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Questioni di Economia e Finanza

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by Valerio Della Corte, Stefano Federico and Alberto Felettigh

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LOOKING THROUGH CROSS-BORDER POSITIONS IN INVESTMENT FUNDS: EVIDENCE FROM ITALY

by Valerio Della Corte*, Stefano Federico* and Alberto Felettigh*

Abstract

Motivated by the increasingly large weight of foreign investment funds on the portfolio of Italian residents, this paper provides an estimate of the composition, by instrument and by issuer country, of Italy's portfolio assets after "looking through" cross-border positions in investment funds. Our main findings suggest that removing the statistical opacity arising from cross-border positions in investment funds has a significant impact on the composition of Italy's portfolio investments. After "looking through" foreign funds' holdings, the share of debt securities on portfolio assets, which is equal to 40 per cent in the unadjusted data, rises to 75 per cent. The country composition of external portfolio assets also fundamentally changes in the direction of increasing its geographical diversification. The United States becomes Italy's main destination country; the shares of France, Germany, the United Kingdom and Spain also increase, while that of Luxembourg, where most of the foreign investment funds are domiciled, drastically falls.

JEL Classification: F36, F65, G11.
Keywords: asset allocation, home bias, mutual funds, portfolio investment.

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1. Introduction and main findings[1]

In the wake of large purchases over the last five years, the stock of foreign investment fund shares held by Italian investors has more than doubled since the end of 2012, reaching the value of €754 billion at the end of September 2017. Almost 30 per cent of Italy's overall external assets are now held in the form of investment fund shares; in almost all of the other European Union countries, investment funds account for no more than 5-10 per cent of foreign assets. Cross-border positions in investment funds add two layers of opacity to the composition of a country's external assets, as highlighted in Felettigh and Monti (2008). The first regards the geographical diversification of risk: as investment fund issuers tend to be concentrated in a small number of countries, selected financial centres disproportionately appear as the main destination of a given country's portfolio investments. The second layer of opacity is related to the "ultimate" composition of foreign assets by instrument (equity versus debt instruments), which depends on the individual funds' allocation strategies.

Motivated by the increasingly large weight of foreign investment funds on the portfolio of Italian investors, this paper makes two contributions. First, it summarizes the recent trends in Italian investments in foreign mutual fund shares. Second, it provides an assessment of the composition, by instrument and by issuer country, of Italy's portfolio assets after "looking through" cross-border positions in investment funds, thus updating the estimates originally published in Felettigh and Monti (2008).

The "look through" method is based on two main approaches. The "ultimate" composition by instrument is approximated using Assogestioni's detailed classification of foreign funds according to their investment policy.[2] Each category of funds (like money market, balanced bonds, balanced equity funds, etc.) is defined with reference to specific regulatory restrictions on the fund's allocation strategy: this allows us to estimate the foreign funds' portfolio allocation between equity and debt securities. The geographical allocation of foreign funds held by Italian investors is instead estimated by assuming that it resembles that of the entire investment fund industry in Luxembourg, Ireland and France, which are the countries where the large majority of Italian investments in foreign mutual funds is concentrated.

Our work focuses on the cross-border portfolio holdings of the total economy and does not therefore provide a "look through" analysis for specific institutional resident sectors (e.g. households). Such an analysis would be much more complex: on the one hand, it would require detailed information on the portfolio allocation of the foreign funds held by a specific institutional sector; on the other hand, it would also require estimating the foreign exposure to which the specific institutional sector is subject

[1] We would like to thank Assogestioni for the detailed database on asset management products ("Mappa del risparmio gestito") which is publicly available on their website, Fabiana Gallo and Giuseppina Marocchi for assistance with additional Bank of Italy data on portfolio investment, Silvia Fabiani, Luigi Federico Signorini and Roberto Tedeschi for useful comments and suggestions.

[2] Assogestioni is an association that represents most of the Italian and foreign investment management companies operating in Italy, as well as banks and insurance companies involved in investment management.

via the financial instruments issued in Italy (i.e. domestic mutual investment funds, pension funds, insurance products, etc.).[3] Ideally, one would also like to take into account the actual distribution of risks between issuers and holders; for instance, risks are not entirely borne by the holder in the case of financial products that guarantee a minimum return.

Our main findings suggest that removing the statistical distortions arising from cross-border positions in investment funds has a significant impact on the composition of Italy's portfolio investments, both by instrument and by destination country.

The share of debt securities on portfolio assets, which is equal to 40 per cent in the unadjusted data, rises to 75 per cent after "looking through" foreign funds' holdings. This correction stems from the relatively large weight of debt securities on the allocation strategy of foreign funds held by Italian investors (around two thirds of the funds' investments). The share of equities correspondingly rises from 7 to 25 per cent after the adjustment.

The "look through" adjustment also fundamentally changes the geographical composition of Italian investors' external portfolio assets, in the direction of increasing their geographical diversification. Luxembourg's share falls from above 40 per cent to less than 4 per cent, while the United States becomes Italy's main destination country; the shares of France, Germany, the United Kingdom and Spain also increase.

The structure of the work is as follows. Section 2 provides a summary of the main trends in Italian investments in foreign funds. Section 3 explains the methodology behind the adjustment for cross-border positions in investment funds and presents the main findings. Further indirect evidence on portfolio allocation of foreign funds is reported in Section 4, which looks at the returns offered to investors via dividends or capital gains. Finally, Section 5 concludes.

2. Italian investments in foreign funds

Balance of payments data on portfolio investment can be broken down into three types of financial instruments: debt securities, equities and investment fund shares. Net purchases by Italian residents of investment fund shares, typically issued in financial centres such as Luxembourg and Ireland, have been particularly high since 2013 (€332 billion between the beginning of that year and September 2017;[4] Figure 1).[5] Relative to GDP, these outflows were much higher than those observed in the other main euro-area countries over the same period (Figure 2).

[3] The work of Cardillo and Coletta (2017) estimates the final destination of Italian asset management products held by households and manages to fill the second gap, but not the first one, due to the lack of information on the final destination of investments in foreign funds held directly or indirectly by the household sector.

[4] The data include the revision, starting from 2010, of the historical series relating to foreign funds held by residents due to a new estimate of the component held with foreign custodians (Bank of Italy 2017a).

[5] Here we do not address the determinants of these outflows. For a descriptive analysis of the overall portfolio rebalancing in Italy, see Banca d'Italia (2017b). For an empirical examination of the drivers of cross-border flows in investment fund shares in Luxembourg, see Di Filippo (2017).

At the end of September 2017, the stock of foreign funds held by Italian investors amounted to €754 billion, the highest value among all European Union countries both as a percentage of portfolio assets (54 per cent; Figure 3) and as a percentage of external assets (28 per cent; Figure 4). This stylised fact reflects, among other factors, the much higher penetration of foreign intermediaries in Italy's asset management sector. Indeed, according to the stock data available in the financial accounts, at the end of September 2017 the weight of foreign funds on overall funds held by residents stood at 70 per cent in Italy, against 16 per cent in France, 24 in Germany and 41 in Spain. In Italy, the institutional sectors with the largest holdings of foreign funds were households (35 per cent of the total), insurance and pension funds (33 per cent) and "other financial intermediaries" (28 per cent), which include financial auxiliaries (5 per cent) and resident non money-market investment funds (4 per cent).[6]

In order to better understand the characteristics of foreign funds purchased by Italian residents we draw on information gathered by Assogestioni from the subjects authorized to undertake asset management activity (i.e. asset management companies, banks, etc.) and published in the document "Mappa del risparmio gestito". It is relatively easy to map the breakdowns available in Assogestioni data into aggregates which are consistent with the criteria implemented by balance of payments statistics. Investment funds are indeed separately reported by Assogestioni in terms of the applicable legislation (Italian *versus* foreign law), which is related to the issuer's residence. Furthermore, the corresponding holdings usually refer to the share that pertains to Italian customers (except in cases where they own a "prevalent share" of a given fund).[7] Given the high representativeness of the sample, Assogestioni data are quite consistent with the corresponding positions and flows recorded in Italy's official external statistics.[8]

According to Assogestioni data, net purchases of foreign funds by Italian investors in the 2013-2016 period were concentrated in flexible funds (37 per cent) and bond funds (30 per cent); the shares referring to balanced, equity and money market funds were significantly lower (15, 13 and 4 per cent, respectively; Table 1). This composition was substantially stable during the period under review, with the exception of 2016 when demand for bond funds increased, mainly to the detriment of equity funds.[9]

Assogestioni data also provide information on whether foreign funds are managed by Italian or foreign intermediaries; the share managed by Italian groups has progressively decreased over time

[6] Investment funds often reinvest part of their assets in foreign fund shares. With reference to the portfolio of Italian mutual funds held by Italian households, Cardillo and Coletta (2017) report that 22 per cent of their value was invested in shares of foreign mutual funds at the end of 2016.

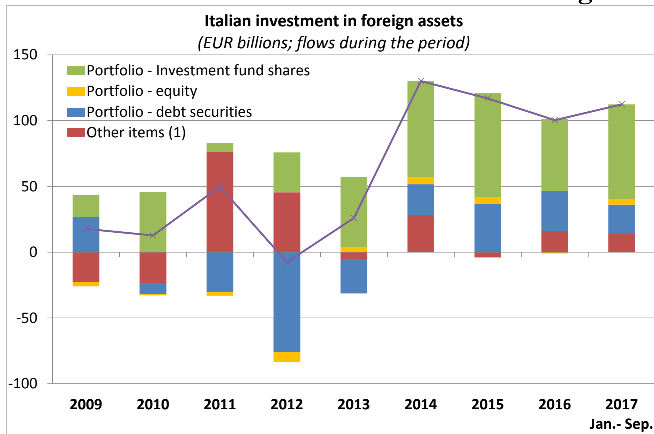
[7] In this circumstance, which only materializes in the case of foreign funds managed by Italian groups, data published by Assogestioni refer to the fund's entire portfolio and not to the component owned by Italian customers only. This entails an overestimation of Italian holdings of foreign funds managed by Italian groups by about 15 per cent. The results presented in this study have been corrected for this overestimation and therefore do not coincide with the data published by Assogestioni.

[8] Although very high, Assogestioni's data coverage in terms of the number of reporting agents is not complete (around 90 per cent); it follows that mutual fund assets are underestimated relative to external statistics.

[9] See Appendix A.1 for more detailed data on the distribution of foreign funds by fund category and Appendix A.2 for a definition of the various types of funds according to Assogestioni.

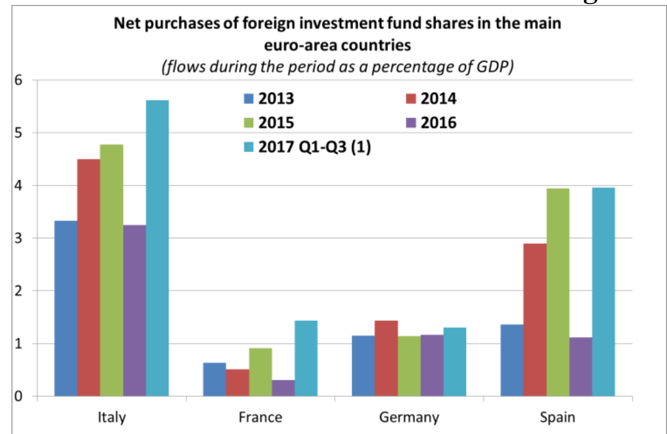
while the share managed by foreign intermediaries rose from around 40 per cent at the end of 2012 to 50 per cent four years later (it was only about 30 at the end of 2008; Figure 5).[10]

Figure 1



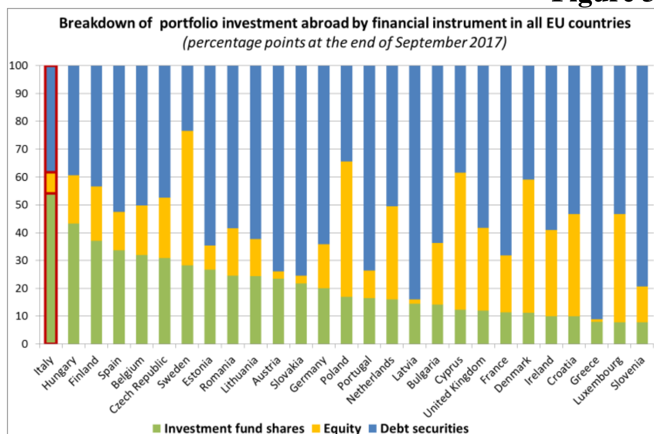
Source: Balance of payments data from Banca d'Italia. (1) "Other items" includes foreign direct investment, other investments, financial derivatives and official reserves.

Figure 2



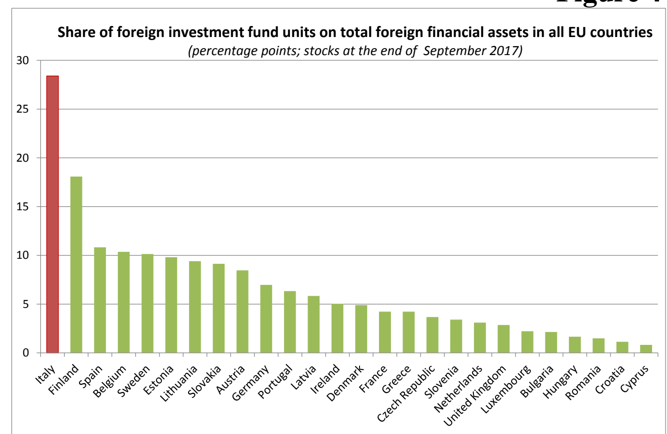
Sources: ECB for balance of payments data and Eurostat for GDP data. (1) GDP data for 2017 are calendar and seasonally adjusted.

Figure 3



Source: ECB (IIP) data. Data not available for Malta.

Figure 4



Source: ECB (IIP) data. Data not available for Malta.

[10] The increase in the share of foreign funds managed by foreign groups is amplified by the entry, in the second quarter of 2015, of a large foreign group (BlackRock) into the Assogestioni sample of reporting companies; even excluding this intermediary, it is however significant (about 4 percentage points between 2012 and 2016).

Table 1 – Composition of foreign funds held by Italian investors: flows

(flows in EUR billions unless otherwise stated)

	2013	2014	2015	2016	2013-2016	
					cumulated inflows	composition (%)
Balanced	6.7	7.1	8.0	3.0	24.8	15.1
Bond	6.7	18.9	10.4	13.3	49.3	30.1
Equity	7.3	6.4	8.9	-1.2	21.4	13.1
Flexible	14.1	15.6	23.6	8.0	61.4	37.5
Money-market	-0.2	-0.2	6.7	0.6	7.0	4.3
Total (1)	34.7	47.8	57.6	23.8	163.9	100.0

Source: calculations based on data from Assogestioni (adjusted as explained in footnote 7).

Notes: (1) Including hedge funds (not shown herein), which are negligible in value terms.

Table 2 – Composition of foreign funds held by Italian investors: stocks

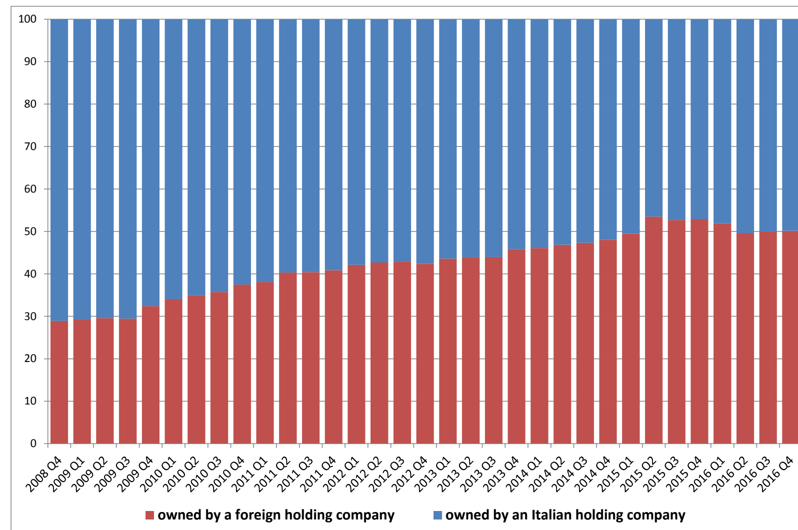
(percentage points unless otherwise stated)

	2012	2013	2014	2015	2016
Balanced	3.9	5.5	6.8	8.6	8.8
Bond	50.6	46.2	44.7	40.1	43.7
Equity	25.9	27.5	26.9	28.2	25.7
Flexible	12.6	15.3	17.1	17.9	17.2
Money-market	6.6	5.2	4.3	5.0	4.4
Total (1) (EUR billions)	279.1	335.7	408.8	527.0	592.3

Source: calculations based on data from Assogestioni (adjusted as explained in footnote 7).

Notes: (1) Including hedge funds (not shown herein), which are negligible in value terms.

Figure 5 – Breakdown of foreign funds owned by Italian investors by residency of their financial group



Source: calculations based on data by Assogestioni (adjusted as explained in footnote 7).

3. An estimate of the composition of Italy's foreign portfolio holdings adjusted for the intermediation of foreign funds

3.1. The distortion induced by foreign funds

According to external statistics, the geographical diversification of Italy's portfolio investment abroad appears rather limited: at the end of 2016 the first five destination countries represented almost three quarters of the total (Table 3, last column). Just under half of the portfolio assets were issued by Luxembourg and Ireland, which accounted for almost 90 per cent of foreign investment funds held by Italian residents.

The large weight of foreign investment funds in Italian residents' portfolio holdings, together with their concentration in Luxembourg and Ireland, causes a significant bias in the composition by instrument and by issuer country of the overall foreign portfolio. As highlighted in Felettigh and Monti (2008), balance of payments statistics are based on the legal residence of the investment fund and do not provide information on either the type of securities (e.g. equities or debt securities) in which the investment fund's assets are actually invested ("intermediation veil"), or on their "location" (that is, where the issuer of the securities held in the fund's portfolio resides; "geographical veil").

By way of illustration, consider a mutual fund established under Luxembourg law, whose shares are purchased by an Italian investor, and which only invests in debt securities issued in the United States. In this case, balance of payments data would record holdings of Luxembourg mutual fund shares by an Italian investor, thus hiding both the effective exposure of the investor to the US bond market and related risks linked to idiosyncratic financial shocks or to changes in the euro-dollar exchange rate.

A more accurate picture of the actual exposure implicit in Italian residents' foreign portfolio holdings therefore requires adjustments which remove the statistical distortions in the composition by instrument and by issuer country arising from the intermediation of foreign funds.

Table 3 – First ten destination countries of Italian portfolio investment abroad at the end of 2016

(stocks; percentage points)

ranking	Equity		Investment fund units		Debt Securities		Total portfolio	
	country	%	country	%	country	%	country	%
1	United States	25.9	Luxembourg	73.7	France	15.3	Luxembourg	40.5
2	France	14.5	Ireland	13.4	Spain	14.0	France	11.6
3	Germany	13.3	France	8.3	United States	13.8	Ireland	8.2
4	United Kingdom	10.8	United Kingdom	2.4	Germany	11.3	United States	7.8
5	Netherlands	8.5	Germany	0.8	Netherlands	8.4	Germany	5.9
6	Switzerland	6.2	United States	0.6	United Kingdom	7.2	Spain	5.9
7	Spain	3.4	Austria	0.4	International org. (1)	6.2	United Kingdom	5.0
8	Japan	3.1	Switzerland	0.2	Luxembourg	4.4	Netherlands	4.0
9	Luxembourg	1.4	Cayman Islands	0.1	Ireland	2.7	International org. (1)	2.6
10	Belgium	1.2	Curaçao	0.0	Belgium	1.8	Belgium	0.8
others	-	11.8	-	0.2	-	14.9	-	7.8
memorandum item: share on total portfolio investment (%)		*7.3*		*52.4*		*40.3*		*100.0*

Source: Calculations based on IIP data from Banca d'Italia. Notes: (1) Includes investments in securities issued by EU institutions and intergovernmental organizations (e.g. European Investment Bank, Bank of International Settlements, European Bank for Reconstruction and Development).

3.2. The adjustment by instrument

Assogestioni's classification of funds into about 40 categories, based on the underlying investment policy, is sufficiently detailed to allow for a correction by instrument (thus removing the "intermediation veil") if we limit ourselves to the distinction between equity and debt instruments. Each category of funds, with the exception of flexible funds, is defined on the basis of specific regulatory restrictions on the composition of the portfolio, assessed according to the "look-through" principle, namely, taking into account indirect exposure through investments in other funds or in financial derivatives. To give an example, the share of equities in a fund's portfolio is zero for money market funds and bond funds (excluding mixed funds, in which it cannot exceed 20 per cent); it can instead vary between 10 and 50 per cent for "balanced bond" funds and between 70 and 100 per cent for equity funds (see Table A.2 in the Appendix). We identify a fund's investment policy by the quota of equities in its allocation strategy and assume that the residual part of the fund's assets are invested in debt securities; the impact of this simplification, which mainly ignores assets held as bank deposits, should indeed be rather limited, also considering that the share of equities is determined according to the "look-through" principle.[11]

By using these quotas or, in the case of intervals, their average value, it is possible to estimate the asset allocation of each category of funds.[12] The only exception arises in the case of flexible funds, for

[11] According to ECB data, at the end of 2016 the weight of debt securities, equities and investment fund shares on a fund's overall portfolio was 99 per cent for funds in Ireland, 94 per cent for those in Luxembourg and 93 per cent for those in France.

[12] Felettigh and Monti (2008) use an alternative approach that rests on the hypothesis that Irish and Luxembourgian funds purchased by Italians constitute a representative sample of the corresponding country-wide industry. This assumption warrants the use of a relatively detailed set of information but presents elements of arbitrariness; we therefore explore an alternative methodology.

which, as already mentioned, there is no formal restriction on investment policies; in this case, we use a weighted average of the share of equities in the portfolio of "mixed" funds from Luxembourg, Ireland and France (see Appendix A.2 for further details).

At the end of 2016 equities intermediated by foreign funds were estimated to be about one third of their total assets and within a range of between 25 and 40 per cent (see Appendix A.2 for the underlying assumptions). The average share invested in equities remained fairly stable between 2009 and 2016, although it temporarily decreased between the second half of 2011 and the second half of 2013.

Without adjusting for the positions intermediated by foreign funds, the share of foreign portfolio assets invested in debt securities stood at 40 per cent at the end of 2016, compared with a 7 per cent quota for equities (with the remaining 53 per cent associated with positions in foreign funds; Figure 6a).

The results of the adjustment are reported in Figure 6b, where the dashed bars indicate the debt and equity assets indirectly held by Italian investors through the intermediation of foreign funds. The overall incidence of debt securities rises to 75 per cent,[13] while that of equity securities to 25 per cent. Around these average values we have defined two estimation intervals, depending on the range of assumptions concerning foreign funds' portfolio allocation.

The first and widest range (grey area in Figure 7) is obtained by considering the "regulatory" limits (minimum and maximum value) to the share of equities in the portfolio of each fund category. For flexible funds, this approach therefore takes into account the very unlikely cases in which the share of equity investments is either zero (minimum limit) or 100 per cent (maximum limit). Such "extreme events" result in an upper and lower bound of 82 per cent and 67 per cent respectively for the portion invested in debt securities at the end of 2016.

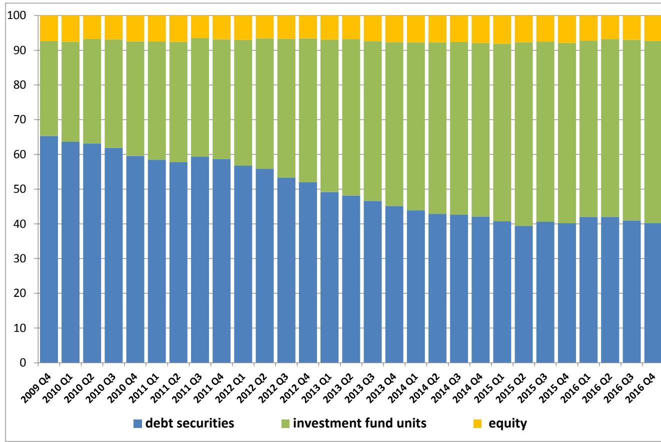
The second estimation interval is narrower; the regulatory limits for funds not in the flexible category still apply, but for foreign flexible funds purchased by Italian residents, the minimum and maximum equity share observed in the mixed funds of Luxembourg, Ireland and France is now used (see Appendix A.2 for details). This estimation interval is almost symmetrical and equal to about 4 percentage points above or below the central estimate; in the "adjusted" figures, the share invested in debt securities at the end of 2016 therefore varies between 72 and 79 per cent (red lines in Figure 7).

[13] As already mentioned, this adjusted share includes the contribution, which we consider to be modest, of assets other than portfolio assets, in particular deposits.

Figure 6 –Foreign portfolio assets: breakdown by instrument

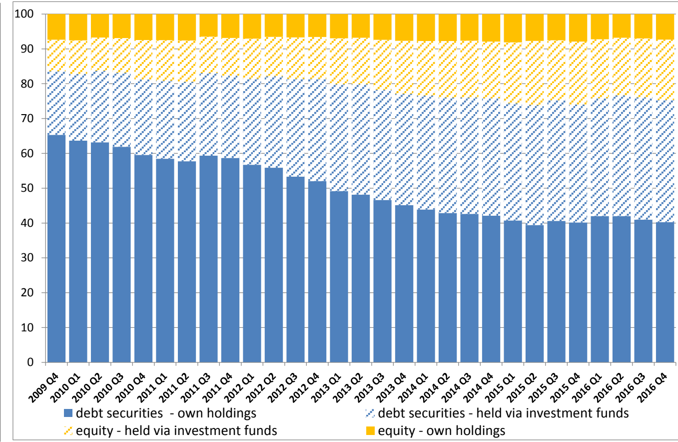
(stocks; percentage points)

(a) According to IIP data



Source: calculations based on Banca d'Italia IIP data.

(b) Adjusted for the positions intermediated by foreign funds



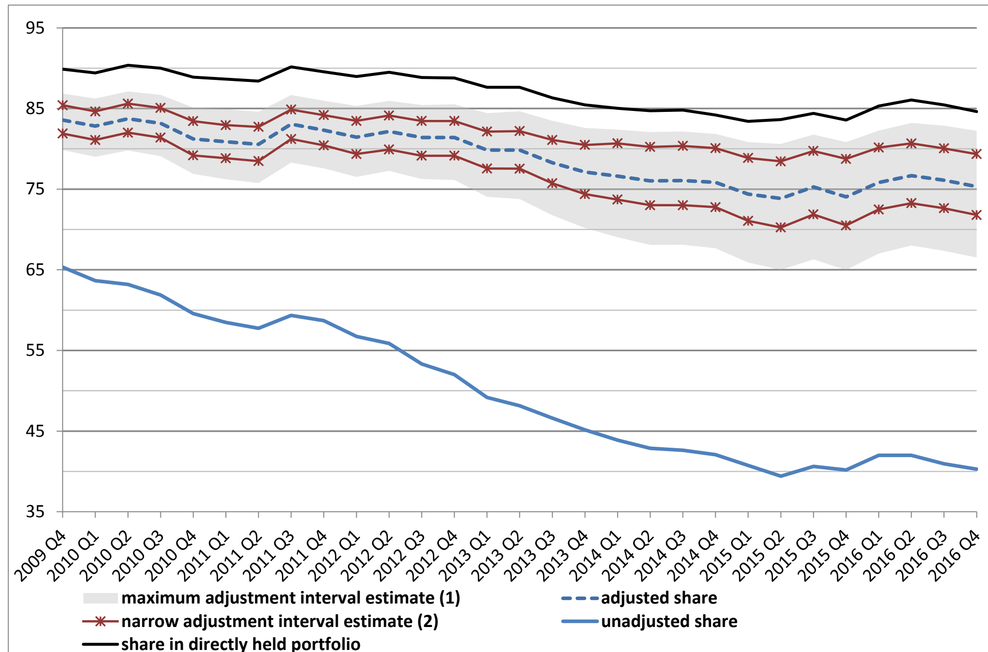
Sources: calculations based on Banca d'Italia, Assogestioni and ECB data.

The adjustment for foreign funds has an impact not only on the share of debt-securities in foreign portfolio assets but also on its dynamics over time. Without the adjustment, the share falls from 65 per cent at the end of 2009 to 40 per cent in 2015 and then stabilizes (Figure 6a and continuous blue line in Figure 7). With the adjustment, a milder decline in the share of debt securities is observed (from 84 to 75 per cent between 2009 and 2016; dotted blue line in Figure 7).

As already mentioned, the portfolio allocation between equity and debt securities by foreign funds is fairly stable over time, with the weight of debt securities standing at around two thirds. The directly held portfolio is even more biased towards debt securities, although their percentage declined slightly over time (from around 90 per cent at the beginning of the period to around 85 at the end of 2016). However, these differences between the two portfolio allocations constitute only a second-order effect relative to the weight of foreign funds in foreign portfolio investment. The "adjusted" share (dotted blue line in Figure 7) indeed tends to broadly follow the trend in the share of debt securities in the directly held portfolio (black line in Figure 7).

Figure 7 – Share of debt securities on foreign portfolio assets holdings

(*percentage points*)



Sources: calculations based on Banca d'Italia IIP data and Assogestioni and ECB data. Notes: (1) The range is constructed on the basis of the minimum and maximum equity composition limits of the various fund types according to the Assogestioni classification. (2) The range assumes that the equity quotas of the flexible funds portfolio mirror those of "mixed" funds domiciled in Luxembourg, France and Ireland in each period (see Appendix A.2 for details).

3.3. The geographical adjustment

The information provided by Assogestioni is not sufficiently complete as regards the adjustment for geographical exposure ("geographical veil"). The taxonomy does not provide information on the issuer country of the assets held by flexible funds, balanced funds and funds specialized in certain industrial sectors. There are "geographical" categories within some specific types of funds (for example, funds specialized in euro-area equities), which are typically based on different levels of aggregation: by continent or geographical area in the case of equity funds and usually by currency in the case of bond funds and money market funds. For the geographical adjustment we have therefore opted for a methodology that, while necessarily based on more restrictive assumptions, combines the estimate on the breakdown by instrument obtained from Assogestioni data with information on the geographical allocation of Luxembourgian, Irish and French mutual funds (which, as mentioned above, represent almost the entirety of the holdings of foreign funds by Italian investors).

The methodology for the geographical adjustment is based on the following hypotheses:

1) the composition by instrument of the assets intermediated by foreign funds held by Italian residents is estimated on the basis of Assogestioni data, regardless of the fund's country of residence;

2) the geographical diversification of Luxembourgian funds held by Italian residents is assumed to coincide with that of the overall Luxembourgian fund industry, separately considering investments in debt securities and equities, and a similar assumption holds for Irish and French funds;

3) the geographical diversification attained by funds resident in the remaining foreign countries (whose total weight is less than 5 per cent) is assumed to equal that averaged by the funds resident in Luxembourg, Ireland and France;

4) any investment undertaken by foreign funds in other funds (either foreign or domestic) are assumed not to have any impact on the geographical diversification of intermediated equities and debt securities (non-distortionary second-round effects).

Based on these assumptions, the "indirect" exposure of Italian investors towards, for example, US debt securities through Luxembourgian mutual funds consists of the product of three terms: (i) the value of the Luxembourgian mutual funds held by Italian residents; (ii) the portion of debt securities on total assets of foreign funds held by Italian residents, as estimated on the basis of Assogestioni data;[14] (iii) the share of US debt securities on total debt securities held by the Luxembourgian investment fund sector (see equation [2] in the Appendix A.3).

As an alternative to the second of the previous four hypotheses, one could assume that there are no significant differences between investment strategies of foreign funds and those of Italian funds; the adjustment could then be estimated by using the geographical allocation of the portfolio held by Italian funds. However, foreign funds are typically aimed at a different set of customers (typically international customers) than of Italian funds, whose customer base is almost entirely domestic and might therefore have a very different investment strategy. In partial support of this argument, Assogestioni data provide evidence suggesting that foreign funds held by Italian residents differ appreciably from the corresponding Italian funds in terms of category and, therefore, composition by instrument (see Appendix A.1).

It should also be noted that, while on the one hand Figure 5 shows that foreign funds held by Italian residents are no longer predominantly round-trip funds,[15] on the other hand a great deal of empirical literature reports that the portfolio choices of mutual funds, as well as other categories of investors, differ significantly between countries, both in terms of home bias and geographical diversification.[16]

[14] The product of these first two terms provides an estimate of the total "indirect" exposure of Italian residents, intermediated by Luxembourgian funds, towards debt securities (without distinguishing them according to the issuer's country of residence).

[15] The term "round-trip" can take on different nuances. Assogestioni (2006) uses the term to denote mutual funds domiciled abroad but "purchased mainly by Italian investors", while the official definition is currently that of "foreign funds promoted by Italian intermediaries"; similarly, Mediobanca (2017) uses the expression to denote funds promoted by Italian managers but domiciled abroad. In practice, the definitions coincide substantially with foreign funds belonging to groups governed by Italian law.

[16] See, for example, Hau and Rey (2008) and Anderson et al. (2011).

Going back to the implementation details of our geographical adjustment, the country allocation of Luxembourgian, Irish and French funds have been derived, separately for each instrument, from the following sources: data from the Banque Central du Luxembourg for funds based in this country; data from the IMF (Coordinated Portfolio Investment Survey, CPIS) for funds based in Ireland and France, supplemented with data on the funds' domestic assets from the Central Bank of Ireland and from the ECB Investment Funds Statistics.[17]

The adjustment makes it possible to more accurately evaluate the actual exposure of Italian residents' portfolio holdings to the various countries' financial markets and to fluctuations in the euro's bilateral exchange rates. In particular, the adjusted data show that the exposure of Italian investors to US portfolio assets (about a fifth of the total; Table 4) is more than double compared with the unadjusted data; the United States remains the first destination of Italian investments in equities and becomes the first destination for investments in debt securities. The results confirm that France is the second country of destination, with a weight of 12 per cent on the total foreign portfolio of residents. The third country is Germany, with a share of 9 per cent, followed by the United Kingdom (8 per cent) and Spain (7 per cent). Taking into account the geographical adjustment, investments in these five countries account for slightly less than 60 per cent of Italy's foreign portfolio, against 37 per cent without the adjustment.

Table 4 – First ten destination countries of Italy's portfolio investment abroad at the end of 2016, adjusted for the positions intermediated by mutual funds

(stocks; percentage points)

ranking	Equity		Debt Securities		Total portfolio		*memorandum item:* Total portfolio unadjusted	
	country	%	country	%	country	%	country	%
1	United States	25.9	United States	19.0	United States	20.7	Luxembourg	40.5
2	France	10.8	France	12.7	France	12.2	France	11.6
3	Germany	9.3	Germany	9.1	Germany	9.2	Ireland	8.2
4	United Kingdom	8.5	Spain	8.9	United Kingdom	8.3	United States	7.8
5	Japan	5.2	United Kingdom	8.2	Spain	7.3	Germany	5.9
6	Netherlands	5.1	Netherlands	7.3	Netherlands	6.7	Spain	5.9
7	Switzerland	4.4	Luxembourg	4.1	Luxembourg	3.8	United Kingdom	5.0
8	Luxembourg	2.9	International org. (1)	3.7	Italy *(round trip)* (2)	2.9	Netherlands	4.0
9	Spain	2.3	Italy *(round trip)* (2)	3.4	International org. (1)	2.8	International org. (1)	2.6
10	Cayman Islands	2.1	Ireland	2.2	Ireland	2.0	Belgium	0.8
others	-	23.5	-	21.4	-	24.0	-	7.8
memorandum item: share on total portfolio investment (%)		*24.6*		*75.4*		*100.0*		*100.0*

Sources: calculations based on Banca d'Italia IIP data and ECB, IMF, Banque Centrale du Luxembourg and Central Bank of Ireland data using equation [3] in Appendix A.3. Notes: due to rounding, numbers may not sum to 100; (1) Includes investments in securities issued by EU institutions and intergovernmental organizations (e.g. European Investment Bank, Bank of International Settlements, European Bank for Reconstruction and Development); (2) Investment in Italian portfolio assets through the intermediation of foreign mutual funds.

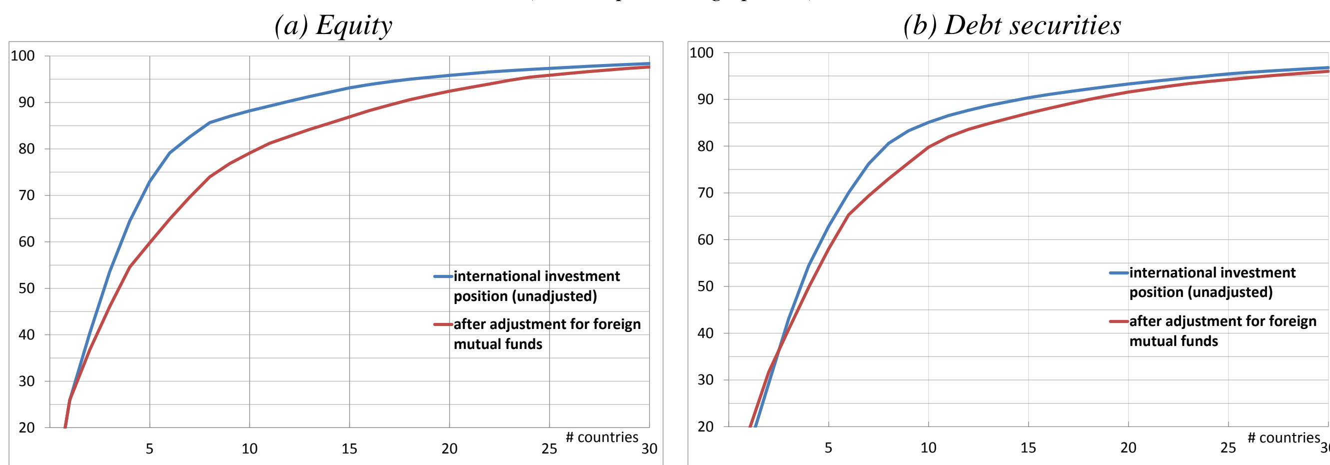
[17] For more details on the methodology and the sources, see Appendix A.3.

The reclassification exercise also estimates that the share of "round-trip" portfolio investments (namely, purchases of foreign funds which reinvest in Italy, so these assets are better described as domestic rather than foreign) stood at 2.9 per cent at the end of 2016 (€37 billion).[18]

Investments in foreign funds to increase the geographical diversification of the foreign portfolio of Italian residents in two ways. The first is a mechanical effect, related to the redistribution of positions in funds that predominantly reside in a few countries to a much larger number of destination countries. The second effect arises from the wider international diversification of foreign funds compared with that of residents' direct portfolio investments, especially in the case of equity instruments (Figure 8). Instead, round-trip investments go in the opposite direction: they increase, albeit slightly, the home bias that characterizes the geographical allocation of the *overall* portfolio of Italian investors.

Figure 8 – Cumulated share of the first 30 destination countries on Italy's portfolio investment abroad at the end of 2016

(stocks; percentage points)



Sources: Calculations based on Banca d'Italia IIP data and ECB, IMF, Banque Centrale du Luxembourg and Central Bank of Ireland data.

3.4. Measuring the home bias in the portfolio of Italian investors

Our adjustment also has a direct and sizeable impact on the analysis of "home bias" in the portfolio choices of Italian investors, namely their tendency to hold a proportion of foreign assets which is lower than that predicted by standard portfolio theory.

The indicators of home bias adopted in the literature are usually based on the deviation between actual holdings of domestic equity (or debt) instruments and the corresponding holdings as dictated by theoretical predictions; the simplest and standard benchmark for the latter is the share of these assets in

[18] This share, indicated in Table 4 as "Italy (round-trip)", is mainly the result of investments by foreign funds in Italian debt securities. The value is close to that estimated in Felettigh and Monti (2008) for the average of the period 2002-2005 (about two per cent).

the world market portfolio.[19] This leads to the following definition of home bias for equity holdings[20] by country i at time t:

$$Home\ Bias(i)_t = 1 - \frac{\text{Share of foreign equities in country } i's \text{ overall equity holdings}_t}{\text{Share of foreign equities in the world market portfolio}_t}, \quad [1]$$

where "foreign" is from the standpoint of country i, and is tantamount to "issued in countries other than country i". When the measure for country i is equal to one, there is full home bias (residents only hold domestic equity); when it is equal to zero, the share of foreign assets in the country portfolio is identical to that in the world market portfolio (as given by the relative market capitalization). When the share of foreign assets in the country portfolio is larger than the corresponding share in the world market portfolio, the indicator of home bias turns negative, to indicate an under-exposure to domestic assets; this case is however of little empirical relevance.

Using this definition, we calculate two alternative measures of home bias, for both equities and debt securities. The first measure is derived by using for the numerator official Banca d'Italia IIP data and financial sector accounts data, while the second measure is adjusted after "looking through" the intermediation of foreign funds following the methodology developed in the previous sections. The denominators are constructed from Bank of International Settlements data for bonds and from World Federation of Exchanges data for equity market capitalisation.

The "look through" adjustment significantly decreases the Italian home bias for equities as well as for debt securities. It also affects the evolution of the home bias over time, although to a lesser extent (Figure 9). The unadjusted home bias for equity was slightly above 0.8 at the start of 2009; it declined to about 0.7 by the end of 2016. The adjusted measure started from a lower level (0.7 in 2009) and decreased much more rapidly, to less than 0.45 at the end of 2016.

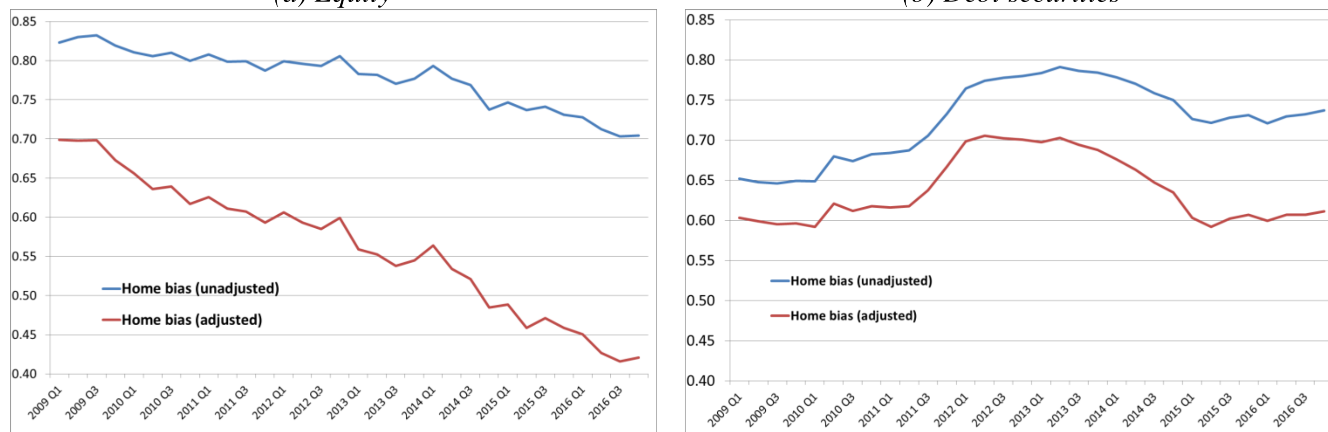
As for debt securities, the unadjusted home bias recorded an increase of almost 10 percentage points by the end of 2016 (from 0.65 at the beginning of 2009 to just under 0.75), peaking to about 0.8 during the euro-area sovereign debt crisis. After adjusting for the positions in foreign mutual funds, the home bias for debt instruments appears instead to have fallen back to its, slightly lower, pre-crisis level (0.60).

[19] This indicator stems from a basic International Capital Asset Pricing model with homogeneous investors across countries. An alternative benchmark in the literature, but specific to equity holdings, is given by a mean-variance portfolio whose weights are derived from a classic mean-variance optimization problem with sample estimates for the mean and the variance-covariance matrix of returns (for a brief review, see Lewis, 1999); we opt for the approach based on the shares of foreign assets on the world market portfolio as it can be applied to both bond and equity holdings and it represents the standard benchmark used in the literature (see, e.g. Coeurdacier and Rey, 2013)

[20] A similar definition holds for debt instruments.

Figure 9 – Home bias of Italian investors by instrument

(a) Equity *(b) Debt securities*



Sources: calculations based on Banca d'Italia IIP and financial sector accounts data and BIS and World Federation of Exchanges data.

4. Returns on foreign funds' holdings

Further information on the portfolio allocation of foreign funds can be derived somewhat indirectly by looking at the returns that they provided to investors in the form of dividends or capital gains. Specifically, the returns of foreign funds held by Italian investors can be estimated on the basis of balance of payments and IIP data, by calculating the sum of income flows and valuation adjustments related to that instrument, in relation to the stock outstanding at the end of the previous period (Curcuru et al., 2011). The first component of the numerator, recorded in the balance of payments as part of investment income, includes the dividends and undistributed profits of the fund ("reinvested profits"), net of management costs. The second component captures holding gains or losses, due to changes in price and exchange rates (and corresponding to the gains that would be realized by selling the investment fund shares, gross of any exit fees and transaction costs).

On average over the period 2013-16 the total net return of foreign funds held by Italian investors (5.3 per cent; Table 5) was slightly higher than that received overall on the other foreign portfolio assets (4.8 per cent).[21] However, the latter are biased towards debt securities. For this reason, a more adequate comparison would be the weighted average of the returns on directly held equity and debt, using as weights the relative shares of these instruments in the foreign funds portfolio. Doing so delivers a counter factual average return in the four-year period that is significantly higher (6.2 per cent; Table 5, bottom panel) than that actually received on foreign funds.

The return on foreign funds was also higher compared with that of funds governed by Italian law (averaging 3.4 per cent in the last four years; Table 6). This discrepancy might also derive from the fact

[21] In particular, returns on foreign funds were on average higher than those on foreign debt securities and significantly lower than those on foreign equities. The comparison should be evaluated with caution, since it is based on a limited time horizon and on aggregate data that do not allow an appropriate assessment of risk-adjusted returns.

that foreign funds are more biased towards equities, a macro-category that is typically riskier and which recorded higher returns than debt securities over the period we consider. Indeed, the Morgan Stanley Global Equity Index indicates that the total return in euros stood on average at 16.2 per cent, compared with 4.6 per cent for debt instruments (as indicated by the J.P. Morgan Global Aggregate Bond Index).

Table 5 – Returns on Italian residents' portfolio of foreign assets

(percentage points unless otherwise stated)

financial instrument	reference period	implied percentage net returns (*valuation adjustments included*)	*memorandum items (EUR billions):* stocks at the end of the period	*stocks at the end of the previous period*	*investment income*	*valuation adjustments (for changes in prices and exchange rates)*
investment fund units	2013	8.8	434.3	353.9	6.2	24.8
	2014	6.4	529.3	434.3	6.7	21.3
	2015	2.7	614.6	529.3	8.1	6.3
	2016	3.1	674.8	614.6	13.3	6.0
	average	**5.3**				
equity	2013	21.7	70.8	56.2	2.6	9.6
	2014	10.7	83.7	70.8	2.4	5.2
	2015	9.3	93.6	83.7	3.2	4.6
	2016	3.6	94.3	93.6	2.3	1.1
	average	**11.3**				
debt securities	2013	0.9	415.8	444.3	13.5	-9.5
	2014	7.5	445.5	415.8	13.4	17.8
	2015	1.8	475.7	445.5	14.2	-6.4
	2016	5.2	518.7	475.7	13.7	11.1
	average	**3.8**				
portfolio foreign assets net of foreign investment fund units	2013	3.2	486.6	500.5	16.1	0.2
	2014	8.0	529.2	486.6	15.9	23.0
	2015	2.9	569.3	529.2	17.4	-1.8
	2016	4.9	612.9	569.3	16.0	12.2
	average	**4.8**				
counterfactual foreign portfolio (1)	2013	7.3	-	-	-	-
	2014	8.6	-	-	-	-
	2015	4.3	-	-	-	-
	2016	4.7	-	-	-	-
	average	**6.2**				

Source: calculations based on Banca d'Italia balance of payments and IIP data. Notes: (1) As a weighted-average of the returns obtained on equity and debt instruments directly held with weights given by the equity-bond allocation estimated for foreign mutual funds (see Section 3.2).

Table 6 – Returns on the main alternative financial assets

(average of annual data; percentage points)

financial instrument	average 2013-2016
Italian investment funds	3.4
foreign equity (1)	16.2
foreign bonds (2)	4.6

Source: Banca d'Italia (2017c).

Notes: (1) Percentage change in the Morgan Stanley Global Equity Index, which includes dividend payments and changes in exchange rates. (2) Percentage change in the J.P. Morgan Global Aggregate Bond Index (excluding the Italian bond market), which includes coupon payments and changes in exchange rates.

5. Concluding remarks

Cross-border positions in investment funds account for a significant share of Italy's external assets, also in comparison with the other EU countries. As already highlighted in Felettigh and Monti (2008), the domicile of investment fund vehicles leads to a disproportionate weight of financial centres among Italy's main portfolio investment destinations. More generally, this phenomenon is an example of how the growing intermediation of mutual funds located in financial centres makes it more difficult to properly assess the extent of "genuine" cross-border portfolio diversification (Lane and Milesi-Ferretti, 2017).

In order to remove the statistical distortions arising from such positions, in this paper we provide estimates of the composition of Italy's portfolio assets, by instrument and by issuer country, after "looking through" the intermediation of foreign funds.

Our main findings point to large distortions arising from holdings of foreign funds in terms of both instrument and geographical allocation. The share of debt securities on Italy's external portfolio significantly rises as a consequence of our "look-through" exercise; its declining trend in the last decade is also less pronounced than that observed in the unadjusted data. Moreover, the adjustment has a large impact on the geographical composition of Italian investors' external portfolio assets: the shares of Luxembourg and other financial centres fall dramatically, while those of the United States and other main advanced economies rise. In general, the geographical diversification of the portfolio tends to increase and the home bias for equities and debt securities is significantly smaller.

Our estimates should, however, be taken with caution, as they rely on several assumptions and on fairly aggregated data. Given the large weight of foreign investment funds in the country's portfolio and, more generally, the strong growth of mutual funds worldwide, further work should be undertaken in this area. To this end, collecting data at a more micro level (i.e. on the portfolio allocation of individual funds) would definitely yield richer insights for a more complete "look-through" perspective.

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Appendix

A1. Composition of mutual funds governed by foreign law by category and comparison with funds governed by Italian law

Table A.1 – Composition of Italian and foreign mutual funds held by Italian investors, by category

(stocks at the end of the year; percentage points unless otherwise stated)

macro-category	category	funds under foreign law - foreign financial groups				funds under foreign law - Italian financial groups				funds under Italian law - Italian financial groups			
		2013	2014	2015	2016	2013	2014	2015	2016	2013	2014	2015	2016
equity	share on total	**35.2**	**33.7**	**35.8**	**33.6**	**20.9**	**20.7**	**19.7**	**17.8**	**9.3**	**7.6**	**7.3**	**6.8**
	of which: America	4.4	4.8	3.9	4.0	4.8	4.9	3.8	3.1	1.2	1.1	1.0	1.0
	of which: Emerging markets	5.5	4.4	2.7	2.9	2.4	2.1	1.5	1.5	1.1	0.8	0.5	0.6
	of which: Euro area	2.1	1.7	1.8	1.7	0.6	0.7	0.7	0.6	0.6	0.4	0.4	0.4
	of which: Europe	5.2	5.3	7.0	5.4	4.9	4.7	5.1	4.5	2.6	2.0	2.0	1.7
	of which: International	5.1	4.9	9.6	9.8	3.1	3.1	3.3	3.2	1.6	1.3	1.3	1.5
	of which: Italy	1.0	0.9	1.0	0.7	0.6	0.7	1.0	0.8	1.2	1.0	1.2	1.0
	of which: Pacific	2.2	1.8	1.4	1.2	2.0	1.8	1.5	1.3	0.8	0.6	0.6	0.4
	of which: specific countries	4.2	3.3	2.6	2.3	0.5	0.4	0.4	0.3	0.0	0.0	0.0	0.0
	of which: industrial sectors	5.6	6.5	5.8	5.5	2.1	2.3	2.3	2.6	0.3	0.2	0.2	0.2
balanced	share on total	**5.1**	**7.4**	**10.0**	**10.6**	**5.9**	**6.2**	**7.0**	**7.0**	**3.5**	**4.6**	**5.9**	**6.3**
	of which: balanced	4.0	5.5	6.3	6.2	2.7	2.7	3.0	2.9	2.0	1.8	1.8	1.8
	of which: balanced bond	0.8	1.6	3.5	4.2	2.6	3.0	3.5	3.6	1.4	2.7	4.0	4.4
	of which: balanced equity	0.3	0.3	0.2	0.2	0.5	0.5	0.6	0.5	0.1	0.1	0.1	0.1
flexible	share on total	**6.9**	**8.7**	**10.1**	**10.4**	**22.4**	**24.8**	**26.7**	**24.1**	**18.6**	**28.2**	**34.7**	**35.1**
hedge	share on total	**0.0**	**0.0**	**0.0**	**0.1**	**0.6**	**0.5**	**0.3**	**0.2**	**2.4**	**1.8**	**1.6**	**1.3**
real estate	share on total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**18.6**	**16.7**	**14.7**	**14.3**
money market	share on total	**4.1**	**3.3**	**3.8**	**3.9**	**6.2**	**5.2**	**6.3**	**4.9**	**5.0**	**3.0**	**2.2**	**1.7**
	of which: Euro denominated	3.1	2.1	2.7	3.1	6.0	5.2	6.3	4.9	5.0	3.0	2.2	1.7
	of which: other currencies	0.9	1.2	1.1	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
bond	share on total	**48.7**	**46.9**	**40.3**	**41.5**	**44.1**	**42.7**	**40.0**	**45.9**	**42.5**	**38.0**	**33.7**	**34.4**
	of which: Emerging markets	4.5	3.9	3.1	3.7	2.0	2.4	2.6	2.9	1.1	0.9	0.7	0.9
	of which: Euro corp. inv. grade	4.2	4.9	3.9	3.9	5.8	4.9	3.7	3.3	1.6	1.4	1.2	1.3
	of which: Euro gov. short term	1.8	1.8	2.4	2.2	3.5	2.9	3.2	3.1	9.5	6.6	3.8	3.2
	of which: Euro gov. medium/long term	3.2	3.9	3.3	3.2	8.4	9.0	8.3	6.0	3.1	2.6	1.7	1.5
	of which: Euro high yield	2.9	3.0	2.3	2.8	0.7	0.6	0.2	0.3	0.4	0.3	0.3	0.4
	of which: flexible	9.9	8.8	7.3	7.0	11.0	8.9	7.9	7.7	7.7	6.7	7.2	7.8
	of which: International	2.9	2.7	2.6	3.4	3.9	3.9	3.2	3.2	1.4	1.7	1.5	1.8
	of which: Italy	0.0	0.0	0.0	0.0	0.7	0.4	0.3	0.1	3.2	2.9	1.2	1.0
	of which: mixed	0.9	1.0	3.9	4.2	1.6	1.4	1.1	9.6	10.2	10.9	11.3	12.2
	of which: other specialisations	16.6	15.6	10.3	9.8	6.0	6.6	8.0	8.3	4.1	3.6	4.5	4.1
	of which: USD	1.7	1.4	1.2	1.4	0.6	1.5	1.3	1.2	0.2	0.2	0.2	0.2
	of which: Yen denominated	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
memorandum: asset holdings, EUR billion (1)		*154*	*196*	*279*	*297*	*182*	*212*	*248*	*295*	*191*	*235*	*264*	*272*

Source: calculations on Assogestioni data. Mutual funds governed by Italian law and held by a foreign financial group are excluded. At the end of 2016 these funds were mainly real-estate and flexible funds and they amounted to just 2 per cent of the total mutual fund market.

Notes: (1) The values refer to the amounts attributable to the Italian clientele only.

A.2. Assogestioni categories and the hypotheses used in the correction by instrument

The classification of mutual funds adopted by Assogestioni divides them into five macro-categories, which can be ordered according to the constraints on the equity allocation of the underlying investment strategy: (i) liquidity funds (or money market funds), which cannot hold equity shares; (ii) bond funds, whose sub-category of mixed bond funds may only make limited investments in equity securities; (iii) balanced funds, which can

invest from 10 to 90 per cent of their assets in equity securities (with more stringent limits based on the specific sub-category); (iv) flexible funds, which are not constrained in terms of equity allocation, but by possible rules imposed by the fund itself; (v) equity funds, which must allocate at least 70 per cent of their assets to equity (Table A.2).

In Section 3 of this paper the portfolio share allocated to the equity segment by foreign funds held by Italian residents was estimated by assuming that the equity allocation of each fund macro-category was halfway between the minimum and maximum "regulatory" limits according to Assogestioni's definition ("baseline" column in table A.2). As a robustness check, the corresponding lower and upper limits were also considered.

The only exception to this approach concerned flexible funds, for which the hypothesis of a 50 per cent share invested in equity in each period seems implausible; likewise, it seems unrealistic to assume that the category as a whole can effectively invest 100 per cent (or zero per cent) of its assets in equity securities. For this category of funds, the benchmark equity composition was instead calculated on the basis of the share invested in equity securities, computed on the total amount invested in equity and debt securities, by the "mixed" funds[22] of the main countries of residence (Luxembourg, Ireland and France) of foreign funds held by Italian investors. In particular, the baseline correction used the weighted average of the equity allocation of mixed funds of each of these three countries, using as weights the corresponding market-shares in the total Italian investments in foreign mutual funds. As robustness hypotheses concerning flexible funds ("min" and "max" columns in the table), the minimum value and maximum value of the equity component of mixed funds of each country were considered. To take into account portfolio shifts between the equity and bond funds over time, a distinctive feature of flexible funds, these values were computed separately by quarter.

Table A.2 –Assogestioni taxonomy and equity allocation

(percentage points)

Macro-category/category	restrictions on the equity allocation (Assogestioni)		equity allocation assumed in the adjustment by instrument of the positions in mutual funds		
	min	max	**baseline**	min	max
Money-market/liquidity *(all categories)*	0	0	0	0	0
Bond					
- *mixed*	0	20	10	0	20
- *all others*	0	0	0	0	0
Balanced					
- *bond*	10	50	30	10	50
- *no indication*	30	70	50	30	70
- *equity*	50	90	70	50	90
Flexible	0	100	40 (*)	20 (*)	46 (*)
Equity *(all categories)*	70	100	85	70	100
All funds as a whole					
2009 Q4 - 2016 Q4 (average)	21	47	32	25	38
At the end of 2016	20	50	33	25	40

Sources: Assogestioni (2003) and, for flexible funds, calculations based on ECB data (Investment Funds statistics).

Notes: (*) The values are purely indicative. The baseline is calculated using the average value, and the lower and upper limits by using the minimum and maximum values in the reference period. The values actually used for the correction exercise are time-varying.

[22] We were constrained to using data on "mixed funds", which groups together flexible and balanced funds, since flexible funds are not separately identified in official statistics.

A.3 Methodology and sources used for correcting the geographic exposure

The value $Y_via_IF_{i,k}^{IT}$ of Italian portfolio investments indirectly made in each destination country i and instrument k (equity or debt securities) through foreign mutual funds is estimated using the following formula:

$$Y_via_IF_{i,k}^{IT} = \left[\sum_{j \in \{LU,IE,FR\}} Y_{j,IF}^{IT} * IF_share_k * geo_allocation_IF_{i,k}^{j} \right] * \frac{Y_{world,IF}^{IT}}{\sum_{j \in \{LU,IE,FR\}} Y_{j,IF}^{IT}} \quad [2]$$

Where:

- $Y_{j,IF}^{IT}$ is the amount of Italian portfolio investment in mutual funds that reside in country *j*, with *j* being one of the following: Luxembourg, Ireland, France or all other countries (except Italy) as a whole (*world*);

- IF_share_k is the share allocated to the instrument *k* by the foreign mutual funds in the hands of Italian investors according to our estimates based on data from Assogestioni (see hypothesis 1 in Section 3.3);

- $geo_allocation_IF_{i,k}^{j}$ is the geographical composition of the portfolio of the mutual funds resident in country *j* by instrument. This is the amount of investments by the mutual funds resident in country *j* in instrument *k* issued by country *i* over the total amount of investments made by the mutual funds of country *j* in instrument *k* (assuming hypothesis 2 in Section 3.3).

Finally, the term on the right-hand side of the square brackets is needed to scale up the investment made by Luxembourgian, Irish and French mutual funds to take into account the investment made by Italian investors in mutual funds resident in other countries (assuming, for simplicity, that these are allocated as those in Luxembourg, Ireland and France; see hypothesis 3 in Section 3.3).

It is therefore possible to estimate the "adjusted" share of portfolio investment abroad made by Italian residents in the financial instrument *k* issued in country *i* as the ratio between these investments and the whole portfolio investment abroad in the instrument *k* (including investments indirectly made through foreign investment funds):

$$adjusted_share_{i,k}^{IT} = \frac{Y_{i,k}^{IT} + Y_via_IF_{i,k}^{IT}}{Y_{world,k}^{IT} + Y_{world,IF}^{IT}} \quad [3]$$

where $Y^{IT}{}_{i,k}$ is the value of Italian portfolio investment abroad in the financial instrument *k* issued in country *i* (direct holdings).

Data on the recipient countries of Luxembourgian mutual fund investments are drawn from the website of the Central Bank of Luxembourg (statistical tables 13.14 and 13.15, respectively for debt and equity securities) and they refer to holdings at the end of December 2016.

Data on the investments of the French mutual funds are instead obtained from the Coordinated Portfolio Investment Survey (CPIS) of the IMF, choosing as the reference sector "Other Financial Intermediaries: Others" (of which mutual funds represent by far the largest segment) and distinguishing between "debt securities" and “equity and investment fund units”. For the sake of simplicity, we assumed that the latter category is represented only by equity securities (we chose to ignore any second-round effects due to purchases of investment fund units of other countries; hypothesis 4 in Section 3.3). CPIS data refer to stocks at the end of June 2016 (latest available data at the time of writing) and only cover purchases of foreign assets. We thus complement them with information on the investments of French funds on the domestic market at the end of December 2016, broken down by instrument, based on the financial accounts data available in the ECB Statistical Data Warehouse.

CPIS data on Irish portfolio investment abroad offer no breakdown by resident sector. We thus consider, as in Felettigh and Monti (2008), asset holdings by all resident investors (stocks at the end of June 2015, latest available data at the time of writing). The use of data for the economy as a whole does not seem particularly problematic for Ireland; indeed, considering the size of the Irish mutual fund industry compared with the country's economy it is realistic to assume that CPIS data largely reflect the positions of resident funds. CPIS data are complemented with data published by the Central Bank of Ireland on the amount invested in the domestic market at the end of December 2016.