Feedback data flows in balance of payments statistics

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Introduction

In recent years, compilers of official statistics have been increasingly concerned about improving the overall efficiency and effectiveness of the production of statistics. Efficiency and effectiveness are interrelated, involving issues ranging from the organisation of statistical institutions to the processes that they manage and the quality of their products. There are many definitions of "quality" in official statistics (IMF, 2001; Elvers, 2003), but "relevance" is a factor in all. Indeed, the production of statistics is justified only insofar as it is relevant to users. In addition, the costs of statistics-related activities must be proportionate to their benefits.

This paper deals with three concepts that are key in assessing the relevance of statistics production in balance of payments (BOP) statistics: products, users and uses. It focuses on the production and use of "micro" statistics (as opposed to "macro" statistics) provided as feedback data flows to BOP data reporters. The issue is analysed in terms of both theory and application, using the experience of Italy's central bank as illustrative.

1. Macro vs micro BOP statistics

Balance of payments statistics are designed to measure the economic transactions – in terms of goods, services, income and financial assets – that residents of one economy engage in with residents of the rest of the world during a given period of time (IMF, 1993). These statistics are fully integrated in the broader set of economic accounts that each country produces. As a result, BOP statistics are closely linked with national accounts and financial accounts statistics.

Hence, BOP has traditionally been a fundamental macro analysis tool for a wide range of users, such as governments, international organisations, private enterprises and researchers. The euro area can be taken as a paradigmatic case. BOP statistics are used by the European Central Bank for monetary policy, by the European Commission for economic policy and trade negotiations, and by national governments for regional analysis of various kinds. In the private sector, businesses and researchers use BOP for analysing the structure and evolution of the general economic framework and, to the extent that detailed data are available, for studies on specific sub-sectors – eg trade in services or foreign direct investment.

While macro uses of BOP data are well established and widespread, micro uses of the same data are not. In this paper, BOP micro data from reporters, bank and non-bank firms, are

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gathered to compile BOP, and are then disseminated back to reporters, after some processing, with a relatively high level of detail. Given this typical cycle of data flow, micro data are referred to here as feedback data flows (FDFs). A distinctive feature of FDFs as defined in this paper is that they allow the reporter/user/enterprise[2] to identify the data associated with the actual reporter. As a consequence, users can analyse the data set in order to, in essence, outline the enterprise's position vis-à-vis the economy as a whole, the industry of which the firm is a part, or a specific market segment, as will be explained below.

Confidentiality criteria, of course, play an important role in defining the level of disclosure of FDFs. Two types of FDFs are possible in this respect:

- Undisclosed FDFs, where the data set disseminated allows the reporter to identify, within the full set, data that the reporter itself provided to the compiler, though it does not enable the rest of the data to be associated with other individual reporters. For example, firm A can "see" and identify the data it reported, but can only see – not identify – the data that firm C reported, since they are presented anonymously. One way of making reporters' data anonymous is to use fictitious, randomly assigned reporter identification codes. In such a system, each reporter would be allowed to identify its own code, but no other code, through a key provided by the compiler.
- Disclosed FDFs, where the data set disseminated to reporters allows the reporter to identify, within the full set, data that the reporter itself provided, and also to associate the rest of the data with the other reporters. For example, firm A can see and identify the data it reported, as well as both see and identify the data that firm C reported. This requires that reporters formally authorise the compiler to disclose their information to other reporters before such disclosure is made.

Obviously, the level of disclosure has a strong effect on the informative potential of FDFs. While non-disclosed FDFs only allow an enterprise to analyse its position in the industry as a whole, disclosed FDFs allow comparisons with individual competitors.

We shall now describe some basic analyses that users can perform on FDF data sets. Let us first attempt a generalisation of FDFs beyond their BOP-specific aspects, as they relate to quantitative measures of the activities of enterprises. In this generalised approach, FDFs provide the following information:

- identification code of the reporting enterprise – fictitious (for non-disclosed FDFs) or real (for disclosed FDFs);
- period of observation;
- a number of qualifying attributes, such as direction of flow (import vs export, inflow vs outflow, etc), nature of transaction (type of good, service or financial asset), partner country, and location of reporting firm;
- the relevant quantitative variable (eg transaction amount, in the case of BOP FDFs).

We use the term market segment to refer to the particular "market" defined by a modality of an individual qualifying attribute or by the combined modalities of two or more qualifying attributes included in the data set. For example, if the data are disaggregated by direction of flow, nature of transaction and partner country, market segments may be "exports to Germany" and "imports of communication services from France". For each reporting firm, with reference to a specific market segment, the following basic indicators can be easily defined:

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[2] These terms are used interchangeably below.

- the market segment value for the reporter ($SV_{r,t,s}$), or the total amount of transactions for enterprise ***r*** at time ***t*** for market segment ***s***;
- then, with ***R*** enterprises, the market segment value for the system ($SVS_{t,s}$), or the total amount of transactions for all enterprises, at time ***t*** and for market segment ***s***, is

$$SVS_{t,\,s} = \sum_{r=1}^{R} SV_{r,\,t,\,s}$$

- and the reporter's market share (MSr,t,s) for enterprise ***r***, at time ***t***, for market segment ***s***, is the ratio

$$MS_{r,\,t,\,s} = \frac{SV_{r,\,t,\,s}}{SVS_{t,\,s}}$$

Calculating rank is also straightforward, rank being the enterprise's position in the list of enterprises arranged in descending order of market share for a particular segment and period. If data on more periods are available, dynamic analysis of changes in market share over time is possible. In other words, the following further indicator can be calculated:

- the change in the reporter's market share ($\Delta MS_{r,t1,t2,s}$) from time ***t1*** to time ***t2***, for enterprise ***r*** and market segment ***s***, is

$$\Delta MS_{r,\,t1,\,t2,\,s} = MS_{r,\,t2,\,s} - MS_{r,\,t1,\,s}$$

Producers of FDFs should account appropriately for mergers and acquisitions to avoid spurious breaks in market share time series. Thus, mergers of two (or more) enterprises should be reckoned retroactively.

Change in market share is a particularly significant synthetic indicator, indicating how the enterprise performed in comparison with competitors. In the case of disclosed FDFs, it can also provide insight into individual competitors' changing market share.

Provided that the data set is sufficiently detailed, ie includes a large number of qualifying attributes, even analysis based on the "core" indicators illustrated above can allow for a systematic, fact-based monitoring of the competitive positions of reporting firms.

Of course, an almost unlimited range of more sophisticated analysis is possible, especially with large, detailed data sets. For example, FDFs can make it possible to:

- conduct a fully detailed analysis of the structure of market segments (number – and, in disclosed FDFs, names – of firms present in each market segment, degree of concentration in the industry/market, etc);
- define competitors' operational profile by identifying the market segments in which they are present and their respective market shares;
- perform more comprehensive studies by combining FDF data with information from other databases, eg information on the structural characteristics of competitors.

2. An application for banks

In the mid-1990s, the Ufficio Italiano dei Cambi (UIC), which, with the Bank of Italy, is jointly responsible for the compilation of Italy's BOP, began producing electronic FDFs specifically for resident banks (IMF, 1995). The source of data consists of reports on cross-border settlements executed on behalf of customers, which banks themselves provide to the UIC for BOP purposes. Two products have been developed. The first one (UIC-MAS) is an

undisclosed FDF designed for all resident banks, while the second (UIC-FIRMA) is a disclosed FDF that addresses only the largest (approximately 150) banks. Given the superior information potential of disclosed FDFs, as mentioned above, we shall focus below on UIC-FIRMA.

Banks included in the sample participating in UIC-FIRMA formally consented to having their data fully disclosed to the other participating banks. Data are broken down by reporting bank, period of observation (half-year or year), nature of transaction, Italian province and partner country. As a result, the market segments, as defined above, include such items as: cross-border settlements that banks carried out on behalf of customers in the first half of 2006 in the province of Milan, for goods transactions with China. For each market segment, each bank's market share and rank are indicated. One feature of the product that is particularly valuable is the fact that it provides intuitive graphics that highlight the change of market share in each Italian province. Bank mergers are dealt with appropriately to preserve time series consistency.

The product is distributed semi-annually on CD-ROM, along with an ad hoc user-friendly application for data browsing. A decade after its introduction, UIC-FIRMA has proven to be a highly valued information tool. Banks, especially the largest, use it extensively in various decision-making and management control activities, such as market analysis and budget planning.

The contents of UIC-FIRMA are periodically reassessed with input from users. Feedback from banks indicates that they are mainly interested in monitoring customers' international settlements in the non-financial area, especially goods and services, with a focus on geographical distribution. Apparently, taking market share away from competitors in this particular field of client operations, in a specific Italian province, is beneficial to the bottom line. It can reasonably be assumed that customers executing "large" current account cross-border settlements also have a prominent position with regard to other areas of banking activities.

3. Private uses of public goods

Both banks and non-banking enterprises bear an increased burden in terms of reporting statistics for BOP purposes. Providing feedback data to reporters can serve as a strategy to offset the costs involved. Thus, official statistics are a typical "public good" – costly to produce, and ultimately distributed free of charge. Increasing the quantity/quality of the private uses of this public good, as proposed here, can significantly increase its value for the collective community.

In particular, microeconomic uses seem feasible in the BOP domain, given the relatively detailed information provided. FDF applications for non-banking enterprises seem, in principle, even more promising than banking applications, since competition in the international marketplace is even more crucial for these businesses. Moreover, the potential of FDFs designed for non-banking enterprises would increase enormously if the production and distribution of the data were centralised at a supranational level. For example, a French firm producing domestic appliances would be able to monitor its competitive position in the Dutch refrigerator market not only vis-à-vis other French companies, but also, and more importantly, with respect to competitors in the Netherlands, Belgium, Germany, etc.

In conclusion, FDFs can enhance the relevance and accuracy of statistics in a cost-effective way, given that:

- they may increase the effectiveness of statistics production by broadening the uses of statistics;

- they may help increase the accuracy of statistics, since they can motivate reporters to provide compilers with more accurate figures so that they will receive more reliable data in return, in a sort of "virtuous circle";
- they are relatively inexpensive, since, as a by-product of compilers' main statistics production, their marginal cost is low.

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