JRC TECHNICAL REPORTS

Finflows: database for bilateral financial investment stocks and flows

Michela Nardo, Nathalie Ndacyayisenga and Andrea Pagano
DG JRC, Growth and Innovation, Finance & Economy

Stefan Zeugner
DG ECFIN, Investment, growth and structural reforms, Macroeconomic imbalances and adjustment

2017

Table of contents

Acknowledgements

The authors wish to thank the European Commission's Directorate-General for Economic and Financial Affairs (ECFIN) for their implication and their support.

Abstract

Bilateral financial investments are not commonly available from a single source. Our database Finflows aims at centralising the information on bilateral capital **financial stocks and financial flows** in a single place. It provides estimates of external assets and liabilities flows between around **80 countries** including those from European Union, the Organisation for Economic Co-operation and Development, Russia, China, Brazil, India and the largest offshore countries. The database contains yearly data from 2000 to the last available year (in general with a 20 months delay). Initially developed by (Hobza & Zeugner, 2014) under the scope of the macroeconomic surveillance work, we provide bilateral financial investment links broken by class of investment such foreign direct investment, banking flows or portfolio investment following the Sixth Edition of the IMF's Balance of Payments and International Investment Position Manual (BPM6, 2009). The specificity of this database lies in the fact that it includes **official** intermediated links either via European Central Bank's funding or other official flows which were providing financial assistance to Euro-area countries in distress helping them to refinance their liabilities. We also consider the investment made during the quantitative easing program of the European Central Bank in 2010 and redirect those inter-banking transactions and customer payments that are settled, in real time, within the Euro-zone system when necessary. Another advantage of the database Finflows relies in the **resolution of potential mismatch** between countries' declarations.

1 Introduction

Finflows allows determining a country investment profile as it helps to identify who are its main partners, the class of investment it used to fund itself from or to invest abroad into and enable analyses of trends of bilateral foreign investment from 2000 in most of the cases.

In particular, Finflows provides the **end-of-the-year bilateral external assets and liabilities stocks** between the countries of the European Union (EU), the Organisation for Economic Co-operation and Development (OECD), Russia, China, Brazil, India and the largest offshore countries. Similarly, it reports the **estimations of the bilateral foreign investment flows**[1].

Depending on data availability, these international investments are decomposed into **foreign direct investment, portfolio equity, portfolio debt** and other investment which includes **banking transactions** following the national accounting standard. Due to confidentiality reasons, these latter detail are not yet available for download. We propose to display only aggregated information into debt, equity and official data.

Initially created by DG ECFIN[2], Finflows is now the result of a joint effort of DG ECFIN and the DG JRC that maintain and regularly update the database. As of summer 2017, Finflows includes yearly data from 2000 to 2015 (the previous version contains data up to 2012). This new release follows the methodology proposed by (Hobza & Zeugner, 2014). The database allows undertaking research activities both in the field of macroeconomic surveillance and in the area of the capital market union, and in particular in the research area of the financial integration.

The database is comprehensive (i.e. it aims at covering the financial account which is a component of a country's balance of payments with notable exceptions of the financial derivatives and reserve assets) and consistent (i.e. it resolves reporting mismatches between countries). One challenge in re-constructing the bilateral financial stocks (respectively flows), relates to the need to keep consistency and coherence of the asset (resp. credit) and the liability (resp. debt) between countries and cleaning flows from valuation for the change in price of current stocks. For that purpose we use as guidelines the methodology proposed by (Lane & Milesi-Ferretti, 2007; Waysand, et al., 2010; Hobza & Zeugner, 2014).

---

[1] In financial national account: flows are labeled transactions and stocks are labeled positions. We use both denominations in the report.
[2] For the data, see http://www.zeugner.eu/studies/Finflows/ (published version)

With respect to the previous version, we profit from an increase in data availability in portfolio and other investment. It allow us to use more extensively long- and short-term debts in the estimation of portfolio flows on one side and get a broader picture of the banking flows using BIS data that are now freely downloadable. This also help us to reduce the use of ad-hoc national central bank data for specific countries. The main change, however, concerns the new accounting standards which are available for most of the classes of investments, resulting major breaks in the underlying time series[3] :

- Foreign direct investment reporting is based on OECD Benchmark Definition of Foreign Direct Investment BMD4[4] (previously BMD3);
- Portfolio and other investment follow IMF Balance of Payments and International Investment Position BPM6[5] (previously BPM5).
- European System of National and Regional Accounts ESA 2010 replaces the older ESA 95, for a set of additional and complementary data[6].

Introducing this last change in the database took most of our efforts to improve the database.

This document provides a general documentation of Finflows. It is structured as follows. Section 2 lists the official data sources used. Section 3 presents the variables of the database and its contents. Sector 4 reports the milestones in the methodology for the treatment of the stocks and the estimation of the flows. Section 5 concludes. The appendix contains information on the data source and countries covered.

---

[3] Treatment of breaks are discussed throughout the documents (e.g. accounting standards, imputation of missing).
[4] https://www.oecd.org/daf/inv/investmentstatisticsandanalysis/40193734.pdf
[5] http://www.imf.org/external/pubs/ft/bop/2014/pdf/guide.pdf
[6] http://ec.europa.eu/eurostat/web/esa-2010

2 Overview of data sources

Concerning bilateral financial **stocks**, Finflows is a combination of different sources of data, which are introduced[7].

The primary sources of information for foreign direct investments are OECD bilateral statistics and Eurostat bilateral data from non-OECD countries as more and more data is available from this latter source. To complement and validate, we rely on the IMF Coordinated Direct Investment Survey and on the data provided by the United Nations Conference on Trade and Development (UNCTAD) from the Division on Investment and Enterprise of United Nations.

Portfolio investments are based on IMF Coordinated Portfolio Investment Survey. Eurostat and IMF data on balance of payment and international investment positions among EU countries and regional aggregates are often used to validate data and adjust where necessary.

The category other investments is based on Eurostat and the locational banking statistics compiled by the Bank of International Settlements. Whenever necessary either for compilation or for validation, we use national central bank statistics in particular for the treatment of special entities e.g. the Netherlands for investment before 2012.

When bilateral flows are available, we use the same combination of data sources. If there are not directly available, essentially for portfolio investments and other investment, we need to estimate those using, on one side, the yearly changes in the values of the underlying financial investment stocks and on the other side, the balance of payment data extracted from IMF or Eurostat. More than **220 countries** are covered by the analysis with different representativeness. Information of higher quality is obtained for European and other OECD countries. Values are given in million EURO.

The following section presents the structure and contents of the database.

---

[7] See appendix 4 for more details.

3 Data and variables' scope

Technically in our processing, financial stocks and financial flows follow the same data structure and are characterised by the similar variables. In particular we are interested at 5 types of characteristics:

- the country or region that reports the investment
- its partner country or region in the investment
- the classes and components of investment
- the direction of the investment
- the specific year attached to the investment ranging from 2000 to 2015 for the stocks and from 2001 to 2015 for the flows.

Countries either reporting or partner are introduced together in the description of Finflows below. We introduce then the classes of investment considered.

The routines for the processing of the database is done in R-Studio.

3.1 Stocks or flows

We consider investment flows as in financial accounts (FA) and investment stocks as the net international investment positions (NIIP). Both FA and NIIP are commonly available when the counterpart is the rest of the world or some regional aggregates. Yet, various problems arise whenever the aim is to capture bilateral information which is the scope of Finflows. Since at country level there are cases where no data is available, what we present in the database is our best guess and we detail in the report the strategy we have used which might impact the final value.

When investment flow data is missing, we need to consider the change in the investment positions at the end of the two consecutive years. Investment **stocks** are, of course, important per se but here **their main role is related to the estimation of investment flows**. Hence, when we find missing values during the processing for stocks we need to make some assumptions to improve estimates for flows: in particular we use growth rate of proxy series to impute missing values. Exceptionally, we smooth stocks time series not to have extreme peaks nor dips which could bring extreme values of flows. We also avoid keeping zeroes in the bilateral stocks data as it might lead to numerical issues in the computation of the flows. This is why, missing values in Finflows could represent either real missing values or 0 with no possibility of distinction in the final database.

3.2 Countries and aggregates

We now refer to **individual countries**, either the reporting ones or its partner, as they have the same scope. During the construction of the database, we consider two listings of countries. In the first phase (pre-processing) we use data for about 220 countries (see Appendix 5 for their complete listing). The main reason to start with such a large number of countries is that the more information we have on stocks the better the estimations of flows could be. When missing the financial flows are, in fact, estimated by using their underlying stocks, hence it is essential to extract values for as many as possible individual and aggregate of countries.

The second stage entails the construction of the final database containing around 80 countries (see Table 1)[8]. :
- 41 EU and OECD countries
- 18 offshore countries
- 25 countries that are either large in the capital market and/or for which data are available. These are located in various regions and include Hong Kong, Singapore, China, Russian Federation, Saudi Arabia, Brazil, South Africa and Malaysia.

In creating this database, we aim at untying from the investment part of the impact of the **offshore** countries and of those entities from non-institutional financial sector whole role is relatively important in the host country (e.g. when the special purposes entities[9] play a big role in the share of financial investment for a given country). For the former, offshore centres are treated almost like any other economy, like any country. Our sample includes 18 pure offshore economies outside the EU which are hubs of financial flows that often only transit through them. The calculation of their assets and liabilities is however particularly sensitive. The main difference in their treatment is that we rely more on the liabilities reported by their partner countries than on the assets reported by them.

For those countries in which the non-institutional financial sector is relatively important, we aim at differentiating between investment in the real economy of a given country and other financial investment which can blur the data and valuation effects. In the EU, the Netherlands and Ireland have the largest of such non-banking financial sector, while Austria, Hungary, Malta and Cyprus have a formal financial sector geared towards **SPEs**[10]. Reporting mismatches in relation to these financial centres have considerable implications on stocks and the estimated flows. However current state in the data doesn't allow to disentangle the part play by this sector yet and their role in foreign direct investment for

---

[8] The remaining countries are dropped. We nevertheless keep them under supervision in case offshore activity might appear.

[9] SPE stands for Special Purpose Entity. FDI activities are sensitive to large mergers & acquisitions which are sometimes intermediated by a SPE. Evidence on their role is anecdotal and mostly related to firm level data or ad-hoc surveys. Changes in FDI should be discussed on a case to case basis to isolate the ultimate beneficiary of the deal and not the immediate partner. However data are too sparse and insufficient to allow a systematic analysis. For example see http://www.oecd.org/investment/FDI-in-Figures-October-2015.pdf or https://www.imf.org/external/pubs/ft/bop/2016/pdf/16-05.pdf.

[10] Even within EU, the impact of the non-banking financial sector needs to be considered. Luxembourg has a strong pure financial sector, as the vast majority of its gross assets are likely no related to its "real" economic activity whereas financial links with the UK and Switzerland are often deeper and can involve transactions at arms-length. However, most of the EU countries publish their international investment positions and financial account statistics that disentangle their SPE sector from the rest of the economy, except Austria and Belgium.

example is mainly anecdotal relating to large merge and acquisitions or ad-hoc surveys[11]. This prevents us of creating additional occurrences in the countries' list to account for them.

The last type of reporting or partner entities concerns **aggregates of countries**. These can be regional (e.g. Euro-Area or the EU countries), represent an economic organisation and are thus reported together (e.g. OECD countries) or countries with some specific characteristics that are also reported together in official data (e.g. Offshore countries). The aggregates of countries are kept separate as a reporting or a partner entity. They could help in adjusting or scaling the results of the stocks' estimation. For example, Eurostat provides investment for Euro-Area: this aggregated value helps to understand how far our estimates are from the positions reported with net international investment positions (NIIP) and this difference can be imputed to the individual countries for which we are missing information. Similar checks are done for the flows with financial account (FA). In the database, we propose eight disjoint aggregates of countries, reported in bold in Table 1.

---

[11] see https://www.imf.org/external/pubs/ft/bop/2016/pdf/16-05.pdf

Table 1: country codes and regional aggregate. Regional aggregate are listed in bold.

Euro-Area countries (EA)

AT	Austria
BE	Belgium
CY	Cyprus
DE	Germany
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PT	Portugal
SI	Slovenia
SK	Slovakia

EU countries not part of the EA

BG	Bulgaria
CZ	Czech Republic
DK	Denmark
HR	Croatia
HU	Hungary
PL	Poland
RO	Romania
SE	Sweden
UK	United Kingdom

OECD countries, not part of the EU

AU	Australia
CA	Canada
CH	Switzerland
CL	Chile
IL	Israel
IS	Iceland
JP	Japan
KR	Republic of Korea
MX	Mexico
NO	Norway
NZ	New Zealand
TR	Turkey
US	United States

Offshore (Aggregate)

AD	Andorra
AN	Netherlands Antilles
BB	Barbados
BH	Bahrain
BM	Bermuda
BS	Bahamas
GG	Guernsey
GI	Gibraltar
IM	Isle of Man
JE	Jersey
KY	Cayman Islands
LB	Lebanon
LI	Liechtenstein
MO	Macao
MU	Mauritius
PA	Panama
UK_CARIB	British West Indies
WS	Samoa

Rest of the World (includes BRIC)

AE	United Arab Emirates
AR	Argentina
BR	Brazil
CN	China
CO	Colombia
CR	Costa Rica
EG	Egypt
ID	Indonesia
IN	India
KW	Kuwait
MA	Morocco
MY	Malaysia
OM	Oman
PH	Philippines
QA	Qatar
RS	Serbia
RU	Russian Federation
SA	Saudi Arabia
TH	Thailand
TW	Taiwan, Province of China
UA	Ukraine
VE	Bolivarian Rep. of Venezuela
ZA	South Africa

Supra-National institutions and other countries	
INTOCB	Int. org and central bank

HK	Hong Kong
SG	Singapore

12

3.3 Classes and components of investment: scope

We built the dataset by combining different data source on specific classes of financial assets in a similar way to (Milesi-Ferretti, et al., 2010; Waysand, et al., 2010). As previously discussed we follow the categories of the balance of payments statistics.

Table 2 reports the instruments used in the processing of Finflows for each class of investment.

Table 3 presents, the four variables that are proposed for download: debt, equity, official and total investment and the formula behind their computation. Initially, data are available on request, but we expect all classes of investment to be downloadable in the next release.

Table 2: Instrument and class of investment from Financial Account (FA) and International Investment Positions (NIIP).[12]

Class of investment	Instrument
Foreign direct investment (FDI)	Debt Equity Total (Debt and Equity)
Portfolio investment (PI)	Debt Total (Long- and Short-term) Debt Long-term Debt Short-term Equity Total (Debt and Equity)
Other investment (OI)	Total private investors Total including TARGET2

---

[12] Restrictions on data extraction might apply. Due to confidentiality requirments, data for some investment is not freely accessible. Export of the database is available on the variables shown in table 3.

Table 3: Instrument of Investment available on request

Instrument	What it includes
Debt	Portfolio Debt Total Total Other Investment Private TARGET2 balance estimate
Equity	Foreign direct Investment Total Portfolio Equity

Official[13]	Securities Market Programme (SMP) from ECB
	 European Union programmes which at its turn includes :
	       European Financial Stability Facility (EFSF),
	       European Financial Stabilization Mechanism (EFSM),
	       European Stability Mechanism (ESM)
	       the Greek Loan Facility (GLF)
	       Balance of Payment assistance (BOP).

Total	Debt Equity Official

The following sections detail each class of functional investment: foreign direct investment, portfolio investment and other investment. Positions and transactions in **financial derivatives and reserves are not included** in Finflows.

3.3.1 Foreign Direct Investment

3.3.1.1 Notion and concept

Direct investment positions are information on the total stock of specific investments made abroad or received from abroad, broken down by instrument (equity, debt) for a given year. Foreign direct investments (FDI) are essentially cross-border holdings of equities/debt greater than 10 percent of ownership of a firm (BMD4 section 1.4). An issue from this definition, which remains unsolved in Finflows, could arise when FDI ownership is reduced under 10% as the investment need to be reclassified as a portfolio investment even if the change is due to an exchange rate effect and not made on purpose by the direct investor.

---

[13] Official stocks or flows refer to investment through international organisations or issued by central banks.

For FDI, Finflows includes the total FDI and its two main investment sub-components debt and equity

Debt includes items such as marketable securities (e.g. bonds and non-participating preference shares), loans, deposits, debt securities, trade credit, and other account receivable/payable (BMD4, Ch. 4).

Equity concerns the shareholder's funds. It contains acquisition or disposal of equity capital, revaluations which are not distributed as dividends. It includes items such as common and preferred shares, reserves and dividends (BMD4, Ch. 4). The equity flows includes reinvestment earnings.

Significant changes in FDI statistics had been brought by the IMF Balance of Payments and International Investment Position Manual, 6th edition (BPM6), which is also applied in the corresponding 4th edition of the OECD benchmark definition of foreign direct investment (BMD4). FDI statistics are now reported on the basis of assets/liabilities principle, preferably at market price, instead of the directional principle outward versus inward investment.

This change in edition of the IMF Balance of Payments Manual from BPM5 to BPM6 and its matching OECD benchmark from BMD3 to BMD4 constitutes a major structural break in the time-series of bilateral direct investment statistics around the year 2012. Recording FDI following the asset/liability principle render FDI figures more consistent with the balance of payment (FA), the net international investment position (NIIP) and the national accounts components.[14] Another significant change brought by BPM6 is that assets and liabilities are measured at market value (nominal value for debt and market value for equities, see BMD4, Ch. 5) while data were usually reported at current prices[15] at the end of the year.

For example, in BMD4, a compiling country reports if the FDI relates to its national account assets or liabilities. Asset/liabilities principle includes as investment assets the investment equity made by a host parent company in its foreign subsidiaries, while the previous standard subtracted them from the outward investment (they reduced the volume of outward investment). Another difference is for the reverse investment, those made when a subsidiary invests in its parent follow a similar pattern: if a parent borrows money from one of its foreign subsidiary, this loan used to reduce the amount of inward investment and is in BPM6 increasing the liabilities of the host country of the parent company.

Net values either by netting net assets and net liabilities or by netting net outward and net inward remains stable (net values remain thus unchanged).

---

[14] In the previous standard BPM5, FDI were recorded according to the direction principle, i.e. depending on whether the ultimate controlling parent of the resident fellow enterprise is a resident or a non-resident of the compiling economy. Reporting problems could arise for multi-territory enterprises (such as shipping lines, airlines, pipelines, tunnels and bridges, etc.), see BMD4 page 47.
[15] See BMD4, Chapter 5 for details.

3.3.1.2 Main input sources

FDI transactions are those few financial flows regularly compile and disseminate on a bilateral basis[16]. OECD reports FDI flows in both credit and debit terms for its Members and other partners, based on national sources. Finflows uses OECD data as the main source of information for both FDI stocks and flows. OECD has a longer historical data based on the new principle of direct investment and the bilateral information on flows. For non-OECD countries we rely on Eurostat bilateral FDI stock data and on some flows information in terms of regional aggregates.

An alternative source for FDI is the IMF Coordinated Direct Investment Survey (CDIS)[17]. This source is used mainly for countries that are not in the EU or part of the OECD. CDIS survey, started in 2009, is conducted under the auspice of IMF. Information collected reports the geographical location of the issuer[18]. Finally, we rely on UNCTAD data which provides data for flows and stocks (inward and outward) as part of the Statistical Annexes of the annual World Investment Report.

Ad-hoc mapping tables (undisclosed) are used to reconcile previous accounting methodology from Eurostat and OECD which to new accounting techniques and reconcile break in series[19]. In this way, net total FDI, net debt FDI and net equity can be associated with previous standard.

Usually Eurostat and OECD FDI statistics are based on the common framework and are very consistent. IMF reports FDI as a functional category of balance of payments so data can vary. FDI are sensitive to the timing (of the extraction) and revisions can influence the statistics. As discussed it is also sensitive to the non-banking financial sectors for some countries.

<u>Note on the special purpose entities</u>

FDI data in Finflows have not been adjusted for special entities purposes (SPEs). SPEs concern the setting of foreign-controlled holding companies that have little or no real activity in the host country where they are located[20]. There is no common definition for this type of legal structures. Usually, they are created and ultimately owned by a foreign parent company and they can act as direct investor. The OECD Benchmark Definition (BMD4 section 6.2) lists common features on top of the ones discussed above: these entities have no or few employees, little or no production in the host economy and little or no physical presence. They manage mainly external assets or liabilities and acts mainly as a group financing, a conduit or a holding company.

---

[16] http://www.oecd.org/corporate/mne/statistics.htm
[17] https://www.imf.org/external/np/sta/pdf/cdisguide.pdf
[18] During the construction of the database, we also tested the use of CDIS as main source of data instead of OECD.
[19] https://www.imf.org/external/pubs/ft/bop/2008/08-10b.pdf
[20] SPEs are legal entities that have little or no employment, or operations, or physical presence in the jurisdiction in which they are created by their parent enterprises located in other jurisdictions. They are often used as a device to raise capital, hold assets and liabilities and usually do not undertake significant production. For additional information see BMD4, Chapter 6.

SPEs are considered to distort direct investment positions of their host country and consequently their capital flows. This can happen for several reasons: countries where SPEs are located overstate **FDI figures which are inflated by pass-through funds which cannot be distinguished from economically relevant investments**; often the immediate non-resident counterpart is not the real direct investor so double counting at the global level may arise. This is one of the reason the reconciliation of statistics at country-level and at firm-level is very difficult. Currently international reporting organizations encourage the use of separate category for such entities; however it should be kept in mind that SPEs data is not available in most of the cases[21]. In Finflows, the **countries for which we consider overstated FDI due to SPEs are Luxembourg, the Netherlands, Hungary, Belgium and United Kingdom**.

3.3.2 Foreign Portfolio Investment

3.3.2.1 Notion and concept

Foreign portfolio investments are cross-border transactions and positions involving equity or debt securities, other than those included in direct investment or reserve assets. This roughly means holding of bonds and equities equal to less than 10% of ownership of a firm (otherwise they are part of direct investment).

Available breakdowns in Finflows are:

Equity: it comprises all instruments and records acknowledging claims on the residual value of a corporation or quasi-corporation, after the claims of all creditors have been met (BPM6, para 5.21). Shares and stocks, participation documents, depository receipts and shares in mutual funds or investment trusts are included in this instrument.

Debt: Debt securities are negotiable instruments serving as evidence of a debt (BPM6, para 5.44). Debt instruments are those instruments that require the payment of principal and/or interest at some point(s) in the future (BPM6, para 5.31).

> **Long–term debt** securities mainly include:
>
> - Convertible bonds into equity (BPM6, para 5.46).
>
> - Nonparticipating preferred stocks (BPM6, para 5.46).
>
> - Zero-coupon and other deep-discounted bonds (BPM6, para 7.31)
>
> - Indexed bonds (BPM6, para 5.49)
>
> - Asset-backed securities (BPM6, para 5.47)

---

[21] Austria and Mexico are an exception as they declare direct investment only for the non SPE sector.

Short-term debt securities mainly include:

- Treasury bills (BPM6, para 5.44)

- Bankers' acceptances (BPM6, para 5.48)

- Certificates of deposit (BPM6, para 5.44)

- Commercial paper (BPM6, para 5.44)

3.3.2.2 Input source

Our source of data for portfolio investment positions is the IMF Coordinated Portfolio Investment Survey (CPIS), which captures bilateral holdings of portfolio in equity, long-term debt securities and money market instruments, using consistent definitions for all sectors (it also reports liabilities). It is an annual survey that collects yearly data from 2001. As in the case of CDIS, the survey is conducted under the auspice of IMF, and it reports the geographical location of the issuer, but differently from CDIS, CPIS mostly reports assets while the reporting of liabilities is only 'encouraged' as portfolio managers might have, in general, more difficulty in tracking the (ultimate) owner of their own liabilities than determining the nature and the origin of their assets. Therefore, in Finflows portfolio liabilities are only inferred from partner countries' declarations. Financial derivatives are not included in the survey[22].

In order to achieve a finer level of disaggregation, key aspect for the reliability of the computation of financial flows, the portfolio investment is decomposed into portfolio equity and portfolio debt. In the latest version of Finflows, debt investments are further split into long-term and short-term investments, which eventually improve significantly the estimations of flows.

Portfolio investment flows are based on the computation of implied financial flows for the components of portfolio equity and portfolio debt (short- and long-term). Eurostat and IMF balance of payment data on financial flows between EU countries and regional aggregates are used to validate Finflows data and to adjust them whenever needed.

3.3.2.3 Specific treatments

In the case of portfolio, two specific treatments are put in place in order to reconciliate the global portfolio of assets and liabilities at the country level with the one obtained summing all bilateral links.

---

[22] Data for 1997 are sometimes available but includes financial derivatives. We excluded them from the selection.

<u>The cases of Securities Held as Reserve Assets and Securities Held by International Organisations.</u>

Portfolio investment is significantly impacted by central banks and in particular their reserves allocation. Assets from Central banks are accounting as portfolio investment while its liabilities refers to reserves. In terms of accounting Central banks (monetary authorities) reserves holdings are recorded in reporting countries as assets towards the partner country. The same amount is however not recorded in partner country as portfolio liability. Therefore in order to match assets with liability we need to assign the amount of reserve assets as portfolio liability of the partner country.

An additional complication is that bilateral information about central banks activity is not publicly and centrally available. The IMF data collected under Securities Held as Reserve Assets (SEFER) supply the aggregated information, for confidentiality reasons. Similarly, Securities Held by International Organisations (SSIO) contains bilateral information concerning the holdings in securities which are not included in the country reported data. SSIO are not resident in the host-economy in which they are located. In our database, we are summing up these categories into a dummy country named 'INTO_CB' (INTernational Organization and Central Banks), which is treated as a country and to reconcile the global portfolio of assets and liabilities at the country level.[23]

Central banks holdings also include monetary gold and IMF special drawing rights (SDRs). These latter are proportionally much smaller as compared to central banks assets in particular in Europe and North America[24]. For the time being these items are not included in Finflows.

<u>The case of Greek selective default</u>

The Greek 'private sector initiative' selective default entailed a bank recapitalization programme which was mostly disbursed in the form of European Financial Stability Facility (EFSF) notes[25]. Since EFSF is a Luxembourg entity falling under private law, this means that CPIS for 2012 show Greek portfolio assets in Luxembourg increasing by a third of Greek GDP. In reality such an investment should be appointed to the entire Eurozone, not only to Luxembourg, proportionally to the participation of each country into ECB capital keys (i.e. the share of the different National Central Banks in the paid-up capital of the ECB). To do so, we first consider the stock's value of EFSF over the year and create a dummy portfolio liabilities investment issued from the Euro-area countries into Greece

---

[23] These counterparts are reintroduced using Table 9 (SEFER) and Table 10 (SSIO) available on the IMF website: http://data.imf.org/?sk=B981B4E3-4E58-467E-9B90-9DE0C3367363&sid=1481574691948&ss=1424963554286

[24] Aggregate reserve flows for Euro-area Central Banks are allocated according to 'other investment' asset acquisition shares in balance of payment (FA). This has implications for the financial links for the Bank of Japan and the Swiss National Bank are presumed to hold important euro-denominated reserves. The financial links reported in CPIS with these countries therefore omit an important part of their foreign assets if not considering 'SEFER'. The People's bank of China does not seem to report to SEFER, so financial links with China are particularly difficult to identify.

[25] The European Financial Stability Facility (EFSF) was a temporary crisis resolution mechanism created by the euro area Member States in June 2010. The financial assistance was financed by the EFSF through the issuance of bonds and other debt instruments on capital markets.

based on their capital keys. We also decrease the portfolio liabilities of Luxembourg from the amount of EFSF.

3.3.3 Cross-border Other Investment

3.3.3.1 Notion and concept

Other investment is a residual category that includes positions and transactions other than FDI, portfolio investment, financial derivatives, employee stocks options and reserve assets. It includes in particular (BPM6, Ch. 6.E):

- Currency and deposits
- Loans
- Nonlife insurance technical reserves, life insurance and annuities entitlements, pension entitlements and provisions for calls under standardized guarantees
- Trade credit and advances
- SDR allocations

In Finflows, the main information conveyed by this category refers to the role of banks international active in intermediating cross-border capital flows. The locational data are more relevant for countries active abroad because they provide a measure a lending which is consistent with the balance of payment statistics. Other data exist on consolidated information which don't allow to capture for our purpose the intra-group lending activities which is netted out.

3.3.3.2 Main input sources

For cross-border other investment stocks Finflows uses the Locational Banking Statistics (LBS[26]) compiled by the Bank for International Settlements (BIS)[27] as primary source. From end of 2016, BIS Foreign Other Investment stocks and flows data are directly accessible through a bulk download. In this way we are able to enhance our final estimation by relying on a larger information set.

LBS contains information about the composition of banks' balance sheets and the geographical breakdown of their counterparties, capturing outstanding claims and liabilities of banks including intragroup positions. Adjusted changes in amounts outstanding are calculated, as an approximation for flows.[28] The data is reported based

---

[26] LBS reports positions based on the residency and not the nationality of the banks (branches are treated as subsidiaries).

[27] We are grateful to the BIS and its partner central banks for providing us with locational banking statistics. In order to guarantee the confidential nature of these data, this paper refrains from detailing bilateral other investment in such a manner that those data may be inferred.

[28] This international banking statistics have evolved over time and information on loans and deposits, with no distinction, are now available and could be included in a further version. Loans and deposits are treated as economically equivalent. They include the cash leg of securities repurchase agreements, working capital and inter-office business.

on the residency and not the nationality of the banks (consolidated data depending on the nationality of the banks are instead reported in BIS Consolidated Banking Statistics- CBS).

As complementary sources to LBS from BIS, we consider Eurostat[29] and ECB loans data to improve the availability of bank assets with significant results for the EU countries. Eurostat data are extensively used to fine-tune BIS information for the EU countries. Additionally Eurostat source allows filling data for some Eastern European countries like Slovak Republic, Slovenia and Croatia after 2013.

3.3.3.3 Specific treatment

The case of TARGET2[30]

Before using the balance of payment statistics from Eurostat, in order to render it compatible with BIS information, we deduct the TARGET2 whose data come as net aggregate exposure (balances) of the European Union or Euro Area. TARGET2 balances data is available publicly on a monthly basis at country level[31], no bilateral breakdowns or gross values are available. For modelling purpose, we treated each Euro system member as either a contributor or a recipient of TARGET2 balance. The former having a positive net TARGET2 balance and the latter a negative net TARGET2 balance exposure.

To estimate a bilateral exposure, we follow the approach developed by (Hobza & Zeugner, 2014). We sum the TARGET2 positive (resp. negative) balance and calculate the proportion that each contributor brings. This proportion is then used to calculate the relative amount the recipient receives from the contributor. For example if Germany account for 75% of TARGET2 positive settlements and Greece account for 20% of TARGET2 negative settlements, then Greece will receive (assets) from Germany 75*20=15 percent of its negative settlements. And Germany will have TARGET2 assets set to zero, it can only contribute (liabilities) to TARGET2 because we only observe the net values.

We used the results to correct the aggregate of Euro-Area in Eurostat for the category of total other investment.

---

[29] The information from Eurostat is entirely public and can be downloaded from Eurostat website choosing the Net International Investment Position statistics (NIIP) on which we extract only yearly data.
[30] TARGET2 is the real-time gross settlement (RTGS) system owned and operated by the Eurosystem. TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer system (see https://www.ecb.europa.eu/paym/t2/html/index.en.html)
[31] See eurocrisismonitor.com

3.3.4 Official investment from central banks or international organizations

Finflows makes available, as separate category, the investments made by international entities such as the European Central Bank (ECB) and the International Monetary Fund (IMF). These investments are in general temporary and related to crisis periods[32]. The latest ECB liquidity programs: **Public Sector Purchase Programme and Corporate Sector Purchase Programme are not included yet in the database**.

To report the temporary investment from public organisation, we use the dummy country denominated International Organisation and Central Banks (INTO_CB). We consider investment by international organizations like the IMF, the EU institutions and the central banks. Some of these entities intervened during the global financial crisis and the sovereign debt crisis in EU by providing capital flows. Accounting for their interventions help to disentangle the origin of the investment (public versus private investment flows).

In particular, we consider five financial assistance programs from ECB, one from IMF and the ECB quantitative easing that occur between 2010 and 2012.

Financial assistance programs

To deal with financial and sovereign crisis, ECB has been providing financial assistance to several countries (e.g. Greece, Portugal, Ireland and Spain). This assistance is funded by Euro-programmes such as European Financial Stability Facility (EFSF funded from the EU budget), European Financial Stabilisation Mechanism (EFSM[33]), European Stability Mechanism (ESM[34]), the Greek Loan Facility (GLF[35]) and Balance of Payment assistance (BOP[36]). EFSM and BOP funds are represented as lending from international organizations. We report also credit provided IMF mainly through General Resources Account (GRA[37]). IMF loans are treated under the same concept of investment issued from an ad-hoc country (INTO_CB) representing the international organizations and central banks. For the other assistance instruments, in order to appoint the source of such funds to specific countries, we make use of the ECB capital keys[38].

---

[32] Currently, the PSPP is not included in the database. This should be done shortly.

[33] European Financial Stabilization Mechanism (EFSM) provides financial assistance to all EU Member States in financial difficulties. EFSM has been activated for Ireland and Portugal by EU.

[34] The European Stability Mechanism (ESM) is the crisis resolution mechanism for countries of the euro area. The ESM issues debt instruments in order to finance loans and other forms of financial assistance to euro area Member States.

[35] Greece has received financial support from euro area Member States and the International Monetary Fund (IMF) to cope with its financial difficulties and economic challenges since May 2010. Then replaced by ESM.

[36] The EU can provide mutual assistance to non-euro area Member States when a Member State is in difficulties or is seriously threatened with difficulties as regards its balance of payments. Balance-of-payments (BoP) assistance is designed to ease a country's external financing constraints.

[37] The GRA is the principal account of the IMF and handles by far the largest share of transactions between the IMF and its membership http://www.imf.org/external/pubs/ft/pam/pam45/pdf/chap2.pdf

[38] The capital of the ECB comes from the national central banks (NCBs) of all EU Member States. The NCBs' shares in this capital are calculated using a key which reflects the respective country's share in the total population and gross domestic product of the EU. The ECB adjusts the shares every five years and whenever a new country joins the EU.

In 2010-2012, the ECB ran SMP, a quantitative easing programme that focused on buying and holding bonds from Greece, Ireland, Portugal, Spain and Italy. Technically, the acquired bonds remain in the portfolio liabilities of the originating countries. Since the ECB holds those bonds to maturity[39], they have to be accounted separately. Overall figures of SMP holdings by the ECB are provided by ECB and we used evidence from (Trebesch & Zettelmeyer, 2014) to derive the sequencing of bond purchases. In 2010 almost all purchases referred to Greek, Portuguese and Irish bonds, while in 2011, 90% of purchases dealt with Italian and Spanish bonds[40]. The repartition of the amount purchased is once more based on ECB capital keys.

4 Finflows Methodology

We now introduce the common approaches used for the estimation of financial flows by functional instruments. These include (1) the imputation of missing values, (2) how we improve coherence of input data and finally (3) how we perform the estimation of financial flows.

4.1 Imputing missing values

For imputing missing values, we consider each bilateral link as a time-series and compare its evolution to the one observed on an alternative time-series. These alternates can either be referring to one observed for the same class of instruments but extracted from a secondary source (proxy) or to the ones reported by the counterpart (partner's declarations).

We explore two main cases depending on whether the times series is completely missing or not.

- In the first case (completely missing), if available, we use a proxy from secondary source of data as it is and we copy the proxy.

- In the second case (partially missing), we use the trend of an alternative time-series to impute values that are missing which allow to extend the time-series and fill the gap in the original series. If the asset series is still partially missing, we may also

---

[39] see http://www.wiwi.uni-frankfurt.de/kolloquium/ws1314_/Zettelmeyer.pdf
[40] Since disclosed information indicates that the bond's maturity is close to 4 years for all countries, we use market yields for a four-year zero-coupon bond to arrive at the market value of those bonds at purchase (since the IIP is accounted for in market values).

consider liabilities reported by partner countries which should ideally be similar to the missing assets.

For example, if we need to impute FDI data. If the data is completely missing, we make use of alternative sources such as IMF CDIS or UNCTAD. If the series is partially missing, alternative sources of data are used to compute backward and forward growth rates to be applied to the main data source to retrieve a missing value. If CDIS (alternative source) shows an increased FDI by 8% between countries A and B from year t to year t+1 and no data is available on FDI only for year t+1 nor from OECD or Eurostat (primary sources), we consider 8% as actual growth rate and impute the missing value in t+1 using that growth rate on the figure available from the primary source in time t.

If we still have missing data, we use regional aggregates (e.g. Euro-area, EU). Missing values are inferred by a rule of proportionality based on those cases where data are indeed available.

After this step, we need to assess the coherence between classes of investment in their sub-components. For example, portfolio debt and portfolio equity should sum to portfolio total. If this latter is missing, we replace it with the sum of its own sub-components. If we notice the total value significantly different from the sum of its sub-components, one can decide either to scale the total or the sub-components depending on which components has been imputed. This is cannot be fully automatized and remains an ad-hoc decision.

4.2 Consistency of investment stocks assets and liabilities

We build the database in an iteratively way to eliminate possible mismatches between the declarations of both entities present in the bilateral investment links. Using official data, one can observe that what country A declares as foreign assets in country B does not always correspond to what country B declares as liabilities from A. This can happen for various reasons, e.g. different reporting standards, the impact of the clearing houses, exchange rate or the offshore countries among others. However, as discussed in (Hobza & Zeugner, 2014), adjusting such inconsistencies of assets and liabilities is a vital for the estimation of the investment flows. In particular we aim at correcting potential mismatch between holdings of assets (country A → country B) and liabilities (country B ← country A). This, in practice, means that we need to rely on some reporting countries more than others.

Several steps are needed; in particular Finflows produces a country "reliability" ranking for each class of investment by combining a set of 5 metrics each evaluating how distant a given country is from all its counterpart's declarations. The country with the highest rank is the one considered closest to its partners and its data are primarily used to iteratively fill the matrix of bilateral investment stocks. Suppose, for example, that country A is 10th in the ranking. The matrix of bilateral A's foreign investments will be filled in with the

(liability) declarations of the 9 countries having higher rank with respect to A. For the remaining, A's asset declarations will be used.

We detail the approach we took to rank countries along their reporting alignment with what other countries might have reported.

We denote by

$$S^{i,j}_{AL,k,t}$$

the volume of stock S reported as assets (AL = 1) or liability (AL = 2) made using the class of investment k between country i and country j in year t. [41]

Ideally one expects that

$$S^{i,j}_{1,k,t} \cong S^{j,i}_{2,k,t}$$

for each i, j, k, y. Once again, we aim at adjusting possible differences thorough a process (consistentify) able to improve the coherence of asset/liabilities stock data.

For each of class of investment k and for each country i, we compute five indicators. The lower is the value of these indicators the better is the reporting quality of country i (except for the last index). The final index is based on the weighted average of the five indicators' ranking. We use bilateral investment stocks from 2010 to 2015 due to the change in national accounting definition and the introduction of BPM6.

Let's denote by i the country for which we want to compute the index and by k the instrument we are considering.

The first index measures the distance between $\dfrac{S^{ij}_{1,k,t}}{S^{ji}_{2,k,t}}$ and $\mathbf{I}$ [42]:

$$Idx_1[i, k] = \text{median}\left(\left| \frac{S^{i,j}_{1,k,t}}{S^{j,i}_{2,k,t}} - \mathbf{I} \right| \right)$$

where j spans over the n countries present in the sample. $Idx_1[i, k]$ is a summary measure of all the discrepancies between what country i holds in country j (i's assets) and what country j declares country i owns (j's liabilities), for all j. The median $Idx_1[i, k]$ is higher for those countries i that declare higher holdings abroad than what their partners declare to

---

[41] Countries i and j are discussed in section 3.1 while investment type k is introduced in section 3.2. The time period spans from 2000 on.

[42] For actual calculations we only focus on larger expositions (we do not consider position smaller than 0.1% of country i cross border investments.

receive. They tend to overestimate their foreign holdings for the investment class k. This index is only computed for relevant links, when the assets is at least 1% of the foreign investment of the country i

$$S^{i,j}_{1,k,t} > 1\% \sum_j S^{i,j}_{1,k,t} .$$

More general, the second index computes a similar distance for all counterparts of the country i without any restriction of the importance of the link for the country itself.

$$Idx_2[i,k] = \frac{\sqrt{\sum_{t=2010}^{2015} \sum_j \left.(S^{i,j}_{1,k,t} - S^{j,i}_{2,k,t})^2 \right/ n-1}}{\sum_j S^{i,j}_{1,k,t}}$$

The third and the fourth indexes exchange the role of assets and liabilities:

$$Idx_3[i,k] = median\left(\left|\frac{S^{i,j}_{2,k,t}}{S^{j,i}_{1,k,t}} - \mathbf{I}\right|\right)$$

$$Idx_4[i,k] = \frac{\sqrt{\sum_{t=2010}^{2015} \sum_j \left.(S^{i,j}_{2,k,t} - S^{j,i}_{1,k,t})^2 \right/ n-1}}{\sum_j S^{i,j}_{2,k,t}}$$

Therefore, $Idx_3[i,k]$ and $Idx_4[i,k]$ are summary measures of the discrepancies between what country i owes to country j and what country j claims in country i, for all j. The first one applied only to link whose importance is greater than 1% for the country i.

The last index computes the number (share) of available observations before any imputation. This is a measure of availability of country i: the larger is the index the higher is the number of available data on bilateral links.

$$Idx_5[i,k] = \#\left(S^{i,j}_{1,k,t} \bigcup S^{i,j}_{2,k,t}\right)$$

For each index individually and each class of investment k, we rank all the countries obtaining a league table of their performance and we repeat the exercise for the remaining

indices[43]. At the end, each country will be ranked on 5 indices. We average, per country, its ranks and we consider as first best the country with the lowest average rank.

The outcome of this process is an ordered list of countries[44]. We use this order to fill in iteratively the database with data on stocks (and flows when available).

This methodology is currently under revision.[45]

4.3 Estimating financial flows from stocks data

Ideally to compute yearly financial flows, intended as net acquisition of assets, we should be able to track the flow of sell/put of individual assets over the period of interest. However, with the available data, we are not able to determine at which point in time an asset is bought or sold or even for how much its value change over the year. We need to extrapolate the flows from yearly stocks data. But the flows are not simply the difference in stock investment from one year to another. This variation, beyond the capital flows, accounts for two additional factors:

- It contains the re-valuation effect due to **exchange change of the local currency** towards the Euro, which is the final currency's unit in Finflows.

- It includes the change in the **market's price of existing stocks**. In other words, if the existing stock increases its value at the end of a year due to an economic upturn, this additional value cannot be considered as an investment flow.

To deal with the first factor we compute stocks in local currency and apply EUR exchange rate when the flows are ready. The impact of the exchange rate can be important especially during the financial turmoil capital markets have experienced over the past years (e.g. global financial crisis, sovereign debt crisis …) as what we cannot account for is the variation of the exchange rate within the same year.

The second argument is more difficult to tackle. If the holdings were available for individual assets we could extract the yield of the asset for each investor. As this data is not available we follow the strategy proposed by (Hobza & Zeugner, 2014) and estimate for each class of investment an aggregate valuation effect for the domestic assets held by foreign investors and compare the financial account (FA) with the change of stocks from the net international investments positions (NIIP). Assuming all investors are affected in the same proportion, we apply this price change to existing stocks held by each foreign investor. We expect that the discrepancies between estimated and actual flows are due several reasons

---

[43] While for the first 4 indices the lower the better, for the fifth the directionality is reversed (the higher the better). That's why we reverse the ranking associated with the fifth index prior to calculate the average.
[44] This process is done firstly comparing the OECD/EU countries and only afterwards the rest of the countries
[45] The ranking of countries obtained is discrete and doesn't take into account the fact that some countries can be similarly trustable (having just a difference of decimals in the statistics). We are currently working in creating a continuous score to account for the trustable of the countries

including some issues of misreporting or when an investor from a particular country differs from what an average investor would have devoted, our assumed distribution doesn't hold for that specific country. Differences can also come from change in national account definition which can reclassified some assets in different class of investment in two consecutive years.

Practically, to compute the estimated flows we compare on one side the sum of all foreign flows (aggregate) from individual countries as reported by IMF or Eurostat in the financial account (FA) with, one the other side, the difference of stocks from the net international investments positions (NIIP). The values are first converted in the local currency. Then we assume that bilateral positions behave coherently with what observed at aggregate level.

As the granularity of Finflows data is annual, we cannot determine at which point in time and at which price a new acquired asset has been bought and how its value has changed during the year. We can just extract its value as part of the total end of year investment positions. Following this consideration, for estimating financial flows, we follow the strategy of (Hobza & Zeugner, 2014). The authors use the rule of thumb and propose that the newly acquired assets bear **half of the valuation effect** on the stocks during period t using the following equation for estimating country i net acquisition into country j from t − 1 to t, $f_{k,t}^{i,j}$:

$$f_{k,t}^{i,j} = \alpha \left(p_{j,t}^k \, a_{i,j,t}^k - p_{j,t-1}^k \, a_{i,j,t-1}^k \frac{S_{1,k,t}^i - \frac{1}{2} FA_{k,t}^i}{S_{1,k,t-1}^i + \frac{1}{2} FA_{k,t}^i} \right)$$

Here,

$a_{i,j,t}^k$ is country i holdings of class (assets) k in country j at the end of time t;

$p_{j,t}^k$ is the price of class (assets) k in country j at the end of time t;

$S_{1,k,t}^i$ is total foreign holdings (stocks) of class (assets) k owned by all countries in country i at the end of time t (i.e. world liabilities in country i);

$FA_{k,t}^i$ is total foreign acquisitions (flows) of class (assets) k in country i between t − 1 to t

And $\alpha = \left(\frac{2 \, S_{1,k,t-1}^A + \frac{1}{2} FA_{j,t}^l}{S_{1,k,t-1}^A + S_{1,k,t}^A} \right)$ is a rescaling factor.

$f_{k,t}^{i,j}$ is the difference between country i's position at the end of the period and at the beginning corrected by a valuation effect.

5 Conclusion

Tackling financial flows between countries relies on the availability of coherent and consistent data along with up-to-date information. With this database, we are sharing data that can be found in different sources and proposes a methodology to build a symmetric matrix in which what the country A declares to invest (claims) in country B is equal to what country B receives from country A (B's liabilities). Using different sources of information allows to extend the scope of information to offshore countries, while keeping the quality and granularity for the EU and OECD countries. Further developments could improve the database. We aim in particular at profiting the the recent developments on special purposes entities especially now that the OECD's BMD4 standard allows to capture them, in part, and distinguish FDI transactions to real economy from the rest of the transactions. We also would like to add some more information on the latest quantitative easing performed by the European Central Bank.

References

BPM6, I. M. F., 2009. *Balance of Payments and International Investment Positions Manual, 6th edition,* Washington D.C.: s.n.

Gourinchas, P.-O. & Rey, H., 2013. *External adjustment, global imbalances and valuation effects,* s.l.: s.n.

Hale, G. & Obstfeld, M., 2016. The Euro and the geography of international debt flows. *Journal of the European Economic Association,* 14(1), pp. 115-144.

Hobza, A. & Zeugner, S., 2014. Current accounts and financial flows in the euro area. *Journal of International Money and Finance,* Volume 48, pp. 291-313.

Hobza, A. & Zeugner, S., 2014. The" imbalanced balance" and its unravelling: current accounts and bilateral financial flows in the euro area. *Economic papers,* Issue 520, pp. 1-32.

Lane, P. R., 2013. Capital flows in the euro area.

Lane, P. R. & Milesi-Ferretti, G. M., 2007. The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970--2004. *Journal of international Economics,* 73(2), pp. 223-250.

Lane, P. R. & Milesi-Ferretti, G. M., 2012. External adjustment and the global crisis. *Journal of International Economics,* 88(2), pp. 252-265.

Merler, S., Pisani-Ferry, J. & others, 2012. Sudden stops in the euro area. *Bruegel policy contribution,* Volume 6, p. 2012.

Milesi-Ferretti, G. M., Strobbe, F. & Tamirisa, N. T., 2010. Bilateral financial linkages and global imbalances: a view on the eve of the financial crisis.

Trebesch, C. & Zettelmeyer, J., 2014. ECB interventions in distressed sovereign debt markets: The case of Greek bonds.

Waysand, C., Ross, K. & De Guzman, J. C. .., 2010. European Financial Linkages: A New Look at Imbalances (December 2010). *IMF Working Papers, Vol. , pp. 1-60. Available at SSRN: http://ssrn.com/abstract=1751408.*

Appendix: List of data sources and update

Table 4: Data sources and update expected release

Source	Tables	Description	Expected update	Class of investment
IMF	Coordinated Direct Investment Survey (CDIS)	CDIS is a worldwide statistical data collection effort led by the IMF improving the quality of direct investment position statistics and the availability of these statistics by immediate counterpart economy (from-whom-to-whom cross border). The CDIS is conducted annually starting with data for end-2009 on a voluntary basis. FDI arises when an investor resident in one economy makes an investment that gives control or a significant degree of influence over the management of an enterprise that is resident in another economy. A guide is available https://www.imf.org/external/np/sta/pdf/cdisguide.pdf	Ideally December/January Participation by economies in the CDIS involves a commitment to submit results of the core data to the IMF within nine months after the end of the reference year; results are to be released by the IMF within twelve months after the end of the reference year. Revised or more detailed core data for the previous year/s should be provided to the IMF at this time as well.	FDI, Portfolio and Other investment
	Coordinated Portfolio Investment Survey (CPIS)	CPIS is the only global survey of portfolio investment holdings, and collects information on cross-border holdings of equities and long- and short-term debt securities classified by the economy of residence of the issuer. The survey covers end of year from 2001 and semi-annual holdings from June 2013 http://data.imf.org/?sk=B981B4E3-4E58-467E-9B90-9DE0C3367363&ss=1481574691948	Ideally December/ January, first release from September The first vintage happens in September of the following years (9 months after the end of the period) but a revision is made in December (12 months after the end of the period)	Portfolio investment

	Securities Held as Foreign Exchange Reserves (SEFER)	SEFER provides geographic and instrument detail on securities that are held as reserve assets Semi-annual update from end-June 2013	Linked to CPIS (12 months after the end of the period)	Portfolio investment
	Securities Held by International Organizations (SSIO)	SSIO provides the geographic and instrument detail on securities that are held by international organizations. Annual update	Linked to CPIS (12 months after the end of the period)	Portfolio investment
	International Financial Statistics (IFS)	Exchange Rates are linked to this database. Data availability starts from 1948 for many IMF countries	Linked to IFS	Exchange rate USD/EUR
	Balance of Payments and International Investment Position (BOP_IIP)	The sixth edition of the Balance of Payments and International Investment Position Manual (BPM6) serves as the standard framework for statistics on the transactions and positions between an economy and the rest of the world. It includes yearly and quarterly data.	Linked to IFS Yearly data availability starts from 1948 for many IMF countries.	FDI, Portfolio and Other investment
BIS	Locational Banking Statistics (LBS)	Data for the currency composition of banks' balance sheets and the geographical breakdown of their counterparties. Data capture outstanding claims and liabilities of banks located in BIS reporting countries, including intragroup positions between offices of the same banking group. Stocks and Flows are available starting from 1977.	Data December is available from April/May **Bulk download is now available.**	Other investment
Eurostat	Balance of Payments (bop_iip6_q)	The Balance of Payments (BOP) systematically summarizes all economic transactions between the residents and the non-residents of a country or of an economic area during a given period.	Code: bop_iip6_q (last update: 21/11/16) Oldest data: 1991 Code: bop_c6_q (last update: 09/12/16) Oldest data: 1982	FDI, Portfolio and Other investment

	Historical bop_C6_q	The Balance of payments provides harmonized information on international transactions which are part of the current account (goods, services, primary and secondary income), as well as on transactions which fall in the capital and the financial account. •net flows, net acquisition of financial assets and net incurrence of liabilities for total financial account and foreign direct investment, • international investment position and net external debt at the end of reference quarter or year.	Quarterly data Available 4-5 months after the closure of the period (April/May for Q4 data)	
	Foreign Direct Investment (FDI) bop_fdi_pos_r2 (BPM6) bop_fdi_pos_r2 (BPM5)	Eurostat uses as a base for its work the OECD Benchmark Definition of Foreign Direct Investment Third Edition, a detailed operational definition fully consistent with the IMF Balance of Payments Manual, Fifth Edition, BPM5. FDI statistics record separately: 1) Inward and Outward FDI statistics record both the initial investment and all subsequent investment made by the direct investor, either in the form of equity capital, or in the form of loans, or in the form of reinvesting earnings. Investment made through other affiliated enterprises of the same group of the direct investor should also be recorded according to the international methodology. There are three main indicators: **FDI flows, stocks** and income. Annual time series on flows cover the reference period from 1992 onwards. For stocks the coverage is from 1994 onwards.	Quarterly data Available 4-5 months after the closure of the period (April/May for Q4 data)	FDI
OECD	Foreign Direct Investment (FDI) stocks	FDI **stocks** are measured in USD and as a share of GDP. FDI creates stable and long-lasting links between economies. • Outward FDI stock is the value of the resident investors' equity in and net loans to enterprises in foreign economies. • Inward FDI stock is the value of foreign investors' equity in and net loans to enterprises resident in the reporting economy.	2015 still not available in December 2016 Bilateral are not available : expected 13-16 months of delay (data for 2015 are given expected mid-January 2017)	FDI

		http://www.oecd-ilibrary.org/finance-and-investment/foreign-direct-investment-fdi/indicator-group/english_9a523b18-en		
OECD	Foreign Direct Investment (FDI) flows	FDI **flows** record the value of cross-border transactions related to direct investment during a given period of time, usually a quarter or a year. Financial flows consist of equity transactions, reinvestment of earnings, and intercompany debt transactions. • **Outward** flows represent transactions that increase the investment that investors in the reporting economy have in enterprises in a foreign economy, such as through purchases of equity or reinvestment of earnings, less any transactions that decrease the investment that investors in the reporting economy have in enterprises in a foreign economy, such as sales of equity or borrowing by the resident investor from the foreign enterprise. **Inward** flows represent transactions that increase the investment that foreign investors have in enterprises resident in the reporting economy less transactions that decrease the investment of foreign investors in resident enterprises.	2015 still not available in December 2016 Bilateral are not available : expected 13-16 months of delay (data for 2015 are given expected mid-January 2017)	FDI
UNCTAD	Foreign Direct investment (FDI) Stocks and Flows	United Nations Conference on Trade and Development (UNCTAD) provides foreign direct investment: Inward and outward flows and stock as part of the Statistical Annexes of the annual UNCTAD World Investment Report. The World Investment Report, which is released in June each year, contains annual data up to the year before, e.g. the 2016 edition contains annual FDI data up to 2015. However, at the time of publication, the data for the most recent year are still preliminary and are subject to revision by the national authorities. When they revise data, UNCTAD updates its database accordingly. Annual, 1970-2015 http://unctad.org/en/Pages/DIAE/Foreign-Direct-Investment-(FDI).aspx	Available 6 months after the closure of the period	FDI

ECB	BSI (balance sheet items)	BSI statistics are based on either the aggregated or the consolidated balance sheet of the monetary financial institutions (MFI) sector. The aggregated balance sheet is the sum of the balance sheets of all MFIs resident in the euro area. The consolidated balance sheet is obtained by netting the aggregated balance sheet positions between MFIs in the euro area. The consolidated balance sheet provides the basis for the regular analysis of euro area monetary aggregates and counterparts. Loans and Deposits Liabilities of Euro-area monetary and non-monetary institutions	Monthly update	Other investment
ECB	SHS (Securities Holdings Statistics)	The data are collected on a security-by-security basis and cover securities holdings by euro area residents of securities issued by selected countries broken down by instrument type, holder sector and issuer sector. Data category Holding amounts (positions)	Monthly update	Portfolio investment

Appendix: Countries that remains under investigation

Here is the list of countries currently dropped from the released database. They remain under investigation and might be included in Finflows whenever their data improved and show relevant patterns.

Afghanistan, Albania, Armenia, Angola, Azerbaijan, Bosnia and Herzegovina, Bangladesh, Burkina Faso, Burundi, Benin, Brunei Darussalam, Pluri-national State of Bolivia, Bonaire, Sint Eustatius and Saba, Bhutan, Botswana, Belarus, Belize, the Democratic Republic of the Congo, Congo Central African Republic, Cote d'Ivoire, Cameroon, Cuba, Cabo Verde, Djibouti, Dominica, Dominican Republic, Algeria, Ecuador, Eritrea, Ethiopia, Fiji, Falkland Islands (Malvinas), Micronesia, Federated States of, Faroe Islands, Gabon, Grenada, Georgia, Ghana, Greenland, Gambia, Guinea, Equatorial Guinea, Guatemala, Guinea-Bissau, Guyana, Honduras, Haiti, Iraq, Islamic Republic of Iran, Jamaica, Jordan, Kenya, Kyrgyzstan, Cambodia, Kiribati, Comoros, Democratic People's Republic of Korea, Kazakhstan, Lao People's Democratic Republic, Saint Lucia, Sri Lanka, Liberia, Lesotho, Libya, Republic of Moldova, Montenegro, Madagascar, Marshall Islands, the former Yugoslav Republic of Macedonia, Mali, Myanmar, Mongolia, Mauritania, Maldives, Malawi, Mozambique, New Caledonia, Niger, Nigeria, Nicaragua, Nepal, Nauru, Peru, French Polynesia, Papua , New Guinea, Pakistan, Palestine, State of, Palau, Paraguay, Rwanda, Solomon Islands, Seychelles, Sudan, Saint Helena, Ascension and Tristan da Cunha, Sierra Leone, San Marino, Senegal, Somalia, Suriname, Sao Tome and Principe, El Salvador, Sint Maarten (Dutch part), Syrian Arab Republic, Swaziland, Turks and Caicos Islands, Chad, Togo, Tajikistan, Timor-Leste, Turkmenistan, Tunisia, Tonga, Trinidad and Tobago, Tuvalu, United Republic of Tanzania, Uganda, Uruguay, Uzbekistan, Holy See (Vatican City State), Saint Vincent and the Grenadines, Viet Nam, Vanuatu, Wallis and Futuna, Yemen, Zambia, Zimbabwe, Namibia, South Sudan, Cocos (Keeling) Islands, Cook Islands, Christmas Island, Western Sahara, British Indian Ocean Territory, Monaco, Norfolk Island, Niue, Pitcairn, French Southern Territories, Tokelau, Antarctica, Bouvet Island, South Georgia and the South Sandwich Islands, Heard Island and McDonald Islands

List of abbreviations and definitions

BMD4   OECD BenchMark Definition of foreign Direct investment (fourth edition)
http://www.oecd.org/corporate/FDI-BMD4-brochure.pdf

BPM6   IMF Balance of Payments and international investment position Manual (sixth edition)
https://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm

CDIS   Coordinated Direct Investment Survey from IMF

CPIS   Coordinated Portfolio Investment Survey

EA   Euro are countries

ECB   European Central Bank

EU   European Union

FDI   Foreign Direct investment

IMF   International Monetary Fund

LBS   Locational Banking Statistics provided by Bank for international Settlement (BIS)

NIIP   Net International Investment Position

OECD   Organisation for Economic Co-operation and Development

OI   Other Investment

PI   Portfolio Investment

SEFER   Securities Held as Reserve Assets

SMP   Securities Markets Programme

SPE   Special Purpose Entities

SSIO   Securities Held by International Organisations

TARGET2   Trans-European Automated Real-time Gross Settlement Express Transfer System 2

UNCTAD   United Nations Conference on Trade and Development

JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.

EU Science Hub
ec.europa.eu/jrc

@EU_ScienceHub

EU Science Hub - Joint Research Centre

Joint Research Centre

EU Science Hub

Publications Office