IMF Working Paper

Data Consistency in IMF Publications:
Country Staff Reports Versus
International Financial Statistics

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Statistics Department

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Abstract

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Data published in IMF country staff reports and *International Financial Statistics (IFS)* may differ for identical variables and, at times, users may be unaware of the reasons for these differences and lack the information needed to permit reconciliation. Such discrepancies stem principally from differences in the objectives of IMF country staff reports and their data requirements, on the one hand, and *IFS*, on the other. This paper presents the results of a study of the consistency of annual data on core statistical indicators required for Fund surveillance presented in the IMF's *IFS* and a sample of recently published Article IV consultation reports. The paper finds a significant incidence of apparent discrepancies for similarly defined variables.

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I. Introduction

The publication of country staff reports and Public Information Notices has significantly expanded the statistical information published by the Fund since the mid-1990s. Previously, dissemination of economic and financial statistics by the Fund was primarily through its traditional statistical publications and databases, led by *International Financial Statistics (IFS)* and *World Economic Outlook (WEO)*.[2]

At times, data reported to the Fund by member countries and published in country staff reports and the *IFS* may differ for identical statistical concepts or variables. This could give rise to concerns about the accuracy and reliability of data published by the Fund, as well as policy advice based on analysis using these data. Indeed, such differences could pose a reputational risk to the Fund as its published data come under increased external scrutiny. Discrepancies stem principally from differences in the objectives underpinning these publications. Data may differ for reasons such as adaptations to suit country-specific analysis and more recent data revisions in staff reports. Nonetheless, external users of these data may not have the time or access to Fund staff to find out the reasons that explain differences. In any event, data differences presented in this study should not be interpreted as reflecting deficiencies in data practices of IMF staff, or of member countries in their provision of data to the Fund.

The reputational risk to the Fund has been a long-standing concern of Fund management. In 1989, at management's request, the then Bureau of Statistics undertook a study of 20 country desk databases and found numerous divergences between the Bureau's and area departments' databases, many of which stemmed from poor coordination of statistical activities. This issue has practical significance for the financial operations and size of the Fund, as well as for the representation in it of member countries, because of the use of country data for calculating members' quotas.[3]

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[2] Also the *Balance of Payments Statistics Yearbook (BOPSY), Direction of Trade Statistics (DOTS),* and *Government Finance Statistics Yearbook (GFSY)*. Before the expansion in publication of country staff reports, the Recent Economic Developments (RED) reports and Statistical Appendices that accompanied them were often published.

[3] *Quotas—Updated Calculations* (http://www.imf.org/external/np/fin/2004/eng/082704.htm). Appendix II provides a detailed description of how the Finance Department handles such problems. Broadly, when members report balance of payments statistics to the Statistics Department, the data in the *IFS* database are used without adjustment or consideration of data published in country staff reports. When data are not available for some members for the time frame required for quota calculations, estimates are made on the basis of the *WEO*. For

The risks posed by data differences among Fund publications were most recently discussed by the Executive Board in the 2004 review of data provision to the Fund for surveillance purposes.[4] To minimize this risk, Executive Directors endorsed efforts to strengthen metadata in databases of the Statistics Department (STA) and explain known data differences, and to increase the use of common sourcing and sharing of data across the Fund. In some cases, differences can be attributed to the incorporation of more recent data revisions in staff reports. Other differences reflect adaptations to suit country-specific analytical purposes, with staff reports focusing on recent economic developments, while the *IFS* emphasizes cross-country comparability and definitional consistency over time. Nonetheless, external and internal users may not be fully aware of the reasons behind differences in data contained in various Fund publications, or may have difficulties reconciling these differences.

Following on the 2004 review of data provision to the Fund for surveillance, this paper presents the results of a study on the consistency of data published in Article IV consultation reports and the *IFS*.[5] It examines the frequency and nature of differences using only publicly available data and metadata in these Fund publications, and attempts to identify discrepancies that may raise legitimate concerns. Specifically, it presents the results of a survey to discern differences between data for key variables presented in staff reports for 66 countries and the same data published in the *IFS*.

The paper is organized as follows. Section II describes the sample, the variables selected for comparison, and classification of comparison outcomes. The results of the survey are presented and discussed in Section III. The main reasons for the lack of comparability and differences between data reported for the same variables in staff reports and the *IFS* are summarized in Section IV. Section V presents conclusions and a recommendation for an integrated approach that can be taken jointly by area departments and the STA to address the issues of comparability and consistency of data published by the Fund.

II. DESIGN OF THE STUDY

A. Sample

A sample of 66 Article IV consultation staff reports was selected from the total of about 150 published between September 2002 and June 2004 (Table 1).[6] Sample selection methodology

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members where neither *IFS* nor *WEO* data are available, data from Article IV staff reports, country desk data, and the Eleventh General Review of quotas database are used.

[4] *Data Provision for Surveillance* (PIN No. 04/37, 4/12/04).

[5] Including combined staff reports on Article IV consultations and use of Fund resources (UFR).

[6] This time frame includes both the period covered by the review of data provision to the Fund for surveillance purposes (September 2002–August 2003) and that for the biennial surveillance review (January 2003–March 2004).

followed that used for the Fund's 2004 data provision review and was designed to yield a representative sample to facilitate analysis that would be valid for the total population. The sample reflects key attributes thought to be relevant for the analysis—specifically, geographical region, stage of development (advanced, transition, and developing), and Fund program status.

B. Variables Selected for Comparison

Annual data, comprised of period averages for flow variables and end-of-period values for stocks, provided in country staff reports were compared with annual data published in the June 2004 edition of the *IFS* for the following 11 key macroeconomic variables:

- nominal GDP
- real GDP growth
- inflation rate
- international reserves

- external current account
  balance
- merchandise exports
- merchandise imports

- general government balance
- total public debt stock
- bank credit to government
- broad money stock

Most of these variables were covered by the core statistical indicators required during the sample period for Article IV surveillance. These form a common set of data to be provided to the Fund by all member countries on a timely basis. These data provide an overview of macroeconomic developments and enable the Board to form views on the appropriateness of economic policies. Many of these variables, or transformations, also figure in early warning system models of currency crisis.[7]

C. Comparison Year

Comparisons were made for the latest year for which complete historical data were provided in both the staff report and *IFS*. Generally, the comparison year was determined by the staff report, with the latest year of complete historical data being generally one year before issuance of the report, and at times two. Consequently, for the period from which the sample of staff reports was drawn, most comparison years were 2001 or 2002. In some instances, the *IFS* provided data for certain variables with longer reporting lags, usually in the national accounts or government finance areas. In these instances, the comparison year for these variables was shifted to the last year of actual data available in the *IFS*.

D. Classification of Comparison Outcomes

The examination of data published in staff reports and the *IFS* frequently involves more than a straightforward determination of whether two statistics matched. Even variables compiled using widely accepted methodologies, like nominal GDP and consumer price inflation, sometimes could not be directly compared because the reference periods differed. For example, staff reports sometimes presented data based on the country's fiscal year rather than for calendar years as done in the *IFS*.

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[7] For a recent survey, see Berg, Borensztein, and Pattillo (2004).

In cases where data were not reported in a directly comparable format, it is frequently possible to put them on a comparable basis—that is, in the same units for the same definition or institutional coverage and time period—by means of a straightforward calculation. For example, when a staff report did not present GDP directly, it was calculated from a variable reported both in nominal value terms and as a percent of GDP.[8]

Based on whether data published in both sources for the same variable were directly comparable or had to be put on a comparable basis, the outcomes of comparisons were classified as:

- direct match
- direct discrepancy
- not comparable

- consistent when put on a comparable basis
- inconsistent when put on a comparable basis

The outcomes in the first row above—direct match or consistent when put on a comparable basis—are achieved when the data reported for the same variable are within 2 percent of each other.[9] When they are not, the outcomes in the second row are obtained depending on whether the data could be compared directly or after being put on a comparable basis.[10] The outcome in the third row is recorded when data in the staff report and *IFS* for the same variable could not be compared.

III. RESULTS

The comparison of data presented in staff reports and the *IFS* for the 11 key variables for the sample countries indicates a significant number of differences and apparent discrepancies. The frequency and nature of differences are analyzed below, first for the entire sample and

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[8] Another example is the comparison of broad money frequently presented in staff reports with the sum of money and quasi-money reported in the *IFS*. If only the percentage change in broad money was presented, it is calculated after adding money and quasi-money in the comparison year and the previous year, and computing the percentage change.

[9] The selection of 2 percent as the divergence criteria, rather than a tighter level, is related to the rounding of source data, principally in staff reports. This can be illustrated in the case of Cyprus, where the 2003 Article IV staff report presents nominal GDP for 2002 of US$9.1 billion. The *IFS* reports nominal GDP in billions of local currency which, when converted to billions of U.S. dollars, yields an estimate of US$9.144. The ½ percentage point difference between these two estimates is purely the result of conversion and rounding. While the size of such differences are a function of the scale of the variable under consideration, a 2 percent divergence criteria was considered sufficiently tight to ignore spurious rounding differences, while signaling data divergences.

[10] Valid reasons for a second row outcome could frequently be provided by the area department's country desk. Because external users cannot easily ascertain these reasons from information provided in the staff report and *IFS*, the outcome was not changed.

separately for the three country groups, and for all variables and each variable separately (Figure 1 and Tables 2–4).

For the entire sample of countries, 64 percent of the data for the 11 variables were either direct matches or consistent when put on a comparable basis, while 19 percent showed inconsistencies or discrepancies and 17 percent were not comparable. Advanced countries showed the lowest proportion of matching and consistent data (61 percent), owing mainly to their having the highest proportion of noncomparable data (20 percent). This followed from the absence of reporting of a monetary survey in staff reports for advanced countries, leaving no data on bank credit to government to be compared with the *IFS*. Both transition and developing countries had a proportion of inconsistencies and discrepancies of 19 percent. Transition countries had a slightly higher proportion of matching and consistent data (66 percent) than developing countries (64 percent).

For the entire sample and for the country groups separately, there were higher rates of direct matching or broad consistency (for data put on a comparable basis) for nominal and real GDP, consumer price inflation, international reserves, and balance of payments statistics than for government finance statistics and bank credit to government. The results for the latter variable reflect to some extent the effect of different definitions of government between the staff report and the *IFS*, and the absence of monetary survey data in the sample of advanced countries, rather than broad problems with monetary statistics. For the entire sample, the rate of direct matching or consistency was 42 percent for bank credit to government data and 73 percent for broad money. For the subsample of countries that participate in the integrated monetary data project (IMDP),[11] these rates were 60 percent and 100 percent, respectively, substantially higher than for the entire sample or any country subgroup.

Data for nominal GDP and real GDP growth matched or were consistent for 88 percent of the sample. Nominal GDP data showed significant differences for two countries, Korea and Vietnam. Advanced countries had the highest percentage of noncomparable cases for nominal GDP, 12½ percent, because the level of nominal GDP was not usually reported in the staff reports. Transition countries showed a high matching rate for nominal GDP (91 percent), while having the highest proportion of noncomparable cases for real GDP growth (27 percent), owing mainly to the nonreporting of real GDP for some countries for publication in the *IFS*. The matching rate for nominal GDP data reported in staff reports and the *IFS* was 90 percent for developing countries. Nominal GDP and real GDP growth data could not be compared for Kenya, since they are reported on a fiscal year basis in the staff report and on a calendar year basis in the *IFS*. These data also could not be compared for Lebanon as national accounts data are not reported for publication in the *IFS*.

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[11] Under the IMDP, STA and the area departments have collaborated in consolidating databases and unifying country reporting of balance sheets of the central bank and the rest of the financial sector. As a result, STA is providing to area departments common-sourced monetary databases for about 30 countries.

The inflation rate presented in staff reports and the *IFS* matched for about 80 percent of the sample. Inflation data were not comparable for a few transition and developing countries as staff reports presented inflation only on an end-period or fiscal year basis, while the *IFS* presented an annual average on a calendar year basis. The *IFS* did not report price data for Lebanon. Inflation in Saudi Arabia for 2001 was reported at different rates in the staff report (-0.8 percent) and *IFS* (-1.1 percent).

Among the 16 advanced countries included the sample, there were discrepancies in the inflation rates for Israel and Sweden between the staff reports and *IFS*. In the case of Israel, the *IFS* flags breaks in the analytic comparability of the consumer price index in 2000 and 2002, which precluded comparison of the inflation rate for the test year with that presented in the staff report used in this study.[12] For Sweden, the 2003 staff report indicates the rate of inflation for 2002 as calculated using the harmonized index of consumer prices (HICP). In 2002, the compilation of the HICP was subject to a methodological change, and the discrepancy between the staff report and *IFS* stem from the different versions of the HICP.[13]

Data on international reserves, a critical variable for vulnerability analysis reported by the Fund, could be compared for most countries, with only developing countries showing some noncomparable cases, specifically 5 out of 39. Costa Rica was considered a comparable case even though international reserves were reported to be 20 percent higher in the *IFS* than the staff report, which noted that bilateral claims under negotiation with neighboring countries were excluded. Among comparable cases, there was a high incidence of differences in the samples of transition (about half) and developing (about one fifth) countries. The reasons for differences could not be fully resolved based on data descriptions in the staff reports or *IFS*. For example, the staff report for Argentina noted that international reserves include liquidity requirements held abroad, which may account for levels higher than published in the *IFS*.[14] The staff report for Ghana presented international reserves data for 1997–2001 that differed significantly—higher in some years, lower in others—from the *IFS*.

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[12] Generally, rebasings of official price indices are linked in a month following the reference year of the revised weights.

[13] The HICP is compiled for European Union member countries according to methodological and sampling standards set by the European Commission. The HICP excludes expenditures on certain goods and services, such as medical care and services of owner-occupied housing. Staff reports for European Union countries could usefully indicate when the HICP is being reported. The change from reporting standard Swedish price indices (up to 2002) to the HICP was not flagged in the 2003 staff report. The *IFS* reports both the HICP (obtained from EUROSTAT) and national consumer price indices for most European Union countries.

[14] The current arrangement between Argentina and the Fund excludes liquidity requirements held abroad from international reserves.

Among advanced countries, only Sweden had discrepancies in reported international reserves. This discrepancy stems from the use of different sources by the area department and STA. The staff report presents international reserves data taken from the Swedish central bank's website, rather than that reported to the Fund by the authorities. The *IFS* reports international reserves data submitted directly to STA by the central bank, modified with the value of SDRs and the reserve position in the Fund from the Fund's own financial records, as provided by the Fund's Finance Department.[15] In addition, the Riksbank indicates that reserves data reported to STA is valued at market value, while that contained on its website is revalued only once a year, and that this can lead to large differences.

The incidence of comparable data for the external current account balance was broadly similar to that for international reserves, with five noncomparable cases in the developing country sample. For Algeria, data on the current account balance were not reported for publication in the *IFS*; only export and import data were reported with a five-year lag relative to the staff report. For Bhutan, current account data have not been reported to the *IFS*; however data on exports and imports were reported on a fiscal year basis in the *IFS* as well as the staff report, although the staff report provided U.S. dollar values and the *IFS* domestic currency values. Nonetheless, exports and imports were broadly consistent when put on a comparable basis.

The incidence of differences between staff reports and the *IFS* in reporting external current account balance data was 35 percent in the entire sample, ranging from 25 percent for advanced countries to 41 percent for developing countries. For Chile and Colombia, current account balances reported in the staff report and *IFS* differed by 20–30 percent, while exports and imports closely matched, indicating differences in other, more difficult to measure, components of the current account, in particular, transfers in the case of Colombia. For Ecuador, the reporting of the current account balance, exports, and imports showed significant differences between the staff report and *IFS* over several years. Data for Honduras' external current account balance differed, with export data showing substantial differences and import data matching.[16] External current account balances reported for Ghana differed significantly during 1997–2001, with differences coming mainly from import data.[17]

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[15] Countries reporting international reserves in the *Data Template on International Reserves and Foreign Currency Liquidity* under the Special Data Dissemination Standard may show minor discrepancies with the Finance Department for the reserve position in the Fund and value of SDR holdings, due to use of a different exchange rate.

[16] Consultation with area department staff revealed that maquila exports were included in total exports in the *IFS*, which was not indicated in published documentation.

[17] Although exports closely match for 1998–2001, there is a large difference for 1997 between the Statistical Appendix of the staff report (US$1,810.2 million) and the *IFS* (US$1,489.9 million), with the *IFS* appearing in error from comparison with the trend in figures.

For the entire sample, a high proportion of government balance data presented in the staff reports and *IFS* was not comparable, ranging from 31 percent for advanced countries to 41 percent for transition countries. This resulted from unclear definitions of government in staff reports and the *IFS*, or lack of reporting of government finance data for publication in the *IFS*. For example, in Brazil's case, the government balance could not be compared because it was not possible to determine whether the definition of the consolidated central government used in the *IFS* matched the staff report's coverage of the federal government, central bank, and social security system. The *IFS* reported a small consolidated central government surplus of 0.2 percent of GDP for 2003, while the staff report presented a substantial deficit of over 4 percent of GDP for its definition of central government. In some cases, even when data on the government deficit were put on a comparable basis, they differed. For example, the staff report for Costa Rica presented the central government deficit in percent of GDP, but when multiplied by GDP, did not match the *IFS*.[18]

For comparable government finance data, differences were found for 27 percent of the entire sample, ranging from 20½ percent for developing countries to 44 percent for advanced countries. Developing countries had the highest proportion of matching and consistent government balance data, mainly because government finance data were generally available only for central government, except in the Western Hemisphere. Consequently, differences in the coverage of government between staff reports and the *IFS* were not as prevalent as with transition and advanced countries.

Public debt data had the highest incidence of noncomparable reporting between staff reports and the *IFS*—52 percent for the entire sample, 31 percent for advanced countries, 55 for transition countries, and 59 percent for developing countries. This was mainly due to the non-reporting of public debt data for publication in the *IFS*, although for Singapore the *IFS* provided public debt data while the 2002 staff report did not (subsequent staff reports have begun to report public debt data). This absence of reporting accounted for all noncomparable cases in the developing country sample. This was also the reason in the transition country sample, although in two cases, Azerbaijan and Kazakhstan, public debt data were not presented in the staff report as well.

Differences in public debt data reported in the staff reports and *IFS* were found mainly in the advanced country sample, specifically 31 percent. Reasons for these differences could be related to differences in the timing of measurement or definition in gross and net terms, but this could not be concluded from *IFS* metadata or the descriptions contained in the staff reports. The rate of matching or consistency of public sector debt data fell in a narrow range across the three country groups—specifically, 36 percent for developing countries, 37½ percent for advanced countries, and 45 percent for transition countries.

As mentioned earlier, data on bank credit to the government could not be compared in the entire advanced country sample owing to the general absence of reporting of a standard

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[18] Area department staff included "capitalized interests" on the expenditure side to account for accrued interest on zero-coupon debt, but this was not apparent in published reports.

monetary survey in these staff reports. The samples of transition and developing countries showed a more modest incidence of noncomparable data, at 18 percent and 10 percent, respectively. Developing countries showed the highest rate of matching data, 59 percent, owing to their generally low level of financial sector development and consequent reliance on domestic bank financing by the government, in addition to official external support.

The lack of reporting of monetary survey data in the staff reports for the advanced country sample resulted in broad money data not being comparable for 37½ percent of the sample. For 44 percent of the sample, broad money data matched or were consistent based on tables of indicators for financial soundness or vulnerability presented in staff reports. Such reporting showed differences and inconsistencies with the *IFS* for 19 percent of the sample. The rates of matching or consistency for broad money data were high for transition and developing countries—91 percent and 80 percent, respectively—whose staff reports included a monetary survey.[19] However, the staff report for Uruguay noted that the monetary survey followed *IFS* definitions, but reported significantly lower broad money than in the *IFS* for 2002 and previous years.

IV. REASONS FOR DIFFERENCES

Many of the reasons for noncomparable and divergent data between staff reports and the *IFS* have been known for a long time. As noted above, some differences and noncomparabilities are related to the use of different classification systems, that is, use of country-specific definitions or data adjustments by Fund staff in staff reports, while standardized international methodologies are followed for data presented in the *IFS*. Other differences and noncomparabilities may arise in some cases from reliance by area departments and STA on different sources of information—different databases and different contact persons—in the government bureaucracy of member countries. As mentioned in the Introduction, data practices of member countries or their provision of data to the Fund are not the source of divergences presented in this study. Beyond these broad explanations, some prominent reasons emerge.

A. Revisions Captured at Different Times

In some cases, staff reports may have contained updated information that had not yet been transmitted to STA for publication in the *IFS*, as illustrated by the case of Swedish HICP. On the other hand, the *IFS* may incorporate revisions of data that are not reflected in staff reports. For example, Uruguay's current account balance data differed between the staff report and *IFS* for 2002, but exactly matched looking back to 2000. This suggests that it may take a couple of years before revisions are completed, indicating the importance of allowing time for the compilation and reporting of revisions to the *IFS* before concluding that data are different or inconsistent. Advanced countries may have the highest percentage of differences and inconsistencies for nominal GDP because it is revised more frequently as a consequence

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[19] The discrepancy for Macedonia in 2001, the comparison year, was due to a coding error in the *IFS*. A comparison of the data for broad money in 2002 matched.

of more frequent reporting requirements and diverse source data than in developing or transition countries.[20] The revision policy of a country may account for some apparent discrepancies owing to different versions of the same data.[21]

B. Differences in Coverage or Classification

Differences between coverage of the public sector in the staff report and *IFS* comprise an important reason for lack of comparability or apparent data discrepancies. For example, for Ecuador, these differences do not allow comparison of data for the government balance, public debt, and bank credit to government. Specifically, the staff report provides fiscal data for the nonfinancial public sector, but no information on the central or general government, while the *IFS* only provides data for the budgetary central government. In the case of the Islamic Republic of Iran, the coverage of government financial operations is not described fully enough in either the staff report or *IFS* to ensure that the data definitions are comparable. Exclusions cited in *Country Notes 2003* for the *IFS* may account for the reporting of a smaller deficit in the *IFS* than in the staff report. This is supported by bank credit to government shown in the *IFS* being about half that in staff report. The staff report for Romania presents government finance data for general government and the *IFS* for central government, and yet both report the same domestic credit to government in the monetary survey. Finally, in the case of Thailand, the discrepancy in net bank credit to government is due to the staff report's lack of documentation of the government's inclusion of coin issuance in the monetary accounts. The difference in the money stock also follows from the inclusion of coin issuance, but is small enough (0.2 percent) that data could be considered as matching.

A common reason for noncomparable fiscal data is the use of different reporting periods, usually fiscal years in staff reports and calendar years in the *IFS*.

With regard to balance of payments data, the current account balance and merchandise export data reported for Thailand in the staff report and *IFS* match, but merchandise import data differ significantly. This difference is mainly offset by a discrepancy in the services balance, indicating a potential difference in the classification of the current account between the staff report and the *IFS*.

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[20] Researchers in need of most recent estimates available from Fund sources, particularly those conducting cross-country studies, may wish to follow the Finance Department's rule of thumb, relying first on *IFS* data to ensure cross country comparability and definitional consistency, and, if *IFS* data are not available, on data reported in country staff reports (or the WEO) after ensuring consistency with the *IFS* for historical observations.

[21] Carson, Khawaja, and Morrison (2004).

C. Different Methodologies or Use of Staff Adjustments of Official Data or Staff Estimates

The *IFS* data are reported to STA by central banks, ministries of finance, and national statistical agencies, and are based on internationally consistent definitions, such as the fifth edition of the *Balance of Payments Manual* (*BPM5*) and *System of National Accounts 1993* (*1993 SNA*). STA's data collection practices are extensive and reflect an effort to compile data into long time series that are consistent across time and countries. For certain countries, however, gaps exist for some data. For example, missing data for GDP and for current account transactions for recent years.

Staff reports should preferably present data consistent with international methodology, but this is not required. For example, the definition of balance of payments variables will not necessarily conform to *BPM5* until such time as national compilers have revised the country's balance of payments accounts or staff reports adopt the new definitions. Because of space constraints, staff reports can not be expected to include all documentation necessary for transparent understanding of definitions used and, more broadly, the quality of data.

In contrast to the rigorous application of international methodologies in the Fund's statistical publications, area department data management practices maintain the flexibility to meet specific analytic requirements in a particular country. These practices often reflect information acquired through frequent, in-depth contact with country authorities. This may include monthly and quarterly data that are not, for instance, in the *BPM5* format, which provide indicators of current developments, for example, oil exports or public enterprise borrowing. This can result in staff adjustments of official data or use of staff estimates in place of officially reported statistics.

Discrepancies in broad money are not unexpected as the *Monetary and Financial Statistics Manual (MFSM)* does not prescribe a specific definition. Instead, the *MFSM* defers to country authorities to apply their own national definition of broad money with a view to using data that are useful for policy purposes. This flexibility carries over to the definition of variables presented in staff reports. For example, the staff report for Algeria presents data on bank credit to government that includes the impact of bank restructuring packages, which converts bank claims on public enterprises into bank claims on the government. As result, net bank credit to the government shown in the staff report can be larger than net bank claims on central government reported in the *IFS*.

Owing to the short time frame, generally five years, of data presented in country staff reports, these data are of limited value for econometric analysis that could inform operational and program work, as well as cross-country analysis, especially when times series data over several years are needed.

D. Differences in Data Sources That Give Rise to Inconsistencies in Underlying Data

As discussed above, the sources for reporting Sweden's international reserves differed between the staff report and *IFS*. Specifically, the staff report presented data available on the Swedish central bank's website, while the *IFS* reports data provided by the authorities and

the Fund's Finance Department directly to STA.[22] This type of discrepancy can be avoided because all Fund staff can adjust data reported by the central bank, as STA does, using data for Fund financial variables from the Finance Department.

The divergence in reporting GDP for Korea may stem from the use of different agencies as sources, with the central bank cited as the source in the staff report and the economic planning board in the *IFS*. Some data differences may point to uneven cooperation between the Fund's area departments and STA. Further, statistical agencies in many countries do not always reconcile data on national accounts and balance of payments.

V. CONCLUSIONS AND RECOMMENDED MEASURES

The conclusions of this study mirror those of a similar study undertaken 15 years ago by STA's institutional predecessor, the Bureau of Statistics—specifically:

- The occurrence of noncomparable data and data differences between staff reports and the *IFS* is significant for the common indicators reported to the Fund by all member countries for surveillance purposes. This incidence would very likely not be as high nor have been as persistent had there been better documentation of the content of country staff reports, and area department and STA databases, as well as better coordination of statistical activities within the Fund;

- The content, coverage, and timeliness of STA's databases have not fully benefited from the knowledge accruing to area departments from their frequent contacts with country authorities; and

- Area departments have not fully utilized STA's databases and expertise in methodology and in the documentation and management of large databases.

The results of this study suggest measures that can be taken by area departments and STA to minimize lack of comparability or apparent differences in data reported in staff reports and the *IFS*, as well as other STA publications. In their most recent review of data provision to the Fund for surveillance, Executive Directors endorsed the strengthening of metadata and explanations of data differences and greater use of common sourcing and sharing of data across the Fund.

Fund management has long supported close cooperation between area departments and STA to ensure better coordination of statistical activities, improved scrutiny of data in the Fund's operations, and remedial actions to address weaknesses. Based on its 1989 study of area department databases, the Bureau of Statistics outlined an approach for increased coordination of area department and Bureau data activities. The proposed approach sought, on a gradual and carefully phased basis in line with resource constraints, to move away from

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[22] It should be noted that Sweden's central bank follows the Fund's reporting and valuation requirements when reporting *IFS* data to the Fund.

dual and independent data collection arrangements to a more integrated arrangement, as the only fundamental and enduring solution for ensuring consistency of Fund country data.

An integrated approach, involving the development on a country-by-country basis of coordinated data collection arrangements jointly by the area departments and STA, is needed to address Fund-wide data consistency issues. Improvements in data documentation and harmonization can be most effectively achieved at the point of data collection, where the complementary experience of area departments and STA can be brought to bear. This approach could also lead to better coordination and more efficient use of resources among data reporting agencies within the government bureaucracy of member countries.

Area departments could promote the use of standard templates for data reporting. Greater use of standard templates rooted in accepted statistical methodologies would bring benefits to data management in area departments and facilitate enhanced reconciliation with data reported separately to STA. As a complement, staff reports should provide information on the coverage and definition of key variables—for instance in the statistical issues appendix—in cases of marked differences with the coverage and definition of these variables in STA's publications. In the event of data deficiencies, staff reports should candidly and clearly identify them together with recommendations for correcting them. In countries with Fund-supported programs, consideration should be given to supporting key recommendations with performance criteria and benchmarks.

Standard templates should cover core statistical indicators required for Article IV surveillance, which would include such basic variables as nominal GDP, international reserves, essential balance of payments statistics, key monetary aggregates from the monetary survey, and financial soundness and external vulnerability indicators. The reporting of international reserves according to the *Data Template on International Reserves and Foreign Currency Liquidity* by more member countries' central banks would help minimize discrepancies related to Fund financial variables, as they would use data from the Fund's Finance Department, as does STA. A standard template based on *BPM5* would be particularly appropriate for balance of payments statistics, as it would reflect the use of *BPM5* by nearly all Fund members as the preferred format.

Coordinated data collection offers the advantages of developing a common database for statistics published in staff reports and the *IFS*. A good example is the IMDP in which area departments and STA work with country authorities to produce a common database for monetary and financial statistics for use in both operational work and statistical publications (Section III). As discussed above, the proportion of directly matching and consistent monetary data for the subsample of countries participating in the IMDP was substantially higher than for the entire sample or country subsamples in this study. In the IMDP, STA and area departments have collaborated in consolidating databases and unifying country reporting of the balance sheets of the central bank and the rest of the financial system. STA is providing to area departments common-sourced monetary databases for about 30 countries.

There have been significant benefits from the IMDP, including (i) reduced reporting burden for country authorities as a single set of monetary data is provided to the Fund; (ii) reduced number and better harmonization of databases maintained by area departments and STA; (iii)

easy identification of differences in monetary aggregates prepared for area department use and for the *IFS*; (iv) reduced differences in data disseminated by the Fund in reports and publications; (v) improved quality and transparency of monetary statistics; and (vi) significant economies in staff time dedicated to surveillance of monetary conditions. To reap these benefits, an expansion of the IMDP to other countries could be undertaken, based on preferences of country authorities and area departments. The pace of these efforts would be determined by the resources available in member countries and the Fund.

The application of common sourcing to sectors other than the monetary and financial sector can be explored. Progress in this direction must, however, be carefully considered against the substantial resource requirements. It must also recognize that operational difficulties can hamper the use of common sourcing in particular circumstances. One such difficulty may be the need to use the most up-to-date data, especially in program countries and in countries with rapidly unfolding economic developments. For example, it may be preferable for area departments and STA to continue to maintain separate balance of payments databases based on the *BPM5*. This would allow STA to continue using the same standard template for quarterly and annual reporting to realize substantial efficiency gains and conserve resources in processing of data prior to the current quarter. This template does not include the monthly reporting and supplementary country-specific data contained in the area department database as the repository of current information.[23]

The benefits of greater consistency between area department and STA databases can be substantial. Data that are consistent across countries and over longer time periods would provide a better foundation for empirical research to improve the analytical framework for the Fund's operational work. In this regard, the suggested integrated approach is intended in part to increase the return on the considerable investment already made by the Fund in data collection and compilation both in area departments and STA.

Finally, on the development that motivated this study—the expansion of the statistical information published by the Fund—greater consistency of data across Fund publications and clear explanation in staff reports of differences when they arise are both desirable, since they would facilitate the use and understanding of the data published by the Fund.

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[23] Differences between area department data and STA data may persist as country authorities or area department staff make revisions that are not sent to STA. This commonly occurs for countries reporting to STA only annual balance of payments data that are officially revised infrequently. Balance of payments data published by STA are reported by the officially designated responsible agency.

Table 1. Sample of Economies: Selected Characteristics and Fund Document Reference

Advanced Economies

Name	Region	Document Number	Comparison Year
Australia	APD	SM/03/309	2002
Belgium	EUR	SM/03/37, SM/04/16	2002
Canada	WHD	SM/03/3, SM/04/10	2002
Cyprus	EUR	SM/03/22	2001
France	EUR	SM/03/318	2002
Germany	EUR	SM/03/341	2002
Hong Kong SAR	APD	SM/03/151	2002
Israel	EUR	SM/04/60	2002
Italy	EUR	SM/03/358	2002
Japan	APD	SM/03/264	2002
Korea, Republic of	APD	SM/03/58, SM/04/23	2002
Singapore	APD	SM/02/348	2001
Sweden	EUR	SM/03/223	2002
Switzerland	EUR	SM/04/165	2002
United Kingdom	EUR	SM/03/49, SM/04/40	2002
United States	WHD	SM/03/239	2002

Countries in Transition

Name	Region	Document Number	Comparison Year
Azerbaijan	MCD	EBS/03/57	2001
Czech Republic	EUR	SM/03/284	2001
Hungary	EUR	SM/04/112	2002
Kazakhstan	EUR	SM/03/68	2001
Latvia	EUR	SM/03/121	2002
Lithuania	EUR	SM/03/261	2002
Macedonia, FYR	EUR	EBS/03/51	2001
Mongolia	APD	SM/02/321	2000
Poland	EUR	SM/03/181	2001
Romania	EUR	SM/02/381	2001
Russian Federation	EUR	SM/03/129	2001

Table 1. Sample of Economies: Selected Characteristics and Fund Document Reference
(continued)

Developing Economies

Name	Region	Document Number	Comparison Year
Algeria	MCD	SM/03/28, SM/03/397	2001
Argentina	WHD	EBS/02/214	2001
Bangladesh	APD	EBS/03/76	FY2000/01
Bhutan	APD	SM/03/57	FY2000/01
Brazil	WHD	EBS/03/30, EBS/04/41	2001
Burkina Faso	AFR	EBS/03/68	2001
Chile	WHD	SM/03/260	2002
Colombia	WHD	EBS/02/210	2001
Congo, Rep. of	AFR	EBS/04/59	2002
Costa Rica	WHD	SM/03/55	2001
Ecuador	WHD	EBS/03/21	2001
Egypt	MCD	SM/04/155	FY2002/03
Ghana	AFR	EBS/03/42	2001
Honduras	WHD	SM/03/143	2001
India	APD	SM/03/221	FY2000/01
Iran, Islamic Rep. of	MCD	SM/03/270	FY2001/02
Kenya	AFR	SM/03/135	FY2001/02
Lebanon	MCD	SM/04/146	2002
Malaysia	APD	SM/04/14	2001
Malta	EUR	SM/03/254	2001
Mauritania	MCD	EBS/03/94	2001
Mauritius	AFR	SM/03/97	FY2000/01
Morocco	MCD	SM/03/119	2001
Myanmar	APD	SM/02/307	FY2000/01
Namibia	AFR	SM/03/128	2001
Nicaragua	WHD	EBS/02/194	2000
Papua New Guinea	AFR	EBS/03/55, SM/04/172	2002
Peru	WHD	EBS/04/18	2002
Saudi Arabia	MCD	SM/03/282	2001
Senegal	AFR	EBS/03/49	2001
South Africa	AFR	SM/03/262	2001
St. Lucia	WHD	SM/04/119	2002
Tanzania	AFR	EBS/02/187	2000
Thailand	APD	SM/03/266	2001
Tunisia	MCD	SM/03/246	2001
Uganda	AFR	SM/03/39	FY2000/01
Uruguay	WHD	EBS/03/93	2002
Vanuatu	APD	SM/02/344	2000
Vietnam	APD	SM/03/304	2001

Table 2. Advanced Economies: Comparability and Consistency of IMF *IFS* and Country Staff Reports, by Selected Indicators 1/

	Australia	Belgium	Canada	Cyprus	France	Germany	Hong Kong SAR	Israel	Italy	Japan	Korea	Singapore	Sweden	Switzerland	United Kingdom	United States	Percent not comparable	Percent inconsistent	Percent comparable and consistent
Nominal GDP	M	M	m	m	M	m	m	m	N	M	D	N	M	M	M	m	12.5	6.3	81.3
Real GDP growth rate	M	M	M	m	M	M	M	M	M	D	M	M	M	M	M	M	0.0	6.3	93.8
CPI Inflation rate	M	M	M	M	M	M	M	D	M	M	M	M	D	M	M	M	0.0	12.5	87.5
International reserves	m	M	M	M	M	M	M	M	M	M	M	M	D	M	M	M	0.0	6.3	93.8
Current account balance	m	m	m	M	m	m	M	D	d	M	D	M	D	m	m	M	0.0	25.0	75.0
Merchandise exports	m	D	m	M	D	D	M	M	M	M	M	N	M	D	D	M	6.3	31.3	62.5
Merchandise imports	m	D	m	M	D	M	M	M	D	M	M	M	M	D	M	M	0.0	25.0	75.0
General government balance	N	d	m	d	D	M	N	d	D	N	N	N	d	m	d	m	31.3	43.8	25.0
Total public debt	d	M	m	d	m	M	N	d	M	N	N	N	m	d	N	D	31.3	31.3	37.5
Bank credit to government	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	100.0	0.0	0.0
Money stock	M	N	N	m	N	N	N	d	N	M	M	M	M	D	M	D	37.5	18.8	43.8
Percent not directly or broadly comparable	18.2	18.2	18.2	9.1	18.2	18.2	36.4	9.1	27.3	27.3	27.3	45.5	9.1	9.1	18.2	9.1			
Percent directly or broadly comparable but inconsistent	9.1	27.3	0.0	18.2	27.3	9.1	0.0	45.5	27.3	9.1	18.2	0.0	36.4	36.4	18.2	18.2			
Percent directly or broadly comparable and consistent	72.7	54.5	81.8	72.7	54.5	72.7	63.6	45.5	45.5	63.6	54.5	54.5	54.5	54.5	63.6	72.7			

Memorandum items:

Source: Country Staff Reports and *IFS*

1/ Entries indicate outcomes of comparisons of data in country staff reports with the *IFS* based on the following classifications:

M denotes direct match; m denotes direct match when put on a comparable basis, with consistency considered a difference of less than 2 percent;

D denotes direct discrepancy; d denotes direct discrepancy when put on a comparable basis, with consistency considered a difference of more than 2 percent;

N denotes not comparable.

Table 3. Transition Countries: Comparability and Consistency of IMF *IFS* and Country Staff Reports, by Selected Indicators 1/

	Azerbaijan	Czech Republic	Hungary	Kazakhstan	Latvia	Lithuania	Macedonia	Mongolia	Poland	Romania	Russia	Percent not comparable	Percent inconsistent	Percent comparable and consistent
Nominal GDP	N	m	M	M	m	M	M	M	m	M	M	9.1	0.0	90.9
Real GDP growth rate	N	M	M	M	M	M	N	M	M	D	N	27.3	9.1	63.6
CPI Inflation rate	m	M	M	M	M	M	D	M	M	M	N	9.1	9.1	81.8
International reserves	D	M	M	D	D	M	M	D	D	D	M	0.0	54.5	45.5
Current account balance	M	M	M	D	M	M	M	M	D	D	M	0.0	27.3	72.7
Merchandise exports	M	M	M	D	M	M	M	M	D	M	M	0.0	18.2	81.8
Merchandise imports	M	M	M	M	M	M	M	D	D	M	M	0.0	18.2	81.8
General government balance	D	N	m	D	N	m	N	D	N	N	M	45.5	27.3	27.3
Total public debt	N	N	m	N	N	M	N	m	m	N	m	54.5	0.0	45.5
Bank credit to government	D	N	m	d	m	m	D	m	N	M	D	18.2	36.4	45.5
Money stock	M	m	M	M	M	M	D	M	M	M	M	0.0	9.1	90.9
Memorandum items:														
Percent not directly or broadly comparable	27.3	27.3	0.0	9.1	18.2	0.0	27.3	0.0	18.2	18.2	18.2			
Percent directly or broadly comparable but inconsistent	27.3	0.0	0.0	45.5	9.1	0.0	27.3	27.3	36.4	27.3	9.1			
Percent directly or broadly comparable and consistent	45.5	72.7	100.0	45.5	72.7	100.0	45.5	72.7	45.5	54.5	72.7			

Source: Country Staff Reports and *IFS*

1/ Entries indicate outcomes of comparisons of data in country staff reports with the *IFS* based on the following classifications:
M denotes direct match; m denotes consistent when put on a comparable basis, with consistency considered a difference of less than 2 percent;
D denotes direct discrepancy; d denotes inconsistent when put on a comparable basis, with consistency considered a difference of more than than 2 percent;
N denotes not comparable.

Table 4. Developing Countries: Comparability and Consistency of IMF *IFS* and Country Staff Reports, by Selected Indicators 1/

	Algeria	Argentina	Bangladesh	Bhutan	Brazil	Burkina Faso	Chile	Colombia	Republic of Congo	Costa Rica	Ecuador	Egypt	Ghana	Honduras	India	Iran	Kenya	Lebanon	Malaysia	Malta	Mauritania	Mauritius	Morocco
Nominal GDP	M	m	M	m	M	M	m	m	M	M	M	M	M	M	M	M	N	N	M	M	M	m	M
Real GDP growth rate	N	M	M	m	M	M	M	M	M	M	M	M	M	D	M	M	N	N	M	M	N	m	M
CPI Inflation rate	M	M	m	m	M	M	M	M	D	M	M	N	m	M	M	M	N	N	M	M	M	m	M
International reserves	M	d	m	N	m	m	M	M	m	N	N	N	D	D	m	N	M	D	M	D	d	m	m
Current account balance	N	D	m	m	M	d	D	D	m	M	D	m	D	D	m	M	D	N	M	D	d	m	M
Merchandise exports	m	M	m	m	M	m	M	M	m	M	D	d	M	D	m	M	D	M	M	D	d	m	M
Merchandise imports	m	D	m	M	M	m	M	M	M	d	D	N	D	M	M	M	D	M	M	D	N	m	M
General government balance	N	N	N	N	N	D	M	M	m	d	N	N	N	m	M	N	M	M	m	D	N	N	m
Total public debt	N	N	N	N	N	N	m	N	m	D	N	d	N	m	M	N	M	D	M	d	N	m	M
Bank credit to government	m	m	m	N	M	D	N	m	M	M	N	N	M	d	m	N	M	D	M	M	M	m	m
Money stock	D	m	M	m	M	D	m	m	M	M	m	N	M	m	m	M	D	M	m	M	M	m	M
Percent not directly or broadly comparable	36.4	18.2	18.2	27.3	18.2	9.1	9.1	9.1	0.0	9.1	36.4	45.5	9.1	0.0	0.0	36.4	27.3	36.4	0.0	0.0	27.3	9.1	0.0
Percent directly or broadly comparable but inconsistent	9.1	27.3	0.0	0.0	0.0	36.4	9.1	9.1	9.1	27.3	27.3	18.2	36.4	45.5	0.0	0.0	36.4	18.2	0.0	45.5	27.3	0.0	0.0
Percent directly or broadly comparable and consistent	54.5	54.5	81.8	72.7	81.8	54.5	81.8	81.8	90.9	63.6	36.4	36.4	54.5	54.5	100.0	63.6	36.4	45.5	100.0	54.5	45.5	90.9	100.0

Memorandum items:

Source: Country Staff Reports and *IFS*

1/ Entries indicate outcomes of comparisons of data in country staff reports with the *IFS* based on the following classifications:
   M denotes direct match; m denotes consistent when put on a comparable basis, with consistency considered a difference of less than 2 percent;
   D denotes direct discrepancy; d denotes inconsistent when put on a comparable basis, with consistency considered a difference of more than 2 percent;
   N denotes not comparable.

Table 4. Developing Countries: Comparability and Consistency of IMF *IFS* and Country Staff Reports, by Selected Indicators (Continued) 1/

	Myanmar	Namibia	Nicaragua	Papua New Guinea	Peru	St. Lucia	Saudi Arabia	Senegal	South Africa	Tanzania	Thailand	Tunisia	Uganda	Uruguay	Vietnam	Vanuatu	Percent not comparable	Percent inconsistent	Percent comparable and consistent
Nominal GDP	M	m	M	M	M	M	M	M	M	M	m	M	m	M	D	N	7.7	2.6	89.7
Real GDP growth rate	M	M	M	D	M	d	M	M	M	D	M	M	N	M	D	N	15.4	12.8	71.8
CPI Inflation rate	N	D	m	M	M	D	D	M	M	M	M	M	N	M	M	M	12.8	10.3	76.9
International reserves	d	M	M	M	d	M	N	m	D	M	M	M	m	M	D	M	12.8	20.5	66.7
Current account balance	N	D	M	D	M	D	M	N	D	D	M	M	d	M	M	M	12.8	41.0	46.2
Merchandise exports	m	M	M	D	M	D	M	N	D	M	M	M	m	M	M	M	2.6	20.5	76.9
Merchandise imports	m	M	M	N	M	D	M	N	D	D	D	M	m	M	M	M	5.1	28.2	66.7
General government balance	M	N	N	D	d	D	N	N	D	D	m	N	D	D	M	N	41.0	20.5	38.5
Total public debt	N	N	N	m	N	N	N	N	m	N	m	M	m	N	N	N	59.0	5.1	35.9
Bank credit to government	M	M	D	M	d	D	M	M	M	D	d	D	m	M	M	D	10.3	30.8	59.0
Money stock	M	M	m	d	N	D	M	M	M	M	M	M	m	D	M	M	5.1	15.4	79.5
Percent not directly or broadly comparable	27.3	18.2	18.2	9.1	18.2	18.2	27.3	45.5	0.0	9.1	0.0	9.1	18.2	9.1	9.1	36.4			
Percent directly or broadly comparable but inconsistent	9.1	18.2	9.1	45.5	27.3	63.6	9.1	0.0	36.4	45.5	18.2	9.1	18.2	9.1	27.3	9.1			
Percent directly or broadly comparable and consistent	63.6	63.6	72.7	45.5	54.5	18.2	63.6	54.5	63.6	45.5	81.8	81.8	63.6	81.8	63.6	54.5			

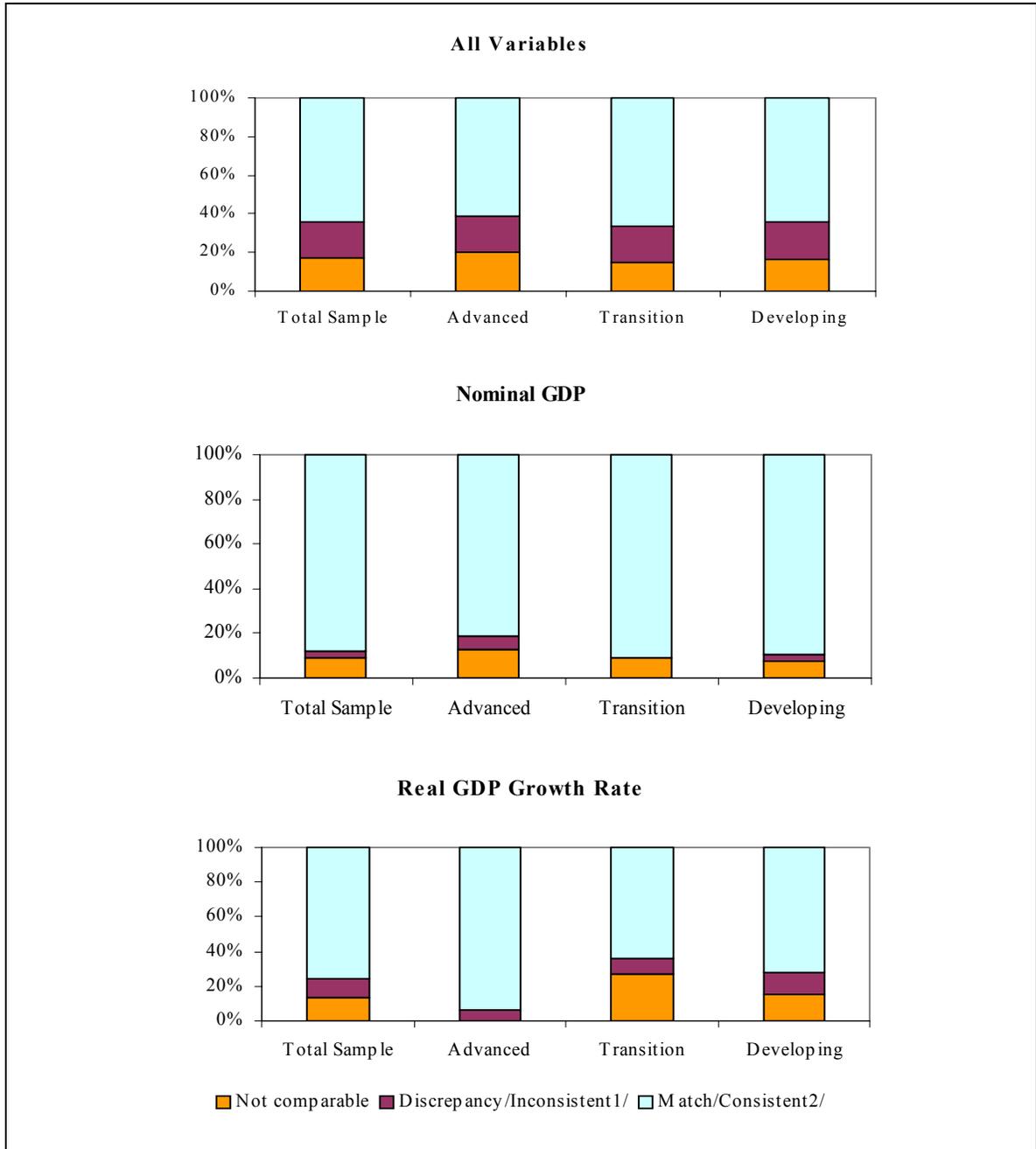Memorandum items:

Source: Country Staff Reports and *IFS*

1/ Entries indicate outcomes of comparisons of data in country staff reports with the *IFS* based on the following classifications:
M denotes direct match; m denotes consistent when put on a comparable basis, with consistency considered a difference of less than 2 percent;
D denotes direct discrepancy; d denotes inconsistent when put on a comparable basis, with consistency considered a difference of more than 2 percent;
N denotes not comparable.

Figure 1. Comparison of IMF Country Staff Report and *IFS* Data

All Variables

Nominal GDP

Real GDP Growth Rate

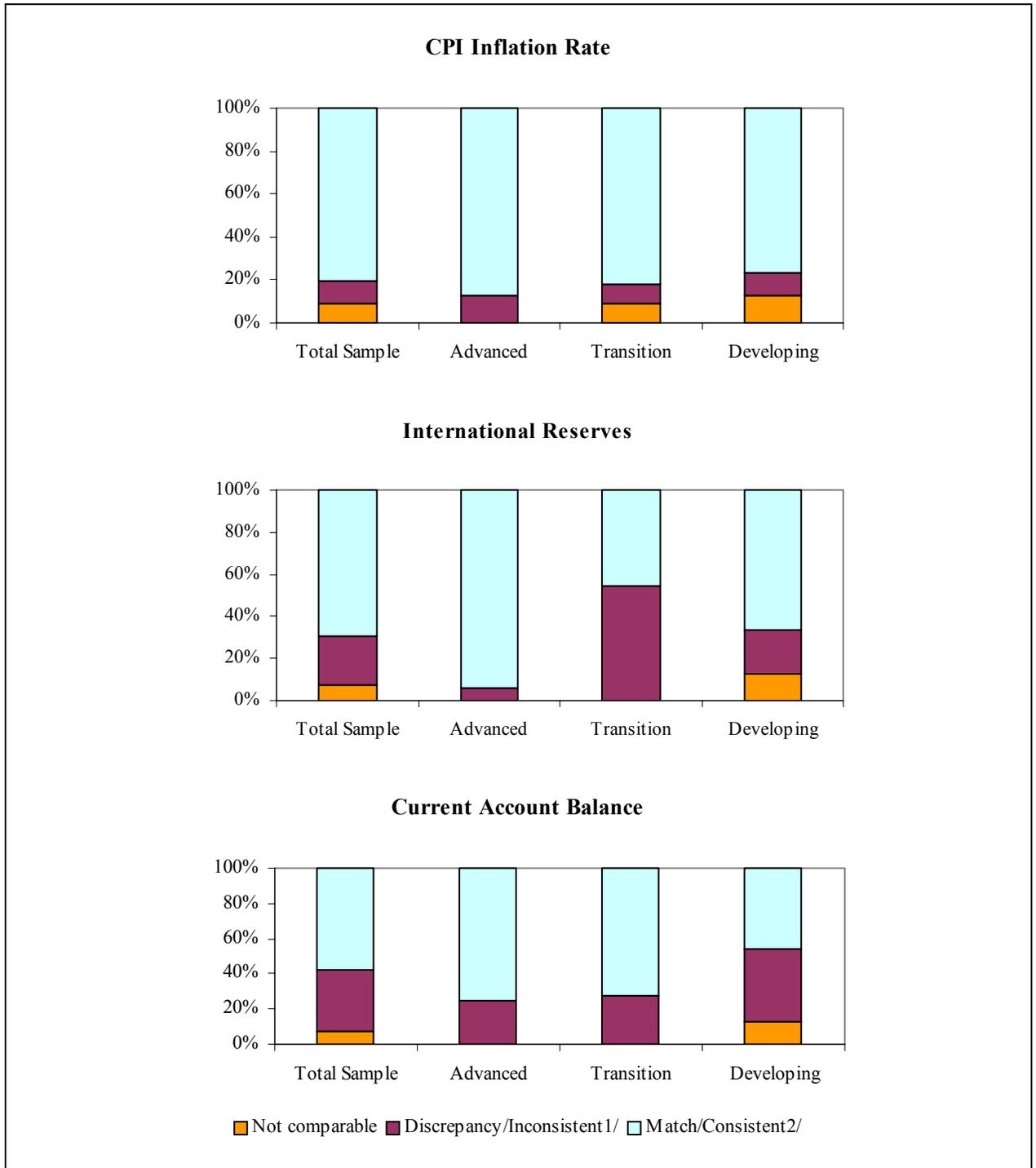☐ Not comparable   ■ Discrepancy/Inconsistent1/   ☐ Match/Consistent2/

Source: Staff Reports and *IFS*.

1/ Discrepancy/Inconsistent indicates differences of more than 2 percent
2/ Match/Consistent indicates differences of less than 2 percent

Figure 1. Comparison of IMF Country Staff Report and *IFS* Data (continued)

CPI Inflation Rate

International Reserves

Current Account Balance

☐ Not comparable ☐ Discrepancy/Inconsistent1/ ☐ Match/Consistent2/

Source: Staff Reports and *IFS*.

1/ Discrepancy/Inconsistent indicates differences of more than 2 percent
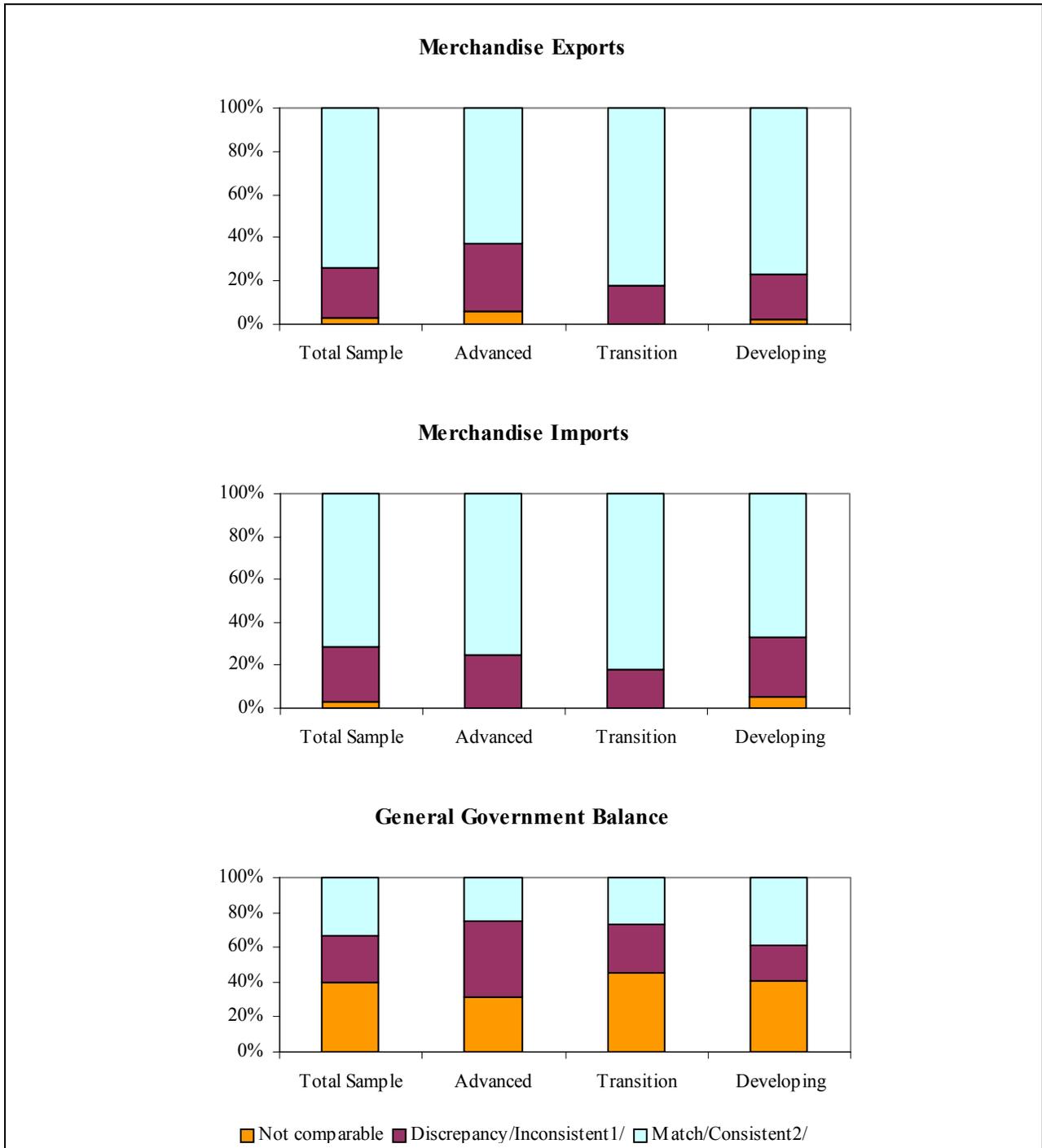2/ Match/Consistent indicates differences of less than 2 percent

Figure 1. Comparison of IMF Country Staff Report and *IFS* Data (continued)

Merchandise Exports

Merchandise Imports

General Government Balance

Not comparable ■ Discrepancy/Inconsistent1/ □ Match/Consistent2/

Source: Staff Reports and *IFS*.

1/ Discrepancy/Inconsistent indicates differences of more than 2 percent
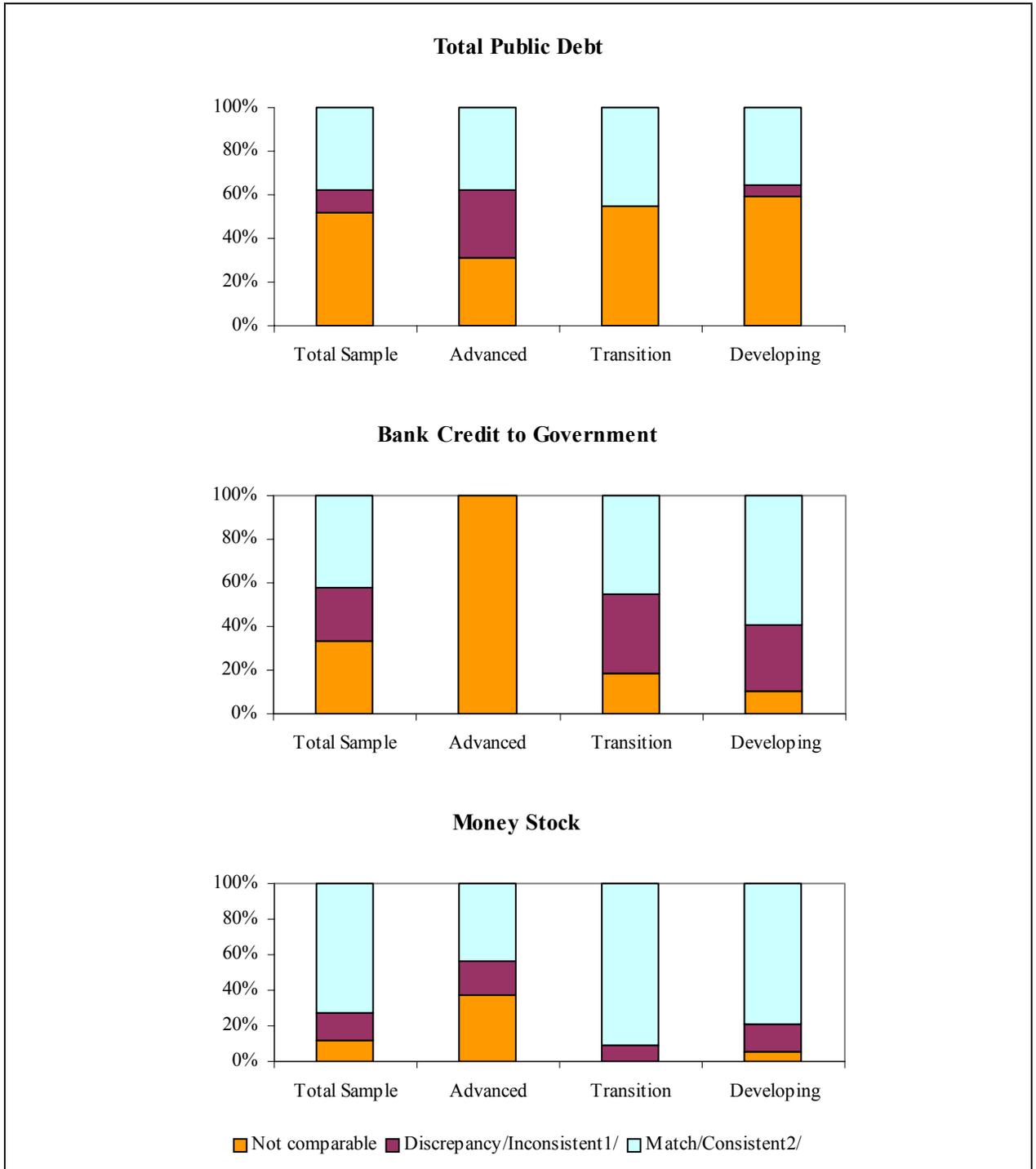2/ Match/Consistent indicates differences of less than 2 percent

Figure 1. Comparison of IMF Country Staff Report and *IFS* Data (concluded)

Total Public Debt

Bank Credit to Government

Money Stock

Not comparable ■ Discrepancy/Inconsistent1/ □ Match/Consistent2/

Source: Staff Reports and *IFS*.

1/ Discrepancy/Inconsistent indicates differences of more than 2 percent
2/ Match/Consistent indicates differences of less than 2 percent

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