EUROPEAN CENTRAL BANK

EUROSYSTEM

EURO AREA BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION STATISTICS

APRIL 2014
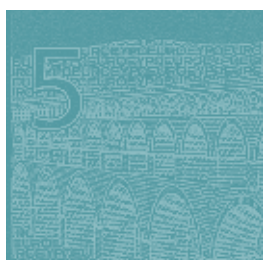
2013 QUALITY REPORT

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EXECUTIVE SUMMARY

This bi-annual[1] quality report is required by Article 6 of Guideline ECB/2004/15.[2] It follows the basic principles of the "Public commitment on European statistics by the ESCB",[3] which is in line with the Eurosystem mission statement[4], and includes both descriptive and quantitative indicators.

In several countries, the introduction of new surveys has triggered revisions, which have resulted in quality improvements, such as better coverage and more accurate data.

Revisions to the net euro area international investment position (i.i.p.) at end-2012 increased the net liability position from €1,146 billion to €1,263 billion (0.6% of the average stock of assets and liabilities), due to revisions to portfolio investment (revised upwards by €104 billion) while revisions to direct investment (revised upwards by €43 billion) and other investment (revised downwards by €39 billion) almost cancelled each other out. The cumulated revisions to the net euro area i.i.p. at end-2011 include one more vintage, and the result from the first assessment was an increase in the net liability position of €319 billion from €1,136 billion to €1,455 billion (1.7% of the average stock of assets and liabilities). This revision was mainly due to upward revisions to other investment of €275 billion and to combined direct and portfolio investment of €44 billion.

The size of 12-month cumulated euro area net errors and omissions has remained stable since the direct actions undertaken by euro area data compilers and the ECB in 2009 which ended the negative trend that had been recorded since 2004.[5]

The external consistency between the b.o.p./i.i.p. and comparable sets of indicators from three different data collections, namely euro area accounts, monetary statistics and foreign trade statistics, have been assessed and monitored regularly to ensure that (i) the sources of discrepancies are identified and recorded, and (ii) the magnitude of discrepancies between these sets of statistics is kept to an acceptable level.

The ECB regularly compares the euro area data with the closely corresponding data released by its main counterparts, namely the United Kingdom, the United States and Japan.

Note that the next version of this quality report, to be published in 2015, may be subject to significant structural and content changes, as data due to be reported from the reference year of 2014 onwards will comply with BPM6 standards. Box 1 (on page 8) provides information on the current status of implementation of BPM6.

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1 This report was published on an annual basis until 2011.
2 See Official Journal of the European Union (OJ) L 354, 30.11.2004, p. 34, and amending Guideline ECB/2007/3, OJ L 159, 20.6.2007, p. 48.
3 Public commitment on European statistics by the ESCB: http://www.ecb.europa.eu/stats/html/pcstats.en.html
4 Eurosystem mission statement: http://www.ecb.europa.eu/ecb/orga/escb/html/mission_eurosys.en.html
5 See Box 2 in "Euro area balance of payments and international investment position statistics – 2009 quality report", ECB, March 2010, page 22.

INTRODUCTION

This report is required by Article 6 of Guideline ECB/2004/15. It complies with the "Public commitment on European statistics by the ESCB" and the Eurosystem mission statement, which stipulate that ESCB statistics are governed by a set of principles referring to the ESCB's institutional environment, statistical processes and statistical output.

Moreover, in line with its mission statement,[6] the ECB is committed to adhering to values such as integrity, competence, efficiency and transparency, while the main principles and elements guiding the production of ECB statistics are contained in the statistics quality framework (SQF)[7] and quality assurance procedures.

This report is organised into three sections. Section 1 focuses on the *institutional environment* in which statistics are produced. It covers the following aspects: (i) independence; (ii) the legal mandate for data collection; (iii) impartiality and objectivity; and (iv) statistical confidentiality. Section 2 concentrates on the *statistical processes*, the relevant aspects of which are: (i) a sound methodology and appropriate statistical procedures; (ii) cost-effectiveness; and (iii) minimisation of the reporting burden. Finally, Section 3 deals with the *quality of the statistical output*, namely its (i) relevance; (ii) accuracy and reliability (including stability); (iii) consistency (or coherence) and comparability; (iv) timeliness (including punctuality); and (v) accessibility and clarity.

The report includes quantitative indicators[8] for measuring reliability (or stability) and consistency. These quantitative indicators were computed on the basis of data published by 29 October 2013.[9] They include monthly b.o.p. observations from January 2010 to December 2012, the results of which are compared with those for the four previous three-year periods, i.e. from 2006 in the main text and from 1999 in Annex 2. By contrast, the study of the euro area i.i.p. revisions is based on the different vintages of the estimates for each year, focusing on data for positions from end-2008 to end-2012.

I   INSTITUTIONAL ENVIRONMENT

The institutional environment has a direct impact on the quality of statistics. The statutory *independence* and accountability of the ECB, based on the provisions of the Treaty on the Functioning of the European Union (the "Treaty"),[10] also apply to its statistical tasks. The euro area b.o.p. and i.i.p. are based on the aggregation of statistics provided by individual euro area countries on transactions and positions between their residents and non-euro area residents. The *legal framework for collecting b.o.p./i.i.p. data* stems from the Treaty, in particular Article 5 of the Protocol on the Statute of the European System of Central Banks and of the European Central Bank (the "ESCB Statute"), which deals with the collection of statistical information.[11] Applying this provision, Article 2 of the Council Regulation (EC) No 951/2009 amending Council Regulation

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6   ECB mission statement: http://www.ecb.europa.eu/ecb/orga/escb/html/mission_eurosys.en.html
7   ECB's statistics quality framework (SQF): http://www.ecb.europa.eu/stats/html/sqf.en.html
8   Based on the work of a joint ECB (Directorate General Statistics)/European Commission (Eurostat) task force on quality, in which representatives of most of the then 15 EU Member States were also involved. The task force report is available on the website of the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) at http://www.cmfb.org.
9   It excludes Latvia, which adopted the euro as its currency on 1 January 2014.
10 For further details, see the ECB's website at http://www.ecb.europa.eu/ecb/orga/governance/html/index.en.html.
11 Article 5.1 sets out that "in order to undertake the tasks of the ESCB, the ECB, assisted by the national central banks, shall collect the necessary statistical information either from the competent national authorities or directly from economic agents".

(EC) No 2533/98 on the collection of statistical information by the ECB[12] defines the reference reporting population, including "legal and natural persons residing in a Member State, to the extent that they hold cross-border positions or have carried out cross-border transactions […]".

The legal obligation set out in Treaty and Council Regulation (EC) No 2533/98, as amended by Council Regulation (EC) No 951/2009, forms the basis for Guideline ECB/2004/15 and for the amending Guideline ECB/2007/3 on the statistical reporting requirements of the ECB in the field of balance of payments (b.o.p.) and international investment position (i.i.p.) statistics, and the international reserves template.

The new international standards for balance of payments statistics are defined in the sixth edition of the IMF's Balance of Payments and International Investment Position Manual (BPM6).[13] The methodological changes introduced by the manual have been translated into new data requirements and integrated into the EU's legal framework through Guideline ECB/2011/23[14] of 9 December 2011 and European Commission Regulation No 555/2012, amending European Parliament and Council Regulation No 184/2005. The new Guideline will apply from 1 June 2014.

The memorandum of understanding of March 2003 between the ECB's Directorate General Statistics and Eurostat (complemented by its Annex 1) defines how responsibility in the field of b.o.p./i.i.p. statistics is shared between the European Commission and the ECB.[15]

The International Monetary Fund (IMF) has established a Special Data Dissemination Standard (SDDS) to guide its member countries in the provision of their economic and financial data to the public. All euro area countries have subscribed to the standard. The euro area as a whole also adheres to the SDDS. References to the IMF's SDDS framework are made in this report where appropriate. Most euro area countries are now undertaking the necessary statistical preparations to adhere to the revised (more demanding) version of the standard in the forthcoming years, namely the SDDS Plus.[16]

The main purpose of euro area b.o.p. and i.i.p. statistics is to support the monetary policy of the ECB and other tasks of the Eurosystem[17] and the ESCB. In the Eurosystem's mission statement, accountability, transparency and good governance are important values which underpin the integrity of the statistical function as defined by the Treaty (Article 5 of the ESCB Statute).

Since the start of Stage Three of Economic and Monetary Union (EMU) in 1999, several measures have been implemented to protect the integrity and credibility of euro area statistics and to increase the efficiency and effectiveness of statistical procedures. In line with the "Public commitment on European statistics by the ESCB", the ECB[18] developed a statistics quality framework, providing

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12 OJ L 269, 14.10.2009, p. 1, and OJ L 318, 27.11.1998, p. 8.
13 *Balance of Payments and International Investment Position Manual – 6th Edition*, IMF, 2009: http://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf
14 As amended by the Guideline of the ECB of 30 July 2013 (ECB/2013/25). Both Guidelines can be found on the ECB's website at http://www.ecb.europa.eu/ecb/legal/1005/1022/html/index.en.html
15 The memorandum of understanding, dated 10 March 2003, is available on the ECB's website at http://www.ecb.europa.eu/ecb/legal/pdf/en_mou_with_eurostat1.pdf
16 The SDDS Plus was established by the IMF in 2012 in support of domestic and international financial stability. It goes beyond the focus of the SDDS on access to international capital markets by putting an emphasis on countries that have systematically important financial sectors that are integral to the working of the international monetary system. (http://dsbb.imf.org/Pages/SDDS/Overview.aspx?sp=y)
17 The Eurosystem is the central banking system of the euro area. It comprises the ECB and the national central banks of the 18 EU Member States (as at 1 January 2014) that have the euro as their currency.
18 In cooperation with the Statistics Committee (STC) of the European System of Central Banks (ESCB) and the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB).

guidance in the compilation of statistics, as well as quantitative measures to assess the statistical outputs. The framework also encompasses procedures to protect statistical confidentiality, as required by Council Regulation (EC) No 951/2009.

In 2013 the Statistics Committee established a task force on quality reports in order to improve the underlying statistics of the macroeconomic imbalances procedure (MIP). The indicators of the MIP scoreboard provide the statistical support to the Commission's Alert Mechanism Report. The MIP is part of the six legislative proposals on economic governance adopted by the European Parliament and Council in November 2011.[19] The MIP scoreboard provides the basis for the economic reading of potential imbalances. Currently, the current account balance, share of world exports and the net i.i.p. are the b.o.p./i.i.p. contributions to the scoreboard indicators.

2 STATISTICAL PROCESSES

2.1 METHODOLOGICAL SOUNDNESS

The ECB's website contains an up-to-date methodological note on the compilation of the euro area b.o.p. and i.i.p. and international reserve assets, including, among other things, the legal framework, the compilation method, euro area definitions and the basis of valuation and revision practices.[20]

In order to meet specific user requirements, the agreed methodology for compiling the euro area aggregates is set out in the IMF's Balance of Payments Manual (BPM5). Moreover, the ECB and Eurostat are together coordinating the necessary steps for the adoption of the sixth edition of the manual (BPM6) by autumn 2014 (see Box 1 below). The methods for compiling the statistics on the international reserves (flows and outstanding amounts) of the ECB and the Eurosystem are described in a separate document.[21] The latter will be updated by summer 2014 in accordance with BPM6 and the updated IMF guidelines on the international reserves and foreign currency liquidity.

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19 Regulation (EU) No 1176/2011 of 16 November 2011 on the prevention and correction of macroeconomic imbalances and Regulation (EU) No 1174/2011 of 16 November 2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area
20 Information on the balance of payments is available on the ECB's website: http://www.ecb.europa.eu/stats/external/balance/html/index.en.html
21 *Statistical treatment of the Eurosystem's international reserves*, ECB, October 2000: http://www.ecb.europa.eu/pub/pdf/other/statintreservesen.pdf

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Box 1

THE IMPLEMENTATION OF THE SIXTH EDITION OF THE IMF'S BALANCE OF PAYMENTS AND INTERNATIONAL INVESTMENT POSITION MANUAL (BPM6)[1]

The ECB data requirements as set out in Guideline ECB/2011/23 are, for the most part, in line with the standard components presented in BPM6 (Appendix 9). The new ECB requirements include additional breakdowns by institutional sector and instrument, the provision of data for changes in positions related to asset prices and to exchange rates, and further data on portfolio investment positions by remaining maturity in order to enhance the statistics on euro area external debt.

1 *Implementing the new BPM6*, available on the ECB's website: http://www.ecb.europa.eu/stats/external/bpm6/html/index.en.html

The first euro area and EU b.o.p. and i.i.p. statistics following the BPM6 methodology will be published in the last quarter of 2014. Until then, the euro area b.o.p. and i.i.p. will be compiled according to Guideline ECB/2004/15 and EC Regulation No 184/2005. In order to smooth the transition from BPM5 to BPM6 methodology, both datasets will be available in the ECB's Statistical Data Warehouse (SDW)[2] for an interim period.

The national central banks of the euro area are working in cooperation with national statistical institutes on incorporating the new requirements into the national data collection and compilation systems (e.g. design of new surveys, guidance to reporters, adaptation of IT infrastructure, etc.)

Further details concerning the implementation of BMP6 are available on the ECB's website: http://www.ecb.europa.eu/stats/external/bpm6/html/index.en.html

2 ECB's Statistical Data Warehouse: http://sdw.ecb.europa.eu

In 2012 the task force on valuation of foreign direct investment (FDI) positions was mandated to review the methods to value direct investment positions stated in Annex III of Guideline ECB/2011/23. In particular, the work of the task force was focused on reviewing recent developments that may justify amendments to the current method and assessing whether new methods to be applied in the national contributions to the euro area aggregate would lead to a more reliable international investment position (i.i.p.), in particular by increasing consistency in the valuation of FDI assets and liabilities. The report concluded that, in some cases where the use of own funds at book value (OFBV) data would lead to significant biases in the national net i.i.p., valuation methods other than OFBV could be used, adding that national compilers shall exchange information on those positions with the other relevant Member State(s). National compilers should then consider, on a case-by-case basis, adjusting the valuation of those positions in order to strive for a consistent recording of these investments by counterpart EU countries. The task force's final report was approved by the working group on external statistics. Subsequently, ECB Guideline (ECB/2011/23) was amended (ECB/2013/25) and published in the Official Journal in September 2013.[22] This new flexibility on valuation methods is already used by some Member States.

The under-coverage of the SPEs in Cyprus and Malta has been recurrently addressed in previous euro area b.o.p./i.i.p. quality reports since both countries joined the euro area in 2008. However, the progress achieved so far has not met expectations. This under-coverage has been discussed both by the ECB's Statistics Committee and bilaterally with both central banks. The Central Bank of Cyprus and the Central Bank of Malta have promptly informed the ECB about their efforts and their plans to improve coverage of the reporting of SPEs in their countries.

The Banque centrale du Luxembourg (BCL) introduced for the reference period December 2011 a new survey on companies active in the financing of international groups (part of SPEs), the consequence of which is that significant revisions were reported for investment income gross transactions from 2011 onwards.

The main changes affecting the compilation of French b.o.p./i.i.p. statistics have been the introduction of a new, more accurate methodology for calculating portfolio investment income from debt securities, and a new survey (the foreign financial assets and liabilities survey, or

22 See the ECB's website at http://www.ecb.europa.eu/ecb/legal/pdf/l_24720130918en00380042.pdf .

"EFI") to improve the measurement of non-trade-related loans between companies. Following the implementation of the new methodology and survey, income data have been revised back to 2010.

2.2 COST-EFFECTIVENESS AND MINIMISATION OF THE REPORTING BURDEN

Since 2003 the ECB's Directorate General Statistics and Eurostat have fully aligned their release and revision calendars. This has increased the comparability of their statistics, while also easing the reporting burden of Member States. A further step in this direction has been taken with the new Guideline ECB/2011/23 and the updated EC Regulation No 184/2005 (Commission Regulation No 555/2013), where the ECB's Directorate General Statistics and Eurostat have also aligned the data requirements and codifications.

The centralised securities database (CSDB) and security-by-security data collection,[23] which were implemented in all euro area countries as of March 2009, provide extensive flexibility in the compilation of statistics without increasing the burden on respondents.

Since 2009 a network for foreign direct investment statistics (the FDI network) has been working to facilitate a secure exchange of information on large FDI transactions between national compilers in the EU to increase the quality of the statistics produced. In 2012 the FDI network began an annual exercise to exchange information on FDI positions in order to better understand bilateral inconsistencies. The participating countries have assessed the associated burden to be acceptable and have confirmed that the exercise helps them to identify the reasons behind mismatched positions. One of the typical differences is the use of different valuation methods to record the positions vis-à-vis partner countries. The national data and euro area aggregates have already benefited from the establishment of the network, as it has triggered a reduction of asymmetries in the euro area b.o.p. and i.i.p., as well as fewer and/or earlier revisions to these data.

3 HIGH OUTPUT QUALITY

3.1 RELEVANCE OF THE STATISTICAL OUTPUT

The ECB statistics must fulfil stated or implied user needs. These needs may vary over time, as a result of changes in the economic environment. The ECB checks the user needs regularly via the annual work programme and the associated mid-year review. Proposals for new statistics or substantial changes to existing statistical requirements are assessed in terms of their merits and costs.

3.2 ACCURACY AND RELIABILITY (STABILITY) OF THE STATISTICAL OUTPUT

When compiling the euro area aggregates at all frequencies, the ECB performs quality assurance procedures on the contributions received from all euro area countries, and from the ECB itself (derived from its accounting ledgers). The aim of these checks is to detect inaccurate, inconsistent or implausible data. Outliers in time series and inconsistencies with other data sources are analysed as well. If a potential problem is detected, the compiler in the country involved has to check, change or confirm the figures; in the latter case, a further explanation with regard to the underlying economic developments is often supplied.

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23 Guideline ECB/2004/15 states that the stocks of securities reported to the national compiler on an aggregate basis, i.e. not using standard (ISIN or similar) codes, should not exceed 15% of the total portfolio investment stocks of assets or liabilities. This threshold should be used as a guide in the assessment of the coverage of Member States' systems.

The ECB publishes its revision practices. The euro area b.o.p. and i.i.p. are revised in line with the following predetermined schedule: monthly b.o.p. data are revised with the publication of the following month's statistics, as well as with the revisions of the relevant quarter; quarterly data are revised with the publication of the following quarter's statistics, and twice a year thereafter, namely in April and October; and the annual i.i.p. is revised with the publication of the same data for the two subsequent years. In addition, extraordinary revisions are justified in the case of major changes in methodology, coverage or data collection systems in the Member States, or when the composition of the euro area changes. Some changes to this practice are envisaged with the introduction of the new b.o.p. and i.i.p. requirements in late 2014. These changes target, in particular, a coordination of the revision practices between the balance of payments and national accounts domains.

The first release of the monthly b.o.p. for the euro area occurs seven weeks after the end of the reference period and is based on the contributions sent by national compilers four working days earlier. This report provides a revision analysis to assess the *reliability* (or stability) of the euro area's monthly b.o.p., based on a number of indicators that measure the proximity of these first assessments to the final assessments. Similarly, the i.i.p. revisions are analysed with due consideration of the different vintages resulting from the annual revisions.

Revisions are necessary to improve the data quality, as the first assessments may be based, in part, on estimates owing to incomplete, late or erroneous responses by reporting agents. Revisions also provide users with more accurate data for time series analysis and forecasting. However, large or systematic revisions may signal weaknesses in the data collection or compilation systems that need to be resolved.

When reviewing the stability indicators, it should be borne in mind that all changes in the underlying data collection or compilation methods, or methodological changes in one or a few Member States, may lead to breaks in, or substantial backward revisions to, the euro area series. At the same time, these changes generally increase the accuracy of the statistics and may be expected to increase the stability of the series over time.

The main results of the stability indicators are presented in the following sub-sections.

3.2.1 The directional reliability of the first assessment of the monthly current account is above 90%, while the directional reliability of the first assessment of direct investment in the euro area deteriorated significantly to 49%

The directional reliability indicator summarises how often the first assessments correctly predicted an increase or decrease in the final value in comparison with the previous observation. The predictability of the direction of the month-on-month changes constitutes a simple measure of reliability, which is applicable to all b.o.p. items. Chart 1 contains the results of this indicator for the main items of the b.o.p. for the period from 2010 to 2012.

Chart 1 shows the good predictability of the first assessments of the current account, with each component recording a directional reliability of the month-on-month changes of above 77%, and reaching 100% reliability for goods credits and total current account credits. In the financial account, the weakest result is for direct investment in the euro area (49%), with a constant deterioration since 2009. The two previous three-year periods reached a directional reliability of 63% for the period from 2008 to 2010 and of 51% for 2010-2011 (see the indicator Q in Table 5 in Annex 2 for an analysis over a longer period). The reliability indicators for portfolio investment and other investment assets and liabilities are stable at high levels, with a predictability of above 70% and

88% respectively (the indicator for portfolio investment assets shows an improvement to 94% of reliability in the most recent period).

3.2.2 The mean absolute percentage error shows a stop in the deterioration trend observed for services and income credits

The mean absolute percentage error (MAPE) has been calculated for the gross series of the euro area current account. The MAPE is equal to the average of the absolute revisions in relation to the size of the respective flow. Chart 2 shows the results for five three-year periods from 2006-08 to 2010-12. The results for periods back to 1999 are included in Annex 2.

The relative magnitude of the revisions continues to be substantially larger for income than for the remaining components. While income debits show a positive trend towards more stable estimates, the income credits show a deterioration in the first assessments from 2010 onwards. In addition, the relative revisions

Chart 1 Overview of directional reliability

(correctly predicted sign of the month-on-month change in the first estimates as a percentage of all monthly estimates in the period from 2010 to 2012)

Source: ECB.

to services credits show a slight reverse in the increasing trend recorded in the last few years, while the relative revisions to goods credits and debits remained quite stable. However, as a result of these developments, the stability of the current account credits and debits has deteriorated slightly (see Table 4 and Chart 4 in Annex 2) and the trend in the relative revisions to the current account has changed from decreasing to slightly increasing (see Chart 2).

The lower stability for income is mainly due to the difficulty in estimating the profits of affiliates, i.e. the frequent correction of the first estimate of the reinvested earnings sub-item. The initial estimates of income credits and debits from 2010 have been underestimated, as the results from companies' balance sheets were larger than the initial estimates, particularly on the assets side (reversing the 2008 and 2009 trend when the income was overestimated because of deteriorating corporate profits).

3.2.3 An increased bias component in the revisions to net services and net income is shown by the root mean square relative error

For both the net items of the current account and the balancing items of the financial account, another type of indicator is used owing to the difficulty in correctly estimating very volatile series, namely the root mean square relative error (RMSRE). This indicator measures the distance between the first and final assessments in relation to the volatility of each time series. The volatility of each series is estimated by its standard deviation, assuming that the series fluctuates around the average in a stable way.[24]

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24 The assumption of stationarity for the net/balancing items has been confirmed by standard statistical tests. In order to remove the effect of large outliers, mainly in the financial account, the standard deviation is calculated without considering the two most extreme observations in the period concerned.
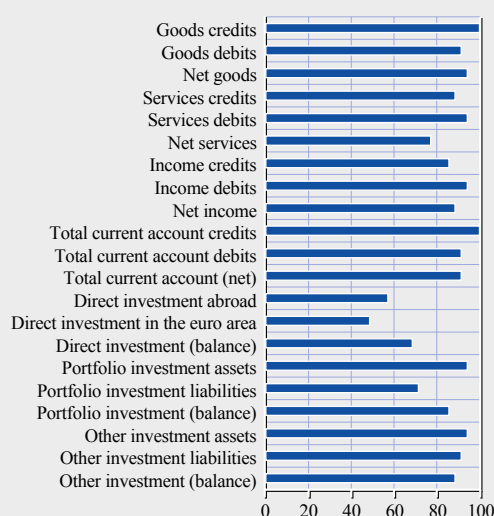
Chart 2 Revisions to the euro area current account as a percentage of the respective flow

(MAPE)

- January 2006 - December 2008
- January 2007 - December 2009
- January 2008 - December 2010
- January 2009 - December 2011
- January 2010 - December 2012
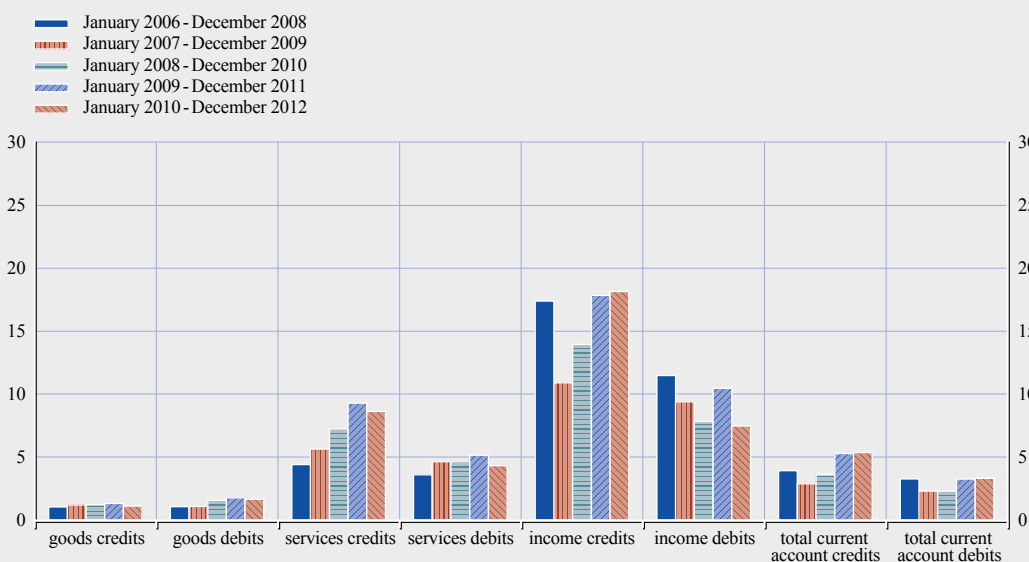
Source: ECB

Chart 3 plots the results for the period from 2010 to 2012 and their further breakdown into a bias, a regression and an unsystematic component. The results for all periods are shown in the tables in Annex 2. The relative revisions to the current account balance have increased slightly in comparison with the previous period, as a consequence of larger relative revisions to services and income. The revisions show a large bias for the net current account, clearly driven by the large bias for both net services and net income.

The results of the breakdown by current account component (Chart 3) show that the relative revisions are almost completely comprised of the unsystematic component for net goods. By contrast, for net services and net income, the RMSRE is mostly comprised of the bias component, reaching 97% of the revisions for the former, and 89% for the latter. More specifically, the increase in the systematic component in net services was due to a change in compilation systems implemented by the Banque de France.

Chart 3 Breakdown of the revisions to the euro area current account as a percentage of volatility in the period from 2010 to 2012

(RMSRE)

- bias component
- regression component
- unsystematic component
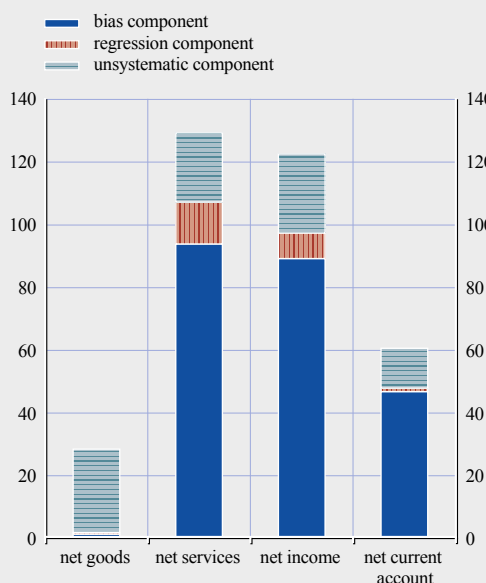
Source: ECB.

3.2.4 The mean absolute comparative error shows a steady improvement in the stability of the estimates of portfolio investment

The indicator used to evaluate the revisions to the preliminary estimates of assets and liabilities in the financial account is the mean absolute comparative error (MACE). The MACE is equal to the average of the absolute revisions in relation to the corresponding outstanding amount in the i.i.p.

Chart 4 presents the results for the estimates of direct, portfolio and other investment assets and liabilities. The average revisions to the preliminary estimates of direct investment both abroad and in the euro area are substantially higher than for the remaining components of the financial account, and the stability of the estimates for direct investment in the euro area has decreased substantially in the latest two three-year periods (with the MACE rising from 0.53% to 0.63%).

On the other hand, the relative revisions to the portfolio investment assets and liabilities continued to decrease in the last three-year period, consolidating the decreasing trend in the revisions to portfolio investment assets since the period 2008-10 (with the MACE falling from 0.28% in the period 2007-09 to 0.14% in 2010-12; see Table 6 and Chart 6 in Annex 2 for data prior to 2006). For portfolio investment liabilities, the decrease was moderate and steady but more acute in the latest three-year period. These developments underline the improvement brought about by the collection and compilation of portfolio investment data on a security-by-security basis, in place in all euro area countries since 2009.

The relative revisions for the other investment assets and liabilities have remained stable throughout the assessment period.

Chart 4 Revisions to the euro area financial account assets and liabilities as a percentage of the corresponding i.i.p. item

(MACE)

- January 2006 - December 2008
- January 2007 - December 2009
- January 2008 - December 2010
- January 2009 - December 2011
- January 2010 - December 2012
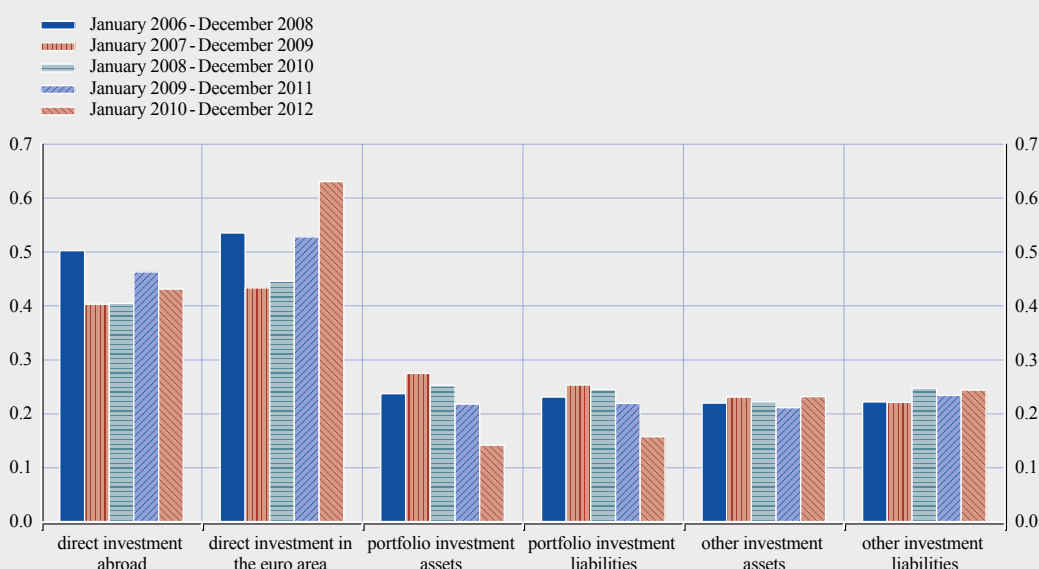
Source: ECB.

Chart 5 Breakdown of the revisions to the euro area financial account as a percentage of volatility in the period from 2010 to 2012

(RMSRE)

■ bias component
▦ regression component
▬ unsystematic component

Source: ECB.

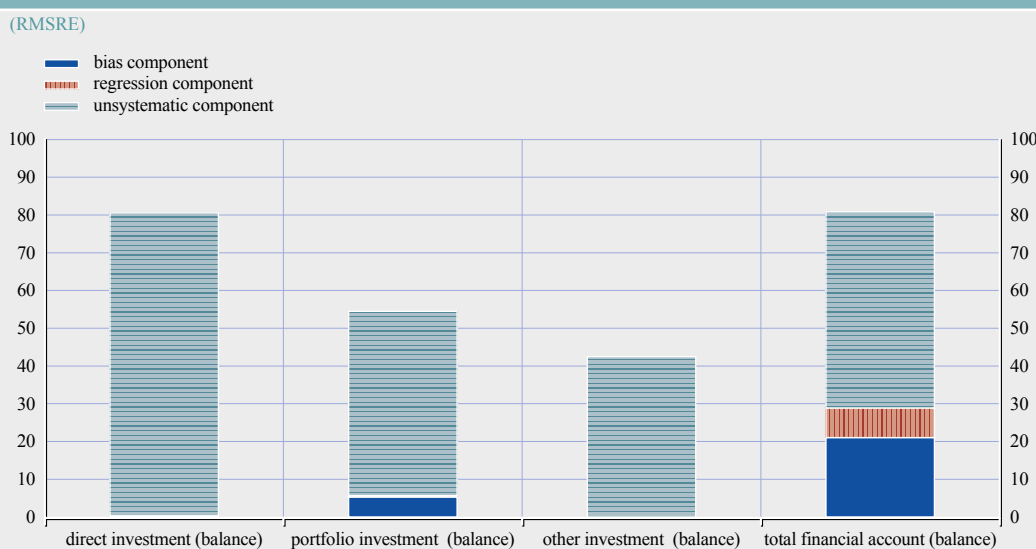### 3.2.5 An increasing bias in the revisions to estimates of the total financial account

The revisions to net direct investment in relation to their volatility were slightly larger than those in previous periods (Chart 5). However, the small bias component previously visible has disappeared. The relative revisions to the estimates of net portfolio investment were lower than in the previous three-year period (54% versus 61%) and mostly comprised the unsystematic component. The bias component is no longer statistically significant, i.e. the mean of the revisions is not significantly different from zero for the period shown in Chart 5.[25] Furthermore, the relative revisions to the other investment estimates decreased slightly (see Tables 5, 6 and 7 in Annex 2).

The balancing item of the financial account as a whole shows a large RMSRE value of 80%, whose main component is the unsystematic component, while the bias component increased in comparison with the previous period. The revisions for the period 2010-12 did show a decreasing regression component as the methodology reduced to a minimum the impact on the patterns in the directly adjusted time series.

3.2.6 Stability of the net international investment position

Five different vintages of revisions to the main items of euro area i.i.p. assets and liabilities are shown in Charts 6 and 7 respectively. The revisions implemented in 2013 refer to 2010, 2011 and 2012 data. Direct investment abroad and in the euro area were the most revised items of the 2012 i.i.p. data in relative terms. Moreover, the relative revisions for 2011 data, implemented in 2012, were significantly larger than the comparable revisions implemented in 2013, in particular for direct investment in the euro area (close to 12%). Revisions to portfolio investment assets were very limited for 2011 and 2012 data, while those to portfolio investment liabilities were somewhat larger.

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25 As the revisions follow a Normal distribution, a t-test is applied.

Chart 6 Revisions to the first estimates of the euro area i.i.p. – assets by reference period

(percentage of the i.i.p.)

- implemented in 2009
- implemented in 2010
- implemented in 2011
- implemented in 2012
- implemented in 2013

	2008	2009	2010	2011	2012
total assets					
direct investment					
portfolio investment					
other investment					
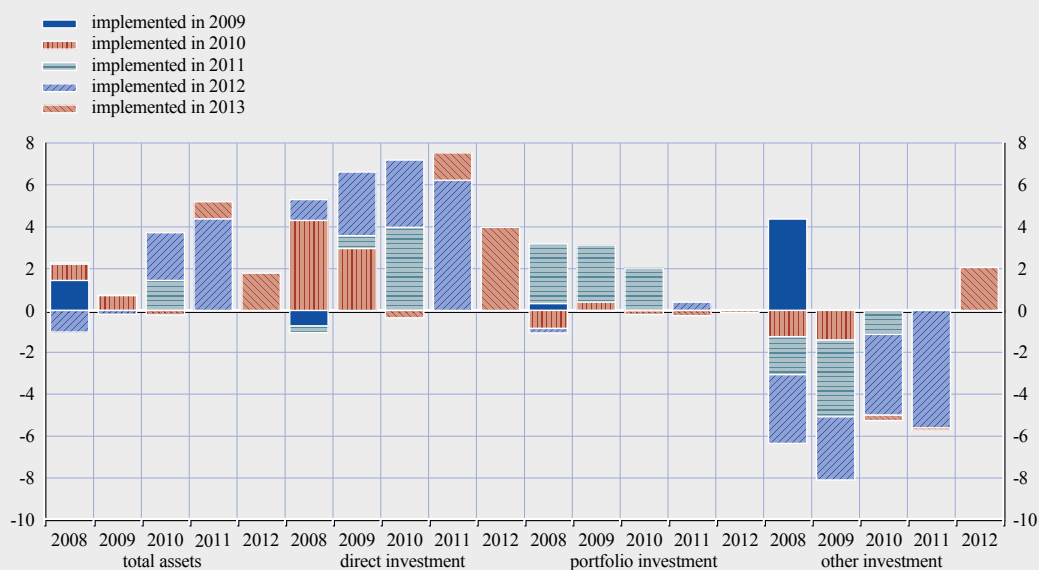
Source: ECB.
Note: The first assessment is based on the quarterly i.i.p.

Revisions to other investment assets for 2008 to 2011 and other investment liabilities for 2008 to 2010 were quite prominent as implemented in 2012, mostly owing to a new survey in Luxembourg which had a major impact on the euro area aggregate.

Chart 7 Revisions to the first estimates of the euro area i.i.p. – liabilities by reference period

(percentage of the i.i.p.)

- implemented in 2009
- implemented in 2010
- implemented in 2011
- implemented in 2012
- implemented in 2013

	2008	2010	2012	2009	2011	2008	2010	2012	2009	2011
total liabilities			direct investment			portfolio investment			other investment	
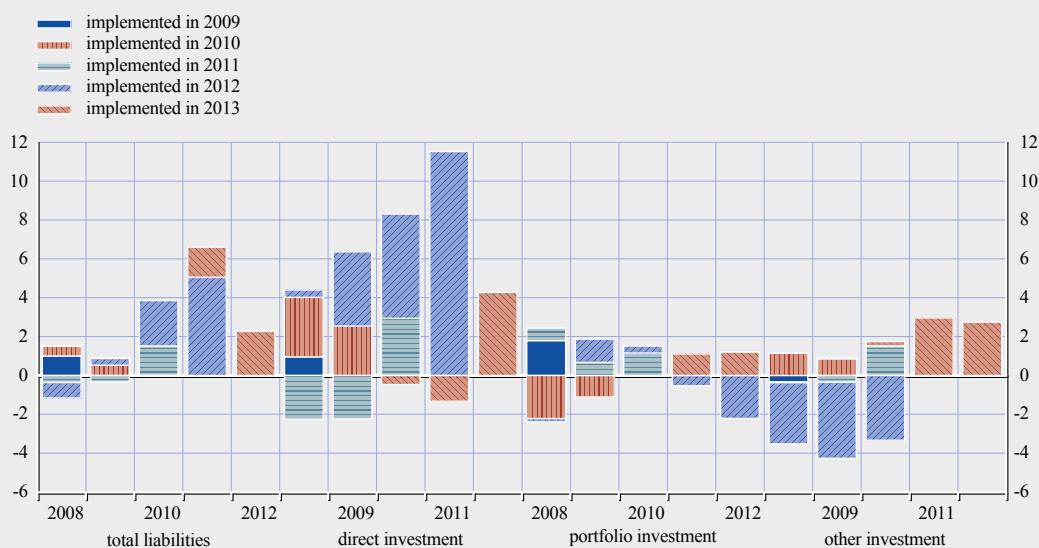
Source: ECB.
Note: The first assessment is based on the quarterly i.i.p.

Chart 8 shows that the total revisions[26] to the estimates for total assets and liabilities were relatively small, except in the cases of 2009 and 2012 data. The revisions to the i.i.p. for direct investment were larger on the assets side. In the case of portfolio investment, the revisions were larger on the liabilities side for 2010, 2011 and 2014, and remained below 2% of the average i.i.p. for the period shown in the Chart 8. Finally, the revisions to other investment liabilities were remarkably large for 2009 and 2011, amounting to nearly 6% of the average i.i.p. The overall revisions to the end-2011 i.i.p. were larger than those to 2012 data as a consequence of larger revisions to other investment owing to the new surveys applied in Luxembourg.

Chart 8 Total revisions to the first estimates of the end-year net euro area i.i.p. by reference period

(percentage of average i.i.p. assets and liabilities)

Source: ECB.
Note: The first assessment is based on the quarterly i.i.p.

3.3 CONSISTENCY AND COMPARABILITY OF THE STATISTICAL OUTPUT

Consistency indicators deal with several aspects: (i) consistency over time, (ii) consistency within a single dataset (internal consistency), (iii) consistency across datasets (external consistency) and (iv) consistency across frequencies; in addition, the statistical output must be (v) comparable with statistics of other regions and countries (comparability with their main partners). For the euro area b.o.p. and i.i.p., internal consistency is assessed by net errors and omissions, and external consistency is measured by discrepancies vis-à-vis other statistics such as foreign trade statistics, external monetary financial institution (MFI) balance sheets and euro area accounts.

Furthermore, consistency covers the effect of a given transaction on subsequent b.o.p. and i.i.p. data (e.g. a change in positions may affect future income flows), or the same recording of a single transaction by both parties involved. Since 2007 the ECB has published an annual reconciliation between b.o.p. and i.i.p. statistics.[27] In particular, the change in the annual positions (i.i.p.) is broken down by b.o.p. transactions, price changes, exchange rate changes and other changes. The box included in the 2006 quality report[28] explained the reconciliation between the financial transactions included in the b.o.p. and the stocks reflected in the i.i.p.

3.3.1 Internal consistency

Net errors and omissions constitute the overall balancing item of the b.o.p., and thus provide an indicator of its internal consistency. In fact, the principle of double-entry bookkeeping implies that the sum of all transactions with the rest of the world should be equal to zero in the b.o.p. statement. A large or persistent residual may hinder data analysis and interpretation.

The root mean square error (RMSE) indicator is calculated from the time series on net errors and omissions as a percentage of the gross flows in the euro area current account. This indicator is also
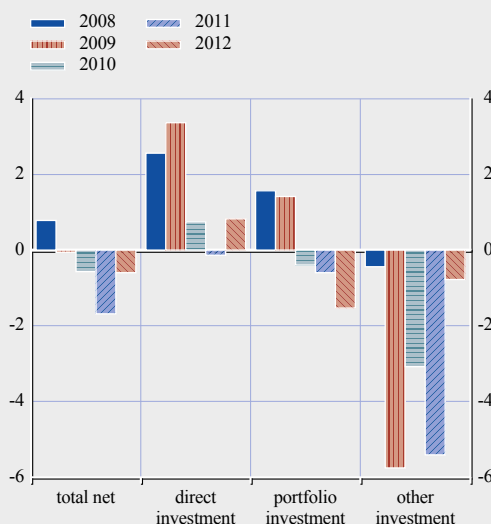
26 Total revisions are computed by summing the revisions to assets to the revisions to liabilities.
27 See Table 7.3.1 entitled "Summary financial account" in the ECB's Monthly Bulletin for data on the reconciliation between flows and stocks.
28 Available on the ECB's website at http://www.ecb.europa.eu/pub/pdf/other/bop_intinvpos-2007en.pdf.

Chart 9 RMSE of net errors and omissions as a percentage of gross flows in the euro area current account

(RMSE)

bias
variance

| | Jan. 2003 - Dec. 2005 | Jan. 2004 - Dec. 2006 | Jan. 2005 - Dec. 2007 | Jan. 2006 - Dec. 2006 | Jan. 2007 - Dec. 2009 | Jan. 2008 - Dec. 20010 | Jan. 2009 - Dec. 2011 | Jan. 2010 - Dec. 2012 |
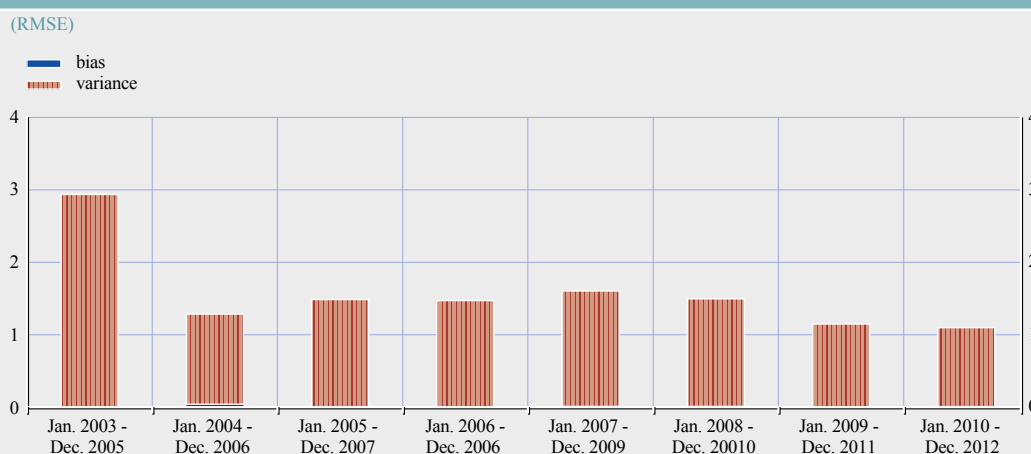
Source: ECB.

used to identify a potential bias (as positive and negative errors and omissions should normally cancel each other out within a given time frame).

In the period from January 2010 to December 2012 the RMSE of the net errors and omissions of the euro area b.o.p. amounted to 1.1% of the average gross current account flows, showing a stable and slightly decreasing trend since 2007. Chart 9 shows that the internal consistency of the b.o.p. has largely improved following implementation of the new compilation system[29] for the euro area aggregates in November 2009, with backward revisions to January 2004,[30] as a result of the work done by the ECB and the national central banks of the euro area to enhance the method used for compiling the euro area b.o.p., thereby reducing net errors and omissions.

Box 2 below shows a preliminary study on consistency between the i.i.p. and the portfolio investment account.

29 Further information is available in the "Balance of payments and international investment position" sub-section of the "Statistics" section on the ECB's website (http://www.ecb.europa.eu/stats/external/balance/html/index.en.html).
30 See Box 2 in the 2009 quality report, available on the ECB's website at http://www.ecb.europa.eu/pub/pdf/other/euroareabalanceofpaymentsandiipstatistics201003en.pdf.

Box 2

CONSISTENCY BETWEEN THE I.I.P. AND THE PORTFOLIO INVESTMENT ACCOUNT

"Rates of return on investment imply a relationship between the various components of investment income and the positions in the same instruments recorded in the international investment position (i.i.p.), a relationship that can be used to confront and improve the quality of the respective components".[1]

1 *The Balance of Payments and International Investment Position Compilation Guide, July 2013, para. 8.26:* http://www.imf.org/external/pubs/ft/bop/2007/bop6comp.htm
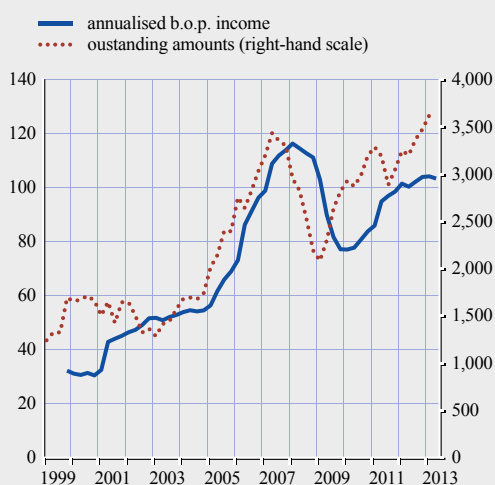
The IMF quality assessment framework[2] in paragraph 3.4.2 states that "The behaviour of series is routinely assessed against related series, for instance: reported data on investment income payments and receipts are regularly assessed in relation to the corresponding stock data in the i.i.p. statistics". In line with this concept, this box provides an analysis of the relationship between certain outstanding amounts of assets and liabilities included in the euro area i.i.p. and the income they generate as reported in the income account (current account). The focus is on equity, bonds and notes, as well as money market instrument assets and liabilities reported for the euro area in the i.i.p. for portfolio investment.

The analysis has been done instrument by instrument, with the purpose of confirming the plausibility of the euro area investment income in relation to the underlying stocks. The first aspect considered is the relationship between the quarterly i.i.p. and the moving sum of the last four quarters of the respective income, studied through graphics and correlation analysis. As a second step in the analysis, alternative income series are estimated by applying market yields to the underlying i.i.p. portfolio investment series. The different market yields (returns) have been chosen on the basis of the instrument type and geographical location of the associated issuer. However, given the availability of only highly aggregated data, the series obtained are rather simple estimates based on several assumptions. The purpose of these estimates is to broadly show whether the euro area portfolio income data can be explained by developments in the underlying stock data and financial markets.

Equity liabilities (chart A) and assets (chart B) show strong correlations between outstanding amounts and related income, with correlation coefficients of 0.86 and 0.82 respectively. The income curve of both equity liabilities and assets is lagged by three to four periods compared with that of the outstanding amounts. This is explained by the fact that price developments tend to reflect expectations in advance of actual dividend payments.

Chart A Equity liabilities: outstanding amounts and income

(EUR billions)

—— annualised b.o.p. income
······ oustanding amounts (right-hand scale)

Source: ECB.

Chart B Equity assets: outstanding amounts and income

(EUR billions)

—— annualised b.o.p. income
······ outstanding amounts (right-hand scale)
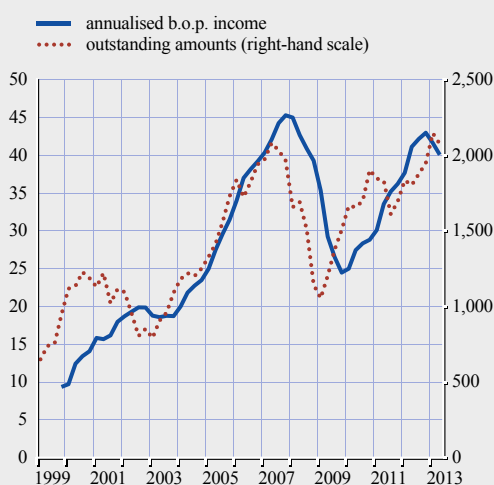
Source: ECB.

2 *Data quality assessment framework*, May 2012: http://dsbb.imf.org/Pages/DQRS/DQAF.aspx.

Chart C Equity – dividend debits: income as reported in b.o.p. and estimated with market index

(EUR billions)

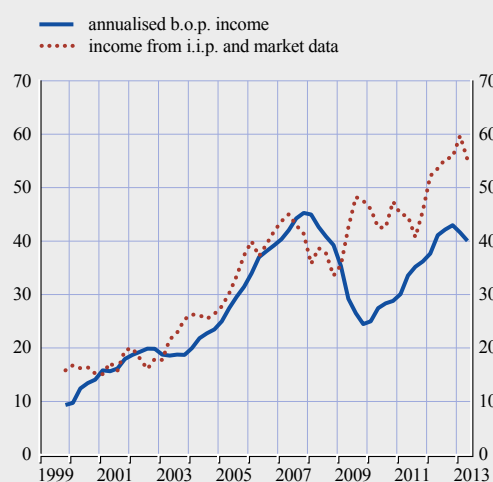— annualised b.o.p. income
····· income from i.i.p. and market data
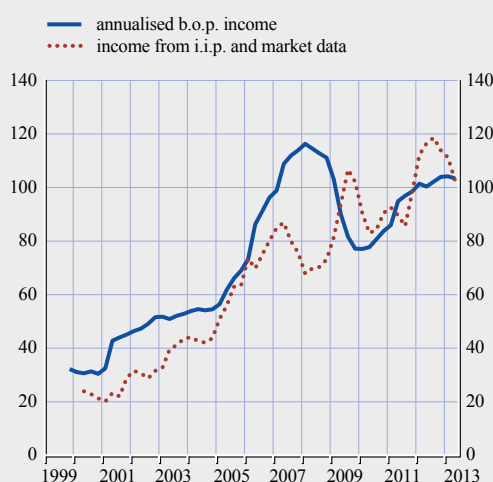
Sources: ECB, ECB calculations and Data Stream.

Chart D Equity – dividend credits: income as reported in b.o.p. and estimated with market indices

(EUR billions)

— annualised b.o.p. income
····· income from i.i.p. and market data

Sources: ECB, ECB calculations and Data Stream.

Chart C compares the b.o.p. income debit data (i.e. dividends paid) with the estimated income from the i.i.p. on the basis of EuroStoxx dividend yields[3] for European equities denominated in euro. A strong correlation is also visible in the periods when the crisis was at its peak and some companies were still paying dividends that reflected past earnings while other large market players were already cutting back dividend payments.

The estimated income credits as presented in Chart D takes into account equity market developments in the main counterpart countries, i.e. the United States, United Kingdom, Switzerland and China (including Hong Kong), which for equity assets represent more than 75% of the issuers. For the remaining 25%, the European market index has been used. With the exception of 2009, the two income series show a strong correlation. The development of income credits follows the same pattern as that of income debits. As in the case above, this development reflects the significant impact of the financial crisis.

The income series for bonds and notes are strongly correlated with those of the outstanding amounts, yielding correlation coefficients of 0.92 for liabilities and of 0.94 for assets (see Charts E and F).

Bonds and notes comprise a very wide category of financial instruments, and developments differ significantly depending on the issuing sector (and the issuer's country of residence). For this reason, on the liabilities side, the income generated by General Government bonds and the one generated by corporate[4] bonds have been estimated separately.

The total estimated income plotted in Chart G is the sum of these two components. For the government component, the estimate uses the yield of the German government ten-year

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3 The dividend yield for an index is the total dividend amount for the index, expressed as a percentage of the total market value for the constituents of that index.
4 Hereafter the term "corporate" refers to bonds issued by all reference sectors except General Government.

**Chart E Bonds and notes liabilities:
outstanding amounts and income**

(EUR billions)

— annualised b.o.p. income
···· outstanding amounts (right-hand scale)
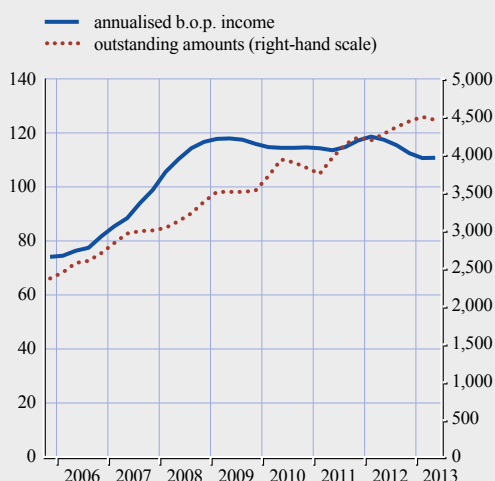
Sources: ECB, ECB calculations and Data Stream.

**Chart F Bonds and notes assets:
outstanding amounts and income**

(EUR billions)

— annualised b.o.p. income
···· outstanding amounts (right-hand scale)
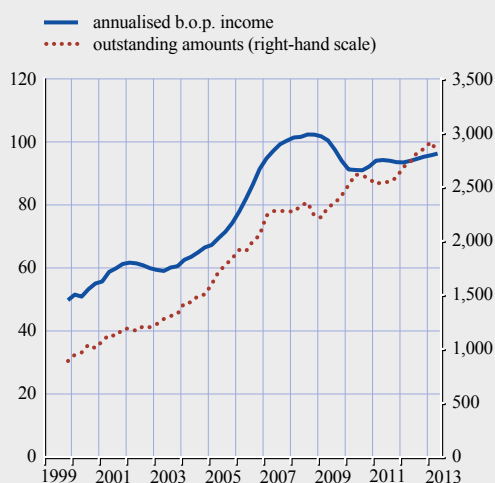
Sources: ECB, ECB calculations and Data Stream.

benchmark bond as a reference; for all the other bonds (corporate), it uses a simple average of four market yields, namely the euro market yields[5] of A and AAA-rated corporate bonds with maturities of up to three and up to ten years.

The results of chart G seem plausible: the surge in the yields observed between 2007 and 2010 and the considerable drop after 2011 are only partly reflected in the b.o.p. income data. The estimated income series are more volatile than the euro area income compiled; this is mostly explained by the fact that the market principle is used in the estimation process instead of the debtor or acquisition principle used mostly by the euro area compilers[6]. New issuances have pushed up income (observed between 2007 and 2009), while old coupon rates had a stabilising effect, making official income data smoother over time.

**Chart G Bonds and notes liabilities:
income as reports in b.o.p. and estimated
with market indices**

(EUR billions)

— annualised b.o.p. income
···· income from i.i.p. and market data
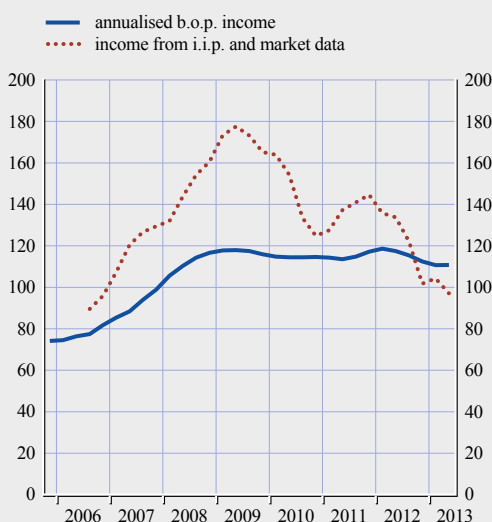
Sources: ECB, ECB calculations and Data Stream.

5 The average gross redemption yield is a good approximation to the average yield of a portfolio, and allows for the different maturity expectations of the securities. It is obtained by weighting the individual bond yields by the size of the holding multiplied by the duration, since duration is just the discounted life of all the future cash flows of the bond.
6 In simple terms, the acquisition approach calculates accrued interest based on the actual coupon and the amortization of the premium or discount paid at the purchase date, while the debtor approach makes use of actual coupon and the amortization of the premium or discount at the issued date. A third approach to calculate accrued interest is to follow the market principle (also called creditor approach) that calculates the accrued interest based on the market yields.

(annual percentage)

- corporate A 1-10-year
- corporate AAA 1-3-year
- general government benchmark bond 1-10 year
- annualised average corporate A-AAA; 1-3 and 1-10 year maturity and general government
- annualised b.o.p. to i.i.p. ratio
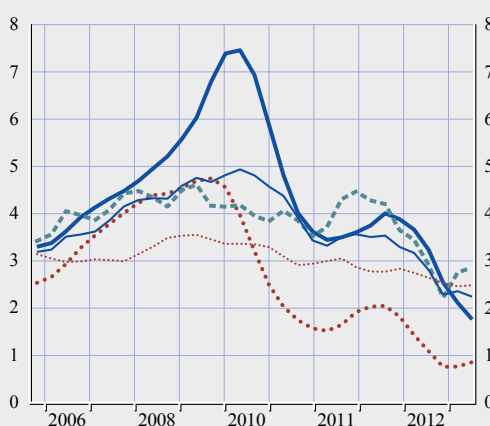
(annual percentage)

- US corporate bond yield
- US government bond yield
- UK government bond yield
- annualised b.o.p. to i.i.p. ratio

Sources: ECB, ECB calculations and Data Stream.
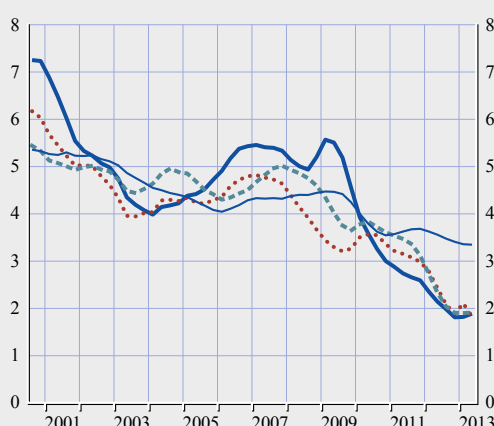
Sources: ECB, ECB calculations, Data Stream, Bank of England and US Federal Reserve.

Chart H shows how different the yields are, and how their average has a higher correlation with the implicit yields derived from b.o.p. and i.i.p. data (annualised b.o.p. to i.i.p. ratio). Information on the outstanding amounts of corporate bonds by maturity and rating would further improve the estimate; however, such data are not available. On the asset side, it is not possible to break down data by issuer (counterpart) sector. Looking at the geographical breakdown, the main euro area counterparts are the United States (30% of total euro area holdings of bonds and notes) and the United Kingdom (22%), while the remaining 48% is split among different counterparts (none exceeding 7%). Given this fragmentation, it seems preferable to limit the analysis to the available yield developments, instead of attempting to estimate the income from bonds and notes assets. Chart I shows that the different market yields in the case of assets have the same trend as the yield implicit in the b.o.p./i.i.p. This trend is also very similar to the yield implicit in the b.o.p./i.i.p. on the liabilities side as shown in Chart H.

For money market instruments (MMI), there is a weak correlation between outstanding amounts and income (Chart J and K), i.e. accrued interest (income) were not explained by stock developments but rather by price (yield) developments, this is particularly evident from 2010 onwards (Chart L and M). The reason for this lies in the short-term maturity of the instrument, so that a rapid decrease in the interest rates affects immediately and drastically the income flows.

As for bonds and notes, the i.i.p. breakdown of MMI liabilities issued by general government and corporates has been used to estimate total income payments. Subsequently, the average yields of the European Union one, three, six, and 12-month government benchmark bonds and of corporate zero-coupon bonds have been used as the price indicator for the two issuer sectors. For the assets, the average yields of the one-week and one, three, six and nine-month coupon bonds issued in the United States, the United Kingdom and Japan have also been used together with

Chart J MMI liabilities: outstanding amounts and income

(EUR billions)

— annualised b.o.p. income
···· outstanding amounts (right-hand scale)
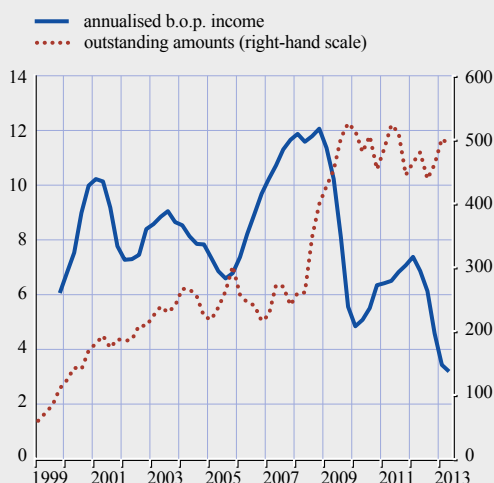
Source: ECB.

Chart K MMI assets: outstanding amounts and income

(EUR billions)

— annualised b.o.p. income
···· outstanding amounts (right-hand scale)
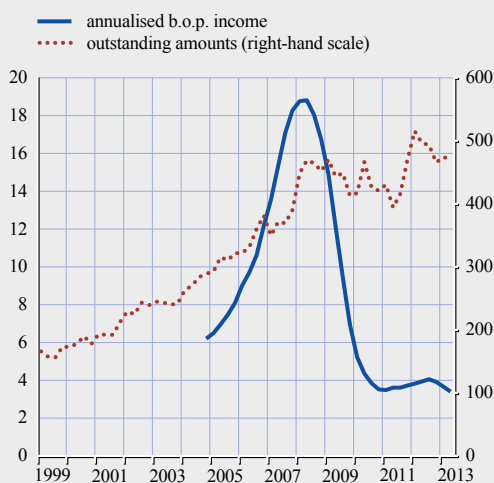
Source: ECB.

the i.i.p. geographical breakdown (these three countries are the counterparts for over 75% of the outstanding assets). The estimated series follow the same trend as the annualised b.o.p. income. The correlation coefficient reaches 0.84 for the liability side and 0.89 for the asset side.

In conclusion, while the financial crisis brought additional difficulties to this empirical analysis because of the volatility of the financial markets, the overall results point to the euro area b.o.p. income being economically plausible. There is a clear correlation between stock and income developments for equities and long-term debt instruments. A high correlation between estimated

Chart L MMI debits: income as reported in b.o.p. and estimated with market index

(EUR billions)

— annualised b.o.p. income
···· income from i.i.p. and market data
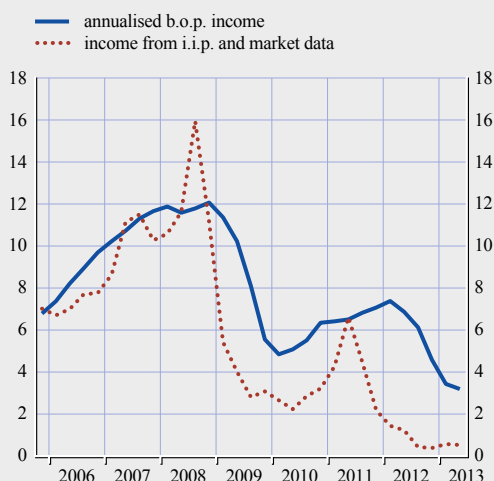
Sources: ECB, ECB calculations and Reuters.

Chart M MMI credits: income as reported in b.o.p. and estimated with market indices

(EUR billions)

— annualised b.o.p. income
···· income from i.i.p. and market data
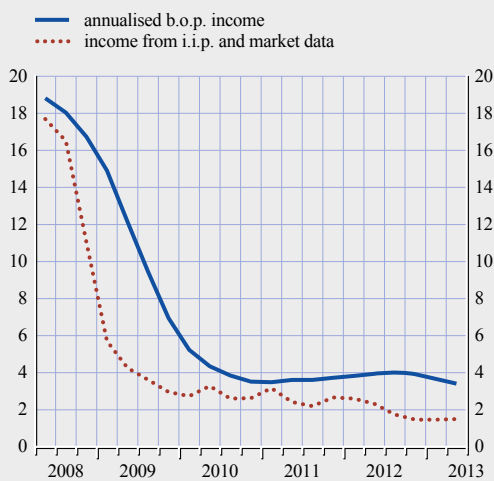
Sources: ECB, ECB calculations and Reuters.

income based on market yields and b.o.p income is observed in all the instruments analysed. In particular, the correlation is high for MMI, where the accrued interest calculations are not significantly affected by the underlying compilation methods (i.e. market/creditor versus debtor/acquisition approach) owing to the high roll-over of this type of instrument.

3.3.2 External consistency

3.3.2.1 Consistency with other statistics

The b.o.p. series have also been compared with the corresponding data published by Eurostat for euro area foreign trade statistics,[31] with the external transactions derived from the MFI balance sheet and euro area accounts statistics published by the ECB. Although the methodologies used for these series are not fully consistent with that used for the euro area b.o.p., they broadly reflect the same economic phenomena. Therefore, the differences are expected to be identifiable and fairly stable over time.

Consistency with foreign trade statistics

For the time being, *foreign trade statistics* are the source used to compile the goods balance of the b.o.p. statistics in all euro area countries except Greece. The conceptual adjustments to the external trade data mainly reflect the differences in the definition of foreign transactions applied in the two sets of statistics. While trade statistics consider a transaction to have taken place when there is a physical movement of goods across borders, the b.o.p. compiler measures goods on a change-of-ownership basis.

Table 1 contains the average of the absolute and ordinary differences in growth rates for exports and imports series compiled on the basis of b.o.p and trade statistics data. The indicators show that the discrepancies gradually decreased for exports and imports from 2003 onwards, but that they started to increase again during the period from 2007 to 2011. However, the revisions incorporated

Table 1 Euro area goods in the b.o.p. and in external trade statistics

(month-on-month growth rate in percentage points)

	Period	Exports	Imports
Average of absolute differences	2003 - 2005	0.93	0.75
	2004 - 2006	0.72	0.71
	2005 - 2007	0.49	0.61
	2006 - 2008	0.35	0.44
	2007 - 2009	0.43	0.48
	2008 - 2010	0.53	0.57
	2009 - 2011	0.60	0.55
	2010 - 2012	0.51	0.55
Average of differences	2003 - 2005	0.03	0.01
	2004 - 2006	-0.04	-0.09
	2005 - 2007	-0.04	-0.05
	2006 - 2008	-0.02	-0.08
	2007 - 2009	-0.02	0.00
	2008 - 2010	0.02	0.01
	2009 - 2011	-0.02	-0.07
	2010 - 2012	0.03	-0.03

Sources: ECB and Eurostat.

31 Comparison based on data published at end-December 2012.

**Chart 10 Exports of goods in b.o.p.
and external trade statistics**

(three-year average of the differences in month-to-month
growth rates; percentage points)

- seasonally adjusted
- non-seasonally adjusted

1 2003-2005	5 2007-2009
2 2004-2006	6 2008-2010
3 2005-2007	7 2009-2011
4 2006-2008	8 2010-2012
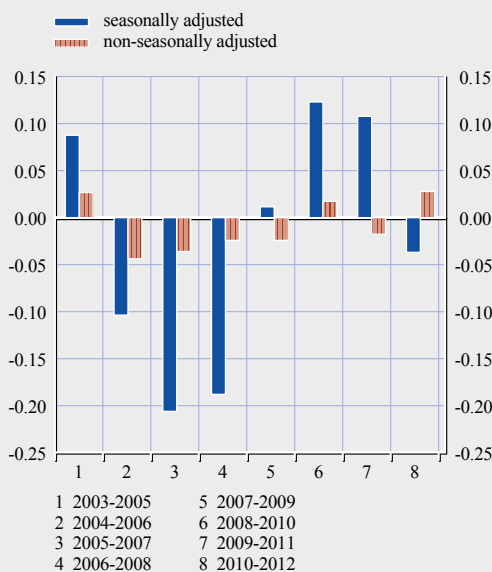
Sources: ECB and Eurostat.

**Chart 11 Imports of goods in b.o.p.
and external trade statistics**

(three-year average of the differences in month-to-month
growth rates; percentage points)

- seasonally adjusted
- non-seasonally adjusted

1 2003-2005	5 2007-2009
2 2004-2006	6 2008-2010
3 2005-2007	7 2009-2011
4 2006-2008	8 2010-2012
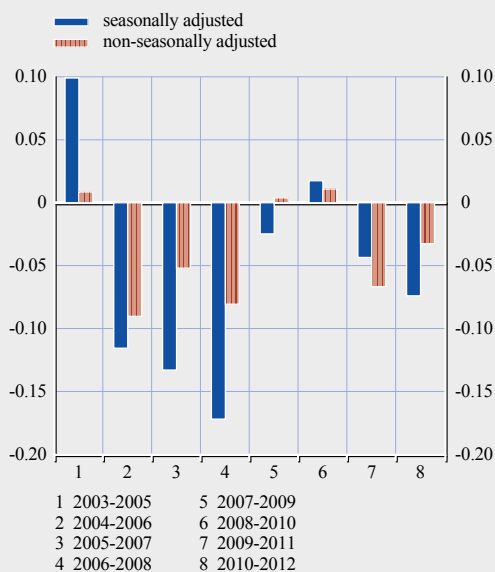
Sources: ECB and Eurostat.

in 2013 in the two datasets have improved the consistency from 2007 onwards for both exports and imports, which confirms that one of the sources of the discrepancies was the different data vintages. The different results obtained by the averages of the absolute and ordinary differences indicate the lack of a persistent divergence of the growth rates of the two series.

Both sets of statistics are also adjusted for seasonal and calendar effects when published. Charts 10 and 11 show three-year averages of the differences in month-on-month growth rates for exports and imports of goods on the basis of both seasonally/calendar-adjusted and raw data. In both cases, the indicator for the adjusted data reveals more differences than that for the raw data. This shows that the different methodologies applied by the ECB and Eurostat to adjust the raw data affect the consistency of (Eurostat's) trade and (the ECB's) b.o.p. statistics.[32]

Consistency with MFI balance sheet items (BSI)

In this series of checks, the b.o.p. series are compared with the external transactions derived from the *MFI balance sheet items (BSI)*. Even though, in principle, both the b.o.p. and BSI comply with international statistical standards, a number of differences can be identified with regard to their *practical implementation*, including the use of different statistical sources, differences in the timeliness of the data reporting and simplifications in one reporting system or the other, which are accepted for the sake of reducing the reporting burden. In terms of compilation systems, the b.o.p. transactions for the MFI sector are reported directly by MFIs in some countries, whereas in the BSI data, transactions are derived from differences in stock data (adjusted for reclassifications, foreign exchange rate changes and price revaluations). In practice, this may give rise to a number

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32 For more information on the different methodologies applied by the ECB and Eurostat, see Table 3 in the *Euro area balance of payments and international investment position statistics – 2009 quality report*, ECB, March 2010 (available at http://www.ecb.europa.eu/pub/pdf/other/euroareabalanceofpaymentsandiipstatistics201003en.pdf).

of differences in the resulting net transactions data, in particular if a large proportion of transactions are denominated in foreign currencies and if the volatility of exchange rates or securities prices is high.

In general, the *methodological differences* between the b.o.p. data and the transactions derived from the MFI balance sheets are limited. In certain cases, information that is available for the b.o.p. is not identified separately in the BSI data, for instance financial derivatives or other accounts receivable/payable. Furthermore, the different treatment of (i) borderline cases between loans and securities, and between securities and derivatives, (ii) inter-company financing, (iii) short selling and reverse transactions, and (iv) the accrued interest that should be reported together with the asset to which it relates should be partly resolved with the implementation of BPM6. This will affect b.o.p./i.i.p. data, as well as the update to the European System of Accounts (ESA2010), which will influence the update to the ECB regulation concerning the balance sheet of the monetary financial institutions sector (to apply from 1 January 2015), which is the underlying BSI statistics data source.

More specifically, the quality indicators used in this report compare: (i) net transactions in deposits/loans reported under "direct investment" and "other investment" in the financial account of the b.o.p. with deposits/loans of other MFIs (i.e. MFIs excluding the Eurosytem) in BSI (see Table 2) and (ii) net transactions in equities/debt securities from "direct investment" and "portfolio investment" in the financial account of the b.o.p. with shares and other equity/securities other than shares in BSI (Table 3).

In both Tables 2 and 3, the RMSRE reflects the distance between the recording in the b.o.p. and BSI of net transactions of other MFIs in the relevant instrument categories, in relation to the volatility of the b.o.p. series concerned. The analysis covers 11 complete years (2003 to 2012) which are divided into six overlapping three-year spans. An RMSRE value of "1" would imply complete consistency between the two datasets.

In Table 2, the RMSRE reflects the distance between the recording of net transactions in deposits and loans of other MFIs in the b.o.p. and BSI in relation to the volatility of the b.o.p. series concerned. Note that these series are rather volatile, and the RMSRE and its components consider both the magnitude of the differences and the volatility of the underlying series. In the first period spanning the years 2003-2005, the RMSRE value was 7.7, with relatively low bias and regression component ratios (1.7% and 0.9% respectively). These results imply that differences exist between b.o.p. and BSI data, with some (but very limited) evidence that these differences are systematic. By contrast, the RMSRE and the regression components for the latest two data spans increased

Table 2 Euro area deposits/loans of MFIs (excluding the Eurosystem) – comparison with corresponding net transactions from monetary statistics				
Period	RMSRE	"Bias component (%)	Regression component (%)	Unsystematic component (%)
2003-2005	7.7	1.7	0.9	97.4
2004-2006	7.4	10.6	0.1	89.3
2005-2007	9.4	3.9	8.5	87.5
2006-2008	7.5	1.8	0.1	98.1
2007-2009	6.9	0.4	0.1	99.5
2008-2010	10.9	0.2	0.2	99.6
2009-2011	15.5	0.5	11.8	87.8
2010-2012	16.1	0.1	13.1	86.9

Source: ECB.

Table 3 Securities assets of MFIs (excluding the Eurosystem) – comparison with corresponding net transactions from monetary statistics

Period	RMSRE	Bias component (%)	Regression component (%)	Unsystematic component (%)
2003-2005	35.6	0.1	11.7	88.2
2004-2006	31.9	0.3	8.0	91.7
2005-2007	36.1	0.4	19.2	80.4
2006-2008	34.8	9.2	6.3	84.5
2007-2009	33.7	10.6	2.6	86.8
2008-2010	34.4	3.7	4.3	92.0
2009-2011	32.9	0.2	0.0	99.8
2010-2012	30.3	7.6	0.1	92.3

Source: ECB.

noticeably from previous years, meaning that the deviation in the overall patterns of both data series rose, with the highest values of RMSRE (16.1) and regression component (13.1%) computed for the data span of 2010-2012. This result, namely the decreasing consistency between both datasets in the latest periods, correlates with the implementation in June 2010 of the current ECB regulation concerning the balance sheet of the monetary financial institutions sector[33]. The adjustments introduced to the reporting under the current BSI regulation were not consistent in both datasets. In addition, during 2010 the amount of flows recorded under the b.o.p. items "other assets" and "other liabilities" increased considerably; this is consequently a key source of discrepancies, as the BSI statistics do not separate geographically this type of assets and liabilities.

In Table 3 above, the RMSRE reflects the distance between the recording of net transactions in (equity and debt) securities assets of other MFIs in the b.o.p. and BSI in relation to the volatility of the b.o.p. series concerned. Note that the RMSRE values computed for this instrument category are considerably larger than those computed for deposits/loans (see Table 2 above) owing to two factors: (i) the magnitude of the discrepancies between the two datasets is larger, and (ii) the volatility of the b.o.p. series concerned is lower. The relative consistency has been quite stable (the RMSRE values over the entire data span range from 30.3 to 36.1), although the bias component increased in relevance around 2008, when euro area b.o.p. statistics started to be compiled based on a security-by-security collection system.[34]

Consistency with euro area accounts

The euro area accounts (EAA) present a complete and consistent set of data for all institutional sectors. They provide comprehensive information not only on the economic activities between resident sectors, but also on the interactions between these sectors (of the euro area) and the rest of the world. Transactions with non-residents and the financial claims of residents on non-residents, or vice versa, are recorded in the "rest of the world" account. Although the euro area b.o.p. and i.i.p. statistics are the major data source for the compilation of the rest of the world account in the EAA, some methodological differences and the EAA integration process, including the removal of horizontal discrepancies (asymmetries) and vertical discrepancies (errors and omissions), imply that the final data shown in the rest of the world account are not identical to the corresponding b.o.p./i.i.p. data, but they should nevertheless broadly reflect the same economic developments.[35]

33 Regulation (EC) No 25/2009 of the European Central Bank of 19 December 2008 concerning the balance sheet of the monetary financial institutions sector (ECB/2008/32), OJ L 15/14, 20.1.2009.
34 Although Guideline ECB/2007/3 required the implementation of security-by-security collection by the first quarter of 2009, most euro area countries nevertheless compiled 2008 data on the basis of the new collection system.
35 See Box 2 in the 2010 quality report, which is available on the ECB's website at http://www.ecb.europa.eu/pub/pdf/other/euroareabalanceofpaymentsandiipstatistics201103en.pdf.

Chart 12 Trade balance (EAA) vs goods and services balance (b.o.p.)

(EUR billions)

 ▬▬ difference
 ······ trade balance
 ╌╌╌ goods and services balance
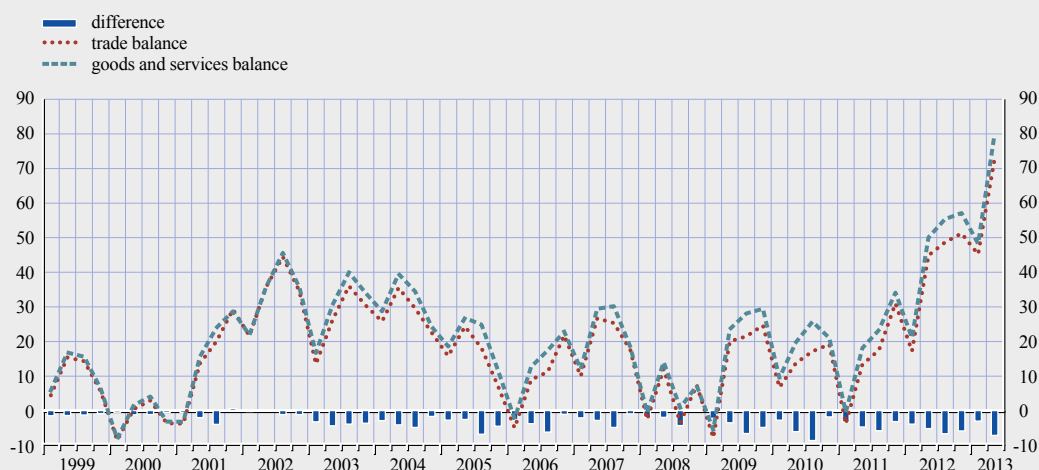
Source: ECB.

The analysis below focuses on the goods and services balance and on the total financial account compared with the corresponding figures published in the EAA. Chart 12 shows, at quarterly frequency, the differences between the trade balance (including services) in the EAA and the goods and services balance in the b.o.p. The b.o.p. figure is usually somewhat larger than the figure for the EAA. Moreover, systematic differences can be observed and were especially large and persistent from the first quarter of 2003. In addition, seasonal behaviour is clearly visible in the discrepancies, as the difference is recurrently larger for the third-quarter figures and reaches the minimum level in the first quarter of every year.

Chart 13 Net lending (+)/net borrowing (-) (EAA) vs. net financial account (b.o.p.) and statistical discrepancies (b.o.p.)

(EUR billions)

 ▬▬ difference
 ▥▥▥ net errors and omissions
 ╌╌╌ net lending/borrowing
 ── net financial account
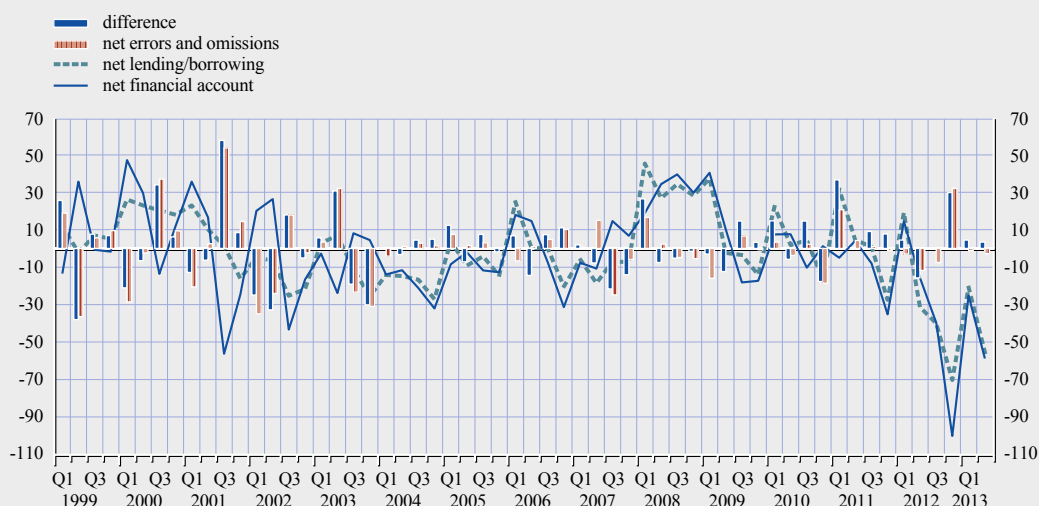
Source: ECB.

Chart 14 Net euro area financial position with the rest of the world

(EUR billions)

- difference
- net international investment position
- net closing balance sheet: assets minus liabilities of RoW sector (adjusted by monetary gold and SDRs holdings) – EAA
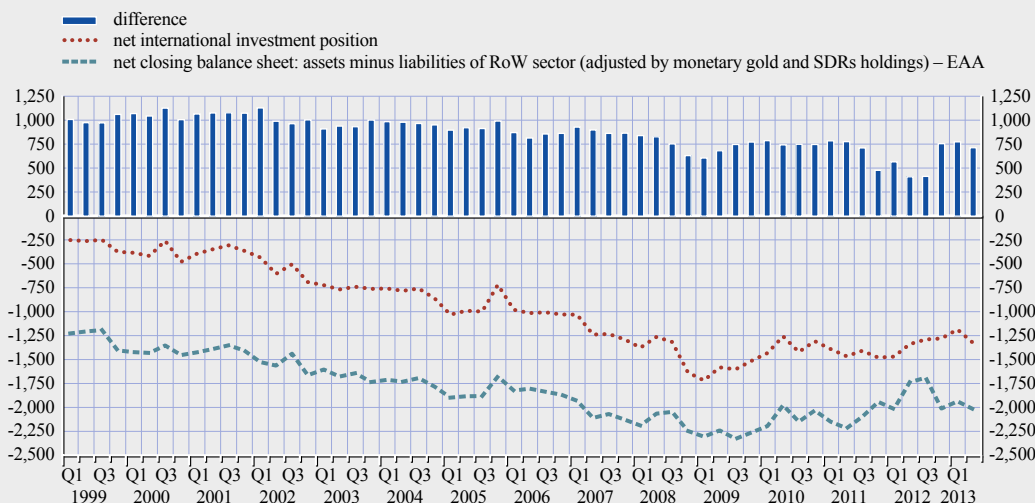
Source: ECB.

The net lending/net borrowing computed in the EAA for the rest of the world account should reflect the same economic developments as the balance of the financial account of the b.o.p. Chart 13 shows that part of the differences between both sets of statistics is related to the net errors and omissions in the b.o.p., which are mostly allocated to the financial account in the EAA. This phenomenon determines noticeably the relationship up to the fourth quarter of 2003, in particular because the errors and omissions in the b.o.p. are relatively large. After the first quarter of 2004, with the reduction of the errors and omission in the b.o.p., the differences are smaller owing to other types of integration adjustments made in the EAA. In particular, the deterioration of the consistency between b.o.p. and BSI data for loans and deposits after the implementation in June 2010 of the current ECB regulation concerning the balance sheet of the monetary financial institutions sector (see paragraph 73 above) also has an effect on the consistency of the b.o.p. with the EAA.[36]

Chart 14 shows that the net i.i.p. has persistently been higher than the net closing balance sheet of the rest of the world sector in EAA statistics. The differences decreased very gradually until 2012, when there was complete consistency; more recently, the differences have increased, albeit remaining small. The differences arise from inherited discrepancies in transactions (i.e. the elimination of asymmetries, allocation of net errors and omissions, use of other data sources) and additional, similar compilation practices for other flows (elimination of non-transactional asymmetries and use of alternative sources for stocks/other flows). In particular, EAA stock data do not present breaks owing to the i.i.p./b.o.p revision policy, the back data being estimated on the basis of alternative sources and balancing procedures.

3.3.2.2 Comparability with statistics released by the main euro area counterparts: the United Kingdom, the United States and Japan

With regard to the consistency of the euro area data with the data released by its main counterparts, the asymmetries between the current account balance of the euro area and that of

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36 This is because BSI data are used in the EAA estimation of transactions/positions of the MFI sector vis-à-vis the rest of the world for loans and deposits.

the United Kingdom (UK) mainly relate to services exports from the euro area to the UK and to income receipts from the UK in 2010-12 (see Chart 15 and Table 9 in Annex 3). The euro area data show considerably and persistently higher *exports of services* to the UK than those recorded as imports from the euro area by the UK. However, the relative difference – which increased steadily from 36% in 2008 to 45% in 2010 – has looked more stable lately, amounting to 44% both in 2011 and 2012. With respect to *imports of services*, the euro area figures are also higher than the UK figures for exports to the euro area, with a relative difference of 34% in 2010, rising to 40% in 2011 but falling back again to 35% in 2012. As a consequence, the economic interpretation of the euro area services balance vis-à-vis the UK changes depending on which figures are used in the analysis. While the euro area shows a positive and stable balance from 2010 to 2012, the UK also has a steady positive services balance.

For income, the discrepancies increased again significantly in 2012 following a decrease in 2011, with the same economic interpretation problem as for services. The divergences in *income* debits have been quite large since 2008, as the euro area reports higher income

Chart 15 Euro area current account transactions with the United Kingdom from 2010 to 2012

(EUR billions)

- current account, balance (euro area)
- current account, balance (UK)
- goods, balance (euro area)
- goods, balance (UK)
- service, balance (euro area)
- service, balance (UK)
- income, balance (euro area)
- income, balance (UK)
- current transfers, balance (euro area)
- current transfers, balance (UK)

Sources: ECB and the UK's Office for National Statistics.
Notes: While the euro area aggregates still follow BPM5 for the recording of the financial intermediation services indirectly measured (FISIM), i.e. they are included in the income account, the UK data exclude FISIM from income, which is included in the services account. This methodological difference does not have any effect at the current account balance level.

expenditure in the UK than that reported by the UK. Nevertheless, they started to decrease from 2010, with the relative difference falling from 55% to 29% in 2012. In addition, in 2012 the income receipts from the UK as reported by the euro area were also higher than those reported by the UK, increasing significantly from 24% in 2011 to 61% in 2012.

The asymmetries in goods follow a different pattern. While the flows recorded by the euro area as exports largely exceeded the mirror flows recorded by the UK, the imports from the UK recorded by the latter are slightly higher than the exports from the UK recorded by the euro area. The relative discrepancies for exports of goods rose from 39% in 2010 and 2011 to 43% in 2012, while the relative difference for imports of goods increased from 2% in 2011 to 5% in 2012. These amounts almost offset each other at the balance level, resulting in a small difference (of €1.4 billion).

The revisions in both statistics have generally improved the consistency for previous years in the case of both credits and debits.

The current account balances of the euro area and the United States show less sizeable asymmetries (see Table 10 in Annex 3). The revisions published by the ECB and the US Bureau of Economic Analysis in 2013 have had a positive impact on the consistency of 2010 data for the current account balances, as most of the asymmetries for the current account components have improved except the services account, which has deteriorated.

The main discrepancies stem from the services account, as the euro area data show persistently higher exports of services to the United States than those recorded in the United States as imports from the euro area. The asymmetries for 2012 increased for the total current account, mainly owing to the increases in services and income. In particular, the income expenditure in, and the receipts from, the United States are equally overestimated by the b.o.p. of the United States.

The current account balances of the euro area and Japan show asymmetries that, though not large in absolute terms, deteriorated in relative terms in 2011, improving again in 2012. Income is the most relevant current account component vis-à-vis Japan and the consistency in 2012 was slightly better than in 2011. Estimates for goods and services flows continued to be the main source of differences (see Table 11 in Annex 3).

3.4 TIMELINESS (AND PUNCTUALITY) OF THE STATISTICAL OUTPUT

The euro area b.o.p. statistics are published on a monthly basis. Additional breakdowns by sector, instrument and geographical counterpart are available on a quarterly basis. Moreover, the euro area i.i.p. and gross external debt statistics are published quarterly. Further breakdowns by currency for portfolio investment debt securities are available on a semi-annual basis. Additional details on FDI and breakdowns by geographical counterpart, as well as a reconciliation between b.o.p. and i.i.p. statistics, are provided at an annual frequency.

Together with the monthly release of the non-seasonally adjusted b.o.p. data, the ECB publishes seasonally and working day-adjusted data for the monthly b.o.p. current account and component items. These data facilitate the interpretation of the latest developments by removing the seasonal pattern, as well as variations due to working day and holiday effects. A note on the methodology used for the seasonal adjustment of the euro area b.o.p. can be found on the ECB's website.[37]

In 2013 the ECB fully complied with its advance release calendar, i.e. the data were published four working days after they were received by the ECB. Monthly data were published seven weeks after the end of the respective month, thereby also making an assessment of the quarterly and annual flows possible within two months, e.g. the first assessment for the full year 2012 was published on 18 February 2013.[38] Quarterly b.o.p. details, as well as the quarterly i.i.p., were published three-and-a-half months after the end of the reference quarter.[39] The annual i.i.p. with further details was released ten months after the end of the reference year.

3.5 ACCESSIBILITY AND CLARITY OF THE STATISTICAL OUTPUT

The press releases on euro area b.o.p. and i.i.p. data are published through wire services and on the ECB's website in accordance with the advance release calendar. In 2013 there were 13 press releases, one annual press release including geographical breakdowns and the reconciliation between flows and stocks, and 12 monthly press releases, four of them combining quarterly and monthly data in the month in which the quarterly publication took place. The most recent data and longer time series with the current or historical composition of the euro area, and the corresponding metadata, can be downloaded from the Statistical Data Warehouse (SDW), the ECB's interactive database, or from the ECB's website in the form of predefined CSV and PDF[40] files. The data

37 Seasonal adjustment of euro area b.o.p. current account items: http://www.ecb.europa.eu/stats/pdf/sa_procedures.pdf
38 The benchmark in the IMF Special Data Dissemination Standard (SDDS) is three months.
39 For example, the end-2012 i.i.p. was published in April 2013. The benchmark in the SDDS is nine months.
40 CSV (comma separated values file format); PDF (portable document file format).

are also included in the issue of the ECB's Monthly Bulletin that is published after the press release. Since 2013 the ECB's website is also providing updated information[41] on the Eurosystem's implementation of the IMF's Balance of Payments and International Investment Position Manual (BPM6).

The ECB has a specific e-mail address for external users of statistics, namely statistics@ecb.europa.eu, which serves to provide assistance to users in accessing and analysing the data.

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41 "Implementing the new BPM6", available on the ECB's website at http://www.ecb.europa.eu/stats/external/bpm6/html/index.en.html

ANNEXES

I METHODOLOGICAL DOCUMENTATION FOR QUALITY INDICATORS[1]

This annex contains the methodology used for the quantitative indicators to assess reliability/stability and serviceability/consistency.

I RELIABILITY/STABILITY

In the IMF's terminology, the study of revisions is normally referred to as *reliability*, while some quality work at the European level is also referred to as *stability*. The underlying concept is, however, the same and can be defined as "*the closeness of the initial estimated value(s) to the subsequent estimated values. Assessing reliability involves comparing estimates over time. In other words, assessing reliability refers to revisions*".[2]

The number of revisions observed depends on the revision policy/practice of a statistical agency or department, which normally decides beforehand (sometimes in collaboration with the users) how many times and when the estimates should be revised and communicated to the public.

As an example, with reference to a series X with N observations, the statistical agency can decide to publish it *k* times with predefined time lags $\{l_1, l_2, \ldots, l_k\}$. From the *k* sets of data, revisions can easily be derived, normally as the difference between two subsequent assessments. Therefore, a revision variable or series can be defined as the difference $R_{ij} = X_j - X_i$, where *i* and *j* identify two specific time-lags, with j > i . The joint ECB/European Commission (Eurostat) task force on quality suggested measuring revisions by means of the difference between the first and latest assessments: $R = X_k - X_l$.

Revisions may also be calculated over a transformation of the original series, such as the respective first difference or the growth rate.

1.1 SIMPLE MEASURES OF REVISIONS

1.1.1 Size indicators
Simple indicators of revisions express the changes in relation to the size of the variable X.

An average of these revisions ($\bar{R}$) then provides an indication of how far on average the first assessment was from the latest assessment. However, if large positive and negative revisions almost cancel out, this may provide a spuriously positive impression of data quality. Therefore, the average of the absolute revisions ($\overline{|R|}$) is generally seen as a better stability indicator.

1.1.2 Directional indicators
In principle, positive and negative revisions should occur with roughly the same frequency. If the revisions are systematically positive, this may point to under-coverage in early estimates, which needs to be corrected somehow. A simple indicator for this phenomenon is the ratio between upward revisions and the number of observations (N).

upward revisions ratio = (# upward revisions) / N

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1   Based on the report by the joint ECB/European Commission (Eurostat) task force on quality.
2   Carson, C. and Laliberté, L., "Assessing accuracy and reliability: a note based on approaches used in national accounts and balance of payments statistics", *Working Paper Series*, No 02/24, IMF, February 2002.

To assess whether the information on the direction of changes as contained in the earlier estimates has been altered by the revisions, a *2 x 2* contingency table can be set up. In this contingency table, the columns consist of positive and negative first differences in the early estimates $\Delta x_{t_1} = x_{t_1} - x_{(t-1)_1}$, while the rows consist of positive and negative changes in the latest values $\Delta x_{t_k} = x_{t_k} - x_{(t-1)_k}$.

Contingency table for directional reliability			
	$\Delta x_{t_1} > 0$	$\Delta x_{t_1} \leq 0$	**Subtotal**
$\Delta x_{t_k} > 0$	n_{11}	n_{12}	$n_{11} + n_{12}$
$\Delta x_{t_k} \leq 0$	n_{21}	n_{22}	$n_{21} + n_{22}$
Subtotal	$n_{11} + n_{21}$	$n_{12} + n_{22}$	N

The directional reliability indicator (Q) is then as follows:

$$Q = \frac{n_{11} + n_{22}}{N}$$

This coefficient Q is equal to 1 if the changes following the earliest and the latest estimates always have the same sign ($n_{11} + n_{22} = N$), while it is equal to 0 when there is a total dissociation ($n_{11} + n_{22} = 0$). Obviously, higher values of this indicator are preferred.

1.2 RELATIVE MEASURES OF REVISIONS

It is often useful to also provide relative measures, which relate the revisions to dimensional measures of the variable concerned. Two main types of indicators have been developed depending on whether the observations of a time series have only positive values (series on gross transactions or on asset or liability positions) or can have either positive or negative values (series on net transactions or balances).

1.2.1 Gross transactions or asset/liability positions

In the case of gross data, the relative revision equals the percentage change of the initial assessment ($\frac{R}{X}$). If the average over time $\overline{\left(\frac{R}{X}\right)}$ is then computed, this is called the *mean percentage error* (MPE).

As revisions can be positive or negative, it is usually more appropriate to take the absolute value in order to avoid revisions of opposite signs cancelling each other out in the resulting indicator. So, if the average is calculated with the absolute values, the result is $\overline{\left|\frac{R}{X}\right|}$, the *mean absolute percentage error* (MAPE).

1.2.2 Net transactions or balances between assets and liabilities

In the case of net data, revisions cannot be properly related to the series value itself because the observations may have different signs and, even more importantly, the values of the series may often be close to zero.

1.2.2.1 Transactions in assets and liabilities

A solution for assets and liabilities of the b.o.p. financial account is to use the corresponding item in the i.i.p. for assessing the relative size of the revision. This provides a relative measure that the user can easily interpret. The indicator will be expressed as $\frac{R}{P}$, where P is the related i.i.p. item. As for

the gross data, an average of the absolute value of this ratio can be taken over time in order to avoid revisions of opposite signs cancelling each other out in the resulting indicator.

The *mean absolute comparative error (MACE)* is defined as $\overline{\left|\frac{R}{P}\right|}$.

As the i.i.p. is not available at a monthly frequency, the calculations of the MACE for b.o.p. data use the level of the i.i.p. at the end of the corresponding quarter.[3]

1.2.2.2 Net transactions in the current account and balances in the financial account

For the b.o.p balancing items, also the i.i.p. can have positive and negative observations. Therefore, a measure of the volatility of the series X is used as a reference for the size of the revisions. This measure reflects the fact that, in practice, it is more difficult to correctly estimate values of a volatile series.

The *mean absolute relative error (MARE)* is then defined as $\dfrac{\overline{|R|}}{vol\,(X_k)}$.

There are several ways of calculating the volatility of X using the standard deviation, the average distance from the mean or the median of the distances from the median[4]. In principle, the volatility should be calculated for the latest assessment X_k, because those values should be the most accurate ones.

An advantage of using the average distance from the mean is that, with a small transformation, this indicator can be decomposed into a bias and a variance component. The indicator is calculated as the square root of the ratio between the average of the square revisions and the variance of the series (S^2). It is called the root mean square relative error (RMSRE):

$$RMSRE = \sqrt{\frac{\overline{R^2}}{S^2}}$$

The value of the RMSRE is 0 when the first assessment always equals the latest, 1 if the *first assessment* is only as accurate as the reference *forecast*, which is the time series average, and greater than 1 when the *first assessment* is less accurate than such a forecast of the series.[5] The square of the RMSRE can be decomposed as follows:

$$RMSRE^2 = \left[\frac{\overline{X}_k - \overline{X}_1}{S_{X_k}}\right]^2 + \left[r_{X_k X_1} - \frac{S_{X_1}}{S_{X_k}}\right]^2 + \left[1 - (r_{X_k X_1})^2\right]$$

where $r_{X_k X_1}$ is the correlation between the two series, and S_{X_k} and S_{X_1} are the respective standard deviations.

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3   Before 2003, this is done with annual data.
4   For more detailed information, please refer to Annex 1 of "Euro area balance of payments and international investment statistics: annual quality report", ECB, January 2005, or to the report by the joint ECB/European Commission (Eurostat) task force on quality, available at http://www.cmfb.org/pdf/TF-QAreport_final_CMFB_jul04.pdf, and to "Quantitative quality indicators for statistics – and application to euro area balance of payments", *Occasional Paper Series*, No 54, ECB, November 2006.
5   Other measures, like the median and the trimmed mean, were tested as well. Assuming that the b.o.p. financial account net flows are stationary, the average was chosen owing to its simplicity and its ease of interpretation, and because it enables a decomposition of the indicator into meaningful components. If the series is not stationary, the indicator can still be applied using the previous value of the series as the reference value, or using the first difference of the series.

The three components can be interpreted as follows:

1) The *bias component* provides an indication of systematic error, since it measures the extent to which the average values of the early and later assessments deviate from each other. The revisions can be considered biased if the mean of the revisions is significantly different from zero.[6]

2) The *regression component* is another systematic component which reflects whether the overall pattern of the series with the early estimates was close to that of the series with the later estimates. If the initial estimates correctly reflect the pattern/volatility of the later estimates, the correlation between both series will be quite high and this component of the indicator will be close to zero.

3) The *unsystematic* component is the variance of the residuals obtained by regressing the early estimates on the later estimates. This reflects more random revisions.[7]

The limitations of this indicator are: (i) in the case of non-stationary series, its value and decomposition become meaningless and (ii) its interpretation is less straightforward.

After successful tests of the stationarity of the series, this indicator has been applied to assess the revisions in the net current and capital accounts, as well as to the balancing items in the financial account.[8]

The following table shows which measures of revisions for the b.o.p. are used in the annual quality report:

Measures of b.o.p. revisions			
	Debits	**Credits**	**Net**
Current account items	MAPE	MAPE	RMSRE
	Assets	**Liabilities**	**Balance**
Financial account items	MACE	MACE	RMSRE

2   SERVICEABILITY/CONSISTENCY

In the IMF's Data Quality Assessment Framework (DQAF), *consistency* is defined as: (i) over time; (ii) between data collected at different frequencies; (iii) internationally; (iv) across variables, either vertically (across transactions), horizontally (across institutional sectors), and/or between flows and stocks. The task force on quality focused on the following sub-categories:

• internal consistency, e.g. within the integrated statistics (b.o.p./i.i.p. or national accounts); and

• external consistency (between different sources of data and/or different statistical frameworks); this may include mirror statistics, as international statistics should be the same also when they are compiled by different institutions or by different units of the same institution.

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6 Assuming normality for revisions so as to be able to apply the t test.
7 However, the unsystematic part could still hide systematic non-linear patterns.
8 To calculate the indicator for every period (36 observations), the two extreme values have been removed in order to make the results more comparable over time.

2.1 INTERNAL CONSISTENCY

According to the IMF's 2001 DQAF for the b.o.p., internal consistency implies checking that "over the long run the errors and omissions item *has not been large* and *has been stable* over time".

A measure of the size of this item can be provided by the *average of the absolute net errors and omissions,* $\overline{|EO|}$.

As with revisions, an alternative measure of the size is the *root mean square error of the net errors and omissions.*

$$RMSE(EO) = \sqrt{\overline{EO^2}}$$

As before, this indicator can be decomposed into bias and variance components:[9]

$$RMSE^2 = bias\ component + variance\ component$$
$$RMSE^2 = \overline{EO}^2 + S^2$$

where S is the standard deviation of the errors and omissions.

In addition, the number of positive EO divided by the number of observations can be used to assess the relative frequency of positive EO:

$$CP(EO) = \frac{Count\ (EO_t > 0)}{N}$$

2.2 EXTERNAL CONSISTENCY

Although minor discrepancies arising from methodological differences can still be present in two sets of data stemming from different sources and/or different statistical frameworks,[10] a comparison of these two datasets can still provide a useful measure of consistency.

2.2.1 Size indicators

2.2.1.1 Series with positive values
Simple indicators of external consistency relate the differences to the values of the variable that is compared. A simple indicator measuring the consistency between b.o.p. and international trade statistics (ITS) can be computed using the latest assessment of both series.

A preferable indicator is similar to the MAPE $\left(\overline{|P|}\right)$, but with the percentage differences calculated as proportions of the average of both time series.[11] This indicator captures the magnitude of the discrepancies in absolute value, and relates it to the average size of both series.

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9   Following the simplest MSE decomposition. See Diebold, F., *Elements of Forecasting*, 2001.
10 For example, the comparison between the euro area goods item (b.o.p.) and Eurostat's external trade data, or the comparison between the b.o.p. flows of the MFI sector and flows derived from the consolidated MFI balance sheet from money and banking statistics.

11 $C = \frac{1}{a} \sum\limits_{t=T-a}^{T} \frac{|x_t - y_t|}{(x_t + y_t)/2}$

   Based on Keuning, S. and Algera, S., "Some elements of a quality framework for CMFB statistics", Statistics Netherlands, October 2001.

Another simple measure is based on the average differences of the growth rates. This also has the advantage that it abstracts from differences in levels between time series, e.g. the imports of goods are measured on a c.i.f. basis in the external trade statistics and on a f.o.b. basis for the b.o.p., while in both statistics exports are measured on an f.o.b. basis. A simple indicator of external consistency then becomes:

$$G = \overline{\left| G_x - G_y \right|}$$

2.2.1.2 Series with positive and negative values

Differences between b.o.p. transactions and similar transactions derived from the MFI balance sheet can be attributed to a variety of factors: time of recording and reporting, revision policies and valuation methods.

Relative indicators for assessing reliability can also be used to assess consistency between comparable net flows. The RMSRE indicator is calculated for the latest assessment of each series, using the b.o.p. series as the benchmark.

2.2.2 Directional indicators

Similar to the directional indicators set out in Sub-section 1.1.2, such indicators can also be constructed to check whether the signs of the changes are typically the same in both the series being compared.

2 RESULTS OF STABILITY INDICATORS

ANNEX 2

Chart 1 Euro area goods

(EUR billions)

a) Credits
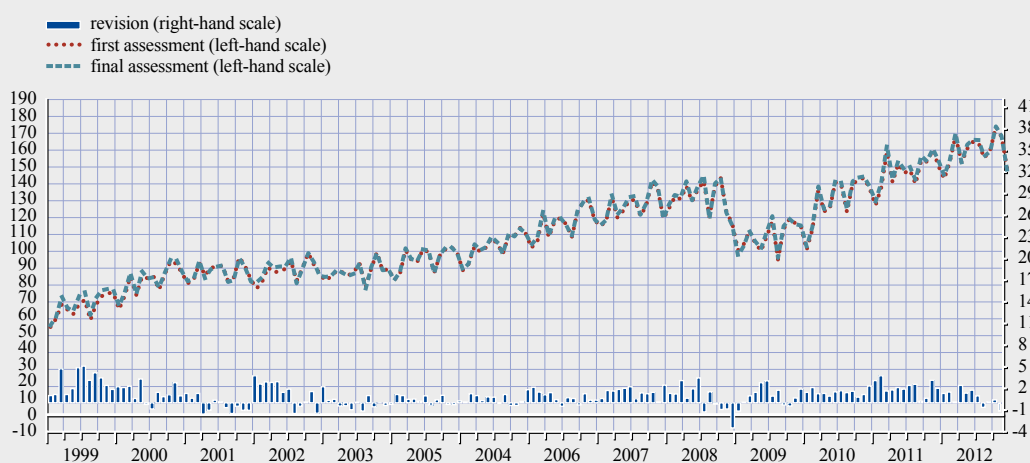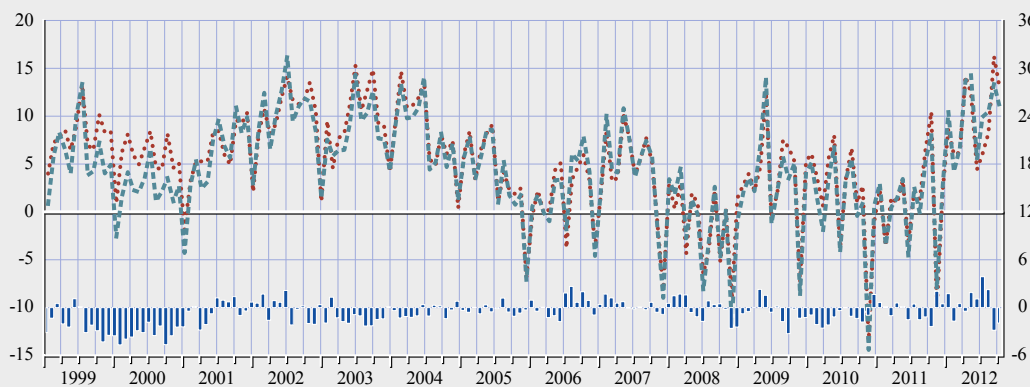
— revision (right-hand scale)
······ first assessment (left-hand scale)
----- final assessment (left-hand scale)

b) Debits

c) Net

Source: ECB.

(EUR billions)

- ▬▬ revision (right-hand scale)
- ···· first assessment (left-hand scale)
- ▬ ▬ final assessment (left-hand scale)
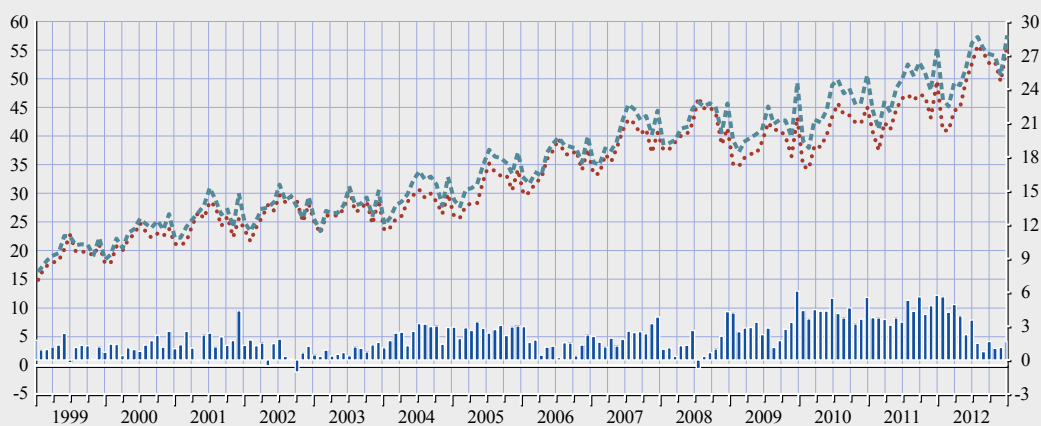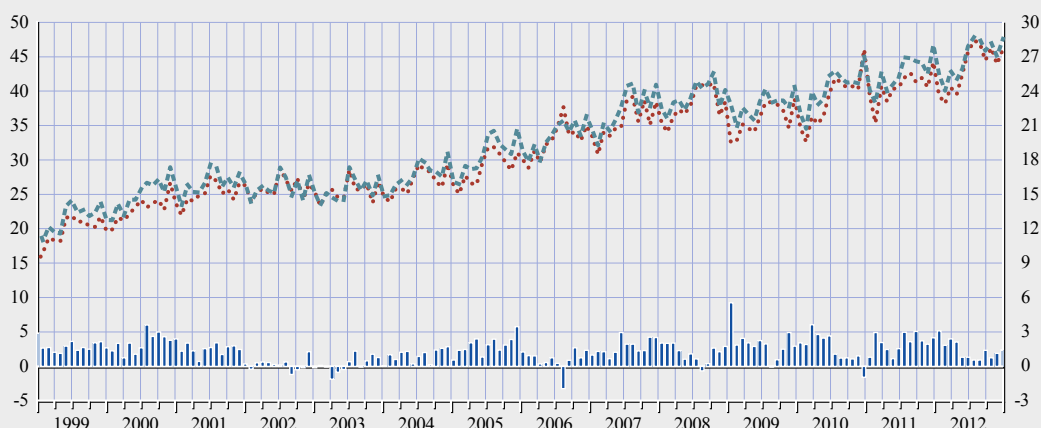
a) Credits

b) Debits

c) Net
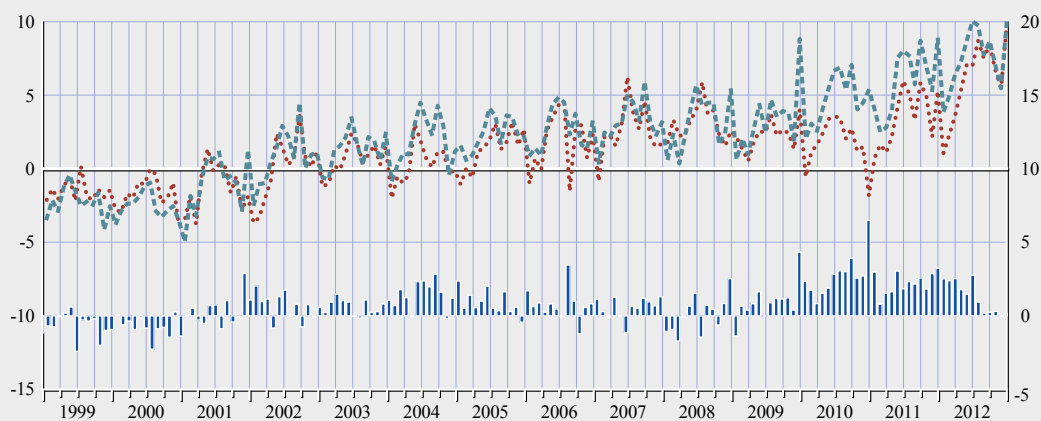
Source: ECB.

Table 1 Stability indicators for euro area goods

| Quality indicator | Reference period (Jan.-Dec.) | Goods | | |
		Credits	Debits	Net
R̄	1999-2001	1.34	3.27	-1.93
(EUR	2000-2002	0.83	2.15	-1.31
billions)	2001-2003	0.38	0.98	-0.61
	2002-2004	0.61	1.25	-0.64
	2003-2005	0.29	0.96	-0.67
	2004-2006	0.58	0.72	-0.14
	2005-2007	0.86	0.73	0.14
	2006-2008	1.07	0.80	0.27
	2007-2009	0.95	1.02	-0.07
	2008-2010	1.00	1.62	-0.62
	2009-2011	1.37	2.19	-0.82
	2010-2012	1.47	1.88	-0.40
|R̄|	1999-2001	1.80	3.67	2.26
(EUR	2000-2002	1.48	2.58	1.93
billions)	2001-2003	1.18	1.47	1.32
	2002-2004	1.07	1.35	1.16
	2003-2005	0.61	1.06	0.95
	2004-2006	0.72	1.06	0.82
	2005-2007	0.95	1.05	0.78
	2006-2008	1.29	1.30	0.91
	2007-2009	1.43	1.28	0.97
	2008-2010	1.48	1.87	1.22
	2009-2011	1.66	2.24	1.24
	2010-2012	1.57	2.27	1.37
MAPE/	1999-2001	2.49	5.55	0.78
RMSRE	2000-2002	1.79	3.42	0.53
(%)	2001-2003	1.40	1.89	0.41
	2002-2004	1.24	1.72	0.45
	2003-2005	0.65	1.27	0.34
	2004-2006	0.69	1.08	0.26
	2005-2007	0.82	0.94	0.26
	2006-2008	1.03	1.06	0.24
	2007-2009	1.18	1.08	0.25
	2008-2010	1.22	1.54	0.32
	2009-2011	1.31	1.76	0.32
	2010-2012	1.11	1.65	0.28
Q	1999-2001	100.00	94.29	88.57
(%)	2000-2002	97.14	94.29	88.57
	2001-2003	97.14	94.29	91.43
	2002-2004	94.29	97.14	91.43
	2003-2005	97.14	100.00	97.14
	2004-2006	97.14	97.14	91.43
	2005-2007	100.00	97.14	91.43
	2006-2008	100.00	97.14	91.43
	2007-2009	100.00	100.00	94.29
	2008-2010	100.00	97.14	97.14
	2009-2011	100.00	94.29	94.29
	2010-2012	100.00	91.43	94.29

Source: ECB.
Note: The MAPE is used for credits and debits and the RMSRE for net data.

Table 2 Stability indicators for euro area services

| Quality indicator | Reference period (Jan.-Dec.) | Services | | |
		Credits	Debits	Net
R̄	1999-2001	1.38	1.79	-0.40
(EUR	2000-2002	1.30	1.25	0.05
billions)	2001-2003	1.12	0.62	0.50
	2002-2004	1.32	0.42	0.90
	2003-2005	1.95	0.98	0.98
	2004-2006	2.15	1.12	1.03
	2005-2007	2.11	1.36	0.75
	2006-2008	1.62	1.14	0.47
	2007-2009	2.16	1.63	0.53
	2008-2010	2.84	1.59	1.26
	2009-2011	3.85	1.87	1.98
	2010-2012	3.74	1.66	2.09
|R̄|	1999-2001	1.40	1.79	0.79
(EUR	2000-2002	1.38	1.32	0.85
billions)	2001-2003	1.21	0.82	0.80
	2002-2004	1.40	0.61	1.02
	2003-2005	1.95	1.10	1.02
	2004-2006	2.15	1.22	1.13
	2005-2007	2.11	1.47	0.91
	2006-2008	1.66	1.27	0.94
	2007-2009	2.20	1.65	1.00
	2008-2010	2.89	1.67	1.66
	2009-2011	3.85	1.93	2.05
	2010-2012	3.74	1.71	2.09
MAPE/	1999-2001	6.46	8.09	0.83
RMSRE	2000-2002	5.80	5.53	0.62
(%)	2001-2003	4.79	3.25	0.62
	2002-2004	5.16	2.33	0.86
	2003-2005	6.77	3.96	1.04
	2004-2006	7.13	4.19	1.19
	2005-2007	6.26	4.57	1.05
	2006-2008	4.39	3.58	0.88
	2007-2009	5.64	4.63	0.78
	2008-2010	7.23	4.61	1.31
	2009-2011	9.28	5.15	1.27
	2010-2012	8.62	4.30	1.29
Q	1999-2001	88.57	82.86	80.00
(%)	2000-2002	91.43	88.57	77.14
	2001-2003	88.57	91.43	77.14
	2002-2004	94.29	91.43	74.29
	2003-2005	94.29	88.57	65.71
	2004-2006	88.57	94.29	68.57
	2005-2007	85.71	97.14	74.29
	2006-2008	88.57	94.29	74.29
	2007-2009	97.14	85.71	77.14
	2008-2010	94.29	85.71	77.14
	2009-2011	94.29	85.71	80.00
	2010-2012	88.57	94.29	77.14

Source: ECB.
Note: The MAPE is used for credits and debits and the RMSRE for net data.

Chart 3 Euro area income

(EUR billions)

- ▬▬ revision (right-hand scale)
- ⋯⋯ first assessment (left-hand scale)
- ▬ ▬ final assessment (left-hand scale)

a) Credits

b) Debits

c) Net

Source: ECB.

Chart 4 Euro area current account

(EUR billions)

- revision (right-hand scale)
- first assessment (left-hand scale)
- final assessment (left-hand scale)

a) Credits

b) Debits

c) Net

Source: ECB.

Table 3 Stability indicators for euro area income				
Quality indicator	**Reference period (Jan.-Dec.)**	**Income**		
		Credits	**Debits**	**Net**
$\bar{R}$	1999-2001	1.33	2.72	-1.39
(EUR	2000-2002	1.37	2.10	-0.73
billions)	2001-2003	0.97	1.05	-0.08
	2002-2004	3.00	2.18	0.82
	2003-2005	4.97	2.48	2.48
	2004-2006	6.87	3.92	2.94
	2005-2007	7.55	4.77	2.78
	2006-2008	3.53	3.60	-0.07
	2007-2009	0.56	0.31	0.25
	2008-2010	1.01	-0.66	1.66
	2009-2011	5.12	0.92	4.20
	2010-2012	6.35	2.53	3.82
$|\bar{R}|$	1999-2001	1.91	3.36	2.29
(EUR	2000-2002	1.95	3.19	2.12
billions)	2001-2003	1.60	2.67	2.02
	2002-2004	3.06	3.55	2.05
	2003-2005	5.02	3.79	3.16
	2004-2006	6.87	4.66	3.51
	2005-2007	7.55	5.15	3.12
	2006-2008	6.56	4.38	2.65
	2007-2009	4.71	4.03	2.80
	2008-2010	5.15	3.06	4.15
	2009-2011	6.23	3.86	4.26
	2010-2012	6.38	2.63	4.04
MAPE/	1999-2001	9.72	16.22	1.46
RMSRE	2000-2002	9.54	13.62	1.10
(%)	2001-2003	8.16	11.40	1.02
	2002-2004	16.08	16.64	0.95
	2003-2005	23.41	16.82	1.33
	2004-2006	27.86	18.08	1.40
	2005-2007	24.45	15.13	1.15
	2006-2008	17.41	11.48	0.62
	2007-2009	10.89	9.39	0.69
	2008-2010	13.94	7.81	0.99
	2009-2011	17.86	10.45	1.25
	2010-2012	18.17	7.46	1.23
Q	1999-2001	80.00	77.14	71.43
(%)	2000-2002	80.00	80.00	74.29
	2001-2003	80.00	80.00	80.00
	2002-2004	88.57	65.71	74.29
	2003-2005	94.29	57.14	62.86
	2004-2006	91.43	65.71	57.14
	2005-2007	88.57	77.14	65.71
	2006-2008	80.00	85.71	74.29
	2007-2009	82.86	91.43	80.00
	2008-2010	82.86	97.14	85.71
	2009-2011	88.57	97.14	88.57
	2010-2012	85.71	94.29	88.57

Source: ECB.
Note: The MAPE is used for credits and debits and the RMSRE for net data.

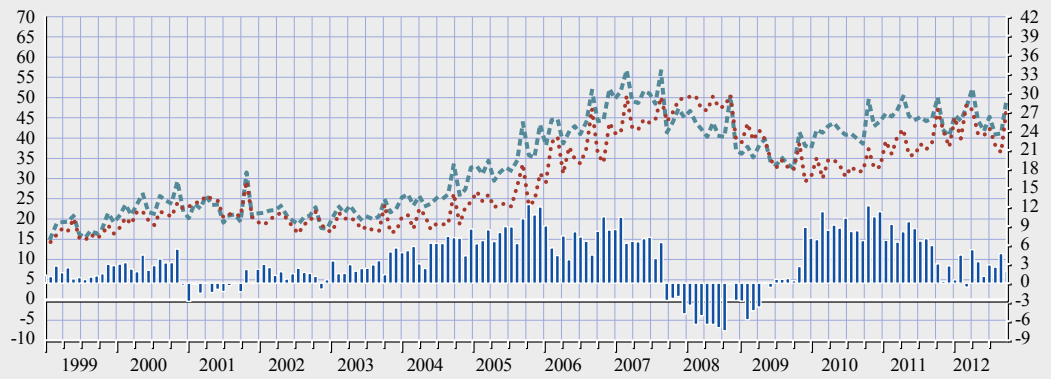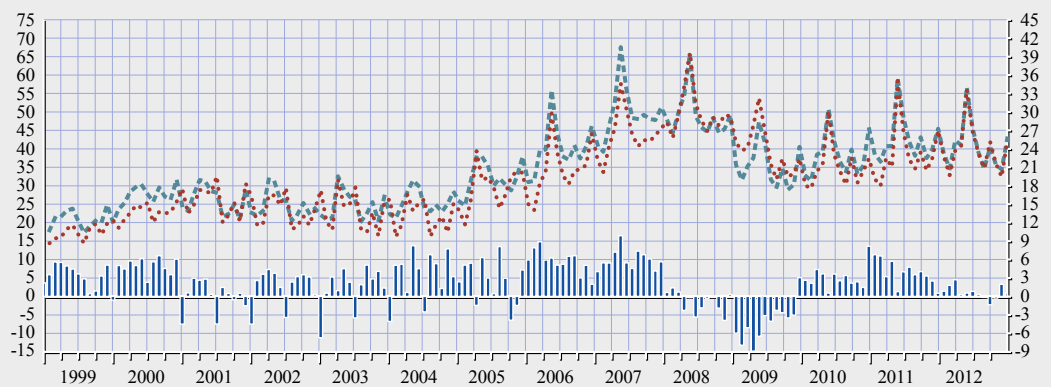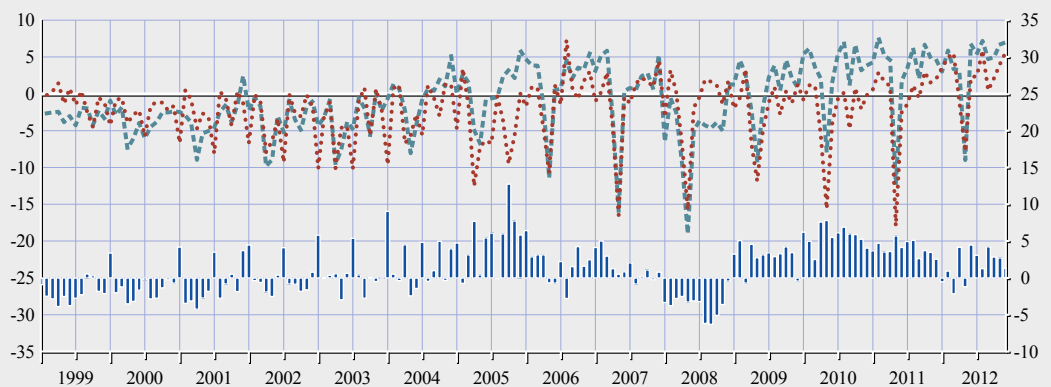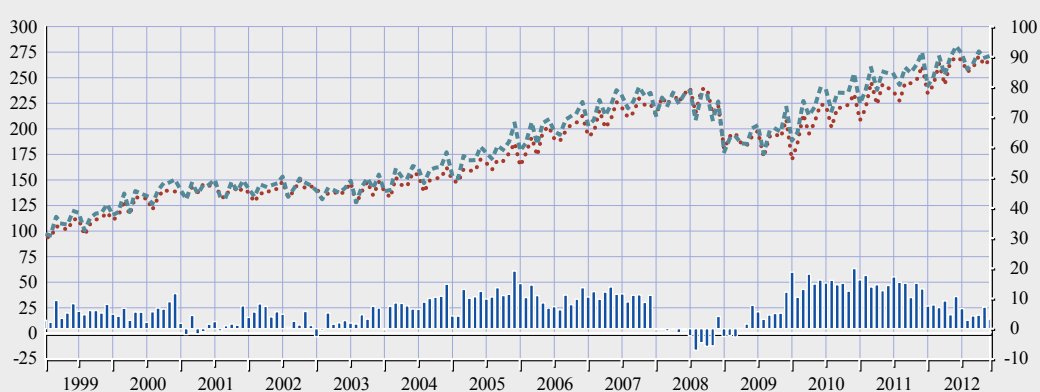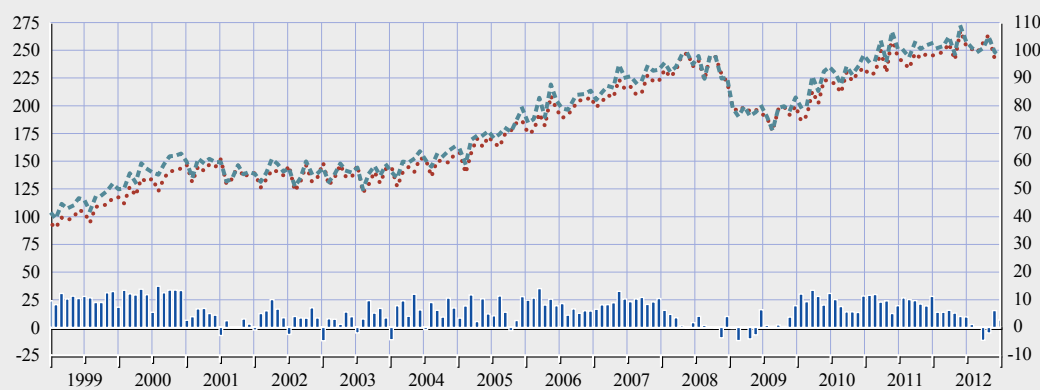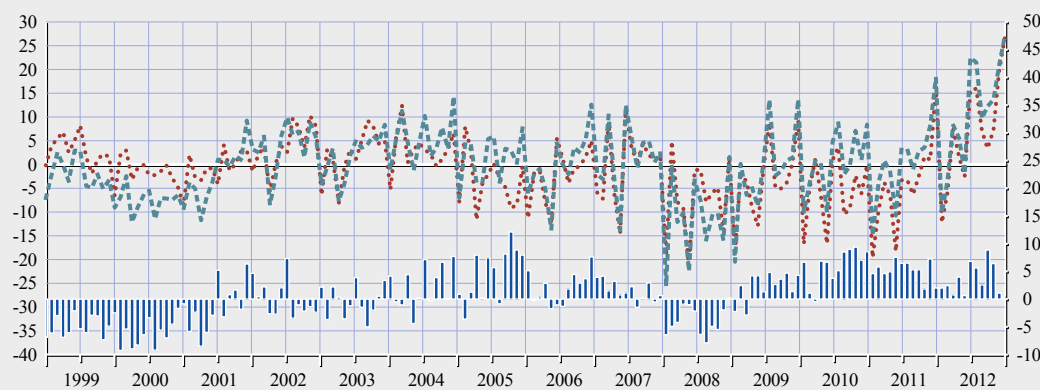| Table 4 Stability indicators for euro area current account				
Quality indicator	**Reference period (Jan.-Dec.)**	**Current account**		
		Credits	**Debits**	**Net**
$\bar{R}$	1999-2001	4.29	8.47	-4.18
(EUR	2000-2002	3.83	6.29	-2.46
billions)	2001-2003	2.79	3.37	-0.58
	2002-2004	5.10	4.42	0.68
	2003-2005	7.31	5.10	2.21
	2004-2006	9.77	6.75	3.02
	2005-2007	10.69	7.93	2.76
	2006-2008	6.40	6.47	-0.08
	2007-2009	4.04	4.01	0.03
	2008-2010	5.48	3.96	1.51
	2009-2011	11.03	6.51	4.52
	2010-2012	12.09	7.20	4.88
$|\bar{R}|$	1999-2001	4.59	8.63	4.95
(EUR	2000-2002	4.12	6.64	4.17
billions)	2001-2003	3.25	4.10	2.98
	2002-2004	5.29	5.27	2.84
	2003-2005	7.50	5.83	3.74
	2004-2006	9.78	7.10	3.85
	2005-2007	10.69	7.99	3.35
	2006-2008	7.98	6.71	2.84
	2007-2009	6.04	4.90	2.99
	2008-2010	7.48	4.86	4.39
	2009-2011	11.45	7.16	4.83
	2010-2012	12.09	7.57	4.91
MAPE/	1999-2001	3.79	7.32	1.17
RMSRE	2000-2002	3.06	5.00	0.75
(%)	2001-2003	2.33	2.99	0.62
	2002-2004	3.66	3.80	0.70
	2003-2005	4.82	3.94	0.98
	2004-2006	5.81	4.28	0.90
	2005-2007	5.68	4.17	0.83
	2006-2008	3.92	3.25	0.41
	2007-2009	2.88	2.30	0.38
	2008-2010	3.61	2.29	0.58
	2009-2011			
	2010-2012			
Q	1999-2001	85.71	85.71	71.43
(%)	2000-2002	85.71	85.71	71.43
	2001-2003	88.57	94.29	68.57
	2002-2004	91.43	85.71	65.71
	2003-2005	91.43	74.29	68.57
	2004-2006	94.29	71.43	77.14
	2005-2007	97.14	82.86	85.71
	2006-2008	97.14	88.57	91.43
	2007-2009	97.14	91.43	88.57
	2008-2010	97.14	91.43	91.43
	2009-2011	100.00	91.43	91.43
	2010-2012	100.00	91.43	91.43

Source: ECB.
Note: The MAPE is used for credits and debits and the RMSRE for net data.

Chart 5 Direct investment

(EUR billions)

▬▬▬ revision (right-hand scale)
· · · · · first assessment (left-hand scale)
▬ ▬ ▬ final assessment (left-hand scale)

a) Abroad
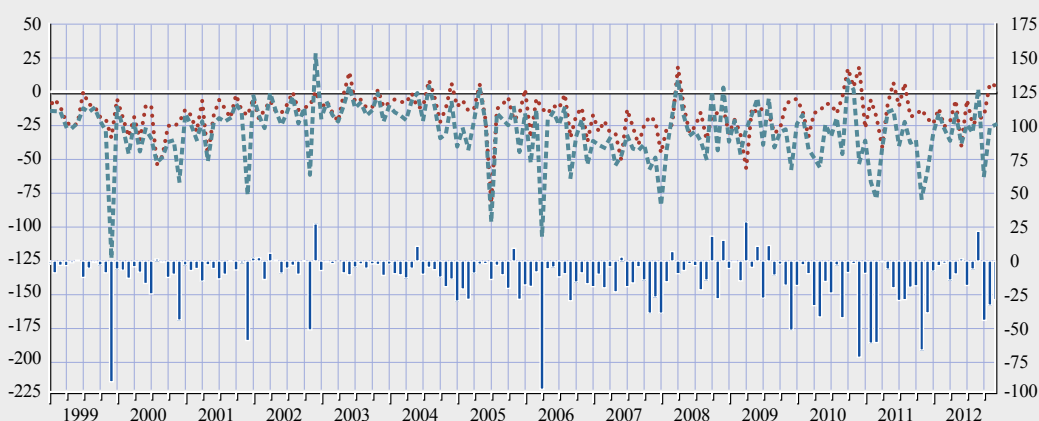
b) In the euro area

c) Balance
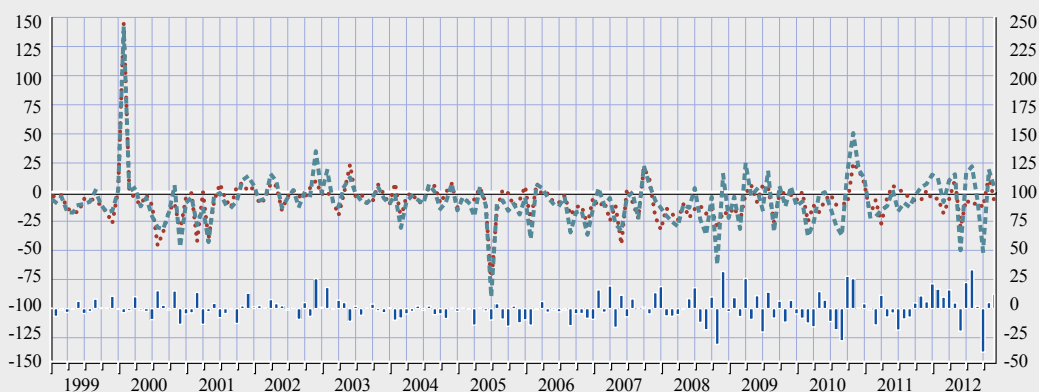
Source: ECB.

Chart 6 Euro area portfolio investment

(EUR billions)

- ▬▬ revision (right-hand scale)
- ⋯⋯ first assessment (left-hand scale)
- ▬ ▬ final assessment (left-hand scale)

a) Assets

b) Liabilities

c) Balance

Source: ECB.

Table 5 Stability indicators for euro area direct investment

Quality indicator	Reference period (Jan.-Dec.)	Direct investment		
		Abroad	Euro area	Net
R̄	1999-2001	-11.52	11.51	-0.01
(EUR	2000-2002	-9.16	9.84	0.68
billions)	2001-2003	-6.72	7.56	0.85
	2002-2004	-5.75	5.91	0.16
	2003-2005	-8.66	6.28	-2.37
	2004-2006	-13.79	9.36	-4.44
	2005-2007	-16.49	14.01	-2.48
	2006-2008	-14.83	14.20	-0.63
	2007-2009	-10.46	11.89	1.43
	2008-2010	-12.65	12.63	-0.02
	2009-2011	-19.83	18.92	-0.91
	2010-2012	-21.44	22.52	1.09
|R̄|	1999-2001	11.63	11.94	5.72
(EUR	2000-2002	11.37	10.42	6.33
billions)	2001-2003	8.85	8.38	5.86
	2002-2004	8.48	6.80	4.95
	2003-2005	9.77	7.74	5.12
	2004-2006	14.90	10.58	5.42
	2005-2007	17.16	14.72	7.09
	2006-2008	17.24	15.80	9.70
	2007-2009	15.71	13.92	11.40
	2008-2010	17.74	15.96	13.15
	2009-2011	22.66	20.71	11.28
	2010-2012	22.74	26.17	13.15
MACE/	1999-2001	0.74	0.97	0.58
RMSRE	2000-2002	0.61	0.69	0.54
(%)	2001-2003	0.44	0.49	0.70
	2002-2004	0.40	0.35	0.61
	2003-2005	0.41	0.35	0.71
	2004-2006	0.55	0.43	0.61
	2005-2007	0.56	0.54	0.68
	2006-2008	0.50	0.54	0.76
	2007-2009	0.40	0.43	0.80
	2008-2010	0.41	0.45	0.75
	2009-2011	0.46	0.53	0.79
	2010-2012	0.43	0.63	0.81
Q	1999-2001	82.86	65.71	74.29
(%)	2000-2002	82.86	71.43	82.86
	2001-2003	91.43	57.14	85.71
	2002-2004	85.71	60.00	85.71
	2003-2005	80.00	57.14	82.86
	2004-2006	77.14	74.29	82.86
	2005-2007	71.43	77.14	74.29
	2006-2008	77.14	82.86	77.14
	2007-2009	65.71	80.00	62.86
	2008-2010	62.86	62.86	65.71
	2009-2011	54.29	51.43	62.86
	2010-2012	57.14	48.57	68.57

Source: ECB.
Note: The MACE is used for assets and liabilities and the RMSRE for balance data.

Table 6 Stability indicators for euro area portfolio investment

Quality indicator	Reference period (Jan.-Dec.)	Porfolio investment		
		Assets	Liabilities	Balance
R̄	1999-2001	-4.49	5.57	1.08
(EUR	2000-2002	-3.27	6.10	2.83
billions)	2001-2003	-2.27	6.60	4.34
	2002-2004	-2.38	6.44	4.06
	2003-2005	-1.73	2.84	1.12
	2004-2006	-4.74	1.48	-3.26
	2005-2007	-5.36	-2.38	-7.74
	2006-2008	-8.33	-2.77	-11.10
	2007-2009	-9.02	-3.13	-12.15
	2008-2010	-6.01	-3.26	-9.27
	2009-2011	-5.03	-3.70	-8.73
	2010-2012	-1.32	-4.50	-5.82
|R̄|	1999-2001	6.18	8.12	8.04
(EUR	2000-2002	5.29	7.99	8.19
billions)	2001-2003	4.44	10.24	8.86
	2002-2004	4.45	11.69	10.94
	2003-2005	4.48	12.76	11.87
	2004-2006	5.91	13.10	11.88
	2005-2007	6.73	14.29	15.28
	2006-2008	10.31	14.13	17.83
	2007-2009	11.75	16.16	20.30
	2008-2010	10.76	16.20	19.57
	2009-2011	9.54	15.35	17.16
	2010-2012	6.79	12.00	14.07
MACE/	1999-2001	0.28	0.28	0.42
RMSRE	2000-2002	0.22	0.25	0.41
(%)	2001-2003	0.18	0.31	0.49
	2002-2004	0.17	0.33	0.62
	2003-2005	0.15	0.32	0.62
	2004-2006	0.17	0.28	0.58
	2005-2007	0.16	0.25	0.62
	2006-2008	0.24	0.23	0.72
	2007-2009	0.28	0.25	0.75
	2008-2010	0.25	0.24	0.77
	2009-2011	0.22	0.22	0.61
	2010-2012	0.14	0.16	0.54
Q	1999-2001	74.29	94.29	85.71
(%)	2000-2002	88.57	85.71	82.86
	2001-2003	91.43	74.29	77.14
	2002-2004	88.57	65.71	74.29
	2003-2005	85.71	65.71	74.29
	2004-2006	88.57	68.57	80.00
	2005-2007	94.29	71.43	80.00
	2006-2008	94.29	77.14	85.71
	2007-2009	94.29	74.29	85.71
	2008-2010	91.43	62.86	80.00
	2009-2011	94.29	68.57	82.86
	2010-2012	94.29	71.43	85.71

Source: ECB.
Note: The MACE is used for assets and liabilities and the RMSRE for balance data.
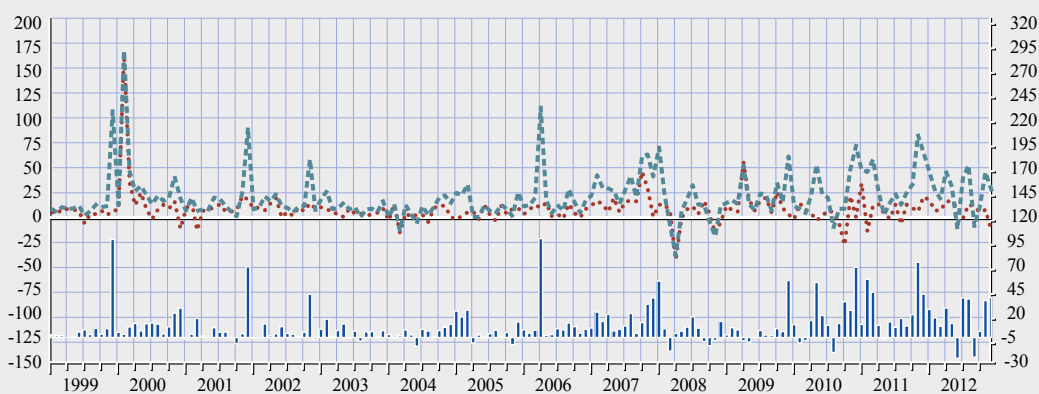
Chart 7 Euro area other investment

(EUR billions)

— revision (right-hand scale)
..... first assessment (left-hand scale)
- - - final assessment (left-hand scale)

**a) Assets**
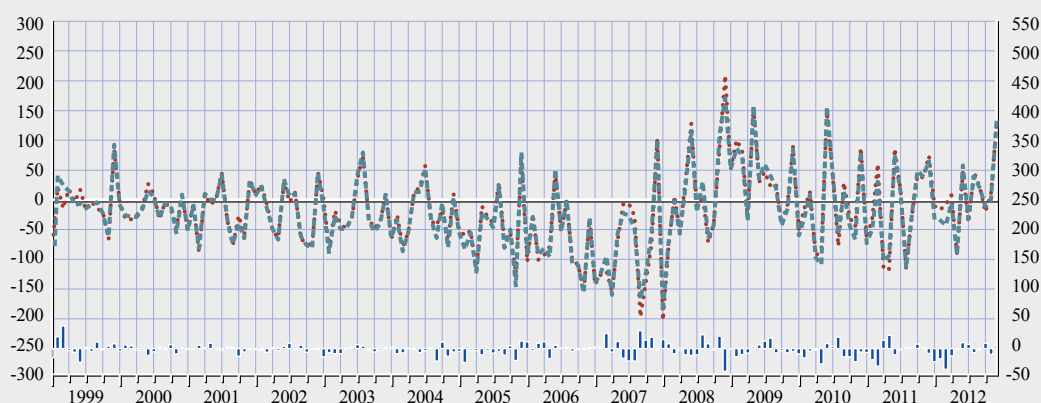
b) Liabilities

c) Balance

Source: ECB.

Chart 8 Total financial account (net)

(EUR billions)

— first assessment (left-hand scale)
...... final assessment (left-hand scale)
— revision (right-hand scale)

Source: ECB.

Chart 9 Euro area errors and omissions

(EUR billions)

— revision (right-hand scale)
...... first assessment (left-hand scale)
----- final assessment (left-hand scale)
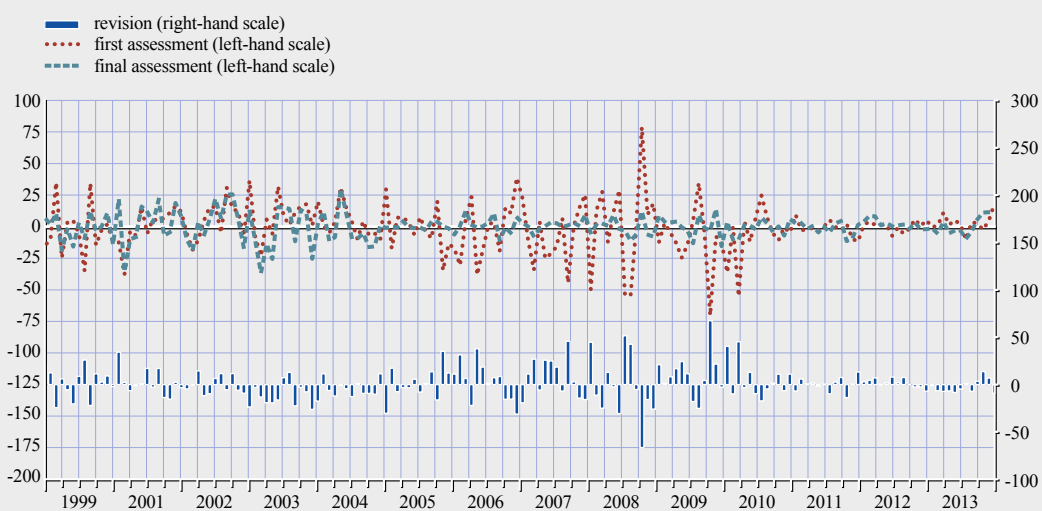
Source: ECB.

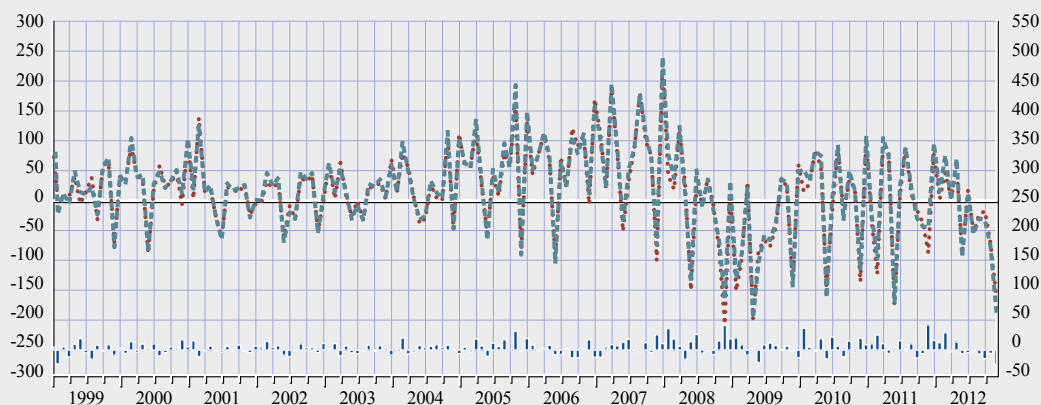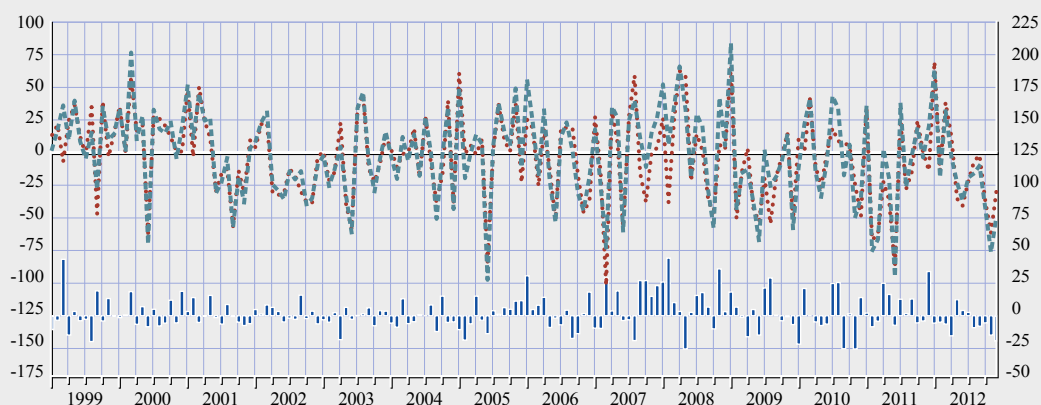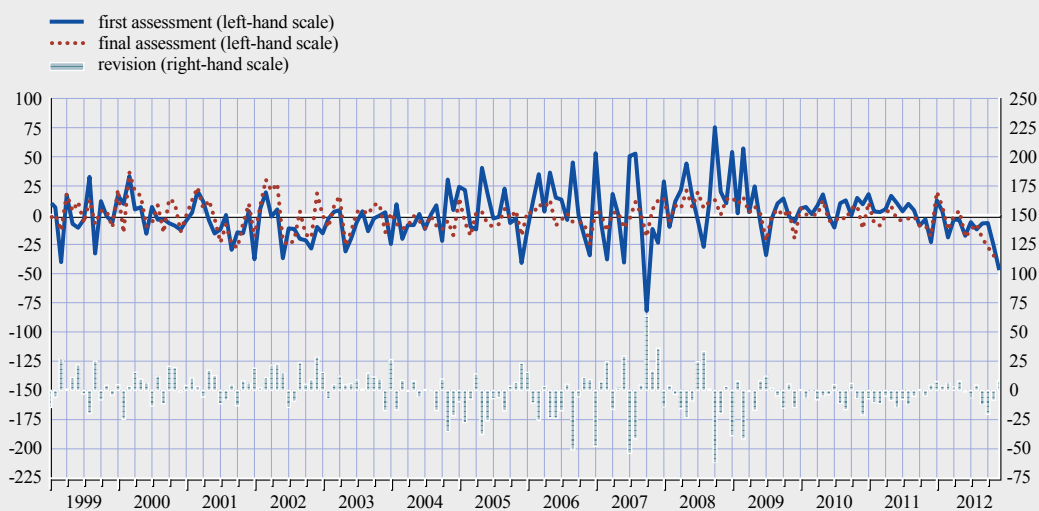| Table 7 Stability indicators for euro area other investment			
Quality indicator	**Reference period (Jan.-Dec.)**	**Other investment**		
		Assets	**Liabilities**	**Balance**
R̄	1999-2001	0.20	1.31	1.51
(EUR billions)	2000-2002	-0.72	2.42	1.70
	2001-2003	-1.28	1.89	0.62
	2002-2004	-2.51	2.58	0.07
	2003-2005	-4.45	3.84	-0.62
	2004-2006	-3.06	3.70	0.64
	2005-2007	-0.56	4.21	3.65
	2006-2008	1.26	5.97	7.23
	2007-2009	0.45	6.89	7.34
	2008-2010	-2.91	7.39	4.48
	2009-2011	-3.45	6.41	2.96
	2010-2012	-5.09	5.08	-0.01
|R̄|	1999-2001	6.74	7.67	8.58
(EUR billions)	2000-2002	4.17	6.52	6.43
	2001-2003	4.29	6.13	5.41
	2002-2004	5.31	6.44	5.71
	2003-2005	7.10	7.49	6.97
	2004-2006	7.25	8.22	8.91
	2005-2007	9.69	9.44	11.82
	2006-2008	11.05	11.66	14.43
	2007-2009	11.79	12.04	14.25
	2008-2010	11.01	13.27	13.94
	2009-2011	10.08	12.05	12.07
	2010-2012	11.24	12.65	11.65
MACE/ RMSRE *(%)*	1999-2001	0.31	0.31	0.42
	2000-2002	0.17	0.23	0.26
	2001-2003	0.16	0.21	0.26
	2002-2004	0.19	0.21	0.29
	2003-2005	0.22	0.22	0.31
	2004-2006	0.20	0.22	0.38
	2005-2007	0.22	0.21	0.46
	2006-2008	0.22	0.22	0.53
	2007-2009	0.23	0.22	0.49
	2008-2010	0.22	0.25	0.51
	2009-2011	0.21	0.23	0.44
	2010-2012	0.23	0.24	0.42
Q *(%)*	1999-2001	88.57	91.43	88.57
	2000-2002	94.29	91.43	82.86
	2001-2003	94.29	91.43	85.71
	2002-2004	97.14	94.29	88.57
	2003-2005	97.14	97.14	91.43
	2004-2006	97.14	100.00	91.43
	2005-2007	97.14	100.00	94.29
	2006-2008	97.14	100.00	100.00
	2007-2009	97.14	100.00	100.00
	2008-2010	94.29	94.29	91.43
	2009-2011	94.29	94.29	88.57
	2010-2012	94.29	91.43	88.57

Source: ECB.
Note: The MACE is used for assets and liabilities and the RMSRE for balance data.

Table 8 Stability indicators for euro area errors and omissions, and for the total financial account			
Quality indicator	**Reference period (Jan.-Dec.)**	**Errors and omissions**	**Total financial account**
R̄	1999-2001	1.35	2.90
(EUR billions)	2000-2002	-3.09	5.68
	2001-2003	-5.62	6.33
	2002-2004	-5.02	4.31
	2003-2005	-0.25	-1.96
	2004-2006	3.99	-6.91
⌐¬	2005-2007	2.68	-5.00
	2006-2008	5.26	-4.73
	2007-2009	4.64	-4.26
	2008-2010	5.52	-6.81
	2009-2011	2.46	-6.83
	2010-2012	-0.22	-4.36
|R̄|	1999-2001	10.56	11.02
(EUR billions)	2000-2002	10.70	12.00
	2001-2003	10.46	11.17
	2002-2004	12.08	12.43
	2003-2005	12.96	12.57
	2004-2006	16.04	15.03
	2005-2007	21.08	20.38
	2006-2008	21.51	21.12
	2007-2009	20.25	20.17
	2008-2010	12.73	13.11
	2009-2011	7.82	9.74
	2010-2012	5.13	7.58
RMSRE *(%)*	1999-2001	1.05	
	2000-2002	0.84	
	2001-2003	0.82	
	2002-2004	1.21	
	2003-2005	2.32	
	2004-2006	4.73	
	2005-2007	4.66	
	2006-2008	4.48	
	2007-2009	4.09	
	2008-2010	3.15	
	2009-2011	2.66	
	2010-2012	1.19	
Q *(%)*	1999-2001	71.43	
	2000-2002	74.29	
	2001-2003	82.86	
	2002-2004	71.43	
	2003-2005	71.43	
	2004-2006	65.71	
	2005-2007	71.43	
	2006-2008	62.86	
	2007-2009	57.14	
	2008-2010	42.86	
	2009-2011	45.71	
	2010-2012	51.43	

Source: ECB.

3 CURRENT ACCOUNT TRANSACTIONS BETWEEN THE EURO AREA AND ITS MAIN PARTNER COUNTRIES

Table 9

(EUR billions)

Item in euro area b.o.p.	2010 as recorded by Euro area	2010 United Kingdom	2011 Euro area	2011 United Kingdom	2012 Euro area	2012 United Kingdom	2010 differences Absolute	2010 Relative (%)	2011 Absolute	2011 Relative (%)	2012 Absolute	2012 Relative (%)
Current account, balance	39.2	-43.3	45.0	-23.4	58.5	-74.8	-4.1	10.0	21.6	63.1	-16.4	24.6
Exports to United Kingdom	431.1	277.2	465.8	316.1	478.5	293.6	153.8	43.4	149.7	38.3	184.9	47.9
Imports from United Kingdom	391.8	320.6	420.8	339.5	420.1	368.5	71.3	20.0	81.2	21.4	51.6	13.1
Goods, balance	44.9	-39.4	45.7	-35.6	51.5	-50.1	5.5	13.0	10.1	24.9	1.4	2.7
Exports to United Kingdom	216.0	146.2	239.5	161.7	254.6	164.4	69.8	38.6	77.8	38.8	90.2	43.0
Imports from United Kingdom	171.2	185.6	193.8	197.2	203.1	214.5	-14.5	-8.1	-3.4	-1.8	-11.4	-5.5
Services, balance	24.1	8.4	23.4	12.8	25.8	10.6	32.5	200.0	36.2	200.0	36.4	200.0
Exports to United Kingdom	109.9	69.2	113.2	72.4	119.2	76.4	40.7	45.5	40.9	44.0	42.7	43.7
Imports from United Kingdom	85.9	60.8	89.8	59.6	93.3	65.9	25.1	34.2	30.2	40.4	27.5	34.5
Income, balance	-28.7	-11.2	-23.1	0.6	-18.4	-34.0	-39.9	200.0	-22.5	190.2	-52.4	200.0
Receipts from United Kingdom	94.4	59.0	101.5	79.4	93.2	49.6	35.4	46.1	22.1	24.4	43.5	61.0
Expenditure in the United Kingdom	123.0	70.2	124.6	78.9	111.6	83.7	52.8	54.7	45.7	45.0	27.9	28.6
Current transfers, balance	-1.1	-1.2	-1.0	-1.2	-0.4	-1.3	-2.3	200.0	-2.2	200.0	-1.7	200.0
Receipts from United Kingdom	10.7	2.8	11.6	2.6	11.6	3.1	7.9	116.8	9.0	126.4	8.5	115.0
Expenditure in the United Kingdom	11.8	4.0	12.6	3.8	12.1	4.4	7.8	98.8	8.8	107.7	7.7	93.3

Sources: ECB and UK Office for National Statistics.
Note: The relative differences are calculated as the absolute value of the difference divided by the average of the absolute values of both estimates.

Table 10

(EUR billions)

Item in euro area b.o.p.	2010 Euro area	2010 United States	2011 as recorded by Euro area	2011 as recorded by United States	2012 Euro area	2012 United States	2010 differences Absolute	2010 differences Relative (%)	2011 differences Absolute	2011 differences Relative (%)	2012 differences Absolute	2012 differences Relative (%)
Current account, balance	-2.8	10.4	-2.5	-2.6	23.9	-12.8	7.6	114.9	-5.1	200.0	11.2	60.8
Goods, balance	51.6	-50.9	58.7	-66.2	76.1	-79.5	0.6	1.2	-7.5	11.9	-3.4	4.4
Exports to United States	183.6	185.4	202.8	208.5	229.2	232.2	-1.8	1.0	-5.7	2.8	-2.9	1.3
Imports from United States	132.0	134.4	144.1	142.4	153.2	152.7	-2.4	1.8	1.7	1.2	0.5	0.3
Services, balance	-20.0	16.3	-18.1	21.3	-14.8	23.6	-3.6	20.1	3.2	16.2	8.7	45.5
Exports to United States	82.2	66.3	90.1	67.6	97.9	74.1	15.8	21.3	22.5	28.5	23.9	27.8
Imports from United States	102.1	82.6	108.2	88.9	112.8	97.7	19.5	21.1	19.3	19.6	15.1	14.4
Income, balance	-33.0	45.3	-43.6	43.2	-37.2	45.3	12.4	31.6	-0.4	0.9	8.1	19.6
Receipts from United States	88.0	101.3	97.1	101.3	97.8	116.1	-13.3	14.1	-4.1	4.2	-18.2	17.0
Expenditure in the United States	120.9	146.6	140.7	144.4	135.0	161.3	-25.7	19.2	-3.7	2.6	-26.3	17.8
Current transfers, balance	-1.5	-0.3	0.5	-0.9	-0.1	-2.2	-1.7	200.0	-0.4	53.7	-2.2	200.0
Capital account, balance	-1.0	0.0	-1.4	0.0	-3.3	1.5	-1.0	200.0	-1.4	200.0	-1.8	73.9

Sources: ECB and US Bureau of Economic Analysis.
Note: The relative differences are calculated as the absolute value of the difference divided by the average of the absolute values of both estimates.

Table 11

(EUR billions)

Item in euro area b.o.p.	2010 Euro area	2010 Japan	2011 Euro area	2011 Japan	2012 Euro area	2012 Japan	2010 Absolute	2010 Relative (%)	2011 differences Absolute	2011 differences Relative (%)	2012 Absolute	2012 Relative (%)
Current account, balance	-35.4	32.9	-34.7	26.9	-25.5	20.5	-2.5	7.3	-7.9	25.5	-5.0	21.7
Goods, balance	-15.9	10.6	-14.1	5.9	-4.3	-2.1	-5.3	40.1	-8.2	81.7	-6.4	200.0
Services, balance	3.0	0.1	4.1	-0.1	5.6	-0.7	3.1	200.0	4.0	189.7	4.9	154.7
Income, balance	-22.8	22.3	-24.9	20.9	-26.9	23.4	-0.5	2.4	-4.0	17.4	-3.5	13.9
Current transfers, balance	0.2	0.0	0.2	0.1	0.1	-0.1	0.2	200.0	0.3	200.0	0.0	35.2
Capital account, balance	-0.1	-0.1	0.1	0.4	0.0	-0.1	-0.2	200.0	0.5	200.0	-0.1	200.0

Sources: ECB and Japan's Ministry of Finance.
Note: The relative differences are calculated as the absolute value of the difference divided by the average of the absolute values of both estimates.