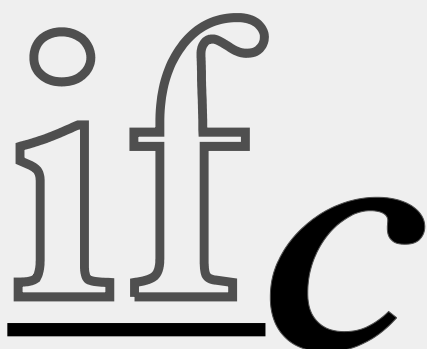# IRVING FISHER COMMITTEE
ON CENTRAL-BANK STATISTICS

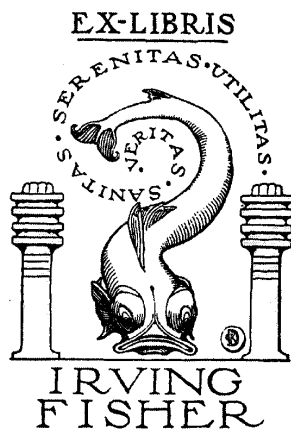# *ifc Bulletin*

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ifc

The Irving Fisher Committee is part
of the International Statistical Institute

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What is the IFC?

The Irving Fisher Committee (IFC) is a forum for discussion on statistical issues that are of interest to central banks. The Committee, which derives its name from the great American economist and statistician Irving Fisher, is part of the International Statistical Institute (ISI).

Objectives

By providing a forum for discussion, the IFC aims at:
- participating in the discussion on adapting statistical systems to changing requirements;
- promoting the adoption of international statistical standards and methodologies;
- sharing experience on the development of new statistics and the implementation of new methods of collecting, compiling and disseminating statistical information;
- exchanging views between central bankers and academics on statistical methods and techniques;
- facilitating personal contacts between central-bank statisticians.

Strategy

To achieve its objectives, the IFC organizes conferences, which take place both inside and outside the framework of the ISI's biennial Sessions. The first "outside" conference – on the challenges to central bank statistical activities – is scheduled for summer 2002 at the Bank for International Settlements in Basle.

The conferences are supported by the publication of the IFC Bulletin, which contains the conference papers and other articles.

The IFC has a Web site (http://www.ifcommittee. org), on which an electronic version of the IFC Bulletin can be found.

What kind of topics are discussed?

Any kind of theoretical or practical statistical subject that has a relationship with the activities of central banks can be considered for discussion. The subjects will mostly be in the area of monetary, financial and balance of payments statistics.

Membership and Structure

In principle, the IFC has no personal members. Central banks and other institutions interested in statistical systems and statistical techniques that have a bearing on the collection, compilation and distribution of central-bank statistics can become members by simple application. So far, more than 60 central banks and a number of other institutions have applied for membership. Members are entitled to appoint delegates to participate in the IFC's activities and to contribute to its conferences by presenting papers.

The prime decision-taking body is the assembly of members' delegates at the "administrative meetings" that are organized during the conferences. Here the IFC's strategy is determined. At these meetings an Executive Body is elected, which is charged with the committee's day-to-day business and with the preparation of the "administrative meetings". Likewise, at the "administrative meetings" topics are proposed for future conferences, and a Programme Committee is elected to choose from these topics and to organize the conferences.

A Short History

The Irving Fisher Committee (IFC) was established on the initiative of a number of central banks statisticians who were attending the ISI Corporate Members Meeting at the 1995 ISI Session in Beijing.

In 1997, during the 51st ISI Sessions in Istanbul, the IFC held its inaugural meeting. At the "administrative meeting" held during that Session an Executive Body was established and it was decided to start publishing the IFC Bulletin devoted to the activities of the IFC. Two years later, at the 52nd ISI Session in Helsinki, the IFC's presence was further strengthened. In 2001, at the 53rd ISI Session in Seoul, the IFC presented a programme comprising an invited papers meeting on "Financial Stability Statistics" and several contributed papers meetings.

In 2002, a conference on "Challenges to Central Bank Statistical Activities" was organised in co-operation with the Bank for International Settlements, which hosted it at its premises in Basle. 160 statisticians representing 73 countries participated. Some 50 papers were presented.

IFC Bulletin

The IFC Bulletin is the official periodical of the Irving Fisher Committee. The Bulletin contains articles and the text of papers presented within the framework of the ISI Conferences. It also sees as its task the recording of interesting events concerning Fisher's life. Institutions and individuals active in the field of central-bank statistics can subscribe to the Bulletin free of charge.

54th ISI Session, Berlin, 2003

The contribution of the IFC to the 54th ISI Session, to be held in Berlin in from 13 to 20 August 2003, will basically be structured along the same lines as in Istanbul (1997), Helsinki (1999) and Seoul (2001), which means that a number of meetings will be organized by persons representing our Committee. Some preliminary information on these meetings is presented on the next pages.

Since September 2000, the web site of the ISI Session *(http://www.isi-2003.de)* contains practical information and offers the possibility to register interest in participation or in presenting a paper.

The deadline for registration and submission of a contributed paper, initially set at 13 January 2003, has been extended to 14 April 2003.

Any person, wanting to submit a paper at one of the contributed papers meetings organized on behalf of the IFC are requested to observe not only the procedures and deadlines laid down by the ISI on its web site, but also to heed the following **recommendations**, which should allow the IFC to properly prepare the meetings and enable publication of the conference documents in the IFC Bulletin and on the IFC Web site:

- Inform the IFC Secretary *(rudi.acx@nbb.be)* as soon as possible about your intention to present a paper at a contributed papers meeting.

- Submit the final version of your invited or contributed paper as soon as possible, but **not later than 14 April 2003** to **both** the IFC Secretary *(rudi.acx@nbb.be)* and the Editor of the IFC Bulletin *(wucwo@wxs.nl)*.

While, according to the ISI rules, papers should not exceed 4 pages (invited papers) or 2 pages (contributed papers), the IFC encourages authors to submit a more **comprehensive version** of their papers for publication in the IFC Bulletin and on the IFC Web site. Extended versions should be made available to the Editor of the IFC Bulletin immediately after the conference at the latest.

Moreover, the IFC would be pleased to receive **abstracts** of papers – containing 150-300 words – at an early stage, but ultimately on 14 April 2003. These abstracts will be published in the IFC Bulletin and on the IFC Web site before the conference.

To facilitate reproduction in the IFC Bulletin any documents should be made available as Microsoft Word files, with tables and graphs in the Excel format; use of colours, particularly in graphs, should be avoided.

This issue of the IFC Bulletin

This issue contains the final part of the Proceedings of the IFC Conference "Challenges to Central Bank Statistical Activities" (20-22 August 2002, Basle). The conference was organised in co-operation with the Bank for International Settlements, which hosted it at its premises. The first and the second part of the conference documents were published in IFC Bulletin No. 12 (October 2002) and No. 13 (December 2002) respectively.

Irving Fisher's "Short Stories on Wealth" will be continued in IFC Bulletin No 15.

Meetings of the IFC at the 54th ISI Session, Berlin, 13-20 August 2003

Preliminary Programme

Invited Papers Meetings (IPMs)

- **IPM52:** *"The Use of Hedonic Methods for Quality-adjusted Prices "*,
  organized by Bart Meganck

  Papers:
  (1) Quality adjustment of euro area price data : Assessing the hedonic methodology
     by Kenny Geoff and Ahnert Henning (European Central Bank)
  (2) Conceptual and measurement issues relating to hedonic methods of quality adjustment of prices: the UK experience and some practical proposals
     by David Fenwick (Head of price statistics, ONS, UK)
  (3) Comparison of hedonic functions for PCs across EU countries,
     by P. Konijn, D. Moch, J. Dalen (Eurostat, Sweden, Germany)

- **IPM85:** *"Use of Statistics in Developing Monetary Policy"*,
  organized by Armida San José

  Papers:
  (1) The Role of Statistics in the Conduct of Monetary Policy in Albania
     by Governor Shelquim Cam and Gramos Kolasi, Bank of Albania)
  (2) Use of Statistics in the Monetary Policy of the Czech National Bank:
     The Case of a Country in Transition
     by Ivan Matalik (Czech National Bank) and Josef Arlt (Czech National Bank,
     University of Economics, Prague)
  (3) Labour Market Indicators and Macroeconomic Modeling in the UK
     by Craig Lindsay (UK Office for National Statistics)
  (4) The use of statistics in Monetary Policy in Cambodia
     by Phousnith Khay (Central Bank of Cambodia)
  (5) The new Interest Rate Survey in the Euro-zone : the case of Germany
     by Stefan Brunken, (Deutsche Bundesbank)

Contributed Papers Meetings (CPMs)

- **CPM79:** *"The Sectoral and Geographical Allocation of Holdership of Negotiable Instruments"*,
  organized by Gunter Kleinjung (Deutsche Bundesbank)

  Papers:
  (1) Reliable statistical recording of negotiable instruments holdership as a precondition for the compilation of money stock and its counterparts
     by Stefan Brunken (Deutsche Bundesbank)
  (2) Possibilities and limits of identifying final holders of negotiable instruments by reporting institutions within the monthly balance sheet statistics framework
     by Beatriz Sanz and/or Miguel Angel Menéndez (Banco de Espana)
  (3) Calculation of holdership structures for money market paper (and other issued bank bonds) by applying estimation procedures
     by Richard Walton (Bank of England)
  (4) Impacts of securities transactions on the statistical presentation of the money stock development in the euro area
     by Stefano Borgioli (European Central Bank)

(5) Derivation of geographical and sectoral holdership structures for negotiable instruments by use of periodically reports of securities settlement systems
by Frank Mayerlen (European Central Bank)
(6) Recording of cross-border transactions in money market paper and other negotiable instruments by sector within the bop statistics framework and derived geographical holdership structure
by Beatrice Timmermann (Deutsche Bundesbank)

- **CPM91:** *"Trade in Services – a Challenge to Statisticians"*,
  organized by Almut Steger (Deutsche Bundesbank)

  Papers:
  (1) The GATS-agreement and the four modes of supply – a statistical challenge
  by Guy Karsenty (World Trade Organisation)
  (2) Analysing tourism in the balance of payments
  by Antonio Massieu (World Tourism Organisation)
  (3) Analytical value and limitations of FDI statistics: a user's perspective
  by Masataka Fujita, Katja Weigl (U.N. Conference on Trade and Development)
  (4) Collecting and using data on FATS: the French experience
  by Francois Renard, Frederic Boccara (Banque de France)
  (5) Temporary movement of natural persons under the GATS
  by Jolita Butkeviciene (U.N. Conference on Trade and Development)
  (6) Implementing the Manual on Statistics of International Trade in Services: Are we progressing?
  by William Cave (Organisation for Economic Co-operation and Development)
  (7) Data collection for services – the increasing role of direct reporting in the Czech Republic
  by Petr Vojtisek (Czech National Bank)
  (8) The evolution of the data collection system for international trade in services in Russia – from surveys to an International Transaction Reporting System
  by Sergej Shcherbakov (Bank of Russia)
  (9) Compiling trade in services statistics in a fully liberalised developing country: The case of Uganda
  by Michael Atingi-Ego (Bank of Uganda)
  (10) Country Size and Trade in Services : Trend Analysis and International Comparisons
  by Daniel O. Boamah (Central Bank of Barbados)
  (11) Italian Business Travellers abroad : a Multidimensional Perspective
  by Giovanni G. Ortolani and Adrea Alivernini (Ufficio Italiano dei Cambi)

- **CPM98:** *"The Use of Surveys in Financial Statistics"*,
  organized by Jorma Hilpinen (Bank of Finland).

  Papers:
  (1) Redesign of the statistics on insurance corporations and pension funds
  by Abraham J. de Boo (Statistics Netherlands)
  (2) Survey of Issuing and Paying Agents for Marketable Securities in the Securities Market Statistics
  by Bruce Devile (Bank of England)
  (3) Utility of Surveys to the Central Bank in the Financial Statistics
  by K.S. Ramachandra Rao (Bank of India)
  (4) The Surveys for the MFI Interest Rate Statistics: Minimum standards for sampling procedures
  by Daniela Schackis (European Central Bank)
  (5) The Implementation of the new ECB Interest Rate Statistics in Austria - a pragmatic approach to a survey
  by Aurel Schubert and Gunther Svoboda (National Bank of Austria)

Executive Body and Programme Committee

Executive Body

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Proceedings[1]
of the Conference on
"Challenges to Central Bank Statistical Activities"
Basle, 20-22 August 2002

Keynote presentation

Session 1:
Central bank statistics and monetary stability

Session 2:
Central bank statistics and financial stability

Workshop A:
Constraints on central bank statistical activities

Workshop B:
Co-operation with national statistical offices

Session 3:
Improving the use(-fulness) of central bank statistics

Session 4:
Developments with respect to statistical analysis at central banks

Session 5:
Central bank co-operation on statistical issues

Workshop C:
Issues relating to balance of payments compiling

Workshop D:
Monetary and financial statistics and international accounting standards

Workshop E:
Deriving information from financial market data

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1   The Keynote presentation and the documents concerning Sessions 1 and 2 were reprinted in
    IFC Bulletin No. 12 (October 2002). Documents presented at Sessions 3, 4 and 5 and in Work-
    shops A and B were reprinted in IFC Bulletin No. 13 (December 2002). Documents of the
    Workshops C, D and E have been reprinted in the present issue. All documents are available at
    the IFC Web site *(http://www.ifcommittee.org)*.

WORKSHOP C

Issues relating to balance of payments compiling

Chair: François Renard, *Banque de France*

Secretary: Blaise Gadanecz, *BIS*

Papers: "Liberalization and the challenges for balance of payments
                compilation – the case of Jamaica"
                Fedrica Robinson, *Bank of Jamaica*

                "Setting up an alternative data collection system for the
                Philippines'balance of payments"
                Evelyn R. Santos, *Central Bank of the Philippines*

                "Surveying the enterprise sector in fulfilment of the ECB
                BoP statistics requirements"
                Jorma Hilpinen, *Bank of Finland*

                "Harmonised balance of payments reporting rules for
                multinationals"
                Peter Hofman and Marius van Nieuwkerk, *De Nederlandsche
                Bank*

                "Changeover from indirect to direct reporting of data to
                the balance of payments in Denmark and implications for
                financial statistics"
                Jens Hald, *National Bank of Denmark*

                "Organisation of the data collection process in a new
                environment for balance of payment statistics"
                Janez Fabijan, *Bank of Slovenia*

Discussants: Almut Steger, *Deutsche Bundesbank*
                Evelyn R. Santos, *Central Bank of the Philippines*

Workshop C:
Issues relating to balance of payments compiling

Issues Paper

François Renard (Banque de France)

It is a great pleasure for me to chair this workshop devoted to *"the issues relating to BOP compiling"*..

You will not be very surprised if I say that *BOP compiling is today one of the most important challenges central banks statistical activities are facing or will have to face.*

1. Challenges faced by BOP compilation

It is a matter of fact, and the papers which will be presented are a perfect illustration, *that methods for collecting BOP data are evolving all around the world, facing new economic trends towards globalization and the integration process in common economic areas.*

The challenges posed by these new economic trends are particularly important for collection *systems relying on bank settlements*, feature which was widespread or which is still widespread in most of EU MS and in a large number of non European countries.

There is no doubt that the reasons of this evolution are different from countries to countries:
* It is the liberalization of exchange control for some countries;
* It is the changes in corporate cash management for multinationals companies, rendering more and more difficult the identification of payments and receipts with non-residents;
* It is the implementation of economic areas or monetary zones, with the interconnection between national payment systems and the integration of national financial markets.

2. New features

a. *The papers on the table clearly show that the answers to these challenges are generally the same, with the implementation of a direct BOP reporting from the transactors themselves,* transactors which are in the best position to report on international flows or stocks when these operations escape to an indirect reporting via bank settlements.
   Beyond this common principle the answers vary from country to country:
   * Some consider that direct reporting has to be a supplement to banks settlements, limited to transactions settled through clearing and netting or via accounts held abroad (what we call "partial direct reporting").
   * Others consider that pure cash basis collection systems cannot be any more an accurate answer, and prefer rely on a general direct reporting from companies who have to report all their cross-border transactions whether they are channelled through the resident banking system or not.
b. *Making a further step, and concentrating as an example on the EU zone, the integration process means on the statistical ground, that economic transactors would probably like to find similar reporting conditions in every MS.*
   * This matter has been debated in various European fora. Going further than the harmonisation of concepts and definitions and of the output requirements, it has been considered that the harmonization of the collection process between EU MS will take time and will be in a first step limited to the exchange of "best practices".

- As it will be seen during the discussion, an important step towards harmonization could be the implementation of a *common reporting for multinationals* together with International Accounting Standards.

3. Plan for discussion

The background issue note note prepared to organize this workshop and written from the readings of the papers to be presented, raises to my opinion some important questions related to the evolution of the BOP collection systems, *focusing on the role to be played by non financial companies.*

    I would like the presentations (no more than 10 minutes per each) and the discussion wich will be introduced by our two discussants Almut Steger and Evelyn Santos, to be centered around these questions.

a. The first one relates to *direct reporting from companies as an appropriate answer to the challenges faced in BOP compilation.*

    We need when answering to this question, even it's attempting the impossible, to take into account a triple condition, that is:
- The need to report data fulfilling *quality* standards.
- With all the *details* required.
- And with a limitation of the *burden* for BOP reporters.

    So, we have to *find the most appropriate source from companies to fulfill these conditions.*
We will have to discuss if the use of *accounting information* from companies, which is highly recommended as it fits well with the concept of transactions , can fulfil the needs of BOP compilers with the requested level of details regarding items and geographical breakdowns. If not, can we find appropriate data in the *financial department* of companies ?
Fedrica Robinson, who will present a paper on "liberalization and the challenges for BOP compilation" will adress a broader issue on that important point which is underlying in all the contributions.

    Another important issue is *the use of surveys*, as whatever the structure of economies, and at least for burden considerations, it is or it will be necessary to have recourse to business surveys, as a piece of BOP collection.
- The design and the implementation of an appropriate business register is a prerequisite to target BOP population and to build surveys. BOP registers pose specific questions, relating in particular in updating, questions which have to be discussed.
- The necessity for most of countries, *to get disposal of information on a monthly basis within a short timeliness* as an indicator for monetary policy, poses also specific problems to countries using surveys.
- The discussion on these two points will be introduced by *Evelyn Santos,* presenting a paper entitled "setting up alternative data collection system for the BOP in Jamaica", and by *Jorma Hilpinen* presenting a paper on "how to survey the enterprise sector to fulfil the ECB BOP requirements".

b. The second chapter of this workshop relates to *the process of harmonisation* of the BOP collection in integrated economic areas, taking account of the european experience.

    We will concentrate on the *lessons to be drawn from the multinationals reporting project,* as multinationals are a privileged ground for harmonisation and as the project contains interesting features regarding the design of the common reporting.
- We need to discuss if the implementation of IAS in Europe from 2005 can be an accelerator in this harmonisation process.
- The question of the integration of BOP multinationals reporting in the collection systems and the possible enlargement of this kind of reporting are also important points of discussion.
  - (a)   *Peter Hofman* will present the model and the empirical results of the BOP reporting by multinationals. Then *Jens Hald* will explain why and how the future collection system in Denmark is supposed to be strongly influenced by the multinationals model.

c. *The third chapter of the workshop deals with organisational matters.*

    (a)   Problems of organisation of collection systems are present in most of the papers, from the ways to catch data from companies and the *share of responsibilities between central Banks and NSI in the data collection,* to the *need of legal impediments* to reinforce the statistical obligation of enterprises.

    (b)   *Janez Fabijan* from the Bank of Slovenia and whose paper is devoted to the "organisation of data collection process in a changing environment"4 will introduce the discussion.

Last but not least, by way of conclusion and if we have time, I propose to discuss on the *questions of quality*, in relation with the evolution of BOP collection systems.

François Renard
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Liberalization and the challenges for balance of payments compilation – the case of Jamaica

Fedrica Robinson [1] (Bank of Jamaica)

Introduction

Jamaica liberalized its foreign exchange system in 1991. Prior to that, it operated under a system of exchange controls. All foreign exchange payments by residents to non-residents had to be approved by the Authorities based on the availability of foreign exchange and the importance of the transactions. Similarly, funds flowing into the country from non-residents, especially those that would imply subsequent foreign exchange outflows e.g. investment income, profits etc. had to be registered with the Exchange Control Department of the Bank of Jamaica (BOJ). Primary balance of payments data for services, transfers and private capital flows were obtained from these approvals/disbursements/registration records duly classified on a monthly basis. There was therefore no need for data to be collected explicitly for the compilation of the balance of payments by the BOJ.

Following liberalization, Jamaica, like most other countries lost ready access to data on foreign exchange transactions relating to services, income, transfers and financial transactions primarily those relating to the private sector. Balance of payments statisticians at the BOJ were challenged to find alternative sources of data and method of collection. In the early years of liberalization, greater emphasis was placed on surveys as the method of data collection. However, a poor rate of response and the non-existence of a legal framework for BOJ statistical requirements posed many challenges. Moral suasion was widely used to encourage compliance in the absence of amendments to the BOJ Act (1961) or until other methods of data collection were developed. At the same time that data sources were being lo, new transactions were being undertaken in the market that needed to be tracked and recorded.

Where there were gaps in the data, estimates were used. However, it was difficult to make estimates in a changing environment where settlements could be done more freely using a variety of payment modes and where business transactions no longer required foreign exchange approvals by the Authorities. Balance of payments data changed frequently, as new data sources came on stream and had to be applied retroactively. While this helped to guide the estimation/projection process, it raised concerns about the accuracy of the published data.

The objective of this paper is to outline the major impact of liberalization on Jamaica's balance of payments compilation process and to highlight the choices made in developing a new statistical system. This exercise may provide lessons that may be of general interest.

Section one of this paper looks at liberalization and the implications for Balance of Payments data collection. Section two identifies the post-liberalization approaches taken by Jamaica to deal with the loss of significant portions of its primary data following the removal of exchange controls. Section three identifies the challenges that still remain, while section four looks at the way forward and identifies strategies that are to be/being adopted to improve the database.

1. Implications of Liberalization for Jamaica's Balance of Payments Data Collection

With financial liberalization, capital was free to flow between economies. There were unprecedented flows of private capital and the occasional sharp reversal of these flows in some countries. This had dramatic macroeconomic effects on their economies that demanded urgent policy responses. However, with limited data on the level and composition of these flows and no analysis of their causes and effects governments were virtually powerless to react. Since the Asian crisis, however, the monitoring and analysis of private capital has received increasing attention although in

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1   *The views presented in this paper are those of the author and not necessarily those of the Bank of Jamaica*

some countries there is still skepticism about the desire to monitor, due to concerns that it may be perceived wrongly by investors as a step back to capital controls.

After the dismantling of exchange controls and the associated reporting requirements, Jamaica, like most other countries faced serious problems in compiling its balance of payments statement. The exchange control laws required that sources of and uses of all funds be clearly identified. The data generated from this process were used for balance of payments compilation on a monthly basis. Although data were available for all the accounts of the balance of payments, not all were used directly as some were substituted with data from other sources. For example, the Statistical Institute of Jamaica (STATIN), using custom documents, generated data on exports and imports and these were used as the official trade data, rather than those generated by the exchange control records. Similarly, travel statistics, official capital flows and official debt payments were generated from other sources and the exchange control statistics, in these cases, were used for verification.

With financial liberalization and the consequent implementation of the *Exchange Control (Removal of Restrictions) Order* in 1991, the following measures were introduced:

- Exporters and all other earners of foreign exchange were free to hold their earnings in foreign currency accounts locally or abroad and could utilize same to settle any foreign obligations.
- The Bank of Jamaica restricted its provision of foreign exchange to the servicing of the public debt, making payments in respect of diplomatic missions and other essential requirements of the government and
- esidents were now able to open 'A' accounts[2] or add to existing balances held in such accounts.

With the introduction of the *Order,* authorized foreign exchange dealers[3] discontinued the processing of information on the sources and uses of foreign exchange.

While the historic database was available, there were no mechanisms in place to capture new data. To compound these problems, many businesses were of the view that they were no longer obligated to report any transaction for statistical purposes. With liberalization, authorized dealers no longer queried foreign exchange transactions of their clients and it became increasingly difficult to classify the growing level of foreign transactions.

There were noted deficiencies in the coverage of private capital transactions. The private sector could now borrow freely from abroad, invest in foreign government debt instruments as well as in private companies, float their debt instruments and hold foreign currency deposits abroad. There were no mechanisms in place to record these transactions on a consistent basis and this led to large distortions in the country's balance of payments and to significant difficulties in making country comparisons on such transactions. The shortcomings were in large part due to the rapid integration of world capital markets and the rise in direct transactions that bypass existing data collection systems. Changes in the balance of payments compilation process were therefore necessary.

Initially, heavy reliance was placed on surveys of business enterprises to satisfy the data requirements of the balance of payments compilers. However, the BOJ had no legal authority to collect data from the private sector. Moral suasion was utilized and while it worked for sectors such as insurance, banking and investment brokers, it was ineffective for other sources such as foreign missions, the entertainment industry, franchise operators, computer service providers and the other business entities. Significantly, these were also some of the areas that the authorities had expected to drive economic growth, which meant that there was an urgency to estimate their contribution to the economy.

From the outset, compilers sought to develop a "feedback flow" system to those providing information. Data providers were assured of the sharing of aggregated data as an incentive to providing timely and accurate information. However, this concept was never wholeheartedly embraced.

At the same time, remittance companies were expanding rapidly throughout the country to facilitate the transfer of funds from Jamaicans residing abroad to their families in Jamaica. Cambios were granted license by the BOJ to buy and sell foreign exchange in an effort to stem the trading of foreign exchange on the unofficial market. A significant portion of foreign transactions was routed through this medium. In both cases, there were no mechanisms in place to classify these transactions for BoP purposes. In this changing environment, it became increasingly difficult to formulate informed estimates and efforts were therefore concentrated on putting in place an appropriate mechanism for data capture.

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2   *'A' accounts are foreign currency accounts that may be held by residents or non-residents..*
3   *Authorized foreign exchange dealers are those institutions, which are authorized by the bank of Jamaica to purchase and sell foreign exchange.*

In the midst of all the aforementioned changes, the balance of payments manual, which is the standard issued by the IMF for the compilation of BoP statements, was upgraded from the fourth to the fifth edition. All the questionnaires had to be redesigned to conform to the nomenclature of the new manual. This new system required more detailed breakdown of international transactions than its predecessor and increased the reporting burden of the data reporters

2. Post Liberalization Approaches to data Collection.

Following liberalization and the non-reporting of foreign exchange transactions by authorized dealers, Jamaica was forced to rely heavily on other sources of data for its BoP compilation needs. The choice of data sources incorporated the requirements of the 5th edition of the BoP Manual. Four main sources of data are used for compiling the BoP of Jamaica:-
• International Trade Statistics
• Administrative and other Documentary sources
• Surveys and
• Foreign Exchange Records.

2.1. International Trade Statistics (ITS)

Jamaica continues to obtain information on its merchandise trade from International Trade Statistics provided by the Statistical Institute of Jamaica (STATIN). The data are compiled from documents sent by importers/exporters to customs and then to the statistical office. Only goods cleared by customs are recorded in the country's trade statistics. Goods imported into the customs free zones and which contribute to the value of the country's production are not included in the official trade data. In addition, goods (bunker and stores) purchased by resident transport operators from abroad are not included in the trade statistics. The customs data also lack the degree of detail called for in the Balance of Payments Manual such as data on goods for processing and repairs. The BoP compiler therefore has to supplement the trade statistics with other sources. Data on the free zones are obtained directly from the administrators of the zones while information on goods procured in ports by carriers is obtained from surveys of transport operators.

2.2. Administrative Records.

Administrative records, especially those kept by government and selected public enterprises have continued to provide data on items such as foreign travel, official loan inflows and repayments, official capital and current transfer inflows, technical assistance received/given and reserves. In addition, new sources were identified that could supply data on the number of migrants/emigrants; the number of visas-permanent and non-immigrant-obtained by residents and the number of foreign/local employees working in missions in order to make estimates for BoP items.

Since liberalization, the Jamaica Tourist Board (JTB) has been the primary supplier of information on the number of visitors to the island and their average length of stay, based on immigration records. In addition, monthly surveys are done to establish the average expenditure per visitor and this combined with the number of visitors and the average length of stay yields an estimate for total tourist expenditure.

Official loan inflows and amortization are obtained monthly from the Debt Management Unit in the Ministry of Finance and Planning from their Commonwealth Secretariat Debt Management System (CSDMS). They also supply data relating to official capital and current transfer flows on a monthly basis.

Prior to liberalization, all missions operating in the country reported their foreign exchange transactions to the Exchange Control Department. Following liberalization, this was no longer required and they could hold foreign currency accounts in the commercial banks and conduct their foreign exchange transactions freely. Surveys were designed to capture these institutions transactions but immunity was claimed under the Vienna Convention.

Although there was non-compliance, other data sources were used to derive estimates for their transactions. Information on the number of Jamaicans who have received immigrant/non-immigrant visas from missions operating in Jamaica and the cost of each visa is obtained from the missions. These fees are then derived by multiplying the number of visas issued by the cost of each visa. In addition, some countries require that each migrant should enter their country with a minimum amount of funds. The number of migrants, times the minimum required funds, yields data for the capital transfers account.

Information on the number of nationals employed in international organizations and missions operating in Jamaica are obtained from the Ministry of Foreign Affairs. This is combined with the average wage rates of similar kinds of employees to obtain data for compensation of employees. Payments that Jamaican missions make to foreign nationals abroad are obtained from the national budget.

2..3. Surveys.

All the existing survey forms were redesigned and new ones created to include questions that were aimed at capturing data on new transactions and data that were lost with the dismantling of exchange controls.

New forms/questions were designed to capture:
• The activities of the foreign embassies operating in Jamaica and those of Jamaican embassies operating abroad;
• Foreign direct investments in Jamaica and abroad;
• Portfolio investments in and out of the country;
• Other private capital flows e.g. private debt, foreign currency deposits and trade credits;
• Remittance flows to and from the island;
• Information on other service items excluding travel;
• Income receipts and payments.

The response rate for the forms relating to the entertainment industry, missions and the information technology sector ranges from 0-5 percent. The forms provided to the banks, insurance and remittance companies enjoy a 100 per cent response rate while those to the other private sector enterprises, non-profit organizations and foreign airlines range from a low of 10 per cent to a high of 50 per cent. Whenever responses are low, estimates have to be extrapolated based on historical trends and any other relevant information that may be available. Responses from the surveys are also used to make estimates for similar types of activities in sectors where the response is negligible. For example, the expenditure of embassies on utilities and maintenance are estimated using the per person expenditure for these goods in a similar size service organization

2.4. Revised Foreign Exchange Forms

In 1993, a new form requesting information on the uses and sources of foreign   exchange was designed for the authorized foreign exchange dealers to replace that used under the exchange control regime. In addition to commercial banks foreign exchange transactions, the new form covers the transactions of Cambios, Merchant Banks and Trust Companies, all of which were designated as authorized dealers. The classification scheme was consistent with the main methodological recommendations of international organizations and observed the nomenclature presented in the balance of payments manual.

Procedural manuals were designed and supplied to each authorized dealer to facilitate consistent classification of BoP items. The authorized dealers were consequently challenged to complete the forms accurately for each customer, as they were no longer required to ask their clients the sources of their funds or the uses to which they intend to put the purchased funds. The dealers used their best judgment to complete each form and there were variations in classifications from institution to institution and with each staff change. Reliance on this method of data collection had to be minimized and where it was used, adjustments were made for misclassification.

The revised statistical system made greater use of computers for the processing and analysis of information and generated statistics more rapidly and at less cost than was the case in the past. However, consequent on changes in data sources and in reporting requirements, especially as it relates to the 5th edition of the BoP manual, the statistics produced is not consistent with historical time series. However, much more detailed information is now provided.

3. Challenges Remaining

There are four major compilation challenges facing Jamaica, which emanated from liberalization and the implementation of the fifth edition of the BoP manual. They relate to the lack of legal authority to collect BoP data, the inadequacy of the data sources, the monitoring of private capital flows and the compilation of the international investment position of the country.

3.1. Legislation

Legislation giving the BOJ compilers the authority to collect required data is necessary for conducting surveys. This will establish the legal obligation for reporters to provide the information while allowing compilers, should the need arise, to examine the records of reporters It would also reinforce the confidentiality of information reported and facilitate the publication of data.

Under Exchange Control, there was sufficient authority to collect information. However, with the dismantling of exchange controls in Jamaica no new legislations were introduced to continue the process. When relevant legislation is insufficient or non-existent, the provision of data is voluntary and any request for certain types of data is generally viewed as being outside the mandate of the compiling agency and is usually met with resistance. In these cases personal contact between compilers and reporters is essential to the collection of useful and accurate data but changes in personnel can and do frustrate these efforts.

3.2. Data Sources

Estimates on the capital and financial accounts have been compiled in Jamaica using data supplied by authorized dealers, the Jamaica Investment Promotion Corporation, Export-Import Bank of Jamaica, Jamaica Bauxite Institute (JBI), published financial statements of companies and surveys. The information, they provide, though useful, is in a number of instances inadequate for BoP purposes due to classification and timing issues. The response rate from the surveys vary according to sectors and range from a high of 100 per cent in the banking, remittance and insurance industry to 0 per cent in the foreign missions and entertainment sectors. It is therefore imperative for the BOJ to improve the response rate and sectoral coverage of the survey.

3.3. Capital Flows

Jamaica has established its presence in the international capital market since the issue of its first official bond in 1997. The Government of Jamaica (GOJ) has also offered US dollar denominated and indexed bonds locally which have been purchased by both residents and non-residents. In addition, foreigners have increasingly been investing in local instruments to take advantage of high interest rate differentials. In the same vein, resident investors have been buying non- resident bonds and investing heavily in companies in other countries. These flows are rarely, if ever reported. Information on the holders of these bonds is very limited and changes each day with trading. As such, it is hard to ascertain the net indebtedness of residents.

3.4. International Investment Position.

At present, only data on flows are collected for BoP purposes. The intention is to expand this to the collection stock data to compile the International Investment Position (IIP) of the country in readiness for subscribing to the Special Data Dissemination System (SDDS) of the International Monetary Fund (IMF). This is likely to be a monumental task without legislation. All the survey forms will again have to be revised to account for stock positions in addition to those for flows.

Balance of payments compilation is dynamic. On a regular basis new types of transactions emerge, e.g. derivatives. These need to be classified, the operational mechanisms unraveled/understood and reporting mechanisms put in place for data capture. BoP compilers need to demonstrate a keen awareness of market trends. They need to be au-fait with developments in the financial markets, innovations in the payments system, questionnaire design, accounting techniques and above all, they need to be well grounded in statistics, forecasting techniques and should have an analytic mind. It is very difficult to attract university graduates with a strong interest to work in the statistics areas of the Bank. This therefore hampers the developmental and pioneering work of the compilation unit.

4. The Way Forward

A growing recognition of the importance of timely and accurate balance of payments data to inform policy making has prompted many governments to seek international assistance to monitor these flows. Jamaica will be undertaking a major effort with the help of the European Union to improve its compilation of balance of payments data. In moving to the 5th manual, satisfactory progress has already been made in compiling statistics on the current account. The area that is most dif-

ficult to implement requires classifying financial transactions according to function and compiling data on international investment position (IIP).

The aims of the project are:
- To improve the Bank of Jamaica's monitoring of private capital flows and stocks.
- To ensure that practices and methodologies utilized accord with the guidelines contained in the 5th edition of the BoP IMF manual;
- To promote support for a joint public-private sector secretariat that will strengthen government-private sector partnership through implementation of a perception survey of direct investment enterprises.

Specifically the project is intended to sensitize investors with foreign assets and liabilities. This would be done by helping them to understand the BoP compilers mandate in data collection, encouraging compliance to the surveys, identifying the concerns of the private sector and obtaining feedback on the questionnaires.

Balance of payment statisticians and analysts would be trained to understand the revised questionnaires and the data entry software. In addition, improved techniques for building investor register and sample selection and enhanced interview practices would be taught.

It is hoped that this survey will mark the beginning of the private/public sector co-operation that will redound to the benefit of both sectors.

In going forward, efforts will be made to amend the BOJ Act to include legislation that will empower the Bank to collect BoP information. Once the legislative basis for compulsory reporting and confidentiality of data has been established it is envisaged that reporters will cooperate more readily.

The Statistical Institute of Jamaica has the legal mandate to collect data. The possibility of an inter-agency (BOJ-STATIN) cooperation in administering the survey will be explored in the interim. In addition, partner countries and international institutions will be approached directly for information required for BoP compilation purposes.

5. Concluding Remarks

Liberalization brought with it many attendant problems for balance of payments compilers. The response to some of the data problems that have emerged has been slow, especially as it relates to the implementation of legal mandate to collect data. The significant growth in private flows and the possibility of sharp reversal of these flows as was evident in the financial crises in Asia has brought to the fore the need to monitor these flows for policy purposes. With this growing recognition of the need for timely and accurate data on private capital inflows and private external debt, Jamaica has sought international assistance to monitor these flows. This will assist in making critical policy decisions that will ensure financial stability.

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Setting up an alternative data collection system for the Philippines' Balance of Payments

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The Philippines' balance of payments (BoP) compilation started in 1949 with the establishment of the Central Bank of the Philippines. The Central Bank is the agency tasked to compile the balance of payments. The Philippines' BoP generally conforms to the conceptual guidelines set forth in the balance of payments manuals published by the International Monetary Fund; the latest one is the 1993 edition, commonly referred to as the 5th edition of the Balance of Payments Manual or BPM5. The Philippines' BoP is a statistical statement designed to provide a systematic record of the Philippines economic transactions with the rest of the world. It is a system of consolidated accounts in which the accounting entity is the Philippine economy and the entries refer to economic transactions between residents of the Philippines and residents of the rest of the world (non-residents).

The Philippines was for a long period – from 1949-1992 – under exchange controls. The compilation of the BoP had therefore relied largely on an information system provided by banks' foreign exchange monitoring reports. Following the liberalization of foreign exchange transactions in 1993, external transactions have grown in volume and complexity. This resulted in payments for external transactions being coursed through different modes and channels other than the domestic banks. The data collection system, however, was not enhanced simultaneous with the policy change in the foreign exchange regime. Compilers have since then been faced with the challenge of expanding the monitoring system to improve the coverage of data capture.

The Data Collection System

Before the liberalization

During the exchange control regime (1949-1992), data for most of the major accounts in the BoP, namely, services, income, transfers, investments, selected loan accounts and short-term loans, came from reports required to be submitted by banks. As a general rule during this period, only commercial banks were authorized to purchase, sell or otherwise deal in foreign exchange. No person can buy or sell foreign exchange except to authorized agent banks or to foreign exchange dealers. All foreign exchange earnings of residents were required to be surrendered to the banks for pesos. Foreign exchange for outward remittance could be purchased from the banks subject to prior approval by the Central Bank and within the imposed prescribed limits. The Central Bank maintained administrative machinery which examined the accuracy of the information submitted by the banks and monitored compliance to foreign exchange regulations by both banks and non-banks. The Central Bank also required exporters and "invisible" foreign exchange earners to report their monthly foreign exchange earnings. Residents were allowed to open and maintain foreign currency deposit accounts with duly authorized domestic banks. However, only foreign exchange receipts not derived from Philippine sources and not required to be surrendered to the banks were eligible for deposit. The foreign currency deposit system was granted by law certain privileges and immunities such as insurance, secrecy of deposits, tax exemption, re-conversion privileges, and exemption from attachment.

In view of the closed international transactions reporting system required for banks, practically all foreign exchange receipts and payments of banks arising from transactions of residents with non-residents and vice-versa were captured in the BoP.

After the liberalization

In 1993, current account transactions were fully liberalized. Foreign exchange receipts or earnings of residents may be sold for pesos to banks or outside of the domestic banking system, or retained, or deposited in foreign currency accounts, whether in the Philippines or abroad. On the other hand, banks may sell foreign exchange to residents for any non-trade purpose provided that (1) for sales of foreign exchange exceeding US$5,000.00[1], banks shall require a written notarized application and supporting documents from the purchaser of the foreign exchange; and (2) for sales of foreign exchange not exceeding US$5,000.00, banks shall require a written application only. For sales of foreign exchange for payment of obligations that are foreign loan- or foreign investment-related, banks shall require the purchaser's presentation of proof of Bangko Sentral ng Pilipinas[2] (BSP) approval and/or registration for each loan or investment, whenever required by existing rules. Registration of foreign loans and investment is not compulsory, provided that future outward remittances connected with the said liabilities that were not registered with the BSP or with custodian banks in the case of portfolio investments shall source their foreign exchange requirements outside of the banking system.

Under a deregulated setting, banks could capture only transactions that are coursed through them. Foreign exchange receipts and payments coursed outside of the domestic banking system, that is, via money changers, foreign exchange (FOREX) corporations, and foreign currency accounts abroad could eventually flow to the banks either through deposits or transfer of funds from abroad. However, the original transactions are missed by the banks as FOREX corporations and money changers would be depositing in bulk the net proceeds of their transactions for the day. Likewise, funds maintained in accounts abroad could be transferred to local banks but the amount of transfer could be the net value of all transactions done for a particular period. Reporting of transactions coursed through foreign currency deposit units (FCDUs) of banks is done on a "best effort" basis as banks adhere strictly to the secrecy of deposits law[3].

The report on foreign exchange transactions (FX Form 1) submitted by banks to BSP had undergone several revisions to conform to the classification of BoP accounts detailed in the BPM5 and to implement the recommendations of various IMF technical assistance missions.

Bank Reporting System (BRS)

Commercial banks are required to submit reports on their positions in foreign currency-denominated assets and liabilities and on all payments /receipts which bring about changes in the banks' positions. The reporting system is used by BSP for (1) monitoring, on a current basis, the international reserve position of commercial banks; (2) balance of payments compilation; and (3) prudential supervision and monitoring compliance with foreign exchange regulations.

In order to meet the various information needs of the different users of the report, the reporting system comprises several sub-reports called "schedules". The Main Report of FX Form I shows the consolidated foreign exchange assets and liabilities of the reporting bank. Claims on non-residents and liabilities to non-residents are reflected in the "Total Monetary Foreign Exchange Assets" and "Total Monetary Foreign Exchange Liabilities". The Main Report is accompanied by 14 schedules but only the following are relevant for BoP compilation:

- Schedule 1: Daily Summary of Foreign Exchange Acquisitions/Dispositions. This schedule shows the net FX Position for International Reserves – end of day – plus FX acquisition minus FX dispositions and the resulting FX Position for International Reserves – end of day.
- Schedule 2 provides a breakdown of inter-bank transactions. This breakdown is not needed for BoP compilation but can serve as a check of the consistency of the bank reports; transactions between local banks should cancel each other.
- Schedules 3 and 4 contain details on disbursements and repayments of loans granted by non-residents to residents or by residents to non-residents. The data in these schedules are partly used because there is a separate database for foreign debt statistics which is used for BoP compilation.
- Schedule 5 is the most widely used report for BoP compilation as it contains information on the acquisition and disposition of foreign exchange for other current account transactions. The fol-

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1 *Originally US$10,000.00 but was reduced to US$5,000.00 in August 2001.*

2 *The corporate name of the Central Bank of the Philippines.*

3 *Pursuant to Republic Act 6426, as amended, "all foreign currency deposits are declared and considered of an absolutely confidential nature and, except upon the written permission of the depositor, in no instance shall such foreign currency deposits be examined, inquired or looked into by any person, government official, bureau or office whether judicial, administrative or legislative, or any other entity whether public or private."*

lowing details are reported by banks: purpose of transaction, country of origin or destination, name of beneficiary or remitter, a book code which indicates whether the transaction has been carried out via the Regular or FCDU unit of the reporting bank.
- Schedule 6 covers direct investment, portfolio investment, and other investment transactions. This schedule allows for proper allocation of transactions to appropriate BoP components.

The reporting system is used to collect and monitor data for several purposes by the different departments in the BSP. Proposals by the IMF BoP Statistics Missions to simplify the reporting system and focus on those schedules which are primarily used for BoP statistics could not be implemented because other departments in the bank make use of the report for their own data gathering and tracking of banks' compliance to regulations.

The bank reporting system include all transactions of commercial banks (numbering 42 banks) that result in changes or movements in the reporting bank's foreign financial assets/liabilities denominated in foreign currencies. Transactions are subdivided into those carried out in the Regular Banking Units or RBUs and those coursed through the Foreign Currency Deposit Units or FCDUs. Transactions with the RBUs are those which involve the purchase of foreign exchange by the banks with pesos, and the sale of foreign exchange for pesos by the banks. Transactions effected through FCDUs are strictly in foreign currencies. Following the liberalization, bulk of transactions particularly in exports of goods and services (around 75% of the total) is effected via FCDUs. Information on transactions carried out through RBUs could be obtained by the banks because these are accompanied by documents and banks obliged customers to provide information on their transactions. However, information on individual payments/receipts via FCDUs cannot be obtained fully due to strict bank secrecy regulations.

Satellite reporting systems

In October 2000, an IMF Statistics Mission recommended the implementation of several satellite reporting systems to close the gaps that could not be adequately filled up by the reporting system for commercial banks. It was observed that there were receipts/payments arising from foreign transactions that by-pass the commercial banks and were carried out through other financial institutions – an offshoot again of liberalization. Eventually, net receipts or payments could flow to the banks as these financial institutions maintain FCDU accounts with the commercial banks. In order to capture transactions done outside the commercial banks, the BSP implemented satellite reporting systems as recommended by the IMF Statistics Mission starting in January 2001.

The satellite reporting systems comprise reports by Offshore Banking Units (OBUs), thrift banks, and foreign exchange corporations (FOREX) that are subsidiaries/ affiliates of banks. The systems are linked to the commercial banks' reporting system since these institutions primarily use their FCDUs to carry out foreign currency transactions (with the exception of OBUs). Thrift banks are not allowed to maintain correspondent banks abroad and therefore use the services of commercial banks as conduits of residents' transactions with foreign counterparties. FOREX corporations, meanwhile, were established to buy and sell foreign exchange that could not be serviced by banks because of legal impediments and other documentary requirements. On the other hand, the treatment of OBUs as non-residents was revised into residents for statistical purposes only. Certain transactions of residents are allowed to be coursed through OBUs and the latter surrender the proceeds of such transactions with the commercial banks. Reporting systems for these institutions were introduced by the BSP starting with the January 2001 transactions. Monthly reports for 2001 have been submitted and the information from these reports will be integrated into the 2001 balance of payments.

Collection systems for non-financial corporations

Efforts to collect information that by-pass the commercial banks focused on direct reporting for transactions effected through residents' deposit accounts abroad. The strategy was not to abandon the bank reporting system but to close the reporting gaps by supplementing it by direct reporting by non-financial enterprises.

A cross border transactions survey (CBTS) was implemented in 2001 for transactions on overseas bank accounts of build-operate-transfer (BOT) project companies. BOT companies have foreign loan approvals registered with the BSP and transactions related to these loans are monitored by the BSP. Thus, the existing report submitted by these companies to the BSP was enhanced to in-

clude other BOP data needs. Attempts, however, to expand the sample of CBTS to cover other enterprises were not successful because of the low response of identified companies to the survey. It maybe noted that surveys involving non-financial enterprises conducted by the BSP are not mandatory because its charter has no express provision to enforce compliance by non-bank reporters to answer such surveys. Thus, the BSP can only use moral suasion to elicit cooperation and support to these surveys.

Another survey implemented in 2001 was the survey of inter-company accounts. This survey covers settlements via accounts of semiconductor companies with their parent companies abroad. Forty companies participated in the survey and their contributions to the total value of exports of the semiconductor industry amounts to roughly 90 percent, and they account for around 40 percent of total exports. All transactions between the resident subsidiary and the non-resident parent company are cleared via these inter-company accounts. To further enhance the scope of this survey, other companies with subsidiary-parent relationship abroad will have to be included.

Alternative sources of data

The BSP had already covered a lot of ground in closing information gaps for the BoP. However, it recognizes the need to improve the quality of the bank reporting system particularly for those transactions effected through FCDUs. Around 75 percent of transactions on the receipts side (credits) for the different categories under "services" are in the FCDUs of domestic banks. Owing to the strict secrecy requirements attached to these accounts, banks could not ask their clients to disclose the underlying nature of transactions settled though these accounts. The classification of transactions settled through FCDUs had long been a standing problem to BoP compilers. There is no foreign exchange receipts form accomplished by clients which banks could use as basis for allocating transactions into appropriate BoP accounts. In view of the large volume of remittances and the different modes by which these remittances are transmitted electronically (via SWIFT, FAX, TELEX, and Automated Remittance Service) mostly for credit to the foreign currency deposit accounts of clients, it is unlikely that banks can institute a questionnaire to be filled up by clients that will serve as basis for them to classify the nature of the transactions. Thus, banks allocate transactions on "best efforts" and tag the transactions according to the business of the clients. On the other hand, transactions on the payments side (debits) could be classified correctly by banks because of the documentation requirements that are to be accomplished by clients for every outward remittance.

Unless the law on secrecy of deposits is eased or amended for purposes of gathering statistics, bank reports could not adequately provide quality information for BoP compilation. Given this, the BSP Governor constituted a Task Force for the Improvement of the Balance of Payments Statistics with the mandate to review the existing data sources and compilation methodology of the various BoP accounts and to identify which components in the BoP could be sourced from enterprise surveys, administrative reports of agencies, and bank reports.

Legal mandate

Under the law creating the Central Bank of the Philippines, banks can be obliged to report its transactions and operations to the BSP under monetary penalties and/or imprisonment of its officers for non-compliance.[4] However, non-bank institutions may only be required to report to the BSP their foreign exchange transactions. There is no enforcement provision in the law that could compel these institutions to comply with reportorial needs of the BSP.[5]

Focus on trade in services

Following a review of current estimation methodology and the quality of reported transactions in the BRS, the Task Force focused on addressing the deficiencies in the compilation system for BoP data on trade in services. This decision was based on the following:
- It is in the credit side (inflow) of the services account that the quality of data reported under the BRS is weak as bulk of the reported transactions for selected accounts is lodged in the FCDU book.

4 *Section 34 of Republic Act 7653 or "The New Central Bank Act"*
5 *Section 80 of Republic Act 7653 or "The New Central Bank Act"*

- There are different modes by which remittances can be inwardly remitted (via SWIFT, TELEX, Fax, Automated Remittance Service of Correspondent Banks) for credit to the accounts of clients or to corresponding domestic branches of banks where clients maintain accounts. Due to the volume of remittances, banks do not require clients to accomplish an "Inward Remittance Form" which could indicate the nature of the underlying transactions and be used as basis for classifying transactions. Thus the accuracy of the classification reported by banks depends on the amount of information they receive from the remittance messages and other documents supporting the foreign exchange receipts.
- Banks have more handle in classifying transactions on the payments side (outflow) because this is based on documents required to be accomplished and/or submitted by clients when purchasing foreign exchange from banks. Moreover, banks require clients to accomplish a "Fund Transfer Form" for every outward remittance regardless of the sourcing of the funds, that is, through purchase of FX, client's own funds, withdrawal from FCDUs, and fund transfer from other banks.
- There are core groups of service exporters which could be surveyed while residents engaging the services of non-residents are diverse and heterogeneous.
- The BoP can continue to use existing data sources for the following accounts:
  - Trade in Goods – Customs Manifest generated by the National Statistics Office (NSO)
  - Freight and Merchandise Insurance – NSO
  - Travel Receipts – Survey of Tourist Arrivals & Expenditures produced by the Department of Tourism
  - Compensation Income – Bank Reporting System (BRS)
  - Investment Income – BRS, BSP Treasury & International Operations Department (IOD) Reports, and Securities and Exchange Commission (SEC) financial reports
  - Current Transfers – BRS and reports from government bodies and international organizations
  - Direct Investment – BRS supplemented by data from the SEC and cross border transactions survey (CBTS) of accounts abroad of Build-Operate-Transfer (BOT) companies
  - Portfolio Investment – BRS, BSP Treasury & IOD Reports supplemented by the CBTS of accounts abroad
  - Other Investment – BRS, Consolidated Statement (CSOC) report of banks, IOD Reports supplemented by the CBTS of accounts abroad by BOT companies and survey of inter-company accounts.
- The BoP has sufficient data capture on investments because these are subject to registration with the BSP or with custodian banks in the case of portfolio investments and therefore inward remittances whether through RBUs or FCDUs are identified by the banks. Likewise, foreign loans are subject to prior BSP approval and registration (mandatory for public sector loans) with a separate database maintained with the BSP International Operations Department.

Coverage survey

The Task Force requested from selected industry associations (listed below) of firms engaged in the provision of services a directory of their members which could be potential respondents for a coverage survey. The directory provided by the industry groups as well as the listing from the top 5000 corporations published by the Securities and Exchange Commission (SEC) was used as samples for the survey. The coverage survey aims to determine the enterprises engaged in the trade in services with non-residents for each of the industry groups. The results of the coverage survey were intended to be used as the basis for the inclusion of firms in the sample for the full enterprise survey. The latter intends to cover transactions coursed either through the banking system or outside the banking system.

A total of 714 firms were included in the Task Force's list of potential respondents for the coverage survey. These belong to the following industry associations:
- Computer and Information Technology
  United Software Exporters of the Philippines Foundation, Inc. (USEPHIL)
  Information Technology and E-Commerce Council of the Philippines (ITECC)
  Philippine Software Association (PSA)
  Information Technology Association of the Philippines (ITAP)
- Construction Industry
  Construction Industry Association of the Philippines (CIAP)
- Professional Services
  Institute of Management Consultant of the Philippines (IMPHIL)

- Personal, Cultural, and Recreational Services
  Animation Council of the Philippines (ACPI)
- Sea Transport Services
  Maritime Industry Authority

Coverage survey questionnaires were also sent to firms in the following service industries: communication, financial, operational and other personal, cultural, and recreational services.

As of end February 2002, a total of 233 coverage survey letters have been sent. Over a hundred firms have responded representing a response rate of 44 percent.

Administrative reports

Before exploring the possibility to shift to an enterprise survey which is costly and requires a large number of manpower complement, the Task Force identified government agencies which have regulatory and supervisory functions over certain service export industries. The Task Force contacted these government bodies and having established that they have reportorial requirements with the industries they supervise from which data for BoP compilation can be extracted, the Task Force made arrangements with these bodies for data sharing through the regular submission of reports to BSP. The following is the outcome of the Task Force's efforts in this endeavor:

- Insurance services – The Insurance Commission (IC) regulates the domestic and external transactions of insurance companies, gives licenses to operate an insurance company and expand the financial services of these companies. It was learned that foreign transactions between residents and non-residents usually occur in the reinsurance phase of the insurance process. Reinsurance is the process where an insurance company insures part of the amount that it has insured for the policyholder by placing it with a reinsurance company, usually with the "mother" company for companies that are affiliates/subsidiaries. Of the total risk involved, a local insurance company is allowed to reinsure with a non-resident company up to 40 percent of the risk. The Insurance Commission agreed to provide BSP with regular reports indicating foreign transactions of insurance companies with details on premiums, reinsurance premiums, foreign investments, foreign loans, and investment income.
- Construction services – The Construction Industry Authority of the Philippines or CIAP(an attached agency of the Department of Trade and Industry) is a licensing authority for construction companies who wants to export their services in overseas projects. The agency ensures the viability of local construction companies to participate in overseas construction. It also looks for markets where local companies have comparative advantage. CIAP requires companies to report their operations in domestic and foreign markets and prepares a quarterly report from data submitted by these companies. Data on construction activities of local companies with non-residents can be obtained from CIAP with details as to the total amount, nature of the project, country of location, and the amount of remittances from the project. Arrangements were made for CIAP to provide BSP with quarterly estimates on construction services and to allow field researchers to look into their database.
- Air Transport Industry – The Civil Aeronautics Board (CAB) is the government agency which is authorized to issue licenses to foreign airlines to use the country's airspace and operate in the local airports. It also has supervision over local airlines. Foreign airlines submit quarterly reports on their receipts from the transport of local passengers and cargoes, and their expenses which include travel agents' commissions, rentals, airport royalty fees and catering services, take-off, landing and terminal fees, ground maintenance, and payroll. Meanwhile, there are only two domestic airlines currently with foreign operations. These airlines submit annual report to CAB which could be used to validate information that will be derived from enterprise survey. CAB agreed to provide BSP with the quarterly report. However, BSP is still negotiating with CAB if it can require foreign airlines to break down their earnings into passenger fares, charter, and cargoes.
- Telecommunications services – The National Telecommunications Commission (NTC) is the agency with mandate over telecommunications companies. It was explained that there are eight (8) telecommunications companies with international gateway facility (IGF). IGFs are linked by fibre optics cable to overseas lines. All incoming and outgoing traffic for international services pass through IGFs. NTC requires these firms to submit detailed annual report on their operations which include net foreign exchange receipts from international telecommunications services. It was learned that the country is a net exporter of telecommunications services because of the establishment of a number of call centers and internet answering services (e.g. America On-Line or AOL) with incoming calls passing through IGFs. Moreover, residents of-

ten request their counterparties to place the calls from their end because of the cheaper rates abroad. NTC agreed to require quarterly reporting by local telecommunications vendors to conform with the needs of the BSP

- Port Services – The Philippine Ports Authority (PPA) has supervision over vessels that dock in Philippine ports. PPA imposes fees from foreign vessels that dock and berth in the country's ports. A fixed amount of fees is paid by foreign vessels; thus, PPA can provide BSP with quarterly and annual estimates of earnings derived from port services. However, this represent only partial data and other services providers like those engaged in repair and cargo handling will have to be surveyed.

Enterprise surveys

The Task Force identified certain industry groups for which enterprise surveys can be conducted. Pilot survey forms were designed and sent to these companies. These industry groups are the following:

- Sea transport services – The Maritime Industry Authority (MARINA) was consulted and it agreed to assist BSP in soliciting the support of shippers to accomplish the pilot survey. A meeting with association representatives will be conducted and MARINA will introduce the survey to these bodies. The proposed meeting has yet to be scheduled by MARINA.
- Cargo Handling – The Task Force sent survey questionnaires to two big cargo handlers. They responded that their income is in the local currency as foreign-owned vessels maintain representative offices in Manila and they pay them in pesos. The survey form has to be reformulated to cover transactions with non-residents regardless of the currency of payment.
- Domestic Airlines – A pilot survey questionnaire was sent to the two local companies with international services. The questionnaire seeks to gather information on income derived from services abroad and expenses incurred in connection with their operations abroad. These companies are expected to respond positively to the pilot survey since they go to BSP for prior approval of their foreign borrowings.
- Government Services – A letter signed by the BSP Governor was sent to all the foreign embassies and diplomatic missions with offices in Manila requesting for an annual estimate of their expenses in the Philippines, excluding salaries of local personnel. The Task Force plan to build a foreign embassies expenditure model which can be updated after a lapse of three years. Despite assurance of maintaining confidentiality of data submitted to BSP, almost all embassies except two, opted not to provide the requested information invoking that the Philippines is a signatory to the Vienna Convention wherein embassies in host countries are exempt from any form of intrusion and search. Meanwhile, on the payments side, the Task Force was assured by the Department of Foreign Affairs that they can provide BSP with estimates based on their approved budget by Congress.
- Travel Expenditures – Inasmuch as there is already a running survey for tourist receipts conducted by the Department of Tourism (DOT), the Task Force explored on the possibility of conducting a similar survey for resident travel expenditures. The Task Force discussed with the DOT how they conduct the survey on tourist arrivals and expenditures in the Philippines which could be replicated for travel expenditures of resident travellers. It was learned that the survey is conducted monthly for one week (whole day) in all airports (Loag, Clark, NAIA Terminals 1 & 2, Cebu and Davao) covering outbound non-residents in the boarding areas. According to DOT, this is more fruitful in terms of results because tourists would have known at this point their length of stay and the average expenditures during their sojourn in the country. The DOT , however, is not concerned with resident expenditures. Thus, they suggested that BSP could conduct the survey of arriving residents and their estimated expenditures during their stay abroad. The timeframe of the survey could be similar to that of DOT's survey. Initially, DOT is willing to assist BSP enumerators. The Task Force drafted a sample survey questionnaire for testing in the future.

Refinements in the BRS

Meanwhile that data collection from surveys and administrative reports has yet to be put in place; the Task Force together with an IMF BoP Statistics Mission reviewed the data reported in the BRS. The following accounts were proposed to be revised.

- Asset and Liability Accounts pertaining to Foreign Banks are split into Foreign and Offshore Banking Units – This is in line with the treatment of OBUs as resident financial institutions and to facilitate the exclusion of OBUs in the foreign assets/liabilities of banks.
- Passenger revenues and Charter fees – These accounts are to be split into domestic air and sea carriers.
- U.S. Government Expenditures - This is to be revised to "Maintenance expenses of foreign embassies and consular offices in the Philippines" to capture FCDU deposits of embassies that are converted into pesos.
- Other Foreign Government Expenditures – This is to be revised to "Other general administrative expenditures in the Philippines of foreign governments/organizations" to capture expenditures of foreign governments other than the maintenance of embassies as well as international organizations.
- Maintenance of diplomatic and consular offices abroad – Similar to the credits side, this is to be revised to "Maintenance of Philippine embassies abroad".
- Other Government Expenditures – This is to be revised to "Other general administrative expenditures of Philippine agencies/organizations abroad" to facilitate the validation of transactions with other data sources.
- Merchanting and Other Trade Related Services – This is to be revised to "Offshore Trade Earnings and Fees" to avoid the reporting of trade in goods transactions under services.
- Professional, Technical and Other Businesses – This is to be revised to "Professional, Engineering, and other Businesses" to avoid misclassification of computer technology services.
- Telecommunications, postal, and courier services – This will be split into "Telecommunications" and "Postal services" to facilitate comparison and validation of information with those reported by telecommunications operators to NTC.
- Services between Affiliated Enterprises – This will be deleted and banks will be instructed to report these transactions under "Direct Investment – Inter-company Accounts".
- "Personal, Cultural and Recreational Services" – This will be revised to "Sporting, Cultural and Recreational Services" to avoid the reporting of transactions claimed to be "personal" in nature.
- "Gifts/Donations Received by Individuals – This is proposed to include the "encashment of treasury warrants/pension checks issued to residents by other foreign governments" which is currently reported under "Services".
- Government Taxes, Fines and Penalties – This is to be revised to "Government fees, grants, awards, taxes, fines and penalties" to include grants and awards received from or paid to other foreign government by residents currently reported by banks under services.
- Other Capital Transfers – This account is to be deleted to avoid the use of the account for clients' fund transfers.

The Task Force met with the banks to inform them of the proposed revisions in the report form and the resulting changes needed to be done in the program for system reporting. The Task Force is coordinating with the Information and Systems Technology Department of the BSP for assistance in the revision of the program of the banks and the users system.

Challenges ahead

The identification of other data sources as a solution to the misclassification problem for transactions coursed through FCDUs have been started. Yet, the Task Force recognizes that the introduction of direct reporting or enterprise surveys is a long-term programme. This will need additional resources in terms of equipment and manpower. The implementation is made more difficult without the legal authority to collect data and enforce compliance over non-financial institutions. For small industry groups like the domestic airlines and shipping companies, however, the BSP could exert moral suasion to elicit their support to this undertaking. Based on experience with the cross border surveys of BOT companies and inter-company accounts of the semi-conductor industry, the compliance is high and regular reporting on the specified deadline has already been established.

   Administrative reports produced by government bodies from the reports submitted to them by specific service industry groups could replace the BRS only if transactions other than services that might have been included in the FCDU deposits (due to tagging of client's nature of business) could be identified and reclassified in the proper BoP accounts. Unless this is done, the changes in positions of banks will not match the reported transactions and will result in errors and omissions. Data from administrative reports, however, should be compared with the BRS and if found to be more reliable, it can replace BRS data. This has already been done for tourist receipts and freight

and merchandise insurance generated by the Department of Tourism and NSO, respectively, which replaced the BRS, reported data.

On the whole, the BSP should sustain its efforts to improve the BoP data collection and monitoring systems. The specific tasks of the Task Force have been completed yet the collection of BoP data from alternative sources have yet to be operationalized, continued and/or modified in order not to loose the momentum and achieve the objective of obtaining reliable data on the external accounts.

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Surveying the enterprise sector in fulfilment of the ECB BoP statistics requirements[1]

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1. Introduction

This paper describes the collection and compilation practices for enterprise data for the high frequency Balance of Payments statistics as in operation in Finland, and discusses how the quality risks of data can be minimised in view to prevailing enterprise structures. A major part of the paper consists of empirical descriptions of Finnish Balance of Payments data, with focus on the enterprise sector.[2] Finally, a comparison of other EU- regulated monthly statistics (Index of Industrial Production) is provided as a benchmark.

In the Balance of Payments statistics, the responsibilities have been shared in Finland between Statistics Finland and the Bank of Finland since 1999. The Bank of Finland compiles the Financial Account and Investment Income, while Statistics Finland collects and compiles the majority of the Current Account data. The Foreign Trade Statistics collected by the Board of Customs are used both in National Accounts and in Balance of Payments. The Bank is responsible for consolidating and disseminating the entire Balance of Payments and for estimating the monthly aggregates of services, transfers and capital account (no monthly data collection) for the ECB MKIs.

The process leading to this division of labour in the collection of the Balance of Payments data in Finland accelerated after signing the Memorandum of Understanding concerning these responsibilities shared similarly between the European Monetary Institute and Euro-stat in 1995. This sharing of functions is better suited to statistical activities of the Bank of Finland with emphasis on high frequency financial statistics, now intended for the European System of Central Banks and earlier for national monetary policy purposes. Especially the structural, product-oriented Foreign Trade-in-services Statistics clearly fall outside this domain.

The Bank of Finland has employed a family of surveys to meet the international and national Balance of Payments (Financial Account) data requirements since 1991. The Balance of Payments and the IIP data are collected simultaneously in this system, and the respondents are required to reconcile stocks, flows and related income. The survey design is based on an end investor / issuer approach and gives sector breakdowns in compliance with

National Accounts. A broker survey has been built into acquire household sector data (see annex 1).

2. Current ECB requirements for high frequency data

The ECB monetary policy strategy to maintain a targeted low inflation is based on two pillars.[3] The first pillar consists of analysis of the growth of monetary aggregates and especially the M3. Balance of Payments statistics are among a wide range of economic and financial indicators making up the second pillar. The BoP data are also duly used to calculate the M3, since the changes of foreign ownership of monetary instruments are to be excluded from the euroarea monetary growth. These analytical needs define the data requirements for the BoP statistics expressed in detail in the so-called ECB BoP Book.[4]

2 *Empirical analysis is carried out and charts drawn employing STATISTICA 6.0 software package*

3 *The two pillars of the ECB's monetary policy strategy, ECB Monthly Bulletin, Nov. 2000, pp. 37-48*

4 *European Union Balance of Payments/International Investment Position Statistical Methods, ECB, November 2001*

Financial account and investment income are rather detailed in the requirements, with emphasis on the data concerning transactions with non-euroarea residents. Because the national BoP has also to be compiled, a geographical split into two (intra and extra euroarea) must be performed in the source data. The level of detail proliferates in the quarterly statistics. In view of the collection, the instrument breakdown is tolerable, even on a quarterly basis, and can be considered simple on the monthly frequency. In fact, the foreign assets & liabilities BoP survey is designed to produce monthly the quarterly requested data. Both monthly and quarterly requirements include sector breakdown, which is readily collectable because of the sector-specific survey family.

According to the experience of the last ten years, the instrument data are available in the enterprise accounting system. Similarly, the stock data are readily available, but problems still lie in the flow-valuations-stock consolidation, and especially in the flow data. The combination of the geography with the flow data is the most difficult part of the survey.

Detailing ECB requirements will multiply with the so-called step 3 requirement of the quarterly geography. At this time, it seems evident that the respondent reporting burden will grow. At any rate, any detailed geographical split to be implemented quarterly is controversial in terms of timeliness and quality targets.

3. Registers, frames and frame surveys

The quality Finnish BoP Statistics suffered from an exceptionally large (negative) errors and omissions item in 1998. This tendency towards negative errors was evident for some years. Due to a long history of current account surpluses and the resulting accumulated liquidity in the economy, it was assumed that all firms having foreign assets did not fall within then prevailing frame which originally was put together in the early 90's.

Frame problems are faced in all survey design but they accentuate in special surveys such as for the BoP statistics in which general registers do not contain appropriate study or stratification variables. Frame problems are most difficult in countries with very skewed enterprise distributions, and usually they are the most common source of bias. In the high-frequency foreign assets-liabilities survey, the frame must be accurate since resources limit the number of enterprises surveyed on a running basis to a minimum.

The relevance of the prevailing frames in Finnish BoP surveys was revised during summer and autumn of 2000 employing large *frame surveys*. For quality reasons, this more labour-intensive technique was preferred. An alternative would have been to base the running surveys on a frame defined in terms of auxiliary variables. As a result, the frames could be defined in terms of aggregated study variables such as total foreign assets and liabilities or any variable included within the frame survey. The final aim of the project was to redesign Balance of Payments surveys with appropriate selection, stratification and sampling as well as to establish routines to maintain the survey populations and frames. These functions constitute the core of a survey process (see annex 2). Later, a decision was made to repeat the frame surveys within an interval of three years. The next are to be undertaken in 2003 for the 2002 data.

Traditionally, the Bank of Finland receives an annual update of the official enterprise register from Statistics Finland containing some 300 000 entries. However, this is too large and not targeted to BoP purposes. The official register, however, contains an extremely useful subset of 700 consolidated enterprises (Consolidated Register). The Bank of Finland also obtains annually a comprehensive set of balance sheet data of some 7000 enterprises from private sources (Balance Consulting Ltd). The Balance Consulting data can be summed up to the consolidated enterprise level, amounting to some 700 consolidated concerns (see annex 3).

None of the registers mentioned above contain information on the Bank of Finland monthly BoP survey target variables, total foreign assets and liabilities exl. the FDI and trade credits (the y's). The registers present two major problems: Firstly, the official register does not contain balance sheet variables. Secondly, in the private registers containing balance sheet data, the definition of the statistical unit varies between a firm and a consolidated enterprise. The quality of the firm identification data in the Balance Consulting data was not always sufficient, and extensive manual cross-checking between registers was required before the data were functional and comparable.

The respondents to the frame survey for the monthly/quarterly foreign assets-liabilities survey were selected employing enterprise balance sheet variables as auxiliary variables (the x's). Balance Consulting data were employed. The relevance of the potential auxiliary variables[5] was stud-

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5 *Turnover, Dividends, Interest yield, Interest expenditure, Total profits, Fixed assets, Current assets, Shares and investments, Cash and other receivables, Financial assets, Assets, total, Equity, Bonds issued, Loans from credit institutions, Long term liabilities, Short term*

ied statistically for the 2000 frame survey, establishing regression equations between them, one by one. The regression models did not find any significant difference between potentially best candidates for auxiliary variables (see annex 4).

The number of the frame survey respondents was restricted to some 2000 due to limited resources. Thus the respondent list was cut off at the point where the total liabilities and financial assets totalled to about EUR 1.7 million. It was estimated from the previous survey selection and the balance sheet data that the share of foreign liabilities amounted to some 20 per cent of total liabilities on average. This relation was assumed to be even lower for smaller enterprises. Accordingly, the frame survey covered 1935 enterprises/consolidated enterprises. The respondents (238 enterprises) of the monthly survey were exempted.

For some other items in the Financial Account, the frame solutions are more clearcut. In the annual direct investment surveys, the frames are based on the official register information on foreign ownership and continuous monitoring of mergers and acquisitions. For trade credits, the Board of Customs register of exporters and importers is available. For the high frequency survey, an appropriate overlap of all these must be constituted (see annex 5).

The 2000 frame survey was designed to include only the main items of the financial account, the liabilities enquired after were bonds, money market papers, loans, financial leasing and deposits. The types of assets included were equities, bonds, money market papers, financial leasing and deposits. In addition, a qualitative question as to whether the respondent has foreign affiliates was included.

The response rate of the survey was 90.5 per cent but it turned out that in most cases enterprises reported just zero in foreign assets and liabilities other than trade credits and receivables. According to the survey result on the enterprise level, the frame for the high frequency (monthly and quarterly) enterprise survey consists of 539 enterprises (See annex 3). In terms of respondents, this equates to some 370 respondents since many firms provide consolidated responses. Subsequently, it has turned out that the size of the population varies constantly and in a census-type collection new respondents must be included as they emerge.

The results also showed that the errors and omissions were not caused by large frame errors in the monthly enterprise survey. The coverage (in stocks) of the sample of the monthly survey at the end of 1999 exceeded 90 per cent of the total population in the major items, while the full coverage survey led to only minor revisions to the 1999 data. On the other hand, a few giant multinational enterprises resident in Finland are a likely source of error because it is not even conceptually clear which country all their transactions fall into. More recent developments in errors and omissions have produced a shift in a positive direction.

The empirical frame distributions of the stocks of financial assets and liabilities (other than direct investments and trade related items) and their data diagnostics are presented in annexes 6A, 6B and 6E. Separate frame surveys were carried out on the FDI statistics, and the FDI distributions appear in charts 6C and 6D for comparison. In practise, the data contain enterprise and consolidated enterprise figures. The number of enterprises / respondents in each is of course smaller than the total frame also because some respondents (169) only have assets and some others only liabilities (132). In fact, it could be that assets and liabilities would require different frames, since only 70 respondents have both (in the 1999 data). The null-replies are excluded as well. The classified frequency distribution charts are in logarithms in order to decrease the positive (to the right) skewness. The log distributions are not skewed but flatter than the normal distribution. The cumulative percentage distributions highlight the importance of large enterprises.

4. The 2001 design of the high-frequency Bop survey and current experience

The limited amount of small and medium sized enterprises excluded probability sampling in the design of the high frequency BoP survey. Changes occurred in the list of respondents, but the cut off-type collection was continued. Instead of a monthly survey, this survey could be characterised in 2001 as a multi frequency survey, since only a small portion of enterprises responded on a monthly basis, and a slightly larger group quarterly. Most enterprises in the frame are approached annually.

In the financial assets other than direct investments of Finnish BoP, the enterprise sector plays a limited role, while the banks. other institutional investors and pension funds lead. Enterprises display nearly as significant flows in the liabilities as have the financial sector players. Globalisation has, however, turned the inter-company loans of direct investments into a major item in the Balance of Payments. These capital flows are substantial and variable (see enterprise financial flows and stocks in the Finnish BoP, annex 7). High frequency data collection must be designed to cover all important items with reasonable reliability. For this reason, questions concerning inter-com-

pany loans and trade credits were included as before. This solution increases the number of respondents in the high frequency survey but resource constraints leave coverage in both somewhat inadequate. According to survey mailing lists, the high frequency survey has 68 common respondents with the annual survey for FDI abroad and 41 common respondents with the annual FDI in Finland survey.

This design was targeted to yield coverage of some 80 per cent monthly and of some 95 per cent quarterly in relation to the stock of main aggregates other than FDI and trade credits. Only 35 respondents were needed to achieve 80 per cent coverage on average since many enterprises reply on a consolidated basis. Additional 80 respondents were required to reach 95 per cent coverage quarterly, and annually some 250 respondents had to be added to make the census.

In practise, the flows are almost always fully covered monthly, since enterprises having a small stock very rarely have flows. The tail is very often vacant; enterprises may have an occasional loan and other transactions do not appear. Because of the enterprise structures, occasional observations can be relatively large and the system must be flexible enough to incorporate new respondents in the higher frequency group. One purpose of the multi-frequency survey structure is to monitor potential new respondents to be included in the monthly section.

The tables below demonstrate that the system functions in major BoP items as expected; the major players report on a high frequency and the tail is caught annually. The outcome is more erratic in minor items. When large figures are found on lower frequencies, the enterprise in question is contacted, more details and timing of transactions are requested, and it is moved to the higher frequency reporting group. The statistics are revised accordingly. These facts also reveal that a grossing-up procedure is unnecessary in stocks and flows.

Because the system is of a census type, it is possible and in fact necessary to include new respondents even within the span of a year causing no break in the time series.

Experience during 2001 and 2002 has shown that the quarterly reports of flows from medium size enterprises provide only a little information for the process. The intra-annual cut-off collection with annual censuses available, say, six months after the end of the year may however lead to a systematic bias in the preliminary statistics and to rather delayed revisions only in one direction. This phenomenon requires a health warning attached to the preliminary statistics. Reinvested earnings and services have not been easy to estimate, partly because of recent swings in economic activity and partly because the results of the annual surveys supplying the final data have not been very stable.

Studies also revealed that in a smaller country all necessary details cannot be published in high frequency. The structural data are publishable on lower frequencies because of extremely skewed enterprise populations and the dominance of a few major enterprises. Detailed monthly data would also promote severe confidentiality problems.

Tables 1 A and B below summarise the ex-post coverage per item and per frequency for 2000 and 2001. Since the data stem from various points of time, the figures do not necessarily tally with current official statistics.

5. Quality issues, risk of bias, structure and volatility of enterprise data

As shown in annex 6E, the frame distributions are extremely skewed to the right and major enterprises play a dominant role. The quality risk caused by this is shown in detail in two major BoP items for enterprises (FDI abroad, Assets, Other capital, Claims on affiliated enterprises and Other investments, Liabilities, Loans). As an indication of the rise of this risk, the aggregated time series of these two items have undergone a structural change in variation from 2000 (annex 8). Charts also include a robust filter[6] applied to time series displaying underlining developments.

For further analysis of the significance of the role major enterprises, the monthly data in the BoP items above were divided into two sets, the first consisting of the data of the five largest consolidated enterprises in stock terms in each month during 1999-2001. The second set consists of the remainder of the monthly respondents. Thus the composition of these two group varies from month to month. Similarly, the ranking order of enterprises in the groups varies in time. The data in annexes 9 –12 demonstrate that the quality of statistics in these items is highly dependent on the quality of source data of the major enterprises. If any are missing or report erroneous data bias in the statistics is always considerable. Even if dozens of small enterprises were missing from the frame, the error would be smaller.

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6 *Filter 4253H in STATISTICA, see STATISTICA Electronic Manual, Transformation of Variables*

Table 1 – Enterprise sector foreign assets and liabilities, net flows collected at various frequencies

EUR Million and per cent of total information flow

A: 2000

	M	%	Q	%	A	%	TOTAL
ASSETS							
Portfolio investments	165	42	0	0	224	58	390
Other investments	454	91	30	6	-16	3	468
LIABILITIES							
Portfolio investments	6251	100	0	0	0	0	6251
Other investments	6921	94	-75	1	-330	5	6516
FDI in Finland							
Equity capital	na	na	160	86	-27	14	133
Claims on direct investors	-54	65	4	5	25	30	-25
Liabilities to direct investors	897	32	340	12	1540	55	2777
FDI abroad							
Equity capital	12314	88	56	0	1648	12	14018
Claims on affiliated enterprises	11052	98	2	0	280	2	11335
Liabilities to affiliated enterprises	4030	93	1	0	309	7	4339
TOTAL ASSETS	28015	92	89	0	2445	8	30549
LIABILITIES	14015	85	429	3	1209	12	15653

B: 2001

	M	%	Q	%	A	%	TOTAL
ASSETS							
Portfolio investments	103	69	-46	31	1	0	57
Other investments	1691	84	-168	8	150	7	1673
LIABILITIES							
Portfolio investments	3343	98	-76	2	0	0	3267
Other investments	-2914	70	1004	24	228	5	-1682
FDI in Finland							
Equity capital	na	na	na	na	486 [1]	na	486
Claims on direct investors	155	83	33	17	0 [1]	0	188
Liabilities to direct investors	-121	9	-790	60	403 [1]	31	-507
FDI abroad							
Equity capital	2633	74	-369	10	551 [1]	16	2815
Claims on affiliated enterprises	4032	82	739	15	121 [1]	2	4892
Liabilities to affiliated enterprises	-701	82	155	18	2 [1]	0	-544
TOTAL ASSETS	7758	80	311	13	151	7	8894
LIABILITIES	463	68	171	20	228	12	1752

Increase in assets -, decrease +.

Increase in liabilities +, decrease -.

Percentages calculated employing absolute values.

[1] Enterprise transaction reporting; annual survey not yet available.

The share of the five largest in the monthly reporters in terms of stock data varied between some 60 to 75 per cent during 1999 – 2001 (annex 9). The median stock of the five largest has been approximately five times the median stock of the rest of monthly reporters in both items during the observation period. Similarly, the variation range of the stocks of the five largest has been many-fold the variation range of the other enterprises in the monthly collection. In view to flows, the size difference of the variation in the two groups is equally striking (see the Box-and-Whiskers plots in annexes 10 and 12). Consequently, the major enterprises almost totally determine the variation of aggregated Balance of Payments time series in these items (annex 11).

Variations are large within respondent and between respondents. In fact, the major respondents must be continuously approached since almost every observation is an extreme. Stocks must be collected simultaneously with flows to establish continuity in the source data and facilitate some quality control by the compiler.

5. Comparison of methods to compile the monthly volume index of industrial production[7]

The volume index of industrial production is a key indicator of cyclical movements; it has to be timely, reliable and internationally comparable. The timeliness requirement is more difficult than for the Balance of Payments. On the other hand, production has a long tradition and the method is well established. The design is based on international recommendations and on an EU regulation to compile these statistics in a comparable manner within the EU. All these properties are such that are desired for monthly collected Balance of Payments.

The target variables in the volume indices indicate the changes in the production volumes, that is, the first differences in the production flow. In practise, the gross value of production as well as physical volumes and cost variables are collected. This equals the collection of stocks, flows and valuation items in the BoP survey. The flow in the Balance of Payments is also a first difference.

In Finland, the volume indices of industrial production are based on a non-probability sample of 6000 units from a frame consisting of 30 000 activity units in the register covering all enterprises making up industrial production. The main criteria in the selection of the respondents has been the overall coverage set to be 80 per cent in relation to the gross value of total industrial production. The coverage can be lower but should be sufficient in all activities. This varies in practise between 40 and 100 per cent. Industrial activity is monitored annually in a census.

The collection procedure above is in most details equivalent to the method employed in the monthly Balance of Payments: Both procedures include estimated sections where collection would be overly costly. Essential is that an annual census is available, the register is continuously updated and a procedure is in place to maintain the register and keep the frame updated.

6. Summary and conclusions

The monthly BoP/Financial Account data on enterprises are based on a non-probability sample selected from a continuously monitored frame. The maintenance of the frames of various BoP surveys can be considered the key task of survey work. The enterprises surveyed on a monthly frequency are determined by their overall importance in the Financial Account of the Balance of Payments; the most important players in each item must be included, the total coverage must be high enough but in terms of detail coverage may vary. It is meaningful that the survey design process is performed in a conventional textbook manner but that the practical respondent selection and quality control solutions contain more art than science. The solutions are to be transparent and clearly explainable to users. In a smaller country, the opportunity to use censuses and cut-offs rather than sampled data is a merit rather than a detriment.

Experience has shown that the flow data could be collected employing even smaller selections but an annual census survey remains essential for stocks. The most difficult and problematic parts of the monthly BoP are those where no high frequency data are available. The time horizon for estimation is rather long, spanning over 17 months in the worst cases. This leads to special revision paths where annual and rather delayed revisions are considerable.

In the prevailing economic situation in Finland characterised by current account surpluses even in recession, other sectors than enterprises are the most important reporters of the BoP Finan-

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7 *The description of the volume index of industrial production is based on the methodology and quality report by Statistics Finland 1998:1*

cial Account data. On the other hand, the Finnish enterprise structures add risk of serious biases in statistics if major reporters make mistakes or if nonresponse occurs. Even if no reporting error can be traced, volatility in flows makes quality control work difficult. The furnishing of the report forms with sophisticated built-in controls does not help in view of quality because the major observations often are special cases and can only be reported employing tailor-made solutions. Dialogue with major respondents is of utmost importance. The confidentiality problem in detailed statistics is obvious.

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Annex 1

Reporting scheme for BoP Financial Account, Investment Income and IIP data collection

Target respondent population	Frequency of reporting	Number of reporting institutions	Coverage (in relation to stocks)	Timeliness (time for sub mission after the end of the reference period)
Foreign assets and liabilities (stocks and flows)				
MFIs	Monthly	11	Full	15 banking days
Other financial institutions	Monthly	18	90% cut-off	15 banking days
Other financial institutions	Quarterly	18+11	Full	15 banking days
Enterprises	Monthly	35	80% cut-off	15 banking days
Enterprises	Quarterly	35+80	95% cut-off	15 banking days
Enterprises	Annually	35+80+250	Full	4 months
Central government	Monthly	4	99% cut-off	15 banking days
Central government	Quarterly	4+3	Full	15 banking days
Local government	Quarterly	11	Full	15 banking days
Foreign asset and liability stocks with geographical breakdown				
MFIs	Annually	11	Full	4 months
Other financial institutions	Annually	29	Full	4 months
Enterprises	Annually	115	95% cut-off	4 months
Central government	Annually	7	Full	4 months
Local government	Annually	11	Full	4 months
Portfolio Investment asset stocks with geographical breakdown				
Mutual fund companies	Annually	23	Full	2 months
Domestic custodians	Annually	34	Full	2 months
Securities trade between residents and non-residents				
Securities brokers	Monthly	34	Full	15 banking days
Direct Investment in Finland				
MFIs	Annually	13	Full	4 months
Other financial institutions	Annually	27	Full	4 months
Enterprises	Annually	800	Sample survey	4 months
Direct Investment abroad				
MFIs	Annually	13	Full	4 months
Other financial institutions	Annually	27	Full	4 months
Enterprises	Annually	400	Sample survey	4 months

Annex 2

A survey process

1. Target & Characteristics

Definition of main target variables, frequency and characteristics according to user needs. Legal background and first contacts to enterprise organisations.

2. Population & Registers

Target Population (in theory)	General Enterprise Register (in practice) Example: 2 mil. enterprises

3. Limitation process

Other information, auxiliary variables related to survey variables, check and update of frame data

4. Frames

Large enterprises Example: $F_1 = 2,000$	Known from various sources relevant to survey Example: $F_2 = 20,000$	Assumed relevant to survey Example: $F_3 = 40,000$

5. Targeted survey population

Survey population

$N = F_1 + F_2 + F_3$
Example: N = 62,000

Possible distributions of survey population

Survey variables or auxiliary variables
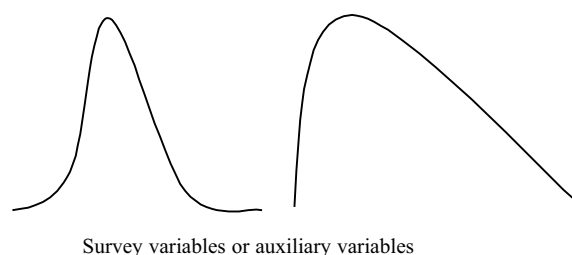
6. Forms

Form planning and form laboratory tests; the IT solution for the forms, form piloting, consultations with respondents: form details, availability of data and respondent instructions

7. Sampling

Take-all stratum Example: $n_1 = 2,000$ Sampling rate: 100 %	*Take some strata* Example: $n_2 = 2,000$ Sampling rate: 10 %	Example: $n_3 = 1,200$ Sampling rate: 3 %	Total sample in example: $n = n_1 + n_2 + n_3 = 5,200$

Boundaries and strata sizes: Variance (precision), total sample size, costs, statistical allocation algorithms available (survey- or auxiliary variables)

8. Data collection

IT application for collection and information system; database, input and output

9. Validation of returns, imputation for non-response, treatment of outliers, estimation (grossing-up), processing the results, update of the frame, improvement of methods, etc.

Annex 3

The Bank of Finland BoP Survey Frame Projec (Enterprise sector)t

General Register
(Statistics Finland 1998)   N = 200,000 enterprises

Subset: 700 consolidated enterprises

FRAME DATA   FRAME DATA

Monitoring Mergers & Acquisitions
(Bank of Finland)

TARGETED REGISTERS

Exporters	Importers
N = 12,866	N = 17,394

Board of Customs 1998

Balance sheet data 1998
Balance Consulting Ltd

N_1 = 700 Consolidated enterprises
N_2 = 5000 enterprises

Direct investors
abroad

N = 1,150
(BOF 1999)

Direct investment
enterprises
in Finland

N = 2,000
(BOF 1999)

FRAME SURVEY
RESULTS IN 2000

AUXILIARY VARIABLES

Foreign assets & liabilities

N = 1,950 (+24) => 540

Direct investors
abroad

N = 1,150 => 900

Direct investment
enterprises
in Finland

N = 2,000 => 1,800

RUNNING SURVEYS IN 2001

Stratified large import credit
Survey
Occasionally

In 2001   n~500

Monthly / Quarterly / Annual Surveys

n = 35 (monthly)
n = 80+35 (quarterly)
n = 250+80+35 (annually)

Annual surveys

DI abroad   n = 400
DI in Finland   n = 800

Annex 4

Total Foreign Liabilities as Dependent Variable

Independent variable	B	St. Err. of B	t(64)	R2	F	Outlier/ number	St. Err. Of Estimate
Turnover	0,70	0,02	28,18	0,93	794,20	2	1,63
Current assets	0,92	0,04	21,15	0,87	447,20	3	2,12
Financial assets	0,82	0,03	27,97	0,92	782,09	2	1,65
Loans from credit institutions	0,96	0,04	22,73	0,89	516,68	6	1,99
Long term liabilities	0,84	0,02	34,90	0,95	1217,80	5	1,34
Short term liabilities	0,82	0,03	30,52	0,94	931,21	2	1,52
Liabilities, total	0,74	0,02	34,20	0,95	1169,80	3	1,36
Turnover+liabilities	0,66	0,02	30,22	0,93	913,04	3	1,53
Turnover+financial assets	0,67	0,02	28,06	0,92	787,09	2	1,64

Total Foreign Assets as Dependent Variable

Independent variable	B	St. Err. of B	t(55)	R2	F	Outlier/ number	St. Err.of Estimate
Turnover	0,59	0,02	25,93	0,92	672,45	3	1,41
Current assets	0,79	0,04	22,14	0,90	490,23	3	1,63
Financial assets	0,69	0,03	27,38	0,93	749,76	2	1,34
Loans from credit institutions	0,76	0,07	11,14	0,69	124,04	2	2,85
Long term liabilities	0,71	0,03	23,07	0,91	532,02	3	1,57
Short term liabilities	0,69	0,03	26,25	0,93	689,02	3	1,40
Liabilities, total	0,63	0,02	26,99	0,93	728,69	3	1,36
Turnover+ liabilities	0,56	0,02	26,34	0,93	694,05	3	1,39
Turnover+financial assets	0,69	0,03	26,25	0,92	689,02	3	1,40

All variables in logarithms and models estimated without a constant

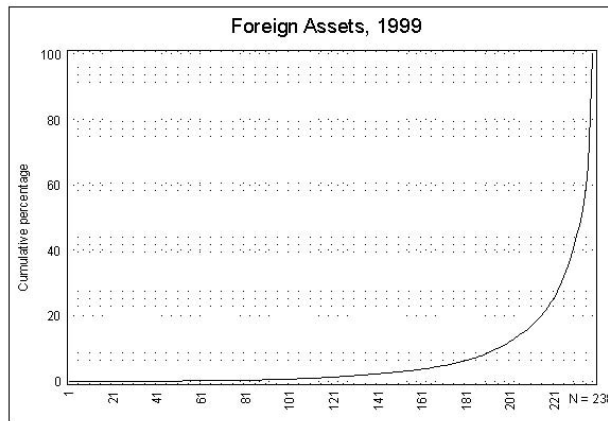**Annex 5**

OVERLAP OF RESPONDENTS IN FOUR SURVEYS

DIA 400

ALH 115

20

9

ALA 250

DIF 800
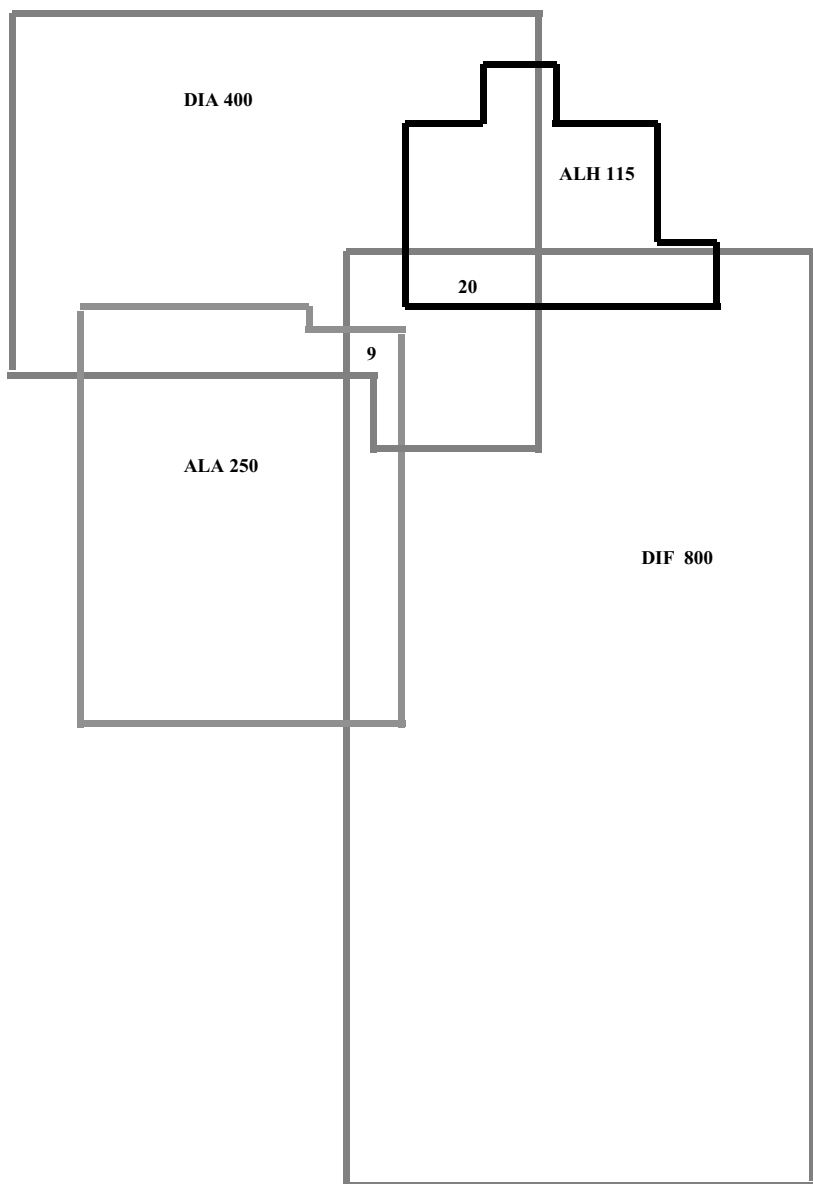
DIA = direct investments abroad
DIF = direct investments in Finland
ALH = assets and liabilities, high frequency
ALA = assets and liabilities, annually

Annex 6A

Foreign Assets, 1999 (ln)

Foreign Assets, 1999

Annex 6B

Foreign Liabilities, 1999 (ln)

Foreign Liabilities, 1999

Annex 6C

Direct Investment Abroad, 1999 (ln)

N = 543

Direct Investment Abroad, 1999

Annex 6D

Direct Investment in Finland, 1999 (ln)

N = 1234

Direct Investment in Finland, 1999
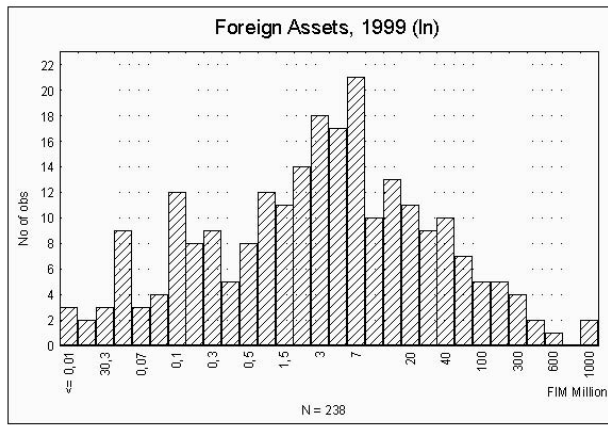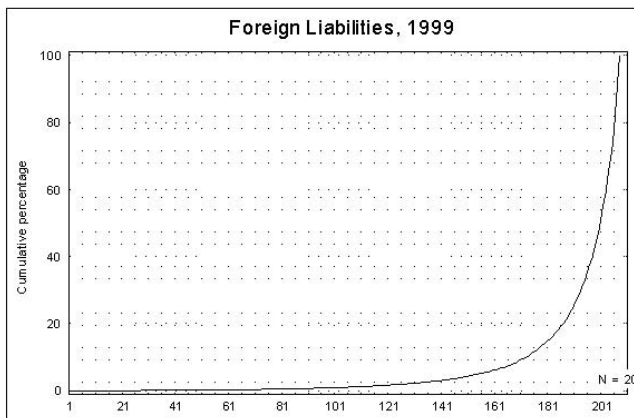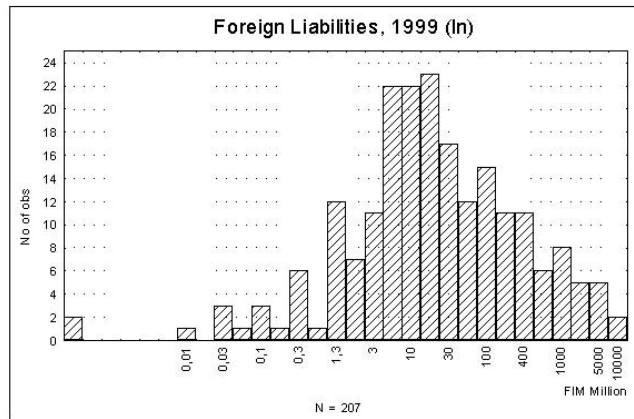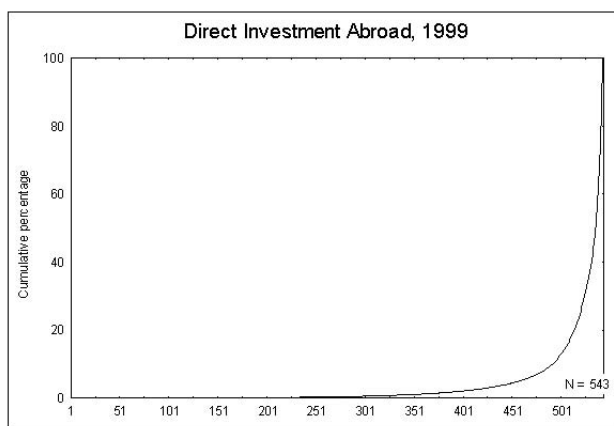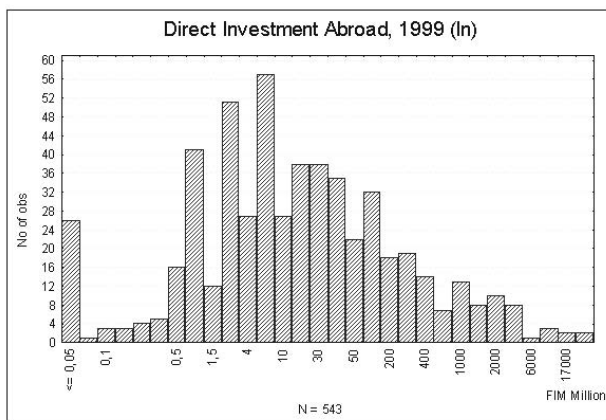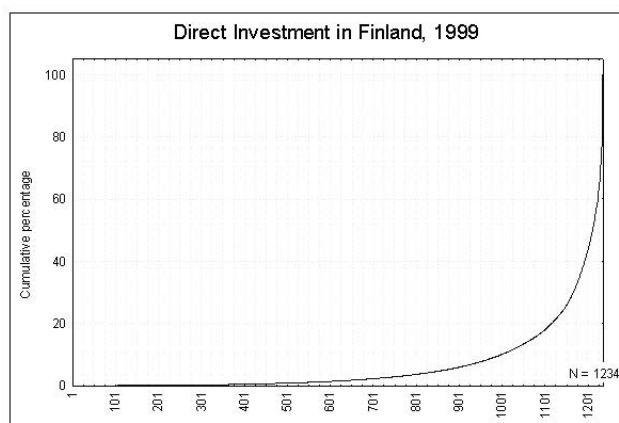
Annex 6E

	Valid N	Median	Sum	Minimum	Maximum	Lower Quartile	Upper Quartile	Std.Dev.	Skewness	Kurtosis
Foreign liabilities (FIM Million)	207	24.50	82716.25	0.00	10990.69	6.47	137.84	1211.45	5.35	35.46
Foreign liabilities (ln)	207	3.20	669.86	-8.18	9.30	1.87	4.93	2.83	-0.69	1.86
Foreign assets (FIM Million)	238	3.51	9732.69	0.01	1783.72	0.49	16.34	166.55	8.40	79.40
Foreign assets (ln)	238	1.26	250.14	-4.90	7.49	-0.72	2.79	2.57	-0.12	-0.46
Direct investment in Finland (FIM Million)	1211	9.00	119294.60	0.01	19582.20	2.36	43.20	641.22	24.49	715.00
Direct investment in Finland (ln)	1211	2.20	2724.05	-4.61	9.88	0.86	3.77	2.28	-0.36	0.85
Direct investment abroad (FIM Million)	543	12.00	237512.35	0.03	34041.84	2.29	83.99	2242.09	10.22	126.01
Direct investment abroad (ln)	543	2.48	1424.86	-3.51	10.44	0.83	4.43	2.73	0.13	0.02

Annex 7

FINANCIAL ACCOUNT, Enterprise Sector Assets and Liabilities
Net Flows in Relation to Current Account Receipts in 1999-2001, %

	1999	2000	2001
ASSETS			
DIRECT INVESTMENT ABROAD			
Equity capital	-9.78	-23.53	-2.42
Other capital	-2.11	-11.13	-6.52
Claims on affiliated enterprises	**-7.50**	**-18.18**	**-5.01**
Liabilities to affiliated enterprises	5.39	7.05	-1.51
PORTFOLIO INVESTMENT			
Shares	-0.05	-0.49	0.03
Debt securities	0.03	-0.07	-0.12
OTHER INVESTMENT			
Trade credits	0.01	-1.21	-0.40
Loans	-0.72	-0.03	-1.72
Currency, deposits and other assets	-0.24	0.20	-0.39
LIABILITIES			
DIRECT INVESTMENT IN FINLAND			
Equity capital	4.38	0.77	1.85
Other capital	3.35	4.13	-0.91
Claims on direct investors	-0.72	-0.01	-0.19
Liabilities to direct investors	4.07	4.14	-0.73
PORTFOLIO INVESTMENT			
Shares	18.65	19.26	6.87
Debt securities	0.22	4.50	3.31
OTHER INVESTMENT			
Trade credits	0.62	1.03	0.47
Loans	**3.06**	**9.81**	**-1.35**
Other	-0.02	-0.02	0.04

Increase in assets -, decrease +.
Increase in liabilities +, decrease -.

FINANCIAL ACCOUNT, Enterprise Sector Assets and Liabilities
End-period Stock in Relation to GDP in 1999-2001, %

	1999	2000	2001
ASSETS			
DIRECT INVESTMENT ABROAD			
Equity capital	17.60	25.71	26.32
Other capital	7.48	12.76	15.37
Claims on affiliated enterprises	**12.52**	**20.97**	**22.63**
Liabilities to affiliated enterprises	5.04	8.21	7.26
PORTFOLIO INVESTMENT			
Shares	0.11	0.37	0.31
Debt securities	0.11	0.14	0.19
OTHER INVESTMENT			
Trade credits	2.42	2.63	2.56
Loans	0.63	0.63	1.43
Currency, deposits and other assets	0.40	0.26	0.43
LIABILITIES			
DIRECT INVESTMENT IN FINLAND			
Equity capital	8.61	8.96	9.75
Other capital	2.88	4.70	3.79
Claims on direct investors	1.49	1.39	1.44
Liabilities to direct investors	4.37	6.09	5.24
PORTFOLIO INVESTMENT			
Shares	177.71	164.79	105.71
Debt securities	1.88	0.00	5.71
OTHER INVESTMENT			
Trade credits	1.99	2.38	2.54
Loans	**10.27**	**14.65**	**13.56**
Other	0.11	0.09	0.09

Annex 8

**Chart 1 – Direct Investment Abroad, Assets, Other Capital,
Claims on Affiliated Enterprises**

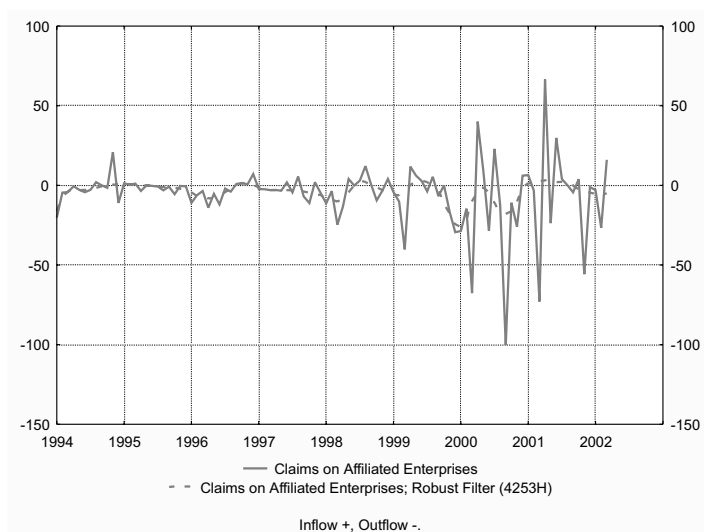Net Flows in Relation to Current Account Receipts and Robust Filter (4253H) in 1994-2001, %

Claims on Affiliated Enterprises
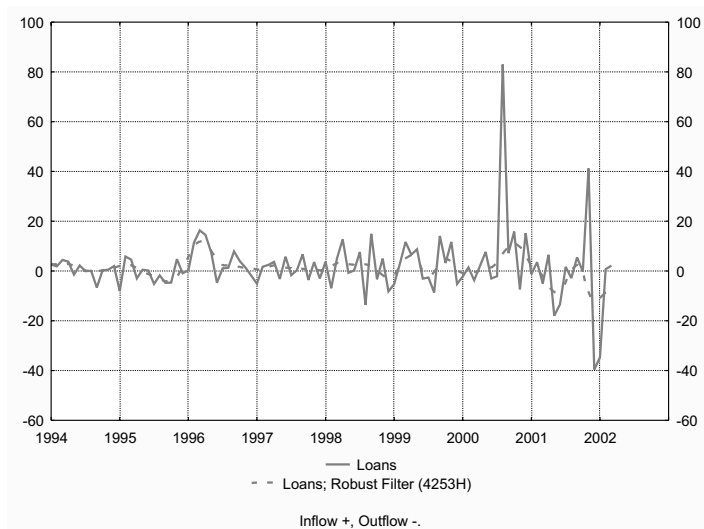- - Claims on Affiliated Enterprises; Robust Filter (4253H)

Inflow +, Outflow -.

Chart 2 – Other Investment, Liabilities, Loans

Net Flows in Relation to Current Account Receipts and Robust Filter (4253H) in 1994-2001, %

Loans
- - Loans; Robust Filter (4253H)

Inflow +, Outflow -.

Annex 9

**Chart3 – Direct Investment Abroad, Assets, Other Capital,
Claims on Affiliated Enterprises, Stocks**

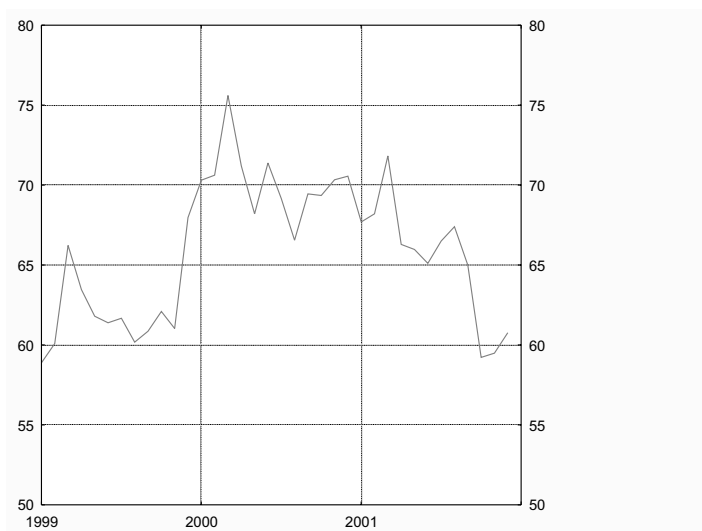Five Largest Enterprises in Relation to All Enterprises in 1999-2001, monthly, %

Chart 4 – Other Investment, Liabilities, Loans, Stocks

Five Largest Enterprises in Relation to All Enterprises in 1999-2001, monthly, %
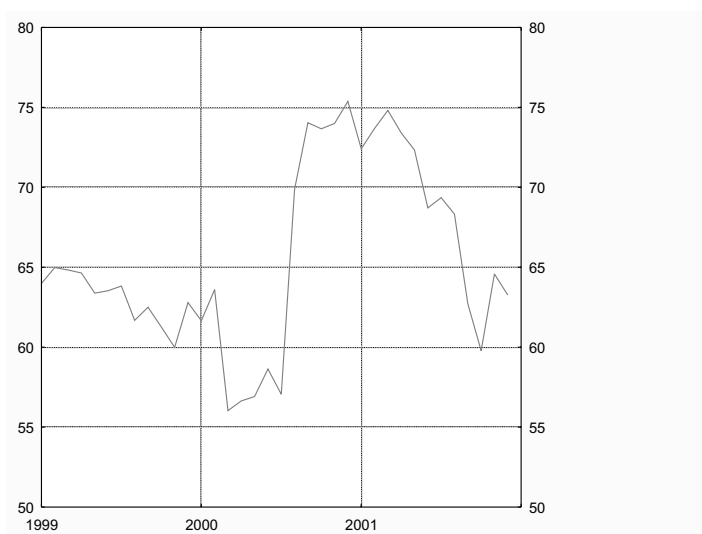
Annex 10

Chart 5 – Direct Investment Abroad, Assets, Other Capital, Claims on Affiliated Enterprises, Stocks

Box-and-Whiskers Plot for Two Groups of Enterprises, 1999-2001, EUR Million

Chart 6 – Other Investment, Liabilities, Loans, Stocks

Box-and-Whiskers Plot for Two Groups of Enterprises, 1999-2001, EUR Million

Annex 11

Chart 7 – Direct Investment Abroad, Assets, Other Capital, Claims on Affiliated Enterprises

Net Flows in Relation to Current Account Receipts in 1999-2001, %

Increase positive, Decrease negative.
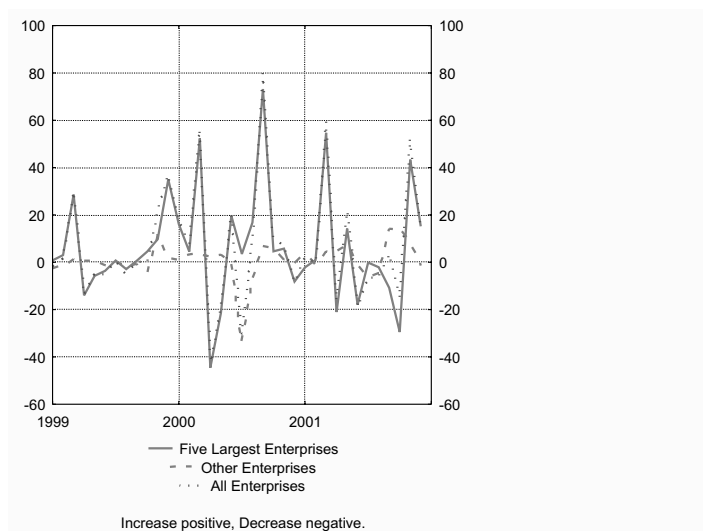
Chart 8 – Other Investment, Liabilities, Loans

Net Flows in Relation to Current Account Receipts in 1999-2001, %

Increase positive, Decrease negative.
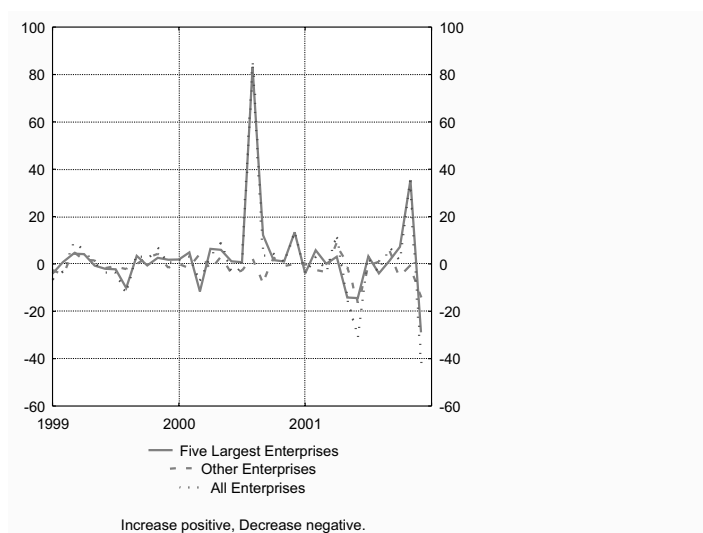
Annex 12

Chart 9 – Direct Investment Abroad, Assets, Other Capital, Claims on Affiliated Enterprises, Flows

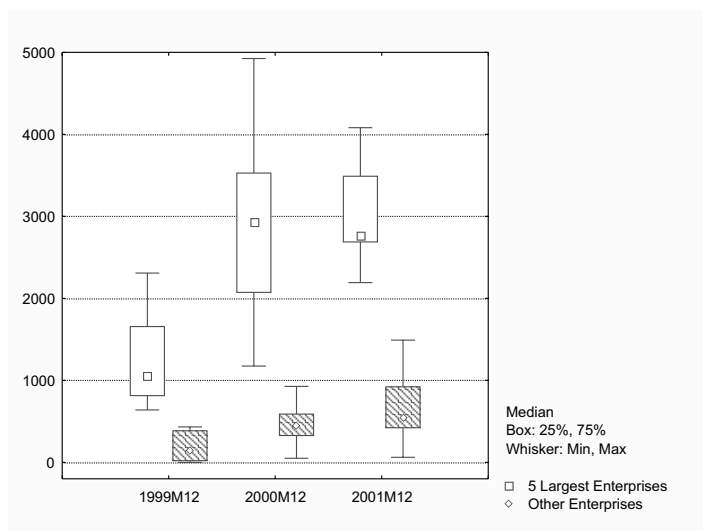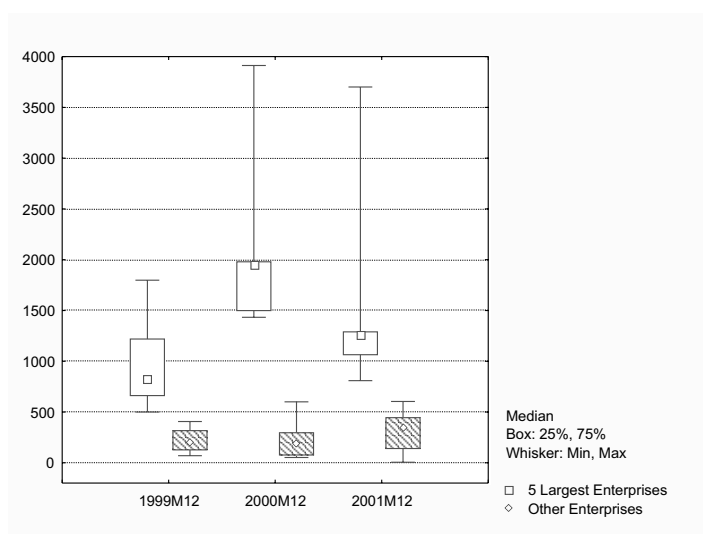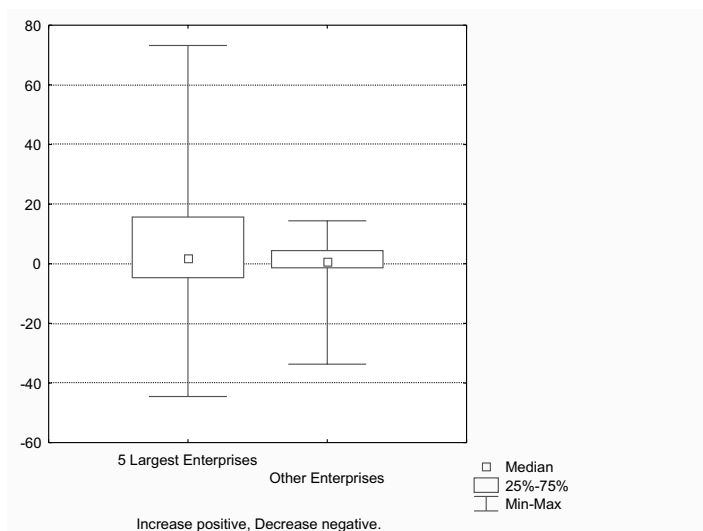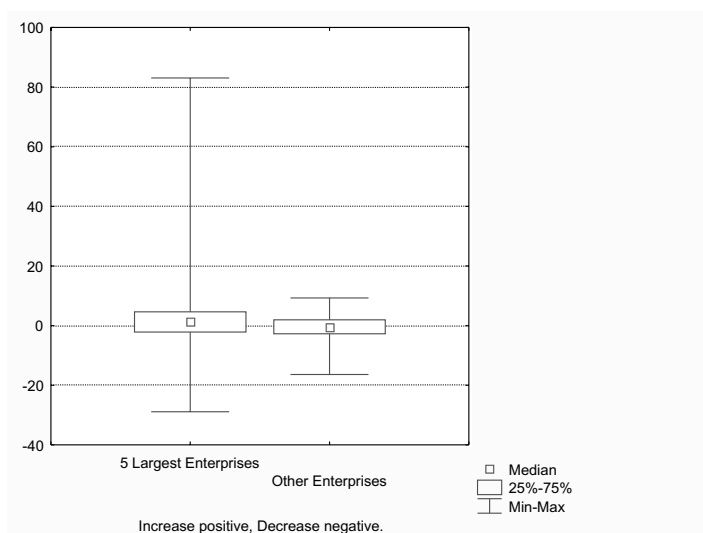Box-and-Whiskers Plot for Two Groups of Enterprises in 1999-2001, EUR Million

Chart 10 – Other Investment, Liabilities, Loans, Flows

Box-and-Whiskers Plot for Two Groups of Enterprises in 1999-2001, EUR Million

Harmonised balance of payments reporting rules for multinationals

Peter Hofman and Marius van Nieuwkerk (De Nederlandsche Bank)

1. Introduction

Europe is marked by a diversity of national Balance of Payments/International Investment Position (BoP/IIP) formats. For (European) enterprises with affiliates in other European countries, this situation is an irritant as reporting requires a specific data processing for each EU Member State or other European country where affiliates are domiciled. Harmonisation of European BoP/IIP reporting rules for multinational companies is expected to increase the efficiency of the reporting process and will foster the level playing field for the companies concerned. The quality of data to be reported by the multinational enterprises would benefit as well from common reporting rules because of both transparency/consistency of reporting guidelines and time coming free to pay more attention to the source data to be delivered.

The idea of *one common reporting format* for multinational companies was object of a request in mid-2000 by the European Round Table of Industrialists (ERT) to the President of the European Central Bank to consider implementation of a harmonised BoP/IIP reporting model in the EU. The ECB and the European Commission (Eurostat) created, as a result of this request, the European Steering Group on Multinationals (SGM)[1]. The SGM has been commissioned to assess the costs and benefits of the idea of harmonised reporting rules for multinational companies. To this end, the SGM started to run a feasibility study and testing (test completion of report forms) with multinational companies.

The feasibility study (Feasibility Questionnaire) and test completion exercise of report forms started off with a first group of European enterprises domiciled in Denmark (Carlsberg), Sweden (Ericsson), Finland (Nokia), France (Renault), Germany (ThyssenKrupp) and the Netherlands (Philips). Individual meetings with these companies in order to start up the activities mentioned took place between November 2001 and January 2002. In chapter 4 of this document, the analysis of replies to the Feasibility Questionnaire will be discussed.

Preliminary conclusions resulting from information received from multinationals op to now can be summarised as follows:
- The picture sketched on the feasibility of the uniform BoP/IIP reporting model can only be provisional as only part of the enterprises to be contacted have provided information. Further, the test completion of draft report forms with real data has net yet been delivered apart from one enterprise.
- Despite a number of critical notes of the enterprises contacted up to now, the overall picture of experiences so far is that the proposed uniform reporting model appears to be feasible.

2. Main elements of the uniform BoP/IIP reporting model

Both the Feasibility Questionnaire and the Uniform Reporting Model have been elaborated by the Technical Group Direct Reporting of Eurostat. The concept of the uniform BoP/IIP reporting model can be explained as follows.

General characteristics

- All source information needed has to be reported *directly* to the BoP compiler of the country where the reporting enterprise is domiciled. So *no* intermediary reporting role for domestic banks is foreseen.

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1 *The Steering Group has the following members: Marius van Nieuwkerk (Chairman), Jean-Marc Israël/ Luca Buldorini (ECB), Jean-Claude Roman/Elena Caprioli (Eurostat), Stuart Brown (Office for National Statistics UK), Francois Renard (Banque de France), Almut Steger (Deutsche Bundesbank) and Peter Hofman (Secretary).*

- The proposed system focuses on a *close link-up with the reporting enterprise's accounting system*. This link-up would guarantee in principle both a business-friendly way of providing the required source information including needed detail and a good approximation of the moment of change of ownership between a resident and a non-resident party in the transaction (transaction-based reporting instead of reporting information on the basis of the moment of settlement via e.g. the company's treasury). Transaction-based information or the principle of accrual accounting is required by the international statistical standards for BoP compilation (IMF BoP Manual).

- The proposed *reporting frequency* for multinationals is monthly (in principle many large enterprises balance the books every month within a number of days after the end of the month; it regards relevant input to the Monthly Key Items reporting obligation of EMU members to the ECB). As some of the information required is only available on an annual basis (especially regarding foreign direct investment), there is also a small set of annual report forms.

- Required detail of information: Where applicable, full geographical breakdown (it seems to be most practical for large enterprises); detail of products of services and of financial instruments in conformity with requirements of international institutions.

- Reporting of *information on international trade in goods is excluded from the uniform model* as there are already existing (harmonised) channels of information (EU: Intrastat/Extrastat).

- The uniform model comprises *two sub-systems*, namely a sub-system for reporting on international trade in services and a sub-system for reporting on foreign financial assets and liabilities. On both sub-systems, some more detail will be provided in the next two paragraphs.

Sub-system on international trade in services

Information is required both on services supplied to non-residents and on services purchased from non-residents. It includes the services classification at the EBOPS level of detail as published in the UN/EC/OECD/IMF/WTO/UNCTAD Trade in Services Manual. Debits and credits have to be reported separately. This sub-system includes also the reporting on transfers (if applicable). See annex 2 for schematic picture of the structure of the reporting model for the services/transfers part.

Sub-system on foreign financial assets and liabilities

- The reporting by type of foreign financial asset or liability, such as e.g. short-term loans, is based on a *fully reconciled model* of both positions (input for IIP statement) and flows (input for BoP statement). The concept of the reconciled model enables both the reporting enterprise (before sending the BoP report to the compiler) and the BoP compiler (after receipt of the BoP report from the respondent) to check the plausibility of the information. This is an important tool of quality control.

- The *structure of the reconciled model* comprises the position of foreign financial asset or liability at both beginning and at end of the reporting month, the transactions (increase/decrease in asset or liability), exchange rate changes, market price changes and other changes in the position. The model thus implies that changes in the position are fully explained by cause. In annex 3 the general structure of the fully reconciled model is presented.

- The *investment income* (interest or dividend) related to the foreign financial asset or liability concerned is part of the reconciled model as well. For interest, a separate reconciled model of reporting, related to the asset or liability involved is required (see annex 3).

3. Other technical aspects of relevance

The following practical aspects, of relevance for both the assessment exercise and possible future implementation of the system, can be mentioned.

IT aspects

Inclusion of a BoP/IIP reporting functionality in ERP (Enterprise Resource Planning) software and in other commercial accounting software used by enterprises could diminish the efforts needed to be done by the reporting enterprise on behalf of automation of the BoP/IIP reporting process. Multinational enterprises use in principle accounting software packages of the specialised important software houses. In the context of the assessment exercise, it seems highly relevant to learn about preferences of multinational companies regarding IT support as well as about the potentialities at software houses to adapt accounting software in future on behalf of BoP/IIP report-

ing. A first meeting held between large software houses (responsible for nearly 75% of the European market) and the SGM resulted in the finding that IT solutions are in principle technically possible (but "keep matters simple on behalf press-the-button solutions") and that one important prerequisite of considering software adaptations is fully standardised reporting rules and codes in Europe. There are of course other prerequisites to be fulfilled as well before software adaptation would be carried out.

International Accounting Standards

International Accounting Standards (IAS) will become an EU legal requirement (IAS Regulation) from 2005 for consolidated accounts of EU-quoted companies. The IAS Regulation will directly concern around 7,000 listed EU companies[2]. Member states will have the option to extend this requirement to unlisted companies and to the production of individual accounts; as a result, the degree of application of the IAS may differ from country to country. The IAS imply in principle both standardisation and modernisation compared to current national accounting rules.

This will contribute to harmonise financial reports thus enhancing comparability across the European Union. Harmonisation of accounting rules will go to the benefit also of statisticians who are collecting data from enterprises in EU countries. Where there are still relevant open spots between IAS and international statistical standards (and that may be still the case), action – co-ordinated by the European statistical fora (CMFB/Eurostat and STC/ECB) – is planned for the short-term. Standardised BoP/IIP reporting rules can benefit from these efforts.

European Company Statute

A Regulation will come into force in this field in 2004. The status, when adopted, of "European Company" ("Societas Europaea" or SE) will give companies operating in more than one Member State the option of being established as a single company under Community law and so able to operate with one set of rules. It is not yet clear whether statistical reporting would fall under the regime of the Regulation. If so, it would be a further driving force for standardisation of BoP/IIP reporting rules for multinational companies.

4. Analysis of results of the Feasibility Questionnaire exercise

The analysis of verbal replies to the Feasibility Questionnaire in this document has been based on the contribution of the six companies of the first wave (see chapter 1) and one company (Procter & Gamble) being part of the third wave (non-EU companies involved). The results to be discussed are still provisional as the test completion of draft report forms by companies have not yet been delivered apart from one enterprise. The test completion exercise is expected to provide more hard evidence on the feasibility of the proposed model. Further, the number of seven companies is still less than half the total number of multinational companies of nearly twenty to be involved in the test project.

The Feasibility Questionnaire comprises five parts, each of them focusing on a specific BoP item. Below, analysis of results will be presented by part of the Feasibility Questionnaire. In order to keep matters concise and thus clear in this document, only major points are mentioned. The following can be reported.

Part A: General Issues

- The *frequency of monthly reporting* is no problem for six out of seven companies. One enterprise mentions that a major part of the information (mother company) is only available on a quarterly basis.
- The provision of *information to be reported within 15 working days* after the end of the calendar month is acceptable to all seven companies. One company mentions that there is no official closing of the books in January and July, which may cause a problem for group companies (i.e. daughter companies).
- All seven companies are able to provide *full geographical breakdown of information* to be reported. One enterprise mentions that there is a problem for gross transactions. Another enterprise noted that geographic information is only available in decentralised databases.

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2 *Source: Eurostat*

- All seven companies use/start to use SAP accounting software (generally, SAP R3 platform). Some companies also use other accounting software (thus non-SAP) for among others treasury and consolidation purposes.
- As it could be expected, six out of seven companies say that *initial IT investment is needed* to provide the information according to requirements of the proposed harmonised model. One enterprise critically comments the required detail (components, geography, reconciliation foreign financial assets/liabilities) compared to what it has to report nowadays.
- As a *major pro* of the proposed uniform reporting model, not surprisingly, the efficiency gain with regard to the (monthly) reporting process is raised by responding enterprises. As a *con*, also not a surprise, the initial investment needed in order to be able to report in the new way is repeated (also mentioned elsewhere in the questionnaire).
- Six out of seven enterprises say that BoP/IIP reports will *not be generated at a central location* on behalf of affiliates domiciled in different European countries.
- Assessment: The overall impression of replies with regard to the General Issues part is that the attitude of enterprises is generally speaking positive, but there are some critical notes raised by one or a few companies such as regarding required detail of information and specific technical matters. It is obvious that for the majority of enterprises initial IT investment is required.

Part B: Services

- Five out of seven enterprises indicate problems in producing the *degree of detail for products of services* required. Four companies see difficulty to provide the detail required directly from the report already available, but indicate that the problem could partly be solved in future through IT investment. One enterprise asks explicitly for an ERP(IT)-embedded solution to do the job efficiently in future (such an approach may be beneficial for other ERP software users as well).
- All seven enterprises mention that distinction between *cross-border intra-group and ditto extra-group trade* in services is possible. But a majority of enterprises say that intra-group trade can only be reported for affiliates in which the mother company has a majority stake or control otherwise.
- Assessment: The required degree of detail for international trade in services is indicated as possibly being difficult to produce by the majority of enterprises consulted op to now. Additional IT efforts (or also manual work) are needed. Maybe an ERP-embedded solution, as proposed by some enterprises, is a good practical solution in future.

Part C: Portfolio assets and liabilities

- Identification of *investment in securities issued by non-residents* is in principle possible, but of limited or of no relevance for most of the companies.
- The majority of the companies say explicitly that they can provide information on *securities held at foreign custodians*; a minority mentions explicitly that this item is not or hardly relevant.
- Four enterprises say they can identify *investment in securities issued by affiliates*; the others mention explicitly that this aspect is not relevant.
- Five enterprises mention that in principle *reporting security-by-security* on portfolio investment is possible (one enterprise mentions however not with ISIN) and the others say the matter is irrelevant anyway.
- All enterprises say that they have no *information on (foreign) holders of securities issued by the reporting company* (some of them reply this matter is irrelevant anyway).
- All enterprises mention that they can make the *distinction between portfolio investment and foreign direct investment* if that is applicable.
- Assessment: Portfolio investment is reported as being of little or of no relevance to non-financial enterprises. If there is any portfolio investment, it appears that most of the information required could be provided.

Part D: Foreign direct investment (equity participation)

- Four enterprises say they can *identify equity investment by non-resident shareholders* in their company if applicable. Three other enterprises mention explicitly that the matter is of no relevance. Two enterprises indicate explicitly that inclusion of information on indirect shareholders is not possible.
- All seven enterprises reply, as could be expected, that they can *identify equity investment by the reporting enterprise in non-resident companies* (with a distinction between a participation in the share capital of less than 10% and 10% or more). Three enterprises say explicitly that data on in-

direct ownership can not be provided and two enterprises, on the contrary, provide a positive answer in this regard.

- Four enterprises indicate that they are able to provide information – although manual work would have to be done – on *financial transactions (equity, debt and income) with foreign shareholders of the reporting enterprise* if that is applicable. Three other companies say in fact that such transactions are not relevant.

- All seven enterprises say, not surprisingly, that they are able to provide information on *financial transactions with foreign affiliates* (foreign enterprises in which the reporting enterprise owns shares). Only two enterprises repeat that they are able to report financial transactions with enterprises in which shares are owned indirectly. There are differing company rules which affiliates to consolidate and which not and they may require additional effort from the respondent concerned in order to be able to provide foreign direct investment information in conformity with international statistical standards.

- On *valuation of foreign direct investment*, the picture is mixed. Two enterprises mention they dispose of information for the three principles mentioned in the questionnaire, namely market value, net asset value and historical value. Two other companies dispose of information regarding market value and historical value and another company can provide information based on net asset value and on historical value. One company disposes only of information based on net asset value. Finally, another company says that information in the context of US GAAP is available regarding consolidated information. *Summarising*, it can be said that all enterprises are able to provide market valuation, required by international statistical standards or a close, acceptable, approach to the ideal, namely net asset value.

- One can say that *the majority of enterprises use market value as the book value*, unless information is not available. In the latter case, the historical value or the net asset value may be used as an alternative.

- Six enterprises confirm that a *full reconciliation of equity investment* – on an annual basis – of positions and flows is feasible. One enterprise did not provide a reply on this topic.

- Four enterprises indicated that information on *variables related to Outward FATS*[3] such as staff and turnover is in principle possible, although not completely in some cases as was proposed in the model. Two other enterprises gave a negative reply and for one company the reply was unclear.

- Assessment: All enterprises are able to provide the needed information for this BoP item, which is at least highly relevant for the category of non-financial multinational enterprises. Both the reconciliation of positions and flows of equity investment and the (approximation) of market valuation appear to be feasible for the seven companies concerned. That is a positive finding. It is, not surprisingly, the cross-border equity investment assets that count in the majority of cases, not the liabilities side (the latter is of little or of no relevance).

Part E: Other assets and liabilities

- All seven enterprises say that they know the *country of residence of its foreign debtors and foreign creditors* (apart from a few specific aspects in some cases).

- Six enterprises confirm that they can deliver the *reconciliation of positions and flows on a monthly basis*. For one of the six enterprises it is not clear whether sufficient breakdown by financial instrument as proposed in the uniform model is possible. A seventh enterprise could not confirm, which needs further investigation.

- All seven enterprises confirm that the *"accrual" principle regarding interest income* with the distinction interest accrued (position/transactions) and interest paid/received can be delivered on a monthly basis by financial instrument.

- For the *breakdown of assets and liabilities by four categories of foreign counterpart* as proposed in the uniform model[4], the picture is mixed. Five enterprises can deliver the required detail here in principle although not completely in a specific case (and sometimes manual work is required). For two other enterprises, the required breakdown can be provided only partially. As such a breakdown is important for a correct BoP compilation, some further investigation seems needed regarding companies concerned.

- Information on *loans or borrowing relating to repos* can be provided, but such transactions are not always relevant for enterprises concerned.

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3 *FATS stands for Foreign Affiliates Trade Statistics*
4 *Vis-à-vis respectively (i) non-resident daughter companies (liabilities) or foreign shareholders (assets), (ii) other non-resident group companies, (iii) third parties: non-resident banks and (iv) third parties: non-resident non-banks. This breakdown is used on behalf of both a correct application of the directional principle on the one hand and a complete sector breakdown required by international instiutions on the other hand.*

- All seven enterprises confirm that a *distinction between short-term and long-term for all assets and liabilities* can be made. One enterprise gave partially an unclear answer.
- Four enterprises mention that they can make a *separation of capital and interest for financial leases* and one enterprise mentioned that financial leases were not relevant. Two enterprises replied that the afore-mentioned distinction is not possible.
- Six enterprises (reply of one enterprise is missing) confirm that *non-tradable bonds and notes* can be included under short-term and long-term loans as proposed in the uniform model.
- Five enterprises say that it is possible – as proposed in the uniform model – to *report current accounts at one place* (under the asset table), independent whether it regards receivables or payables. One enterprise mentions that compensation is not allowed according to US GAAP. One reply was missing.
- Assessment: Generally speaking, the seven enterprises are able to provide the information as required in the draft uniform model for multinationals. There is among others a confirmation on the monthly delivery of the reconciliation of positions and flows, including for interest income, which is a core element of the proposed new system. There are here and there some deficiencies, but the overall picture of replies is a positive one.

5. Overall assessment of the feasibility study so far

Summarising, the following can be mentioned:
- As said before, this document can only provide a *provisional picture* of the feasibility study. More enterprises (second and third wave of assessment of feasibility of the uniform model started recently) have to deliver their contribution to the study to be followed by a test completion of the draft report forms. The latter exercise is to be considered as a confirmation (or not) of what has been stated during the Feasibility Questionnaire phase.
- Not all information required by the proposed uniform reporting model is directly available, *Initial IT investment will be needed*.
- All seven enterprises, whose replies for the Feasibility Questionnaire are used for this document (an interim picture for the project), *use SAP accounting software* as either sole platform or as an important tool for company administration.
- The *relevance/importance of ERP-embedded solutions*, facilitating BoP/IIP reporting processes in a structural way, is acknowledged.
- As a *major pro* of the idea of standardisation of BoP/IIP reporting rules, enterprises mention efficiency gains; a *major con*, neither surprising, is the required initial IT investment.
- With regard to *services*, difficulties are reported for producing the degree of detail for services required (EBOPS classification). The problem could be solved in the future through IT solutions.
- Portfolio investment is for non-financial enterprises of little or no relevance (on the basis of seven replies up to now). For the second wave, inclusion of an important insurance company is foreseen, which is of relevance to test requirements of the uniform model on portfolio investment among others.
- Major aspects of the proposed concept for *foreign direct investment*, such as reconciliation of positions and flows and requirements on valuation, appears to be feasible. That is a positive finding for an important BoP component.
- For the category of *other foreign financial assets and liabilities*, the overall finding resulting from the feasibility study up to now is in principle very positive.
- The *overall picture of the experiences* so far is that the concept of the uniform BoP/IIP reporting model seems acceptable despite a number of critical aspects raised by enterprises concerned.

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Annex 1

Companies involved in project uniform BoP/IIP reporting model for multinationals[5]

EU:

First wave:

1 Carlsberg, Denmark (November 21, 2001).
2 Ericsson, Sweden (November 22, 2001)
3 Nokia, Finland (November 23, 2001)
4 Renault, France (November 29, 2001)
5 ThyssenKrupp, Germany (December 17, 2001)
6 Philips, Netherlands (January 24, 2001)

Second wave:

7   Delta Holding, Greece (May 21, 2002)
8   Solvay, Belgium (July 5, 2002)
9   Repsol, Spain
10 Amorim, Portugal
11 OMV, Austria
12 Generali, Italy
13 Jefferson Smurfit, Ireland
14 Vodafone, United Kingdom (to be held October 3, 2002)

Non-EU:

Third wave:

15 Norsk Hydro, Norway
16 Nestlé, Switzerland (to be held September 23, 2002)
17 Profilo Holding, Turkey
18 Procter & Gamble, European headquarters, Belgium/United Kingdom (July 4, 2002)
19 ExxonMobil, European headquarters, Netherlands (June 17, 2002)

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5   *Date of start-up meeting in brackets.*

Annex 2

Structure of the reporting model for international trade in services and for transfers

Reporting model for international trade in services   **Amount in Thousands of euros**

Input code	Country code of the non-resident counterpart	Intra-Group Transactions		Extra-Group Transactions	
		Services supplied to non-residents	Services purchased from non-residents	Services supplied to non-residents	Services purchased from non-residents

Changeover from indirect to direct reporting of data to the balance of payments in Denmark and implications for financial statistics

Jens Hald (National Bank of Denmark)

Introduction

There are two sets of systems in the world for collecting data for the balance of payments (bop): Indirect/settlement systems which to a large extent are based on residents' reporting of all cross border payments via domestic banks (dominating in continental European countries), and systems which are based on direct reporting/surveys of transactions from a limited number of enterprises (dominating in Anglo-Saxon countries) and supplementary sources. Several attempts were made in the 1990s to find the "best" system in the EU, but with limited success. Instead, it was decided to focus on output requirements and best practices (CMFB's vision-paper, 1999). However, ten to fifteen years after abolition of exchange controls and increasing volumes of cross border payments and, most importantly, ever increasing complexity and changes in payments systems in banks and multinational enterprises have undermined settlements systems. Among EU countries Finland was the first country to change from settlements to direct reporting. Next year the Netherlands and Sweden are going to change and a number of other continental European countries have also decided to change – among them Denmark.

Why and how is one of the subjects of this paper. Another subject is the link between existing Danish financial statistics for government and MFIs and statistics for bop/iip (iip=international investment position). In the last part of the paper it is discussed whether the changeover in the bop collection system - in coordination with development of quarterly financial accounts - has created a need for/a good opportunity to develop new financial statistics for securities, the rest of the financial sector and insurance companies and pension funds.

The paper concludes that the creation of a securities database, security by security, and an expansion of the financial statistics to other financial institutions than MFIs as well as to insurance companies and pension funds is an appropriate way forward. This would significantly improve the quality of the Danish bop/iip as well as financial accounts statistics, while at the same time reduce the reporting burden, particular on the business sector.

Why change the bop collection system

The present Danish bop system is a settlement system. It was modernised from 1992 – 1998.

Although we believe that the Danish system, among settlement systems, is sophisticated and cost effective, settlement systems have generally come under pressure. Danmarks Nationalbank and Statistics Denmark have during the first half of 2002 investigated alternative bop collection systems and concluded (in June) to recommend that the system should be changed to a system based on direct reporting from a limited number of large enterprises and existing supplementary sources.

The pressure consists of many elements of which the most important ones are:
- Changes in payments patterns/systems. The main pillar of the Danish settlement system is reporting of payments between residents and non residents via banks in Denmark. Since the reporting system is integrated with other systems of the banks, it is vulnerable to any changes in these systems. Such changes have occurred several times and will undoubtedly continue to occur. Indeed, the high degree of automation of the present system is also one of its potential weak-

nesses. Relatively simple errors in the data-processing systems of the banks or the Nationalbank can have far-reaching consequences.

- Errors in the banks/enterprises' use of the code list for purpose of the payment; for example construction services are sometimes recorded as direct investment, repayment of loans can include interest payments, payments for goods can include services, etc.
- Payments are not always a good proxy for transactions; for example netting of assets against liabilities in multinationals groups of companies or off setting of transactions (for example exchange of shares related to mergers) suppress payments; other problems relate to differences in timing between payments and transactions (especially for goods) and differences between the country of the counterpart for payments and transactions (which lead to wrong geographical allocation).
- The explosion in the volume of cross border payments, since the exchange controls were dismantled in the late 1980s. From 1990 to 2000 the cross border financial flows for Denmark have increased six fold, while the Danish GDP grew 60 per cent..
- The need/pressure for reducing the reporting burden on banks and enterprises. This has led, inter alia, to introduction of an exemption threshold for reporting of small cross border payments (12,500 euro) in the EU. The threshold is expected to be increased to 50,000 euro in a few years. This will undermine statistics based on payments, especially for items like services and income.
- Transactions in cross border trade in goods are combined with *payments* for services. Statistics Denmark (and the Bank) have invested many resources in comparing/reconciling statistics for goods based on transactions respectively payments. However, even though this comparisons have been easier in Denmark than in other countries, because the payments statistics contain information on the month in which the merchandise transaction takes place, the results have not been satisfactory.

To sum up, although the quality of the bop data may at present be considered satisfactory, it is likely to deteriorate in the future. Errors and omissions are likely to become even larger and more volatile than today. The reporting burden for banks and enterprises is heavy already, and the need for supplementary information is expected to increase in future. (Especially in form of direct reporting of netting, off setting, payments via banks abroad, and supplementary information on accruals basis and on payments below the threshold.)

On this background the Bank and Statistics Denmark agreed on the need to change from indirect/settlements to direct reporting/surveys.

The decision was also influenced by the trend in other countries. For example, the other Nordic countries have implemented or decided to implement a survey system. Major Danish banks and many enterprises have subsidiaries or parents in the other Nordic countries. It would, therefore, create problems for Danish banks and enterprises, if they were to report according to one system in Denmark and another system in other countries - especially the Nordic countries. Having the same type of system as in most other countries would also create a level playing field.

For collection of financial data and income data, we have concluded that the model for multinationals is the best available model. This model was developed by De Nederlandsche Bank at request from a Dutch based multinational company (Philips).The model is described below and is equal, in principle, to the Finnish model.

If most/all countries in the EU adapt this agreed model (for multinationals), I believe that it would generate many advantages in terms of improvement of quality of the EU bop statements, and a reduction of the reporting burden in the EU.

The proposed future bop collection system in Denmark

Our investigation led us to conclude that it is possible to get a better collection system than the present one at a lower overall cost. The new system would be based on a building block approach, see box, where existing and planned statistics are going to be used to a high degree. For sectors/instruments not covered by existing or planned statistics, data collection will be based on direct reporting from a sample[1] of respondents.

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1 *Collection of data for services is proposed to follow a more traditional sample survey system. For many sub items it is sufficient in Denmark to ask only a few respondents each quarter to get a coverage of at least 70 per cent., and to broaden the coverage on a yearly basis. In addition to the reduction of the reporting burden compared to the present system, it is expected, that quality will improve. Direct reporting from enterprises' ledgers are more reliable than indirect reporting of payments, via banks, cf. above. Furthermore, the new system will, in my opinion, create the possibility to coordinate collection of data for goods and services at the level of enterprises in a coherent way – the lack of which is one of the drawbacks of the existing collection system. Statistic Denmark will take over the responsibility for collection*

The box shows the main sectors and instruments of the bop financial account. The white cells show existing/planned statistics which, in principle, can provide the required bop/iip data, whereas the black cells show where new data collection in Denmark is needed. The reporting population consists mainly of non financial enterprises.

The data, which we intend to ask for in the future system, is financial flows during the month, stocks at the beginning and the end of the month at market value, valuation changes etc. – as in the multinational model. This identity creates a possibility for the reporter to check the data, before they are submitted to the Bank which is expected to reduce the numbers of reporting errors. Another advantage is that the reported data from the enterprises are equal to the output requirements (BPM5, p. 108 ff.)

Box Structure of the future Danish bop collection system for the financial account

Sector	Instrument			
	Portfolio investment	Direct investment	Derivatives	Other investment
General government				
MFIs incl. central bank				
Mutual funds				
Other financial enterprises				
Insurance and pension				
Non financial enterprises				
Private persons				

The future collection system thus integrates the requirements of bop and iip into the reporting forms. Consequently, uncertainty and the problems of calculation of stocks based on flows and subsequently reconciliation between two collection systems – for flows and for stocks – disappear. Or at least are reduced to verification of reporting forms and coverage. Furthermore, we intend (as in the forms for multinationals) to add questions about the income item (interest and dividends) on an accruals basis.

Reporting burden and resources

Under the present system about 25,000 Danish enterprises made cross border payments above the threshold during 2001. In the new direct reporting system approx 200 enterprises are expected to report transactions in services on a quarterly basis and an additional approx 900 on a yearly basis. For services, it is possible to gross up due to the stability of the transactions of smaller enterprises. Monthly data will be estimated. For financial transactions it is impossible to estimate monthly data from quarterly data, because financial transactions are very volatile, and for the same reason it is difficult to gross up from a small sample. Therefore, it is necessary to ask a fairly large number (between 800 – 1,300) of enterprises each month to obtain a high coverage (above 95 per cent for the main instruments[2]).

The aggregated reporting burden for the enterprises is *estimated* to approx 35 man/year against approx 120 man/year under the present system of which two third are related to enterprises. For the statistical authorities Statistics Denmark will need to allocate more resources, because collection of information on services is taken over, while the Bank will need less resources. So, the overall assessment of the future system is that we should get better data, especially for services and for iip (monthly/quarterly frequency in stead of yearly), at smaller costs.

of services (and transfers).

2   *The over-all coverage for the economy is higher, because the coverage for the government and most of the financial sectors are close to 100 per cent.*

The link between existing financial statistics and bop/iip

Financial statistics in Denmark are well developed for government, MFIs and mutual funds. With minor exceptions the existing statistics can be used as building blocks in the statements for bop and iip. These sectors cover about half of the total Danish bop/iip, cf. Table 1.

Table 1 – External financial stocks and flows for Denmark, 2001
DKK billion

Sector	Stocks, end 2001		Flows, 2001
	Assets	Liabilities	Receipt + expenditure
General government	126	305	1,304
MFIs incl. central bank	744	1,004	1,208
Mutual funds	160	10	237
Other financial enterprises	55	73	88
Insurance and pension	242	15	482
Non financial enterprises	715	896	1,847
Private persons	39	2	44
Total	2,081	2,305	5,210

¹ *Banks' own transactions are calculated as the net changes in their external assets and liabilities.*

Implications for Danish financial statistics

Databases for securities and bop portfolio investment

Portfolio investment is the most important instrument in the Danish bop/iip, cf. Table 2.

Table 2 – External financial flows for Denmark, 2001
DKK billion

Sector	Portfolio investment	Other investment
General government	1,300	4
MFIs incl. central bank	972	236
Mutual funds	237	0
Other financial enterprises	45	42
Insurance and pension	413	69
Non financial enterprises	571	1,276
Private persons	37	7
Total	3,575	1,635

¹ *Banks' own transactions are calculated as the net changes in their external assets and liabilities.*

We believe that the most rational way to collect bop/iip data is to use the existing and planned databases for securities.

The database for *Danish securities issued in Denmark* has existed since 1983 and is the source for security statistics in general. Non residents' holdings are a subset, and can be used as a building block. The Bank has agreed to take over responsibility for this database from 2003 from Statistics Denmark. As a supplement, the Bank has recently built a database for *Danish residents' securities issued abroad*. The two databases will fulfil the requirements of ECB's planned centralised security database (CSDB).

Furthermore, the Bank requires information from Danish custodians about residents' holding of *foreign securities*. At present, this database is not (as the two other databases) on a security by security basis. The databases are supplemented by direct information from a number of Danish investors using foreign custodians.

In addition to these databases and direct reporting from a limited number of investors we expect to get separate information on repos and redeposits of securities to improve the basic information in the databases. However, much work remains in this area.

We look forward to see whether CSDB can provide us (and others) with the needed information, so we can abstain from asking Danish custodians to specify residents' holdings of foreign securities, security by security, and residents' repos and redeposits in foreign securities.

Other financial enterprises and insurance and pensions funds

Financial statistics for the rest[3] of the financial sector as well as insurance companies and pensions funds (S125) on a quarterly basis are poor in Denmark. When the settlement statistics disappear in 2005, we need monthly bop data and at least quarterly iip data from these enterprises.

This need for bop/iip data and the demand for better statistical coverage to build *quarterly financial accounts* have led us to conclude that other financial enterprises as well as insurance companies and pension funds ought to be covered statistically over the next years. This conclusion is also based on the size of these enterprises, cf. the Appendix. We intend to follow the same approach as for MFIs and mutual funds, where domestic and foreign assets and liabilities and transactions are reported separately. A very large proportion of the assets are securities. If the security databases are completed as planned, the increase in the reporting burden for the enterprises could be small. Only other assets than the securities, which are recorded in the databases, and liabilities have to be reported directly and broken down by the relevant criteria.

Domestic assets and liabilities for non financial enterprises

The construction of quarterly financial accounts are planned to be completed in the Bank next year. However, estimations are necessary in some areas. One important area is related to some instruments of non financial companies ("Other accounts receivable/payable" (trade credits etc.), "Deposits and loans with non financial companies", "Unquoted shares" and "Other equities"). We intend to investigate the possibility of having quarterly data from the largest non financial companies in connection with the new bop/iip reporting forms, at least for the most important of the instruments mentioned.

Conclusions

I believe, that the future Danish bop collection system as outlined above will
- reduce the reporting burden (by cease of double reporting and by broader use of existing sources)
- improve the quality of the bop/iip statements (better coherence between trade in goods and services and between financial flows and stocks)
- improve the coverage and quality of financial accounts both on the domestic and foreign side (through development of securities databases and expansion of financial statistics to other financial institutions than MFIs as well as insurance and pension funds)

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3 *The sectors S123 and S124 except mutual funds, cf. The European System of National Accounts (ESA).*

Denmark´s financial accounts, end 2000   Appendix

DKK billion	Domestic		External		Total	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
General government	669	618	98	314	767	932
MFIs incl. central bank	2,636	2,554	693	800	3,329	3,354
Mutual funds	108	247	150	11	258	258
Other financial enterprises	339	152	54	72	393	224
Insurance and pension	847	1,078	239	14	1,086	1,092
Non financial enterprises	740	1,379	603	841	1,343	2,220
Households and NPISH	1,868	1,264	40	9	1,908	1,273
Total	7,207	7,292	1,877	2,061	9,084	9,353

Sources

Domestic   Calculated as residual (the difference between the total and the external assets and liabilities)

External   Danmarks Nationalbank, Denmark´s international investment position 2000, Særlige Opgørelser No 3 - 31 October 2001. Total external data are equal to data in Statistics Denmarks´statement; minor adjustments are made in Danmarks Nationalbanks statement for MFIs and non financial enterprises

Total   Statistics Denmark, Financiel Accounts 2000, Statistiske Efterretninger, 2002:3, 15 March 2002

Organisation of the data collection process in a new environment for balance of payment statistics

Janez Fabijan (Bank of Slovenia)

Introduction

The article deals with one of the main challenges nowadays, namely implementing and maintaining the quality of the statistical reporting system for the Central Bank purposes: "replacing the indirect reporting statistical system with direct reporting". We focus on the area of the Balance of Payment statistics.

The Central Bank is by law responsible for preparing macroeconomic information on the Balance of Payments (BoP). The information serves in a decision-making process on monetary policy as well as at a broader economic policy level of a respective country. Consequently, taken decisions might have a significant effect on an overall economy. For a small and open economy like Slovenia, timely and accurate information on the Balance of Payments is very important. But we should also take into account the need to change the exchange rate regime together with Slovenia's joining the EU and its obligation to stay in the ERM2 for the first two years (European Exchange Rate Mechanism 2).

A competitive environment in payment systems and banking as a whole on the one hand and rational behaviour of a bank client on the other hand (growing mergers and acquisitions – globalisation and integration processes) do not allow the Bank of Slovenia (BS) to make costs to the banking community no more than is needed by collecting more frequent and detailed data. On the contrary, the new EU directive has recently significantly raised the threshold for each transaction to be reported.[1]

A step by step approach in building a direct reporting system by some segments of the BoP (e.g. portfolio investments, commercial credits, foreign direct investments, etc.) is in our opinion strongly recommended, since there is a need for simultaneous running of the old and new systems. The article describes in detail a simulation tool for decision-making support in building an alternative direct reporting statistical system. It analyses the empirical result from an on-going project in the Central Bank.

Balance of Payments compilation system in Slovenia

A type of a collection system[2]

The main reporting system for the BoP (Balance of Payment) is the ITRS (International Transactions Reporting System), which is a closed system. There are the reporting of the positions on non-resident accounts (these explain the changes in the assets and liabilities in the BoP's capital and financial accounts) and the transactions settled through these accounts (these principally explain the changes in the BoP's current account) integrated there. In the reporting form, the position in each non-resident account at the end of the reporting period should equal the position at the beginning of it, plus credit transactions minus debit transactions. The transactions are classified on the basis of their description, as provided by bank clients, and the assignment of a transaction code. There are more than 300 of these transaction codes there and a list of them is available in the BS on

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1 *Regulation (EC) No. 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euros, OJ L 344, 28.12.2001.*

2 *The following chapter is part of our contribution to the ECB publication: European Central Bank: Accession Countries: Balance of Payments / International Investment Position statistical methods, Frankfurt, October 2001.*

request. They form the basis of the methodology that allows banking forms (e.g. payment orders and forms relating to incoming payments) to be used in the compilation of the BoP statistics.

The main reporting pillars of the ITRS are:

(i) Reports on the transactions settled between residents and non-residents via bank accounts (the so-called non-resident accounts). These accounts comprise:
– the banks' foreign correspondent accounts (nostro and loro accounts, including the Central Bank); and
– the non-bank resident accounts abroad.
The transactions are classified using descriptions provided by bank clients.

(ii) Customs declarations as the main source for recording merchandise (compiled by the SORS).

(iii) Reports to the BS on registered credits granted and disbursed abroad.

(iv) The Bank of Slovenia accounting data.

(v) Commercial bank balance sheet data.

(vi) Data on direct investment (reinvested earnings).

(vii) Reports on goods sold to non-residents in duty-free and border shops.

Some estimates are used in the BoP and IIP (International Investment Position) for the valuation of the data on imports, incoming travel, labour income, short-term trade credits, foreign exchange and deposits of resident households in foreign banks.

For the IIP, data are collected from residents' reports on inward and outward direct investment, reports of enterprises on short-term trade credits and some of the other above-mentioned sources.

The BoP and IIP are compiled on the basis of the reports from the following agents:
(i) commercial banks, which report on the transactions between resident and non-resident entities (banks, enterprises, individuals, etc.) as well as on the transactions for their own accounts;
(ii) non-bank residents report on the data on their accounts held abroad, on inter-company accounts with foreign partners and on the sale of goods in duty-free shops. They also report on short-term trade credits granted to non-residents and obtained from them;
(iii) residents report on the inward and outward direct investment stocks and transactions;
(iv) the SORS provides the data derived from customs declarations;
(v) the Bank of Slovenia provides its accounting data; and
(vi) residents report on the data on loans and long-term trade credits granted to non-residents and obtained from them.
There is no special threshold for the ITRS data.

The BoP is compiled monthly and disseminated no later than seven weeks after the end of the reference month. Although the data have been available since 1988, only the data for the key BoP's items are available for the period 1988-1993. The figures for the period 1988-1991 exclude the transactions with the former Yugoslavia. The IIP is compiled yearly and disseminated no later than six months after the end of the reference year. The data have been available since 1994.

A high level of transparency has been reached by adopting the SDDS standard. An advance release calendar is published on the Bank of Slovenia web side (http://www.bsi.si) and in its Monthly Bulletin.

Implementing direct reporting systems

The liberalisation of our economy has already been taking place for several years. Significant changes in legislation were adopted in 1999. Since then, we have been looking for alternative sources of data for external statistics.

It seems that the main concern for the quality of the BoP statistics that caused an unbalanced result regarding the total world position is statistics on securities or portfolio and direct investment items of the BoP.[3] The Bank of Slovenia implemented a direct reporting system for these items on a monthly basis together with the legislative changes concerning the Foreign Exchange Act. The supplementary executive regulation kept an obligation for authorised dealers (banks and brokers) to report on the securities between residents and non residents. Data are provided for stocks and flows. A potential lack of information might derive from the transactions of residents avoiding domestic intermediaries. Therefore, the Bank of Slovenia is strongly interested in sharing information and databases with international institutions (e.g. ECB, BIS) or on a bilateral basis with Central Banks.

Our main concern remains in avoiding a possible lack of information from the most important source of data for the BoP, i.e. the ITRS. The greatest impact of a lack of information would be reflected in the items such as Services, Income, Current transfers and Capital account.

Table 1 – A percentage loss of information from the ITRS by implementing a threshold of €12,500 or €50,000

B.o.P.'s Item / Threshold	EXPORTS		IMPORTS	
	€12,500	€50,000	€12,500	€50,000
TOTAL for Services	**84.0**	**72.0**	**84.7**	**73.9**
Transport	77.3	65.7	83.7	74.7
Travel	91.4	85.7	82.8	77.6
Communication	86.6	83.8	97.0	91.3
Construction	94.6	86.2	93.0	76.5
Insurance	95.7	90.8	94.3	89.5
Financial	68.3	58.0	68.9	57.8
Computer and Information	93.7	83.8	88.9	74.6
Royalties and license fees	83.8	72.4	95.5	89.2
Other business services	70.2	36.7	80.8	61.4
Personal, cultural and recreational	78.0	62.1	80.9	72.9
Government services	99.3	99.3	100.0	100.0

Source: The Bank of Slovenia, Financial Statistics, a calculation on the data for the period January–April 2002.

The services would undergo more than 15% of the loss of data regardless of the export or import part. Other business services that seem to be the most perspective kinds of services for Slovenia nowadays would suffer most from implementing the threshold in the ITRS data.

In addition to many other activities in searching alternative sources for external statistics, a new approach has taken place in the form of a project implementing a direct reporting system in some segments of reporting.

Case study: direct investments, trade credits and transactions in accounts abroad

The project of preparing a new reporting system on some external statistics is approaching its final phase in Slovenia. A new user-friendly application has been prepared for reporters. It is not difficult for them to download it from the Bank of Slovenia web site. Reporters use an e-mail communication with a special security protocol. Less important data were removed from the old forms. Data quality control is run by the Central Bank in the method of interactive communications with a reporter.

In August 2001, the Bank of Slovenia collected the first set of data for the "C" report form – monthly data on the transactions with non-residents from the accounts abroad. Other two forms involved are: the SKV form – monthly data on the accounts payable and receivable from the transactions with non-residents – stocks and flows, and the SN form – yearly data on foreign direct investment. In the old reporting system, the SKV form was reported of on a quarterly basis. In simulation, that follows the possibility of the introduction of the quarterly SN reports to be dealt with. We

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3   *IMF, Balance of Payment Report for 2000, Washington, 2001.*

have already benefited from more accurate and frequent reporting which has also been less time-consuming. A new Oracle environment application has been developed for the database input process. Data are automatically loaded into the central database. An automatic answer is sent to a reporter in case of discrepancies.

In taking into account the above-mentioned situation from the Central Bank's statistical point of view, an overall concern arises: How to use the advantages of an information era? In that sense, reengineering processes in a data collection system using new communications means with a large number of reporters are the main factors in managing a statistical system.

A research approach or methodology

The target is introducing a universal working place for receiving different kinds of reports instead of specialised ones. A *simulation*[4] has to answer the question: How many universal service facilities – bank employees would be needed to efficiently run the data collection system in the future?

Using a simulation, we expected to get a set of systems responses for different operating conditions. Because it is usually difficult to measure a lack of precision in simulation results, two approaches are pointed out:

1   *Quantitative approach*: On the basis of the past and current data on receiving, controlling and processing statistical information by each employee involved, a stochastic model could be established for further decision-making support. Receiving statistical reports represents the system of service facilities with a queuing mechanism.
   a) Data seizure and a program for a simulation technique (software used: GPSS – General Purpose Simulation System) exist in two phases:
      (i)   a simulation of the old system; 14 specialised serving facilities (3 for the C monthly report forms , 7 for the SKV monthly report forms and 4 for the SN yearly forms),
      (ii)   a simulation of the system currently implemented (10 specialised service facilities),
   b) Each phase took a few steps:
      (i)   a formal description – a block diagram and a mathematical model,
      (ii)   preparing and running a simulation program,
      (iii) analyses of the results of the simulation experiments.
   The main concern in running a model was a lack of the exact data distribution of the reports' arrival time and waiting time in the queue. However, a numeric generator of random numbers to simulate both distributions is used.

2   *Qualitative approach*: Several main qualitative changes in a data collection system must be taken into account, at least:
   a) By using modern ways of communications with reporters (e.g. the e-mail system with automatic quality control answers), new working functions may arise (e.g. confidentiality and data security). A huge number of reporters will change the security key with the CB Statistics Department.
   b) Simplifications of the reports oriented towards the accounting information systems of reporters (mainly the non-financial sector).
   c) The number of reporters could be significantly reduced by sampling the population.

Each bank employee will deal with a closed group of companies (reporters) and manage receiving all three different kinds of reports. Higher standards of knowledge would be needed.

Due to some empirical data on the number of reports, the number of bank employees, the average time needed for processing a single report, etc., a simulation of the new system presumes a possibility of the reports of higher frequency.

A simulation was running during the period of the maximum burdening of service facilities, and that means that the period of a respective month (15 days) during which all three kinds of reports as well as one quarterly report came to the Central Bank was taken into account. On the basis of the empirical data, it is estimated that about 250 reports could be successfully processed on a daily basis.

Unavoidable iterations of simulations have also been accomplished.

Some important results are presented in the following chapter.

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4   *"Simulation is a quantitative procedure which describes a process by developing a model of that process and then conducts a series of organised trial-and-error-experiments to predict the behaviour of the process over time.", Jenkins A. Milton, Readings in Research in Management Information Systems. Baltimore, MD: Information Systems Research Center, University of Baltimore, 1998.*

Simulation results

As all the results, those of the old system also represent the final average results for 10 iterations for each report.

Table 2 – Simulation results of the old system
(specialised service facilities; 3+7+4)

Report	AVG-UTIL-TOTAL-DURING-TIME	AVAIL. TIME	UNAVAIL. TIME	ENTRIES	AVERAGE TIME/UNIT	CURRENT STATUS	PERCENT AVAIL.	CAPACITY CONTENTS	AVERGE CONTENTS	CURRENT CONTENTS	MAXIMUM CONTENTS
C	0,9217			95	13,9334	AVAIL	100	3	2,760	3	3
SKV	0,9306			78	40,0478	AVAIL	100	7	6,514	7	7
SN	0,9440			78	23,3958	AVAIL	100	4	3,777	4	4

Report	QUEUE	MAXIMUM CONTENTS	AVERAGE ENTRIES	TOTAL ENTRIES	ZEROS	PERCENT TIME/UNIT	AVERAGE TIME/UNIT	$AVERAGE	CURRENT CONTENTS
C	VR	3	0,5231	96	36	37,7	2,5995	3,8233	6,1
SKV	VR	4	0,8714	81	26	33,5	5,2247	7,1879	0,9
SN	VR	4	0,9704	79	19	24,5	5,8967	7,5879	1,6

Report	RANDOM STREAM	ANTITHETIC VARIANTS	INITIAL POSITION	CURRENT POSITION	SAMPLE COUNT	CHI-SQUARE UNIFORMITY
C	1	OFF	91864,5	92056,2	192	0,44
SKV	1	OFF	100715,6	100873,7	158	0,53
SN	1	OFF	100709,4	100867	158	0,48

Obviously, the *old system* was relatively busy, which is reflected in "AVG-UTIL-TO-TAL-DURING-TIME" in above Table 2. For various reports, working facilities were busy from 92% to 94% of all the available working time. During the day, when all three kinds of reports stand in the queue, approximately 230 reports are processed in all 14 working places together. It is estimated that a relatively low level of the arrival time results from different means of communication used by reporters. Consequently, the value of information – statistics – prepared was unacceptable (timeliness).
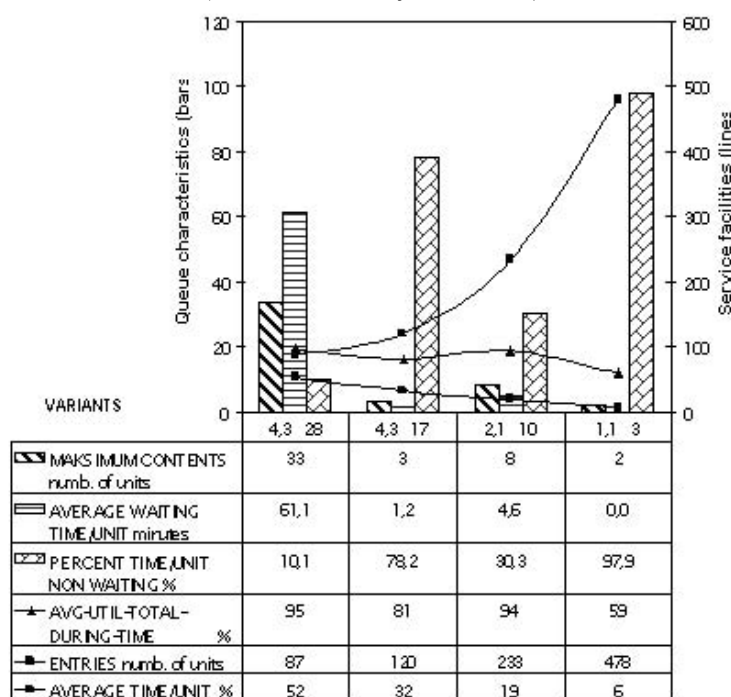
The arrival time of reports and their processing time correlate with each other, and therefore, it was not possible to fix one variable and simulate another one in order to find out the equilibrium situation. Therefore, different combinations of variables are used to achieve a higher frequency of reports based on the technological reorganisation of the reporting system. The next most significant variants in the simulations of the *new system* are presented.

In the following Chart 1, the variants are expressed in numbers: e.g. "4,3 28". Number "4,3" stands for the average arrival time of each 4 minutes with a standard deviation of 3 minutes. Number "28" stands for the average time needed to process a single report.

In *the first variant* (from the left hand-side to the right hand-side), the conditions of the old system are simulated with the exception of using only 10 universal service facilities, and that is in fact the main feature of the new system. On the one hand, despite reducing service facilities, almost the same level of the utilisation of the available working time (95%) can be reached; on the other hand, the "productivity" is insufficient, since only 87 reports were successfully processed. The targeted result was to process 250 reports per day. "AVERAGE TIME/UNIT" is too high (52 minutes for one report).

In *the second variant*, we keep the same level of the arrival time, but we cut down the average time to process one report at the level of 17 minutes. The number is simply derived from the total available time and the number of all reports to be processed (5,100 different reports). Consequently, the simulation shows that the queues are almost removed (80% of the reports are not waiting). But we still have not processed enough reports on a daily basis to be finally successful (only 120 reports have been processed). At this phase, it should be stressed that the average time needed for the execution of one report is cut down by the fact that each reporter on average sent at least two different reports to the same bank employee in the Bank of Slovenia.

Chart 1 – Simulation results of the new system
(universal service facilities; 10)

	4,3 28	4,3 17	2,1 10	1,1 3
MAKSIMUM CONTENTS numb. of units	33	3	8	2
AVERAGE WAITING TIME/UNIT minutes	61,1	1,2	4,6	0,0
PERCENT TIME/UNIT NON WAITING %	10,1	78,2	30,3	97,9
AVG-UTIL-TOTAL- DURING-TIME %	95	81	94	59
ENTRIES numb. of units	87	120	233	478
AVERAGE TIME/UNIT %	52	32	19	6

In the case of the *third variant*, taking into account our experience of the existing project, we were surprised by the rapid arrival time (especially by the "C" report) as a consequence of the efficient electronic data reporting system. Therefore, we have increased the arrival time by one half (2,1) compared to the previous time (4,3). The results of the simulations in the third variant are almost optimum, as regards the target system results. On average, almost enough reports are processed per day (233 reports). The effective average time to execute one report is close (19 minutes) to the theoretically calculated time (17 minutes). The conditions in the queue are acceptable: the average waiting time is just 4 minutes, the maximum number of the reports in the queue (8) is lower than the number of service facilities (10) – "CAPACITY CONTENTS". In other words: *ten bank employees have the same level of productivity as in the old system but they perform their tasks at a higher level of quality.*

The forth variant is more or less a theoretical one and thus imposes a possible further influence of a higher technological development. High standards concerning both "1,1 3" variables are established. Almost full automation of the process is reached: there is no queue, bank employees and reporters are exploited irrationally and the productivity level is extremely high.

On the basis of the above analysis, we could estimate that the expectable level or output of the future system would potentially be even somewhere between the 3rd and 4th variants, however close to the 3rd variant. But an adequate level of control should be kept at the same time as well. A fully automated process would not support solutions for new methodological questions, e.g. financial innovations. In that sense, fully automated quality control would imply automated acceptance of potential error.

On the other hand, from the viewpoint of the method applied, we have to bear in mind that the independence of the main variables was not fully applied and that further simulations with the system, knowing the distributions of variables, should be of great concern in the future.

The comparison of statistics produced by a different reporting system

Direct versus indirect reporting on trade credits

Parallel running and the comparison of a final output from the data collected by the old and new systems is a necessary process being also time- and resource-consuming; nevertheless, it is a good starting point for the new system if the results can be simultaneously compared with the old one at least for a while in order to keep or even improve the quality.

Chart 2 – Trade credits from the ITRS and from direct reporting – the SKV form

Net claims on trade credits in mio USD
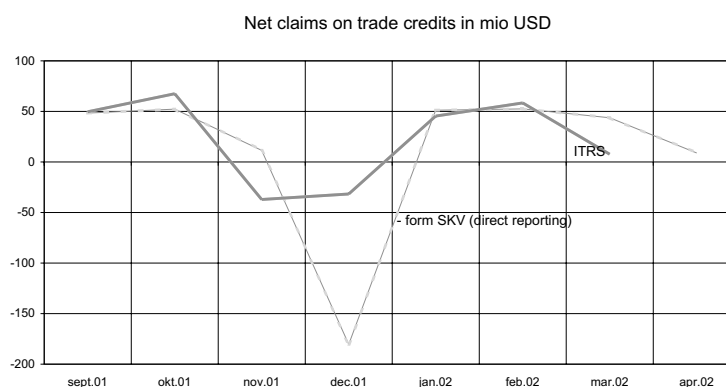
The chart is showing us the trade credits within the period of eight months. In addition to some methodological differences regarding the data compiled from both sources, flows and stocks show similar movements. We could say that, generally speaking, the expectable quality has been reached. The only exception to this statement is December, in which the net position significantly differs. This fact could be explained by a fundamentally different type of a data source, i.e. the accounting data on the SKV form and the data compiled from the payments on the ITRS.

Conclusions

Substantial changes in the overall environment: i.e. the integration processes towards the EU and the EMU as well as the opening of Slovenia's economy through liberalising the capital market must be reflected in the changes in the organisation systems as well as in the State institutions. The management of a complex statistical information system is faced with a problem of keeping and/or even improving the quality of information for a decision-making process at a macroeconomic level. On the other hand, a growing technological and communications environment plays a crucial role in implementing a faster exchange of information as well as giving greater possibilities for a needful adjustment of the statistical requests on the Central Bank's part, taking into account the accounting information systems of reporters. The SDDS standards of the IMF show us the way towards the quality macroeconomic statistics encompassing a reliable, timely, adequate and accurate performance.

This research and a practical implementation of the project have shown us that it is possible to implement an efficient alternative direct reporting system. The exchange of international experience is of vital importance in this area. We have found out that an additional source of information taken from all the population of potential reports should be provided at least on an annual basis, since good sampling is one of the preconditions in a direct reporting system. An accurate and timely central business register is also very important, not only at national but also at local level. Countries should harmonise their registers, methodologies and compilation practices as much as possible in order to avoid multilateral asymmetries.

The topical project of introducing new reports for trade credits gave satisfying results, compared to the old system.

But still, some doubts exist, since the cost effects of collecting data at the overall national economy level have not yet been compared. Two strong blocks of reporters, banks and multinationals are urging to reduce the costs of reporting to the Central Bank.

Implementing direct reporting systems takes time (parallel running) and resources (knowledge, registers, infrastructure, etc.).

Last but not least: for accession countries to the EU and the EMU, the time of changing the reporting system is even more inconvenient, since they will change their exchange rate regimes as well. The Bank of Slovenia has set up an infrastructure for a further implementation of a direct reporting system for external statistics. The main source of data, i.e. the ITRS system, has still to be replaced.

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Abstract

Slovenia, as a candidate country to the EU and the EMU, has recently adopted a regulation that liberalises its economy in the area of the capital account of the Balance of Payments as well. For a small and open economy, timely and accurate information on the Balance of Payments is of high importance for decision-making at the monetary as well as at the economic policy level. The importance of having timely and reliable information on the BoP statistics gets even more weight by the prospect of joining the EU and the EMU and staying two years in the ERM2 (European Exchange Rate Mechanism 2) in between. A recently adopted EU regulation on a threshold for collecting the data from the ITRS from banks established the need to search and develop direct reporting systems as an alternative.

The paper therefore describes a project of implementing a direct reporting system with segments corresponding with the items on the Balance of Payments (commercial credits, foreign direct investments, accounts abroad). By the time of running and implementing the new data collecting system, the decision-making process was supported by a simulation technique also focusing on the possibilities to develop similar systems for other, even more important items of the BoP. On the one hand, the results give us hope to find an alternative way of collecting data by using high technologies without the need for additional human work; on the other hand, the level of knowledge in the phase of collecting statistical data should be significantly higher in the future. Compared to the current or former data sources, some doubts remain as to whether the quality of the reported data meets the requirements of the BoP compilation purposes.

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Discussion comments

Almut Steger (Deutsche Bundesbank)

Discussion on the papers of Fedrica Robinson (Bank of Jamaica), Evelyn R. Santos (Central Bank of the Philippines), and Jorma Hilpinen (Bank of Finland)

With great interest I have read the three papers, because they show in a very instructive way the difficulties which BoP-compilers face all over the world. The situation presented is only different with regard to the stage of development in the respective countries, but has the same general pattern.

In many countries exchange control mechanisms were the basic source for BoP-compilation over a long period. With the liberalisation process the situation changed dramatically. This has been made quite apparent in the two papers presented by our colleagues from Jamaica and the Philippines. Whereas the situation is here a relatively new one, European countries had to face these developments years ago. At the very latest all restrictions had to be abandoned with the first step of the European Monetary Union. The answer to the liberalisation had been in many countries a statistical reporting system which had very similar features than the exchange control mechanisms and had therefore been difficult to be implemented because of the idea that a free flow of funds should not be interrupted by any kind of reporting. In the Compilation Guide of the IMF this system has been called International Transactions Reporting System (ITRS). But this type of system is now under a twofold pressure again. There is a serious reluctance of banks to further play an important role in the reporting process. In addition as an effect of globalisation financial flows can less and less be interpreted as a proxy for the real flows. Inhouse-banking, clearing houses and similar procedures diminish the usefulness of financial flows as a source of BoP-data. Insofar this type of reporting may not be seen as "the" solution to overcome the problems of statisticians in the context of liberalisation nowadays.

The envisaged solutions are similar everywhere. Alternative sources are used as far as they are available. International Trade Statistics as well as administrative and other documentary sources belong to it. In addition necessary estimates are made on the basis of information from third parties. The less regulation is in operation in a country, the more the direct reporting of companies becomes an important source. Although all three papers have shown clearly that it is not the original task of a central bank to collect information from companies – which is different in several other countries (in Germany we have done it since about 40 years) – it is nonetheless a new challenge for statisticians. Difficulties arise when central banks do not have a sound legal basis, as it was mentioned by our colleagues from Jamaica and the Philippines. And this shows quite clearly that a legal basis combined with strict confidentiality rules is one of the prerequisites to collect reliable information. But even if this obstacle does not exist, difficulties arise with regard to the availability of the information requested and also to the effect that a full census of all companies does not seem to be possible any more and sampling techniques have to be used. Key words like "partner-country data" or the "co-operation with National Statistical Institutes" gain importance.

I would like to come back to the issue note of François Renard and the questions raised there in the context of direct reporting techniques. As long as exchange controls or the ITRS were used, payments in a broader sense formed the basis for BoP-items. With the changeover to direct reporting of companies the question arises how to collect transactions instead of settlements to be more in line with the requirements of BPM5. The basic idea is to rely on accounting information. First more intensive tests in Europe have shown that it does not seem to be so easy to derive the requested level of detail. Ledgers have not been created in analogy to the BoP-classification. What would be the additional costs for companies to derive the information from their databases? In first discussions with software houses we have heard that the costs would become very high. If this is the case, could we come back to data of the financial department despite of the difficulties arising from globalisation? I very much would like to see what experiences countries have made with the possibilities to collect data on a transaction basis. What are the obstacles? What are the alternatives?

Another point for discussion arises in the context of sampling techniques. The third paper presented by the Finish delegate describes the solutions found so far to fulfill the international require-

ments with regard to timeliness and level of detail. Questions concerning the frame are raised. Of special importance is the availability and maintenance of registers. As far as they are available they have not been created with a special view on BoP-needs and in addition access may not be guaranteed for central banks. European countries are still struggling with the answer to the question how far it will be possible to create a register for BoP-purposes and how to find the appropriate variables for grossing up the data. What are the experiences of other countries in this field? How is the co-operation between central banks and national statistical institutes? What variables are used to gross up samples if this should become one of the more important data collection procedures?

A problem which is closely related to the type of a reporting system is the periodicity of data. Most European countries publish so far monthly data. And there is an obligation to contribute to the Monthly Key Items of the Euro zone after 30 working days. From our colleagues from Jamaica and the Philippines we understood that this way of reporting had also been in line with their original type of reporting system. But what will be the consequences when the proportion of data which is derived from a more survey-oriented method and therefore only available relatively late, will increase? What are the experiences in other countries with regard to the combination of reporting methods and the timeliness of data?

The papers of Peter Hofman and Jens Hald have one common ground. They are both dealing with the changeover to direct reporting by companies. Whereas the first one is related to very important studies on the possibility of a Europe-wide reporting by multinational companies, the second one develops considerations how these ideas could be put into reality in one specific country.

From the point of view of an internationally operating company it seems to be an understandable request to report in the same way to all BoP-compilers – in this case Europe-wide, in other cases may be world-wide. Although there is some kind of a general classification of reporting systems (– following the BoP Compilation Guide it is the basic distinction between International Transaction Reporting Systems and Survey Systems –) there exist nonetheless quite different national solutions. Developments towards more unified economic areas like the EU / EMU today promote the ideas of unified formats.

Discussion on the papers of Peter J. Hofman (Netherlands Bank) and Jens Hald
(National Bank of Denmark)

The paper of Peter Hofman describes the model underlying the reporting scheme and the first steps in the direction of an implementation, which are for the time being mainly related to questions of the feasibility and the practical difficulties for a change from well established systems to a new model for reporters as well as for compilers. It also deals with possible gains in efficiency and in the end a more cost-effective solution for companies, taking into consideration the technical investment which is needed to implement the new forms.

One key element of the new reporting scheme is the direct reporting of all transactions to the compiler on a monthly basis. The second one is a full reconciliation between stocks and flows (including investment income) in the financial account. First results of the testing – which are still very preliminary – are mainly related to very general questions. A detailed feedback is not yet available. As long as no data have to be delivered the attitude of companies is quite positive; as soon as data have to be filled in, the complexity of the forms may come up.

Nonetheless, the multinational model is a very interesting approach which has to be tested by companies as well as by the compilers. Several questions arise in this context:
- If the compiler wants to rely on information from the accounting system, would a better reflection of BoP-needs in the accounting standards be helpful or even necessary?
- What would be the initial costs for companies to implement such a system? Would the benefits from standardisation be higher than the costs to change existing systems?
- Is the requested level of detail available without additional investment?
- What are the steps to be taken by compilers to integrate the model in their regular reporting if they do not make a general use of it like in Denmark?
- Will there be a realistic chance to extend this model to a world-wide application?

In contrast to these still very general considerations the Danish paper gives first of all a very detailed information why the change to direct reporting is urgently needed and refers to the multinational model as the basis for the future reporting in Denmark. The paper lists the difficulties which have to be faced by settlement systems today (e. g. changes in payment systems, wrong use of codes, payments no good proxy for transactions any more) and describes the expected loss of quality in future, if there should be an increase in the threshold to 50,000 Euro. These problems coincide with the need to reduce the reporting burden for banks as well as for companies. The stock-/flow-model shall improve the quality of data, because it offers at company level a possibil-

ity for cross-checking, and it shall deliver the required BoP-components. Compared with the previous system only a limited number of enterprises will have to report. The number as well as the frequency of reporting will be different for services and for items of the financial account. The new forms will also be used to close gaps in coverage in the financial account. Altogether better quality should go along with lower costs for respondents.

Questions in the context of the reorganisation are similar to those raised with regard to the general multinational model:
- From a theoretical point of view the model is a very attractive approach because of its consistency, but is it known if companies will be able to provide the details?
- If companies have so far not yet reported foreign assets and liabilities (e.g. trade credits) what will be the investment for the introduction of a new complex system? Doesn't it produce an increase in costs again?
- The responsibility for the collection of data on services will be transferred to Statistics Denmark. Does it mean in practice that the idea of an overall reporting of all items of the BoP is not the basic intention, because the companies asked for services will not necessarily be the same than for parts of the financial account?
- How will the share of responsibility be organised? Will it be similar to the solution in Sweden?

Discussion on the paper of Janez Fabijan (Bank of Slovenia)

The paper of Janez Fabijan describes the change from an International Transaction Reporting System to a direct reporting as it has been done in the other contributions, too. The reasons are in general similar. Although Slovenia is not yet a member of the EU and EMU, its status as candidate country leads to comparable developments. The liberalisation process could result in a situation described by the representatives of Jamaica and the Philippines. With the additional view on European legislation like the introduction of a threshold of 12,500 Euro including the possibility of a further increase up to 50,000 Euro for bank reporting it seems to be necessary to think about alternatives to the actual system. The concern to loose information is mainly related to items of the current account. In addition – like in other countries – it is not possible to put too much burden on the banking community.

   Some steps have been taken to collect flows and stocks for direct investment, transactions in accounts abroad, and trade credits directly from the parties involved. The idea is to have the chance for a simultaneous running of the old and the new system to examine possible weaknesses. This is an important advantage compared with other countries who dispensed the old system as soon as the new one was introduced.

   The paper is not focused on the results of the new ways of reporting. It is the only one presented in this session which deals mainly with organisational matters. A simulation model is used to answer the question how the modern EDP-techniques will make it possible to get good results with a reduction of costs/burden for the reporters, but also for the compiler. Nonetheless, the considerations on which this model is based are again similar to ideas of other countries who have taken similar decisions. The term direct reporting includes the intention to collect all BoP information directly from companies. This is related to the fact that the compiler has to reorganise its work from a purely transaction-based to a company-oriented one. Another point is that in case of direct reporting information should be derived from the accounting system. That this may lead to additional difficulties has been brought up by some of the previous contributors. And in the end it is also explained that the number of respondents could be reduced by the use of sampling techniques. This would be in line with the intended direction of European developments. All this goes along with a change in the staff required: The skills needed will be higher, the number of staff involved could be reduced especially at the lower end.

   After having solved very interesting EDP-problems serious questions with regard to the results seem to remain. Apart from the fact that additional/other resources have to be made available it would be very interesting to see what the difficulties are when data are collected in a new way. Questions like how to sample a population and how to make use of registers seem to be very important. How can timeliness be guaranteed? Good organisational structures are in any case a precondition for a successful work, but the creation of a new reporting scheme may cause even more demanding problems.

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Liberalization and the challenges for balance of payments compilation: the case of Jamaica by Ms. Fedrica Robinson

Setting up an alternative data collection system for the Philippines' Balance of Payments by Evelyn R. Santos

My task is to provoke discussions on the topics and issues presented during this Workshop. I will be throwing some questions to you to stimulate the discussion.

- The common issue in the papers presented by Fedrica of the Bank of Jamaica and myself is the loss or weakness of data capture or coverage for balance of payments compilation which had relied on an information system provided by banks and supported by exchange controls in the past.
- One lesson learned in both Jamaica and the Philippines' cases is that, any changes in policy (in this particular case, the liberalization of foreign exchange transactions) must be accompanied by support mechanisms for monitoring of information.
- Clearly, to improve data coverage and quality for the balance of payments, the presentations of Fedrica and myself point to resorting to direct reporting from companies as the solution.

There are a number of questions that come to my mind regarding the challenges ahead.

1. On legal mandate – Meanwhile that no legal mandate to collect data from non-financial institutions is in place or the if the possibility of enactment of such legislation is still in the far future, the BoP compilers are confronted with the problems now and yet despite all of these present problems, are expected to produce the statistics to meet both domestic requirements and international commitments. In her paper, Fedrica mentioned that the Statistical Institute of Jamaica has the legal mandate to collect data. In Finland, the responsibilities for collecting balance of payments statistics have been shared between Statistics Finland for the current account data and the Bank of Finland for the Financial Account and Investment Income.
   In this regard, would it not be efficient and cost-saving to devolve to the state statistical agency the collection of data on current account transactions where they have more expertise and established contacts on surveys, and for central banks to focus on monitoring of the financial accounts, with particular emphasis on high frequency financial statistics, as in the case of what the Bank of Finland did? The case is made even stronger by the fact that, in Jamaica, there is 100 percent response rate to surveys of banks and insurance companies – clearly, a manifestation of the Bank of Jamaica's clout over banks and financial institutions.

2. Sustaining central bank's efforts on enterprise survey activities – Discussions since last Tuesday revolve around greater emphasis of central banks' statistical activities on monitoring monetary and financial stability due to shifts in monetary policy framework, new instruments and integration of financial markets. As stated by Mr. Hilpinen in his paper, "the structural, product-oriented foreign trade-in-services clearly fall outside this domain". It has been recognized that moving into enterprise surveys for balance of payments compilation requires enormous resources and changes in organizational set-up. Given all these considerations, will central banks be able to sustain its efforts to conduct enterprise surveys for balance of payments compilation? Again, would central banks be better off to focus on its mandate of guarding the monetary and financial stability of the economy and produce timely and quality statistics towards this end?

3. Monthly vs. quarterly balance of payments statistics – A monthly balance of payments statistics is highly desirable for monitoring purposes. However, compilers are faced by problems on the size of the sample frame and response rate for the monthly survey, thereby resulting in poor quality and volatility of the collected data. The level of detail needed could not be provided by companies for monthly surveys. These are the problems faced by the Bank of Finland on its high frequency survey of selected financial account variables. In my paper, it was found that administrative reports of selected government agencies are available quarterly as these are consolidated based on quarterly submissions of reports by companies. Moreover, financial statements of companies, including their income and expense statements, are prepared on a quarterly basis.

Given these considerations, should central banks continue their monthly monitoring of balance of payments statistics collected through surveys? Can other indicators like cash balance of payments substitute such monthly balance of payments statistics?

Harmonization of the BoP collection in integrated economic areas; papers by Mr Peter J. Hofman and Mr Jens Hald

As a balance of payments compiler from a developing country like the Philippines, I am envious of the situation in the European Union where industrialists requested the European Central Bank to consider the implementation of a harmonized BoP/IIP reporting model in the EU. In our part of the globe, compilers are beset with setbacks in drawing good responses from companies in our surveys, much more instituting a standardized form. In our survey of inter-company transactions of multinational companies in the semiconductor industry in the Philippines, for instance, we allowed multinational companies to specify and state their transactions according to their accounting records and classification, which they claimed are prescribed by their mother companies.

- Based on the results of the feasibility questionnaire discussed in Mr. Hofman's paper, the over-all impression of the companies that participated in the pilot is very positive. It is only in the services account where a majority of the companies criticized the degree of detail for the products of services required.
- I agree with Mr. Hofman that the harmonization of reporting format/rules for multinational companies in the EMU/EU area will result in greater efficiency, ease the reporting burden and provide a level playing field for multinational companies operating in the EU.
- Given these developments, a harmonized reporting for multinational companies will require changes in the reporting format for medium sized companies as well. Would this not raise reluctance by these companies to comply? What would be the implications of such changes in cost and timeliness of reporting for medium sized companies?
- Given that a number of subsidiaries of multinational companies operate in developing and emerging economies, what would be the implications of such uniform reporting format on the reporting of multinational companies' subsidiaries overseas?
- As in the case of Finland and the Netherlands, Denmark has decided to shift its data collection system for balance of payments compilation to direct reporting/surveys from indirect/bank settlement system. Statistics Denmark will take over the responsibility for collection of services and transfers. As a result, Danmarks Nationalbank will focus its statistical activities on the financial account of the balance of payments and the development of new financial statistics for the rest of the financial sector.
- Again as discussed earlier, this will allow Danmarks Nationalbank to strengthen its statistical activity towards monitoring financial stability, which is clearly the mandate of a central bank.

Organization of data collection system in a new environment for balance of payments statistics, Mr. Janez Fabijan

- The shift to a new data collection system – from settlement/indirect reporting to a direct/survey system – has been recognized as a long and costly process in a number of the papers presented. Meanwhile that this new process is being studied, tried or tested, the old system would still have to run parallel for the current compilation. Hence, if the whole new data collection process for the balance of payments will be shouldered by the central bank, it must be supported by investment in equipment, processing techniques, and manpower resources.
- The paper of Mr. Fabijan introduced simulation to answer questions on resources needed for running efficiently a new data collection system if and when management decides to implement a direct reporting system. This initiative is laudable as it will aid management in its decision. Mr. Fabijan, however, admitted that the cost effect of collecting data on an overall national economy level has not yet been compared. Moreover, banks and multinationals are urging the central bank to reduce the cost of reporting. Thus, it comes at a time when there is a risk that the project might encounter some resistance on the part of reporters.
- Again, this brings me to my question of should central banks devolve the conduct of enterprise surveys to the state statistical agency? What would be the pros and cons of this position?

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WORKSHOP D

Monetary and financial statistics and international accounting standards

Chair: Michel Stubbe, *Head of Money and Banking Statistics Division, European Central Bank*

Secretary: Gert Schnabel, *BIS*

Papers: "Eurostat activities on International Accounting Standards – Special focus on Balance of Payments"
Elena Caprioli, *Eurostat*

"IAS impact on central balance sheet data offices:
a Spanish and European view"
Manuel Ortega, *Banco de España*

"A Note on the valuation principles
underlying Financial Accounts"(Background paper)
Kiyohito Utsunomiya, *Hitotsubashi University*

Discussants: Clive Thorp, *Reserve Bank of New Zealand*
Marc Chazelas, *Banque de France*

Eurostat activities on International Accounting Standards

Special focus on Balance of Payments

Elena Caprioli (Eurostat)

1. Introduction

The European Commission is placing great emphasis on accounting harmonisation. The Internal Market Directorate General's aim is to improve the quality, comparability and transparency of financial information provided by companies.

According to the present proposal of the Regulation on the application of International Accounting Standards (IAS), publicly traded companies will be required to apply from 2005 a single set of internationally agreed standards for the preparation of their consolidated financial statements. This will contribute to harmonise financial reports thus enhancing comparability across the European Union. Harmonisation of accounting rules will go to the benefit also of statisticians who are collecting data from enterprises in EU countries.

Member States will have the option to extend this requirement to unlisted companies and to the production of individual accounts: as a result, the degree of application of the IAS may differ from country to country.

The European Commission is working in parallel on the revision of the 4th and 7th Directives to ensure the compatibility between the Accounting Directives, which will remain applicable to all limited liabilities companies, and the International Accounting Standards.

2. Application of IAS: harmonisation of "output"

In the statistical field, harmonisation of "output" has already been achieved for major macroeconomic domains, both at the European level (by means of European Regulations, e.g. ESA 95), and at the international level (e.g. 1993 System of National Accounts, IMF Balance of Payments and Monetary and Financial Statistics manuals), where an agreed set of definitions and indicators has been defined. The result of this work is that statistical statements can be compared across countries, across institutional sectors and over time. The collection of data from respondents however remains a prerogative of each Member State and in practice collection systems differ.[1]

Hypothetically, the same input/output approach may be applied to accountancy, where the Financial Statements may be considered as one of the main output of the accounting system.

Accounting system	Financial Statement
• General ledger • Sub-ledgers • Cost Accounting • Etc.	
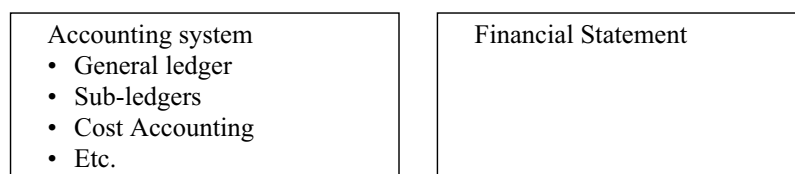
In each country the organisation of companies' accounting system is the result of historical and cultural differences. Nevertheless a shared European accounting system theoretically is attainable: countries and companies practices are evolving and are somehow connected with the harmonisation of commercial law (in this prospect it is worth mentioning the recent creation of the *Societas Europaea*[2]), companies tax regulation and with the world wide phenomenon of globalisation.

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1 *For example, in the BoP domain both surveys to companies and "indirect" reporting of international settlements by banks are used.*

2 *A company may be set up within the territory of the Community in the form of a European public limited-liability company (Societas Europaea or SE) on the conditions and in the manner laid down in Council Regulation (EC) No 2157/2001 .*

The introduction of *Harmonised Standards* does provide a common reference that defines evaluation principles and the content of the Financial Statements for disclosure.

According to IAS 1[3] (Presentation of Financial Statements), the Financial Statement is composed of:

1. Balance sheet
2. Income statement
3. Changes in Equity
4. Cash flow statement
5. Notes to the financial Statement.

The main purpose of the IAS is to ensure comparability of the disclosed accounts, by setting guidelines for their structure and minimum requirements for the content.

These "official" statements are meant for a general purpose, which is to provide a wide range of users with information about the financial position, performance and cash flows of an enterprise. For Financial Institutions additional requirements are set out in IAS 30.

Ideally if the statistical information is already disclosed in the Financial Statements and if accounting and statistical concepts are harmonised, no additional burden is set on companies. In many countries the information can be readily available to statisticians via databases of companies' Financial Statements.

The accounting system in its broad sense is much more detailed than the information disclosed. In particular the general Ledger includes all accounts of a company. It varies depending on the size and complexity of a company's transactions. At the end of each accounting period, all transactions and positions recorded in the Ledger are the object of certain adjustments in order to comply with the accrual system and proper financial recording. Unfortunately at end of period other special recording are sometimes carried out to "make up" the result of the company performance so as to disclose a desired picture (the so called "window dressing").

The Financial Statement is not the only "output" of the accounting system, which also provides other types of information and reports for different purposes, both for the internal management and for external authorities (such as tax, administrative and statistical bodies).

3. Companies' accounts: a challenge for balance of payments compilers

The interest of BoP statisticians in accounting is increasing as data collection procedures are developing towards systems where companies become an increasingly important source of statistical information.

The shift in some EU countries of data sources for the collection of BoP data from bank settlements to companies' data is the result of a series of factors, such as the increasing complexity and diversity of international transactions, the development of Internal Market and the introduction of the Euro and the widespread use of practices like "cash pooling".

Balance of Payments and accountancy concepts and output present a number of similarities. In particular the Financial Accounting records *all external transactions* (meaning transactions with third parties, residents or non residents) of a company.

This is quite similar to the information needs of Balance of Payments, but in this case transactions and positions with residents of the countries are not relevant. The Figure below highlights the sub-set of accounting data that are relevant for Balance of Payments purposes.

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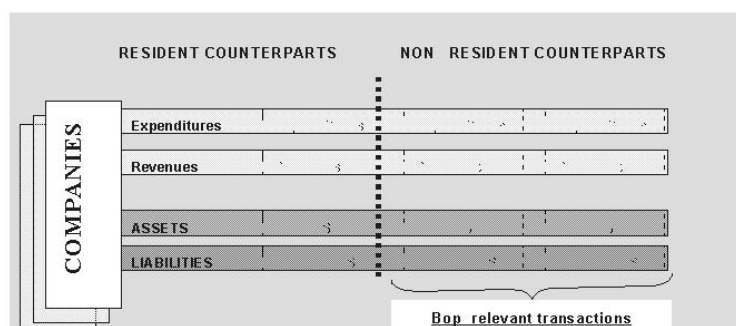
3 *The complete list of IAS document is given in Annex 1. Some of this document is currently undergoing a revision process.*

Also at the output level, Balance of Payments statements and Financial Statements present common concepts. The Current Account could be considered as an Income Statement (however there are some differences in classification for various transactions, such as fixed capital investments, changes in inventories, etc.), the International Investment Position (IIP) as a Balance Sheet and the Financial Account as the changes in assets and liabilities from one period to the other.

Several aspects however need to be considered.

From one side, the level of *detail of the information that will be disclosed* is of particular importance. Official companies' returns *per se* do not appear to be of great usefulness for BoP purposes. In fact the geographical aspect and the level of detail, in particular for the Services items, seem to be the most problematic areas. The IAS 14 on Segment Accounting deals in part with the issue of geography, but the minimum requirements for data disclosure in the Balance Sheets and Income Statements (IAS 1) do not include the split "resident/non-resident" that would be of great interest to BoP statisticians. The information that is needed to compile the BoP and IIP in compliance with the National and International requirements will have to be found in the companies' ledger and sub ledger, and more generally, in the data stored in their data warehouse/ERP systems (e.g. records of orders, invoices, etc.). In this prospect, a major challenge is represented by the development of IT solutions for the accountancy and of ERP systems.

In any case, it is necessary to map the system to identify the moment the information is or could be collected, keeping in mind that each company is different and identifies the organisation of its accounting system so as to better monitor its performance.

The following questions should be addressed:
- Has the statistical data been recorded by the company and inserted in the (accounting) system?
- Are concepts in line regarding classification and evaluation?
- Is it feasible to retrieve the data at a reasonable cost?
- How can this information be made available to statisticians?

The objective is to limit the reporting burden and to obtain from companies data that are in line with the statistical requirements in terms of concepts and level of detail.

Drafting survey forms and clear guidelines in accordance with accounting language makes reporting easier for companies. Furthermore clearly stating statistical needs and working towards harmonisation of concepts are to be considered as a means to save costs for the economic system in general.

It is true that statistical needs are often considered as a burden to companies and requiring some information that was not originally classified may request efforts and manual intervention. Moreover one could expect that in case accounting and statistical concepts differ, companies' might follow the former also when compiling statistical returns.

Regarding *the comparison between accounting and statistical definitions and classifications*, some interesting areas that are being analysed are the evaluation principles of Financial Instruments (and the concept of fair value indicated by the IAS), and the treatment of specific transactions such as insurance, leasing, constructions. Of particular relevance is also the study of the accounting principles related to consolidation and disclosure of participation in Associates, as these concepts are linked to Foreign Direct Investment (FDI) and Foreign Affiliates Trade Statistics (FATS). An example of divergence between statistical concepts and the IAS is the definition of Associates. For FDI statistics, the concept of lasting interest is associated to a threshold of 10% while IAS 28 indicate that a "Significant influence" is presumed to exist if the investor owns more than 20 per cent of the Associate.

Both Eurostat and national BoP compilers have started an in-depth investigation on the links between Accountancy and Statistics. At Eurostat, the Technical Group Direct reporting is investigating best practices in obtaining data directly from companies. The TG has also organised a workshop on Accountancy and BoP. Its activity is co-ordinated with the work carried out by the Accounting Task Force set up in Eurostat, Directorate D (see next paragraph).

Furthermore, at the request of the European Round Table of Industrialists (ERT) a "European Steering Group for Multinationals" has been created to promote the testing of harmonised BoP reporting format for multinational enterprises. The exercise aims at assessing the feasibility of common forms with a close link with the accounting systems, in order to foster efficiency and quality of reporting across Europe. Special attention is also given to IT aspects, which are considered to have a significant impact on statistical work and contacts have been taken with major software companies. The results of the first contacts with major European multinationals indicate that *common understanding of information needs and data availability goes to the benefit of both statisticians and enterprises, by offering a better correspondence between statistical requirements and companies' accounting.*

4. Accountancy: Opportunities and constraints for statisticians

In the field of Accounting and Statistics, Eurostat (Directorate D) has set up an Accounting Task Force with participation of several countries as well as representatives from DG Internal Market. The major statistical fields likely to be influenced by the introduction of IAS (National Accounts, Financial Accounts, Business Statistics, Business Registers, Balance of Payments, etc.) are also actively involved. This group will also integrate a representative from balance sheet data offices and other stakeholders in this domain: furthermore, it is planned to invite participation also from the EFRAG (European Financial Reporting Advisory Group).

High level meetings have already started involving EFRAG, CMFB representatives, ECB and Eurostat

Regarding possible influence of statisticians in the development of the standards, it is important to mention that the IAS Board is actively reviewing a number of the current standards and a number of changes and improvements are expected to result from this review. Under a separate project also IAS 32 (Financial Instruments: Disclosure and Presentation) and 39 (Financial Instruments: Recognition and Measurement) are under review. EFRAG recognises that IAS 39 currently gives rise to the greatest difficulties – particularly in the area of derivatives, repurchase agreements and hedge accounting. The calendar for such reviews is given in Annex 1.

5. Conclusions

Statisticians should follow the development of accounting principles as survey variables could be at risk of some change and, conversely, opportunities can be explored to obtain directly from the accountancy data, which would be closer to statistical needs. The opportunity to react and to participate in the revision process of the International Accounting Standards should be considered with special attention.

A main concern is related to the difference between accounting and statistical language. Accounting and statistical concepts are complex and comparing the two requires high competence.

It is important, however, to emphasise that basic principles like time recording, accruals, double entry accounting and stock and flows concepts are common to companies accounts, National Accounts and Balance of Payments.

Having a closer look at the source of statistical data, in the specific case of company accounts, is a crucial point. The challenge is mainly directed at *finding synergies* and opportunities in terms of costs for statistical reporting and in terms of convergence of concepts.

Statisticians should not miss the chance to actively interrelate with the relevant accountancy bodies and clearly state their needs, by all possible means, at European and national level[4]. The result is a higher quality of statistics and less reporting burden for companies.

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4   *The CMFB document 02/07/D.5 "International Accounting Standards" proposes future actions and divisions of responsibilities between EU and National statistical institutions.*

Annex 1

International Accounting Standards
in existence at 1 March 2002

In bold are those 13 standards for which an exposure draft has been issued and comments are invited by September 2002 to International Accounting Standards Board.

Moreover an Exposure Draft of Proposed amendments to IAS 32 and IAS 39 is available in the IASB web site and comments to be received by 14 October 2002.

IAS No.*	Title
IAS 1	**Presentation of Financial Statements**
IAS 2	**Inventories**
IAS 7	Cash Flow Statements
IAS 8	**Net Profit or Loss for the Period, Fundamental Errors and Changes in Accounting Policies**
IAS 10	**Events After the Balance Sheet Date**
IAS 11	Construction Contracts
IAS 12	Income Taxes
IAS 14	Segment Reporting
IAS 15	**Information Reflecting the Effects of Changing Prices**
IAS 16	**Property, Plant and Equipment**
IAS 17	**Leases**
IAS 18	Revenue
IAS 19	Employee Benefits
IAS 20	Accounting for Government Grants and Disclosure of Government Assistance
IAS 21	**The Effects of Changes in Foreign Exchange Rates**
IAS 22	Business Combinations
IAS 23	Borrowing Costs
IAS 24	**Related Party Disclosures**
IAS 26	Accounting and Reporting by Retirement Benefit Plans
IAS 27	**Consolidated Financial Statements and Accounting for Investments in Subsidiaries**
IAS 28	**Accounting for Investments in Associates**
IAS 29	Financial Reporting in Hyperinflationary Economies
IAS 30	Disclosures in the Financial Statements of Banks and Similar Financial Institutions
IAS 31	Financial Reporting of Interests in Joint Ventures
IAS 32	*Financial Instruments: Disclosure and Presentation*
IAS 33	**Earnings per Share**
IAS 34	Interim Financial Reporting
IAS 35	Discontinuing Operations
IAS 36	Impairment of Assets
IAS 37	Provisions, Contingent Liabilities and Contingent Assets
IAS 38	Intangible Assets
IAS 39	*Financial Instruments: Recognition and Measurement*
IAS 40	**Investment Property**
IAS 41	Agriculture

* Discontinuity in the numbering of IAS is due to the fact that some of the first standards have been superseded by more recent ones.

Reference documents

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European Accounting Guide, 4th edition . Miller.

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IAS impact on central balance sheet data offices:
a Spanish and European view

Manuel Ortega (Banco de España)

I. Central balance sheet data offices and statistics

Since 1987, the European Central Balance Sheet Data Offices (CBSO) have been collaborating in a European Committee (European Committee of Central Balance Sheet Data Offices, ECCBSO) with a view to improving the economic and financial information on non-financial corporations available in their databases. The exchange of experiences and working methods, joint studies and, lastly, the joint maintenance of certain databases pay testimony to the co-operation between these Offices which, given their different institutional and functional arrangement, maintain different objectives and ways of operating. The document distributed as an annex hereto (circulated in the 23rd meeting of the CMFB) reports the studies conducted in the ECCBSO and the member countries. It is worth noting here that, although the main objectives of central balance sheet data offices differ, they all share both the basic information (individual and/or consolidated annual accounts of non-financial corporations) and the associated results, i.e. the existence of databases that are used to conduct studies and compile statistics on individual corporations and on their aggregates, by sector of activity and size, and also national aggregates.

In the case of a significant group of central balance sheet data offices, there is close co-operation between the central balance sheet data offices and the central banks' statistical units (Belgium and France), if not indeed full integration (the case of Spain and Portugal) or the related national statistical offices (Finland and the Netherlands). In all these countries, corporate annual accounts are a source of information or a factor for controlling the compilation of financial accounts and the non-financial part of National Accounts.

It is not the aim of this address to review the mechanisms linking business accounting and national accounting. But it would seem advisable briefly to highlight the problems shared by statisticians in preparing studies and statistics and the main points connecting both areas. These aspects are covered in section II of this document.

The process of international accounting standardisation promoted by the stock markets, which has led to a situation whereby the consolidated annual accounts of companies listed on European markets are to be compiled in accordance with IAS (rules issued by International Accounting Standard Board), marks a change from the current situation and will have immediate repercussions in the aforementioned databases. This poses a challenge, involving opportunities for standardising the information but also dangers both for central balance sheet data offices and statistical offices. I shall refer to these in sections III and IV drawing on the Spanish and European standpoint. The latter point of view is broader and taken from the work conducted in the group set up for this purpose within the ECCBSO (III WG, on the IAS impact and CBSO databases), which it is my current privilege to chair.

II. Business and national accounting: common points and problems

Business accounting in continental Europe is historically based in most countries on compulsory rule-based systems. These have had to adapt to the common source of the European Accounting Directives, which has not proven too difficult given the excessively lax nature of the latter. It might be concluded that compliance with the Directives has not created a common information base. In Spain's case, the relatively recent arrival on the scene of the General Chart of Accounts (GCA), which dates from 1990, enabled many of the international dictates prevailing at that time to be adopted. This endowed the GCA with a high informative value for statistical purposes (including most notably the inclusion on the balance sheet of leasing transactions and the discounting of commercial paper, and the segregation of taxation and accounting). The official institution compiling

the accounting rules has also assumed responsibility for updating the GCA, at least in part, through resolutions and interpretations geared to bringing it into line with the changes that business reality imposes. That has allowed use of the legal source of information (the GCA), with additional details requested by the Banco de España Central Balance Sheet Data Office, to make an approximation to the full accounts of corporations in national accounting terms. Thus, the Central Balance Sheet Office was able to create, first, an intermediate system providing for the transition of business accounting concepts to those correlating to national accounting; second, it incorporated source hierarchisation adjustments and estimations with which to approximate the valuation of the different transactions and instruments to what was stipulated in ESA 95; and lastly, as from 1999, it has performed an extrapolation exercise with which it compiles complete accounts of the aggregate of non-financial corporations, which act as a basis and control in the compilation of financial accounts by the Banco de España, and the National Accounts by the National Statistics Institute.

The *speed of change* over the past decade resulting from market globalisation, the explosion and expansion of information and communications technologies, and investor pressure on stock markets to have access to relevant information has meant that Spanish and European statisticians and accountants (who are also statisticians even though they may not perhaps know it) have to face the same pressing problems.

a. Information users request that, *in unison, data reliability should be increased and the time lag reduced* between when events occur and when the data reflecting them are disseminated. Analysts are thus exerting pressure to achieve something which is impossible: that the process of data recording and editing be reduced to something close to zero, without the quality of the information being affected.

b. Analysts *have no wish to know the technical details* that would explain how two intertemporal or interspatial observations are not fully comparable. They "merely" require of data providers (whether they work in a central balance sheet data office or in a statistical unit, and whether the analysis of a corporation or of a national aggregate is involved) that they *make comparable* what is on occasions practically impossible to standardise.

c. Meeting under pressure the requests formulated in the two foregoing points is a task carried out also by other *private agents* that have progressively emerged on the market. Private databases, which are not subject to the strictures characterising official data, claim they are capable of attending to market requirements, although this may entail some imbalance between reliability and urgency.

d. Broadening the supply of information and its use by analysts leads to *contradictions emerging* between various sources. The process of analysing and explaining differences, which brings about priceless gains in quality, entails an additional workload in the short term. Nonetheless, the obligatory process of *co-ordinating sources* and data (real and financial; resident and non-resident; microeconomic and macroeconomic) offers advantages in the medium and long term that are hard to quantify.

Those of us who, in our daily work, have been obliged to reconcile working on one hand as business accounting experts and on the other as National Accounts statisticians, have met with a pleasant surprise. Facing us are two conceptual frameworks, that of business accounting and that of national accounting, which are compatible and closely related. Both sides have things to learn from and teach to one another:

1. *Business accounting* has progressively taken on concepts proper to national accounting (gross value added, for instance). Examples of this are the reports of certain large corporations which, along with other data, report the contribution they make to GDP or to national income. Regarding valuation, there is a growing need under business accounting to have alternative valuations at historical price; thus, the analysis of corporate profitability requires close-to-market valuations, which are the basis of national accounting, or at least valuations at current values, to improve the compatibility of ratios between companies. The valuation of intangible assets and the recording of financial derivatives and of new financial instruments are problems faced by business accountants for which they could well refer to the studies conducted in the sphere of national accounting. Probably, one of the improvements that would help in the interpretation of business results would be a clearer separation of the current transactions that are reflected in companies' profit and loss accounts from flows that are not transactions, i.e. changes in volume and, in particular, revaluations. This is a matter under study internationally in business accounting (the separation between the concept of profit and distributable profit), for which ESA 95 has provided a conceptually brilliant solution[1].

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1   *In any event, there is a clear need, in the national accounting sphere too, to keep borderline cases continuously under study so as to standardise the division between current and capital transactions, which affect the deficit, and financial*

2. In the case of *national accounting*, SNA 93 and ESA 95 integrated into the system the compilation of balance sheets and, with these, the need for a full reconciliation between stocks and flows (transactions and other flows). This complete accounting framework is substantial to business accounting. Likewise, macroeconomic analysis requires the preparation of traditional ratios in business accounting, measuring the efficiency of returns, through the comparison of flow and stock variables (the above-mentioned profitability may act as an example, as may productivity). Finally, the valuation of certain financial instruments requires traditional business economics tools. Thus, book value valuation of other equity, and of shares not listed in certain countries, requires business accounting information. The same may be said of the methods that can be used in valuing unlisted shares (listed companies' capitalisation/book value ratio; discounting of profit flows).

However the main problem for business accounting in Europe is the lack of uniformity across countries, which takes us back to the beginning of this section. The accounting Directives have proven too flexible, perhaps because they accommodated the pre-existing national accounting rules, the differences in which arise largely from those in the various countries' mercantile regulations. Precisely because of this, because they derive in part from substantive law, there was cause for pessimism some years back about business accounting being able to attain what national accounting has, namely the existence of an international reference manual. Pressure from agents, first, and from recent accounting scandals, subsequently, have prompted and speeded through an accounting unification process that was inconceivable a decade ago.

First. Pressure from corporations listed on international markets, which did not wish to show two alternative measures of profits and own funds, depending on the market on which they were listed.

Second. The recent scandals in respect of management (inappropriate remuneration policies via stock options), accounting (expenses booked as assets), auditing (concealment of illegal practices), supervision (inadequate controls) and consultancy (conflict of interests with the companies analysed) have all led to a demand by investors for governments to intervene.

The compulsory use of IAS rules by listed European corporate groups has thus become a solution to the problem of the comparability of accounting information in Europe. The challenge posed to European central balance sheet data offices, which will be affected to differing degrees by this change, led the IIIWG of ECCSBO first, to initiate in 2001 the monitoring of the regulatory changes envisaged in Europe; and second, to study in each of the member countries the differences and similarities between their databases as a starting point for preparing a standard form consistent with IAS rules. The document referred to earlier, which was circulated in the CMFB and has been distributed in this workshop, offers the findings of the work conducted in 2001 by the IIIWG of the ECCSBO. Section III highlights the key aspects of this work, with section IV then providing the catalogue of risks and opportunities arising from the forthcoming regulatory change.

III. IAS impact and CBSO databases

The objectives of the IIIWG of the ECCSBO are:
(i) To report to the ECCSBO on the situation of implementation of the IAS standards in European regulations and in the regulations of the Member States that make up the group (Germany, Austria, Belgium, France, Spain, Italy and Portugal).
(ii) To report on the foreseeable impact of the application of the IAS standards on databases and/or CBSO systems of analysis.
(iii) Analysis of the databases (questionnaires) of each central balance sheet office and preparation of a standard form based on the IAS (more specifically, using the XBRL taxonomy approved by the ISAB), which could subsequently be used by those central balance sheet offices that wish to use it.

As regards the first of these tasks (*situation of implementation of the IAS standards* in Europe and in the individual countries), Table 1 of the document distributed to the CMFB summarises the situation as at October 2001. Of note since then has been the approval in June 2002 of the Regulation of the European Parliament and of the Council (yet to be officially published), which officially adopts

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(when is connected to other financial operation) and revaluation transactions and changes in volume, which do not. The compilation and revision of the debt and deficit manual are an example to follow in business accounting. As is later outlined, the application of IAS in Europe and the interpretation thereof are the symmetrical reference to the aforementioned process of clarification and standardisation, which is maintained in national accounting.

IAS standards to harmonise the information presented by officially listed company groups and the presentation of a proposed directive in June 2002 to eliminate the outstanding conflict between the directives and the IAS standards; this proposed directive foresees the elimination of the annual account formats defined in the 4th and 7th Directives. It should be noted that:

- Mandatory use of IAS standards by listed groups has been approved for the drafting of consolidated accounts as from those relating to 2005 (the financial year beginning on 1 January 2005), with deferment to 2007 for those groups that use to prepare their accounts in accordance with other international standards. Each state shall decide whether they are to apply to the consolidated accounts of unlisted companies and/or individual accounts. In the case of Spain the government has, since June 2002, had a White Paper for the accounting changes that would apply to all companies. Of the rest of the countries, only Portugal has stated its intention to extend the use of IAS standards to all companies. Anyway, all the participating countries envisage that the consolidated accounts of unlisted companies will in future be prepared in accordance with IAS standards.
- The Commission shall decide by December 2002 on the applicability of the current IAS standards (for which purpose it has drawn up the above mentioned draft directive). Section 4 of this document discusses some of the planned changes and their effects.

As regards the *impact envisaged on central balance sheet offices*, that will obviously depend on the extent to which IAS standards are eventually applied in the different countries, although all the countries participating in the group have stated that their databases will be affected. The change of conceptual framework introduced by the IAS standards is initially of considerable importance, which has a bearing on the above-mentioned impact. Annex 1 to this document gives a list of the IAS standards and SIC interpretations in force. The following table sets out the broad differences between the directives and the IAS standards.

Main discrepancies between the IAS and European Directives

Criteria	European Accounting	IAS
Aims of accounting	True and fair view of enterprise, for creditors´ and investors´ use	Delivering information for investors´ decision-making
Accounting principles	Principle of caution (prudence)	Principle of accounting on an accrual basis
	Protection of creditor	Protection of investor
Influence of tax law	Financial reporting used for fiscal purposes in some countries	No influence of taxation on accounting principles
Classification	Rules for classification	No strict classification rules
	Standard formats	No standard formats

As regards the third target of the WG (a *comparative study of the databases* or questionnaires and the drafting of a standard European format), it should be noted that some central balance sheet offices have databases for consolidated and individual accounts, whereas others only have them for individual accounts. Given that the application of the IAS standards to the consolidated accounts is official whereas this is not the case for individual accounts, each participating country has decided which questionnaire (individual or consolidated) it wishes to work with. Meanwhile, the standard questionnaire currently being drawn up on the basis of the XBRL (extended Business Reporting Language) taxonomy approved by the IASB will include the greatest possible amount of detail so that later the common minimum to be used in future can be decided. For the purposes of comparison a set of examples is being prepared on the basis of the accounts of 14 listed European groups which are stated as being prepared in accordance with international accounting principles. The standard questionnaire is being completed on the basis of this information, in order to ascertain which of the data required by the IAS standards will be readily obtained from the accounts actually prepared by companies and which will not be. The situation of this work will be reported in October 2002 to the European Committee of Central Balance Sheet Offices in Paris (so far the maximum content that could be requested in accordance with IAS standards has been determined, in the sections "general company characteristics", "employment" and "active", as well as all the notes that should be included on these items in the notes to the accounts).

IV. IAS implementation in Europe: opportunities and risks

It is clear from the above that the accounting changes will have a different extent depending on the country concerned. It also seems likely that the changes will occur gradually. Most countries do not initially plan to introduce IAS standards for individual accounts, yet the use of these standards by groups may in future affect the large national companies and the small and medium-sized ones within their sphere. As a result, countries are authorised to extend the IAS standards to other companies and groups of companies. In any case, it is clear that *the administrative sources of information will be affected in one way or another*. The following paragraphs highlight some of the opportunities and risks that can be expected to arise.

Opportunities

The first and most obvious is that the information source, *the company accounts, will be fully comparable at the international level*, and not only at the level of listed European consolidated groups. There will also be comparability with the rest of the world, insofar as the IAS standards are eventually adopted as the single international standard[2].

In addition, Europe has a procedure for drafting accounting standards (by filtering and approving those drafted by the IASB) which will be more flexible and will more rapidly adapt regulations to the changing reality.

Some of the planned accounting changes tie in with the requirements of the national system of accounts. In particular:

- Valuation at market prices (fair value) of the financial assets and liabilities that are quoted on organised markets and not held to maturity (those that are held to maturity will still be valued at historical cost). A significant change is that other tangible assets may be valued in future at market prices; specifically, investment property (IAS 40) and biological assets (IAS 41 Agriculture), may be so valued, when the Member State concerned introduces this change.
- Approximation of the present value (as a second best to market value) of assets that are allowed to be revalued, in addition to those planned so far (the Directives envisage the revaluation of tangible assets; intangible assets may also be revalued under IAS standards).
- Disclosure of new data: information on action taken to protect the environment and environmental risks, social balance sheets, assets arising from the knowledge economy (website developments for example); inclusion in the balance sheet of assets acquired through leasing and of discounted bills in those countries in which such data are recorded off-balance sheet.
- Segmented data, with a more detailed breakdown by productive activity.
- Availability, for all companies, of an accounting statement detailing the changes recorded in own funds.
- Obligation to submit interim reporting data (quarterly, by-annual).

In any event, the greater opportunities for statistical and economic analysis already exist. Company accounting information, irrespective of the accounting model and system of valuation applied in the country concerned, is a data source that is probably under-utilised by the European Statistical System. Specific phenomena such as the setting up and dissolution of companies, the existence of numerous companies with no employees, real state and property companies and the setting up of groups of companies, and the effects of these phenomena on national accounts, can and should be analysed using basic accounting information. Countries with quarterly central balance sheet data can also begin to use the data available as a check when preparing the quarterly financial accounts. Related to timing aspects, perhaps this could be a good opportunity to ask for changes in mercantile regulations, and demand an earlier deposit of the annual accounts: the advances in technology should allow non-financial corporations to set their annual accounts and deposit them earlier.

Risks

The first and most obvious one is the appearance of breaks in the series maintained by central balance sheet offices (for example, the new treatment of leasing transactions and fair value accounting entail breaks in the series or else new estimates).

Point 15 mentions the possible gain in terms of regulatory flexibility. However, the concomitant risk is that the information requirements of stock markets set the agenda for European standardising institutions. This will be referred to again in the next point.

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2 *This, which is the basic premise, is still not fully accepted. The US authorities have been reluctant to accept standards other than those drawn up nationally (US GAAP, General Accepted Accounting Principles), so that this obstacle remains. It will probably be overcome shortly, once the IAS standards comply with the SEC's requirements.*

The gain in terms of international comparability for listed groups of companies may entail a loss of comparability at the national level, in the event that other groups and/or individual companies not use the IAS standards. This will highlight the power of stock markets in those countries in which it occurs, in so far as the information requirements of investors, will have adverse consequences for other agents who use the annual accounts of companies (suppliers, clients, employees, management, other users), by making comparisons between national companies within the country concerned more difficult.

All in all, there are two main risks inherent to the IAS standards which are now being adopted in Europe:

- The existence of alternative accounting treatments and valuations. Currently, IAS standards establish preferable and alternative treatments, although it is expected that the alternatives will be reduced or even eliminated. For example, capital subsidies may be reflected in the liabilities, or else offset against assets, so that the assets acquired with the capital transfers disappear from the balance sheet[3].

- Absence of standard formats. IAS regulations expressly[4] avoid defining standard formats for the balance sheet, profit and loss account and other supplementary information. Future use of XBRL as language reporting will eliminate the needs of standard formats, but for the moment is still very necessary the existence of electronic formats. This is the only way to create databases with companies´ annual accounts.

This is probably the greatest challenge facing us. A change in this area in the non-continental approach which informs the international standards would be desirable in order to meet the requirements of Eurostat and enable accounts formats to be developed, which the continental European countries and their companies are used to having. *The cost of maintaining this practice, which is normal in Europe, is less than the supposed benefit arising from freedom of choice of format.* The more abundant information, but without officially approved presentation formats, is of no assistance to analysis and knowledge of the reality reflected by the data. And this prejudices statistics compilers, as well as the other users of annual accounts.

To finish, and by way of conclusion, there are three challenges facing statisticians and company accountants:

To ensure that the accounting change brought about by IAS standards benefits the European statistical system and the companies themselves, ending the repeated requests for information from them. If the regulatory change were to take into account the information requirements of all agents, and not only those of stock market analysts, and these were incorporated in official forms, the cost that adaptation to the IAS standards is going to entail for companies would be widely exceeded by the ensuing benefits. Perhaps it could be taken advantage of the changes in laws, to demand for an earlier elaboration and deposit of annual accounts by companies.

Irrespective of the foregoing, to increase co-ordination between the different statistical units and to fully exploit the information possibilities afforded by central balance sheet offices to the European Statistical System.

To tie in with the beginning of my talk, we are facing a time of change and continual acceleration. The move to IAS standards will afford additional detail in company information. In this context, the real challenge is to use more information more quickly, without any loss of quality. And, if possible, to be able to get home for supper with the family.

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3   *In business accounting Capital transfers are booked in liability side of the balance, instead registering as an income.*

4   *As mentioned, the IIIWG is developing a standard model based on the XBRL- IASB taxonomy. However, this is a derived and qualified model that inevitably has on occasions had to opt for one model or another for presenting data. Accordingly, it can still be concluded that the current IAS standards do not define a standard information model.*

Annex 1

International Accounting Standards in force and its year of approval

IAS	1	Presentation of financial statements	1997
IAS	2	Inventories	1993
IAS	3	Consolidated financial statements *(revoked by IAS 27 and 28)*	
IAS	4	Accounting for depreciation *(revoked)*	
IAS	5	Financial statements disclosures *(revoked by IAS 1)*	
IAS	6	Accounting for changes in prices *(revoked by IAS 15)*	
IAS	7	Cash- flow statements	1992
IAS	8	Net profit or loss for the period, fundamental errors and changes in accounting policies	1993
IAS	9	Research and development costs *(revoked)*	
IAS	10	Events after the balance sheet date	1999
IAS	11	Construction contracts	1993
IAS	12	Income taxes	2000
IAS	13	Presentation of current assets and current liabilities *(revoked by IAS 1)*	
IAS	14	Segment reporting	1997
IAS	15	Information reflecting the effects of changing prices	1994
IAS	16	Property, plant and equipment	1998
IAS	17	Leases	1997
IAS	18	Revenue	1993
IAS	19	Employee benefits	2000
IAS	20	Accounting for Government grants and disclosure of government assistance	1994
IAS	21	Effects of changes in foreign exchange rates	1993
IAS	22	Business combinations	1998
IAS	23	Borrowing costs	1993
IAS	24	Related party disclosures	1994
IAS	25	Accounting for investments *(revoked)*	
IAS	26	Accounting and reporting by retirement benefit plans	1994
IAS	27	Consolidated financial statements and accounting for investments in subsidiaries	2000
IAS	28	Accounting for investments in associates	2000
IAS	29	Financial reporting in hyperinflationary economies	1994
IAS	30	Disclosures in the financial statements of banks and similar financial institutions	1994
IAS	31	Financial reporting of interest in joint ventures	2000
IAS	32	Financial instruments: disclosure and presentation	1998
IAS	33	Earnings per share	1997
IAS	34	Interim financial reporting	1998
IAS	35	Discontinuing operations	1998
IAS	36	Impairment of assets	1998
IAS	37	Provisions, contingent liabilities and contingent assets	1998
IAS	38	Intangible assets	1998
IAS	39	Financial instruments: recognition and measurement	2000
IAS	40	Investment property	2000*
IAS	41	Agriculture	2001**

* Effective date 2001
** Effective date 2003

Standing Interpretations Committee (SIC)

SIC 1	Consistency - Different costs formulas for inventories	IAS 2
SIC 2	Consistency -	IAS 23
SIC 3	Elimination of unrealised profits and losses on transactions with associates	IAS 28
SIC 4	Classification of financial instruments – issuer's settlement option	IAS 32
SIC 5	Classification of financial instruments – contingent settlement provisions	IAS 32
SIC 6	Cost of modifying existing software	Framework
SIC 7	Introduction of the euro	IAS 21
SIC 8	First time application of IASs as the primary basis of accounting	IAS 1
SIC 9	Business combinations – classification either as acquisitions or uniting of interests	IAS 22
SIC 10	Government assistance – no specific relation to operating activities	IAS 20
SIC 11	Foreign exchange – capitalisation of losses resulting of severe currency devaluations	IAS 21
SIC 12	Consolidation – special purpose entities	IAS 27
SIC 13	Jointly controlled entities – non monetary contributions by venturers	IAS 31
SIC 14	Property, plant and equipment – compensation for the impairment or loss of items	IAS 16
SIC 15	Operating leases – incentives	IAS 17
SIC 16	Share capital – reacquired own equity instruments (Treasury shares)	IAS 32
SIC 17	Equity – cost of an equity transaction	IAS 32
SIC 18	Consistency – alternative methods	IAS 1
SIC 19	Reporting currency – measurement and presentation of financial statements	IAS 21 and IAS 29
SIC 20	Equity accounting method – recognition of losses	IAS 28
SIC 21	Income taxes – recovery of revalued non-depreciable assets	IAS 12
SIC 22	Business combinations – subsequent adjustment of fair values and goodwill initially reported	IAS 22
SIC 23	Property, plant and equipment – major inspection and overall costs	IAS 16
SIC 24	Earnings per share – financial instruments and other contracts that may be settled in shares	IAS 33
SIC 25	Income taxes – changes in the tax status of an enterprise or its shareholders	IAS 12
SIC 26	Property, plant and equipment – results of incidental operations	IAS 1, IAS 17 and IAS 18
SIC 27	Evaluating the substance of transactions involving the legal form of a lease	IAS 1, IAS 17 and IAS 18
SIC 28	Business combinations – "Date of exchange " and fair value of equity instruments	IAS 22
SIC 29	Disclosure – service concession arrangements	IAS 1
SIC 30	Reporting currency – translation from measurement currency to presentation currency	IAS 21
SIC 31	Revenue – barter transactions involving advertising services	IAS 18
SIC 32	Costs of web pages	IAS 38
SIC 33	Derechos potenciales de voto y reparto de los intereses de los propietarios	IAS 27

A Note on the valuation principles underlying Financial Accounts

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Background Paper

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1. Introduction

Over the last decade, statisticians of central banks and national statistical offices in major countries have been engaged in implementing SNA93 and the following ESA95 for their national accounting systems, and in the last few years their work has almost been completed. During this period, however, actual economic and financial structures have also changed, as information technology has developed and globalization progressed. In financial fields, in particular, with the introduction of new financial products into the market, companies have been increasingly required to face various risks: market risks, credit risks, liquidity risks and so on,.

. Against this background, although accounting standards for business accounting still vary among countries, the International Accounting Standard Committee (IASC) has been engaged in the international promotion of fair value accounting. The Joint Working Group (JWG) established jointly with the accounting standards-setting bodies of major countries has proposed that all financial instruments should be measured at fair value in its exposure draft titled "Financial Instruments and Similar Items" (2000).

In the sense that in the SNA balance sheets stocks are evaluated on a mark-to-market basis, it can be said that the accounting concepts governing the two systems of business and national accounting are gradually converging. However, national and business accounting have never been essentially the same in their purpose and function. Even SNA93 is still far from representing the wholesale adoption of a system based on market values.

In this paper, referring to the difference in purpose between these micro and macro accounting systems, I focus on the issue of the valuation of financial accounts in the SNA. The paper is organized as follows: Section 2 presents an overview of the accounting purposes of and points out the differences between the national and business accounting systems. Section 3 discusses the issue of loan asset valuation and section 4 presents quantitative estimates of the differences between several valuation methods.

2. The Purpose of the SNA and fair value accounting

2.1. Economic principles and valuation

Although there are arguments about the role of business accounting, there seems to be a consensus that business accounting is supposed to provide a company's stakeholders with information and that it functions as a measurement system for contracts among them. In contrast, since "the SNA is a multi-purpose system, designed for economic analysis decision-taking and policy-making" (1.29)[1] according to SNA93, its function is not so clearly specified as that of business accounting.[2] However, with regard to valuation, the prevalent idea is that the SNA is based on economic principles.

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1 *This and subsequent quotations are from Systems of National accounts, hereafter SNA93.*
2 *In SNA93, the specific uses of the SNA are described as "monitoring the behavior of the economy," "macroeconomic analysis," "economic policy-making and decision making," and "international comparisons"; however, these are still broad.*

SNA93 prescribes that "when business accounting practices conflict with economic principles, priority is given to the later."(1.59) More specifically, SNA93 states the following: "Business accounts commonly (but not invariably) record costs on an historic basis, partly to ensure that they are completely objective… In the System, however, the concept of opportunity cost as defined in economics is employed… The best practical approximation to opportunity cost accounting is current cost accounting, whereby assets and goods used in production are valued at their actual or estimated current market prices at the time the production takes place 1.60)"[3]. Although it would not be fair to describe the opportunity cost as wholly meaningless information within a business accounting framework, where the interest of business accountants is focused on a company as an going concern the historical cost method may be deemed more objective and better suited to the needs of stakeholders. For example, the "lower of the cost or market" method in business accounting, in which the cost of an acquisition and its market value are compared and the lower value is recorded, reflects the unique accounting principle of "conservatism" that aims to protect creditors by disclosing as far as is possible any information that may be considered detrimental to a company. In such respects there are clear differences in underlying purpose that distinguish national accounting, based on economic principle, from business accounting.

2.2. Valuation consistency

The SNA is composed of data aggregated from different economic institutions, while business accounting typically deals with the records of one company or of consolidated companies. Changes in assets and liabilities simultaneously cause changes in those of counterparties, and so double-entry bookkeeping by both parties to a transaction results in what is called "quadruple-entry bookkeeping". Thus, to preserve balance-sheet consistency, the valuation method used for a given financial asset or liability must be the same among all economic entities even if there are some differences in their business accounting practices.

For example, under the Japanese business accounting rules governing the valuation of financial instruments which were introduced in 2000, the means of measuring the value of securities is determined based on the objectives of those owning the securities.[4] Under the new framework, securities are classified into four categories: trading securities and others are evaluated at market prices, while securities held to maturity are evaluated at historical costs and shareholders' equities at costs subject to depreciation. This type of framework seems quite reasonable for the purpose of keeping stakeholders informed about the current condition of a company viewed as a going concern. However, this method of bookkeeping is not appropriate for the SNA because transactions involving securities must be recorded in such a way that total assets and liabilities are balanced as a whole. Unlike business accounting, the method used for recording a specified transaction must be consistent, regardless of objectives of creditors or debtors. Thus, as long as market prices exist, these values are adopted.

2.3. The JWG's proposal and SNA93

As financial markets have developed and the securitization of assets and liabilities has spread, objective accounting information has become measurable and all market participants have come to require such information. Under these circumstances, fair value recording has become widespread in business accounting in practice, and the JWG under the IASC has taken a position advocating that all financial assets and liabilities should be valued based on their fair values instead of according to conventional historical costs.

At the current juncture, the valuation principles underlying business accounting have progressed beyond those of national accounting. Specifically, while SNA93 states that "financial assets and liabilities should be valued at current prices whenever they are regularly traded on organized financial markets, and they should also be assigned the same value in the balance sheets whether they appear as assets or liabilities" (13.64), it also takes the position that "financial receivables (claims) not traded in organized financial markets should be valued based on amounts payable by debtors to creditors for the extinguishment of the claims (13.64)." From this position,

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3   *In the paragraph which follows, SNA93 points out the problems inherent when using historic costs at a time of inflation. "Profits at historic costs are liable to give very misleading signals as to the profitability of the production processes to which they relate by systematically undervaluing inputs compared with outputs."(1.61)*

4   *See JICPA's Accounting Committee Report No.14 "Practical Guidelines for Accounting for Financial Instruments."*

SNA93 has determined that deposits and loans should be recorded using book values instead of market values.

The JWG's proposal is certainly adventurous and has aroused opposition from business accountants in many countries. Nobody denies the difficulty of assessing the market values of products without explicit trading markets. However, if the conventional accounting framework overlooks the changing situation observed in the actual economy, something new should be done to rectify this oversight. From the perspective of economic principle, national accountants should also reconsider the accounting rules governing those assets and liabilities without well "organized financial markets."

3. Valuation of loan assets

3.1. Valuation of loans in SNA93 and the IMF Manual

One of the most controversial issues is the valuation of loan claims[5]. A basic principle of SNA93 is to recognize loan claims as "financial claims that are not traded in financial markets," and to value such claims based on book values. However, now that financial markets have developed to the extent that more and more loan claims are securitized and traded in markets, this rule set out in SNA93 no longer seems necessarily appropriate. Moreover, obtaining the fair values of loan claims will be of help in making prudent policy judgments in an economic sense.

The Monetary and Financial Statistics Manual published by the IMF in 2000 (hereafter the Manual) recommends that "the entire loan portfolio be valued at book value in presenting the loan value"(206) in line with SNA93 and conventional accounting practice. In addition, the Manual by the IMF also recommends that "data on expected loan losses be shown as memorandum items accompanying the sectoral balance sheets."(207)

3.2. Valuation methods in practice

A point that is always discussed with regard to valuation based on fair values is the method used to obtain an actual fair value. If there is a complete market, the present values of future cash flows are reflected in market prices and objective values are obtainable there. However, even if many loan claims and debts are traded in the market nowadays, objective market prices or fair values of loan claims are not obtainable from market information. The Manual states that "data can be used to obtain the expected realizable value of loans, by deducting the expected loan losses (whether or not covered by loan loss allowances) from the book values of the loans."(207)

In practice, fair value accounting of loan claims in the SNA is done in only a limited number of countries such as Japan and Germany. In Japanese financial accounts, the fair value of loan assets held on the balance sheets of private banks are obtained by deducting specific allowances from book values[6]. For example, as shown in Figure 1, even if there are no new loan transactions, loans outstanding can be reduced by an increase in the special allowance as well as by direct write-offs or by drawing-down the allowance. Since specific allowances are calculated for individual claims by estimating the probability that the debt (or some part of the debt) will become uncollectible, based on the debtor's condition, this valuation is regarded as a reliable accounting method.

In this calculation, in order to balance assets and liabilities, debts held by the nonfinancial corporation sector are devalued at the same time. From an individual debtor's perspective this treatment may seem strange not only in a legal sense but also in an economic sense. We would expect debtors' economic activities to be affected by the burden of their debts unless the acquittal between debtors and creditors is concluded. In this respect, however, the present mark-to-market valuation of securities has the same problem. When corporate bonds are devalued in the market, although the redemption price is unchanged, the aggregate debt is recorded based on the devalued market price. The essence of valuation in the SNA is to capture reality on an aggregated basis, not on an individual basis.

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5 *Issues on the valuation of actuarial liabilities of retirement benefit and stock options in national accounting are discussed in Utsunomiya, Hagino and Nagano (2001).*

6 *Because there is no specific allowance made in the balance sheets of public financial institutions, their loan assets are recorded at book value.*

Figure1 – Evaluation of loan assets in Japanese financial accounts
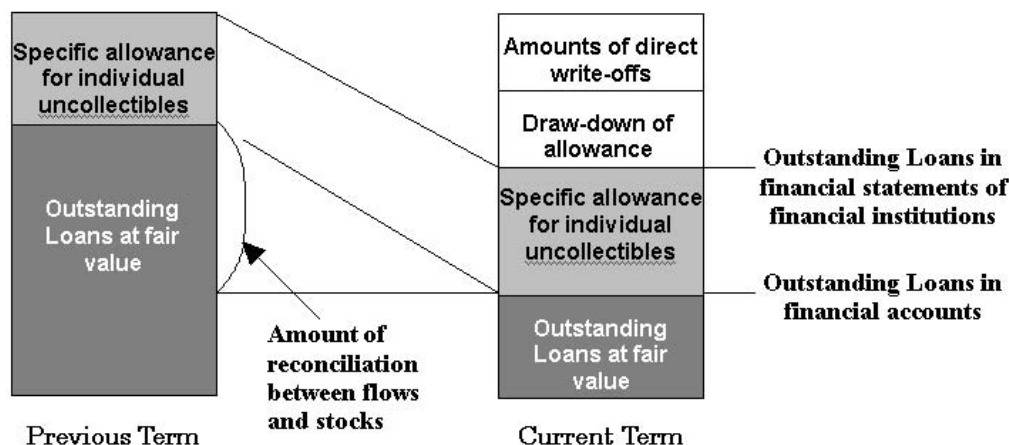
(Assume a case where there are no transactions during the current term)

3.3. An Alternative methodology

A more drastic way of estimating the fair value of loan claims in financial accounts is to deduct general allowances against the whole loan claims. In the Japanese case, general allowances for loan losses are supposed to be recorded based on a self-assessment of loan claims using the rate of actual past losses. Thus, deducting general allowances for loan losses means that losses from unspecified loans are taken into account.

There might be an argument that general allowances are not arrangements that give rise to unconditional requirements between economic entities. A rule of the SNA is that "these arrangements, which are often referred to as contingencies, are not actual current financial assets and should not be recorded in the SNA."(11.25) In addition, in recording general allowances, no counterparty is specified.

However, even events that occur with uncertainty for an individual company may be considered events that occur "with certainty" for a given percentage of companies at the macro level. As long as general allowances are reasonably computed, aggregate loan values before deducting general allowances are probably overvalued. This issue constitutes a fundamental difference between national accounting and business accounting, and accounting practice should recognize that what is uncertain at the micro level becomes certain at the macro level. SNA93 explains that "where contingent positions are important for policy and analysis, it is recommended that supplementary information be collected and presented as supplementary data in the SNA," (11.26). However, it should be recognized that, from a macro perspective, loan values after deducting general allowances provide a better reflection of actual conditions than "supplementary data".

4. Estimation of loan assets in Japan

In this section, in order to attain a better grasp of how influential the choice of valuation method can be, I compare the book value with three estimates of the fair value of loan assets held by Japanese banks: the official figures published by the Bank of Japan (method 1)[7]; figures obtained after deducting general allowances from the figures reported in method 1 (method 2); and figures obtained after deducting non-performing loans (NPLs) from the book value of loan assets, where NPLs are composed of overdue loans and loans to debtors in legal bankruptcy (method 3). Of course, it may not be the case that all NPLs are valueless, but calculation of method 3 nevertheless provides us with a useful insight into loan asset valuation. It should be noted that overdue loans used here include only those bad loans from which banks are no longer accruing any interest receivable.

In performing the calculations, as allowances and NPLs are obtained from the data on "all banks" published by the Japanese Bankers' Association, which is slightly different from the data on "domestically licensed banks" in the SNA, I adjust my figures using the ratio between the two

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7   *In fact, the financial accounts of the SNA are published by the Cabinet Office of Japan. However, the latest data are obtainable from the BOJ's flow of funds accounts, which are the source of the financial accounts of the SNA.*

totals obtained from the two different data sources. Book values are not found in the financial accounts of the SNA, but they are easily calculated using data from the flow of funds accounts, which have started publishing some book values as reference data in addition to the balance sheet figures based on fair values.

Table 1 shows that, in the official data from the late 90s, book values are more than 3 percent higher than the corresponding fair values, and that even these fair values are possibly overvalued. Taking into consideration that NPLs published by banks are said to be too small, methods 2 and 3 could still result in rather conservative estimates of the gap between book and fair values. Although Japan might be an extreme case, where bad loan problems have undermined the macro economy over the last decade, there is no doubt that the fair values of loan assets are not merely "supplementary" information, but represent information that is of substantial importance for macroeconomic analysis and for making policy decisions based on economic principles in every country.

Table 1 – Loan Assets of Domestically Licensed Bank in Japan
Million yen, per cent

End of Fiscal Year	Book Value	Estimated Fair Value					
		Method 1 (Official data)		Method 2		Method 3	
			Debaluation rate		Devaluation rate		Devaluation rate
1991	534.7	533.3	-0.3	531.4	-0.6	-	-
1992	536.8	534.4	-0.5	532.5	-0.8	522.9	-2.6
1993	532.5	528.7	-0.7	526.8	-1.1	517.8	-2.8
1994	531.3	525.8	-1.0	523.9	-1.4	517.3	-2.6
1995	549.8	538.2	-2.1	536.2	-2.5	532.5	-3.2
1996	551.7	541.2	-1.9	539.2	-2.3	534.1	-3.2
1997	557.2	539.3	-3.2	537.2	-3.6	537.9	-3.5
1998	543.8	525.3	-3.4	521.4	-4.1	516.2	-5.1
1999	515.2	503.7	-2.2	499.8	-3.0	490.7	-4.7
2000	512.0	504.7	-1.4	500.5	-2.2	490.2	-4.2

Note: Method 2: Deducting general allowances from Method 1.
Method 3: Deducting NPLs from book value.

5. Concluding Remarks

This paper has discussed the valuation principles underlying financial accounts. Although the accounting rule of the SNA represents "fair" value in the sense that it is based on economic principles, recent trends in fair valuation business accounting have surpassed the thinking of SNA93. It seems too radical to record all assets and liabilities at fair value in financial accounts. However, it is true that business accounting practices demonstrate an attempt not to fall behind the actual economic movements of the times. In this paper, focusing on the valuation of loan assets, which SNA93 and the IMF Manual determined should be recorded at book value, I have explained the method of fair value accounting used in the Japanese SNA and I have suggested an alternative. I have also showed that the deviation between the book and fair value of loan assets in the 90s was of an order that those responsible for macroeconomic analysis and economic policy-making should not ignore.

Ten years have passed since SNA93 was published. Of course, it is not easy to implement new valuation methods in the SNA. However, the methodology should constantly evolve in order to deal with the changes observed in the actual economy. Recent movements in business accounting practice may provide us with some clues as to a possible future direction for the SNA.

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Monetary and financial statistics and international accounting standards

Chairman's summary

Michel Stubbe (ECB)

Workshop D covered a topic of increasing relevance. To give an important example, in mid-2002 the EU Council of Economics and Finance Ministers adopted a European Regulation, which will make the use of the International Accounting Standards (IAS) for consolidated accounts of listed companies compulsory with effect from 2005. The general implementation of IAS is of great interest to statisticians because the business systems of the reporting agents are an important and probably growing source of statistical information. Indeed, reliance on business systems has considerable advantages in terms of accuracy, detail, timeliness and reduction of response burden. Against this background, statisticians have to take into account that the implementation of IAS may affect their business sources of information in one way or another. While this may entail benefits, it may also imply risks. The aim of Workshop D was to identify these potential opportunities and risks and to discuss ways of addressing them.

For these purposes, Workshop D benefited from the contribution of four outstanding experts. As a first contributor, Ms. Elena Caprioli, economist at the European Commission (Eurostat), presented Eurostat's activities on IAS with special focus on Balance of Payments. The second contributor was Mr. Manuel Ortega, Head of the Central Balance Sheet Office of the Banco de España and Chairman of Working Group Three (International Accounting Standards) of the European Committee of Central Balance Sheet Offices. In his contribution, Manuel Ortega analysed the IAS impact on Central Balance Sheet Offices, from a Spanish and from a European point of view. Furthermore, Messrs. Marc Chazelas (Deputy Head of the Monetary Statistics Research Directorate of the Banque de France) and Clive Thorp (Senior Adviser in the Economics Department of the Reserve Bank of New Zealand) acted as discussants, bringing in their long-standing statistical, monetary and policy expertise. As background documents, the contribution from Mr. Kiyohito Utsunomiya (Institute of Economic Research, Hitotsubashi University) entitled "A note on the valuation principles underlying financial accounts" and a study on IAS considered by the EU Committee on Monetary, Financial and Balance of Payments Statistics on 30 January 2002 were gratefully acknowledged.

A general thrust on the questions of the potential opportunities and risks and of the ways to address them emerged from the contributions mentioned above and the lively discussions from the floor. The present summary therefore reports on this general "message" rather than on individual contributions and positions.

First, participants noted that some important questions will need to be addressed by the users of the statistics. The first of these questions is connected with the potential increase in the volatility of the data following the implementation of the IAS, due to its underlying principles and to the permanent review procedures it follows. Users of statistics should therefore reflect on how far such volatility should be carried over in monetary, financial and other economic statistics. At the same time, they should take into account that double reporting is costly and difficult to "sell" to the reporting agents and the general public. The second of these questions relates to the fact that the implementation of IAS might increase the fluidity of the monetary policy transmission mechanism. Users of statistics may therefore have to review their statistical requirements accordingly.

Turning to the statistical questions, the participants identified a number of important opportunities for statistics in the process of implementation of IAS, including the following:

- the company accounts as source of statistics will become much more comparable at international level, going even beyond the European level, if the IAS are eventually adopted at global level;

- a number of the planned changes are on path with the requirements of national accounts, such as a) valuation at market prices or otherwise the closest approximation, b) disclosure, breakdowns and analysis of changes recorded in own funds and c) infra-annual frequency of data supply.

However, the participants also identified risks. A first category might consist of the following "opposite side of the coin" of the opportunities:
- increase of breaks in series;
- agenda and concepts being influenced by specific interest groups, e.g. connected with stock markets;
- the gain in terms of international comparability for listed companies entailing a loss of comparability at the national level, in the event that unlisted companies and groups would not be required to use IAS (the current position at EU level is unclear at this stage).

A second category of risks is related to the differences between the respective objectives of the IAS and of monetary and financial statistics. It includes the following potential risks:
- is the balance between rules and judgement implied by the IAS acceptable for statisticians (even when based on market prices)?
- IAS often offers alternative accounting treatments and valuation procedures. Although such alternatives are expected to narrow over time, they might meanwhile lead to unacceptable recording differences;
- at present IAS expressly avoids defining standard formats for the balance sheet, profit and loss account and supplementary information, with the aim of leaving it open to companies to present information in the most relevant way. However, the collection of statistics requires the use of standard formats. It was noted that the argument of investor protection might strengthen the case of statisticians in favour of standard formats.

The participants also noted that irrespective of these opportunities and risks, the implementation of IAS should not necessarily be seen as a general statistical solution. For example, in an enterprise the original information may be produced by other business systems than the accounting systems and be transferred to the accounting systems with a delay. Such procedures are important to take into account when considering the trade-offs between timeliness, frequency, relevance and detail. As another example, there is a trend in statistics to increasingly rely on security by security reporting. Obviously, this development is unrelated with IAS (though reconciliation issues may arise).

Concluding, a strong message arose from the discussion. Statisticians should use the opportunities to actively interrelate with the relevant accountancy bodies. They should clearly state their needs in a focused way at national, European and global level, aiming at both a higher quality of statistics and a lower reporting burden. As a bottom line, accounting reports should be obtained which better fulfil the statisticians' needs. Furthermore, an intensive dialogue between accountants and statisticians may allow more convergence of definitions, recognition of business and measurement/valuation procedures. On top of this, it was stressed that accountants and statisticians have a lot to learn from each other and should exploit synergies. In terms of timing, the general feeling was that the time was ripe for a proper lobbying (the expression "the train should not be missed" was also used). At the same time, the caveat was expressed that the development and implementation of IAS is work in progress and that there would be a need to manage "moving targets".

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Discussion comments

Clive Thorp (Reserve Bank of New Zealand)

What may be the implications of the changes, and/or the implementation of, international account-ing standards for the monetary policy and financial stability functions of central banks?

I have been asked to make some general remarks about the possible monetary policy and financial stability implications of adoption of European regulations that will require the use of IAS for con-solidated accounts of listed companies. While it is not yet clear how widely these requirements will be adopted beyond listed companies, it seems likely that increasingly they will be used for other companies too. Such a development will simply reinforce the points I raise. Also of relevance to my comments has been the point made by *Manuel Ortega* that compliance with existing European accounting directives has not created a common information base in the Union, whereas adoption of IAS is likely to do so, at least for companies initially affected.

To achieve its monetary policy objectives the ECB makes use of as many timely and reliable data sources it can as it constantly monitors the evolving economic conjuncture. There are numer-ous techniques for dealing with uncertainty in the forecasting and policy-making process, but a ba-sic one is to speed receipt of current information to limit "starting point" uncertainty, and to en-hance the quality of this information as far as possible. In this respect, while official data compiled under new IAS rules will presumably continue with existing timeliness deadlines, various quality checks relevant to monetary policy seem likely to be enhanced through the introduction of IAS, in addition to the benefit of greater consistency than is believed to exist now.

As *Manuel Ortega* has implied, the IAS will apply a consistent methodology to the primary data sources that inform the data series relied on by the ECB. An informal result of greater har-mony between business and ESA95 data representations will be that public announcements by large companies of their results, usually provided in advance of official data, will be able to be in-terpreted with greater certainty in terms of the trend they suggest for forthcoming official data. To the extent that the authorities are able to assess how widespread is the adoption of IAS beyond listed companies, inferences drawn from listed company reports may give a guide to the evolution of results more broadly throughout the non-financial company sector.

The main impact for monetary policy of applying IAS to company accounts is the requirement for use of market values. It is possible that this will lead to changing behaviour among companies, their bankers and in capital markets over time, and that this will have consequences for monetary policy. In a structural sense, it might be expected that the implementation of IAS will increase com-petitiveness among lenders, as better information about companies becomes available and im-proves risk assessments, especially from potential lenders. The term "better" here is intended not only to imply that current values in accounts are more useful than historic values, but that there are attendant improvements in IAS implementation that also improve understanding.

There may be ongoing repercussions of the change to IAS methodology for monetary policy implementation, associated with the new requirement for relatively timely reflection of valuation changes, and institutional responses to fluctuations in them. Balance sheet values are integral to the financial arrangements of corporations. The treatment of debt ratios and borrowing covenants, expressed in terms that use balance sheet values, will require close consideration in the transition to IAS. There will probably be an extended learning period for corporate borrowers, and lenders and capital markets, as the implications of greater balance sheet volatility, or different ways of profit recognition, are comprehended. There are likely to be learning issues for the ECB too over the transitional implementation period, with the usual problems arising as data series change the bases on which they are derived.

Timely and more accurate recognition in corporate accounts of the wealth impacts of corporate behaviour and of monetary policy itself could have a beneficial impact on monetary policy opera-tion. It is possible that IAS accounting changes, driven by the revaluation requirements, may give rise to a business sector more responsive to monetary policy action, as lending behaviour is influ-enced by the recognition of "up-to-the-minute" (or at least latest quarter) valuation changes. Fur-thermore, because of a possible "capital leverage" effect of IAS implementation, it might be that

the amplitude of interest rate movements required to achieve particular monetary policy outcomes could be less.

From the point of view of the financial stability responsibility of central banks, the development and more widespread use of a common accounting methodology is a welcome step. That it is associated with the introduction of recognition of valuation changes in a more timely, systematic and widespread manner is a further reason for welcoming the adoption of IAS. The greatest gains will be made at the level of individual assessment of risk, which is where advances in financial stability measures are likely to be the most effective. IAS methodology is of course substantially in harmony with the framework already used for national accounting, which is another positive aspect of its introduction.

Prompt recognition of the impact of the economic environment on corporate valuations, as well as that of their own activities on value and a meaningful concept of profit, is surely part of the recipe for better information that must underlie gains needed in the assessment of financial stability. Prudent assessment of values is one of the core requirements for all involved in financial stability, from the micro to the macro levels. Use of a common methodology that is likely to minimise the "second-guessing" (based on historical values) currently required is a solid gain.

This commentary has not sought to provide a full list of possible monetary and financial stability effects of the introduction of IAS to corporate reporting in Europe, but to stimulate thought on the matter, for users of data and their compilers. The costs and technical difficulties of the introduction of this methodology are not to be minimised, but it would seem likely that from the quarter examined, there will be benefits to set against them.

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Marc Chazelas (Banque de France)

A few comments about the papers by Elena Caprioli and Manuel Ortega and a tentative selection of issues for discussion

These two papers are excellent, full of information and proposals, both being mainly focused on data collection from non-financial corporations. Not being able to challenge the views of the authors on that ground, I'll try to shift the debate towards financial institutions, the population of which I'm more familiar with.

But my first reaction is to stress how comforting I found Manuel Ortega's paper, as the thorough comparison he made between business and national accountings leads to the conclusion that not only both are compatible and closely related, but also that business accounting could take some concepts from national accounting, such as changes of volume. On the other hand, some other aspects are more disturbing, like possible breaks in time series or heterogeneity among listed companies when they implement IAS.

Anyway, the work which has been carried on at the Central Balance Sheet Office of the Bank of Spain is once more very impressive, especially the use of data collected from non-financial corporations for the compilation of Financial Accounts. We have had a few tries at this in France, but so far the results have been quite disappointing: it was very difficult to reconcile the data coming from the business accounts of non-financial corporations with data obtained from banks (loans granted to and deposits received from non-financial corporations) or financial markets statistics. At this time, it seemed that the non-financial corporations did not distinguish very clearly between an issued security and a loan granted by a bank, or between a deposit with a bank or a deposit with another institution. Moreover, the list of financial instruments used in the business accounting of non-financial corporations proved very poor in regard of national accounting requirements. So, I think it would be very interesting that Manuel Ortega tells us what are the prospects for improve-

ment in this field with IAS implementation. Another question would be about the time delays for gathering business accounting data for the annual and quarterly reporting and whether some improvements can be foreseen.

Concerning Elena's presentation, from which I learn a lot about the setting of European standards, I'm going to try to challenge the idea that the accounting system is always the best framework for collecting statistical data.

A first issue concerns the timeliness of data. Our experience at the Banque de France is that when we ask reporting agents, which are frequently banks, some data with a very short time limit, they often answer that if they are to meet the deadline, the data will no be of accounting quality, as they will be based on their own internal information system, which, generally speaking, is not fully consistent with the current accounting framework. This seems to mean that, among economic agents, there are at least two levels of data: internal data, responding to the companies' own definitions, and official data following the principles of accounting. Possibly, if the new accounting standards really meet the needs of the companies, both levels will be unified. But for the time being, when we ask for data with a short time limit, we tend to receive a material which is not from the accounting system.

Another possible topic for discussion is the harmonisation between accounting or legal definitions and statistical concepts. A recent example of this in France concerns financial leasing, which is treated in Money and Banking Statistics as a loan of money. As we are currently implementing a new statistical reporting scheme for collecting data on interest rates, we have asked financial leasing companies to report us their transactions. Their reactions so far have been very negative, they argue that they do not lend money but lease equipment to their customers. So, they do not calculate interest rates, they don't want to do so and they even reject the idea that interest rate statistics related to their business could be published.

Another example may be given to illustrate the fact that relying on accounting standards may not always be the best approach for data collection. I have in mind the gathering of data on security holdings such as the portfolios of banks, mutual funds and insurance companies. It seems that in many cases it is more efficient to ask reporting agents for the composition of their portfolio on a security by security basis, each security being identified by its international code, rather than asking them for some specific aggregation, even based on the breakdowns provided by accounting standards. The compilers can then make all the aggregations they wish. provided that they have at their disposal a security database such as the one currently projected by the European Central Bank. So it may be worth discussing whether this is something specific to securities or whether there are other examples of such a configuration.

Finally, we could try to exchange a few words about the participation of statisticians, and more precisely central bank statisticians, in the review of accounting standards. Currently, IAS 32 and 39 are under discussion, and in my institution some comments have been prepared, mostly by the people engaged into banking supervision, expressing strong views against applying fair value accounting to banks. To my knowledge, statisticians have not been asked whether they found some advantages to fair value for their own work. So it would be interesting to hear if in some other countries central bank statisticians have had their say about this issue within the scope of this official consultation.

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WORKSHOP E

Deriving information from financial market data

Chair: Leon Taub, *Senior Vice President, Statistics Function, Research and Market Analysis Group, Federal Reserve Bank of New York*

Secretary: Blaise Gadanecz, *BIS*

Papers: "Do syndicated credits anticipate BIS consolidated banking data? A closer look"
Blaise Gadanecz and Karsten von Kleist, *BIS*

"Extracting information from currency option prices: some preliminary results for Hong Kong"
Ip-Wing Yu, Angela Sze and Laurence Fung, *Hong Kong Monetary Authority*

"The use and availability of financial markets statistics for the euro area"
Michel Stubbe and Per Nymand-Andersen, *ECB*

"Papers on using market data for obtaining supervisory information"
Leon Taub, *Federal Reserve Bank of New York*

    based on:

    "Comparing Market and Supervisory Assessments of Bank Performance: Who Knows What When?"
Allen Berger, Sally Davies, and Mark Flannery, *Federal Reserve Bank of San Francisco*[1]

    "Incorporating Equity Market Information into Supervisory Models"
Jose Lopez and John Krainer, *Federal Reserve Bank of San Francisco*[2]

Discussants: Yair Haim, *Bank of Israel* [3]
Kees Elfferich, *De Nederlandsche Bank*

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1 *This paper could not be reprinted in the IFC Bulletin.*
2 *This paper could not be reprinted in the IFC Bulletin.*
3 *Mr Haim's discussion comments have not been recorded.*

Do syndicated credits anticipate BIS consolidated banking data? A closer look[1]

Blaise Gadanecz and Karsten von Kleist (BIS)

Commercial data on international syndicated credit facilities are available three months earlier than the BIS consolidated banking statistics and provide information on many characteristics of the individual facilities. On the other hand, BIS data reflect actual loan drawdowns and repayments while syndicated loan data are based on announcements of facilities that may or may not be drawn. Nonetheless, syndicated loans account for a significant part of actual international bank claims[2] and should thus contain information to complement the BIS data. In this article we compare the two data sets, adjusting for conceptual and practical differences. The comparison allows us to better understand both the nature of the consolidated claims reported to the BIS and the way syndicated facilities are used. Moreover, we find that, under certain conditions and for certain classes of borrowers, the more timely syndicated credit data can provide some useful advance information about the consolidated data.

Filtering syndicated credits

A direct comparison of the two data sets is less than straightforward. As shown in Table 1, while syndicated credit data are a mixture of domestic and international lending facilities, the BIS banking statistics focus exclusively on international lending. The syndicated credits are gross announcements of loan facilities (ie loan commitments which need not be drawn down fully or immediately), while the changes in amounts outstanding in the BIS data are driven mainly by net new lending (actual disbursements). Since the BIS data are obtained from balance sheets, they give a more accurate picture of banks' actual intermediation activity, taking into account early repayments, payments of arrears and writedowns.[3]

> Making the two data sets comparable requires filtering ...

We reduce the differences in the two data sets by filtering the syndicated credit data to bring them conceptually as close as possible to the BIS consolidated banking statistics. The main adjustment we make is to include only those facilities in which the nationality of at least one of the syndicate banks differs from that of the borrower.

Syndicated credit data from commercial providers (eg Dealogic Loanware) are not available as stocks but rather as announcements of loan facilities granted by bank syndicates. To approximate outstanding bank credit, we build up a stock of loans, which assumes new facilities are drawn at their announcement date and repaid at maturity. These are pseudo-stocks in the sense that we assume that the facilities are fully drawn and that no early repayments are made. To generate scheduled repayments for earlier loans, we extended backwards the filtered Loanware data (which start in 1992) with historical data from the Bank of England going back to the 1970s, which were collected using

> ... and building synthetic stocks of syndicated credits

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[1] This is an updated and extended version of a feature article published in the March 2002 issue of the BIS Quarterly Review. The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS.

[2] Estimated outstanding stocks of syndicated loans amount to about 50% of outstanding BIS bank loans to Latin America and developing Europe, but to around 100% of those to Asia and the Africa-Middle East region.

[3] The renegotiation of syndicated loans becomes more difficult as the number of banks participating increases. Early repayments may therefore be concentrated in non-syndicated traditional bank loans included in the BIS data. See Berlin (1996).

Table 1 – Differences between syndicated credits and the BIS consolidated banking statistics

Syndicated credits	BIS consolidated banking statistics
Very few syndicated credits are extended to banks	All credits extended to banks as well as to non-banks are included
Credit announcements available on a weekly basis with a few day's lag	Balance sheet positions reported quarterly (semiannually up to end-1999) with a three-month lag
Limited to syndicated bank credit	Cover all (syndicated and bilateral) credits, include all on-balance sheet items
Include domestic bank lending to the extent that domestic banks join the syndicate	BIS reporting limited to banks' total cross-border claims in all currencies plus their foreign affiliates' local claims in foreign and local currencies
Gross announcements of loan facilities (always positive or zero)	Changes in stocks measure net new lending, including early repayments, payments of arrears and writedowns (can be negative)
Credit commitments	Actual balance sheet positions
Exclude repos	Include repos as collateralised lending

Sources: Dealogic Loanware; BIS

a similar, but not identical methodology. This ensures that the stock is complete and that amortisation of older loans (granted before 1992) is fully accounted for.

Announcements of syndicated loan facilities tend to be reported by Loanware within one week. In contrast, the process of reporting banks' worldwide consolidated end-of-quarter balance sheet totals to monetary authorities and then to the BIS currently takes up to 12 weeks to complete.

Because there is very little syndicated lending between banks, we restrict both data sets to the non-bank sector. We use the consolidated rather than the locational BIS banking data because the sectoral classification of consolidated non-banks is closer to that of the syndicated credit data. In contrast, at least 20% of lending classified as lending to banks in the locational statistics ultimately provides funds to non-banks. This result is derived from comparing the locational statistics with the consolidated statistics for developing countries. In the consolidated statistics, inter-office bank lending is netted out, and subsequent lending to non-banks is reported instead. Since banks' loans and holdings of securities are reported as a single aggregate in the consolidated data, we use the locational banking statistics to estimate the *loan* component of total consolidated lending to non-bank borrowers. Separate data on the loan component of the BIS locational statistics started to become available in 1993, so we begin our comparative analysis in the second half of that year.[4]

To establish the strength of the relationship between the two data sets, we compare semiannual and quarterly changes in stocks, depending on the availability of BIS data. These changes include similar exchange rate effects in both cases, since we convert the non-dollar components of the synthetic stock of syndicated lending into dollars at each end of period at current exchange rates, thus replicating the way in which BIS banking data are reported.

## Comparison with the BIS consolidated banking statistics

Because the BIS consolidated banking statistics are available on a quarterly basis only as from end-1999, we compare semiannual changes in both data sets. We focus on lending to emerging markets, where the limited participation of domestic banks in syndicates makes our filtering more effective in identifying international lending.

A visual comparison of the two adjusted data sets shows some correlation. In Graph 1 we have plotted the changes for four groups of emerging economies. Downturns are more pronounced in the consolidated banking statistics than in the syndicated credits series (see, notably, Latin Amer-

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4 *For further discussion of the consolidated and locational BIS banking statistics, see Wooldridge, in BIS Quarterly Review, March 2002. The concepts underlying the two sets of BIS banking statistics are also discussed in the Introduction to the Statistical Annex of the BIS Quarterly Review (page A4).*

**Chart 1 – BIS consolidated banking statistics and syndicated credits
for selected borrowers**

*Total lending to non-banks in emerging economies, semiannual changes in stocks
in billions of US dollars*

Asia

Latin America

Developing Europe

Africa – Middle East
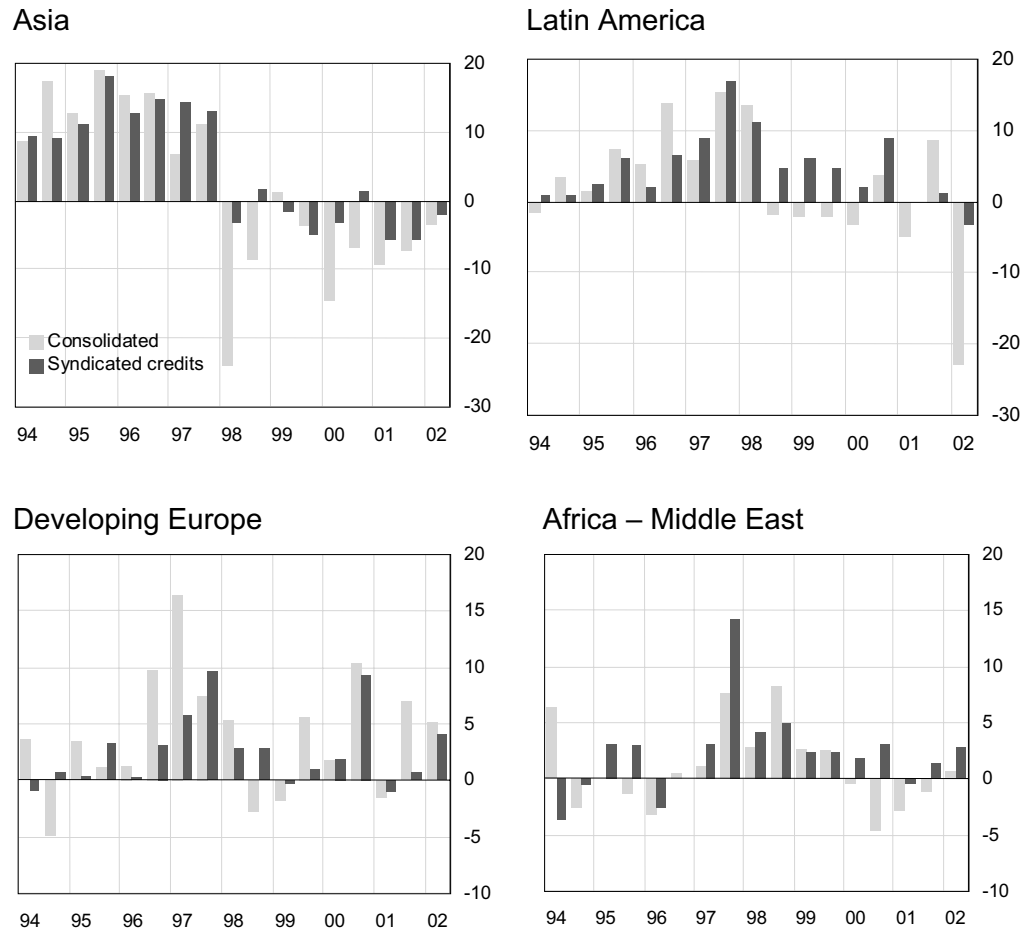
Sources: Bank of England; Dealogic Loanware; BIS international consolidated banking statistics.

ica between 1998 and 2002 or Asia in 1998) because decreases in the latter are limited to the assumed repayment of the full facility amounts at due date.

The two data series appear correlated

Conversely, reductions in the former also cover called-in loans, write-offs and loans sold from banks' books. Changes may also appear in the BIS data later than in the syndicated credits, due to unusual delays between commitments and disbursements, such as during times of financial stress or turbulence (see, for instance, Latin America between 1997 and 1998).[5]

Detailed examination of individual credit facilities allows us to identify likely causes of some of the major discrepancies. For example, refinancing facilities worth $900 million[6] granted to Asian borrowers probably contributed to the major divergence in the two Asian data sets in the second half of 1998. Likewise, loan refinancing worth $3.5 billion, arranged for an energy utility in Chile and having no net effect on the BIS data but entering the syndicated credits as a new facility, may account for the opposite changes in Latin America in the second half of 1999.

5 *We tested whether systematically excluding from the syndicated stocks all facilities granted for standby, commercial paper backup, refinancing, debt repayment and future acquisition purposes would improve the data correlation, since such facilities may not be drawn immediately or at all, and their undetermined drawdown pattern may be introducing noise. Although the amplitude of opposite moves is reduced when using the more restricted data set, the original data series are more closely correlated.*

6 *Assuming the refinanced debt was non-syndicated bank debt already included in the BIS consolidated banking statistics.*

Chart 2 – Undisbursed credit commitments as a percentage of total consolidated cross-border claims of BIS-reporting banks

For selected borrower countries
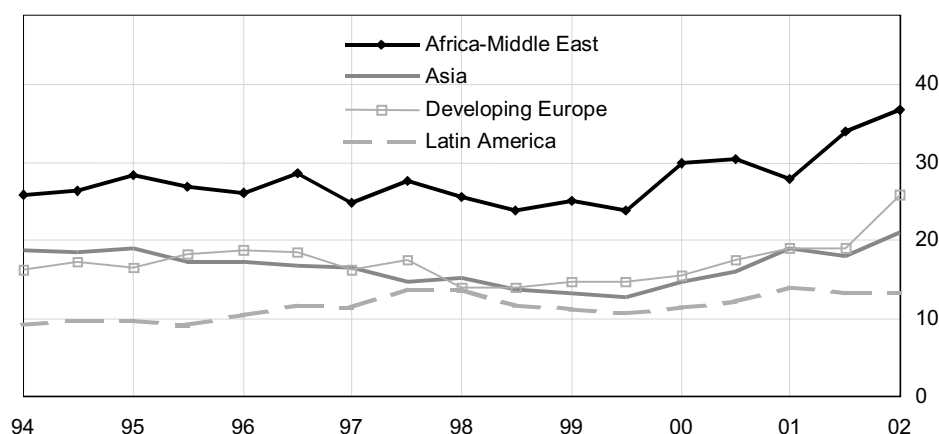
We can also relate the joint evolution of syndicated credits and the BIS consolidated claims to movements in the ratio of undisbursed credit commitments to total consolidated cross-border claims of BIS-reporting banks vis-à-vis developing countries (Graph 2). Higher values of this indicator – such as the ones observed in 2001 and 2002 – are often associated with discrepancies in the evolution of syndicated credits and BIS consolidated bank claims, particularly for Latin America, eastern Europe and Africa-Middle East. In those cases, new signings of syndicated credit facilities overstate the corresponding increase in balance-sheet claims, as large parts of the facilities actually remain undrawn. Conversely, lower values of the ratio of undisbursed credit commitments to total consolidated bank claims – such as the ones observed between 1994 and 1997 in Latin America – can be associated with closer parallel movements in the stocks of syndicated credits and consolidated bank claims, as facility signings tend to be more directly reflected in balance sheet claims.

Semiannual estimates

Next we try to quantify the strength of the relationship between the two sets of data. As discussed in the box on methodology, we relate semiannual changes in consolidated BIS loans to changes in the synthetic stocks of syndicated credits for all emerging economies together and then by region for the period from mid-1994 to mid-2002.[7] From this we expect answers to two questions:

- First, what is the average difference between the two series, unrelated to any co-movement between the two? This is measured by the regression constant. Its value should depend mainly on the amount of *non-syndicated* lending included in BIS data, but also on average early repayments and the average amount of announced syndicate loans not drawn down. This amount might be positive or negative, depending on which factor was dominant during the sample period.

- Second, to what extent do the two series move together over time? Given an increase of one dollar in the syndicated credits, will the BIS data on average increase by more, by less or by exactly one dollar? For example (keeping other factors constant), if syndicated loans are only partially drawn down in each period, we expect this factor to be less than one. It will be negative if changes in the two series tend to move in opposite directions, eg if early repayments exceed net new syndicated announcements. If additional non-syndicated lending is generally proportional to syndicated lending, we expect a coefficient greater than one. These effects may partially cancel each other out and other factors may also influence the proportional relationships. Ideally, if changes in both data sets were identical, we would expect the regressions to estimate an exact dollar for dollar relationship.

Regarding the first question, we found that, taking lending to the four emerging market regions (Asia, Latin America, developing Europe and Africa-Middle East) together, *on average* and for the period as a

> The strength of the relationship differs by region ...

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7 *For a discussion of the factors driving international bank lending during this period, see Jeanneau and Micu, in this BIS Quarterly Review, March 2002.*

whole, the stock of BIS banks' lending declined by $4.9 billion more each half-year than could be inferred from the changes in syndicated lending. As is clear from Graph 1, this average is influenced by substantial early repayments in Asia during the post-1997 period. With respect to the second question, the proportional changes in both data sets seem to be closely linked, with the change factor significantly different from zero and virtually identical to one. On average, 60% of the variation in BIS bank lending to emerging market economies can be related to changes in syndicated credit facilities during the whole period in this simple model.

We then allow the constant and the proportional factors to be different for each region. The various regional constants (reported in the box) confirm that the large repayment constant noted above is

> ... and is influenced by early repayments and partial drawdowns

due mainly to Asia, where heavy early repayments of bank credit are not reflected in the syndicated data. Thus, credit to Asia appears to have declined by $4.3 billion more each period than evident from the syndicated credits. The positive constant term for developing Europe indicates that in these regions the changes in the consolidated statistics exceeded those in syndicated credits by $1.4 billion.

The resulting proportional factors by region are shown in Graph 3 (left-hand panel). The length of the vertical lines reflects the degree of confidence in the estimates. The longer lines signal that the true underlying coefficient could be quite far removed from our central estimate. In all four regions the proportional factors are all positive and significantly different from zero and close to one. They indicate that, over the period, a one-dollar change in syndicated lending to developing Europe tended to be mirrored by a 100%proportional change in BIS consolidated banking data. The coefficients for Latin America and Asia indicate that changes in syndicated lending were accompanied by more than proportional moves in the BIS data. This result is presumably driven by large early repayments following the Asian crisis and more recently in Latin America (Graph 1).

Graph 3 – Average relationship between changes in syndicated credits and in BIS consolidated banking stocks vis-à-vis emerging economies
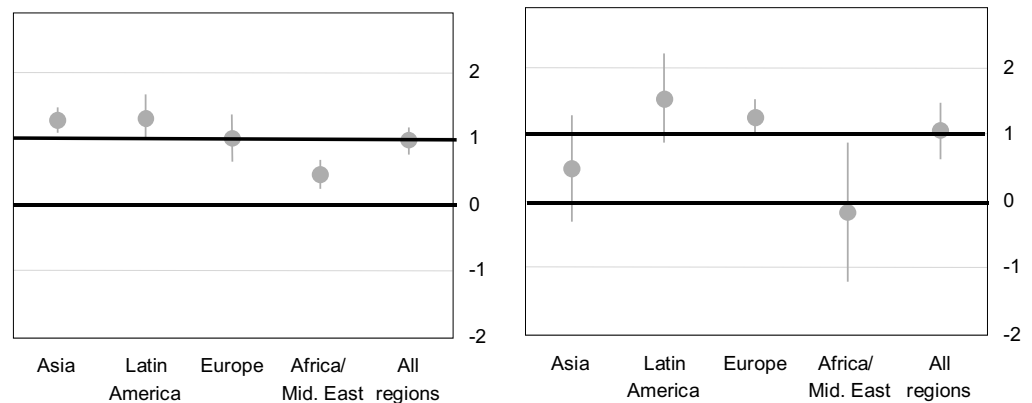
In Graph 4 we have plotted the evolution of the goodness of fit resulting from systematic re-estimations of the model for a rolling four-year period between 1994 and 2002. This analysis confirms that changes in the stock of syndicated credits are rather well correlated with changes in BIS consolidated claims between 1994 and 1997. The goodness of fit decreases as financial crises result in large amounts of early repayments between 1997 and 1998, and drops further as the ratio of undisbursed credit commitments to total consolidated claims rises between 2000 and 2002 (Graph 3).

Re-estimating the model for each region for various sub-periods, we obtain variations in the goodness of fit. Thus, for Latin American borrowers, we get an R^2 value of 69% for between 1994 and the first half of 1998, when undisbursed credit commitments are relatively low for the region, which is higher than the overall R^2 value of 51% for the whole 1994-2002 period. The overall result appears to be pulled down by two peaks in the ratio of undisbursed credit commitments to total consolidated international bank claims between the second half of 1998 and 2002. Likewise, in Af-

Graph 4 – Evolution of the goodness of fit between changes in the stocks of syndicated credits and BIS consolidated banking data

R^2 values for regressions estimated for four-year periods
centred around the half-year periods shown on the X-axis
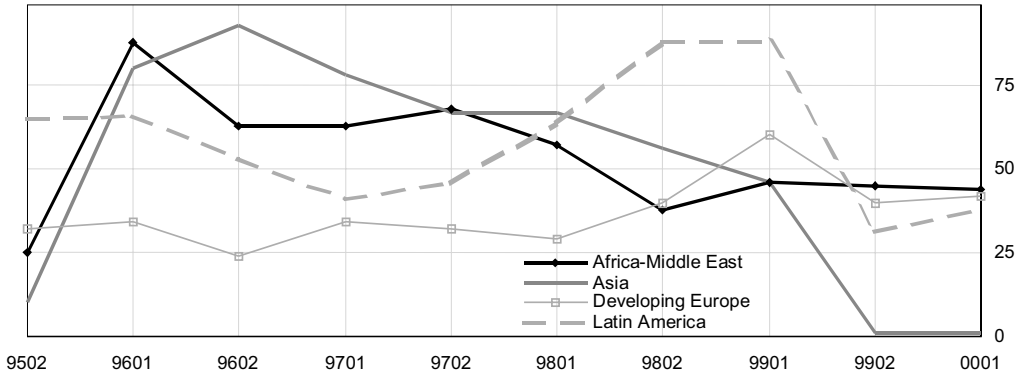
rica-Middle East, the R^2 reaches 68% between 1996 and 1999, and collapses to 0.1% between 2000 and 2002, again driven by movements in the ratio of undisbursed commitments to total claims.

Quarterly estimates

The BIS consolidated banking statistics became available on a quarterly basis at end-1999. A re-estimation of the model with quarterly data between 2000 and the first half of 2002 produced similar results for emerging markets as a whole, compared with our earlier results for the whole period from 1994 onwards. Pooling all data for the four emerging market regions, we found that there was a constant quarterly decline of $6.9 billion in BIS lending, reflecting the heavy early repayments

> Recent quarterly data produce similar estimates in aggregate ...

taking place during the estimation period that cannot be inferred from the changes in syndicated lending. The proportional changes in both data sets again seem to be closely linked, with the proportional coefficient close to one and highly significant with a low standard error. On average, 42% of the total variation in BIS bank lending to emerging market economies can be related to changes in syndicated credit facilities during this period.

However, once we allow the constants and the proportional factors to be different for each region, there is a strongly significant and positive slope coefficient only for developing Europe and Latin America, indicating that total lending to those regions exceeded syndicated lending during the estimation period. The other coefficients are rather low and not significant (Graph 3, right-hand panel). The values and the significance of the regional estimates for the proportional factors are consistent with early

> ... but regional proportional factors are not as strong

repayments being most concentrated in Asia, and Latin America, less so in developing Europe. Although 42% of the variation in BIS data is accounted for by changes in syndicated credits, some of the estimated factors are so close to zero that we cannot have statistical confidence in them. We conclude that, in the current climate of early repayments of loans and subdued new lending to emerging markets, with the exception of developing Europe, it is difficult to find in most regions relationships as strong as those evident in the past between syndicated lending and the BIS data derived from banks' balance sheets. Moreover, the limited run of available quarterly consolidated BIS data reduces the statistical reliability of the estimates for the time being.

Conclusion

It is clear that there are significant differences between the two data sets. Even after our adjustments the changes in the two data sets are not always of similar magnitude or even of the same sign. Over the estimation period, about 60% of the variance in international bank lending to emerging market economies can be explained statistically by changes in syndicated credits. This probably reflects in part the fact that the BIS consolidated banking statistics take account of actual drawdowns and early repayments, which cannot be identified in the constructed stocks of syndicated credits.

As a consequence of the weak relationship between the two data sets on a quarterly basis, there is little evidence that syndicated credits can be a reliable early proxy for consolidated bank lending in the near future. Once an additional timely source of early repayments data becomes available or once the level of early repayments shrinks again, this conclusion can be re-examined.

Still, at least in those periods where both data sets change by a similar amount, it may be helpful to look at the composition of the syndicated credit data to improve our understanding of BIS-reported bank lending to regions and individual economies. The purpose, maturity and pricing of most syndicated facilities are known, and we can distinguish between facilities entering and exiting the constructed stock of syndicated credits; therefore, we can analyse variations in the composition of net new lending. More generally, the data sets are complementary. Taken together, they improve our understanding of movements in international bank lending by more than if analysed in isolation, and without imposing an additional reporting burden.

Methodology

Regression analysis allows us to quantify the strength of the relationship between the changes in stocks in the BIS banking statistics and those in syndicated credits. Progressing from the general to the specific, we found that one- and two-period lags of the syndicated credit variable did not contribute significantly to explaining changes in the BIS data. We then reduced the model to two parameters:

$$\Delta CONS_i = \alpha_i + \beta_i\,\Delta SC_i + \varepsilon_i$$

where:

- $\Delta CONS_i$ denotes semiannual changes in consolidated BIS loan stocks to geographical area i, corrected for any breaks in series, the exact size of which is available in the BIS database.
- ΔSC_i denotes semiannual changes in stocks of syndicated credits outstanding to region i.
- ε_i is a randomly distributed error term.

Parameters to be estimated:

- α_i corresponds to the average discrepancy in the two series for region i unrelated to any co-movements between the two.
- β_i estimates the proportional covariation between the two data sets for region i.

Both syndicated credits and the BIS consolidated data are non-stationary in levels. Changes are stationary under a Phillips-Perron test at the 5% level of significance, with the exception of syndicated credits for Asia.
Using the White test, we could not find any evidence of heteroskedasticity in the residuals of the regressions.

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Annex

Regression of changes in BIS consolidated banking data on changes in stocks of syndicated credits
Sample period 1994 H1 to 2002 H1, 17 semiannual observations, in billions of US dollars

The table shows the semiannual estimation results for this model for the 1994–2002 period taking all regions together as well as each region separately. The slope coefficients for all regions except Africa-Middle East are significant at the 5% level or better, while only the constant for Asia is significantly different from zero.

We re-estimated this model using the available quarterly data for the 2000–02 period (not shown). Again, the constant for Asia is highly significant and negative, but only the slope coefficients for developing Europe and Latin America are significant in the quarterly estimation. R^2 values are generally lower, except for a 0.73 R^2 value for developing Europe. For both regressions, the slope coefficients and their standard errors are plotted by region in Graph 3.

We tested whether timing differences in the recording of loans might have a larger impact on quarterly data relative to semiannual data, thus explaining some of the weaker performance of the quarterly regressions for most regions. However, shifting the quarterly intervals of the syndicated credits backwards or forwards by one month did not improve the fit.

The BIS banking data tend to be more volatile than the syndicated loans series because they include short-term repo transactions. Excluding short-term components (less than one year) from both quarterly data sets, we obtained an overall R^2 of 0.45 and coefficients similar to those yielded by the quarterly model including all maturities.

Change in consolidated lending (ΔCONS)	Constant	Change in syndicated credits (* ΔSC)	R^2	Standard error of regression	DW
All emerging markets	− 4.9 (− 1.18)	+ 1.0 (4.79)	0.60	12.3	1.19
Asia	− 4.3 (− 2.34)	+ 1.3 (6.68)	0.75	6.6	1.48
Latin America	− 3.9 (− 1.7)	+ 1.3 (3.93)	0.51	6.6	1.73
Developing Europe	1.4 (1.01)	+ 1.0 (2.86)	0.35	4.5	2.24
Africa-Middle East	− 0.10 (− 0.10)	+ 0.5 (2.07)	0.22	3.4	1.17

Note: t-statistics in parentheses.
Sources: Bank of England; Dealogic Loanware; BIS consolidated banking statistics.

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Extracting information from currency option prices: some preliminary results for Hong Kong

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I. Introduction

The prices of currency options reflect market views on the distribution of the future exchange rate. In a previous study, the information extracted from the Hong Kong dollar options is shown to be useful in monitoring market sentiment regarding the currency board (Tang, Yu and Sze (2001)). Apart from the method of smoothed implied volatility smile (SML) adopted in that study, a number of alternative approaches have been developed in the literature. This paper compares different methodologies with a view to recommending one or a combination of methods for regular monitoring. Taking into account the illiquid Hong Kong dollar option market, the paper also examines the robustness of the selected method by testing the sensitivity of the derived information to pricing errors.[1]

This study consists of two parts. In the first part, four commonly used methods – the jump-diffusion model (JD), the method of the mixture of two lognormals (MLN), the Hermite polynomial 4-th order approximation method (HP4) and the smoothed implied volatility smile method (SML) – are used to estimate the probability density functions (PDFs) of the future Hong Kong dollar exchange rate.[2] The estimation is performed using 3-month US$/HK$ over-the-counter option prices from J. P. Morgan for 15 selected days during 1997 to 2002.[3] The period covers both normal days and episodes during the Asian financial crisis when the Hong Kong dollar was under severe selling pressure.[4] Results show that these four methods are not suitable for regular monitoring of market sentiment regarding Hong Kong's currency board where the nominal exchange rate tends to be close to the official rate under normal circumstances but may adjust substantially during crisis periods.

The second part of the study focuses on the restricted jump-diffusion (RJD) method, a modified version of the JD model that incorporates a restriction on the minimum size of any jump in the exchange rate. To illustrate how the RJD model can be useful in monitoring market expectations, PDFs are estimated to examine the evolution of market sentiment regarding the Hong Kong dollar during the market turbulence in August 1998 in addition to the previous 15 selected days. The robustness of the RJD model is also tested through Monte Carlo simulations. By perturbing prices

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1   *There are some concerns about the quality of data on option prices in an illiquid market. Besides liquidity premia, the option prices may be subject to mistakes in the recording and reporting of prices, and the problem of non-synchronisation in the settlement prices for options at different strikes and the underlying asset as their last trade may not have occurred at the same time.*

2   *The PDFs derived in the study assume risk-neutrality. In the real world, however, investors are likely risk-averse. Despite this short-coming, risk-neutral PDF is used in the literature because (i) it is easy to estimate and interpret; (ii) the true market density function may not differ much from the risk-neutral one, at least for some markets (Rubinstein (1994)); and (iii) if the risk premium is relatively stable over time, changes in risk-neutral PDF from one day to the other reflect changes in market's beliefs about the future outcomes of the underlying asset.*

3   *The exact dates used in this study can be found in Table 1.*

4   *These four episodes are also referred to in RM 12/2001. They include: 1) late October 1997 when the New Taiwan dollar devalued sharply; 2) early January 1998 when economic and political tension in Indonesia intensified; 3) June 1998 when the Japanese Yen depreciated sharply and 4) August 1998 when speculators began to engineer extreme conditions in both Hong Kong's stock and foreign exchange markets.*

with random shocks from a uniform distribution of a range between –5% and 5%, the simulation help verify whether the information derived is sensitive to errors in the recorded option prices.

The rest of the paper is organised as follows: Section II provides a brief discussion of the four different methods used for estimating the PDFs and explains their inadequacy when applying to Hong Kong's currency board system. Technical details of individual method are given in Appendix 1. Section III discusses the PDFs derived from the RJD model and illustrates their use in monitoring market sentiment. This is followed by a technical discussion of the model stability based on the results of Monte Carlo simulations in Section IV. Conclusions are presented in the last section.

II. Common Models

a. Review of Methodology

The prices of currency options with the same maturity date but different strike prices reflect market participants' views on the likelihood of the currency trading between these strike prices when these options expire. Theoretically, if there are infinite number of options traded in the market, it is straightforward to derive the distribution of future exchange rate. In practice, however, option prices are not available at closely spaced strike prices and only a few option contracts with different exercise prices are actively traded in the market at any one time. As such, all PDF estimation methods apply some assumptions regarding the prices of the options or their underlying assets. The techniques used in the literature to extract PDFs can be grouped under two approaches: structural and non-structural.[5] In this study, the JD model is an example of the structural approach while the MLN, HP4 and SML models are non-structural.[6]

Similar to other structural methods, the JD model assumes that there is either no or one jump in the exchange rate over the life span of the option.[7] Under this assumption, the PDF and the option prices can be derived as a function of the parameters of the statistical process governing the exchange rate. In the empirical work, these parameters are chosen to make the implied option prices as close as possible to the observed data. After estimation, the distribution of future exchange rate can be obtained by substituting the parameters into the PDF formula (Malz (1995), Bates (1996)).

By contrast, non-structural methods do not assume any statistical process for the price of the underlying asset. Instead, both the MLN and the HP4 methods assume a specific form for the distribution. The assumed PDF should be flexible enough to allow for a variety of possible shapes. While the PDF under the MLN method is a weighted sum of two lognormal distributions (Melick and Thomas (1997)), the PDF from the HP4 method is obtained by applying a fourth-order Hermite polynomial expansion around the lognormal distribution (Madan and Milne (1994)). The theoretical prices of options can then be expressed as a function of the parameters of the PDF and the parameters are determined by minimising the sum of squared errors between these prices and the observed prices of options.

Instead of directly specifying the functional form for the PDF of the underlying, the SML method is an approximation method applied to the volatility smile. Specifically, option prices at different strikes are first converted into implied volatility at different deltas.[8] Following the procedures in Malz (1997), a continuous parabolic function is fitted to the implied volatility and the associated deltas. After smoothing, the implied volatility function is converted into a call price function from which the PDF can be directly inferred.[9]

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5 *Alternative classifications are also found in the literature. For example, Bliss and Panigirtzoglou (2002) summarised all methods for estimating PDFs into five groups: stochastic process methods, implied binomial trees, PDF approximating function methods, finite difference methods, and implied volatility smoothing methods.*

6 *The non-structural approach can be further classified into parametric, semi-parametric and non-parametric methods. The MLN is a parametric method while HP4 is semi-parametric. The SML method is either semi-parametric or non-parametric, depending on how the implied volatility smile is smoothed. The SML method used in this study is semi-parametric as the volatility smile is assumed to be parabolic.*

7 *Technically, the prices of the underlying asset in a jump-diffusion process are assumed to follow the sum of a geometric Brownian motion and a Poisson jump process. The jump-diffusion process assumed in this study is a simpler Bernoulli version in which the jump is non-stochastic and there is either zero or one jump in the exchange rate over the life span of the currency option.*

8 *The delta (δ) of a currency option is the rate of change of the option price with respect to the spot exchange rate. As the delta has an one-to-one correspondence with the strike price, it is also a measure of the price distance at which different options are traded. In over-the-counter markets, dealers usually quote the option prices in terms of implied volatility whereas the exercise prices of in- or out-of-money options are not expressed in currency units but in terms of delta.*

9 *Breedon and Litzenberger (1978) showed that the PDF of the underlying asset could be obtained by differentiating the call price function twice with respect to exercise price.*

b. Estimated PDFs

To see how the information extracted from the Hong Kong dollar options reflects market expectations of future exchange rate, the above four models are applied to 15 selected days in the period 1997-2002, covering episodes when the Hong Kong dollar was under severe selling pressure. Charts 1 and 2 show the shapes of the PDFs derived from each model on 12 January 1998 and 20 March 2002, an example of a crisis day and a "normal" day respectively. In Chart 1, all the PDFs estimated from the models have a segment extended to exchange rates far weaker than the official rate of 7.80, reflecting market concerns about exchange rate realignment on a crisis day. Obviously, the fact that the estimated probability density arising from the MPL and SML models are negative for certain exchange rates on a normal day like 20 March 2002 makes economic interpretation of these results difficult (Chart 2).

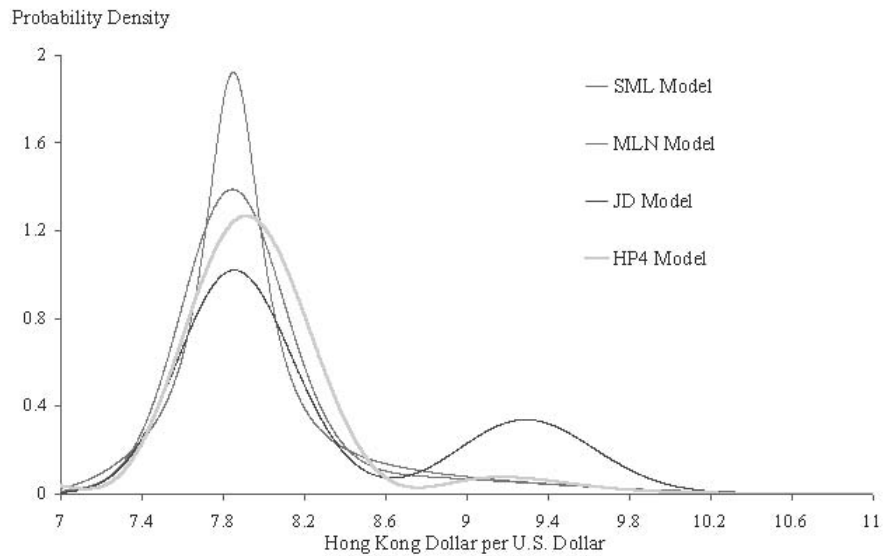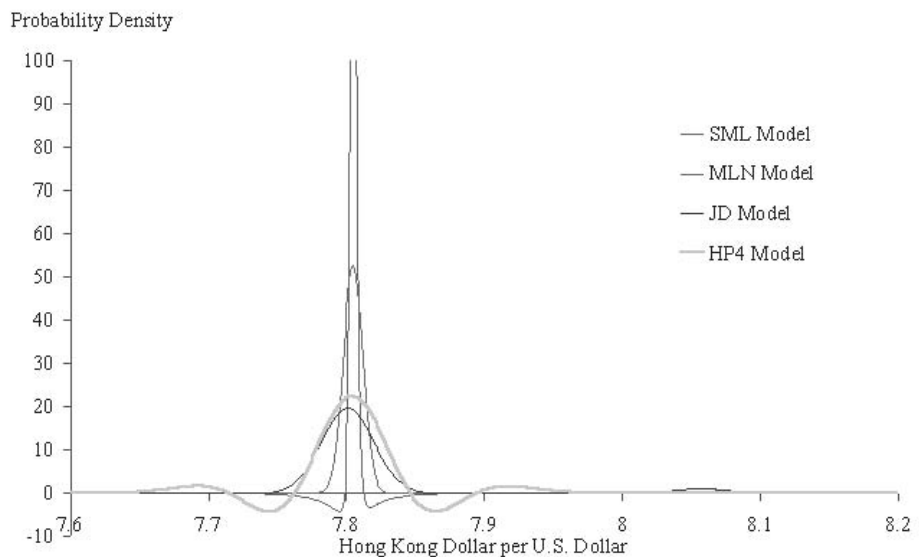**Chart 1: The PDFs on 12 January 1998**

Chart 2: The PDFs on 20 March 2002

The probability and the magnitude of an exchange rate realignment, which can be calculated from the area under the PDF curve, can be used to monitor market sentiment regarding currency board.[10] Table 1 summarises the probability and the magnitude of an exchange rate realignment obtained from these four models. During the days in Asian crisis (23 October 1997 for example), the proba-

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10 *A technical definition of the probability and the magnitude of exchange rate realignment is also given in Appendix 1.*

bility and the magnitude of an exchange rate realignment reflected market concerns about the risk of holding Hong Kong dollar. However, it is problematic to use the realignment probability from any model as an indicator on a normal day (20 March 2002 for example) because the chance of an exchange rate realignment anticipated by the market, which should be much smaller on a normal day than a crisis day, is as high as that in Asian crisis. Given these anomalies, the four methods are not considered appropriate for daily monitoring purpose.

Table 1 – Probability and Magnitude of Exchange Rate Realignment by Different Models on selected days

Date	Realignment Probability (%)				Magnitude of Realignment (pips)			
	JD	MLN	HP4	SML	JD	MLN	HP4	SML
3-Jan-97	24	22	30	24	36	32	54	33
17-Oct-97	62	56	68	58	475	340	517	340
21-Oct-97	76	66	77	67	1254	877	1358	880
23-Oct-97	89	88	87	88	8756	5078	5236	5098
6-Jan-98	70	58	64	58	3479	1456	1524	1423
12-Jan-98	75	68	72	72	5680	2748	2868	2714
15-Jun-98	68	59	72	65	6402	2221	3187	2087
7-Aug-98	63	57	67	67	4666	1763	2112	1613
13-Jan-99	55	49	62	54	956	342	405	283
23-Jul-99	45	26	55	17	1109	310	341	293
10-Sep-99	45	41	51	20	518	205	212	171
6-Apr-01	52	60	56	100	278	96	112	86
11-Jul-01	48	48	50	77	264	82	99	62
18-Jan-02	45	51	55	83	192	81	117	64
20-Mar-02	52	69	59	103	219	104	120	99

Note: Crisis days are highlighted.

Conceptually, the JD model, which assumes that the future path of the exchange rate will experience either a jump or no change, is more appropriate for a fixed exchange rate regime. Estimates of the diffusion volatility, the jump probability and the jump size from the JD model can be directly used to monitor market sentiment about the exchange rate risk of the currency. While the diffusion volatility reflects the degree of uncertainty in the future exchange rate, the jump probability and the size of the jump estimated from the JD model give measures of the expected probability and the magnitude of the realignment in the exchange rate should one occur.[11] Table 2 gives these estimated parameters for the selected days from 1997 to 2002. From the Table, the diffusion volatility is found to be higher during the Asian crisis, reflecting greater market uncertainty about the future exchange rate. While the jump probability was not particularly high during the crisis as compared to some of the non-crisis days, the expected size of the jump, ranging from 10% to 30%, was significantly greater than that on normal days.

Although the jump feature of the JD model is more consistent with a fixed exchange rate regime, the fact that the jump size can be very small makes interpretation of the model results difficult at times. For instance, on 3 January 1997, the probability was as high as that in the Asian crisis but the estimated size of the jump was a mere 0.08%. Without imposing a restriction on the jump size, the combination of an insignificant jump size and a high probability does not agree with the experiences of fixed exchange rate system. It is therefore desirable to modify the model by introducing a minimum jump size.

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11 *It should be noted that the jump probabilities directly estimated from the JD model are different from the probabilities in Table 1. While the probabilities in Table 1 reflect the market assessment of the likelihood for a rate weaker than the fixed level on a given day, the jump probability directly estimated from the model refers to the likelihood of a jump in the exchange rate from now until the option expires. The latter gives a forward looking element in assessing the risk of the currency board.*

Table 2 – Estimated Parameters of Jump Diffusion Model on selected days

Date	Diffusion Volatility	Size of Jump (%)	Jump Probability (%)
3-Jan-97	0.0060	0.08	7.39
17-Oct-97	0.0167	1.42	5.06
21-Oct-97	0.0336	1.63	12.73
23-Oct-97	0.0853	19.70	7.93
6-Jan-98	0.0438	11.32	8.03
12-Jan-98	0.0720	18.29	6.95
15-Jun-98	0.0442	29.60	6.20
7-Aug-98	0.0444	28.70	4.45
13-Jan-99	0.0097	6.90	3.87
23-Jul-99	0.0066	6.15	5.81
10-Sep-99	0.0084	8.26	1.65
6-Apr-01	0.0040	1.54	5.10
11-Jul-01	0.0042	1.49	5.28
18-Jan-02	0.0050	4.49	0.91
20-Mar-02	0.0049	3.28	1.38

Note: Crisis days are highlighted.

III. Restricted Jump-Diffusion (RJD) Model

The experience of fixed exchange rate regimes suggests that the failure of the regime in many cases lead to a discrete move in the exchange rate.[12] As such, to make the JD model more realistic and suitable for market monitoring, a minimum jump size of 10% is introduced to the model as a restriction. This assumption is based on two observations. First, experiences from the Thai Baht devaluation in July 1997 and more recently the floating of the Argentina Peso in January 2002 show that the two currencies fell by 19% and 40% respectively. Therefore, the assumption of at least a 10% jump is a conservative estimate of market expectation for currency realignment. Second, as shown in Table 2, during past episodes when the Hong Kong dollar was under severe selling pressure, the estimated jump sizes were always above the 10% level.

The estimation results of the restricted JD model for the 15 selected days are presented in Table 3, along with results from the unrestricted JD model for comparison. The estimated sizes and probabilities of exchange rate jumps during the Asian crisis based on both restricted and non-restricted models are similar. In the last two years, however, the jump probability of the two models differed. Those of the restricted model continued to fall to below 1%, consistent with a stable Hong Kong dollar market. These results indicate that the restricted model is able to distinguish between small disturbances and episodes of significant pressure on the currency board.

Chart 3 illustrates the evolution of the PDFs generated from the RJD model on selected days during the speculative attack against Hong Kong in August 1998 and aftermath. On 14th and 21st of August 1998, sentiment on the Hong Kong dollar was bearish when the government started intervening in the stock market. The Hong Kong dollar was expected to weaken to between $9.5 and $10.5 per US dollar should the link break. Towards the end of August and at the beginning of September when the pressures intensified, there was more uncertainty on the sustainability of the Hong Kong dollar link - the PDFs at that time widened and extended far beyond the official exchange rate. Market sentiment on the Hong Kong dollar improved only after the introduction of seven measures to strengthen the currency board system on 5 September. On 16 October, for example, the PDF nar-

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12 *During the 1994 Mexican crisis, the Mexican Peso fell by 15% on 20 December 1994. At the height of the Asian financial crisis, the Korean Won dropped by 16% on 22 December 1997, and the Indonesian Rupiah fell by 21% on 19 January 1998.*

rowed significantly and the jump shifted back to around $8.6, reflecting a return of market confidence to the link.

Date	Jump Probability (%)		Size of Jump (%)	
	Unrestricted Form	Restricted Form	Unrestricted Form	Restricted Form
3-Jan-97	7.39	0.18	0.08	10.00
17-Oct-97	5.06	0.22	1.42	10.14
21-Oct-97	12.73	0.30	1.63	10.30
23-Oct-97	7.93	7.77	19.70	19.84
6-Jan-98	8.03	8.12	11.32	11.27
12-Jan-98	6.95	6.97	18.29	18.25
15-Jun-98	6.20	6.23	29.60	29.52
7-Aug-98	4.45	4.42	28.70	28.81
13-Jan-99	3.87	2.35	6.90	10.00
23-Jul-99	5.81	2.84	6.15	10.00
10-Sep-99	1.65	1.33	8.26	10.00
6-Apr-01	5.10	0.35	1.54	10.57
11-Jul-01	5.28	0.35	1.49	10.56
18-Jan-02	0.91	0.23	4.49	15.80
20-Mar-02	1.38	0.29	3.28	12.38

Note: Crisis days are highlighted.

Table 3 – Estimated Parameters of Jump Diffusion Models on selected days

Chart 3 – Restricted JD Model During and After the Intervention in August 1998
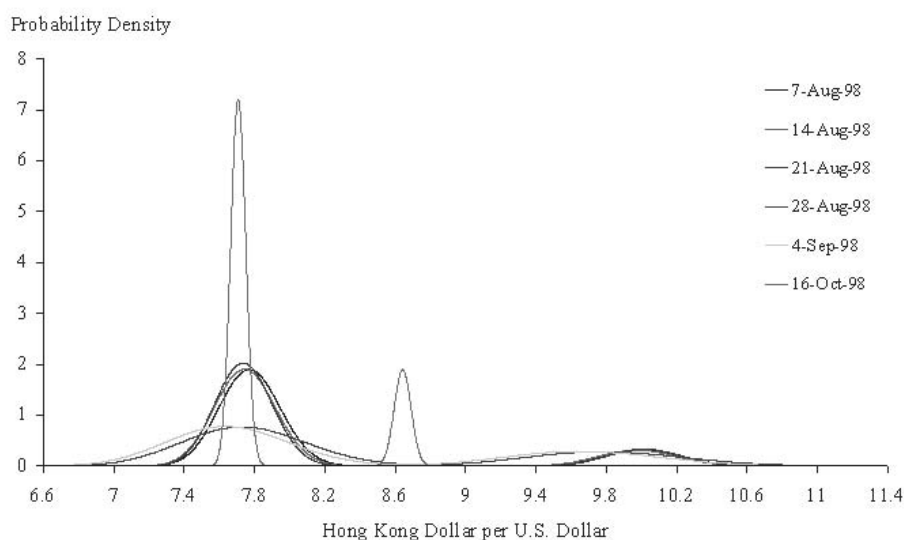
The evolution of market sentiment regarding currency board can also be seen from the estimated parameters of the restricted JD model in Table 4. On 7 August 1998, when concerns on the Hong Kong dollar peg surfaced, the estimated jump probability surged to 4.4% as compared to less than 1% on normal days. The expected jump size rose to 28.8%, indicating market expectations of the Hong Kong dollar to fall to around HK$10 per US dollar should the link break. The first round of government market operation on 14 August did not alter the bearish sentiment. Both the jump probability and the expected jump size on that day were virtually unchanged after 7 August.

On 28 August, despite the large-scale stock market operation of the government, market expectation of the jump probability almost doubled to 8% and the size of the expected jump remained large. In addition, the diffusion volatility also doubled, signalling that market participants were in-

creasingly uncertain about the stability and soundness of the currency board system. By 4 September, widespread worries regarding the Hong Kong dollar link remained. Estimated parameters and statistics derived from the PDF on that day were little changed from 28 August. The market was then not convinced that the currency board system would be sustainable.

On 5 September, the "seven technical measures" were introduced to strengthen the currency board and market sentiment about the Hong Kong dollar improved markedly. On 16 October, for example, the jump probability fell to 5.7% and the size of the jump dropped significantly to around 12% as market participants were gaining confidence regarding the currency board system.

Table 4 – Estimated Parameters of the Restricted JD Model during and after August 1998 crisis

Date	Diffusion Volatility	Size of Jump (%)	Jump Probability (%)
7-Aug-98	0.0444	28.8	4.42
14-Aug-98	0.0444	28.8	4.42
21-Aug-98	0.0418	29.5	4.43
28-Aug-98	0.0907	26.5	8.06
4-Sep-98	0.0908	26.4	8.04
16-Oct-98	0.0110	12.1	5.74

The above discussion shows that the RJD model can be an effective tool to monitor sentiments regarding future exchange rate movements. Since the probability refers to the likelihood of a possible jump during the life of the option, monitoring of this indicator can provide an early warning signal regarding market sentiment on the exchange rate. Besides, the estimated jump size provides an indication of market beliefs on the magnitude of exchange rate realignment during extreme market conditions. The inclusion of a minimum jump size as a restriction will help reduce the likelihood of false alarms in monitoring.

IV. **Simulation of the RJD Model**

As the Hong Kong dollar option market is rather illiquid, the quality of the price data is a concern when used for estimation. To address whether the estimated results are sensitive to errors in the price data, the robustness of the RJD method is tested by Monte Carlo simulation. In the simulation process, the observed option prices are perturbed by adding a random error from a uniform distribution of a range between –5% to 5%. The PDF is re-estimated using the simulated prices, and the process is repeated 100 times for each day.

Table 5 summarises the impacts of the variations in the simulated prices on the results of the RJD model. To evaluate the impact, the average percentage differences between the estimated parameters from the 100 simulations and the original estimated parameters are calculated. As shown in the Table, the effects of price errors on the diffusion volatility, the jump probability and the jump size are generally limited (less than 1% difference in the crisis period). The only exceptions are found in 2002 when the average percentage differences are rather large. However, it is noted that even in these cases, the absolute difference in the probability is small – the average absolute difference between the results from the simulation and the original estimate of the jump probability is less than 0.5%. Given the small absolute size of the probability, a large relative change in the jump size from the simulation is not a major concern.

To examine the impacts of extreme price errors, PDFs derived from the largest price error in the perturbation as compared to unperturbed prices on a crisis day (6 January 1998) and a non-crisis day (18 January 2002) are presented in Charts 4 and 5 respectively.[13] From Chart 4, the extreme price error appears to have little impact on the PDF for a crisis day in 1998. For a non-crisis day (18 January 2002) shown in Chart 5, however, the PDF estimated from the RJD model appears to be sensitive to the price changes – the second "hump" shifts from around $9 to around $8.6. In absolute terms, however, the impact on the jump probability is small, as evidenced by very little change

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13 *The largest price error is the maximum absolute difference between the perturbed prices and the unperturbed ones.*

in the area covered by the second "hump". Again, the sensitivity of the jump size relative to errors in option prices, though not desirable, is not a major problem in daily monitoring.

Table 5 – Impacts of Simulated Random Error on the Restricted JD Model (in %)

Date	Jump Probability	Size of Jump	Diffusion Volatility
3-Jan-97	0.70	0.00	-0.16
17-Oct-97	-0.08	0.00	-0.25
21-Oct-97	-0.10	0.00	-0.11
23-Oct-97	0.44	-0.14	0.26
6-Jan-98	0.70	-0.35	-0.31
12-Jan-98	-0.72	0.36	0.45
15-Jun-98	-0.18	0.09	-0.50
7-Aug-98	-0.23	0.13	-0.28
14-Aug-98	-0.25	0.16	-0.20
21-Aug-98	0.83	-0.38	0.03
28-Aug-98	-0.23	-0.07	-0.28
4-Sep-98	0.33	-0.19	-0.24
13-Jan-99	-1.33	0.40	-0.54
23-Jul-99	0.21	0.00	-0.73
10-Sep-99	0.41	0.13	1.62
6-Apr-01	0.01	0.00	0.16
11-Jul-01	0.01	0.00	-0.37
18-Jan-02	53.06	-32.89	-0.36
20-Mar-02	17.45	-14.61	0.04

Note: 1. The figures shown are the average percentage differences between the 100 estimated parameters from simulations and the original estimated parameters.
*2. Crisis days are highlighted.*

Chart 4 – Impacts of Largest Absolute Price Errors on PDF for Restricted JD Model on 6 Jan 1998
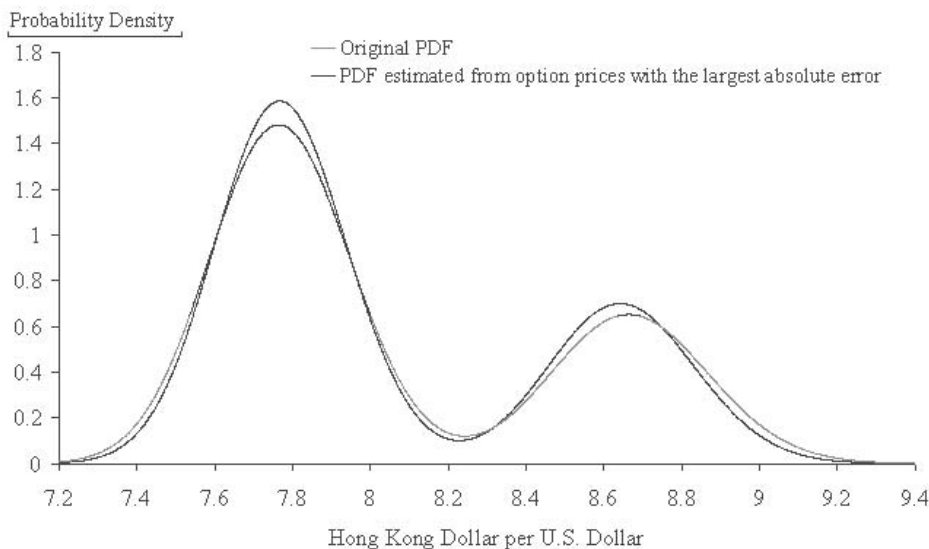
Note: The largest price error is the maximum absolute difference between the perturbed prices and the unperturbed ones.

Overall, both the PDFs and the estimated parameters of our RJD model do not appear to be sensitive to errors in option prices. Barring some extreme cases, the information content derived from the RJD model is robust despite the low liquidity of the Hong Kong dollar option market.

**Chart 5 – Impacts of Largest Absolute Price Errors on PDF
for Restricted JD Model on 18 Jan 2002**
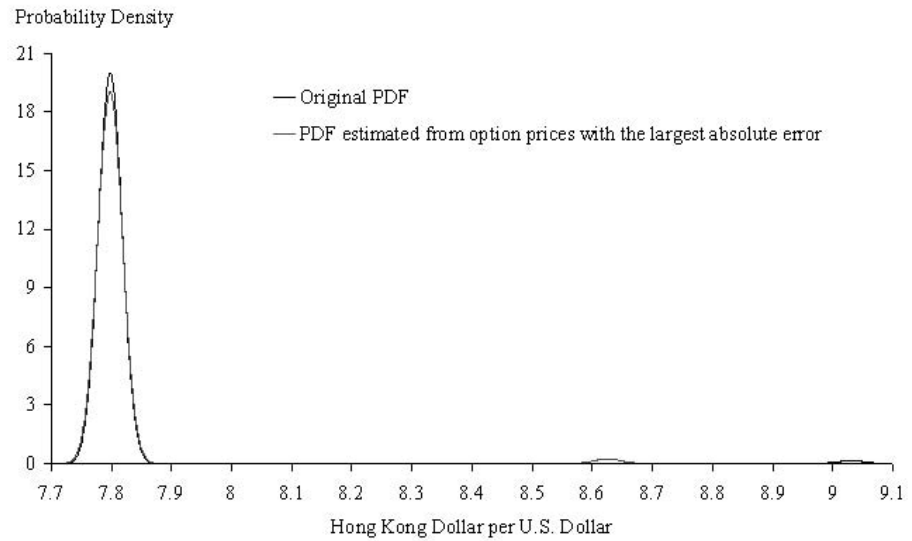
Note: The largest price error is the maximum absolute difference between the perturbed prices and the unperturbed ones.

V. Conclusion

This paper has adopted several methods – structural and non-structural – to derive information content from the Hong Kong dollar option prices. Taking into account the institutional feature of a fixed exchange rate regime, the restricted jump-diffusion model, which assumes either no or only one jump of a minimum size of 10% before the option expires, appears to be more appropriate in the case of Hong Kong.

Empirically, the results in this paper suggest that the restricted jump-diffusion method is superior to the jump-diffusion, the mixture of two log-normals, the Hermite polynomial 4-th order approximation and the smoothed implied volatility smile methods. In particular, by examining the evolution and the distribution of the PDFs and their estimated parameters during crisis and non-crisis periods, the restricted jump-diffusion approach with the imposition of a minimum of 10% jump appears to be useful in monitoring market sentiments regarding the currency board. Moreover, as evidenced in the Monte Carlo simulation, the illiquidity of the Hong Kong dollar option market has only limited effect on the information derived. This leads to the recommendation that the restricted jump-diffusion model is an effective monitoring tool and provides an early warning signal on potential pressures against the currency board system in Hong Kong.

Appendix 1 – Methods for Estimating the Probability Density Function from Currency Options

(A) Jump-diffusion model (JD)

In an asymmetric jump-diffusion model, the stochastic process for the future exchange rate ST is assumed as follows:

$$S_T = S_t + \int_t^T (\alpha - r^* - \lambda E[J]) S_l \, dl + \int_t^T \sigma_w S_l \, dW_l + \int_t^T S_l J dq_{l,T} \, ,$$

where σ_w denotes the diffusion volatility of the exchange rate,
W_l is a geometric Brownian motion,
$q_{l,T}$ is a Poisson counter over the time interval (t, T) with average rate of occurrence of jumps λ,
t is the current date,

T is the option maturity date,
S_t is the level of the exchange rate at time t,
α is the expected rate of return on the domestic currency, which is represented by the risk-free domestic interest rate $\mathbf{r}$,
r^* is the risk-free foreign interest rate,
E is the expectation function, and J is the possibly random jump size.

In a simple version of the jump-diffusion model, in which J is non-stochastic, there is either zero or one jump in the exchange rate over the life of the option. This is referred to as the Bernoulli distribution version of the model. As shown in Bates (1991), the price of a call option for a Bernoulli jump-diffusion model is written as:

$$C(S_t, \sigma_w, \lambda, J)$$
$$= (1 - \lambda\tau)\left[S_t e^{-(r^* + \lambda J)\tau} \Phi(d_0 + \sigma_w \sqrt{\tau}) - X e^{-r\tau} \Phi(d_0) \right]$$
$$+ \lambda\tau \left[S_t e^{-(r^* + \lambda J)\tau} (1+J)\Phi(d_1 + \sigma_w \sqrt{\tau}) - X e^{-r\tau} \Phi(d_1) \right]$$

where
Φ is the cumulative density function of a normal distribution,
X is the exercise price,
τ is the tenor of the option, which is equal to T-t, and

$$d_0 = \frac{\ln(\frac{S_t}{X}) + (r - r^* - \lambda J - \frac{\sigma_w^2}{2})\tau}{\sigma_w \sqrt{\tau}},$$

$$d_1 = \frac{\ln(\frac{S_t}{X}) + \ln(1+J) + (r - r^* - \lambda J - \frac{\sigma_w^2}{2})\tau}{\sigma_w \sqrt{\tau}}$$

The call option price can be interpreted as the average of the Black-Scholes option value given a jump, weighted by the probability of a jump, and the Black-Scholes value absent a jump, weighted by the probability of no jump.

Three parameters, $\theta = (\sigma_w, \lambda, J)$, are estimated by minimising the sum of squared errors associated with the theoretical and observed prices of call options. That is, the parameters of the risk-neutral PDF are estimated by solving the following minimisation problem:[14]

$$\underset{\theta}{Min}\left[\sum_{t=1}^{5} [C(X_i) - C_\theta(X_i)]^2 \right]$$

where $C(X_i)$ are the observed prices of call options, and $C_\theta(X_i)$ are the theoretical prices of call options.

As shown in Malz (1995), if the exchange rate follows the jump-diffusion process represented in the formula of the call option price, the risk-neutral PDF of the logarithm of the underlying exchange rate is then given as:

$$\ln(S_\tau) \sim N\left[\ln(S_t) + \left(r - r^* - \lambda J - \frac{\sigma_w^2}{2}\right)\tau + q_{t,T} \ln(1+J), \sigma_w^2 \tau \right]$$

where $N(.)$ is the density function of a normal distribution.
Based on the PDF, two measures can be derived to evaluate market sentiment regarding the fixed exchange rate system. These are the probability and the magnitude of any exchange rate realignment in the currency. Under a fixed exchange rate system, the risk of the exchange rate realignment

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14 *The set of parameters estimated in this minimisation problem is often not unique. Provided that these parameters do not violate the obvious assumptions, the parameters with the smallest error in comparing the prices of options associated with the model are chosen whereas the pricing error is defined as sum of squared error (SSE) given by:*

$$SSE = \left[\sum_{t=1}^{5} [C(X_i) - C_\theta(X_i)]^2 \right]$$

or the realignment probability is estimated by the area under the PDF curve beyond the official exchange rate. Mathematically, the realignment probability is defined as follows:

$$prob(S_T > \bar{S}) = \int_{\bar{S}}^{\infty} \pi(S_T) \, dS_T$$

where $\bar{S}$ is the official exchange rate, and S_T is the future exchange rate. Alternatively, this integral is equivalent to one minus the cumulative distribution function, $\Pi(X)$, evaluated at $\bar{S}$, i.e. $1 - \Pi(\bar{S})$.

In addition to the realignment probability, the magnitude of the realignment, which sums up all the possible values of the underlying exchange rate beyond the official linked exchange rate weighted by their respective probabilities of occurrence, is another useful information for understanding the pressure on the Hong Kong dollar exchange rate. In mathematical terms, the magnitude of the realignment, $I_{\bar{S}}$, is given by:

$$I_{\bar{S}} = \int_{\bar{S}}^{\infty} (S_T - \bar{S}) \pi(S_T) \, dS_T$$

With this measure, we are able to estimate the size of the expected exchange rate changes and hence the profit of the speculators shorting Hong Kong dollar had the exchange rate realignment occurred. The calculation of the probability and the magnitude of an exchange rate realignment in this model can also be applied to all the other three methods.

(B) Method of Mixture of Two Lognormals (MLN)

In this method, the risk-neutral PDF $q(S_T)$ of the future exchange rate, S_T, on the maturity date is assumed to be a weighted mixture of two lognormal distributions given by:

$$q(S_T) = w q_1(S_T) + (1 - w) q_2(S_T)$$

$$\text{where } q_i(S_T) = \frac{1}{\sqrt{2\pi\tau}\,\sigma_i\,S_T} e^{\frac{1}{2}\left(\frac{\log(S_T) - \mu_i}{\sigma_i\sqrt{\tau}}\right)^2} \quad \text{for } i = 1, 2.$$

μ_i and $\sigma_i\sqrt{\tau}$ is the mean and standard deviation of the distribution respectively, $0 \le w \le 1$ is the weight assigned to the first lognormal distribution.

Based on the above equation and noting that the prices of options are equal to their discounted future payoffs, the theoretical prices of European call options can be written as:

$$C_t = e^{-r\tau} \left(\begin{array}{l} w\left\{ e^{\mu_1 + \frac{1}{2}\sigma_1^2\tau}\left[1 - \Phi\left(\frac{\ln(X) - \mu_1 - \sigma_1^2\tau}{\sigma_1\sqrt{\tau}}\right)\right] - X\left[1 - \Phi\left(\frac{\ln(X) - \mu_1}{\sigma_1\sqrt{\tau}}\right)\right]\right\} \\ + (1-w)\left\{ e^{\mu_2 + \frac{1}{2}\sigma_2^2\tau}\left[1 - \Phi\left(\frac{\ln(X) - \mu_2 - \sigma_2^2\tau}{\sigma_2\sqrt{\tau}}\right)\right] - X\left[1 - \Phi\left(\frac{\ln(X) - \mu_2}{\sigma_2\sqrt{\tau}}\right)\right]\right\} \end{array} \right)$$

As the discounted expected future price of the exchange rate must be equal to the current price, we have to impose the Martingale constraint:

$$S_t e^{(r - r^*)\tau} = w e^{\mu_1 + \frac{1}{2}\sigma_1^2\tau} + (1-w) e^{\mu_2 + \frac{1}{2}\sigma_2^2\tau}$$

Because of the constraint, μ_1 is a function of w, μ_2, σ_1 and σ_2. Thus only four parameters of the risk-neutral PDF, $\theta = (w, \sigma_1, \mu_2, \sigma_2)$ are estimated by solving the same minimisation problem in the jump-diffusion model.

After estimating the parameters, the PDF can be derived by substituting the weight, means and variances. In addition to the PDF, the cumulative distribution function (CDF) at a particular exchange rate S_T can be obtained as follows:

$$\text{Prob}\left[x \le S_T\right] = w\Phi\left(\frac{\log S_T - \mu_1}{\sigma_1\sqrt{\tau}}\right) + (1-w)\Phi\left(\frac{\log S_T - \mu_2}{\sigma_2\sqrt{\tau}}\right).$$

(C) Hermite Polynomial 4-th order Approximation Method (HP4)

The Hermite polynomial (HP) approximation is a scheme to add orthogonal perturbations to the Black-Scholes model such that asymmetries in the PDF can be captured.

In this model, the PDF is an approximation of a linear summation of Hermite polynomial. Theoretically, the more the polynomials are used, the better the approximation we have. For practical purpose, however, a 4-th order approximation is employed in this study. Following the procedures developed in Madan and Miline (1994), the European call can be written as:

$$C_\theta(0, X) = e^{-r\tau}\sum_{k=0}^{4}\alpha_k b_k$$

where $\alpha_k = \dfrac{1}{\sqrt{k!}}\dfrac{\partial^k \Psi(u)}{\partial u^k}\bigg|_{u=0}$

and $\Psi(u)$ is the generating function, which is given by:

$$\Psi(u) = S_t e^{(r-r^*+\mu)\tau+\sigma\sqrt{\tau}u}N(d_1) - XN(d_2)$$

where $\quad d_1 = \dfrac{\ln\left(\dfrac{S_t}{X}\right) + \left(r - r^* + \mu + \dfrac{\sigma^2}{2}\right)\tau}{\sigma\sqrt{\tau}} + u, \qquad d_2 = d_1 - \sigma\sqrt{\tau},$

On the other hand, following the idea of Abken, Madan and Ramamurtie (1996), the risk-neutral PDF for the future exchange rates S_T is:

$$q(S_T) = \frac{1}{\sigma\sqrt{\tau}S_T}Q(z)$$

where z is a normalised variable z defined as follows:

$$z = \frac{\ln\left(\dfrac{S_T}{S_t}\right) - (r - r^* + \mu - \dfrac{\sigma^2}{2})\tau}{\sigma\sqrt{\tau}}$$

and

$$Q(z) = \frac{1}{\sqrt{2\pi}}e^{-\frac{z^2}{2}}\left[\left(b_0 - \frac{b_2}{\sqrt{2}} + \frac{3b_4}{\sqrt{24}}\right) + \left(b_1 - \frac{3b_3}{\sqrt{6}}\right)z + \left(\frac{b_2}{\sqrt{2}} - \frac{6b_4}{\sqrt{24}}\right)z^2 + \left(\frac{b_3}{\sqrt{6}}\right)z^3 + \left(\frac{b_4}{\sqrt{24}}\right)z^4\right]$$

which is the PDF of z with the 4-th order Hermite approximation.

As the PDF integrates to unity, we have $\int Q(z)dz = b_0 = 1$. Under the measure of $Q(z)$, the mean and variance of z are b_1 and $b_0 + \sqrt{2}b_2 - b_1^2$ respectively. To ensure z has a mean of 0 and a variance of 1, the restrictions $b_1 = 0$ and $b_2 = 0$ must be imposed.

Hence, after substituting the constraints, the PDF of z for the 4-th order Hermite polynomial approximation is now given by:

$$Q(z) = \frac{1}{\sqrt{2\pi}}e^{-\frac{z^2}{2}}\left[\left(1 + \frac{3b_4}{\sqrt{24}}\right) - \left(\frac{3b_3}{\sqrt{6}}\right)z - \left(\frac{6b_4}{\sqrt{24}}\right)z^2 + \left(\frac{b_3}{\sqrt{6}}\right)z^3 + \left(\frac{b_4}{\sqrt{24}}\right)z^4\right]$$

After the HP approximation, the risk-neutral PDFs is now depending on four parameters, b_3, b_4, μ and σ. To estimate these parameters, the same minimisation process in the JD model is applied where the theoretical call price for HP4 model under restrictions is:

$$C_t(b_i, \mu, \sigma) = e^{-r\tau} \sum_{k=0}^{4} \alpha_k b_k$$
$$= e^{-r\tau}(\alpha_0 b_0 + \alpha_1 b_1 + \alpha_2 b_2 + \alpha_3 b_3 + \alpha_4 b_4)$$
$$= e^{-r\tau}(\alpha_0 + \alpha_3 b_3 + \alpha_4 b_4)$$

where $\quad \alpha_0 = S_t e^{(r-r^*+\mu)\tau} \Phi(d_1) - X\Phi(d_2)$;

$$\alpha_3 = \frac{1}{\sqrt{3!}} \left[\begin{array}{l} (S_t d_1^2 - 3S_t \sigma\sqrt{\tau} d_1 + 3S_t \sigma^2 \tau - S_t) e^{(r-r^*+\mu)\tau} \phi(d_1) \\ + S_t \sigma^3 \tau^{\frac{3}{2}} e^{(r-r^*+\mu)\tau} \Phi(d_1) + (1 - d_2^2)X\phi(d_2) \end{array} \right];$$

$$\alpha_4 = \frac{1}{\sqrt{4!}} \left[\begin{array}{l} (-S_t d_1^3 + 4S_t \sigma\sqrt{\tau} d_1^2 + (3S_t - 6S_t \sigma^2 \tau)d_1 + 4S_t \sigma^3 \tau^{\frac{3}{2}} - 4S_t \sigma\sqrt{\tau}) \\ * e^{(r-r^*+\mu)\tau} \phi(d_1) + S_t \sigma^4 \tau e^{(r-r^*+\mu)\tau} \Phi(d_1) + (d_2^3 - 3d_2)X\phi(d_2) \end{array} \right].$$

By substituting the estimated parameters in the specified equations before, the PDF for z and the corresponding risk-neutral PDF for the future exchange rates S_T can be derived. The CDF for the future exchange rates S_T can be calculated from numerically integrating its PDF.

(D) Smoothed Implied Volatility Smile Method (SML)

Following Malz (1997), the implied volatility smile (σ_δ) is approximated by the following function:

$$\sigma_\delta(\delta) = b_0 + b_1(\delta - 0.50) + b_2(\delta - 0.50)$$

The coefficients b_is are estimated by the least square method with data at 5 deltas (delta at 0.1, 0.25, 0.5, 0.75 and 0.9).[15] After approximating the implied volatility against each δ, the implied volatility can be found as a function of the exercise or strike price rather than δ. Noting that δ itself is a function of implied volatility, the volatility smile can be re-written as follows after substituting δ (in terms of σ):

$$0 = \sigma - b_0 - b_1 \times \left[e^{-r^*\tau} \Phi\left[\frac{\ln\left(\frac{S_t}{X}\right) + \left(r - r^* + \frac{\sigma^2}{2}\right)\tau}{\sigma\sqrt{\tau}} \right] - 0.50 \right]$$

$$- b_2 \left[e^{-r^*\tau} \Phi\left[\frac{\ln\left(\frac{S_t}{X}\right) + \left(r - r^* + \frac{\sigma^2}{2}\right)\tau}{\sigma\sqrt{\tau}} \right] - 0.50 \right]^2$$

As there is no closed form solution to the above equation, the implied volatility as a function of exercise price X (denoted as σ_X) is obtained by non-linear least squares. After obtaining the volatility smile σ_X, the call price, written in terms of the exercise price X, can be found by substituting σ_X into the Black-Scholes formula, i.e.

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15 *The delta (δ) of a currency option is defined as the rate of change of the option price with respect to the spot exchange rate. In over-the-counter markets, dealers usually quote the option prices in terms of implied volatility whereas the exercise prices of in- or out-of-money options are not expressed in currency units but in terms of delta.*

$$C(t,T,X) = e^{-r^*\tau} S_t \Phi\left[\frac{\ln\left(\frac{S_t}{X}\right) + \left(r - r^* + \frac{\sigma_X^2}{2}\right)\tau}{\sigma_X \sqrt{\tau}}\right] - e^{-r\tau} X \Phi\left[\frac{\ln\left(\frac{S_t}{X}\right) + \left(r - r^* - \frac{\sigma_X^2}{2}\right)\tau}{\sigma_X \sqrt{\tau}}\right]$$

Finally, by differentiating the call price numerically with respect to X, we are able to obtain the estimates of cumulative distribution and probability density functions.

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Abstract

Risk-neutral probability density functions (PDFs) implied by currency option prices are increasingly used by central banks for monitoring purposes. In the case of fixed exchange rate regimes, information embedded in PDFs is useful in monitoring market sentiment regarding realignment risk. This paper compares several methods of extracting information from the Hong Kong dollar options and shows that the restricted jump-diffusion (RJD) model is an effective monitoring tool. Assuming that market participants believe there may be either no or one jump of a minimum size of 10% in the exchange rate over the life span of the option increases the ability of the model to pinpoint the perception of the realignment risk. Results from Monte Carlo simulations suggest that illiquidity of the Hong Kong dollar option market has only limited effect on the information content derived from the RJD model.

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The use and availability of financial markets statistics for the euro area

Michel Stubbe and Per Nymand-Andersen (ECB) [1,2]

Introduction

Financial markets are a key channel in the transmission of changes in monetary policy to the real economy. Moreover, the developments on financial markets reflect the anticipations, in particular the expectations regarding future price dynamics, of economic agents. The ECB therefore intensively uses financial markets statistics, in order to analyse in a systematic way the interrelationships between monetary policy and financial markets. More specifically, the provision of high quality financial markets statistics is essential for, among others, the analysis of the structure of the financial system and the functioning and the developments of the financial markets. It is also important in order to assess the expectations held by market participants with respect to future micro and macroeconomics developments and, in a very timely fashion, the possible macroeconomic consequences of certain events and developments.

For these purposes, the Financial Markets Statistics Unit (FMSU) of the ECB's Money and Banking Statistics Division is regularly collecting and producing Euro area financial markets statistics, together with the National Central Banks (NCBs) of the European Union or directly from financial market information sources. Presently the ECB's Financial Markets Statistics (FMS) cover the following important areas:

- Key ECB interest rates set by the Governing Council, which define the rates charged or paid by the Eurosystem, which comprises the ECB and the twelve NCBs of the EU Member States participating in Monetary Union.
- Prices on the money market, and other financial markets such as foregn exchange, bond, equity.
- Volumes on the Euro area securities markets (amounts outstanding and gross/net issues).

While it may be worthwhile to note that the ECB plans to start publishing harmonised euro area statistics on interest rates paid and charged by Monetary Financial Institutions (MFIs) vis-a-vis households and non-financial corporations, these will not be covered in the present paper.[3]3

Against this background, the present paper is divided into five sections. The first section reviews the statistics on key ECB interest rates, the second on financial markets prices and the third on securities issues statistics. The fourth section describes the procedure used in the ECB to assess the fulfilment of the user requirements. The final section reflects on the potential benefits of co-operation.

Key ECB interest rates set by the ECB Governing Council

The key ECB interest rates reflect the stance of the monetary policy of the ECB, which is implemented via the Eurosystem monetary policy operations. The Eurosystem monetary policy operations rely on open market operations (the rates on the main refinancing operations, the longer-term refinancing operations and on other open market operations) and the overnight interest rates on the marginal lending and deposit facilities.

Statistical information on the key ECB interest rates are available from the beginning of the Monetary Union (January 1999) and includes the respective levels outstanding in percentages per annum and changes in percentage points.

The statistical information available (as from January 1999) on the Eurosystem monetary policy operations allotted through tenders show the rates for fixed rate tenders or the variable rate tenders applied weekly to the main refinancing operations. It also shows the rates applied to longer-term refinancing operations and other open market operations, along with the respective amount of bids, allotments and maturity. For variable rate tenders the minimum bid rates, the marginal rates and the weighted average rates are available.

Prices on the financial markets

Money markets are the financial markets in which short-term financial assets are issued and traded. The financial instruments traded in these markets have, generally speaking, an original maturity of up to and including one year.

The ECB provides daily statistics on money market interest rates covering a broad spectrum of maturities for the Euro area interbank deposit rates, covering the overnight deposits, one-month, three-, six- and twelve-months euro deposit rates. For "Euro area rates" before January 1999, synthetic proxies have been calculated on the basis of a weighted average of the national deposit rates (using London Interbank Offered Rates (LIBOR) where available), where the national annual GDP figures are used as weights. As of January 1999 the Euro Overnight Index Average (EONIA) is used for the overnight interest rates and the Euro Interbank Offered Rates (EURIBOR) are used for the other maturities. These rates are collected directly from the markets and are compared with United States and Japan LIBOR rates. In addition the most representative bid and ask quotations of Forward Rate Agreements are collected.

Statistics are collected for the foreign exchange spot and forward markets covering the currencies of the G20 countries, accession and emerging market countries.

Furthermore, statistical information is collected on the bond markets, mainly covering government bond yields for the Euro area, the US and Japan. The data are collected directly through wire services or from other sources. For the Euro area, the maturity spectrum spans from two up to ten years and includes the intermediate bands of three, five and seven years. Yield statistics are calculated on the basis of national (mostly benchmark) government bond yields

weighted by GDP and, as of January 1999, by the nominal outstanding amounts of government bonds in each maturity band. Monthly and yearly values are period averages from January 1999 and - up to December 1998 - end of period values are reported for two, three, five and seven years yields while ten years yields are period averages.

In addition, the ECB monitors the developments in global stock markets through the stock market indices for the Euro area, the US and Japan. Daily index values are transformed into period averages for monthly and yearly frequencies. The sources for the data are the wire services. For the Euro area, the Dow Jones EURO STOXX indices reflect the stock markets dynamics and the main sectoral economic developments. These indices include two benchmark indices, the Broad and "50" benchmark, and the main economic sector indices covering basic materials, consumer cyclical, consumer non-cyclical, energy, financial, industrial, technology, utilities, telecommunications and health care. The ECB collects comparable information for the US, using the index Standard & Poor's 500, and for Japan, using the index Nikkei 225.

Limited statistical information on prices and quantities of financial derivative business is already available within the Eurosystem, although the ECB also has a keen interest in both derivative price indicators and global derivative market statistics.

Statistics on securities issues

Information on issues and holdings of securities is an important element of monetary and financial analysis. For borrowers, securities issues are an alternative to bank financing. Holders of financial assets may view bank deposits, negotiable instruments issued by banks (included in M3 if issued for two years or less) and other securities as partial substitutes. Over time, any shifts in financing between the banking system and the securities markets may affect the transmission of the ECB monetary policy. Statistical information on outstanding amounts of securities issued indicate the depth of capital markets, while issues in euro by non-residents of the Euro area are used to assess the international role of the euro. Statistics on securities therefore complement monetary and financial data.

Securities refer to any financial asset, which is negotiable and usually traded on secondary markets, or any other transferable financial asset normally dealt in giving the right to acquire any such transferable securities by subscription or exchange or giving rise to cash settlement.

Debt securities - referring to "securities other than shares excluding financial derivatives (ESA95, F.33)" - give the holder the unconditional right to a fixed or contractually determined variable money income in the form of coupon payments (interest) and/or a stated fixed sum on a specific date or dates or starting from a date fixed at the time of issue. This includes bonds and other forms of securitised debt, which are negotiable on a regulated market.

Equity securities - referring to "shares and other equity excluding mutual funds shares (ESA95, F.51)" - are financial assets except mutual fund shares which represent property rights on corporations or quasi-corporations. These financial assets generally entitle the holders to a share in the profits of the corporations or quasi-corporations and to a share in their net assets in the event of liquidation. This includes shares in companies and other transferable securities equivalent to shares in companies.

Securities issues statistics are made available in accordance with the Guideline of the ECB concerning certain statistical reporting requirements of the ECB and the procedures for reporting by the NCBs of statistical information in the field of money and banking statistics (ECB/2000/13) of 13 November 2000, which can be acces sed on the ECB's web site.

The Eurosystem produces main aggregates and sector and maturity breakdowns relating to issues by Euro area residents, in any currency, and to issues in euro, regardless of who issues them. The data on issues by Euro area residents are provided monthly starting in January 1990 (end-December 1989 for the amounts outstanding) and, in co-operation with the BIS, those on euro denominated issues by non-residents on a monthly basis, beginning with the amounts outstanding at end-December 1998.

The securities issues statistics made available measure the stocks (amount outstanding) and flows (gross issuance, redemptions and net issuance) in the debt securities market. The amount outstanding is the stock of securities at the end of the period Gross issues cover all issues for cash; they give rise to new instruments and thereby add to the amount outstanding. Redemptions comprise all repurchases by the issuer for cash, whether at maturity or earlier; redemptions lead to the deletion of instruments and thereby reduce the amount outstanding. Net issues are gross issues minus redemptions during the same period. In principle, they correspond to the change in amounts outstanding between two periods, though differences may arise from valuation changes, reclassifications and other adjustments during the periods.

The statistics cover securities other than shares (debt securities). Money market paper and, in principle, private placements are included. The data are provided with a breakdown by original maturity, residency of the issuer, currency of denomination and, for euro-denominated issues, also by issuing sector. Securities statistics cover issues by entities resident in the Euro area. Issues by foreign-owned entities located in the Euro area are classified as issues by Euro area residents. Issues by entities located outside the Euro area but owned by residents of the Euro area are treated as issues by non-residents of the Euro area. The currency of issuance refers to the currency denomination of the security. The Euro area securities issues statistics cover securities denominated in euro as well as securities denominated in currencies other than the euro.

Statistics on quoted shares are due to be made available in the second half of 2002.

The securities issues statistics for residents of the Euro area are collected and produced by the Eurosystem. The ECB is responsible for the provision of Euro area aggregated securities issues statistics, while the publication and dissemination of national datasets is the responsibility of the respective NCBs. In order to facilitate access to the national breakdown of the Euro area aggregate, the ECB also makes available the amount outstanding of euro-denominated debt securities by country of residency, sector of the fesuer and original maturity. The national data will shortly be added to the ECB website and will be updated on a monthly basis. More detailed information on national datasets can be accessed through the respective NCBs directly.

### Procedure for the assessme nt of the fulfilment of the user requirements

As already mentioned, the ECB has a growing need for formal statistics recording essential financial market information in a highly standardised and harmonised way. This implies the further development of Euro area financial markets statistics and indicators based on sound and comparable concepts and methodologies across the Euro area. One way of identifying the ECB user needs for financial markets instruments and their level of fulfilment can be done by using a "consolidated radar chart" as presented below.

A radar chart is a graphical presentation of multi-dimensional user requirements. The radar chart presented below is structured into four main categories of requirements. The first category of requirements relates to the *content* of the financial market statistics in terms of the coverage of the financial markets, the historical availability of the individual series, the frequency of data collec-

tion and confidentiality of the information. The requirements for structured data and data availability is labelled *technology.* The third category of requirements relates to the *data processing* of ensuring high quality financial markets statistics, providing adjustments and implementing algorithms for calculating value added financial markets statistics. Three other dimensions, the level of system integration, the usability and reliability represents the fourth category called *integration.*

   Each individual dimension is represented by its own axis starting from the center of the radar chart. The dimension with the least demanding requirements will be closest to the center and the dimension with the highest demand level will be closest to the periphery. The scaling of the radar chart is expressed in percentage points where the periphery represents 100 percent and the center 0%. The solid line connecting the scores of the individual dimensions represents the consolidated ECB user profile for financial markets statistics. Clearly these profiles differ according to business needs, where typically a Front Office user would have a high need for "online availability", a user in Economics would have a high need for "system integration" whereas a typical researcher would have a high user need for long time series expressed by a high ne ed for the "history" dimension.

**Chart 1 – A consolidated presentation of the ECB user needs
for financial markets statistics**
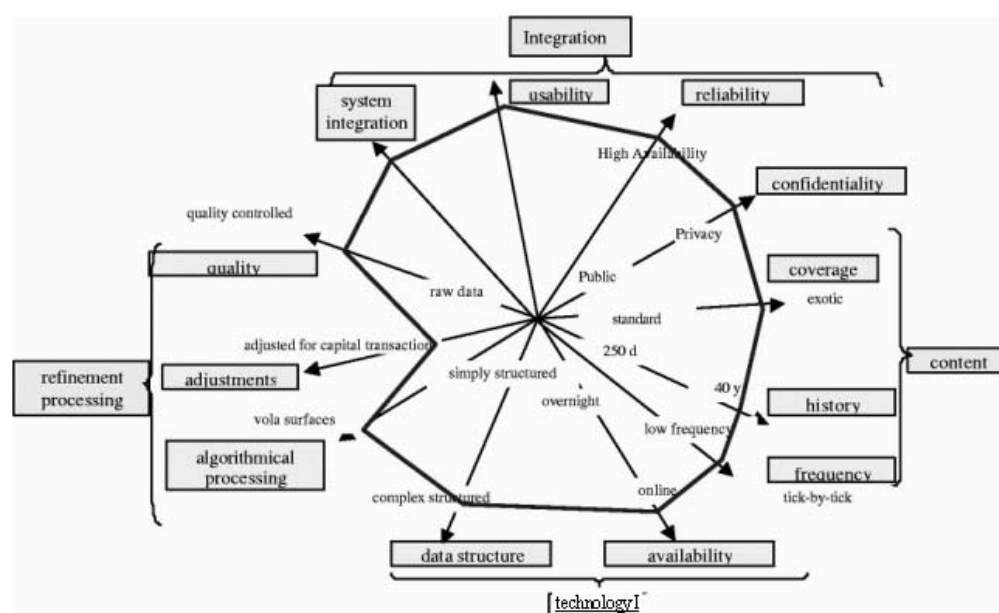
While the consolidated radar chart above covers the ECB user needs for financial markets statistics, these requirements are likefy to be similar to the needs of other Central Banks. The fulfilment of these requirements appears to be essentially based on the following key features:
- The availability and ease of access to the market information on the underlying financial instruments - in terms of coverage, frequency of observation and cost-effectiveness.
- The ability to filtering market data using stochastic approaches as part of the Intelligent Data Quality Management procedure, in order to ensure high quality financial markets statistics.
- The development of statistical added value and indicators based on sound and agreed methodology and algorithms according to international standards and market practices.

Benefits of co-operation for further statistical work in the field of financial   markets statistics on prices and quantities

Against the background of the previous sections, the main areas for further co-operation appear to be the following:
- discuss the best practices for filtering methodology and their application in order to provide high quality financial market statistics.

- exchange experience relating to value added financial markets statistics, in particular on the identification of common methodologies to achieve comparability, taking account of differences in the structure and functioning of financial markets concerned.
- sharing expertise on the respective financial markets, e.g. for the identification of the financial instruments which matters.
- on the basis of agreed common standards in the broadest sense, promote the timeliness and easy of access by sharing the work and exchanging the resulting statistical information in an effective manner.

Abstract

This paper identifies, mainly from a monetary policy point of view, the user requirements for Euro area financial markets statistics on prices and quantities, in terms of coverage, timeliness, consistency and reliability. The types of statistics covered also include value-added indicators, and historical information has been collected with intra-daily, daily, business and at lower frequencies. This paper briefly reviews the current availability of such Euro area statistics from different sources and describes the procedure used to assess the degree of fulfillment of the user needs. The paper concludes by outlining the potential benefits of co-operation for further statistical work on the financial markets.

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Papers on using market data for obtaining supervisory information

Leon Taub[1] (Federal Reserve Bank of New York)

The use of market data for obtaining supervisory information is fairly controversial. After all, supervisors have access to far more data than the public. Nevertheless, the two discussion papers provided for this session indicate that bank financial positions are sufficiently transparent to enable some market data to provide useful monitoring information. However, the papers do raise several important questions: (1) To what extent are the authors using truly "market" data? and (2) Would the same results likely apply in other countries? Which institutional factors are the same and which are different? For example, are virtually all of the basic regulatory reporting data available to the public in other countries? Are the types of market information used in the papers available in other countries?

A. Comparing Market and Supervisory Assessments of Bank Performance: Who Knows What When? (Allen Berger, Sally Davies, and Mark Flannery)

The first discussion paper, by Allen Berger, Sally Davies and Mark Flannery of the United States' Federal Reserve Board, examines four "market measures" of bank performance: Moody's bond rating; abnormal stock returns; the percent of equity owned by insiders; and the percent of equity owned by institutions. All of these measures could incorporate at least some information not generally available to the public. These four measures are compared to two supervisory measures: (1) the confidential ratings given by supervisors; and (2) the frequency of on-site inspections (which is also taken as an indication of supervisory concern).

The central issue which Berger, Davies, and Flannery (BDF) examine is, "Who knows what when?" BDF suggest that this is a key issue because increased reliance upon market information and market disciple is a key premise underlying the new Basel Accord proposals, proposals for increased reliance upon subordinated debt, and U.S. proposals to reduce the safety net provided to depositors. The authors explicitly reject the argument that, if market information is as good as supervisory information, supervisory activities can be dispensed with. They note that all of their measures of market information are collected under a regime of supervision, with all key players knowing that supervisors are effective. No one knows how the data might change if the supervisory regime changed.

The study itself covers 184 large Bank Holding Companies (BHC's). The period of observation is 1989.4–1992.2. The objectives are to assess the timeliness and accuracy of the two measures of BHC final health.

BDF conclude: (1) supervisory and bond ratings complement each other; each group that discovers independent information helps to forecast the other; (2) Supervisory and equity-based information are unrelated. BDF attribute the lack of correlation to the different objective functions of creditors and owners; and (3) Supervisory information is the "gold standard" in the period of an on-site examination. However, supervisory information becomes less accurate than either bond or equity information in periods subsequent to the on-site examination.

Questions that remain unanswered include: Why should supervisory information from off-site evaluations be less knowledgeable than market information? Bad data? Incomplete data requests? Regulatory lag?

B. Incorporating Equity Market Information into Supervisory Models
(Jose Lopez and John Krainer)

Lopez and Krainer (L&K) look at two types of equity market information: stock returns and equity-based-default-probabilities. Using equity market information to "forecast" supervisory reviews is a tough task because of the difference in objective functions. However, L&K argue that equity information is important, even if less ideal than debt-based information, for several reasons: (1) many more Bank Holding Companies (BHCs) have traded equity than have traded debt; (2) equity markets are larger and more liquid than debt markets; and (3) at least in the United States, a "too big to fail" policy could protect creditors, making debt information less useful than some equity-based information. (This could be a key issue: When the U.S. retreated from this policy, yield spreads rose, proving its importance.)

Two market indicators were examined: (1) equity returns; and (2) expected default probabilities provided by KMV Software, a financial software firm.

L&K imposed demanding requirements upon the market data, by comparing the results not just to the actual ratings (which may lag) but to a model created by the Federal Reserve System called SEER (System for Estimating Examiner Ratings). Thus, the importance of "regulatory lag" is reduced. Since most BHCs are not publicly traded, the study was restricted to the 25% of BHCs in the rating database with traded equity. However, these BHCs have 85% of all assets. The study period was 1990 to 1999. The goal was to predict ratings after the next full on-site inspection. In total, four thousand ratings of 1,440 BHCs were analyzed.

L&K discuss several potential problems faced by the comparison: (1) the different objective function between equity holders and supervisors; (2) the difference in rating scales by regulators and the market. (The supervisory ratings scale runs from 1 to 5, with ratings of 1 and 2 being given to institutions that do not raise supervisory concerns. Markets, however, may have an entirely different scale. For example, markets may not distinguish between the top two categories. In fact, equity market participants may even prefer a rating of two to a rating of one, if the higher risk is expected to lead to higher returns. Also, the market scale presumably is continuous); (3) timing is critical; equity participants may see things even earlier than the expectational rage studied; and (4) the study reduces the "regulatory lag" aspect of the comparison, but relies on accuracy of the SEER model.

L&K conclude that: (1) the equity markets can anticipate supervisory rating changes by up to four quarters; (2) the use of equity market indicators does not improve the forecast accuracy of the model much, but it is still valuable; and (3) equity information works better for upgrades than downgrades. In particular, the crucial downgrades from a rating of 2 to a rating of 3 (perhaps most serious change in ratings) were not anticipated well by the market indicators.

L&K also look at expected default probabilities (EDFs) from KMV Software, a firm that uses a structural model, a default database, and information about BHC liability structures to infer expected default probabilities one year ahead. L&K find that for downgrades the power of KMV's EDFs are significantly higher than average, as early as twelve months prior to the event. For upgrades, EDFs react up to nine months before the event date. There is a significant type two error at some times for banks whose rating does not change. EDFs do not provide a continuous indication. Thus, it is not easy to estimate the economic significance of a change in on EDF. Nevertheless, L&K conclude that adjusted EDFs are informative with respect to forecasting ratings and could be of use for off-site monitoring.

Discussion comments

Leon Taub, (Federal Reserve Bank of New York)

I. Do syndicated credits anticipate BIS banking data? (Blaise Gadanecz and Karsten von Kleist)

Blaise Gadanecz and Karsten von Kleist examine commercially available data on syndicated credits to determine if they can provide analysts with a "first estimate" of the cross border changes in net loans of international banking organizations by comparing these data to the BIS consolidated banking data on loans to non-banks (published 3 months later). The paper also provides an excellent analysis of the strengths and weaknesses of the two data sets. The authors conclude that until a timely source of data on redemptions becomes available, the syndicated credit data may best be thought of as a complement to, rather than an early predictor of, the consolidated banking data.

In the discussion, there was great enthusiasm for continuing this work, both by exploring complementary data sets and by performing additional analyses on the syndicated loan data. (For example, it might be possible to parse the syndicated loan data by the rating of the debtor, to see if a closer relationship could be found.) Also, there was agreement that it would highly desirable to obtain a market-based source of data on early repayments of international loans.

II. Extracting information from currency option prices: Some preliminary results for Hong Kong (Ip-Wing Yu, Angela Sze, and Laurence Fung)

Ip-Wing Yu, Angela Sze, and Laurence Fung examine several methods for developing information from Hong Kong dollar option prices. Given the limited number of open contracts at any one time and the relative illiquidity of the market, looking at the spreads between options with various expiration periods may not provide sufficiently clear information. The authors conclude that a restricted jump-diffusion model can provide an early warning signal of the magnitude of market pressures which could be very useful to policymakers during periods of economic pressure.

Discussants from countries with fixed exchange rates commented upon the importance of this work, in terms of both the need for this kind of information and the success of the results. A representative of a country with a flexible exchange rate noted that methods to extract information from option prices with greater clarity could be useful in that environment as well.

III. The use and availability of financial markets statistics for the euro area (Michel Stubbe and Per Nymand-Andersen)

In their paper, Michel Stubbe and Per Nymand-Andersen describe euro area financial market statistics provided by the European Central Bank. These statistics full into three categories: (1) Key ECB interest rates; (2) money market, bond, equity, and foreign exchange prices; and (3) security market volumes. The authors identify several key issues for discussion, most notably: (1) the need/usefulness of additional statistics; and (2) methods for improving the statistics through greater harmonization of practices and standards and the sharing of expertise.

The discussion following this paper was quite lively. All discussants agreed that this work was extremely useful and valuable. Some participants suggested substantial additional needs, including making the data easier to access and extending the data base. Other participants expressed the view that the demand for additional information seemed infinite and that costs also needed to be considered carefully.

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Blaise Gadanecz and Karsten von Kleist, "Do syndicated credits anticipate BIS consolidated banking data"

With respect to the paper by Blaise Gadanecz and Karsten von Kleist, I have pointed out that these consolidated banking data have two purposes:
(a) to indicate the lending to (emerging) countries and
(b) to indicate the extent of exposure of a banking system. I asked for confirmation that these syndicated credits data would help with respect to (a). This was confirmed.

As the relationship between syndicated credits data and consolidated banking data was weakened because of lack of data on early repayments – the former are gross and the latter are net data – I have suggested to contact the debtor countries for information on early repayments. This suggestion would be investigated.

Ip-Wing Yu, Angela Sze and Laurence Fung, "Extracting information from currency option prices: some preliminary results for Hong Kong"

With respect to the paper by Ip-Wing Yu, Angela Sze and Laurence Fung, I commented that the possibility to use this information as an early warning signal was to be welcomed. However, I suggested to use this information very carefully as the markets are thin.

This was acknowledged by Ip-Wing Yu by saying that the Hong Kong currency board would use this information together with other information.

Jose Lopez and John Krainer, "Incorporating Equity Market Information into Supervisory Monitoring Models"

As for the Krainer Lopez paper my prepared but due to time constraints unspoken comments/remarks were as follows:

The paper is very interestingly related to the Financial Stability issue discussed in Session 2 of the conference. The paper concludes that equity markets could give useful information for the supervisors. Would this the other way round also imply that the markets already know enough to evaluate the financial soundness of the banks, in other words that Financial Statistical Indicators in some countries would not be necessary?

Perhaps this is too strong. It will certainly not be true for countries in which the equity markets are not so well developed as in the United States. Or in countries where event defaults probability information is not so easily available. I think this would be one of the reasons why the recommendation to use equity market information might not be feasible for the Netherlands.

Anyhow, from the perspective of vulnerability of the banks it would be more interesting how the model performs with respect to BOPEC downgrades than upgrades. The paper states that this is the case. A separate issue is that I wonder whether the model also holds in bad weather conditions. The data used run from 1990 onwards, so they include the recession in the early 1990s, but is the model tested for separate time ranges, for instance 1990–1993.

Another question is about the conclusion itself. Equity market data are useful for supervisory monitoring purposes. An earlier paper by Berger, Davies and Flannery concludes, however, that the relation between equity markets and supervisory assessment are very weak. The reason for that are the differences in incentives of stockholders and supervisors. However, in case the conclusion of Krainer and Lopez is correct a related question is what would happen when the markets know that market information will be used by the supervisors. Would that influence the market itself (something like Goodhart's law)? Or alternatively, would it be possible that the markets produces wrong signals, and what would be the consequences of that.

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