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Improving the quality of balance of payments statistics via granular bilateral analysis

Trilateral comparison: Austria, Italy, and Spain

Contents

Abstract

Our research focuses on improving balance of payments (b.o.p.) and international investment position (i.i.p.) statistics through a trilateral country comparison. Our method takes a comprehensive approach, unlike previous studies that focused on specific subsets of data, to identify and address inconsistencies in the statistics. Through collaborative efforts and secure data sharing, we detected systematic patterns and prioritise the analysis of key breakdowns that mainly contributed to bilateral inconsistencies. By facilitating effective data reconciliation, our research enhances the accuracy and reliability of b.o.p./i.i.p. statistics. This empowers policymakers, economic analysts, and the public to make better-informed decisions based on high-quality international economic data.

JEL classification: C82, E01, F21, F23.

Keywords: Asymmetries, mirror data, balance of payments, foreign direct investment

Non-technical summary

This research aims to improve balance of payments (b.o.p.) and international investment position (i.i.p.) statistics by using a trilateral comparison approach. By comparing data between three countries, we were able to identify and address inconsistencies in b.o.p./i.i.p. statistics of Austria, Italy and Spain. Unlike previous studies that focused on specific subsets of data, our approach takes a comprehensive view of the overall b.o.p./i.i.p.

The trilateral comparison analysed a country's data alongside information provided by two other counterparty countries. This collaborative approach allows us to detect systematic patterns that indicate inconsistencies in the data. By sharing information and working together to reconcile the data, we can enhance the accuracy and reliability of the statistics. To ensure efficient resource allocation, we prioritised the analysis and reconciliation of specific breakdowns that contribute the most to the overall bilateral inconsistencies.

A key aspect of our framework was the secure sharing of targeted microdata. This enables detailed investigations and precise analyses, which are crucial for resolving bilateral inconsistencies. By emphasizing the importance of data sharing, we facilitate collaboration among countries, enabling them to work together towards reconciling the data and ensuring its accuracy.

Our research provides practical guidance on organising data comparison exercises, encouraging countries to participate in these exercises. By actively engaging in data comparison, countries can identify and reconcile discrepancies in their b.o.p./i.i.p. statistics.

In conclusion, our research uses a trilateral comparison approach to identify and address inconsistencies in b.o.p./i.i.p. statistics. Through collaborative efforts, targeted analyses, and secure data sharing, we improve the accuracy and reliability of these statistics. This research empowers policymakers, economic analysts, and the public to make better-informed decisions based on high-quality international economic data.

1. Introduction

The balance of payments (b.o.p.) and international investment position (i.i.p.) summarise an economy's international transactions and positions, providing a comprehensive account of the economic and financial linkages between its residents and the rest of the world (see Box 1 for further details). B.o.p./i.i.p. statistics are fundamental indicators to assess a country's economic performance, exchange rate policy, reserves management and external macroeconomic imbalances. The availability of high-quality b.o.p./i.i.p. statistics is key to ensure policymakers, economic analysts and the public at large can access adequate and reliable information on developments in cross-border trade and international capital flows, on exposures to external shocks and on the international transmission of monetary and fiscal policies.[1]

In the context of the compilation of b.o.p./i.i.p. statistics, the quality of statistical output is analysed on a regular basis according to several criteria: methodological soundness and statistical procedures; timeliness and punctuality; data and metadata availability; accuracy and reliability; internal consistency; external consistency/coherence with other comparable statistical domains; size and persistency of bilateral asymmetries.[2] This last feature, negatively affecting the quality of data, is typically observed in statistics where the geographical location of the counterparty is captured and mirror information can be obtained from data published by the counterparty country. For example, direct investment from country A into equity issued by country B is independently measured both by country A (as asset vis-à-vis country B) and by country B (as liabilities vis-à-vis country A). When the two countries use comparable methodologies to collect and compile data, the two observations should be equal as they measure the same phenomenon. However, this is not often the case due to e.g. the way statistical concepts are interpreted or differences in data collection sources and in statistical estimation methods. The size of the existing discrepancy in mirror statistics is labelled *bilateral asymmetry*. Significant and persistent bilateral asymmetries adversely affect the quality of official statistics, their credibility and usability as a basis for sound policy advice as data users may obtain contradicting messages depending on the data source used.

The presence of sizeable bilateral asymmetries in cross-border statistics has been a growing concern for compilers and users of b.o.p./i.i.p. statistics. The increased complexity of global production and financing network (e.g. due to factory-less production, merchanting arrangements, tax-optimisation strategies, importance of intangible assets) has, in turn, increased the complexity of the measurement

[1] For an overview of the analytical value of external statistics see Lane, P.R., The analytical contribution of external statistics: addressing the challenges, speech at the conference on "Bridging measurement challenges and analytical needs of external statistics: evolution or revolution?", Lisbon 17 February 2020

[2] As an example see The Euro area and national balance of payments and international investment statistics: Quality report 2021, a biennial report providing a quality review of the national b.o.p., i.i.p. and international reserves, as well as the associated euro area aggregates.

process, as well as the scope for emergence of asymmetries in the published data. Damgaard and Elkjaer (2017) and Angulo and Hierro (2017) document the large global and bilateral asymmetries in FDI data reported in the Coordinated Direct Investment Survey (CDIS) and discuss the main reasons behind them. Pastoris and Schmitz (2020) (Box 5) show how the large asymmetries in the bilateral euro area – United States current account are linked with asymmetric treatment of foreign direct investment income, in turn affected by the complexity of ownership structure of large multinationals. Jellema et al (2020) provide a comprehensive overview of the phenomenon of asymmetries in cross-border statistics, summarising the different analytical tools to measure them, listing the existing studies by statistical agencies and international organisations (e.g. Central Statistics Office (2016), Bureau of Economic Analysis (2018), Eurostat (2019), Office for National Statistics (2020)) and suggesting a novel framework to assess the structural dimension of asymmetries between a country and a group of counterparties: this is particularly useful in case of complex FDI operations affecting the data of several countries at the same time.

At the European level, where the quality and consistency of the geographical breakdown is key to produce meaningful euro area/EU aggregates for the b.o.p./i.i.p.[3], several initiatives are in place to better understand asymmetries and, where possible, to prevent or reduce them by ensuring consistent recording of statistical events across Member States. Regular analysis of the developments in intra-euro area/EU asymmetries is now included in quality reports on b.o.p./i.i.p. data produced by the ECB and Eurostat. Member States are encouraged to extensively use the FDI Network, an infrastructure which allows sharing confidential micro-data on large FDI operations between the involved counterparty countries with the aim to match and reconcile the exchanged statistical information. The Asymmetry Resolution Mechanism for FDI (FDI ARM) is a quarterly exercise to resolve the largest outstanding bilateral asymmetries in the EU, where experts from the countries involved in these large asymmetries engage in virtual discussions to address them in a collective manner. Microdata information shared in the FDI network is the basis for the FDI ARM discussion, enriched with additional metadata and investigations once a particular FDI event is in focus. An Asymmetry Resolution Mechanism for Trade in Services (ITSS ARM) was then launched in 2022 to address the most important asymmetries among the data of EU member states. An Early Warning System was established in 2017 to detect restructuring events of MNE groups and ensure their consistent statistical recording in European statistics. The European Network of Multinational Enterprise Coordinators (MNEnet) was established in 2021 to strengthen the cooperation of European MNE experts and ensure knowledge on statistical treatment of MNEs is flowing to all statistical domains and countries.

Our paper contributes to the existing initiatives on improving the quality of b.o.p./i.i.p. statistics by presenting a framework for an in-depth comparison and reconciliation of granular b.o.p./i.i.p. statistics in a trilateral fashion. First, while existing studies mostly

[3] For the euro area b.o.p./i.i.p. only the transactions/positions vis-à-vis non-residents of the euro area matter; transactions and positions vis-à-vis other euro area countries should instead be consolidated and, in the absence of asymmetries, they should amount to zero in net terms. For additional information on asymmetries in euro area b.o.p./i.i.p. see Jellema et al (2020).

focus on bilateral data comparisons only for a specific subset of the b.o.p/i.i.p. (e.g trade in goods; trade in services; current account; FDI), our exercise covers the full b.o.p./i.i.p. of the involved countries to provide a comprehensive overview of the bilateral quality of the external account. This is in line with the approach taken in Timmermann B. (1997), where the bilateral b.o.p. data of Portugal and Germany is analysed and reconciled. While covering the whole b.o.p./i.i.p., we also suggest a way to prioritise the in-depth analysis and reconciliation for those detailed breakdowns which contribute most to the overall b.o.p. bilateral inconsistency. Second, our framework involves a trilateral exercise with bilateral b.o.p./i.i.p. comparisons involving a group of three countries: this helps detecting systematic patterns on the bilateral data, as a single country's data is analysed in detail against the information provided by two counterparties. The trilateral setting of the exercise also allows some additional learning experience from sharing information and discussing reconciliation possibilities on a more extensive setting. Additionally, this setting allows for in-depth comparisons between country pairs which are rarely involved in exchanges in the existing European initiatives on asymmetries as these are often targeted towards the largest operations, which, in turn, are mostly concentrated in a small set of counterparty countries. Finally, our exercise suggests a practical way on how countries can organise such data comparison exercises, emphasising the importance of sharing targeted microdata to allow in-depth analyses for the reconciliation of the main asymmetries. Sharing microdata in a safe and protected fashion is key to solve bilateral inconsistencies in b.o.p./i.i.p. data as it allows detailed and precise follow-up investigations.

The remainder of the paper is organised as follows. Section 2 introduces the framework for the granular analysis of b.o.p./i.i.p. data, describing the different activities for analysing and reconciling data. Section 3 shows how this framework was applied in a pilot project involving the comparison of b.o.p./i.i.p. of Austria, Italy and Spain. The main reasons behind asymmetries and an overview of the reconciliation efforts are discussed. Section 4 presents some suggested initiatives for further improving the quality of bilateral b.o.p./i.i.p. data. Section 5 contains concluding remarks.

Box 1: Balance of payments and international investment position

The balance of payments (b.o.p.) and international investment position (i.i.p.) for an economy summarise the economic relationships between residents of that economy and non-residents. They consist of i) the b.o.p. that records the economic transactions between residents in an economy and non-residents, during a specific period of time; ii) the i.i.p. that shows, at a specific point in time, the value and composition of financial assets and liabilities of residents of an economy vis-à-vis non-residents; and iii) other flows than transactions in financial assets and liabilities, that shows valuation and other volume changes that reconcile the b.o.p. and i.i.p. for a specific period.

The b.o.p. consists of several accounts which are distinguished according to the nature of the economic resources (e.g. goods, services, income or financial resources) provided or received by the resident economy (see Table B1).

Table B1
Standard presentation of the balance of payments

Account	Subaccount/Functional category
Current account (CA)	Goods
	Services
	Primary Income
	Secondary Income
Capital account (KA)	Non-produced non-financial assets
	Capital transfers
Financial account (FA)	Direct investment
	Portfolio investment
	Financial derivatives and employee stock option
	Other investment
	Reserve assets
Net errors and omissions (E&O)	

The current account shows flows of goods, services and income between resident and non-residents. Goods cover all goods for which changes of ownership between residents and non-residents occur (e.g. general merchandise). Services cover all services produced by a resident in one economy and consumed by a resident of another country (e.g. manufacturing service, travel and financial services). Primary income consists of income payable and receivable in return for providing temporary use to another non-resident entity of labour, financial resources, or non-produced nonfinancial assets (e.g. compensation of employees, dividends and interest). Secondary income shows redistribution of income, that is, when resources for current purposes are provided without anything in return (e.g. international cooperation and workers' remittances).

The capital account shows transactions in non-produced non-financial assets, such as sales of licenses and marketing assets, and capital transfers, such us debt forgiveness, between residents and non-residents.

Net acquisition and disposal of financial assets and liabilities between debtor (creditor) residents and creditor (debtor) non-resident are included under the financial account of the balance of payments. Related stocks of assets and liabilities are included under the international investment position statement. The financial transactions and positions are primarily classified by type of cross-border investment in five functional categories: direct investment, portfolio investment, other investment, financial derivatives and reserve assets.

Although the balance of payments accounts should be balanced (the net financial account should equal the balance on the current and capital account), imbalances may arise in b.o.p. statistics from imperfections in source data and compilation practices. These imbalances are labelled net errors and omissions (E&O).

2. A framework for granular bilateral b.o.p./i.i.p. analyses in a trilateral setting

2.1. Setting-up a trilateral comparative exercise

The mechanisms already in place within the EU to address bilateral asymmetries (such as the FDI Network and the Asymmetry Resolution Mechanisms) target very specific b.o.p. items and normally focus on very large operations/asymmetries. The results of these mechanisms have been very positive and contributed to the overall enhancement of the data quality of b.o.p./i.i.p.. However, they have mainly involved only a few EU countries, given the required size of the operations discussed.[4]

The framework on bilateral matching of balance of payments in a trilateral setting put forward in this paper addresses the participation limitations within the current mechanisms. It allows for an in-depth and comprehensive analysis of all items of b.o.p./i.i.p. accounts, also for country pairs that do not regularly participate in the asymmetry resolution mechanisms and other EU networking initiatives, due to the more limited size of their bilateral data.

The concept of bilateral comparison in a trilateral setting is very simple: three countries simultaneously take part in a bilateral comparison of their b.o.p./i.i.p. data. Data is compared bilaterally across the three participating countries, in a way that each country is involved in comparisons against the two other counterparties. The exercise would normally involve countries with a strong interest in improving the quality and consistency of their mutual data, such as relevant trade and/or financial partners, countries with similar structure in the external accounts, or with *ex-ante* knowledge of existing sizeable discrepancies in their data and/or compilation methods.

The choice of having a trilateral setting brings more balance to the country discussions and allows an easier detection of systematic patterns on the bilateral data, as a single country's data is analysed in detail against the information provided by two counterparties. Keeping the involved number of countries small allows a fully in-depth and thorough investigation of the reasons behind the bilateral asymmetries, without dispersing efforts in many investigations across a large number of partner countries.

Each of the three countries expressing interest in running such trilateral comparative exercise would nominate one b.o.p./i.i.p. expert as the main contact person for the exercise. The main contact person would participate to all the activities of the comparative exercise and be responsible for setting their pace and efforts. However,

[4] The threshold for exchanging operations in the FDI network is 2 billion EUR, while only bilateral asymmetries in FDI transactions larger than 10 billion EUR are considered in the FDI ARM. As a result, mostly the Netherlands, Luxembourg and Ireland, are involved as counterparties in these exchanges.

given that the exercise spans over the full b.o.p./i.i.p. and requires very specific knowledge on all the b.o.p./i.i.p. accounts, each main contact person should deal at the national level with experts from the different b.o.p./i.i.p. domains to clarify specific topics and carry out in-depth investigations. This setting ensures a focused participation in the trilateral meetings and discussions during the full timeline of the comparative exercise, providing a unique responsible person per country from the beginning to the end of the exercise. This also provides a unique opportunity for professional development of the main contact persons involved. On one side it allows for a knowledge increase on the different aspects of the national b.o.p./i.i.p. sub-domains thanks to the frequent interaction with topic-experts outside the own expert field; on the other side it helps creating a strong cross-country network of b.o.p./i.i.p. experts, with noticeable advantages in terms of cooperation between countries in the years to come.

The main steps foreseen in the framework for the bilateral comparison of b.o.p./i.i.p. in a trilateral setting are the following:

- Qualitative analysis on statistical methodology, methods and reporting systems
- Quantitative data comparison and prioritisation strategy
- Investigation of granular asymmetries and addressing reconciliation efforts

2.2. Qualitative analysis on statistical methodology, methods and reporting systems

The compilation of b.o.p./i.i.p. is currently based on the sixth edition of the Balance of Payments and International Investment Position (BMP6) manual.[5] The BMP6 manual aims at providing harmonised concepts and improving the international comparability of external accounts data. Although the methodological basis for b.o.p./i.i.p. statistics is well defined in BPM6, the practical compilation of b.o.p./i.i.p. also requires, in some instances, an interpretation of the BPM6 manual, the alignment of different data sources, as well as data collection and compilation methods choices. All these aspects, if approached in a different way across the compiling countries[6], may contribute to differences in the data across countries.

The first step of our comprehensive comparative framework is thus to understand possible structural causes of bilateral asymmetries across the three involved countries due to: i) deviations from BPM6 methodology; ii) different data collection processes; iii) different compilation methods. As BPM6 is the common methodological manual to be followed by b.o.p./i.i.p. compilers worldwide, deviations from BPM6 methodology should be rare and, when present, be rather of a temporary nature, with a clear plan for their overcoming. Differences due to data collection

[5] See the online version of the BPM6 manual: https://www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf

[6] In several countries different parts of the national b.o.p. may also be compiled by different national institutions with both the national central bank and the national statistical institute involved.

processes may emerge as b.o.p./i.i.p. data collection includes different types of data sources such as the use of direct reporting (e.g., from nonfinancial corporations on a monthly basis), surveys (e.g., sample surveys on annual basis) or administrative data (e.g., tax information). Compilation methods may be at the origin of structural discrepancies in b.o.p./i.i.p. data as they may involve adjustments to national data sources, benchmarking to other datasets (e.g., using mirror data), or using statistical models based on indicators.

In the trilateral setting it is important to have a clear overview of the countries ' approaches on the three mentioned aspects to easily understand any potential reason for a structural discrepancy in the data stemming from one of these methodological, collection or compilation choices. An overview matrix detailing these aspects for the main b.o.p./i.i.p. categories was created according to a common template and filled-in with specific information for each of the three countries. Table 1 shows an example of such an overview table for the main items of the b.o.p. financial account. A more detailed table could include information at the sectoral level and for a more granular breakdown of the b.o.p./i.i.p. main categories.

Table 1

Example of country overview table for qualitative analysis

	Methodology	Data collection				Compilation methods				Responsible institution
	Deviations	Administrative data	Direct reporting	Survey	Other	Adjustments to data sources	Statistical model based on indicators	Other estimations	Benchmarking to other datasets	NCB/NSI
FDI equity										
Reinvestment of earnings										
FDI debt										
Portfolio equity										
Portfolio debt										
Other investment										

Notes: The table shows only the main categories for the financial account. A full country overview table should also include all the relevant entries for the current and capital accounts and the international investment position.

Most of the information needed to fill in this overview table can be obtained directly from relevant metadata disseminated or available at the national level or from information provided to international organisations (e.g., ECB, Eurostat, OECD, IMF) in the context of data transmission (e.g., see the information EU countries provide to the ECB in the context of the B.o.p. and i.i.p. book).

2.3. Quantitative data comparison and prioritisation strategy

The second step in our framework is a quantitative comparison of the bilateral b.o.p./i.i.p. data of the three involved county pairs. Depending on the available level of detail, the comparison can address a more restricted or more expanded set of b.o.p./i.i.p. indicators. As a minimum level, the main categories of the current account (goods, services, primary income, secondary income), the capital account and the functional categories of the financial account and the international investment position are to be compared.

While quarterly bilateral data may be available, it is preferable to use yearly data in this type of exercise to smoothen out quarterly temporal mismatches and focus only on other main reasons for asymmetric results. Also, while the calculation of asymmetries is done at the yearly level, several years of data should ideally be analysed in order to distinguish structural discrepancies recurring every year from year-specific sources of discrepancies.

Country pair data tables were created for the three country pairs involved according to a common template. These data tables included bilateral detailed data, together with the size of the corresponding bilateral discrepancy (if any). The tables provided the basis for the initial quantitative investigation of the size and relevance of the asymmetries in the different b.o.p./i.i.p. items. For each b.o.p./i.i.p. item and for each country pair, two asymmetries emerge, one for credits (assets) and another for debits (liabilities).

Table 2

Example of country pair data table for quantitative comparison

Year 2020	Assets Country A	Liabilities Country B	Asymmetry 1	Liabilities Country A	Assets Country B	Asymmetry 2
FDI equity						
Reinvestment of earnings						
FDI debt						
Portfolio equity						
Portfolio debt						
Other investment						

Notes: The table shows only the main categories for the financial account. A full country pair data table should also include all the relevant entries for the current and capital accounts and the international investment position.

The tables provide a detailed picture of the size of bilateral data and the size of bilateral asymmetries for the three country pairs for the full b.o.p./i.i.p.. A prioritisation strategy was then followed to focus the in-depth investigations on a subset of b.o.p./i.i.p. details, allowing to keep the overall efforts of the exercise within reasonable limits.

With regards to the prioritisation strategy, different selection methods can be used to determine the b.o.p./i.i.p. details to be later investigated:

- Absolute size of the largest bilateral discrepancies: for each country pair, only the b.o.p./i.i.p. items which show the largest (absolute) size of asymmetries are selected/prioritised. This method is simple to implement and will most likely put the focus of the comparison on b.o.p./i.i.p. items with large bilateral flows/positions as these are the most likely to have larger size of asymmetries.

- Relative size of the largest bilateral discrepancies: for each country pair, only the b.o.p./i.i.p. items which show the largest size of asymmetries, relative to the combined size of the bilateral flows/stocks, are selected/prioritised. This method is simple to implement and has the merit of focusing on b.o.p./i.i.p. items where measurement discrepancies are very large compared to the reported data. However, this method may focus on items where the starting flows/positions are rather small and thus not relevant for the overall bilateral b.o.p./i.i.p.

- Synthetic relevance asymmetry indicator: a synthetic indicator which shows, for each country, the relevance of each of its b.o.p./i.i.p. items in the overall b.o.p./i.i.p. asymmetries vis-à-vis the group of counterparties (please see Box 2 for more details on the calculations behind this indicator). This method has the advantage of providing a synthetic measure of relevance considering the asymmetries generated vis-à-vis the full group of counterparties (in this trilateral exercise vis-à-vis the two partner countries involved) and thus it is ideal for the assessment in our trilateral setting.

The prioritisation strategy could also use a combination of all these methods/criteria, possibly together with some additional information on items of interest from the qualitative analysis of the comparative b.o.p./i.i.p. methods.

2.4. Investigation of asymmetries and addressing reconciliation efforts

The detailed investigations of the reasons behind the discrepancies in the selected b.o.p./i.i.p. items were the core activity in our framework.

For items where it is possible to investigate the granular operations/events behind bilateral asymmetries (e.g., FDI transactions), an exchange of micro-data on such operations was key. Exchanging this information at the most granular level allowed the identification of the individual operations driving the bilateral asymmetries. The investigation included sometimes contacting the reporting agent, reviewing the information collected in the past and analysing again the balance sheet to get a consistent view of the analysed operation/event.

In-depth investigations made use of additional data sources to obtain information to complement the b.o.p./i.i.p. aggregate data (e.g. registers to investigate the resident

population, using AnaCredit data[7] on counterparties of loans, using BSI[8] interbank data to understand the asymmetries from the inter-banking sector positions).

For items where the use of estimations, modelling or assumptions is very relevant (e.g., travel services), in-depth investigations focused on understanding the impact and reliability of the modelling framework/assumptions, also in comparison with the mirror data. In these cases, the trilateral framework was very useful as some possible under/overestimation of data vis-à-vis both partner countries provided useful information on possible refinements to the modelling/estimation framework.

Once the investigation phase was completed, there was a clear assessment of the results obtained and a timeline for the implementation of the reconciled results. It is important here to distinguish between:

- Reconciliation results that can be implemented in the short-term (e.g., correction of wrong reporting, agreement on a different treatment of a corporate restructuring case), where corrected data is to be published in the first available revision window;
- Reconciliation results that can be implemented in the medium-term (e.g. in the occasion of a benchmark revision or revision of the international manuals), for corrections in the data that require more structural changes in data sources or further methodological clarifications;
- Investigations resulting in unreconciled differences, for those cases where it is unclear where the discrepancies originate, or where the involved countries do not manage to agree on a similar treatment.

Besides the immediate reconciliation effects, the trilateral comparison and matching contributed to the exchange of compilation methods (i.e. using additional data sources), and strengthened the network between the participating central banks experts on b.o.p./i.i.p. topics.

It should be noted that the benefits of the bilateral matching in a trilateral setting also extend beyond the immediate reconciliation of the targeted asymmetries: the learning curve for participating countries may also support more detailed investigations into the respondents 'practices in the future and favour a revised interpretation of economic events.

[7] The Analytical Credit Datasets (AnaCredit) of the ECB covers confidential data on loans granted and/or serviced by Monetary Financial Institutions that are resident in the Euro Area or resident in a non-Euro Area but with headquarters in a Euro Area country. The data in AnaCredit includes only loans to legal entities (no natural persons/ private households) and is compiled on a monthly basis, as of September 2018. REGULATION (EU) 2016/ 867 OF THE EUROPEAN CENTRAL BANK - of 18 May 2016 - on the collection of granular credit and credit risk data (ECB/ 2016/ 13) (europa.eu)

[8] BSI data include balance sheet information of monetary financial institutions (MFIs) (https://data.ecb.europa.eu/data/datasets/BSI/data-information)

Box 2: A synthetic indicator for prioritising asymmetry investigations

The quality of the geographical breakdown in the b.o.p./i.i.p. can be assessed by means of comparisons with mirror data. While such comparisons tend normally to focus on pairs of countries in a bilateral setting, Jellema et al (2020) have introduced three synthetic indicators to assess the quality of a country vis-à-vis an entire group of partner countries.

One of these indicators, the Relevance indicator (RELV), quantifies the contribution that an individual country makes to the aggregate asymmetry of a group of countries, by relating the sum of bilateral asymmetries involving this certain country to the total asymmetry generated by that group of countries. In the context of an economic aggregate, the RELV indicator provides an assessment of a member state's contribution to the overall asymmetries within the regional aggregate.

For the purpose of prioritising asymmetry investigations only on certain items within the overall b.o.p./i.i.p., we can use a variation of the RELV indicator (called RELV*), which measures, for each country, in the contribution of its asymmetries vis-à-vis its counterparties for a specific b.o.p (or i.i.p.) item over the total sum of its b.o.p. (or i.i.p.) asymmetries vis-à-vis its counterparties.

The RELV* we use in our prioritisation strategy is expressed by the following formula:

$$RELV^*_{i,x} = \frac{\sum_c |A_{i,c,x} - L_{c,i,x}| + \sum_c |L_{i,c,x} - A_{c,i,x}|}{\sum_x \sum_c |A_{i,c,x} - L_{c,i,x}| + \sum_x \sum_c |L_{i,c,x} - A_{c,i,x}|}$$

Where *i* = reporting country; *x* = b.o.p. (or i.i.p.) item; c = counterparty country; *A*=Assets (or credits); *L*=Liabilities (or debits). The indicator ranges from 0 to 1 with higher values corresponding to a higher relevance of asymmetries of item *x* for country *i*. For each country, the sum of the indicators across the total *X* elements of the b.o.p. (or i.i.p.) is equal to 1: the relevance indicator for each b.o.p. (or i.i.p.) item x for country *i* thus represents a share of the (absolute) asymmetries for this item in the total sum of b.o.p. (or i.i.p.) (absolute) asymmetries.

As a numerical example, consider the case with three countries (C1, C2 and C3) and available bilateral data on 5 items of the non-financial account: Goods, Services, FDI Income, Other Investment (OI) Income, Secondary income and Capital account. Table B2 contains the information needed to calculate our relevance indicator (RELV*) for country C1.

- Columns 1 and 2 contain the absolute value, for each non-financial account item, of the bilateral asymmetry between country C1 and country C2: for example, the absolute asymmetry on Goods amounts to 36 considering the credits of country C1 vis-à-vis C2 minus the mirror debits of country C2; and to 50 considering the debits of country C1 and credits of country C2. Columns 3 and 4 contain the same data but for the absolute asymmetries of country C1 and C3.

- Columns 5 and 6 contain, respectively, the numerator and denominator of the RELV* formula, for each non-financial account items: the nominator is simply the sum of the bilateral asymmetries involving country C1 vis-à-vis its two counterparties for that specific non-financial account item, while the denominator is the sum across all the non-financial account items.

- Column 7 shows the value of the RELV* indicator for country C1, for each non-financial account items: the sum across all items is 1, while the value for each item shows its share in the total asymmetry. In this case we can see that Goods, Services and FDI Income each

are the source of approximately one third of the total asymmetries in the non-financial account for country C1, while the other three items have a much more marginal contribution. The RELV* in this case would suggest focusing on the first 3 items for the detailed investigation phase for country C1 against its counterparties.

Table B2
Synthetic relevance indicator for prioritising asymmetry investigations for country C1

	1 |C1.CR-C2.DB|	2 |C1.DB-C2.CR|	3 |C1.CR-C3.DB|	4 |C1.DB-C3.CR|	5 Numerator	6 Denominator	7 RELV*
Goods	36	50	13	25	125	377	0.33
Services	56	18	23	4	101	377	0.27
DI income	32	63	4	10	108	377	0.29
OI income	11	2	2	2	17	377	0.04
Secondary income	9	5	7	4	24	377	0.06
KA	1	0	1	0	2	377	0.00

Notes: CR=credit; DB=debit. |C1.CR-C2.DB| represents the aboslute value of the bilateral asymmetry betweeb the bilateral credits of country C1 and the mirror debits of country C2: in case of absence of asymmetry this amount would be zero.

3. A trilateral comparison: Austria, Italy and Spain

3.1. Operational set-up of the trilateral exercise

The trilateral comparison of b.o.p./i.i.p. data was set-up for Austria, Italy and Spain.[9] The trilateral comparative exercise, coordinated by the ECB, took place virtually between the months of October 2022 and April 2023, during which the three contact persons from the participating institutions (the central banks of Austria, Italy and Spain) could dedicate around one third of their full-time working time to this project.

A common virtual space for the trilateral exercise was created with restricted access to guarantee a protected exchange of bilateral data, confidential micro-data on the results of the detailed investigations and information on the different methods and compilation choices. Virtual contact points between the ECB and the three country contact persons were organised every second week, with the possibility of more frequent contacts between the country participants to discuss their activities in more detail.

Bilateral annual comparison tables of the b.o.p./i.i.p. details of the three participating countries were prepared by the ECB, based on quarterly bilateral data sent to the ECB in the context of the b.o.p./i.i.p. guideline[10], and shared with the country participants. The data for the exercise was based on the October 2022 quarterly data vintage[11]. The quarterly data was aggregated to yearly frequency to smoothen out temporarily mismatches, and the focus of the comparative analysis was set on the years 2019, 2020 and 2021, for two main reasons. First, the time series dimension allows to distinguish potential structural discrepancies in the data from discrepancies which are only limited to one occurrence. Second, an important consideration was that 2019 is considered already a final vintage of data, while 2020 and 2021 can still be subject to vintage revision issues as well as potential specific additional data quality challenges related to the extraordinary pandemic-related issues in data collection and compilation. Thus, considering these three years sounded like a balanced decision to detect both structural and idiosyncratic discrepancies in the data.

For b.o.p./i.i.p. items where the comparison could make use of granular data, it was first necessary to carry out an in-depth preliminary investigation to define the country that needed to share the microdata (e.g. Italy to share with Spain the largest

[9] Within the context of the virtual ESCB Schuman programme, an initiative by the ESCB to foster external mobility among staff. It consists of projects on a topic of interest for the hosting/coordinating institution, where colleagues from visiting institutions can be involved physically or virtually.

[10] See here: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02011O0023-20220516

[11] Normally the October data vintage includes longer revision periods for country data and thus also previous periods are regularly revised.

operation related to foreign direct investment dividends in 2020 and 2021). Moreover, a template was defined with all the necessary information to be shared.

As regards loans data in other investment, AnaCredit data were used to evaluate any missing reporting entities: a restricted file was shared with the top largest loans that resident companies received from non-resident banks.

Methods and data related to the compilation of goods item were also shared between each country pair.

3.2. Differences emerging from the qualitative analysis

The analysis of the comparative country tables on methodology, methods and source data showed that the methodology of the three countries is mostly aligned with the international standards. This finding is not unexpected since the alignment of euro area countries 'b.o.p./i.i.p. data with the international methodology is regularly checked, assessed and encouraged at national and European level[12].

In other investment, potential structural causes of asymmetries emerged from the different use of specific data sources across the three countries, such as mirror data based on BSI statistics[13] and BIS locational banking statistics[14] for deposits and loans (see paragraph 3.4.3 for additional details). Another difference was the use of micro-data for quality assurance during the compilation phase to find reporting mistakes or missing information and correct it.

Concerning deviations in foreign direct investment (FDI), a case was observed in Spain. Transactions and positions in trade credits and advances are always classified as other investment, even when they occur between entities in an FDI relationship. Therefore, they are not included in the FDI functional category, causing a structural discrepancy. Moreover, due to missing data sources on exact geographical counterparties, the regional breakdown is estimated based on the known geographical proportions in exports and imports of goods and services. These geographical estimates can have an impact on the bilateral comparison under discussion.

The valuation of unlisted and other equity was another well-known challenging item in FDI, which can bring structural discrepancies across countries. There is methodological guidance in the BMP6 manual, offering a list of alternative methods when the market prices are not observable[15]. However, if the partner countries opt to apply two different methodologically acceptable methods, bilateral asymmetries can

[12] See, for example, the Euro area and national balance of payments and international investment position statistics – 2021 Quality Report and the European Union Balance of Payments and International Investment Position statistical sources and methods – "B.o.p. and i.i.p. e-book", October 2023.

[13] The balance sheets of monetary financial institutions (MFIs) (europa.eu)

[14] Locational banking statistics (bis.org)

[15] For more details, see "Chapter 7. International Investment Position, B Direct Investment" of the BPM6

structurally arise for the same unlisted equity position (see paragraph 3.4.2 for additional details).

3.3. Size of data asymmetries and prioritisation choices

Country pair data tables provided an overview of the bilateral data, size and direction of the asymmetries for the different categories of the bilateral b.o.p./i.i.p.. Appendix A presents a simplified version of the country pairs data tables used in the comparative exercise.[16]

For Italy and Spain, relevant and recurrent asymmetries emerged for goods, travel services and reinvested earnings in the current and capital accounts. In the financial account and i.i.p. it was mostly FDI equity, other investment (OI) 'loans and deposits' and trade credits.

For Austria and Italy, relevant and recurrent asymmetries emerged for goods, travel services and reinvested earnings in the current and capital accounts. In the financial account and i.i.p. it was mostly FDI equity, FDI debt and OI loans.

For Austria and Spain, relevant and recurrent asymmetries emerged for transport and travel services and reinvested earnings in the current and capital accounts. In the financial account and i.i.p. it was mostly FDI equity, OI 'loans and deposits' and trade credits.

We made use of the RELV* synthetic indicator[17] to support our prioritisation strategy on the selection of b.o.p/.i.i.p. items for the in-depth investigation phase. In the current and capital account, goods and FDI equity income were the most relevant items for asymmetries for both Italy and Spain, while for Austria the transport services item dominated (see Chart 1). Travel services results were rather relevant for Austria and Italy, in particular in 2019 and 2020.

In the financial account, FDI equity was the most relevant item for asymmetries for all countries (see Chart 2). FDI debt showed some volatility with visible importance in specific years. Trade credits in OI was relevant for Italy and Spain.

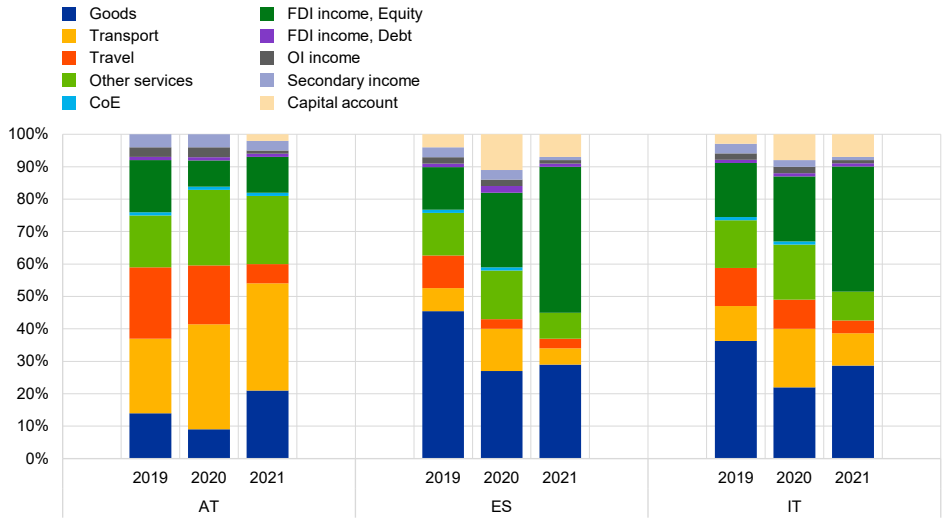
In the i.i.p., FDI equity was the most relevant item for asymmetries for Italy and Austria (for the latter it represented almost half of the i.i.p. asymmetries). For Spain the OI items represented more than half of the i.i.p. asymmetries.

[16] The country tables used in the trilateral exercise contained additional data details, e.g. a detailed breakdown of services data in the different services breakdown, a breakdown of FDI equity transactions singling out the role of reinvestment of earnings, a full breakdown of other investment by instrument.

[17] See Box 2 for more detailed information on the RELV* indicator.

Chart 1

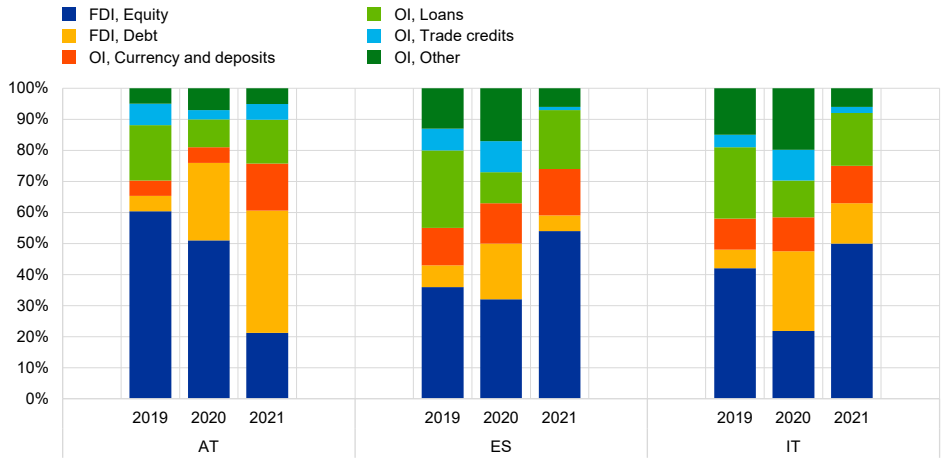
Results on RELV* indicator for the main items of the current and capital account



Notes: CoE refers to cross-border compensation of employees.

Chart 2

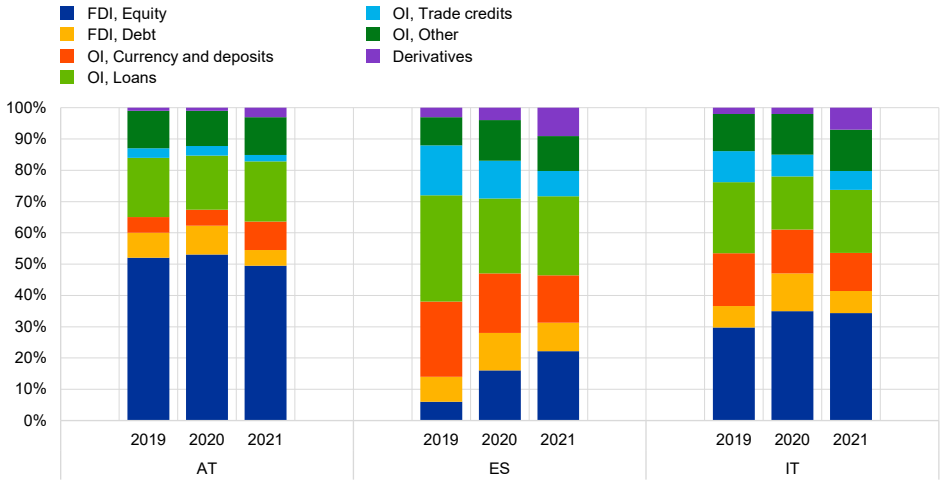
Results on RELV* indicator for the main items of the financial account



Notes: "OI Other" includes the remaining items form other investment, e.g. accounts/receivable payable.

Chart 3

Results on RELV* indicator for the main items of the international investment position

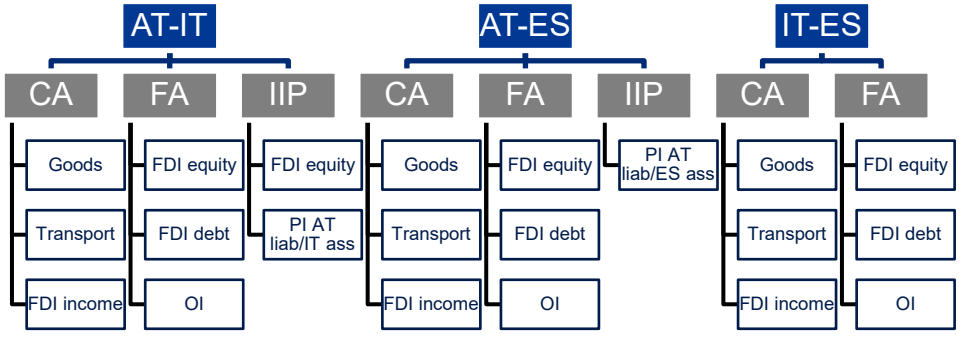


Notes: "OI Other" includes the remaining items form other investment, e.g. accounts/receivable payable.

Our analysis of bilateral asymmetries in the three countries, combined with insights from the RELV* synthetic indicator and qualitative analysis of methods and data sources, led us to prioritize the in-depth investigations of 3 items from the current and capital accounts, 3 items from the financial account, and 1 item from the i.i.p.. Furthermore, we also looked at FDI income because it is closely related to FDI equity positions. An overview of the prioritised items for each country pair is shown in Chart 4.

Chart 4

Prioritised b.o.p./i.i.p. items for the in-depth investigations



Notes: The chart shows the item prioritised for each country pair. Liab. = liabilities; Ass.= assets.

3.4. Main reasons for asymmetries and reconciliation results

3.4.1. Goods and transport services

As mentioned in Section 3.3, relevant and recurrent asymmetries between the three countries emerged for goods, being particularly relevant for the overall current account asymmetries of Italy and Spain.

Compilation of goods exports/imports in b.o.p. starts from source data from the international trade in goods statistics (ITGS), usually compiled by the National Statistics Institute (NSI). ITGS data record exports and imports of goods when the physical flow of goods passes across borders. In b.o.p. what matters is instead the change of the economic ownership between residents and non-residents. The ITGS information needs thus to be adjusted for b.o.p. purposes to move away from the concept of the physical crossing of goods across borders to the concept of cross-border change of ownership[18].

Therefore, discrepancies in the b.o.p. goods statistics between countries may originate from two main reasons:

1. differences in the underlying ITGS source data.
2. differences in adjustments to derive b.o.p data from ITGS source data.

First of all, we compared the methods used to derive b.o.p. goods concepts to adjust ITGS data. While conceptually all countries undergo similar adjustments to derive b.o.p. goods from ITGS data, some estimations need imputations and modelling assumptions to derive these adjustments and, as they may differ across countries, they may contribute to the bilateral discrepancies. It was however challenging to directly map the exact contribution of each adjustment to the existing bilateral asymmetries since some of these adjustments lack the bilateral geographic details needed for our comparison (e.g., illegal trade is estimated by the NSI for the overall goods imports/exports without any bilateral counterparty country detail).

The overall comparison of the bilateral reconciliation tables between ITGS and b.o.p. data, highlighted that asymmetries between our country pairs are usually directly due to differences in ITGS source data. For example, between Italy and Spain, on average, 70% of asymmetries in the b.o.p goods figures are due to the respective differences in the underlying ITGS data, while around 30% is due to differences in the adjustments from ITGS to b.o.p. concepts.

Transport services is another relevant category of asymmetries in the current account among our three countries, with particularly high relevance for Austria. While

[18] For further details between balance of payments and foreign trade statistics see https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Differences_between_balance_of_payments_and_foreign_trade_statistics&oldid=405507

countries mostly use survey information to estimate these data, differences can derive from using different data sources and/or different adjustments/estimation models across countries. For example, in Italy the item comprises three aggregates computed from three different surveys: (i) the passenger transport services based mainly on the Italian International Tourism survey; (ii) the freight transport (and related auxiliary services) computed from Foreign Trade Statistics and integrated with an ad hoc survey; (iii) the postal services estimated through a quarterly enterprise survey. In Austria, data for transport mainly comes from a dedicated survey to the non-financial sector (by mode of transport), complemented with estimates of the cif/fob correction (distance/freight rate method) and estimates of transport components in travel packages as well as fuel exports according to price differentials with neighbouring countries. In Spain data obtained via surveys are complemented with estimations of the freight services based on prices per kilometre and tonne transported, according to the origin and destination, for different transport modes.

It was generally rather challenging to analyse and pinpoint the exact reasons behind the bilateral differences in the current account items in our exercise, due to different methods of compilation and different ways to perform source data adjustments performed across countries.

While it is difficult to directly attribute discrepancies in services to a single cause due to the difficulty of sharing the underlying microdata/survey detailed results, several initiatives are ongoing at the international level to understand and reconcile differences across countries in the services item (mainly organised by Eurostat, via the International Trade in Services Statistics (ITSS) Asymmetry Resolution Mechanism (ARM), and the OECD). The focus of these initiatives is to exchange methods across countries and try to converge to agreed best practices.

3.4.2. Direct investment

An exhaustive analysis of the asymmetries in the FDI category was possible thanks to the availability (and possibility to share) microdata for most of the examined cases. Starting from the asymmetries amounts in the bilateral country comparisons (Appendix A) it was possible for the country participants to share in a protected environment the respective microdata information behind each bilateral transaction/position/income flow at the company level. Comparing this very detailed information across countries, it was then easy to pinpoint which company level transactions/positions/income flows were driving the overall bilateral asymmetry amounts. This detailed comparison was realized both for equity and debt instruments in the financial account and income flows[19]. Additionally, special attention was directed towards reconciling one case of a large divergence in FDI positions between Austria and Italy.

[19] Note that the specific issue of trade credits will be addressed in the Other investment category (p 3.4.4).

Across the analysed cases, we identified several recurrent factors contributing to the FDI asymmetries among the three country pairs:

- differences in the valuation method used for unlisted equity;
- different classification of dividends (as ordinary or super-dividends);
- transactions recorded differently in the event of large corporate financial restructurings;
- lack of information or inaccuracies in reporting.

First, the topic of **different valuation methods** of unlisted equity as a cause for large bilateral asymmetries in FDI data has been discussed extensively within the statistical community. The international methodological guidance allows several methods as a proxy for market value, e.g., own funds at book value, use of net asset value[20]. Our detailed exercise revealed that large part of the asymmetry in bilateral FDI equity positions between Italy and Austria were due to a different valuation method applied for positions in the banking sector: Italy values its foreign subsidiaries in the banking sector at book value, while the same entities are valued at own funds at book (OFBV) value by Austria. The two different valuation methods provided very different valuation estimates to the same bilateral FDI position. In Italy, for the asset side, data are compiled using integrated reports related to (asset) balance sheet information submitted for supervisory purposes. This analysis shows how it is in practice very difficult/challenging to evaluate positions according to the OFBV for the asset side (i.e., for the values of foreign subsidiaries) since compilers do not have at their disposal detailed information on the books of foreign subsidiaries, unless such information is obtained via a dedicated survey.

Second, also the topic of how the different treatment of distributed earning as **ordinary dividends or super-dividends** can lead to asymmetries has been often discussed in the statistical community. In our detailed investigations, several cases of asymmetries were linked to this issue. For example, there were situations when a company paid a dividend that is related to past years operational income, drawing it from the company's reserve accounts; however, when looking at the history of dividend payments from that company, this looks like its regular behaviour and thus this can be seen as a regular dividend. Following the current international statistical standards, countries may get different interpretations on the definition/practical application of the superdividends concept which can lead to asymmetries between how they records items in the income and the financial account. Furthermore, it is important to highlight that although the identification of superdividends (as opposed to regular dividends) does not affect the net current and net financial accounts (and thus does not impact net errors and omissions), it does change the composition of the subitems (reinvested earnings and equity). This topic is being clarified in the ongoing update of the international statistical manuals and this additional clarity on

[20] For additional information on this topic and on the effort to improve cross-country consistency in the ongoing update of the international statistical standards, the interested reader can refer to the IMF Direct Investment task Team (DITT) guidance note D.2 Valuation of Unlisted Equity.

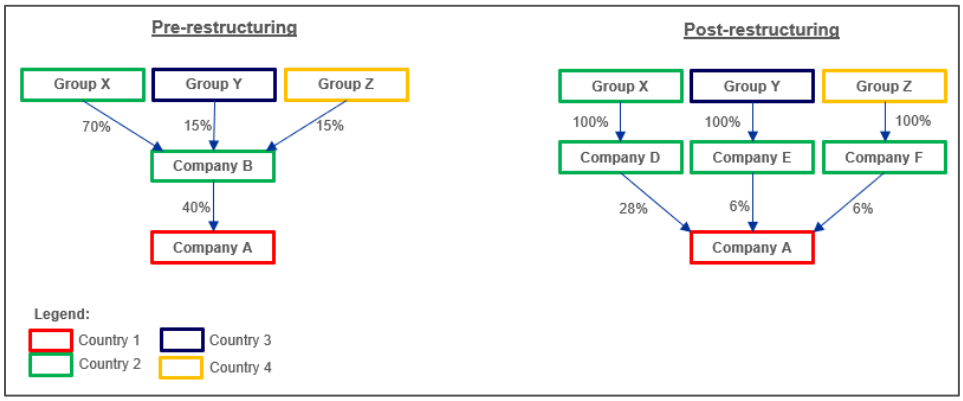
how to record these distributions of funds will help compilers in the future and improve symmetric treatment across countries[21].

Third, change of economic ownership in the **corporate financial restructuring of MNEs** can lead in some cases to different treatments, in particular when these corporate events are complex and involve several operations with different entities in different countries and in different periods. The same cross-border corporate restructuring cases/operations are sometimes identified by country compilers either as “transactions” or as “other changes in volume”, depending on their interpretation of the manuals and the (partial) information available at the moment of data compilation. For instance, we analysed in depth a complex scenario in which, due to a winding up of a joint investment vehicle, an existing company holding an FDI position abroad is split by its shareholders in three different companies, each of them reflecting the control of the three ultimate parent groups and each of them being assigned part of the original FDI position abroad in proportion of the original joint investment vehicle shareholders’ capital (see Chart 5 below). While the overall sum of the participations of the three new entities in the foreign affiliate is still the same as the single participation of the previously existing joint investment vehicle, now only one of these three investment links can be configured as FDI, while the other two investment links fall below the FDI threshold and thus are to be reclassified as portfolio investment. The asymmetry in the b.o.p. treatment here originated from the different way of recording the change in shareholding percentage (leading to functional category re-classification of part of the investment): as transaction or as other changes in volume. In such instances, an exhaustive work analysing the pre- and post-operation ownership structure of the entities involved becomes necessary, as does the knowledge of the business implications or the goal of the operation. In this regard, there are ongoing initiatives within the framework of the ongoing revisions of the international statistical standard dedicated to addressing these matters and to provide additional clarity on how to symmetrically record these complex corporate restructuring operations.

[21] For additional information on this topic, the interested reader can refer to the IMF Direct Investment task Team (DITT) guidance note D.17 Identifying Superdividends and Establishing the Borderline Between Dividends and Withdrawal of Equity in the context of Direct Investment

Chart 5

Example of a complex corporate restructuring operation with impact on b.o.p. flows



Notes: This is a simplified version of a real case analysed. Three different groups (X, Y and Z) had set-up a joint investment vehicle in Country 2 (Company B) to hold 40% of the equity capital of Company A (in Country 1). With the corporate restructuring, the joint investment vehicle Company B is wound up and its cross-border participation in Company A is split in three newly created different companies (D, E and F), each of them expressing the interests of the three different investment groups. Due to the new shares' percentage held in Company A, only one cross-border link (Company D to Company A) is still to be classified as FDI, while the investment links from Company E and Company F into Company A are now to be classified as Portfolio Investment.

Finally, there is **lack of information or inaccuracies** in reporting. Although the number of companies and the amount involved were not substantial, these cases may emerge when one reporter did not get any information on a single position/transaction/income flow, or the information received was inaccurate. These cases justified further examination based on the micro-data received from the counterparty country and, in some cases, they were solved after contacting the reporting agent or analysing in detail balance sheet information to find out where the misreporting originated. The most relevant cases were rather concentrated as they regarded two companies between each pair of countries.

We analysed the FDI data mostly based on exchange of microdata for individual transactions and positions. For each of the four macro reasons illustrated above, we found out that asymmetries are concentrated in a small number of cases, linked to the operations of a small group of large enterprises. Often a single enterprise is responsible for the great majority of the asymmetry, with the asymmetric recording even affecting different items (e.g., equity transactions and income recording). For example, for several FDI bilateral asymmetries, one single case/company was responsible between 70% and 90% of the bilateral asymmetry. This finding shows how the phenomenon of FDI is very concentrated and obtained symmetric recording of a small number of large cases would significatively improve bilateral consistency in data across countries.

3.4.3. Other investment

The bilateral discrepancies in deposits and loans were mainly due to differences in benchmarking to other datasets. By comparing the two datasets directly, we were able to identify and reconcile discrepancies in loans.

Concerning the reporting gap of deposits and loans of foreign banks[22] from/to domestic private households, non-financial corporations as well as other financial institutions, different compilation methods/data sources are applied:

- Austria uses the mirror data of BSI statistics for the euro area as well as the BIS locational banking statistics[23] to close the reporting gaps;
- Spain adjusts the data only for private households;
- Italy does not use BSI and BIS locational banking statistics for compilation purposes.

During the trilateral exercise, the international AnaCredit database was also used for the in-depth analysis of loans by foreign banks to resident corporations. For example, an analysis of the top five loans from Austrian banks to Italian or Spanish nonfinancial cooperations was helpful to identify missing data reporting from the Italian or Spanish nonfinancial corporations.

Discrepancies in loans and deposits in some cases compensate, suggesting a misclassification in one of the counterparties. One possibility comes from an issue related to compilation method: in Italy, deposits of deposit-taking corporations vis-à-vis a non-deposit-taking corporations are not reclassified as loans, as suggested by the international statistical manuals, and are classified as deposits. This led to the result that in the bilateral data, especially between Italy and Spain, compensating discrepancies in loans and deposits in sum were showing.

The asymmetries in insurance, pension schemes, and standardised guarantee schemes were due to national differences in sources. The highest discrepancies were between Italy and Austria as well as Italy and Spain. While Austria mainly uses information from financial market authority and Solvency II data, Italy bases the compilation on direct reporting and tax information. Spain uses insurance corporation and pension fund statistics, tax information, as well as information from the Spanish financial regulatory department.

For trade credits, the main reason for asymmetries is a methodological deviation in Spain. Italy and Austria use a direct reporting system, but cross-border trade credits and advances in Spain are classified in the functional category of other investment only. This means there are no trade credits and advances recorded in FDI for Spain[24], which resulted in a relatively high asymmetry between Spain and Italy. At the same time, only small asymmetries were detected between Austria and Italy and

[22] Monetary Financial Institutions

[23] Locational banking statistics (bis.org)

[24] In the benchmark revision 2024 Spain will begin to differentiate trade credits and advances from direct investment from those of other investment.

Austria and Spain. In order to further investigate asymmetries between Spain and Italy, a micro data analysis was performed. In this case, differently from what emerged in the FDI, flows data were not concentrated in a small number of enterprises but they are spread on a quite large number of medium sized operations. Moreover, it sheds in light another possible methodological source of asymmetries: data coming from surveys are grossed up and even if the micro data are equal the grossing up procedure can led to different total amounts.

3.4.4. Portfolio investment

In the absence of reliable data on the residency of non-resident holders of portfolio liabilities, the holdings of domestic securities by non-residents are often estimated using a "residual approach". This method involves subtracting the total holdings of domestic securities by resident investors from the total amount of domestic securities outstanding, and assuming that the remaining amount is held by non-resident investors. However, this approach results in missing information on the geographical breakdown of liabilities[25].

Austria has implemented an estimation on an annual basis based on mirror data from Securities Holding Statistics by Sector (SHSS) and the Coordinated Portfolio Investment Survey (CPIS) to analyse the geographical breakdown. The quality of country-specific results depends on the outcome of the residual approach as well as the quality of mirror data in the SHSS and the CPIS. The incomplete reporting of assets in the CPIS, due to non-reporting countries and hidden wealth[26], results in Austrian PI liabilities exceeding Austrian securities held by foreign investors.

In our exercise, the geographical breakdown of Austrian PI liabilities stocks was compared to the Spanish and the Italian assets, resulting in only minor bilateral asymmetries. This exercise showed that using SHSS and CPIS for the geographical breakdown of the i.i.p. may be a good source, at least within the Euro Area.

3.4.5. Summary table on expected reconciliation results

Based on the findings of our analyses, the main expected reconciliations are in FDI and mainly linked to the described topics of market valuation, dividends vs. super dividends, and corporate financial restructuring (chapter 3.4.3.). The key finding that only a small number of large MNEs dominate the discrepancies in FDI calls for a particular care and attention to the correct recording of the cross-border operations on MNEs. The current update of the international statistical manuals provides a very valuable opportunity to help compilers to narrow down the cases where different

[25] Detailed information on the estimates of the geographical allocation of portfolio investment liabilities can be found in the EU b.o.p./i.i.p. e-book and, for the estimates on the geographical breakdown of euro area portfolio liabilities in the document https://www.ecb.europa.eu/pub/pdf/other/Geographical_allocation_of_euro_area_portfolio_investment_income_debits-methodological_note-201904~617d8ce92c.en.pdf

[26] Schmitz, Martin, "An assessment of euro area households' missing foreign assets," in Bank for International Settlements, ed., New developments in central bank statistics around the world, Vol. 55 of IFC Bulletins chapters, Bank for International Settlements, 2021.

interpretations of the guidance is possible and to increase the focus on providing additional clarity on how to treat complex cross-border economic phenomena.

Other investment (OI) also showed potential reconciliations results, but mainly based on missing reporting, which were uncovered by using granular information from AnaCredit information. Another expected reconciliation result will come from the resolution of the methodological deviation in Spain concerning trade credits. In some cases, additional reporting mistakes or missing information were discovered across the three countries, though they had a relatively small impact on the observed asymmetries.

Overall, there are no expected reconciliations results for portfolio investment as it was a unilateral exercise by Austria and in goods and transport services, due to asymmetries mostly due to source ITGS data and different methods used in the compilation, respectively.

	Direct Investment	Other Investment
Short-term reconciliation	Correction of wrong reporting	Correction of wrong reporting
Medium-term reconciliation (benchmark revision/ revision of international manuals)	Differentiation in trade credits and advances data	Use of mirror data
Long-term reconciliation (international guidance needed)	Dividends vs superdividends Corporate financial restructuring	

Box 3: A gravity model approach to benchmarking b.o.p. asymmetries

Prepared by M. Ryzhenkovby and J. Diz Dias

Bilateral b.o.p. between countries often experience statistical asymmetries due to various reasons such as source data, compilation methods and techniques, methodological choices. A gravity model may be used to approximate the “true” values for the b.o.p. items as suggested by countries’ fundamentals.

We concentrate on the following items after a detailed analysis of the bilateral b.o.p./i.i.p. between Austria, Italy and Spain for the reference period 2019-2021: (i) trade in goods (transactions), (ii) trade in transportation services (transactions), (iii) FDI in equity (positions), (iv) FDI in debt instruments (positions).

We use a generic specification of a gravity model expressed as:

$$\log(\mathrm{Y_{odt}}) = \alpha_{\mathrm{o}} + \alpha_{\mathrm{d}} + \alpha_{\mathrm{t}} + \beta_1 \log(\mathrm{GDP_{ot}}) + \beta_2 \log(\mathrm{GDP_{dt}}) + \beta_3 \log(\mathrm{dist_{od}}) + \Gamma \mathrm{X_{odt}} + \epsilon_{\mathrm{odt}},$$

where Y_{odt} is a variable of interest (e.g., bilateral exports of goods), α_o is a fixed effect for an origin country (e.g., exporter), α_d is a fixed effect for a destination country (e.g., importer), α_t is a time (year) fixed effect, GDP_{ot} is gross domestic product of an origin country, GDP_{dt} is GDP of a destination country (e.g., importer), $dist_{od}$ is distance between the origin and destination, and X_{odt}

is a vector of controls that includes population of both counterparties, bilateral dummies for a joint border, a common official language, common legal system before the transition, a bilateral dummy for both counterparties belonging to the euro area, social connectedness index, corporate tax rate in each country, as well as real exchange rate / harmonised competitiveness indicators for both counterparties.

Conceptually, we use a set of fixed effects α, coefficients β and Γ with respective control variables to predict the "true" values for a b.o.p./i.i.p items of interest. The idea for the exercise is comparing bilateral figures (mirror data) and fitted values from the gravity model could indicate the direction of the asymmetry[27]. Using the described gravity equation, we implement the following four approaches: (A1) separately for exports/assets and imports/liabilities, (A2) separately for exports/assets and imports/liabilities but include variable lags on the left-hand side (and GDP growth), (A3) only for reported exports/assets while including mirror imports/debits to the right-hand side, (A4) only for the average of reported and mirror values.

Sample contains bilateral transactions/positions between all EU countries, except for the UK[28], for the period of 2013-2021. We extended the sample to reduce the impact of COVID-induced temporary de-globalization. The variables were converted to annual frequency using the following approach: (i) sum up the quarterly values for transactions within a given year; (ii) assign the value of a position in the fourth quarter for a given year. Before generating annual values, we: (i) drop all the negative values[29], (ii) drop all the values with zeros; (iii) drop all the empty observations; (iv) check whether a sample contains all four quarters of data for transactions.

In addition, we reduced the impact of outliers with a two-step approach. First, we computed the standard deviation of gaps between reported and mirror data and drop observations with the absolute value of gap above 3 standard deviations. Second, following Schmitz and Brisson (forthcoming)[30], we calculate a symmetry index and use it for weighting observations in regressions (observations with more symmetry have bigger weight). Reporting is symmetric if an absolute difference between reported and mirror values is below 30% of their sum, i.e. $\left|x_{i,j}^{rep} - x_{i,j}^{mir}\right| < \left(x_{i,j}^{rep} + x_{i,j}^{mir}\right) * 30\%$. A symmetry index is defined as a ratio of symmetric observations to a total number of observations for a given country pair (between zero and one), i.e. $SI_{i,t} = \frac{Flows_{i,t}^{symmetrical}}{Flows_{i,t}^{total}} \in [0,1]$. A symmetry index is used as a weight for each observation for a given country pair.

The results obtained using the gravity model and sample are presented in Figure 1.

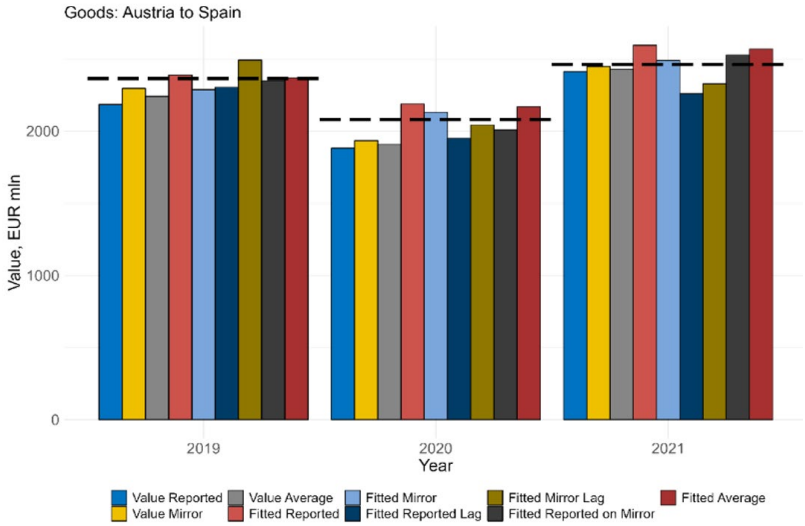
[27] Consider a case of exports of goods between countries A and B – the reported value is the A exports to B reported by A, while the mirror value is B imports from A reported by B. If fitted values are closer to the reported value, the A exports estimate is deemed closer to a "true value"; if closer to the mirror value – the B imports estimate is deemed closer to a "true value".

[28] United Kingdom is excluded to reduce the impact on Brexit on the estimates

[29] Could happen in case of a significant influence of merchanting

[30] Brisson, R. and Schmitz, M. "The ECB's enhanced effective exchange rates and harmonised competitiveness indicators – an updated weighting scheme including trade in services", *Statistics Paper Series*, ECB (forthcoming).

Figure: Fitted values from a gravity model for exports of goods from Austria to Spain
(EUR mln)



Note: Fitted values for exports of goods from Austria to Spain. Value reported and mirror value is exports reported by Austria and imports reported by Spain, respectively. The value average is an average of reported and mirror values. Fitted reported and fitted mirror are predicted values for reported and mirror data using approach (A1). Fitted reported lag and fitted mirror lag are predicted values for reported and mirror data using approach (A2). Fitted reported on mirror is predicted value of exports using approach (A3). Fitted average is predicted value of average between reported and mirror data using approach (A4). Dashed lines show an average over all fitted values for a given year.

The various methods estimate different results that may be very different. To deal with this issue, we collect results obtained from four approaches and calculate the average of the estimates. Next, we compare this average with reported exports/assets and mirror imports/liabilities observable in the data and check which one is closer to the average. This exercise is not conclusive and only provides suggestive evidence. Moreover, in addition to different results for the various methods, the asymmetry pattern could vary between years. As a result, while for some items or country pairs it is possible to make a conclusion which values are closer to the suggested "true" values, in some cases, the conclusion is not clear (see Table). In case we find that both reported and mirror values are closer to the estimates, we note the country for a given country pair and item is closer to the estimate. Otherwise, we make partial conclusions or note that the relationship is not clear.

Table: Comparing reported values with average over specifications

Item	Austria-Spain	Austria-Italy	Spain-Italy
Goods	ES closer to the estimates	AT closer to the estimates	Exports values closer the estimates
Transportation services	AT closer to the estimates	AT closer to the estimates	ES closer to the estimates
FDI in equity	Mirror values closer to the estimates	IT closer to the estimates	ES assets are closer, IT assets – not clear
FDI in debt instruments	ES assets are closer, AT assets – not clear	IT closer to the estimates	IT closer to the estimates

4. Suggested initiatives for improving quality of bilateral data

The trilateral exercise revealed several opportunities to further reduce the differences observed in the bilateral flows and positions between countries. Indeed, we noticed that with a few very target initiatives we can get considerable reconciliation results that improve the data quality of b.o.p./i.i.p.. The two initiatives described in the next subsections are presented by effort required to the compilers of b.o.p./i.i.p..

4.1. ESCB data sharing of bilateral data

The ECB has been collecting bilateral flows and positions between EU countries, the so-called the intra-EU flows and positions, for several years. The main purpose is to improve the euro area aggregates, as intra euro area flows and positions need to be excluded for the euro area when considered as one economic territory area, and to assist in the event euro area enlargement.

The bilateral data are transmitted to the ECB and are kept in the ECB systems. The sharing of the bilateral data with euro area statistical authorities has been considered in the past but has never happened in a systematic manner. The trilateral exercise made particular use of the bilateral data available in the ECB systems and securely shared the data with participating countries.

The sharing of the bilateral flows and positions between the euro area countries has the potential to regularly inform each euro area country on how their data sources and methods compare with the mirror data from partner euro area countries. The information can be used in many ways:

- Ad-hoc reconciliation of a single but large difference. The reconciliation can anticipate future revisions and promote better internal consistency of the accounts in b.o.p./i.i.p.. In fact, it is possible that a country may miss information while its partner country already collected the data. This is related to the different frequency of the data sources across countries.

- Multi-partner bilateral analysis (asymmetries indicators) for a given item to help in calibrating data sources and/or compilation methods. This is particularly relevant if a country shows systematic bias, all in the same pattern, with various partner countries simultaneously. The study will help in detailing the root causes and devise actions to correct the situation.

At its meeting of May 2023, the WG-ES agreed to share the bilateral data at the end of the quarterly compilation rounds. This was perceived the best timing to share the bilateral data, benefiting from the compilation round stabilisation and providing enough lead time to act before the next quarterly compilation round. The network of

WG-ES members will provide a decentralised and direct approach to address the bilateral differences.

4.2. Structural reconciliations for large MNEs

B.o.p./i.i.p. are highly influenced by the global role of large MNEs. The organisation of global value chains[31] by MNEs have grown in complexity and involve many countries. Also, the distribution channels of the goods and services offered by MNEs are often set up to serve consumers globally. Such a complexity and intensity of trade in goods and services, intellectual property rights, as well financial flows both intra and extra MNEs is observable practically in all b.o.p./i.i.p. items.

Such dominance of MNEs in b.o.p./i.i.p. is also evident in the asymmetries between country bilateral data, which is confirmed by the results of the matching study of this paper.[32] In fact, very few MNEs accounted for most of the relevant differences in the matching study. The main reasons for the differences are:

- Change of economic ownership: transactions are recorded when there is a change of the economic ownership, as a rule in b.o.p./i.i.p.. This principle is particularly challenging to apply in MNEs and their complex global value chains. Differences in bilateral country data can arise for instance by one MNE affiliate reporting a change of ownership for some intermediate goods, while the next MNE affiliate in another country does not.

- Valuation of intra-group transactions and positions: MNE units may report different values of the same intra-group trade recorded in goods and services and of the same intra-group financials recorded in FDI to their respective resident statistical authority. In the matching study the valuation of FDI equity positions showed a large bilateral difference related to the selection of the valuation method for unlisted equity used by the units (see section 3.4.2).

- Generation and distribution on income along the chain of control: MNEs have a great control to shift profits from one location to the other. This means that the generation of income can quickly change from one reference period to the other, sometimes using temporary SPEs. In addition, the distribution of income can create classification difficulties linked to the consistent application of definitions across countries and respondents, most evidenced in the matching study by the application of the ordinary versus super dividends definition.

[31] Global value chains include sequential value-added functions such as design, production, marketing, transportation, logistics, distribution, support and after-sales service to final consumers. All these activities can happen in any location around the globe and not exclusively in one unit and country. For more information see Global value chains and economic globalization, Report to Eurostat by Timothy J. Sturgeon, 2013 and Lane, P.R., "The analytical contribution of external statistics: addressing the challenges", keynote speech at the Joint European Central Bank, Irving Fisher Committee and Banco de Portugal conference on "Bridging measurement challenges and analytical needs of external statistics: evolution or revolution?", 17 February 2020.

[32] Inconsistencies may also arise in the reporting of MNEs to other statistical domains than external statistics.

5. Conclusion

Our paper presents a novel approach to identifying and addressing asymmetries in balance of payments and international investment position statistics. By leveraging a trilateral comparison framework, we were able to detect systematic patterns that indicate inconsistencies in the data and prioritize the analysis and reconciliation of specific breakdowns that contribute most to the overall bilateral asymmetries between countries.

Our pilot project involving the comparison of b.o.p./i.i.p. data of Austria, Italy, and Spain demonstrated the effectiveness of our framework in identifying and reconciling bilateral asymmetries. The main reasons behind asymmetries involved all possible situations, related to the interpretation of statistical concepts, data collection sources, and statistical estimation methods. By sharing microdata in a safe and protected fashion, we were able to solve the majority of bilateral asymmetries in b.o.p./i.i.p. data. We contributed to improve the accuracy and reliability of these statistics for the benefit of policymakers, economic analysts, and the public to make better-informed decisions based on high-quality international economic data.

Our project highlights the importance of international cooperation and coordination in improving the quality of b.o.p./i.i.p. statistics. The trilateral setting of our exercise allowed for in-depth comparisons between country pairs that are rarely involved in exchanges in existing European initiatives on asymmetries, and the sharing of microdata enabled the identification of systematic patterns that indicate inconsistencies in the data.

Our framework has the potential to be applied to other countries and regions, and we encourage policymakers and statistical agencies to adopt this approach to improve the accuracy and reliability of their b.o.p./i.i.p. statistics. By working together, we can enhance the quality of international economic statistics and support more informed decision-making in the global economy.

Future work may revolve around implementing and refining the ESCB data sharing of bilateral data and structural reconciliations for large MNEs, with a focus on monitoring their effectiveness in mitigating differences in bilateral data. Furthermore, additional research may investigate the development and application of sophisticated algorithms that can assist in the intricacies of MNEs' global value chains in statistical recording. For example, future exercises could involve several countries collaborating on reconciliation efforts, with a focus on specific MNEs, to provide comprehensive insights and promote better internal consistency of the b.o.p./i.i.p..

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Appendices

Appendix A: Detailed tables on country pairs b.o.p/i.i.p. data

Table A.1: Spain and Italy

	2019						2020						2021					
	Current and capital account						Current and capital account						Current and capital account					
	Credit ES	Debit IT	Asym	Debit ES	Credit IT	Asym	Credit ES	Debit IT	Asym	Debit ES	Credit IT	Asym	Credit ES	Debit IT	Asym	Debit ES	Credit IT	Asym
Goods	24.4	22.3	2.1	21.7	23.4	-1.7	21.1	19.7	1.4	18.7	19.2	-0.5	28.2	23.3	4.9	23.8	23.5	0.3
Services	5.6	4.9	0.7	3.4	3.4	0	3	2.4	0.6	2.4	2.1	0.3	3.9	3.7	0.2	3.4	2.7	0.7
FDI income, Equity	0.7	0.2	0.5	2.1	2.6	-0.5	0.5	0.2	0.3	2.6	1.3	1.3	0.7	0.2	0.5	2.1	9.6	-7.5
FDI income, Debt	0	0	0	0	0.1	-0.1	0	0.1	-0.1	0	0.1	-0.1	0	0.1	-0.1	0	0.1	-0.1
Other inv. income	0	0.1	-0.1	0.1	0.1	0	0	0.1	-0.1	0.1	0.1	0	0	0.1	-0.1	0.1	0.1	0
Secondary income	0.5	0.4	0.1	0.4	0.3	0.1	0.5	0.5	0	0.4	0.3	0.1	0.7	0.6	0.1	0.5	0.4	0.1
Capital account	0.1	0.2	-0.1	0	0.3	-0.3	0.1	0.2	-0.1	0	0.7	-0.7	0	0.9	-0.9	0	0.5	-0.5
	Financial account						Financial account						Financial account					
	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym
FDI, Equity	-1.1	0.1	-1.2	1.3	1.7	-0.4	1.6	0.5	1.1	-1.6	-1.4	-0.2	4.6	3.8	0.8	-0.2	7.2	-7.4
FDI, Debt	0.8	0.8	0	0.3	0.7	-0.4	0.7	1.9	-1.2	0.1	0.3	-0.2	0.4	0.1	0.3	0	-0.1	0.1
Other investment	4.5	3.5	1	0.5	-1.4	1.9	0	0.8	-0.8	2.8	1.7	1.1	6.5	6.1	0.4	0.7	1.4	-0.7
	International investment position						International investment position						International investment position					
	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym	Asset ES	Liab IT	Asym	Liab ES	Asset IT	Asym
FDI, Equity	11.3	10.9	0.4	38.9	38.9	0	12.3	11.3	1	37.9	35.5	2.4	16.9	15.7	1.2	34.8	40.4	-5.6
FDI, Debt	2.9	3.1	-0.2	3.7	4.7	-1	3.6	5.1	-1.5	3.8	5.1	-1.3	4	5.3	-1.3	3.8	5.1	-1.3
Other investment	25.7	20.6	5.1	13.8	12.3	1.5	25.7	21.2	4.5	16.7	13.6	3.1	33	27.7	5.3	17.4	15.1	2.3
Fin. Derivatives	1.9	1.9	0	1	1.5	-0.5	2.5	2.1	0.4	1.2	1.6	-0.4	3	4	-1	4.1	6.1	-2

Notes: Amounts are shown in EUR billions. Data from the October 2022 data vintage.

Table A.2: Austria and Italy

	2019						2020						2021					
	Current and capital account						Current and capital account						Current and capital account					
	Credit AT	Debit IT	Asym	Debit AT	Credit IT	Asym	Credit AT	Debit IT	Asym	Debit AT	Credit IT	Asym	Credit AT	Debit IT	Asym	Debit AT	Credit IT	Asym
Goods	9.3	9.8	-0.5	10.1	10	0.1	8.3	8.1	0.2	9	8.9	0.1	10.8	10.3	0.5	11.2	10.7	0.5
Services	2.9	2.4	0.5	2.8	3	-0.2	2.4	1.8	0.6	1.8	2	-0.2	2.9	1.7	1.2	3	2.6	0.4
FDI income, Equity	0	0.2	-0.2	0.4	1	-0.6	-0.2	0	-0.2	0.2	0.4	-0.2	0.3	0.1	0.2	0.8	0.5	0.3
FDI income, Debt	0	0.1	-0.1	0	0	0	0	0	0	0	0	0	0	0.1	-0.1	0	0	0
Other inv. Income	0.1	0	0.1	0	0	0	0.1	0	0.1	0	0	0	0	0	0	0.1	0	0.1
Secondary income	0.1	0.2	-0.1	0.1	0.1	0	0.1	0.2	-0.1	0.1	0.1	0	0.1	0.2	-0.1	0.1	0.1	0
Capital account	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.1
	Financial account						Financial account						Financial account					
	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym
FDI, Equity	0.1	0.3	-0.2	-1	0.8	-1.8	-0.1	0.1	-0.2	0.4	1	-0.6	0.5	0.1	0.4	0.6	0.3	0.3
FDI, Debt	-0.1	-0.2	0.1	0.1	0	0.1	0.2	1.1	-0.9	0	0	0	0.5	-1.2	1.7	0	0.1	-0.1
Other investment	0.5	0.7	-0.2	0.4	0.4	0	-0.8	-0.5	-0.3	-0.2	0	-0.2	2	1.5	0.5	0	-0.1	0.1
	International investment position						International investment position						International investment position					
	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym	Asset AT	Liab IT	Asym	Liab AT	Asset IT	Asym
FDI, Equity	3.6	4.1	-0.5	9.4	18.4	-9	3.6	4.2	-0.6	9.6	19	-9.4	4.1	4.3	-0.2	10.2	19.2	-9
FDI, Debt	1.5	2.2	-0.7	0.5	0.9	-0.4	1.7	3.2	-1.5	0.5	0.8	-0.3	2.2	2	0.2	0.5	0.9	-0.4
Other investment	6	3.8	2.2	4	5	-1	5	3.2	1.8	3.8	5	-1.2	7.2	4.9	2.3	3.8	5	-1.2
Fin. Derivatives	0	0.1	-0.1	0	0.1	-0.1	0	0.1	-0.1	0	0	0	0	0.3	-0.3	0	0.2	-0.2

Notes: Amounts are shown in EUR billions. Data from the October 2022 data vintage.

Table A.3: Austria and Spain

	2019						2020						2021					
	Current and capital account						Current and capital account						Current and capital account					
	Credit AT	Debit ES	Asym	Debit AT	Credit ES	Asym	Credit AT	Debit ES	Asym	Debit AT	Credit ES	Asym	Credit AT	Debit ES	Asym	Debit AT	Credit ES	Asym
Goods	2.2	2.3	-0.1	2.6	2.6	0	1.9	1.9	0	2.4	2.4	0	2.4	2.4	0	2.5	2.6	-0.1
Services	0.7	0.5	0.2	1.1	1.2	-0.1	0.5	0.2	0.3	0.6	0.4	0.2	0.6	0.3	0.3	0.8	0.6	0.2
FDI income, Equity	0.1	0.1	0	0.1	0.1	0	0.2	0.3	-0.1	0.3	0.3	0	0.2	0.2	0	0.2	0.4	-0.2
FDI income, Debt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other inv. income	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Secondary income	0	0.1	-0.1	0.1	0.1	0	0.1	0.1	0	0	0.1	-0.1	0	0.1	-0.1	0	0.1	-0.1
Capital account	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Financial account						Financial account						Financial account					
	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym
FDI, Equity	0.9	0	0.9	-0.5	0.2	-0.7	0	0.2	-0.2	0.2	1.6	-1.4	0.3	0.1	0.2	0.1	0.3	-0.2
FDI, Debt	-0.2	0	-0.2	0	0	0	-0.5	-0.4	-0.1	0.2	0.1	0.1	-0.1	0.1	-0.2	0	0.1	-0.1
Other investment	0.7	1.3	-0.6	-1	-0.5	-0.5	0.1	0.2	-0.1	-0.2	-0.3	0.1	0.2	-0.3	0.5	0.4	0.1	0.3
	International investment position						International investment position						International investment position					
	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym	Asset AT	Liab ES	Asym	Liab AT	Asset ES	Asym
FDI, Equity	2.5	2.2	0.3	1	1.5	-0.5	2.7	2.3	0.4	2.6	2.7	-0.1	2.9	2.4	0.5	2.7	3.1	-0.4
FDI, Debt	1	1	0	0.1	0.5	-0.4	0.5	0.5	0	0.4	0.5	-0.1	0.4	0.6	-0.2	0.3	0.6	-0.3
Other investment	5	3.8	1.2	1.5	1.5	0	5.1	3.9	1.2	1.3	1.3	0	5.4	3.7	1.7	1.6	1.3	0.3
Fin. Derivatives	0.1	0.1	0	0	0.1	-0.1	0.1	0.1	0	0	0	0	0.1	0.2	-0.1	0	0.1	-0.1

Notes: Amounts are shown in EUR billions. Data from the October 2022 data vintage.

Acknowledgements

The work for this paper took place within the framework of the ESCB System-wide Virtual Teams Programme on “Improving the quality of the balance of payments of EU countries” which took place between November 2022 and April 2023.
The authors would like to thank Mykola Ryzhenkov for his study on the application of gravity framework to solving bilateral b.o.p. asymmetries in the euro area.
The authors would like to thank the members of working group of the ESCB Statistics Committee on External Statistics for their useful comments and suggestions on an earlier version of this work.
Additionally, we wish to thank the ECB colleagues from the External Statistics and Sector Accounts division for their useful comments.

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