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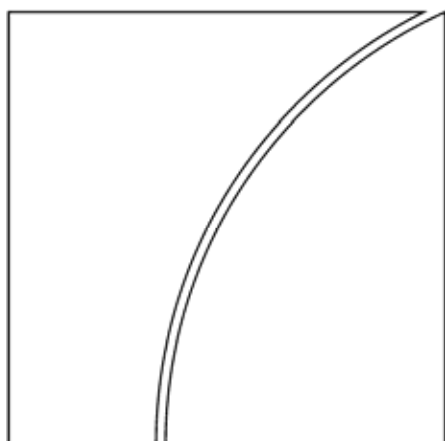
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Financial aspects of migration: the measurement of remittances

The IFC's contribution to the IAOS Conference,
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Overview of the IFC contribution to the IAOS Conference Ottawa 2006

João Cadete de Matos¹

The Irving Fisher Committee on Central Bank Statistics (IFC) contributed to a conference entitled “People on the Move”, held by the International Association for Official Statistics (IAOS), in Ottawa, Canada, September 6–8, 2006. The IAOS had invited the IFC to organise a plenary session on the topic “Financial Aspects of Migration: The Measurement of Remittances”.

In the IFC session the following three papers were presented: “Workers’ remittances in the Spanish Balance of Payments” by Eduardo Rodríguez Tenés (Banco de España), “Overseas Filipino Workers’ (OFWs) Remittances: Compilation Practices and Future Challenges” by Ruth Gonzaga (Bangko Sentral ng Pilipinas) and “Remittances in the Balance of Payments Framework: Current Problems and Forthcoming Improvements” by Jens Reinke (International Monetary Fund). These papers were commented on by two invited discussants: Fernando Alberto Rocha (Banco Central do Brasil) and Stefaans Walters (South African Reserve Bank).

The paper by Eduardo Rodríguez Tenés presents the recent work at the Banco de España to improve the quality of the data published on workers’ remittances in the Spanish balance of payments. The comparison of the data included in the balance of payments until 2005 with other indicators, namely the figures published by the counterpart countries and other information sources, pointed to an overestimation of remittances of emigrants (credits) and an underestimation of remittances of immigrants (debits). Given this situation, and in the particular case of remittances by immigrants where the biases appeared to be greater, the paper focuses on the methodology developed in order to solve the problem. A panel data econometric model was estimated based on the main economic and financial determinants of these remittances for the years 1993 to 2000, and the results of the model were used to make forecasts for 2001 to 2004. These forecasts were compared with the data published before revisions and confirmed the underestimation of debits under the heading of workers’ remittances in the Spanish balance of payments. This conclusion justified a revision of the published data for the period 2001–2005, entailing an increase in the figures of around 20%.

The paper by Ruth Gonzaga focuses on the estimation methodologies and data sources used by the balance of payments compilers at the Bangko Sentral ng Pilipinas to measure the remittances of overseas Filipino workers. The paper explains the main methodological problems, namely: the application of residence criteria; monitoring of the stock of migrant workers given relevant factors such as mobility and undocumented workers; remittances through informal channels; and the limitations of bank data, particularly in determining the true source of the remittances. According to the studies carried out, the remittances of overseas Filipino workers compiled in the balance of payments by the Bangko Sentral ng Pilipinas included a compound of current transfers and compensation of employees. These different issues affect country and regional reporting systems and make necessary their harmonisation with international standards and a revision of the methods and sources of information.

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The paper by Jens Reinke outlines the current definitions and practices for the compilation and dissemination of data on remittances in the balance of payments framework. The author presents the recent work to modify the ways that remittances are presented and compiled in the balance of payments, which generally do not satisfy institutional users' needs. The paper starts with an overview of data and concepts concerning remittances and other private transactions linked to migration, as well as information about the sources and methods used by countries worldwide to compile these data. In a second part, the paper summarises the new and improved definitions for remittances, which were developed by the United Nations Technical Sub-Group in wide consultation with compilers. The new definitions simplify the standard components related to migration and remittances and introduce several new supplementary items to the balance of payments framework, addressing specific concerns raised by data users. Finally, the author illustrates the main weaknesses in global remittance data and the need for improved practical guidance on data sources and compilation methods.

There was a very fruitful discussion of these three papers in the session, and a large consensus emerged supporting the importance of the improvements planned in this statistical domain at the national and international levels. The need for progress in the measurement of remittances was considered crucial given its relevance as a national income source in many countries worldwide.

Overseas Filipino workers' (OFWs) remittances: compilation practices and future challenges

Ruth C Gonzaga¹

Background

Philippine migrant workers, commonly called Overseas Filipino Workers (OFWs), perform a vital role in the economy. The stock of OFWs has averaged 4.8 million over the last five years, with about 95 percent classified as land-based workers.² OFW remittances have emerged as a major source of the country's foreign exchange inflows. Remittance flows contribute significantly to economic growth with its share in gross national product (GNP) averaging 8.9 percent over the last five years.

In 2005, remittances channeled through banks amounted to US\$10.7 billion, or a year-on-year growth rate of 25.0 percent. Robust inflows were mainly attributed to the: (i) sustained demand for OFWs; and (ii) improved capture of remittance flows. Filipino workers' professionalism and technical competence continued to be the source of strength to remain competitive in the overseas labor markets. As OFWs grow in numbers (by latest count they constitute about 6 percent of the Philippine population), local banks have benefited from their new economic status, with OFWs increasingly accessing banking channels to remit funds to Philippine beneficiaries. Commercial banks' faster delivery systems and wider choice of remittance centers abroad further facilitated the shift to formal channels. By 2005, therefore, only 13 percent of total remittances, from a high of about 25 percent in 2001, were channeled outside the banking system.

Compilation efforts prior to 2004 revision

The shift to the use of the Balance of Payments Manual, 5th edition (BPM5) as the framework for balance of payments (BOP) compilation, which started in 2000, was gradual given the data limitations and institutional constraints. One of the problem areas was the measurement of OFWs' contribution to the external accounts. Basically, their contribution had been measured in terms of remittances which grew steadily to become a major component in the country's BOP. However, data on remittances were entirely based on the bank reporting system, with no details provided on the volume of foreign exchange transactions reported to the central bank. This limitation, and other factors, prevented the full adoption of internationally recommended concepts and coverage.

The old estimation procedure is described as follows:

1. The rule on residency was not followed. All contract workers, regardless of the length of stay in the host economy, were considered as residents.
2. Compensation of employees was measured net and not gross as required in the BOP system. Estimates of income were based on the amount of cash remittances,

¹ Bangko Sentral ng Pilipinas.

² Based on Stock Estimates of Overseas Filipino Workers (OFWs) by the Commission on Filipinos Overseas, Department of Foreign Affairs.

therefore net of workers' expenditures spent abroad. Likewise, remittances in kind were not covered in the estimates.

3. Only remittances channeled through the banking system are captured. Country attribution is traced to the immediate source of fund transfer. Thus, the use of correspondent banks located outside the countries of deployment tends to distort statistics on the true source country.
4. As a consequence of the net measurement of income, there is no estimate in the BOP of workers' travel expenditures.

Recognizing the deficiencies of the old approach and the need to conform to international standards, the Bangko Sentral ng Pilipinas (BSP) created an Interagency Task Force on OFW and Travel Statistics in 2001 to address data gaps and unify statistics on migrant workers. The interagency group set out to harmonize estimation methodologies with the System of National Accounts (SNA). The Task Force also aimed to establish a data system that would complement bank reports in monitoring workers' remittance and travel accounts for BOP compilation purposes.

The Task Force instituted the following changes, among others:

- (a) Established benchmark estimates of the number of Overseas Filipinos including contract workers. The Task Force utilized combined sources such as censuses of host countries, reports on headcount by Philippine embassies and consulates, and membership databases of overseas workers' welfare agencies.
- (b) Initiated collaborative effort to gather average salary per worker by skill and country through random sampling of employment contracts. To estimate the average salary data, the Task Force reviewed employment contracts processed for deployed workers, as well as data results of skills mapping exercises.
- (c) The Commission on Filipinos Overseas (CFO), Philippine Overseas Employment Administration (POEA) and the Overseas Workers Welfare Administration (OWWA) serve as the lead government agencies involved in implementing and institutionalizing the above activities.

In 2003, the BSP handed over the supervision of the Task Force to the National Statistical Coordination Board (NSCB), the country's highest statistical policy-making body, so as to align the task force activities with parallel efforts of the NSCB's Inter-Agency Committee (IAC) on Labor, Income, and Productivity. Based on the updated results of the Task Force's activities, the reorganized IAC approved the conduct of bilateral consultations between the BOP and the SNA compilers. The consultative efforts were geared toward unifying their methodologies.³

2004 BOP revision: estimation methodologies and data sources

Starting in 2004, BPM5 recommendations have been fully adopted across all major accounts in the BOP, among which are the OFW-related accounts – income, travel, and current transfers. Recently, historical data going back to 1999 have also been revised to bring about consistency for time series analysis.

The following are the salient points of the methods being adopted by the BOP compiler specifically on OFW-related accounts:

³ The Philippine SNA has not shifted to the 1993 manual and continues to treat all OFWs as residents.

A. Concept of residence

The BOP observes the one-year rule for residency, as an OFW intending to work abroad for less than one year is considered a resident of the Philippine economy. Conversely, an OFW intending to work abroad for one year or more is considered a non-resident of the Philippine economy.

Based on this principle, OFWs are classified into two main categories:

1. Sea-based workers – considered as Philippine residents regardless of the length of work contract. This treatment follows the BPM5 concept on the mobility of seafarers who are in international waters most of the time and thus have not established a center of economic interest in any given economy.
2. Land-based workers
 - (i) Performing artists – considered as Philippine residents since they normally have six-month employment contracts.
 - (ii) All others – considered as non-residents since land-based workers generally sign two-year employment contracts.

B. Estimation of the stock of OFWs

Based on the benchmark numbers (per category) established by the task force, monthly updating is based on a moving total, computed as follows:

$$Stock_{t=1} = Stock_{t=0} + \text{number of deployed}_{t=1} - \text{number of workers with finished contracts}$$

Example:

$$Stock\ of\ Performing\ artists_{t=Jan04}$$

$$= Stock_{t=Dec03} + deployed_{t=Jan04} - deployed_{t=Jul03}$$

$$Stock\ of\ Sea-based_{t=Jan04}$$

$$= Stock_{t=Dec03} + deployed_{t=Jan04} - deployed_{t=Jan03}$$

$$Stock\ of\ Other\ land-based_{t=Jan04}$$

$$= Stock_{t=Dec03} + deployed_{t=Jan04} - deployed_{t=Jan02}$$

The benchmark estimate for stock of OFWs was established for 1998 and 1999 data series, using information from Philippine embassies and consulates supplemented by reports from OWWA welfare offices in host economies on stock data of undocumented workers.

C. Estimation of compensation of employees (CE)

1. Sea-based workers

$$CE_{Sea-based} = Remittances \div 0.80$$

As stipulated in the work contracts of sea-based workers, it is mandatory that 80 percent of the basic salary be remitted to the officially designated beneficiary. Thus, banks' electronic reports on remittances are magnified to represent total compensation. It should be noted, however, that overtime pay earned by seafarers on board is not captured using this approach. However, other databases, particularly the Survey of Overseas Filipinos (SOF), provide parameters for estimating remittances in kind, which are then assumed as being financed by overtime pay. In short, remittances in kind also represent estimate of overtime pay and other benefits.

2. Performing artists

$CE_{\text{Performing artists}} = \text{Stock of workers}_{t=0} \times \text{average salary per worker}_{t=0}$

Plus: $\text{number of deployed}_{t=1} \times \text{average salary per worker}_{t=1}$

Less: $\text{number of workers with finished contracts} \times \text{average salary per worker prevailing at the time of their employment}$

The POEA provides data on the average salary per worker used in the above estimation method for compensation of performing artists.⁴

D. Estimation of workers' remittances

Workers' remittances cover current transfers to the Philippines in cash and non-cash sent by non-resident OFWs. Cash remittances of non-resident OFWs are computed by deducting remittances of resident OFWs from the global estimate of remittances, which is the sum of remittances channeled through banks and informal channels.

The BSP compiles data on cash remittances that are sourced from electronic bank reports (or FX Form 1) generated through the International Transaction Reporting System (ITRS). FX Form 1 reports are also used to derive data on OFW remittances by country and type of worker.

Since 2001, thrift banks, offshore banking units (OBUs) and foreign exchange corporations have been included as entities required to report their foreign exchange transactions to the BSP. However, the data series do not accurately reflect the actual country of deployment of OFWs due to the common practice of remittance centers in various cities abroad to channel remittances through correspondent banks mostly located in the United States. Since local banks attribute the origin of funds to the most immediate source, the U.S. therefore appears to be the main source of OFW remittances.

To account for cash remittances through informal channels and come up with the global estimate of remittances, a raising factor (r), based on the results of the SOF, is applied as follows:

$\text{Global estimate} = \text{remittances through banks} \times 1.r$

Remittances in kind are likewise estimated as a percent of cash remittances based on the SOF results.

E. Travel expenditures

- Travel debit (imports)

Travel expenditures abroad of resident OFWs are derived as follows:

$\text{Travel imports}_{\text{Sea-based}} = \text{Compensation of employees (CE)}$

Less: Total remittances

where $\text{Total remittances} = \text{cash}_{\text{banks + other channels}} + \text{in kind}$

The BSP also makes use of partner country data to complement domestically generated information. For instance, since more than 90 percent of performing artists/entertainers are

⁴ The POEA and OWWA are government agencies attached to the Department of Labor and Employment (DOLE) specializing in OFW employment issues and welfare concerns. The POEA provides data on salary per worker by skill and country of origin, although with a considerable time lag due to the agency's manpower constraints. The time lag could be one year or more from the reference year.

employed in Japan, the Family Income and Expenditure Survey (FIES) of Japan is used to estimate entertainers' travel expenditures abroad.

- Travel credit (exports) and current transfers debit

Based on POEA information, the bulk of deployed land-based workers are basically rehired under work contracts with the same employer or new overseas firms. It is a common practice that after the end of the two-year work contract, the land-based OFWs embark on home visits for at least a month. Travel exports are imputed to represent their local expenditures during their home visits. However, it is also assumed that the family provides for all the expenses and thus current transfers (or payments) are also recognized. The estimates of travel exports and the equal amount of transfers are based on the per capita personal consumption expenditure under the SNA.

Travel credit = Transfers debit

$$= \textit{per capita personal consumption expenditure} \times \textit{number of non-resident OFWs}$$

F. Summary methodology of total remittances

While the estimate of total remittances is not shown explicitly in the BOP report, the BSP prepares a supplementary table on the estimate for analytical purposes. Total remittances are categorized into two main sources, as follows:

- Resident OFWs

$$R_1 \textit{ Performing artists} = \textit{CE} - \textit{Travel expenditures}$$

$$R_2 \textit{ Sea-based} = (\textit{Cash remittances through banks})$$

x raising factor

+ remittances in kind

Remittances by resident OFWs are segregated by type of worker, in order to account for the diverse remittance practices of performing artists and sea-based workers.

- Non-resident OFWs

$$NR_{\textit{Sub-total}} = (\textit{Total cash remittances through banks})$$

x raising factor

- remittances of resident OFWs ($R_1 + R_2$)

+ remittances in kind

It should be noted that the raising factor was reduced from a high of 28 percent in 2001 to 20 percent in 2004. In 2005, it was further reduced to 15 percent to account for the increase in the volume of remittances passing through formal channels.

Box1

Survey of Overseas Filipinos (SOF)

The SOF is a nationwide survey conducted every year by the National Statistics Office (NSO) that seeks to gather information on Filipino citizens who left for abroad during the last five years. It is a rider survey in the October round of the NSO's quarterly Labor Force Survey (LFS).

Collection of data on the profile of overseas workers started in 1982 using a one-page rider questionnaire in the Integrated Survey of Households, but has since evolved to derive the estimate of the number of OFWs and other information on migrant Filipinos. In 1993, the two-page questionnaire was renamed Survey of Overseas Filipinos.

The SOF aims to provide data on overseas Filipinos, particularly overseas contract workers and their contribution to the economy. Specific objectives are:

1. to obtain national estimates on the number of overseas Filipinos including overseas workers and their socio-economic characteristics (e.g., name, age, sex, civil status, highest educational attainment, occupation); and
2. to provide estimates on the amount of cash and in kind transfers received by the families, as well as their modes of remittances.

The survey involves a probability sample of about 51,000 households, which are considered representative samples of private households in all provinces of the country. Two forms are used in the survey, namely:

SOF Form 1 – gathers the socio-economic characteristics of overseas Filipinos, the amount of cash and in kind transfers received, and the modes of remittances, among others; and

SOF Form 2 – serves as a household control form to be used as basis for determining households with members who are overseas.

Statistical issues

The BSP has identified the following areas of concern in measuring data on workers' remittances:

1. There is an urgent need to at least set up a well-coordinated system of monitoring that will cater to the individual statistical needs of each concerned agency, given the varying objectives and mandates among agencies. In particular, population statistics and other administrative data do not conform exactly to the BPM5 definition. Even the Philippine SNA has not yet adopted the recommended definition of residence, which is supposed to be consistent with the BPM5 recommendation. At present, all contract workers, regardless of the length of stay in the host economies, are treated as residents in the SNA. Meanwhile, population statistics' cover of residence extends up to a five-year period, so that a migrant worker will be dropped from the Philippine population count only after five years of working abroad.
2. The present system of monitoring the headcount of migrant workers is still subject to a number of deficiencies:
 - (a) the difficulty of monitoring migrant workers with no valid work documents or those counted as tourists upon departure
 - (b) tendency of an upward bias in the headcount due to:
 - (i) mobility, especially in landlocked countries, which results in counting the same worker in two different places in one accounting period;

- (ii) the fact that returnees with unexpired work contracts are not covered in the estimation process as the system does not closely monitor returnees; and
 - (iii) the possibility that workers who are frequently on vacation could also be counted more than once in one accounting period upon their return to the host countries.
- 3. There is a need to conduct an independent survey as the sampling design of the present SOF is not intended to provide efficient estimates and parameters on OFW statistics. The present SOF is just a rider survey to the October round of the NSO's quarterly Labor Force Survey (LFS) and, consequently, the sampling frame is the same as that of the LFS.
- 4. More in-depth cross border comparative analysis should also be undertaken in order to increase the reliability of statistics on OFW remittances. Partner country data could be verified initially on a regional level and with major host economies, to be expanded to other source economies of workers' remittances. However, the observance of thresholds, particularly in partner countries' ITRS, has been a limiting factor, since relatively small values are missed out in their systems.

Future direction

In collaboration with other Philippine statistical authorities, the BSP adopts a forward-looking approach to fully address the domestic issues in compiling workers' remittance data. The interagency committee aims to: (i) harmonize the definition of terms and come up with reconciliation points; and (ii) strengthen the current system to monitor the headcount of migrant workers. In technical meetings with the POEA planning office, the BSP and POEA have drawn up joint timelines for measures that are aimed at further disaggregating the OFW database, particularly data on monthly salary by skill and on deployment of workers. The BSP has also lined up a project with the CFO on the improved computerization of migration statistics. Meanwhile, the BSP continues to coordinate with the NSO on a medium- to long-term target of improving the SOF's sampling design, by launching the survey independent of the LFS with OFW households as the direct respondents.

In a parallel move, the monetary and statistical authorities in the region are focusing on compiling workers' remittance data that would serve relevant policy needs. The regional compilers recognize the vital role of central banks' initiatives toward sound regulatory environments that will promote the efficient use of remittances. The initiatives would encourage partner countries to: (i) explore ways to reduce transaction costs; (ii) develop payment systems and financial intermediation functions; and (iii) improve financial literacy and labor conditions. The ultimate goal for policymakers is aligned with the Millennium Development Goal of reducing poverty, which could be achieved if migrant workers are provided the proper infrastructure and mechanisms for channeling their foreign exchange savings to micro-enterprise activities and other alternative financial instruments.

Remittances in the balance of payments framework: current problems and forthcoming improvements

Jens Reinke¹

Introduction

This paper outlines the current definitions and practices for the compilation and dissemination of data on remittances in the balance of payments framework.² It outlines shortcomings in this framework as well as additional data needs identified by data users. It completes the picture by outlining the development of improved definitions and concepts – a process about to be completed – as well as setting out the plans for improved compilation guidance.

In its first section, this paper provides a brief overview of data and concepts concerning remittances and other private transactions linked to migration. It covers data on remittance flows, their definitions in the context of balance of payments statistics, information about the sources and methods used by countries worldwide to compile these data, and the assistance provided by the IMF to its member countries to improve these statistics. The line items that broadly relate to remittances in the balance of payments framework are reviewed: “compensation of employees” under income, “workers’ remittances” under current transfers, and “migrants’ transfers” under capital transfers.

The primary sources of statistical information on remittances (and other balance of payments items) available from the IMF are also introduced. These comprise the fifth edition of the *Balance of Payments Manual (BPM5)* on recommended data definitions and classifications within the macroeconomic statistical framework, the *Balance of Payments Compilation Guide* and the *Balance of Payments Textbook* for compilation guidance and accessible explanations of data categories, and the *Balance of Payments Statistics Yearbook* for both worldwide data on external flows and metadata from country compilers.

In its second section, the paper discusses the limitations in the current conceptual framework. Conceptual shortcomings often frustrate data users, who find that they cannot easily identify relevant data in official statistics. Compilers are sometimes forced to ignore conceptual complexities, furthering the argument for a clarification and simplification of the definitions of standard components related to remittances. This section then introduces the new and improved definitions for remittances, which were developed by the United Nations Technical Subgroup with wide consultation of compilers. Most importantly, these new definitions simplify the standard components related to migration and remittances. They also introduce several new supplementary items to the balance of payments framework, addressing specific concerns raised by data users.

¹ Statistics Department, International Monetary Fund. Disclaimer: This note should not be reported as representing the views of the IMF. The views expressed in this note are those of the author and do not necessarily represent those of the IMF or IMF policy.

² Earlier versions of this paper were presented at the first meeting of the Luxembourg Group in Luxembourg on June 26, 2006 and at the 2006 Annual Conference of the International Association for Official Statistics at the Fairmont Chateau Laurier in Ottawa, Ontario, Canada. The paper builds on Reinke and Patterson (2005), International Working Group on Improving Data on Remittances (2005), United Nations Technical Subgroup on the Movement of Natural Persons (2006), and discussions of the Luxembourg Group.

Remittances and the International Working Group

Origin of the International Working Group on Improving Data on Remittances

The importance of the accurate measurement of remittance flows was emphasized by the G8 Heads of State meeting at Sea Island in 2004. There are weaknesses in official data on remittances, however, and G7 Finance Ministers and others called for the establishment of a statistical working group, to be led by the World Bank, for improving remittance data.

In January 2005, the World Bank hosted an international meeting on the issue of statistics on remittances in order to establish the working group, take stock of existing work and initiatives, clarify the needs of data users, and agree a strategy towards improving the availability and accuracy of data. The meeting, jointly organized with the IMF, was attended by almost 60 participants comprising data users and compilers from various countries and international organizations. G7 countries were represented by their balance of payments compilers, plus an official from the US Treasury and an official from the UK Department of International Development. Participants concluded that the key priority for the working group would be to improve remittance data within the balance of payments framework, both concepts and definitions, and data collection and compilation methods. The World Bank and IMF, together with numerous partners, agreed to establish the International Working Group on Improving Data on Remittances (“the international working group”) to coordinate the various parts of the work program.

Progress on concepts

To accomplish the conceptual part, participants agreed that an existing subgroup of the UN Interagency Task Force on Statistics of International Trade in Services, the Technical Subgroup on the Movement of Natural Persons (TSG), would review concepts and definitions relating to remittances. The TSG has now completed this task and will report its final recommendations to the IMF Committee on Balance of Payments Statistics and the Advisory Expert Group on National Accounts during 2006. The new concepts and definitions are outlined in section 2 of this paper.

Progress on practical compilation guidance

Practical guidance on data sourcing and compilation is required to achieve the accuracy promised by improved concepts. To address these issues, participants at the international meeting agreed that it would be useful to form a core group of compilers to review methods and, in the medium term, develop more detailed guidance for compiling remittances data in a “city group”. Eurostat, the statistical office of the European Union, offered to host the first meeting in June 2006, thereby creating the “Luxembourg Group”. Terms of reference and membership were developed by Eurostat in consultation with the IMF and the World Bank as well as other stakeholders.

In the meantime the international working group is also coordinating with a recent project being conducted by the Center for Latin American Monetary Studies (CEMLA) to improve central bank remittance reporting and procedures. This project is supported by the Multilateral Investment Fund of the Inter-American Development Bank, with oversight for this work provided by an International Advisory Council, including the IMF and World Bank. Developments on data collection and compilation methods are discussed in section 3.

The third and final section illustrates weaknesses in global remittance data (including an assessment of global discrepancies in remittance aggregates) and the need for specific practical guidance on data sources and compilation methods. The inadequacy of practical compilation guidance concerns compilers, who, as a result, often produce data that is less credible than other balance of payments components.

Since the development of improved guidance has only just begun, the section concludes by outlining the initial steps taken and introduces the Luxembourg Group, a consultative group

formed to review and develop approaches to compiling remittances data based on international best practices.³

I. Concepts, data, and guidance at present

Remittances and the definition of components in the *BPM5*

Data users hold different views about the concept of remittances. Research papers (Adams and Page, 2003; Harrison, 2003; Migration Policy Institute, 2003) and subsequent debates treated as remittances certain transactions that are initiated by individuals living or working outside their country of birth or origin and related to their migration. The following components of balance of payments statistics have been specifically mentioned in this context:

- compensation of employees;
- workers' remittances; and
- migrants' transfers.

In the balance of payments framework, compensation of employees is a component of income while workers' remittances are a component of current transfers; both are part of the current account. Migrants' transfers are a component of capital transfers, which are part of the capital account. The definitions of these components, according to the *BPM5*, are:

Compensation of employees comprises wages, salaries, and other benefits earned by individuals – in economies other than those in which they are residents – for work performed for and paid for by residents of those economies.

Workers' remittances covers current transfers by migrants who are employed in new economies and considered residents there. A migrant is a person who comes to an economy and stays there, or is expected to stay, for a year or more. Workers' remittances often involve related persons.

Migrants' transfers are contra-entries to the flow of goods and changes in financial items that arise from the migration of individuals from one economy to another.

The concept of residence for households and individuals is based on their center of economic interest. If a resident household member leaves the economic territory where the household is based and returns to the household after a limited period of time (of less than one year), the individual continues to be a resident even if he or she makes frequent journeys outside the economic territory. Individuals leaving their country with the intention of living in a new economy for a year or longer will be considered residents of the new economy (with a few exceptions, notably students, medical patients, diplomats, and military personnel). The *BPM5* does not specify a definition of migrants.

Transfers are offset entries in the balance of payments to the provision of a resource (such as grants and gifts in kind or financial form) without a quid pro quo. Depending on the nature and use of the resource, transfers are recorded as current transfers in the current account or as capital transfers in the capital account component of the capital and financial account.

³ A statistical "city group" is a voluntary group of statistics compilers formed for improving statistical practices in a specific area. Such groups are named after the city of their first meeting.

“Workers’ remittances” and “migrants’ transfers” are transfers, while “compensation of employees” records the remuneration for work. “Workers’ remittances” involve a current transfer between residents of different countries, while “migrants’ transfers” relate to the capital account changes caused by the change of residence of a household, at the time this takes place. Depending on their specific needs, data users can decide which of these components best represents their notion of remittances.

Data on remittance flows

Data on remittances, like on all other components of the balance of payments statement, are compiled by relevant statistical authorities in member countries (typically the central bank or national statistical office). Member countries then report their data to the Statistics Department at the IMF, where global tables are compiled and published in the *Balance of Payments Statistics Yearbook*. Part 2 of the *Yearbook*, which shows world and regional tables by item, is a particularly good place to identify and compare specific items, such as those relating to remittances.

The *Balance of Payments Statistics Yearbook 2006* (Part 2) shows that total receipts of workers’ remittances in 2005 were recorded as \$151.4 billion, of which developing countries account for \$139.5 billion. Receipts of compensation of employees are shown as \$71.8 billion, of which \$28.2 billion were reported by developing countries (see the Appendix). Migrants’ transfers are not separately listed in the global table.

The data are far from perfect. Aggregate data are subject to the variations of compilation on a national basis. Concepts and methodologies are not applied uniformly across all countries. Data sourcing and compilation is better in some countries than others. Some countries report no data to the Fund, or not on all items. Therefore, data comparison and aggregation have to be approached with caution (see also page 10).

Variations in data compilation procedures occur partially due to different interpretations of definitions and classifications.⁴ In most cases, however, data weaknesses and omissions are due to the difficulties in obtaining all necessary data. For compiling all remittance-related flows, a variety of data sources would have to be used, some of which are difficult to capture, and the data need to be classified appropriately according to standard definitions.⁵

The problems that compilers encounter, and the solutions that they apply, vary among countries. The same is true for the resources available to compilers as well as their institutional capacity. As a result of these factors, data are neither perfectly comparable nor equally comprehensive and reliable across countries.

Metadata

Metadata is a tool for understanding the differences in methodology, data sources, and compilation practices applied by national compiling agencies. The compiling agencies of IMF member countries compile information on their data sources, definitions, classifications, and compiling methods. Reported in a standard template, this information is published by the IMF in the *Balance of Payments Statistics Yearbook* (Part 3) and is also available online.

⁴ For example, some countries consider their nationals working abroad for a year and longer as residents – and their earnings therefore as compensation of employees – because they maintain strong linkages with their home country. Most countries follow the one-year rule.

⁵ For example, hawala transactions are difficult to capture. Once aggregate flows through the hawala system are reported to compilers, they have to classify flows according to their purpose (payment for imports, investment, remittances, etc).

Although these metadata help in understanding different approaches taken by balance of payments compilers, the level of detail they provide is insufficient for a detailed analysis of data systems.⁶ However, some technical assistance projects, such as the GDDS project at the IMF, take the compilation and review of metadata as a starting point for strengthening the capacity and methods of data compilers. In itself, metadata is a resource for cross-country comparison, but not a sufficient one for improvement; yet as a starting point for prioritizing technical assistance, metadata plays an important role.

Compilation guidance and technical assistance

In support of the application of principles set out in the *BPM5*, the IMF published the *Balance of Payments Compilation Guide* and the *Balance of Payments Textbook*. The *Compilation Guide* provides practical guidance on issues such as data sources including surveys, the establishment and use of International Transactions Reporting Systems (ITRS),⁷ compilation of the various accounts in the balance of payments statistics, estimations, database management, and publications. The *Textbook* was written mainly as a reference book for IMF training courses in balance of payments methodology, yet it makes a good resource for self-study by compilers. It provides practical examples and useful explanations of definitions and conventions contained in the *BPM5*.

Technical assistance is available from the IMF for member countries to support the continued improvement of balance of payments statistics. Technical assistance missions frequently assess statistical systems, provide recommendations for improvement, help with implementing methodological changes, and engage in general capacity building and on-the-job training. Regular training courses on balance of payments statistics are held at the IMF headquarters and regional training centers for the benefit of all member countries.

Compilation guidance through publications, technical assistance, and training courses address all parts of the balance of payments framework, including the categories discussed in this paper. However, member countries decide what emphasis they want to give to any one area, such as remittances.

II. Conceptual problems and improvements in progress

This section outlines the limitations of existing concepts and data and the improved new definitions for remittances that are currently being finalized. It also discusses how the new definitions simplify the standard components and address the concerns of data users, particularly by creating new, supplementary data definitions derived mostly from standard components.

⁶ However, even at a more general level, it is interesting to note that the majority of countries do not describe all migration-related flow items (compensation of employees, workers' remittances, and migrant transfers) in their metadata.

⁷ An ITRS is a system for measuring international transactions. In particular, it measures individual external cash transactions that pass through domestic banks and through enterprise accounts with banks abroad, noncash transactions, and stock positions. Most ITRS evolved as by-products of foreign exchange control systems. Not all countries have an ITRS.

Conceptual limitations of remittance definitions in the *BPM5*

The *Balance of Payments Manual* does not define workers or migrants.⁸ According to the *Balance of Payments Textbook*, “workers’ remittances consist of goods or financial instruments transferred by migrants living and working in new economies to residents of the economies in which the migrants formerly resided” (p. 90). It further states that workers’ remittances are “transfers made by migrants who are employed by entities of economies in which the workers are considered residents” and that transfers of self-employed migrants “are not classified as workers’ remittances but as current transfers” (p. 90–1). This distinction is necessary since “workers’ remittances, according to the balance of payments convention, arise from labor and not from entrepreneurial income” (p. 91).

Data compilers as well as users have pointed out that this distinction is neither analytically desirable nor practically implementable. Households often earn income from different sources, combining wages and entrepreneurial labor income with investment income and transfers. Since money is fungible, it is often impossible to determine whether transfers abroad are made from wage or other income.

Also, households are often comprised of people with diverse residence status and histories. The *BPM5* states that “it is often difficult to make the distinction between persons whose earnings are classified as *compensation of employees*, even though they are not residents of the economies in which they work, and migrants who have become residents of the economies by virtue of being expected to live there for a year or more” (*BPM5*, paragraph 272). One may add that it may also be difficult in practice to make the distinction between migrant residents and non-migrant residents, making the precise application of *BPM5* definitions precarious.

Bilateral data of remittance flows are a key interest of some data users. Although classification of flows by partner country is possible within the framework, it is not a standard feature and attempts to compile it may face practical limitations. Voluntary country classification as a supplemental item is outlined in the *BPM5* and could be further encouraged, so that interested countries record remittances by partner country.

Data users are interested in the net income a country earns from seasonal and border workers abroad. Balance of payment statistics show under “compensation of employees” the remuneration paid by resident companies to nonresident employees and remuneration received by residents from nonresident employers. However, a part of these earnings will likely be spent in the host economy and will therefore not accrue to the home economy as net income. “Personal expenditures made by nonresident seasonal and border workers in the economies in which they are employed [...] are recorded under *travel*” (*BPM5*, paragraph 271). However, data reported under travel also includes the personal expenditures made by other business and personal travelers, while taxes paid in the host economy include those paid by residents and other travelers. It is therefore difficult, at best, to identify the offset items needed to calculate the net income relating to compensation of employees.

New concepts and definitions

At its meeting in Frankfurt in October 2006, the IMF Committee on Balance of Payments Statistics adopted the conceptual definitions on remittances proposed by the TSG after a

⁸ In fact, the *BPM5* is not too concerned about the identification of migrants amongst residents. “The activities of an individual – whether he or she is regarded as a resident or a migrant – do not affect the aggregate transactions of the compiling economy with the rest of the world. Therefore, difficulties on this score will not, in principle, be a source of net errors and omissions in the balance of payments. Even so, efforts should be made to observe the distinction between nonresident workers and migrants” (*BPM5*, paragraph 272).

one-year period of extensive international consultation. Separately, the meetings of the IMF Committee on Balance of Payments Statistics and the Advisory Expert Group on National Accounts in 2005 adopted proposals for simplifying the treatment of migration-related issues. The resulting enhancements will be included into the revision of the fifth edition of the *BPM5* and the update to the *System of National Accounts, 1993 (1993 SNA)*, scheduled to be completed in 2008.⁹

These changes should substantially improve accessibility and clarity of data on remittances in the balance of payments, national accounts and international trade in services frameworks. They would bring the balance of payments flows in line with the *1993 SNA* concepts and definitions. They include the introduction of four categories related to remittances, a conceptual change in the use of migration and residence status, the elimination of the concept of “migrants’ transfers”, and reporting of bilateral flows:

“Personal transfers” to replace “workers’ remittances”. Personal transfers will replace the existing workers’ remittances item in the balance of payments, and will include all current transfers in cash or in kind between resident households and non-resident households. Unlike workers’ remittances, the new concept is based neither on employment nor migration status and thus resolves inconsistencies associated with the previous concept.

Creation of a new item, “personal remittances”. Personal remittances will be defined as current and capital transfers in cash or in kind between resident households and non-resident households, and “take-home” compensation of employees earned by persons working in economies where they are not resident.¹⁰

Creation of a new item, “total remittances”. This will include “personal remittances” and social benefits. Intuitively, it includes all household income obtained from working abroad.

Creation of a new item, “total remittances and transfers to nonprofit institutions serving households”. This will include all components of “total remittances” as well as both current and capital transfers to nonprofit institutions serving households (NPISHs).

Removal of the concept of “migrants’ transfers” from the balance of payments framework. Instead of recording changes of assets and liabilities resulting from individuals moving their residence from one economy to another in the capital account, they will be recorded as “other changes of assets and liabilities”. The movement of personal effects that accompany a migrant will be excluded from import and export data.

Abolition of the concept of “migrant” in the balance of payments framework. Since the concepts of personal transfers and remittances are based on the concept of residence rather than migration status, the concept of migrant is no longer relevant. This is consistent with the use of residence criteria elsewhere in the balance of payments and national accounts frameworks.

Reporting of remittance flows to and from major partner countries in balance of payments data. This is a lower priority request of data users compared to accurate reporting of aggregate remittance flows, but reporting of bilateral flows will be encouraged.

⁹ Final details are tentative, subject to further comments from compilers and data users.

¹⁰ This concept refers to “compensation of employees” net of, i.e. less, taxes on income, social security contributions, and travel and passengers’ transportation related to the short-term employment and paid to resident entities in the host economy. Depending on policy interests, some countries may choose to compile the above components to obtain “compensation of employees less associated travel, transportation, taxes etc”, however, these components may not be included as part of the balance of payments standard presentation for reasons of simplicity and collectability.

“Personal transfers” is expected to be a standard item in the revised balance of payments framework. All new definitions – i.e., “personal remittances”, “total remittances”, and “total remittances and transfers to nonprofit institutions serving households” – are expected to be supplementary items that compiling countries are encouraged but not required to compile. It should be noted that they cut across standard categories (income and transfers) and may entail asymmetries between transacting countries due to sector allocation.

III. Practical problems and compilation guidance

In this final part, this paper draws attention to some of the difficulties in compiling data on remittances and to the need for improved compilation guidance. The background and rationale for the formation of the Luxembourg Group is also outlined.

Problems in extracting data from the balance of payments framework

Not all funds remitted by migrants will be recorded as remittances in the balance of payments framework.¹¹ This sometimes contributes to the data users’ problems in identifying the data that corresponds to their analytical needs. Hence, the *Balance of Payments Textbook* states that “money remitted by a migrant for the purpose of making a deposit in his or her own account with a bank located abroad represents a financial investment [...] rather than a transfer” (p. 90) and is therefore not a remittance (but is instead recorded as an investment asset of the sending economy). It involves a quid pro quo since the sending party acquires a claim against the deposit-taking bank abroad. Similarly, money remitted to purchase real estate or acquire control of a business would be treated as a form of investment, even if family members in the country of origin live in the house or work in the business.

In some cases, migrants’ accounts may be accessible by family members in the country of origin (e.g., through ATM cards). Therefore, withdrawals from such an account constitute a remittance when the withdrawal is made, yet it would seem very unlikely that such transactions are accurately recorded. Similar caveats apply to money transfers to non-residents in the receiving country (students, medical patients, tourists, etc), which do not constitute remittances because by definition no change of ownership between residents and nonresidents occurs. Such flows may interest data users, yet they are not identifiable as migration-related flows in balance of payments statistics unless recorded mistakenly, e.g., by recording Western Union transfers between household members as remittances.

A similar situation exists concerning some physical movements of goods across borders. Migrants visiting their home countries are considered visitors there. When they take personal effects (or cash) with them on home country visits, these are not classified as exports in their country of residence nor imports in their country of origin. However, personal effects are then often given as gifts to relatives living in the country of origin, at which point they constitute exports and imports, and therefore remittances. It is unlikely that such transactions are sufficiently covered by customs data, and they could be substantial where large migrant flows occur, and especially where migrants can travel overland between their countries of origin and residence.

¹¹ The balance of payments concept is based on residence and ownership, and remittance flows, as a form of transfers, are further defined as a transaction without a quid pro quo.

Data accuracy and global discrepancies

It is evident from metadata, data accuracy checks, and the review of individual country data that the coverage, classification, and compilation of migration-related and household-based transactions is often much less than desirable. Another method to look at data accuracy, on a global level, is to compare inflows and outflows worldwide. In principle, the combined credits (inflows) and debits (outflows) for all countries should equal zero, as the credits of one country or international organization are the debits of another. In practice, however, the data do not offset each other. Statistical discrepancies may reflect the incomplete coverage of transactions, the inaccurate and inconsistent recording of transactions resulting from differences in classification and practices, and the difference in the time of recording transactions. The table below displays aggregate global data for compensation of employees and workers' remittances.

Compensation of employees and workers' remittances, 1999 to 2005

In millions of U.S. dollars

	1999	2000	2001	2002	2003	2004	2005
Compensation of employees							
Credit	40850	39986	42119	48048	58081	66370	71770
Debit	46889	47000	50054	56495	66465	75522	82217
Global discrepancy	-6039	-7015	-7935	-8446	-8384	-9152	-10447
Workers' remittances							
Credit	67308	73301	82570	94739	114869	130653	151390
Debit	59194	62012	67370	77472	81128	90717	97416
Global discrepancy	8114	11290	15200	17268	33741	39935	53975
Sum of compensation of employees and workers' remittances							
Credit	108157	113287	124689	142788	172950	197023	223161
Debit	106083	109012	117424	133966	147593	166240	179633
Global discrepancy	2074	4275	7265	8821	25357	30783	43528

Source: *Balance of Payments Statistics Yearbook 2006, Part 2.*

The table shows that, for all years from 1999 to 2005, discrepancies for compensation of employees and workers' remittances are larger than those for the sum of these categories. Presentation of the sum removes discrepancies that are due only to different interpretations of the one-year rule. Therefore, the last line is most meaningful as a residual error term. It is rather large in some years, representing 17 percent of recorded global inflows in 2005.

Many observers assume that underreporting is common, although overreporting (through misclassification and inadequate estimation) has also been found. The large discrepancy indicates substantial room for improvement.

It should also be noted that the total discrepancy has been growing rapidly in recent years because recorded workers' remittance credits more than doubled in the last five years while

recorded debits grew much more slowly. This may suggest that compilers from net remittance receiving countries have recently put more effort into improving data than their colleagues from net sending countries.¹²

Measurement issues and the need for improved compilation guidance

Aggregate flow data published in balance of payments statistics are, therefore, far from perfect.¹³ Concepts and methodologies are not applied uniformly across all countries, and data sources and compilation methods are better in some countries than in others. Some countries report no data, or not on all items. Data comparisons and aggregations are therefore difficult, and data users often need to make imputations or estimates for missing values. Some problems are due to different interpretations by countries of definitions and classifications, but overall the paucity of source data is seen as the biggest constraint to improving remittance data.

Resource constraints and institutional capacity also play a significant role in limiting the availability, timeliness, coverage, and accuracy of data compiled by statistical authorities. The largest outflows take place from countries where remittances are often a relatively small item in balance of payments statistics. As a result, data collections and improvements are often given lower priority than other items. Countries with relatively large inflows are often those with relatively weak capacity and limited resources, even though remittances are a larger item in the balance of payments statistics.

Most problems occur because of difficulties in obtaining all the necessary data. For instance, some countries use international transactions data from the banking sector, which may not include remittances made through informal channels or through money transfer operators. Some countries use models, but parameters are difficult to estimate on a regular basis in a cost-effective manner, and models may lack sufficient data checks. Other countries use counterpart data (e.g. data on outflows are estimated by aggregating inflows recorded by other countries). Overall, there is room for improvement in data sources and compilation methods employed in measuring remittances for the balance of payments.

Recently, household surveys were proposed as a more appropriate data source for remittances, but such surveys create new problems. Estimating remittance flows from surveys requires samples that include sufficiently large numbers of households related to or containing migrants. There are practical difficulties – migrants are not uniformly distributed in the population, finding households containing migrants is a relatively rare event, and information on remittances may be considered sensitive by respondents. As a result, the incorporation of questions in regular surveys may not yield data of sufficient reliability without additional cost. On the other hand, conducting household surveys specifically for balance of payments purposes is costly and time consuming. Many developing and transition countries lack the capacity to implement additional surveys.

¹² The increase in credits is largely due to the contributions of Africa, Asia, and especially Latin America. Numerous countries reported at least a doubling of receipts of workers' remittances within the last five years, including Bangladesh, China, Ethiopia, India, Morocco, Nigeria, Pakistan, Sudan, Tunisia, and a number of Western Hemisphere countries including Mexico. The Philippines show a steep increase in 2003 due to a change in classifications.

¹³ See Reinke and Patterson (2005).

The Luxembourg Group and the remittance data compilation guide

The Luxembourg Group held its second meeting on December 4–5, 2006. The Group, formed as a cooperative effort of interested parties in June 2006, is now collecting the material that will allow the publication of a compilation guide for remittance data. The IMF, together with the World Bank, has offered to edit and publish the guide. At its first meeting, the Luxembourg Group reviewed the inventory of more successful compilation methods with a view towards developing a menu of promising approaches. The second meeting successfully launched the drafting of the compilation guide by reviewing early drafts for substantive chapters and agreeing on a broad outline of the guide.

The Group identified as the main compilation methods those that are based on general transactions data (ITRS), direct reporting, household surveys, and various approaches using models. These approaches have different advantages and drawbacks which will be explored in greater detail during the upcoming work of the Group. The availability of sources, and the relative merits of using them, vary from country to country, but the guide will outline general principles for assessing the suitability of alternative data sources and estimation methods. The guide will also emphasize the requirement that compilers understand the nature of remittance transactions in their country, and it will provide a four step approach to developing a data improvement strategy.

Most countries represented in the Group use a combination of different data sources, including administrative registers and files in addition to the four main sources outlined above. The participants agreed that no single source is likely to yield sufficient data for the improvement of remittance data in the longer term. Instead, innovative combinations of sources hold the promise of more significant improvements in remittance data. Compilers therefore have to decide which data sources to use in the circumstances of their country, depending on institutional, legal, and practical considerations. Further, they need to establish compilation methods that result in complete and consistent estimates of remittances data drawn from sometimes inconsistent or overlapping data sources. These issues will be important to address in the compilation guide.

The Group has quickly moved beyond a review of existing methods to identifying potential routes to the development of future best practice. The compilation guide will promote improved compilation practices while offering countries a choice of methodologies. Choice in approaches is important due to the variance in countries' economic and demographic structure, statistical infrastructure and resource establishment, and data requirements. Therefore, the members of the Group are preparing topical contributions, focusing on areas of their specific experience, as draft chapters of the guide. Based on these contributions, the IMF will prepare a draft compilation guide for the Group's next meeting in June 2007.¹⁴

Despite all efforts, it is also important to recognize that compiling accurate and regular data on remittances in a timely fashion is a major challenge. Even with improved concepts and compilation methods, the nature of remittances – frequent, small flows in cash and kind, through a multitude of channels, mostly by related individuals – will continue to challenge compilers and data users around the world.

¹⁴ More information on the Luxembourg Group and other activities related to remittance data is available from <http://www.imf.org/external/np/sta/bop/remitt.htm>.

Excerpts from the *Balance of Payments Statistics Yearbook, Part 2*

Remittance-related flows, 1999 to 2005
In millions of U.S. dollars

	1999	2000	2001	2002	2003	2004	2005
Compensation of employees							
Credit							
Industrial countries	29378	27662	29032	32936	38383	43162	43538
Developing countries	11472	12324	13087	15113	19698	23208	28232
International organizations	0	0	0	0	0	0	0
Total	40850	39986	42119	48048	58081	66370	71770
Debit							
Industrial countries	31854	31356	33559	38782	45285	50279	52624
Developing countries	8194	9104	9359	9631	11614	14934	18787
International organizations	6842	6540	7137	8082	9566	10309	10806
Total	46889	47000	50054	56495	66465	75522	82217
Global discrepancy							
Industrial countries	-2476	-3694	-4526	-5846	-6902	-7117	-9086
Developing countries	3278	3219	3728	5482	8085	8274	9445
International organizations	-6842	-6540	-7137	-8082	-9566	-10309	-10806
Total	-6039	-7015	-7935	-8446	-8384	-9152	-10447
Workers' remittances							
Credit							
Industrial countries	10497	10713	11575	10813	11275	11943	11889
Developing countries	56811	62588	70995	83926	103594	118709	139501
International organizations	0	0	0	0	0	0	0
Total	67308	73301	82570	94739	114869	130653	151390
Debit							
Industrial countries	36651	37044	41113	43747	46563	52535	55129
Developing countries	22543	24968	26257	33725	34565	38183	42286
International organizations	0	0	0	0	0	0	0
Total	59194	62012	67370	77472	81128	90717	97416
Global discrepancy							
Industrial countries	-26155	-26331	-29539	-32934	-35287	-40591	-43240
Developing countries	34268	37620	44739	50201	69029	80527	97215
International organizations	0	0	0	0	0	0	0
Total	8114	11290	15200	17268	33741	39935	53975

Excerpts from the *Balance of Payments Statistics Yearbook, Part 2* (cont)

Remittance-related flows, 1999 to 2005
In millions of U.S. dollars

	1999	2000	2001	2002	2003	2004	2005
Sum of compensation of employees and workers' remittances							
Credit							
Industrial countries	39874	38375	40607	43749	49658	55106	55427
Developing countries	68283	74912	84082	99039	123292	141917	167733
International organizations	0	0	0	0	0	0	0
Total	108157	113287	124689	142788	172950	197023	223161
Debit							
Industrial countries	68505	68400	74672	82529	91848	102814	107753
Developing countries	30736	34072	35615	43355	46179	53117	61074
International organizations	6842	6540	7137	8082	9566	10309	10806
Total	106083	109012	117424	133966	147593	166240	179633
Global discrepancy							
Industrial countries	-28630	-30025	-34065	-38780	-42190	-47708	-52326
Developing countries	37547	40840	48467	55683	77113	88800	106660
International organizations	-6842	-6540	-7137	-8082	-9566	-10309	-10806
Total	2074	4275	7265	8821	25357	30783	43528

Source: *Balance of Payments Statistics Yearbook 2006, Part 2.*

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Workers' remittances in the Spanish Balance of Payments^{1, 2}

Eduardo Rodríguez Tenés

1. Introduction

In recent years international flows of workers' remittances have been receiving growing attention, in step with their constant increase, as a stable source of financing in certain developing countries, and with their notable economic and social impact. This attention has naturally spread to the statistics that measure this type of transaction. In this respect the Balance of Payments, which records real and financial transactions between an economy's residents (whether immigrants or not) and non-residents, is a fundamental point of reference for quantifying remittances. Nonetheless, the information on workers' remittances in the Balance of Payments is not free from limitations.

Broadly, these limitations come to light first, on comparing the figures under the heading "Workers' remittances" in the Balance of Payments of the different countries with their main economic, financial and cultural determinants and with that of other available indicators; and further, on comparing the data of the main remittance-issuing and recipient countries. The awareness of these limitations and the growing demand for figures on workers' remittances have prompted the competent international agencies to initiate a process of revision of the conceptual framework and of the methods used to obtain the data falling under "Workers' remittances" heading.

The case of the Spanish Balance of Payments is no exception. Comparisons with other indicators of the figures from the heading "Workers' remittances", which the Balance of Payments had been including, highlighted a potential underestimation of debits and overestimation of credits in this section. These results reflect the problems of properly estimating workers' remittances using reporting systems based essentially on the filing of foreign proceeds and payments made through credit institutions and foreign accounts (the International Transactions Reporting System – ITRS). This is the procedure that has been used for the Spanish Balance of Payments and is probably the most common one used internationally. But it faces serious problems derived from the presence of exemption thresholds, which are high for the reporting of individual transactions, and from the sending via so-called remittance companies,³ or unofficial channels, of a significant proportion of the funds relating to remittances. The use of these procedures makes it difficult to capture this information and allocate it correctly, both in the related Balance of Payments heading and, geographically, according to the destination or source of the remittances.

¹ This paper summarises the work carried out by the Balance of Payments Department of the Bank of Spain during 2004, 2005 and 2006. It was written by Francisco Javier Álvarez de Pedro, María Teresa García Cid and Patrocinio Tello Casas and will be published in the July–August edition of the Economic Bulletin of the Bank of Spain.

² Contribution to the 2006 IAOS Conference, Ottawa, 6 to 8 September.

³ This article uses the term "remittance companies" to refer to authorised Money Transfer Operators. Although these establishments are regulated by and registered at the Bank of Spain, to which they regularly provide information on their operations, in other countries the lack of specific regulation places them in the realm of unofficial channels.

In Spain's case, the importance of revising calculation procedures, especially those affecting debits under this heading, was clearly apparent in view of the notable dynamism of the immigrant population in recent years and its impact on the sending of remittances. Specifically, in the period 2001–2004, the number of immigrants in Spain grew at an annual average rate of 35.3%, according to municipal census figures.

This article sets out the work undertaken to evaluate the quality of the debits figures under the Spanish Balance of Payments Workers' remittances heading and to improve the estimate thereof. First, an estimate is made of the maximum flow of remittances abroad (potential remittances). Second, following the analysis of the procedures used by different countries, an alternative calculation method is described for these remittances based on a panel data econometric model which, in addition to the information from the ITRS, uses that available on the characteristics of the immigrant population and on the economies from which they have come. This new method has helped reduce the uncertainty intrinsic to estimates to date and, along with the analysis and use of other alternative information sources (information on funds channelled through Money Transfer Operators and remittance credits of the main counterpart countries), has enabled the underestimation of remittance payments from Spain in the period 2001–2004 to be corrected. In April 2006, coinciding with the revision of the figures for 2005, the data under this heading in this period were revised, entailing an increase in debits of around 20%.

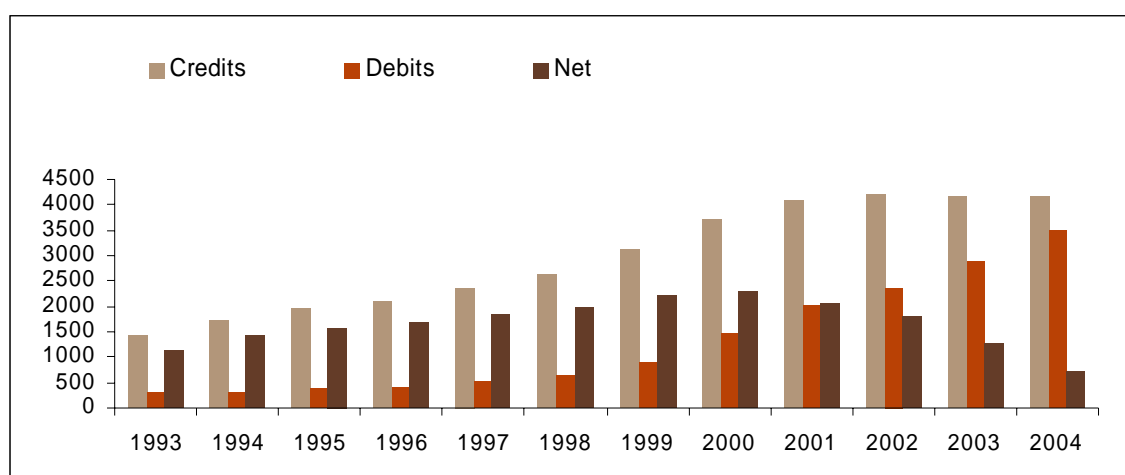
The article is structured as follows. Section 2 analyses developments in the "Workers' remittances" section in the Spanish Balance of Payments. Section 3 compares this heading with other indicators, in order to detect potential biases. Section 4 makes an estimate of the maximum flow of remittances sent abroad, drawing on the characteristics of the immigrant population in Spain. Section 5 details an alternative calculation method involving the estimation of an equation for remittances sent from Spain to the principal destinations and sets out the results obtained. Finally, section 6 draws conclusions.

2. The "Workers' remittances" section in the Balance of Payments

Prior to the April 2006 revision, the surplus in the Balance of Payments section "Workers' remittances", after holding stable at around 0.4% of GDP during the period 1993–2000, had fallen significantly in recent years, accounting for only 0.1% of GDP in 2004. The main influential factor here was the behaviour of debits. Charts 1 and 2 show that, until 1999, both debits and credits trended similarly, their weight in terms of GDP holding up, whereas thereafter debits increased significantly and credits, by contrast, did so at a much more moderate rate.

Chart 1
Workers' remittances. Absolute figures

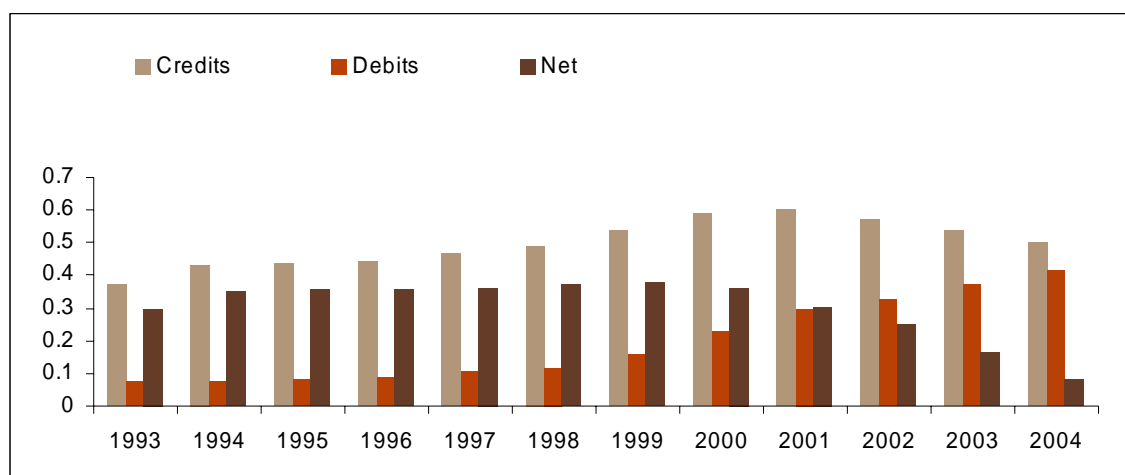
Millions of euros



Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

Chart 2
Workers' remittances. Weight in GDP

Percentage



Sources: Bank of Spain and INE (Instituto Nacional de Estadística). Data prior to the April 2006 revision of remittance debits figures.

The differing course of credits and debits is due to the different times at which the emigration and immigration processes came about in Spain. If we focus on the second half of the 20th century, Spanish emigration can be seen to have been concentrated in the 50s and 60s, and thereafter the Spanish population resident abroad has been on a declining path⁴ (see

⁴ According to official data on migration (Anuario de Migraciones, Ministerio de Trabajo y Asuntos Sociales) and to records of residents registering with Spanish consulates, 649,039 Spaniards emigrated abroad in the 1950s, 929,662 in the 1960s, 492,991 in the 1970s, 195,944 in the 1980s, and only 27,683 in the 1990s. From 1993 to 2004, the Spanish population abroad fell from 2,327,759 to 1,497,817. The changes in the Spanish

Charts A1 and A2 in Annex A). Conversely, immigration is a relatively recent phenomenon which, in the Spanish case, and unlike other European countries, has peaked in recent years.⁵

The recent changes in migratory flows have not only affected the level of debits in the “Workers’ remittances” section, but have also thoroughly altered their geographical allocation. In 2004, using data prior to the April 2006 revision, Latin America was the destination of 50.6% of the total remittances sent from Spain, according to Balance of Payments estimates, while in 1994 only 13.7% of the total was routed to Latin American countries. These data confirm the growing significance these flows are acquiring in some countries as alternative sources of financing to other resources (e.g. direct investment or tourism). Conversely, the weight of EU Member States as recipients of remittances from Spain has diminished from 35.0% of the total to 5.1% over the same period.

Although the trends revealed by the Balance of Payments figures reflect the change in the Spanish population’s structure, the growing problems faced in properly measuring real and financial transactions by immigrants and the need for more reliable and detailed information on the phenomenon made it necessary to refine the estimation methods for the “Workers’ remittances” section, as set out below.

3. Difficulties in estimating workers’ remittances

As indicated in the previous section, before the April 2006 revision the Spanish Balance of Payments figures appeared to reflect appropriately the population changes which, as a result of migratory flows, have taken place in our country in recent years. Nonetheless, it is not clear that they reflected such changes in all their intensity. An analysis of the credits and debits recorded in this statistic and the cross-checking thereof against some of the alternative information sources available suggested that the remittance credits figure in the Spanish Balance of Payments might be overestimated while that of debits might be underestimated.

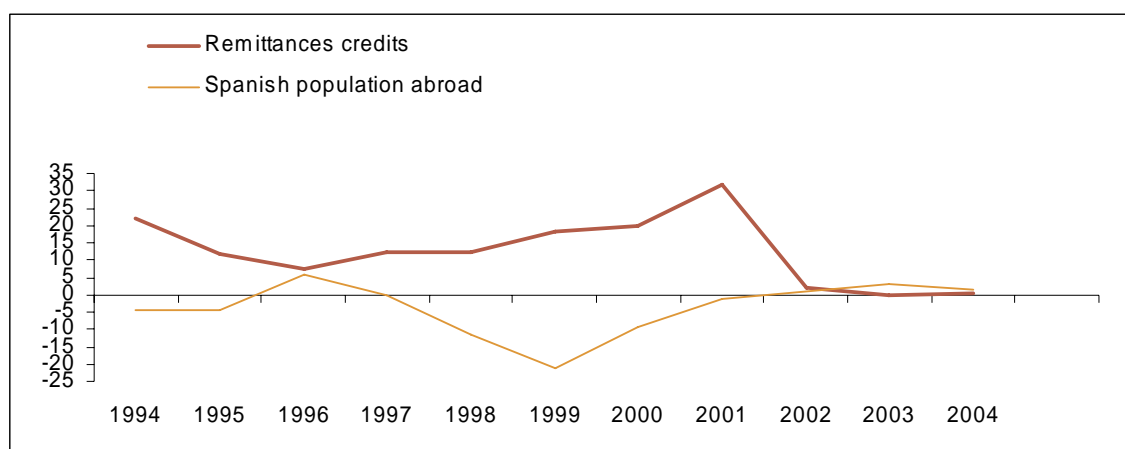
3.1 Remittance credits: available evidence

One indicator of the potential overestimation of credits is the discrepancy between the Balance of Payments remittance figures and the figures for Spaniards abroad. Chart 3 shows the growth rates of remittance credits in the Balance of Payments and of the stock of Spaniards resident abroad obtained from official consular records.

population stock abroad might be affected by the methodological change that came about in 1996 further to the creation of the Census of Spanish Residents Abroad (PERE by its Spanish name), compiled on the basis of data from consular records. The integration of the PERE information with that from the Spanish municipal censuses, and the subsequent update of the consular records, would account for the decline that these records show.

⁵ According to municipal census figures dated 1 January 2005, the foreign population as a proportion of the total population in Spain was 8.6%, compared with 2.2% in 2000. In Austria, Germany and Belgium, these percentages were already 9%, 8.8% and 9%, respectively, in 1995 (OECD, Factbook 2005).

Chart 3
**Growth rate of remittance credits
and of the Spanish population abroad**
Percentage



Sources: Bank of Spain and consular records (Ministerio de Asuntos Exteriores y Cooperación).

In the period 1994–2001, with the exception of 1996, the rate of change of the stock of Spaniards abroad was negative while that of remittance credits showed significant growth, peaking in 2001 with an annual rate of change of 31.7%.⁶ In this period, remittance credits grew at an annual average rate of 16.9%, while the related rate for the population stock was –5.7%. From 2001, both credits and the population stock tended to stabilise. Considering the entire period from 1994 to 2004, the annual average growth rate of credits was 12.5% and that of the Spanish population stock abroad was –3.6%.

A similar conclusion, i.e. that Spanish remittance credits are overestimated, is drawn in Britton, Harrison and Swanson (2004). This paper compares the credits published by Spain with an alternative estimate that considers the remittance debits published by countries in which Spanish emigrants are resident and the proportion of the Spanish population in the total immigrant population in each of them.⁷

3.2 Remittance debits: available evidence

In the case of debits, the evidence of a potential underestimation of the data would lie in the comparison with the information available on the trend and characteristics of the immigrant population in Spain, the significance of remittance credits in the Balance of Payments of the

⁶ The integration of the PERE information with that from Spanish municipal censuses, and the subsequent update of the consular records, as mentioned in footnote 3, might account for the heavy fall in the Spanish population stock from 1997, which peaked in 1999 (a decline of 21.2%).

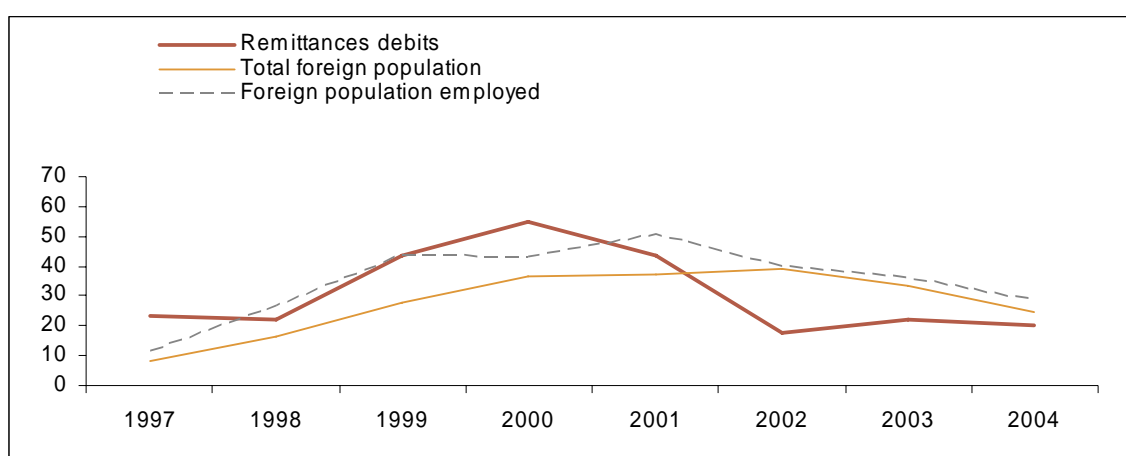
⁷ Although the paper points to an underestimation of approximately 80%, the result should be viewed with caution. Firstly, a definition of the remittances variable that includes compensation of employees is assumed. Secondly, the paper assumes that the average remittance sent by emigrants in a country is the same irrespective of their nationality. Further, the result might be affected by the underestimation of the debits published by the counterpart countries.

recipient countries of funds sent from Spain and the transfers abroad via remittance companies.⁸

3.2.1 Remittance debits and characteristics of the immigrant population

Chart 4 shows the growth rates of Balance of Payments remittances and of the total and employed foreign population resident in Spain⁹ for the period 1997–2004. The population figures were obtained from the EPA 2005¹⁰ (the new Spanish Labour Force Survey).

Chart 4
**Growth rate of remittance debits,
 total foreign population
 and foreign population employed in Spain**
 Percentage



Sources: Bank of Spain and INE (Instituto Nacional de Estadística). Data prior to the April 2006 revision of remittance debits figures.

According to this chart, two different periods can be distinguished. In the first period (from 1997 to 2001), remittance debits show higher growth rates than those of the foreign population, while in the second period, the latter exceed the former. In this second period, which runs from 2001 to 2004, the average growth rates of Balance of Payments remittance debits, total foreign population and employed foreign population are 25.8%, 33.5% and 38.5%, respectively. The widening gap in recent years between the dynamism of debits and the foreign (total and employed) population was an indicator of the likely underestimation in the Balance of Payments of funds sent abroad by foreign workers resident in Spain.

⁸ As previously indicated (see footnote 1), Money Transfer Operators provide information to the Bank of Spain Financial Reporting and Central Credit Register System Department on their transfer operations.

⁹ Only the population considered as foreign in the EPA is considered; the population with dual nationality is excluded. In the period 1996–2004, the segment of the population with dual nationality accounted for an average percentage of 13% of the total foreign population, with a gradual loss in weight from 1997. Specifically, this population segment accounted for 7% of the total in 2004.

¹⁰ The EPA 2005 shows revised data on the total and employed foreign population for the period 1996–2004. For a detailed description of the methodological changes and the main findings of this survey, see Quarterly Report on the Spanish Economy (Banco de España (2005a)).

The significance of immigration, which is reflected by the 2005 EPA for recent years, is also evident in the other available information sources: the 2001 census (and its projections for the years 2002–2004), the municipal census and the DGP (Directorate General of Police) records of foreigners resident in Spain, as can be seen in Table 1.

Table 1
**Stock of foreign population in Spain
according to the 2005 EPA, the 2001 census and the DGP records**

	2005 EPA	2001 census	Municipal census	DGP
1996	400,150	–	542,314	540,649
1997	434,300	–	n.a.	611,697
1998	505,375	–	678,366	719,647
1999	645,200	–	748,953	801,329
2000	880,125	–	923,879	895,720
2001	1,207,075	1,548,941	1,370,657	1,109,060
2002	1,682,350	2,163,214	1,977,946	1,324,001
2003	2,241,325	2,728,240	2,664,168	1,647,011
2004	2,789,675	3,196,784	3,034,326	1,981,933

Sources: INE and DGP, Ministerio del Interior.

3.2.2 Remittance debits set against recipient countries' credits

The moderate growth of remittance debits in the Spanish Balance of Payments from 2001 contrasted with the growing significance that the corresponding credits in the recipient economies have acquired. Table 2 shows the percentage of GDP accounted for by remittance credits in the Balance of Payments of the most significant countries from Spain's standpoint, both in terms of the weight of the total transfers sent abroad to these countries, and of the significance of the population from these countries as a proportion of the immigrants resident in Spain.¹¹

¹¹ The increase in the Dominican Republic's figures for 2003 is affected by the strong fall in GDP expressed in dollars for this country (25.5% in relation to 2002).

Table 2

**Weight in GDP of the remittance credits
of Spain's main counterpart countries**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Colombia	1.2%	0.9%	0.8%	0.7%	0.8%	1.5%	1.9%	2.3%	2.9%	3.9%	3.4%
Ecuador	1.5%	1.9%	2.3%	2.7%	3.4%	6.5%	8.3%	6.7%	5.9%	5.7%	5.4%
Bolivia	0.0%	0.0%	0.0%	0.9%	0.8%	0.9%	1.2%	1.3%	1.0%	1.3%	1.3%
Peru	1.1%	1.1%	1.1%	1.1%	1.1%	1.3%	1.4%	1.4%	1.3%	1.4%	1.5%
Dominican Republic	7.0%	6.6%	6.7%	7.2%	8.3%	8.6%	8.4%	8.2%	9.0%	14.2%	13.9%
Morocco	6.0%	6.0%	5.9%	5.7%	5.6%	5.5%	6.5%	9.6%	8.0%	8.2%	8.7%

Sources: IMF and IDB.

On the basis of the difference between the total debits recorded by Spain and the credits of the recipient countries, and of the percentage of total emigrants from these countries residing in Spain, a measure was obtained of the degree of underestimation of the Spanish Balance of Payments figures, which might stand between 15% and 20%. Table A1 of Annex A details these differences for some of the main recipient countries of remittances sent from Spain.

3.2.3 Remittances and transfers abroad through Money Transfer Operators (remittance companies)

Before the April 2006 revision, the Spanish Balance of Payments figures were very similar to those reported by remittance companies in respect of their transfers abroad: €3,481 million euro and €3,424 million euro in 2004, respectively. Bearing in mind that immigrants claimed to make 80% of their total remittances through these remittance companies,¹² a degree of underestimation of debits recorded in the Balance of Payments on the order of 20% might be inferred, a percentage similar to that obtained from the comparison with the credits published by the main counterpart countries.

The data from these establishments offer valuable information on the countries that receive the remittances, which does not match that provided by the geographical breakdown of the data that were included in the Balance of Payments. Table 3 shows the amount of transfers sent to the main counterpart countries according to the remittance companies for 2004 (Table A2 in Annex A includes the data for 2003).

¹² Evidence in this connection is provided by the study by CECA (Spanish Savings Bank Confederation) on remittances sent by Latin American emigrants resident in Spain to their home countries.

Table 3

**Comparison of the geographical breakdown
(absolute and percentage of total world transfers)
according to the Balance of Payments (BP)
and the figures from remittance companies, 2004**

	Remittance companies	BP	% remittance companies	% BP
Argentina	46.22	13.60	1.35	0.39
Bolivia	187.31	177.56	5.47	5.10
Brazil	153.68	10.53	4.49	0.30
Colombia	729.58	766.75	21.31	22.03
Ecuador	770.19	664.22	22.49	19.08
Peru	81.90	87.61	2.39	2.52
Dominican Rep.	165.27	86.70	4.83	2.49
Philippines	75.57	55.89	2.21	1.61
Morocco	210.65	75.61	6.15	2.17
United States	4.77	1160.41	0.14	33.34
Romania	192.51	38.17	5.62	1.10
Bulgaria	12.84	3.86	0.38	0.11
% of total			76.83	90.23

Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

One notable feature of this comparison is that while the sending of remittances to the United States accounted for a very significant proportion of total debits in the Balance of Payments (33.3%), their weight in the total transfers by remittance companies was negligible (0.14%). Conversely, for the Latin American and Eastern European countries, the figures in the Balance of Payments were, in most cases, lower than those relating to the remittance companies. These differences highlight the different geographical allocation criteria used in the Balance of Payments and remittance company figures. The fact that the Balance of Payments should use the information on the related payments between residents and non-residents made through Spanish banks (ITRS figures) meant that in some cases their reported geographical distribution did not properly reflect the country that was the final destination of the funds. This occurs when intermediaries resident in third countries intervene in the settlement of the transactions, a particularly significant aspect in the case of remittances routed via agents of the major international money-transfer networks. In these cases, the transfers through which the remittance companies settle their transactions go to the head offices of these networks, often resident in the United States, and not the final recipients of the remittances. This would explain the overestimation of the weight of remittances sent to the United States according to the Balance of Payments figures, before they were revised, which was offset by smaller amounts for the other destinations.

To illustrate this point, Table 4 shows the growth rates of Balance of Payments remittances, before the April 2006 revision, and of the foreign population stock in Spain in the case of the

EU, the United States and Latin America. As can be seen, except for 1998, 2002 and 2004,¹³ remittances sent to EU countries posted negative growth rates, while the foreign population stock grew at an average rate of 10.6%. In the case of the United States, although the US foreign population stock grew at a lower rate than that of the EU countries, remittances did so at much higher rates (30.9% on average for the period considered). Finally, high growth rates were recorded in the case of Latin America both for remittances and for the foreign population stock, especially in the period 1997–2003.

Table 4
**Growth rates of remittance debits
and of the foreign population stock by area**

	EU		United States		Latin America	
	Remittance	Population	Remittance	Population	Remittance	Population
1994	-12.12	9.23	37.10	1.38	13.12	7.65
1995	-7.6	6.71	56.91	2.48	-12.97	5.96
1996	-9.01	11.01	46.64	-7.60	-13.79	5.04
1997	-12.57	-2.87	18.74	-20.40	122.62	14.83
1998	28.01	12.55	15.54	16.62	58.91	10.89
1999	-3.33	20.41	50.64	12.79	74.51	11.86
2000	-0.36	8.47	74.05	9.14	66.17	36.29
2001	-31.73	10.02	25.93	11.05	87.75	123.58
2002	203.12	15.93	-27.56	14.26	62.65	77.44
2003	-50.24	18.24	25.63	17.31	29.99	43.41
2004	73.92	7.32	16.75	-22.37	9.03	20.49
Average	16.19	10.64	30.94	3.15	45.27	32.44

Sources: Bank of Spain and INE. Data prior to the April 2006 revision of remittance debits figures.

The basic conclusion of this analysis is that the high growth rates of remittances to the United States did not match the growth rates of the foreign resident population in Spain of US nationals. As earlier indicated, this distortion is due to the fact that, in many cases, the Balance of Payments would assign transactions to the country of residence of the intermediary through which the funds were routed and not to the final destination of the remittances.

3.3 Calculation procedures for remittance debits in the Spanish Balance of Payments: limitations of the reporting system

The analysis set out in the foregoing paragraphs highlights the limitations of the reporting system used, until the April 2006 revision, for estimating remittances in the Spanish Balance of Payments. As indicated, this system was essentially based on the ITRS figures, mainly payments made via Spanish resident banks. The first of these limitations, and probably the

¹³ In 2002, an exceptionally high figure for remittance debits was recorded in the case of Germany.

most important one in view of the correct measurement of remittances, is the existence of high minimum thresholds for the reporting of individual transactions (€12,500 since January 2001 and €3,005 before then). These thresholds particularly affect the figures under the “Workers’ remittances” heading owing to the habitually small amounts characterising this kind of transaction.¹⁴ In addition, attention should also be paid to the influence exerted by the frequent use of alternative systems to deposit institutions, such as remittance companies or informal channels (direct delivery of banknotes, remittances in kind, etc.), to route remittances. In Spain’s case, this influence is by no means negligible, given the low degree of financial integration that is still the case for immigrants. The use of these alternative systems affected the Balance of Payments figures in a different way.

As regards the use of remittance companies, their transactions were indeed captured indirectly by the reporting system, since these establishments periodically settle with their correspondents, or with the clearing centres of the international money-transfer networks, the remittances that they channel. Such settlement, in which resident banks normally intervene, is recorded in the ITRS in net terms,¹⁵ albeit with the aforementioned problems regarding geographical allocation. Conversely, in the case of remittances sent through informal channels, no estimation as to their amount is currently available.¹⁶

Finally, the possibility should be highlighted that, even if all transactions with non-residents (residents) conducted by an immigrant (emigrant) were recorded, it would be difficult to ensure that these had been correctly allocated to the various Balance of Payments headings.¹⁷ This essentially affects the sections “Workers’ remittances”, “Compensation of employees”, “Capital transfers” and “Other current transfers”.

In sum, the presence of high reporting thresholds and the routing of transactions through remittance companies and informal channels entails a weakening of the relationship between remittance debits and their demographic, economic and financial determinants; accordingly, while hampering their detection by the reporting system used by the Spanish Balance of Payments, this bears on the geographical allocation of remittance debits (see section 3.2.3 above) and on the incorrect recording of these transactions.¹⁸ Thus, bearing in mind the direction and intensity of the migratory movements in Spain in recent years, the need to revise the procedure for calculating debits under this heading became patent.

¹⁴ Reporting institutions communicate the total of the amount of transactions below the threshold, without specifying in which connection they are made. The distribution of these below-threshold amounts among the different Balance of Payments headings is estimated taking into account, as the main indicator, that relating to transactions of immediately higher amounts. This distribution system significantly affects remittance credits.

¹⁵ The ITRS figures collect the net amount of transfers issued and received, although the amount of the latter is small in Spain’s case.

¹⁶ According to Puri and Ritzema (1999), for certain Asian and African countries, and in relation to different periods in the 80s and early 90s, the routing of remittances through informal channels would account for between 10% and 55% of the total sent. In a more recent paper, Freund and Spatafora (2005), using a model estimated for the period 1995–2003 and for a group of 104 countries, estimate that remittances sent through informal channels account for between 35% and 75% of total remittances sent to developing countries. Moreover, in keeping with the evidence shown by surveys conducted in some developing countries, significant differences between regions are observed regarding the proportion of informal remittances to total remittances. Specifically, it seems that the significance of remittances through informal channels is greater in the case of sub-Saharan Africa, Eastern Europe and Central Asia, with such remittances proving less substantial in the case of Latin America and the Caribbean and East Asia.

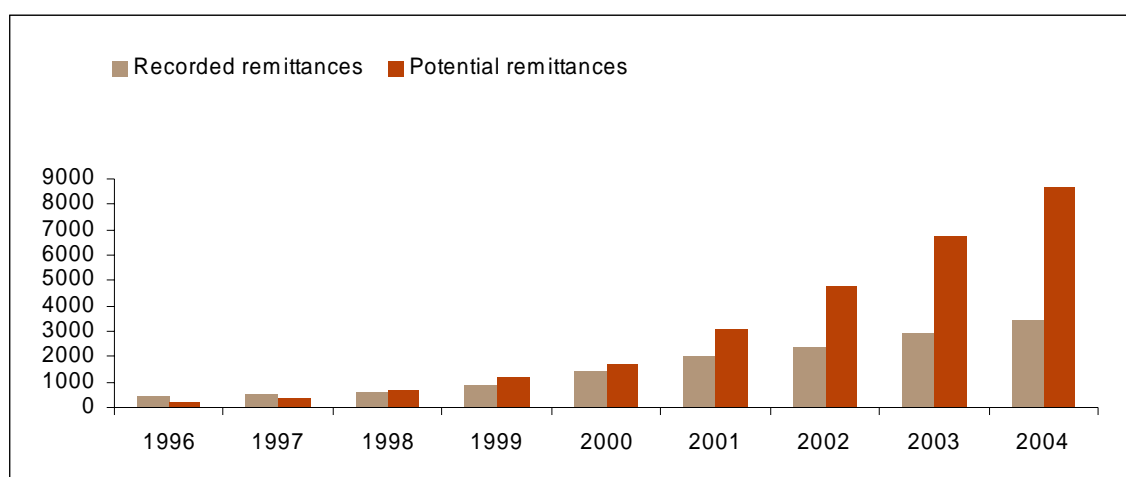
¹⁷ For example, transactions that should be recorded as “Other current transfers” might be recorded under “Workers’ remittances”. This might be the case for pensions received by Spanish retirees resident in Latin America from the Spanish social security system.

¹⁸ In principle, it is to be expected that while the effect of transfers by remittance companies would be more significant in the case of immigrants from countries at a greater distance in miles from Spain, the resort to unofficial channels would be greater in the case of immigrants from countries geographically closer to Spain.

4. Estimation of potential remittances sent abroad

In order to quantify the underestimation of Balance of Payments remittance debits, the maximum flow of remittances that foreign workers resident in Spain could send to their home countries was first estimated, as described in this section. Hereafter, this estimation is called “potential remittances”. Potential remittances are defined as the income available to immigrants once current expenditure and social security contributions have been deducted.¹⁹ To calculate total potential remittances, we take into account fundamentally changes in the foreign population in Spain²⁰ and its characteristics, using as basic information sources the new EPA 2005, and data from the Household Expenditure Survey and the Quarterly Labour Costs Survey. Chart 5 shows, for the period 1996–2004, changes in Balance of Payments remittance debits and those in estimated potential remittances. As can be seen, and except for 1996 and 1997, potential remittances exceed debits. Further, this difference increases progressively over the years coinciding with the increase in the immigrant population. In particular, for 2004, an estimation of potential remittances of €8,710 million is obtained, compared with €3,481 million of remittances recorded in the Balance of Payments. These data would indicate that immigrants were, on average and from 2001 to 2004, transferring 49% of the maximum amount (potential remittance) that they could send to their home countries. This percentage fell to 40% in 2004.

Chart 5
Recorded remittances and potential remittances
Millions of euros



Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

¹⁹ The basic outline of the exercise for estimating potential remittances is included in The Spanish Balance of Payments and International Investment Position, Banco de España (2003).

²⁰ This exercise for calculating potential remittances considered the population classified as foreign in the EPA, excluding the population with dual nationality. One problem with the classification of dual nationality is the absence of a breakdown by geographical area. In another exercise not included in the article, individuals with dual nationality were considered, being assigned by area on the basis of their distribution for the group of foreigners. The results of this exercise in terms of the trend of potential remittances were similar to those set out in this article, with estimated potential remittances somewhat higher than those obtained considering only the group of foreigners.

Table 5 compares the estimation of potential remittances obtained from the information provided by the EPA with that stemming from the use of the foreign population figures provided by the aforementioned alternative information sources (census, municipal census²¹ and DGP figures on foreigners). Although the figures for potential remittances obtained from the municipal census show the same trend as those of the EPA, the estimated level of potential remittances for each year is somewhat lower.²² Note that the potential remittance estimated using the 2001 census gives a closer value to the remittances estimated using the EPA 2005 than to the potential remittances estimated using the municipal census.

Table 5
**Comparison of potential remittances
and Balance of Payments (BP) remittances**

€m	1996	1997	1998	1999	2000	2001	2002	2003	2004
Potential remittances EPA 2005	245.67	348.16	656.13	1198.73	1728.79	3095.80	4807.14	6741.57	8709.74
Potential remittances municipal census	168.30	330.60	690.11	1040.75	1215.35	2466.50	3992.83	6172.95	7376.33
Potential remittances 2001 census	–	–	–	–	–	2912.71	–	–	–
BP remittances	420.98	519.96	634.36	910.15	1445.83	2019.09	2371.03	2895.38	3481.05
% maximum BP underestimation in relation to:									
Potential remittances EPA 2005	–0.71	–0.69	3.32	24.07	16.37	34.78	50.68	57.05	60.00
Potential remittances municipal census	–0.60	–0.36	8.08	12.55	–18.96	18.14	40.62	53.10	52.80

Sources: Bank of Spain and INE. Data prior to the April 2006 revision of remittance debits figures.

Although the analysis of potential remittances provides the maximum theoretical amount that such transactions could reach, as well as an indication of the underestimation of debits under the Balance of Payments heading “Workers’ remittances”, this exercise does not allow the true degree of this underestimation to be quantified. To do this it would be necessary to know

²¹ In the case of the municipal census, the employed population figures would be obtained by applying the participation and unemployment rates calculated using the new EPA.

²² The greater potential remittances obtained using the population data from the EPA rather than from the municipal census is a result of the bigger employed foreign population/total foreign population ratio obtained using the EPA instead of the municipal census.

the propensity of each group to send remittances, and this information is not currently available in Spain.

5. Estimation of an equation for actual remittances sent from Spain

In order to obtain an accurate measure of the degree of underestimation, a panel data econometric model was estimated for the variable of remittances sent from Spain to other countries on the basis of the variables which, according to the literature on remittances, are their main determinants (World Bank (2005), Bougha-Hagbe (2004), Brown (1997), Chami, Fullenkamp and Jahjah (2003), El-Sakka and McNabb (1999), Solimano (2003) and Wahba (1991)). One significant difference between this exercise and the papers mentioned is that the dependent variable is not defined in terms of the remittance credits of the recipient countries, but in terms of the remittances sent from the issuer country (in our case Spain).²³ The primary aim of the exercise is to establish what the fundamental determinants are of remittances to the different countries. The second aim is to use the model, devised with data from the period 1993–2000, to make projections of the remittances figure during the period 2001–2004.²⁴ The basic equation considered is defined by:²⁵

$$r_{it} = \alpha_i + \beta'z_{it} + v_{it} \quad i=1, \dots, N; \quad t=1, \dots, T \quad (1)$$

where r_{it} denotes the logarithm of the remittance debits²⁶ recorded in the Spanish Balance of Payments in year t made by immigrants from counterpart country i , α_i is a specific effect relating to country i and z_{it} is a vector of explanatory variables.

As regards the selection of the model's explanatory variables, the guidelines of the literature on remittances that analyses the fundamental determinants for the sending of these transfers²⁷ have been followed. An initial approach in this literature establishes that remittances are sent by immigrants in response to altruistic motives. Under this approach, remittances reflect the immigrants' concern for the welfare of their family in the country of origin. Altruistic motivation has been considered as a determinant of so-called fixed remittances (a minimum amount that immigrants send to their family to meet their basic needs). As explanatory variables related to this altruistic motivation, the literature mentions the economic situation in the immigrants' home country, the income differential between the

²³ One exception would be the paper by Faini (1994), which analyses the determinants of remittance payments by various groups of immigrants resident in Germany. In the literature on remittances, the dependent variable is often defined by the proportion accounted for by remittance credits in each country's GDP. Along these lines, in a specification not included in the text, the percentage accounted for by remittance payments from Spain in each country's GDP was considered as a dependent variable.

²⁴ The choice of estimation period was in response both to the fact that the minimum reporting threshold for foreign proceeds and payments transactions was raised (in January 2001), with a subsequent loss of information deriving therefrom, and to the fact that from 2001 the correlation between the Balance of Payments data obtained from the habitual calculation procedure and those derived on the basis of the characteristics of the immigrant population lessened.

²⁵ The estimated equation can be deduced from a specification for total remittances sent that is defined by: Total remittances = Average remittance sent by immigrant * Number of immigrants. Taking logarithms in the specification and formulating a model for the average remittance per immigrant in terms of explanatory variables and of specific country effects gives equation (1).

²⁶ Remittance debits in euros deflated using the base 1992 Consumer Price Index (CPI) are considered.

²⁷ Another important branch of the literature on remittances analyses the effects that remittances have on the economy of the recipient country. It highlights the role played by these funds in supplementing national saving and as a source of external financing.

home and host countries, and demographic variables, such as the foreign population stock and the average time that the immigrant has been in the country of residence. Regarding this latter variable, one of the predictions of the altruistic approach is that the remittances sent to the home country will diminish as the time that immigrants stay in their new country of residence increases and the ties to the country of origin weaken. In an attempt to capture the altruistic motive, the model considers as explanatory variables the logarithm of the ratio of Spanish per capita GDP to that of the country of origin (adjusted by each currency's purchasing power parity), the growth rate of GDP in the immigrant's home country and the average duration of stay in Spain, all such variables being for immigrants from different geographical areas.²⁸

A second approach of the literature analyses remittances from the perspective of the family (Lucas and Stark (1985)). Here, remittances are in response to an implicit contract between the immigrant and the family that stays in the country of origin. The contract may have an intertemporal perspective and investment and compensation components. The investment component refers to the fact that the family decides to meet the costs of the immigrant's education in the country of origin and, in some cases, to finance the cost of the change of residence (transport costs and initial subsistence costs in the host country). The compensation component is defined by the remittances that the immigrant sends once he/she is established in the host country as compensation for the investment made earlier by his/her family.

A variation on this theme of the implicit contract described in the previous paragraph refers to the concept of risk diversification. Under the assumption that economic risk in the home and host countries is negatively correlated, and assuming the existence of incomplete financial markets and liquidity constraints in the immigrant's home country, a risk diversification strategy for the family consists of promoting the emigration of one of its members. Under this approach, the immigrant can finance the family at times of economic crisis in the home country. Likewise, the fact that the family remains in the home country is an insurance policy for the immigrant at times of economic crisis in the host country. This motivation behind the sending of remittances is included in the equation through the variables that reflect both the altruistic and the investment approaches.

Finally, another approach in the theory of remittances establishes that they are due to an economic or investment concern on the part of the immigrant (portfolio approach). Under this approach, the immigrant saves and sets aside a proportion of saving to invest in the home country (Faini (1994), Glytsos (1988) and Straubhaar (1986)). In making this investment decision the immigrant takes into account the interest rate differential and the expectations regarding future movements in the exchange rate.²⁹ The explanatory variables relating to the investment motive that are considered are the interest rate differential between the immigrant's home country and Spain and the logarithm of the exchange rate of the home country's currency against the euro.³⁰ Regarding the interest rate differential, the theory predicts that the remittances sent will be bigger the greater the interest rate differential between deposits in the currency of the country to which the funds are sent and deposits in the currency of the immigrant's host country. As to the exchange rate variable, the theory's prediction is ambiguous since the total effect of a depreciation of the immigrant's home country's currency is the sum of a substitution effect and of an income effect. On the one

²⁸ Annex B includes a full description of the variables and data sources used.

²⁹ The exchange rate is a variable that is also related to the altruistic motive owing to its effect on the purchasing power of the recipient of the remittance expressed in the currency of the country in which the immigrant resides.

³⁰ Given the characteristics of the immigrant population in Spain, it is to be assumed that investment-motive remittances are sent essentially to their respective home countries.

hand, there is a negative substitution effect induced by the fact that, with the depreciation, goods in the immigrant's home country are cheaper expressed in the currency of his/her new country of residence, and therefore, he/she needs to transfer less income to finance the purchase of a given quantity of goods in the home country. On the other hand, there is a positive income effect arising from the fact that, with a depreciation, the immigrant's purchasing power measured in the currency of his home country is greater, meaning that the remittance sent increases. Finally, a variable of the business cycle in the emigrant's country of residence, which is defined by the growth rate of GDP in Spain,³¹ is considered as an explanatory variable.

A key feature of the findings of the exercise, in the different models estimated and in relation to the predictions of the theory of remittances, is that while the variables related to income differences between countries and demographic variables have, in general, turned out to be significant in the estimates for developing countries, the financial variables relating to the investment motive turned out to be negligible or insignificant for these countries; however, on occasion they were significant in the estimates obtained for the developed countries.

The estimation was made separately for three groups of countries: a) Latin American, African and Asian countries, b) Eastern European countries and c) EU countries and the United States.³² The countries selected cover a significant proportion of the total remittance payments from Spain during the period considered.³³ The separate estimation by group of countries is in response to the fact that the motivations for sending remittances may differ among immigrants from different geographical areas. In particular, bearing in mind the income differences between Spain and some Latin American, African and Asian countries, the altruistic and contractual motives will conceivably be important when explaining the remittances sent by immigrants from these countries. Conversely, in the case of immigrants from EU countries and the United States, the investment motive may be more important than the altruistic motive.

A summary description follows of the key results of the estimation of different specifications of the immigrants' remittances equation (model 1, model 2, model 3 and model 4).

The following table shows two alternative estimations of the remittances equation for the group of Latin American, African and Asian countries for the 1993–2000 period (model 1). As indicated earlier, the period considered for estimating the model does not run beyond 2000 for two reasons. The first is the raising of the minimum reporting threshold for individual transactions in 2001, and the second the lesser correlation between the Balance of Payments data on remittance debits obtained using the habitual procedure and the characteristics of the immigrant population in Spain as from that year. The second column

³¹ Other variables considered in the estimations are the inflation rate in the immigrant's country of origin, the female participation rate in the country of origin, the local currency/euro real exchange rate and a political freedom index. While the first three variables proved relatively insignificant, the political freedom index was in fact significant and with a negative sign, but the result it gave was different from what was expected. All the indications are that the variable considered is not properly capturing the characteristic it is sought to reflect. Accordingly, and given that the predictive results of the model do not change to any great extent when this variable is included, it is deemed preferable to set out the results of the estimation without including it and to undertake a more detailed analysis of the matter in the future.

³² Latin America (Argentina, Bolivia, Colombia, Ecuador, Brazil, Mexico, Peru, Dominican Republic and Venezuela), Africa and Asia (Morocco and the Philippines), the United States, the EU 15 (Germany, Portugal, United Kingdom and France) and Eastern Europe (Romania, Poland, Bulgaria and Russia).

³³ Specifically, the remittance debits recorded in the Balance of Payments, those intended for the countries considered in the estimation, account for 73.9% of debits in 1993 and 95% in 2004. As to the percentage accounted for by the population of these countries in the total foreign population stock, municipal census figures show that the population of these countries represented 61.4% of the total population in 2003 and 74.4% in 2004.

contains ordinary least squares (OLS) estimations of the remittances equation, including the aforementioned main explanatory variables of remittances.

Table 6
Estimation model 1, 1993–2000

Variable	OLS	t-ratio	OLS with country effects	t-ratio
lstock	0.5478	4.52	1.5937	9.18
lratiopib	1.0578	3.15	–	–
pibesp	0.1607	2.64	0.1362	2.73
pibext	–0.0172	–0.66	–0.0329	–1.49
estancia	–0.7237	–3.15	–	–
difint	–0.0000	–0.14	–	–
tipcam	0.0213	0.47	–0.6111	–3.44
R2	0.687		0.994	

Note: The fourth column includes OLS estimates with country effects (0–1 dummy variables for each country) interacting with the logarithm variable of the population stock. The dependent variable is the logarithm of real remittance debits. The variable *lstock* denotes the logarithm of the foreign population stock, the variable *lratiopib* denotes the logarithm of the ratio of Spanish per capita GDP to that of the immigrant's home country (with a PPP adjustment), the variables *pibesp* and *pibext* denote the real growth rates of GDP in Spain and in the immigrant's home country. The variable *estancia* is the average time the immigrant stays in the host country. The variable *difint* is the nominal interest rate differential between the home country and Spain, and *tipcam* denotes the logarithm of the home-country currency/euro exchange rate. The variable *lstock* in the second column refers to the interaction between the foreign population stock and a 0–1 dummy variable for Ecuador.

Source: Bank of Spain.

In general, the OLS estimations present the expected signs with a greater level of significance of the variables related to the altruistic motive. The remittances sent to other countries depend positively on the logarithm of the foreign population stock (*lstock*), on the difference in GDP per capita between Spain and the immigrant's home country (*lratiopib*) and on the growth rate of Spanish GDP (*pibesp*), albeit with a lower level of significance for the latter. However, there is negative dependence regarding the average stay by the immigrant (*estancia*). The explanatory variables related to remittances responding to the investment motive are not statistically significant.

A problem with OLS estimation is that it assumes there is no heterogeneity between countries, either in the average of the equation or on the effect of specific explanatory variables on remittances sent. For example, it is assumed that the marginal effect of an increase in the number of immigrants of a specific nationality on remittances sent is the same irrespective of the nationality in question. In practice, it is to be expected that these effects will change significantly from one nationality to another, owing for instance to human capital differences among the immigrants arriving in Spain. To control for this, consideration has been given to an alternative specification which introduces interactions between the logarithm of the foreign population stock and 0–1 dummy variables for each country

considered in the estimation.³⁴ The fourth column of Table 6 shows the results of this estimation.³⁵ It can be seen that the explanatory power of the equation (measured by the R^2 ratio of the model) increases by means of the inclusion of the aforementioned interactions. The remittances sent depend positively on the foreign population stock, on the Spanish GDP growth rate and, negatively, on the local currency/euro exchange rate. Moreover, the growth rate of GDP in the immigrant's home country,³⁶ which was not previously significant, is now marginally so. The negative sign of this variable suggests that remittances sent increase when the growth rate of the home country is lower. Lastly, the coefficients relating to interactions of the population variable with country effects show some cross-country heterogeneity.³⁷

Along these same lines, an estimation (models 2 and 3, included in Annex D) has been made of the remittances equation for the group of EU countries and the United States, and for the group of Eastern European countries. In these areas, some of the variables lose their level of significance. In the case of the EU countries and the United States, there is a positive relationship between remittances sent and the interest rate differential between the home country and Spain. This effect might suggest an investment motive in the sending of remittances. In the case of the estimation for Eastern European countries, there is a positive relationship between remittances sent and two other variables, the foreign population stock and the interest rate differential, while the variables proxying the altruistic effect did not only not prove significant but had, on occasion, a sign contrary to what the theory predicts. Behind this result might be a greater resort to unofficial channels for sending remittances than in other countries, aided by greater geographical proximity.

Chart 6 compares the Balance of Payments figure for nominal remittances for the three groups of countries considered as a whole, with the fit (for the period 1993–2000) and the projection (for the period 2001–2004) for the remittance debits obtained using the different models estimated by area. The models that finally appeared most suitable for obtaining the projections are those that include interactions of country effects and of the population variable, since they achieve a better fit of the remittances equation in the estimation period. In terms of the projection of the model for the period 2001–2004, the result is an average underestimation of debits of around 10% for this period.

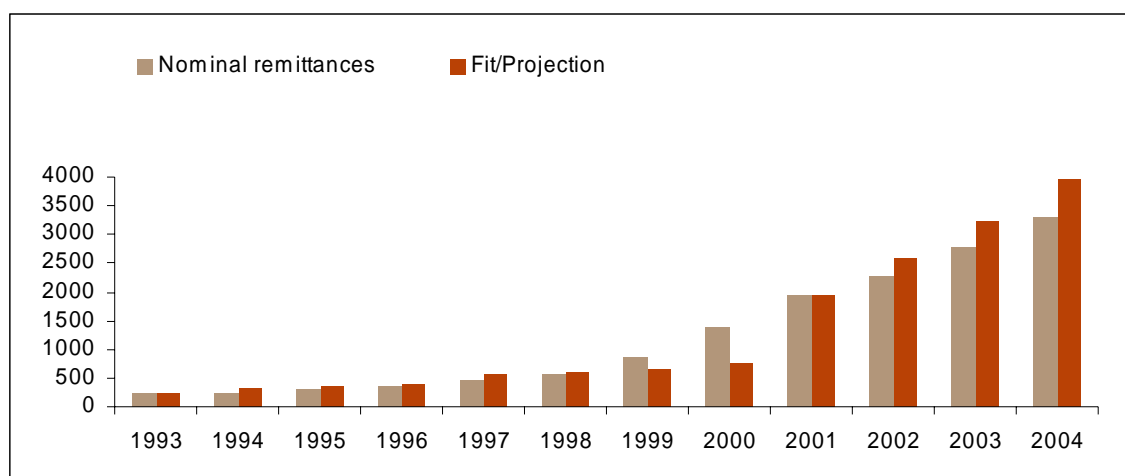
³⁴ For a treatment of the estimation of the panel data models with fixed effects, see Arellano (2003) and Hausman and Taylor (1982).

³⁵ Table 6 only shows the final specification with the significant variables which will be used subsequently in the forecasting exercise. In practice, other alternative specifications were also considered. An initial specification included 0–1 dummy variables for each country in the remittances equation, although the fit of the model was inferior. A second specification included a lag of the dependent variable in the model. The lag proved significant, capturing part of the effect of the foreign population stock which was also a significant variable. The predictions of this specification did not change appreciably from that which was finally considered.

³⁶ Some studies mention the possibility of the GDP growth rate in the immigrant's home country being an endogenous variable. A Hausman exogeneity test, which compares the estimation made with an estimation of instrumental variables (using a lag of the GDP growth rate as an instrument), does not reject the hypothesis of exogeneity of this variable. Specifically, the value of the statistical test is 1.09 for a JI-square with 14 degrees of freedom.

³⁷ In particular, the countries with the highest coefficient for the logarithm variable of the population stock (greater elasticity of remittances sent to the foreign population stock) are Mexico (1.094), the Philippines (1.178), Colombia (1.327) and Ecuador (1.594), while those with a lower coefficient (less elasticity of remittances sent to the foreign population stock) are Morocco (0.874), Argentina (0.783) and Bolivia (0.778).

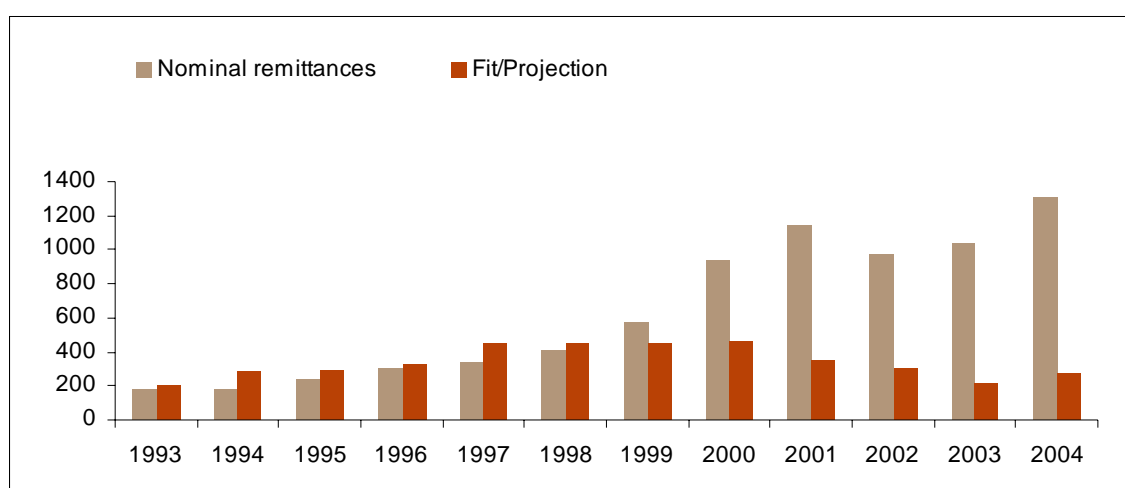
Chart 6
Fit and projection of models 1–3 (millions of euros)



Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

It should be stressed that the coefficients estimated for the explanatory variables of the foregoing model might be affected by the fact that a significant portion of remittances is routed through remittance companies, whose settlement centres are resident in the United States. This flow of remittances, as discussed in section 3, was allocated to the United States as the counterpart country, although its final destination was other countries. The result was a debits figure recorded vis-à-vis the United States that was far higher than the prediction in the model, formulated on the basis of their demographic, economic and financial determinants. This is clearly reflected in Chart 7, which compares the remittances recorded and the projection of remittances in model 2 relating to the EU countries and the United States. As can be seen, the basic result is that the determinants of remittances in the developed countries predict far fewer remittances from Spain in the period 2001–2004.

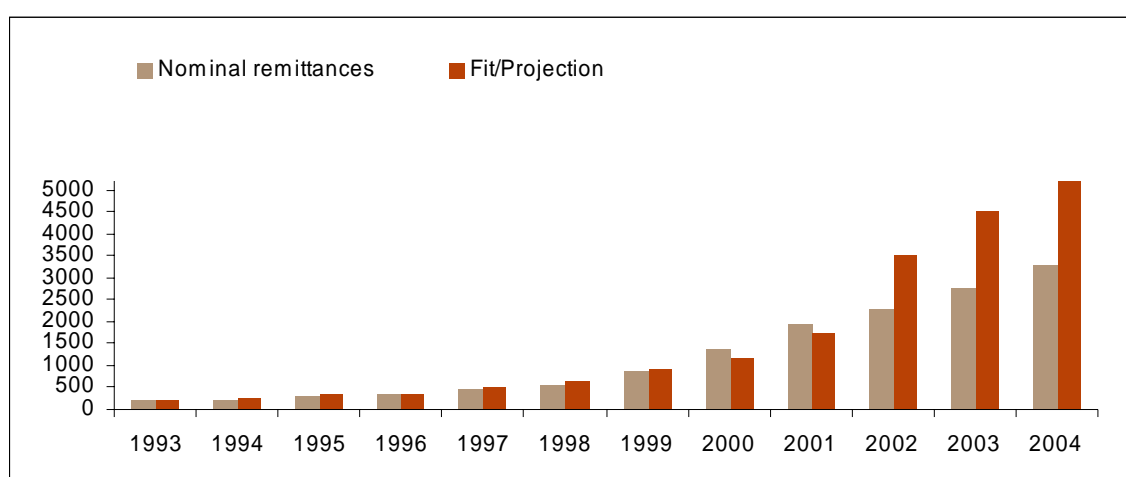
Chart 7
Fit and projection of model 2 (millions of euros)



Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

So as to control the effects that remittances to the United States recorded in the Balance of Payments may be introducing into the estimation of the potential overvaluation, an alternative estimation exercise has been conducted. Given the characteristics of immigrants from the United States and their motives for sending remittances, it was considered a reasonable hypothesis that remittance payments to the United States should have followed a similar pattern to that of remittance payments made by residents from EU countries.³⁸ Thus, it was considered that remittance payments whose final destination was the United States grew, from 1993, at a similar rate to that of remittance payments whose final destination was the EU countries. The difference between remittance payments to the United States recorded in the Balance of Payments and payments calculated in accordance with this criterion was reallocated to the countries with more weight in terms of remittances made through remittance companies.³⁹ Once the reallocation was made, the models were estimated again for the different groups of countries and projections were calculated for the period 2001–2004 (model 4). The comparison of the fit/projection of the model and the total remittance recorded in the Balance of Payments is shown below (Chart 8).

Chart 8
Fit and projection of model 4 (millions of euros)



Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

An initial conclusion that may be drawn from the estimation of the models entailing reallocation of the figure for remittances sent to the United States is that their fit, in the estimation period 1993–2000, improves in relation to the fit of models without any reallocation.⁴⁰ Moreover, the projections of remittance debits suggest the existence of an average underestimation of 25% in the figure recorded for debits for the period 2001–2004.

³⁸ Another alternative hypothesis involved applying the growth rates of the US foreign population stock to the pattern of remittances. The results would suggest an average underestimation that was somewhat greater in total debits for the period 2001–2004 (approximately 31%).

³⁹ In this connection, the percentage accounted for by each country in transfers made through remittance companies in the period 2002–2003 is taken into account.

⁴⁰ As an adjustment measure, the mean of the squared differences can be compared between the values of the adjusted remittance and the recorded remittance using the models estimated for the period 1993–2000. The value of this statistic for the estimation of the models without reallocation of the figure of payments to the United States is 15.076, while the value of the statistic for the estimation of the models with reallocation of the figure of payments to the United States is 4.272.

Therefore, the underestimation obtained for the model with reallocation of the debits figure to the United States, in the period 2002–2004, is higher than that of the model without reallocation. In order to compare statistically the projections resulting from the estimation of the models with and without reallocation of the US debits figure, Table 7 shows the 95% confidence intervals for the projections obtained with both models.

Table 7
**Confidence intervals for the projections
of remittances in millions of euros**

	Models without reallocation of US figure			Models with reallocation of US figure		
	Lower value	Central value	Upper value	Lower value	Central value	Upper value
2001	1616.1	1943.7	2271.4	1518.1	1763.8	1935.6
2002	1949.2	2578	3206.8	2829.3	3512.2	4197.1
2003	2290.5	3234.4	4178.3	3505.2	4519.3	5533.4
2004	2819.8	3961.1	5102.4	3965.5	5196.2	6426.8

Source: Bank of Spain.

As can be seen in the table, the projections obtained from the models with no reallocation of the US debits figure are lower than the projections of the model with reallocation. Nonetheless, in each year a significant portion of the values in the intervals estimated in the first case is within the confidence intervals defined for the model with reallocation.⁴¹

In sum, econometric model 4 reallocates a high proportion of the remittances sent from Spain to the United States according to the Balance of Payments to their final destinations, in accordance with the information provided by currency-exchange bureaux and with the pattern of remittances sent by immigrants from the EU, with similar characteristics to the immigrants whose home country is the United States. And it is this model which has the best fit in the estimation period 1993–2000. The projections obtained with this model for remittance payments sent from Spain in the period 2001–2004 point to an underestimation in the Spanish Balance of Payments data, prior to their revision, of close to 25%.

⁴¹ As an alternative to the reallocation of the figure for remittance debits to the United States in the Balance of Payments, consideration was also given to the possibility of including as explanatory variables in the equation of remittances sent to the United States the foreign population stock of countries that use remittance companies, the average GDP growth rate of those countries and variables relative to the United States. As a result of the estimation, a positive relationship was identified between the remittances sent to the United States and the foreign population stock of the countries that send remittances via that country, with a low level of significance of the other explanatory variables associated with these countries. The model thus estimated suggests the existence of an average underestimation of close to 29% for the period 2001–2004. However, the projection of the figure for remittances sent via the United States for this period (and the projection of total remittances sent) will be biased upwards if the effect of the foreign population stock of the countries considered diminishes over time as the process of integration of this group of immigrants increases.

6. Conclusions

The scale of migrant inflows into Spain in recent years and the evidence that such immigration was not being reflected in all its intensity in the Balance of Payments data has made it necessary to determine the possible biases in the figures included in this statistic, using methods other than the reporting system previously employed to calculate them.

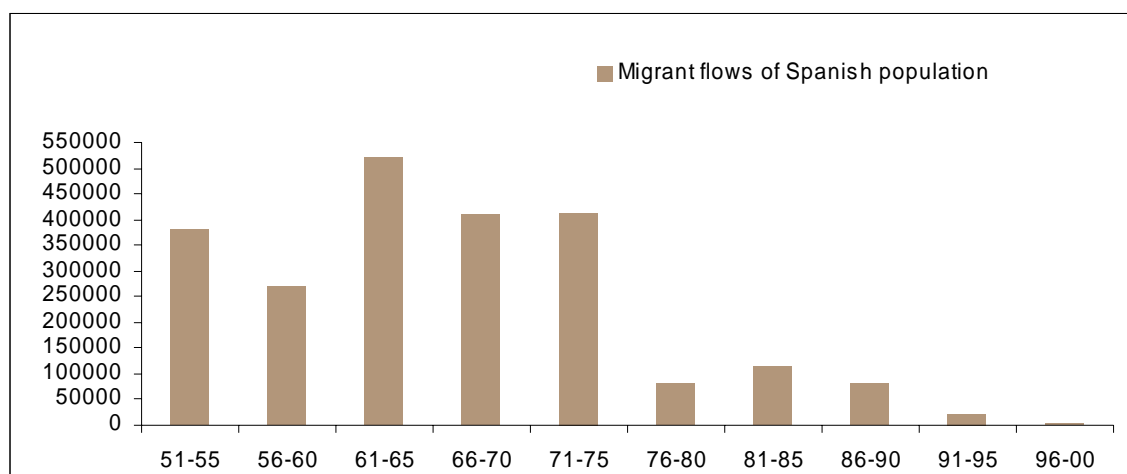
This article describes the limitations to the data estimations of workers' remittances in the Spanish Balance of Payments when they were estimated using exclusively the information from the ITRS figures. The pattern of remittances in Spain, according to Balance of Payments data, and that of their main determinants highlighted some overstatement of debits and a potential understatement of credits. The notable growth of migrant inflows into Spain in recent years has advised focusing work on the debits under this heading.

Accordingly, an estimation has been made both of the maximum remittances that immigrants resident in Spain might send to their home countries (potential remittances), and of remittances actually sent, bearing in mind the variables which – according to the literature on remittances – determine these flows. To do so, a panel data econometric model was estimated considering different geographical areas, with the aim of taking into account the different characteristics of immigrant groups. The result of this exercise was an average underestimation of remittance debits for the period 2001–2004 of around 25%. This result is consistent with that obtained from the comparison of Balance of Payments data with other available sources (data on transfers via remittance companies, data on the debits of the counterpart countries, etc.), from which an underestimation of close to 20% was inferred.

On the basis of the results of the exercise described in this article, and coinciding with the annual revision of the Spanish Balance of Payments data which, like every year, was conducted in April 2006 when the initial data for January of the current year were released, the data on debits under the “Workers’ remittances” heading were revised. In addition to bearing on the data for 2005, which were closed for the first time, this revision affected those relating to the period between 2001 and 2004. The revision has translated into an increase in debits of around 20% in relation to the previous figures. Furthermore, the allocation of these payments to their end-countries has improved, using information provided to the Bank of Spain by currency-exchange bureaux (remittance companies), which reflect this variable more appropriately. The Balance of Payments department is continuing to work on a similar exercise for remittance credits, which offers evidence of their possible overestimation.

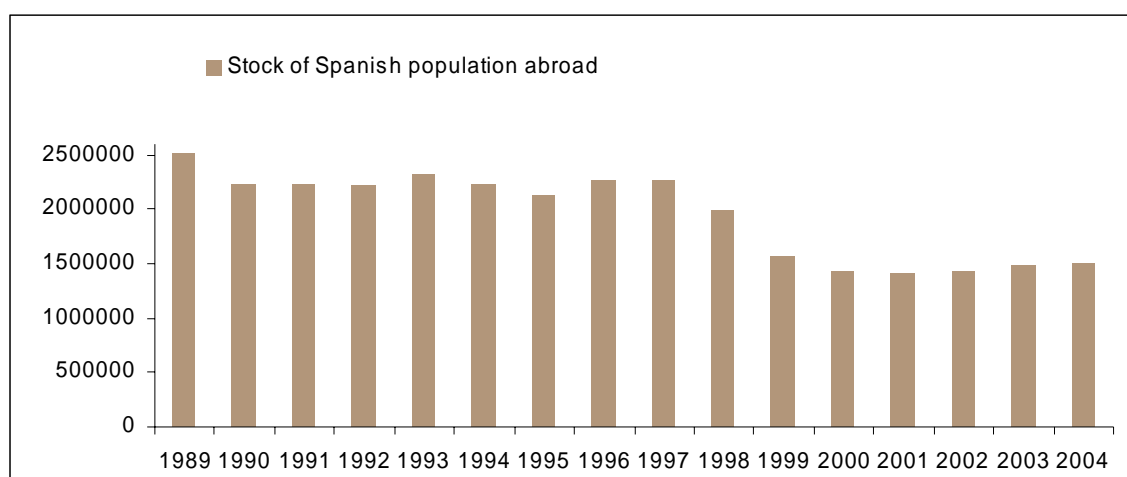
Annex A: Alternative indicators of remittance payments

Chart A1
Migrant flows of Spaniards abroad
Units



Source: Anuario de Migraciones, Ministerio de Trabajo y Asuntos Sociales.

Chart A2
Stock of Spanish population abroad
Units



Source: Registration of residents at Spanish consulates.

Table A1

**Estimation of remittance payments from Spain in 2001
(millions of euro)
obtained from information on the remittance credits
in the BOP of recipient countries
and the proportion of foreign population
aged over 15 resident in Spain**

Country	Estimation of payments	Payments recorded
Colombia	407.87	191.63
Ecuador	598.19	480.72
Morocco	730.88	9.75
Romania	120.02	0.34
Dominican Republic	108.92	17.03
Brazil	73.76	17.14
Bolivia	17.32	12.61
Peru	97.72	43.97
Argentina	55.81	1.98
United States	7.75	1092.05
Philippines	1.14	24.48
Total	2219.4	1891.69

Note: To calculate the estimation of debits, an allocation of credits is made from the "Workers' remittances" section of the Balance of Payments of the main recipient countries of funds sent from Spain, using the proportion of emigrants aged over 15 resident in Spain in relation to total residents in OECD countries. It has been assumed in this estimation exercise that all immigrants who send remittances to their home country do so for a similar amount, irrespective of the country in which they currently reside. That is to say, on average, an Ecuadorian immigrant sends to Ecuador the same amount irrespective of whether he resides and works in Germany or in Spain. Furthermore, it should not be forgotten that the different estimation methods and sources of information used by the different countries reduce the comparability of bilateral flows.

Sources: IMF and OECD (Database on Foreign-Born and Expatriates, 2005).

Table A2

**Comparison of the geographical breakdown
(absolute figure and percentage of total world transfers)
according to the Balance of Payments (BP)
and the figures from remittance companies, 2003**

	Remittance companies	BP	% remittance companies	% BP
Argentina	42.39	3.96	1.50	0.14
Bolivia	84.11	83.52	2.96	2.91
Brazil	93.62	3.18	3.32	0.11
Colombia	711.59	757.40	25.23	26.16
Ecuador	707.66	650.18	25.08	22.46
Peru	60.54	81.87	2.15	2.83
Dominican Republic	132.99	62.77	4.71	2.17
Philippines	33.52	32.18	1.19	1.12
Morocco	145.54	58.04	5.16	2.01
United States	15.46	993.90	0.55	34.33
Romania	135.67	5.32	4.81	0.18
Bulgaria	10.78	1.36	0.38	0.05
% of world total			77.04	94.47

Source: Bank of Spain. Data prior to the April 2006 revision of remittance debits figures.

Annex B: Description of the variables of the econometric model

This annex describes the variables used in the estimation and the data sources from which they are drawn.

1. Nominal remittance payments to the counterpart countries are obtained from the Spanish Balance of Payments for the period 1993–2004.
2. The consumer price index base 1992 used to deflate the variable of nominal remittance payments is obtained from INE (National Statistics Institute).
3. The data on PPP per capita GDP in dollars for Spain and the other countries are obtained from the September 2004 IMF World Economic Outlook database.
4. The growth rates of Spanish GDP and of GDP for the other countries at constant prices are obtained from the September 2004 IMF World Economic Outlook database. Specifically for Spain, the variable is defined as the growth rate of GDP at 1995 constant prices.
5. The exchange rate of the euro and the currencies of the other counterpart countries in relation to the dollar are obtained from the IFS (International Financial Statistics) database. The variable is defined as the annual average of exchange rates for each year of the period considered.
6. The interest rate differential is obtained as the short-term or deposit rate drawn from the IFS database.
7. The “immigrant population in Spain” variable is obtained by combining the data of the municipal census and the DGP figures for foreigners in Spain. For the period 1993–1995, the DGP data are taken. The data for 1996 and 1998 are obtained as averages of the municipal census and the DGP figures. For 1997, the 97/98 DGP growth rate is applied to the figure calculated for 1998. For the period 1999–2002, the municipal census data are used. There are countries for which municipal census data are not available until 2001 (Ecuador, Colombia and Dominican Republic). In this case, a population figure is constructed by projecting backwards the municipal census 2001 population figure, using the growth rates of the DGP figure.
8. The variable of the average stay in Spain of the different groups of immigrants is constructed for different geographical areas using the information from the 2005 EPA (Labour Force Survey).

Annex C:
Model 1 with a dependent variable
defined as remittances per immigrant

Estimation of the model with a dependent variable defined as the logarithm of remittance payments per immigrant. The following table shows the results of the estimation of a model with country effects in levels for the group of Latin American, African and Asian countries (model 1), including the most significant variables and the coefficients relating to the country effects in levels:

Table C1
Estimation model 1, period 1993–2000,
logarithm of remittance payments
per immigrant as a dependent variable

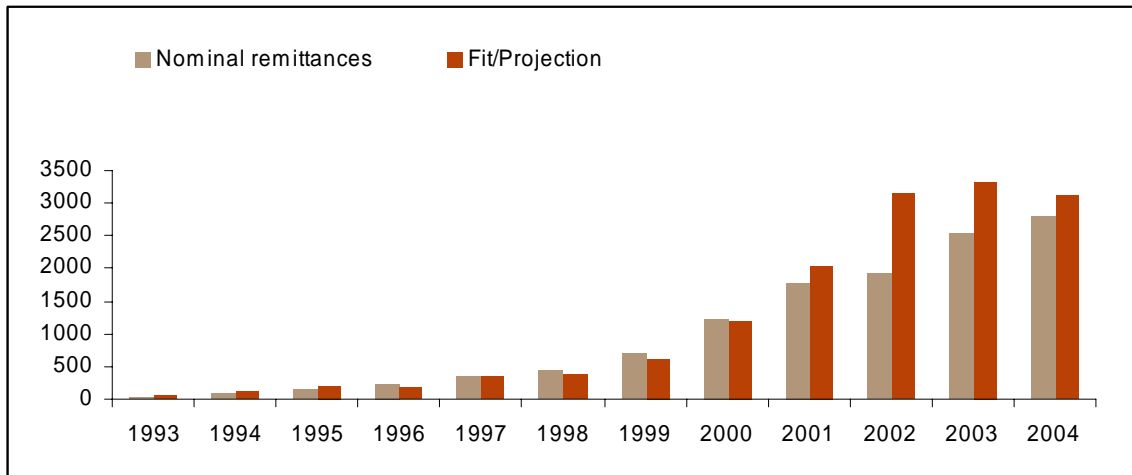
	OLS effects in levels	t-ratio
pibesp	0.2763	6.35
pibext	-0.0278	-1.33
estancia	-0.4846	-2.14
Bolivia	-1.2595	-1.30
Argentina	1.0915	1.13
Ecuador	1.9221	1.99
Philippines	2.0953	1.81
Morocco	1.2209	1.05
Brazil	1.3097	1.35
Mexico	1.1023	1.14
Peru	0.7722	0.80
Colombia	1.2901	1.33
Venezuela	0.4757	0.49
Dominican Republic	1.6715	1.72
R2	0.7170	

Source: Bank of Spain.

The result of the estimation shows that the remittance per immigrant depends positively on GDP growth in Spain and negatively on the average stay in Spain. The variable GDP abroad has the expected sign but is not significant.

The following chart compares the recorded remittances for model 1 with the prediction of the model when the reallocation of US remittances is made. In each case the logarithm of the remittance per immigrant and specific country effects included in the average of the estimated equations is considered as a dependent variable.

Chart C1
Fit and projection model 1
Millions of euros



Source: Bank of Spain.

The comparison of recorded and predicted remittances using the model with reallocation for the period 2001–2004 reveals an average underestimation of approximately 21%.

Annex D: Results of the estimation of models 2 and 3

This annex includes tables with estimations relating to model 2 (the United States and countries of the EU area) and model 3 (Eastern European countries).

Table D1

Estimation model 2, 1993–2000

Variable	OLS	t-ratio	OLS with country effects	t-ratio
Lstock	-2.3192	-5.83	-0.7648	-2.52
Pibesp	0.2715	2.37	-	
Difcam	-3.8344	-2.63	-	
Difint	-1.6396	-2.41	0.0800	3.17
R2	0.586		0.999	

Note: OLS estimation with country effects denotes OLS estimation with individual country effects included in levels for the United States, Germany, Portugal, Italy and the United Kingdom.

Source: Bank of Spain.

Table D2

Estimation model 3, 1993–2000

Variable	OLS	t-ratio	OLS with country effects	t-ratio
Lstock	0.4059	1.56	0.4307	9.23
Lratiopib	-3.5410	-3.42	-	
Difint	0.0110	2.21	0.0069	1.61
Tipcam	0.0913	1.54	-	
R ²	0.8456		0.982	

Note: OLS estimation with country effects denotes OLS estimation with individual country effects interacting with population for Romania, Bulgaria, Poland and Russia. The coefficient of the variable lstock corresponds to the interaction of the population with the variable (0–1) for Russia.

Source: Bank of Spain.

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