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THE EVOLUTION OF ITALY'S INVESTMENT INCOME BALANCE

by Giacomo Oddo* and Enrico Tosti*

Abstract

This paper analyses the evolution of Italian investment income flows in relation to the corresponding financial stocks in the international investment position. The period under scrutiny is from 1999 to 2016, covering all developments since the beginning of monetary union. The analysis is based on a decomposition framework which allows us to disentangle investment income changes into three elements: (i) variations due to changes in the international investment position (stock effect); (ii) variations due to changes in the yields accruing to the underlying stocks (yield effect), and (iii) variations due to changes in the financial instrument composition of assets and liabilities (composition effect). The most important driver of Italy's investment income balance variations is the yield effect. The stock and the composition effects are less significant: the former effect contributed to the worsening balance of payments in the first half of the period but waned thereafter; the latter effect strengthened after 2008. Applying this analytical framework to the other three main euro-area countries confirms the key role of the yield effect in shaping the short-term dynamics, and shows the different role of stock and composition effects in shaping the longer-term dynamics.

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* Bank of Italy, Economic Research and International Relations.

1. Introduction and review of the literature[1]

The last two decades have been characterised by a worldwide deepening in international financial integration, resulting in the build-up of large national gross positions of external assets and liabilities, by far exceeding net foreign assets. In many countries the investment income balance has hence become a major factor in determining both the magnitude and the dynamics of the current account balance.[2]

Italy was no exception in this global tendency: external assets and liabilities were 91 and 96 per cent of GDP in 1999 and by 2016 they had reached 149 and 164 per cent respectively; the difference between them, i.e. the net international investment position (net IIP) also increased remarkably, from -5 per cent in 1999 to -15 in 2016, though with significant fluctuations over time. These developments had obviously relevant consequences on the size and the dynamics of the investment income balance, whose relation with the underlying stocks became more complex. The current account dynamics has a direct impact on the IIP dynamics (net of valuation adjustments), but the IIP too has a feedback effect on the current account, via the (investment) income balance, which is part of the current account. This feedback loop is one of the reasons behind the need of a better understanding of the relation between IIP and investment income.

There is a large array of theoretical and empirical works focusing on the relation between the income balance and the international investment position; virtually all contributors agree in attributing a pivotal role to the *return differential*; a large stream of research dealt with the "exorbitant privilege" (a persistent and positive difference between returns on assets and liabilities) of the United States (Obstfeld and Rogoff 2005; Meissner and Taylor 2006; Lane and Milesi-Ferretti 2007; Eichengreen 2011; Curcuru, Thomas, and Warnock 2013); the favourable yield spread has been mainly attributed to persistent differentials in direct investment yields (Curcuru et al. 2013), among other factors. Similar explanations have been found to hold also for long-term positive yield differentials in other countries – Japan, Switzerland, France and the United Kingdom – while the euro area as a whole does not appear to have a "yield privilege" (Habib 2010; Meissner and Taylor 2006). It is important to recall that the leverage resulting from large gross positions (Milesi-Ferretti and Lane 2005; Lane and Milesi-Ferretti 2007) implies that even tiny yield differentials can have a sizable impact on the investment income balance.

To assess the rising importance of yield (and yield differentials) over the other possible drivers of the dynamics of the income balance calls for a robust framework of analysis. Quoting Knetsch and Nagengast (2016), the analysis of the various drivers and of their relative strength «still lacks a systematic framework for empirically analysing changes in the investment income balance »; in their work indeed the two authors develop a methodology for decomposing variations in the income balance into partial variations due to stock movements and into partial variations due to yields and yield differentials changes.

Our paper applies a slightly simplified version of the Knetsch and Nagengast approach to Italian data, analysing the evolution of income flows originating from the assets and liabilities of the international investment position of Italy, disentangling the role played by the financial *stocks* from that played by their *income-yielding* capacity and by their instrument *composition*.

The usefulness of a proper decomposition framework should not be underrated, as the investment income balance is affected by the concurrent effects of both long-term structural forces and short-term policy interventions and market outcomes, which need to be separated both from the research and from the policy evaluation point of view. For example, identifying the effect of yield decline from that of a variation in yield differentials allows a better assessment of the impact of long-term decline of interest rates to near-zero level on the investment income balance (the so called "secular stagnation" phenomenon. See Summers 2014,

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[2] In the OECD average over the period 1999-2015 the investment income balance was the second most important factor after the good trade balance for the changes in current account.

Teulings and Baldwin 2014). Separating yield effects from changes due to the instrument composition of assets and liabilities offers also the possibility of a better understanding of the monetary policy implications for the IIP and the investment income balance, as different kinds of instruments are affected differently by different policy interventions; indeed, one of the channels through which "unconventional" monetary policy measures deliver their effects is via portfolio rebalancing (Albertazzi et al. 2016. Krishnamurthy et al. 2014).[3] Finally, a third motivation can be found in the growing interest for cyclically adjusted estimates of the current account, particularly so in the current post-crisis period of external-rebalancing; estimation models are typically focused on the "real" part of the current account (goods and, sometimes, services), disregarding the effects of the cycle on the income component of the current account via interest rates (Fabiani et al. 2016; Haltmaier 2014). An operational decomposition framework of the investment income dynamics is a preliminary step in the direction of integrating the income component – whose importance within the current account increased in the recent years – in cyclically adjusted estimates, for a comprehensive analysis of external rebalancing.

The paper is organized into 6 sections. After this introduction, section 2 offers an overview on some relevant empirical facts on the Italian income balance and financial stocks. Section 3 presents the decomposition methodology and the data used. Section 4 deals with the implementation of the analysis of credit, debit, and balance flow into a so called "stock effect", "yield effect", and "composition effect". Section 5 estimates the impact of the fall of interest rates on the investment income balance of Italy by means of a simple counterfactual yields scenario. Section 6 compares the results for Italy in Section 4 with those of the three main euro area countries (Germany, France and Spain). Finally, a concluding section and a statistical appendix complete the paper.

2. A long-term view on investment income flows and financial stocks

The income flow is one of the three components of the balance of payments current account (the other two being goods and services) and can be divided into primary and secondary income.[4] While the latter is mainly constituted by unilateral current transfers – it includes flows that do not originate from underlying real or financial stocks, neither from trade or other commercial exchanges – primary income has a proper nature of "income", i.e. remuneration flows of capital and labour stocks. Accordingly, it can be separated into labour income, investment income, and other primary income, the latter being a miscellaneous item including taxes, subsidies, rents and the like.[5]

Investment income is by far the most relevant item within primary income flows – both on the credit side (income yielded by foreign assets accruing to resident investors), where it accounts for about 85 percent of total primary income flows – and on the debit side (income yielded by domestic liabilities accruing to non-resident investors) with the 94 per cent of the total (Tab. 1).

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[3] Broadly speaking, unconventional policy measures can be defined as those policies that directly target both the cost *and* the availability of external finance for the economic actors, as opposed to conventional monetary policies that target the interest rate (with respect to whom the supply of central bank money is adjusted thereafter). Examples of unconventional policies are the APP (Asset Purchase Program) and the OMT (Outright Monetary Transactions).

[4] For a general presentation on the current account and its main components, see the "Manuale della bilancia dei pagamenti e della posizione patrimoniale sull'estero dell'Italia", Banca d'Italia, March 2016 (English version forthcoming), and the "European Union Balance of Payments and International Investment Position statistical sources and methods" published by the European Central Bank on its website.

[5] The miscellaneous item "Other primary income" (whose weight on the total primary income is about 9 per cent on the credit side and below 4 percent on the debit side) consists of production taxes, duties and fees on imports, subsidies, rents and exploitation rights (land and other natural resources).

According to Balance of Payments definitions, investment income flows can be classified into four functional categories: (i) direct investment income, (ii) portfolio investment income, (iii) other investment, and (iv) reserve assets.[6]

Table 1: Composition of primary income in Italy's balance of payments (credits and debits)
(*percentages*)

	Credits			Debits		
	Labour income	Investment income	Other primary income	Labour income	Investment income	Other primary income
Average 1999-2007	4.2	86.9	8.9	3.3	94.0	2.7
Average 2008-2016	8.2	82.9	8.9	3.1	93.4	3.5
Average 1999-2016	*6.1*	*85.0*	*8.9*	*3.2*	*93.7*	*3.1*

Source: authors' elaborations on Bank of Italy's data.

In 2016 the current account surplus of Italy's balance of payments nearly doubled the value recorded in the previous year, reaching 2.6 per cent of GDP (€42.8 billion), the highest value since 1997. The most relevant contribution to the increase in surplus came from the dynamics of the primary income balance, which improved by €12.0 billion (even more than the goods surplus, whose increase was €9.9 billion).

Since 1999 Italy's investment income balance has always recorded a deficit, the only exception being the year 2006 (Fig. 1).[7] The negative sign of the balance is structurally linked to Italy's international investment position, whose liabilities exceed assets on average by 15 percent.[8]

As the graph shows, the instrument composition of income streams can change dramatically over time; as will be explained in Section 4, the relative weight of different components has itself an impact on the dynamics of the investment income balance.

In this paper we restrict the scope of the analysis to the 1999-2016 period, because of limitations in data availability for the stocks of assets and liabilities in previous years. In this time-span, the dynamics of the investment income balance does not show any clear trend. Moreover, it has no stable correlation with the evolution of the net IIP either, if not in a long-run perspective (Fig. 2).[9]

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[6] The partition of investment income flows into the four functional categories mirrors the partition used for the assets and liabilities stocks, with the only difference that in the latter there is one additional category: financial derivatives. Financial derivatives positions do not have a corresponding flow item recorded within income investment (see footnote 10). Reserve assets are considered a stand-alone functional category although they are constituted by financial instruments that are not inherently different from portfolio and other investment assets. Since they serve a different function and are managed in different ways from other assets, they are shown and recorded separately. For all other categories there is a one-to-one correspondence: portfolio income is the flow accruing to resident holders of foreign securities (credits) or paid by the domestic issuer of securities to non-resident investors (debits); direct investment income is the income accruing to the resident investor in a non-resident firm's capital as long as his/her claims are larger than 10 percent of the firm's capital (see the IMF's *Balance of Payments and International Investment Position Manual* 2009 for more details); other investment income includes mainly interest on deposits, loans, trade credits/debits and other asset or liability account.

[7] In order to look at earlier periods, we need to rely on the previous version of balance of payments statistics, based on the 5th Balance of Payments manual (BPM5); according to those data, the investment income balance has been negative since 1981.

[8] A positive balance in investment income is usually associated with a positive IIP. A notable exception is represented by the United States, recording net investment income inflows in spite of a negative IIP. On the causes behind the so called "exorbitant privilege" see Obstfeld and Rogoff (2005), Lane and Milesi-Ferretti (2007) and, especially, Curcuru et al. (2013).

[9] In terms of balance of payments accounting, the following identity must hold in every period of time *t*:
$$\Delta IIP_t = b_t + VA_t$$
Where *b* is the net financial outflow, i.e. the financial account balance, and *VA* are valuation adjustments of assets and liabilities of the IIP due to price changes, exchange rates variations and other changes pertaining to a variety of reasons (accounting standards variations, re-classifications, etc.). The complexity of the "other changes" component, and its unclear distinction from the larger class of valuation adjustments due to market developments, is the reason

In the short run, divergent trends can indeed be observed, as it is the case for the 2003-2006 period: the investment income balance improved by €12 billion, while the net debtor position kept on widening (from €167 billion up to €311). The value gap between assets and liabilities reflects not only investment decisions made by operators (purchases and sales) but also market developments (variations of prices and exchanges rates) and other valuation adjustments.

Figure 1: Italy's investment income balance since 1999
(as a percentage of GDP)
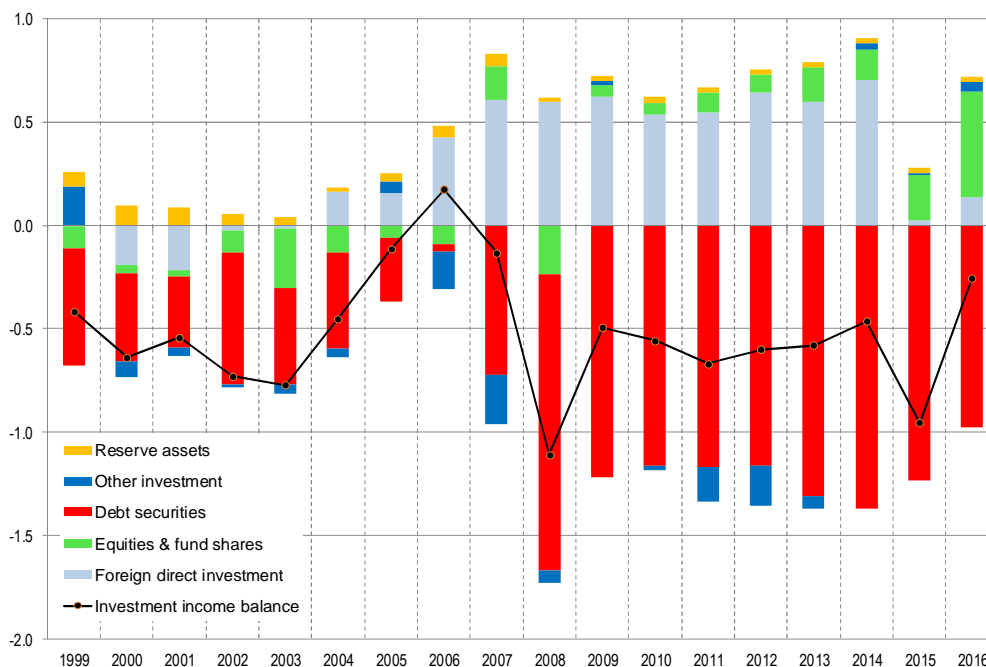
Source: authors' elaborations on Bank of Italy's data and Istat (for GDP).

As we will argue later in the paper, the net IIP has only a partial role in determining the observed overall dynamics of the income flows originating from the various components of assets and liabilities: a relevant role is in fact played by both the changing *yields* of assets and liabilities, and by the *composition* (and its variation over time) of such stocks. This is why we take a closer look at the components of the international investment position and at the payments and revenues associated with the different items that constitute the position.

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for the historical apparent disconnect between flows and stocks in balance of payments and international investment position statistics, known in the literature as the "position puzzle". See Curcuru et al. 2013 for a thorough assessment of the issue.

Figure 2: Italy's investment income balance and the international investment position
(four-quarter cumulated sum for income; end-of-quarter positions for IIP; € million)
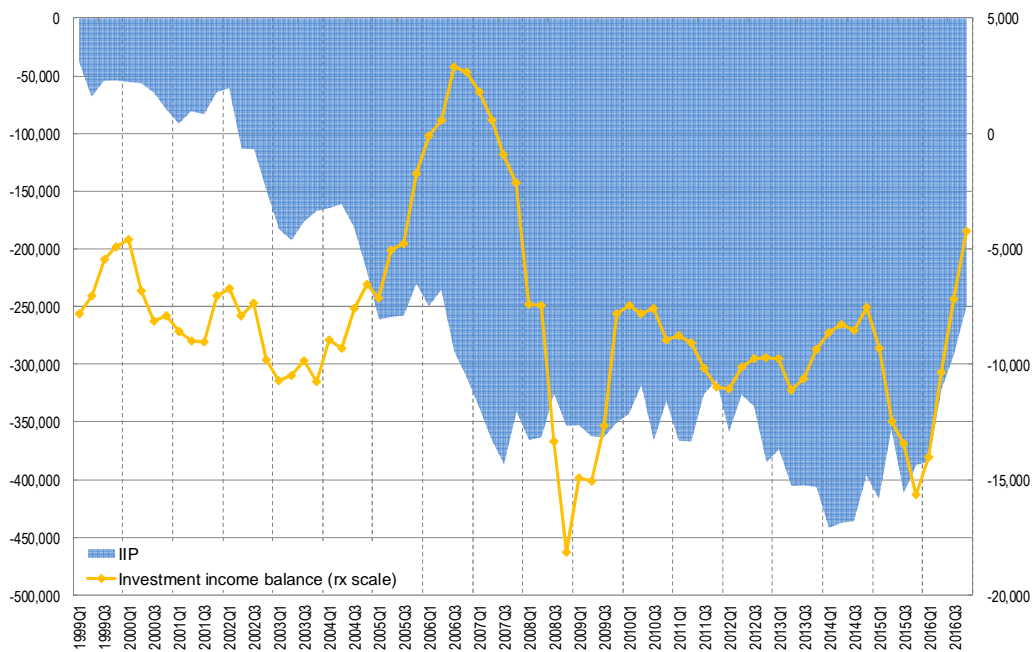
Source: authors' elaborations on Bank of Italy's data.

2.1. The dynamics of financial stocks (IIP)

Italy's net international debtor position has increased significantly since 1999. Figure 3 shows the temporal evolution of the net positions of its main components, classified into five instrument categories: portfolio investment, direct investment, other investment (a miscellaneous aggregate whose largest part is made by deposits and loans), official reserves, and derivatives. Table 2 reports the composition of the IIP between 1999 and 2016. For both assets and liabilities, foreign direct investment gained weight, whereas the share of portfolio investment decreased, even though more on the liabilities (equities and investment fund shares) than on the assets side.

Three separate sub-periods can be identified, each characterized by different trends: in the first decade (1999-2008) Italy's net debtor position increased remarkably, from an average of €53.5 billion (about 4.5% of GDP) to €352 (21.6% of GDP); the increase occurred almost entirely within the portfolio component, while the net creditor position in direct investment and the net debtor position in other investment contracted. Interestingly enough, during the same period the investment income balance improved, reaching a surplus in 2006, thanks to the favourable revenue performance of direct investment and portfolio assets (see figure A2).

Table 2: Shares of instrument categories in Italy's foreign assets and liabilities

(percentages; € billion for total assets and liabilities)

Assets	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Direct investment abroad	18.4	17.7	18.4	17.1	15.9	15.6	15.9	16.6	19.3	21.4	22.4	22.4	23.4	23.3	24.5	23.0	22.9	22.3
Portfolio debt securities	31.5	27.2	28.8	28.3	29.0	29.0	30.2	27.2	25.4	27.7	28.5	27.1	24.2	21.1	20.2	19.7	20.2	20.8
Portfolio equities & fund sha	19.8	25.7	22.2	20.2	20.9	21.7	22.0	23.0	21.1	13.0	15.1	18.0	16.3	18.2	22.4	24.8	27.4	28.2
Official Reserves	4.2	4.2	4.2	4.5	3.9	3.3	3.4	3.1	3.3	4.2	4.8	6.0	6.6	6.5	5.1	5.2	5.1	5.2
Derivatives	0.3	0.3	0.4	0.9	1.4	1.5	1.5	1.3	1.1	6.4	5.3	5.6	6.9	7.1	5.0	5.6	4.2	3.7
Other investment	25.8	24.9	26.0	29.0	28.8	29.0	26.9	28.8	29.9	27.4	24.0	20.9	22.6	23.8	22.7	21.8	20.3	19.8
Total investment	**1,068**	**1,213**	**1,244**	**1,190**	**1,277**	**1,395**	**1,667**	**1,849**	**1,954**	**1,822**	**1,936**	**1,988**	**2,043**	**2,109**	**2,061**	**2,262**	**2,361**	**2,489**

| Liabilities	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Direct investment abroad	12.2	12.7	12.9	12.7	13.3	13.4	13.6	14.1	15.0	14.1	15.2	14.0	15.0	15.0	15.5	15.3	15.3	16.4
Portfolio debt securities	39.9	41.2	43.4	47.6	47.4	46.3	46.3	44.4	42.7	45.8	47.6	44.8	38.6	37.8	39.7	42.5	41.6	38.5
Portfolio equities & fund sha	17.4	16.3	13.6	11.0	11.7	13.3	13.1	14.1	12.4	6.1	7.5	6.6	4.9	5.9	7.5	7.4	9.0	7.6
Derivatives	0.1	0.1	0.2	0.3	0.3	1.7	2.0	1.8	1.4	6.8	5.6	6.1	8.1	8.4	5.9	7.1	5.5	5.4
Other investment	30.4	29.7	29.9	28.4	27.3	25.3	24.9	25.6	28.5	27.2	24.1	28.4	33.4	32.9	31.4	27.7	28.7	32.2
of which: T2 liabilities	*0.0*	*1.4*	*0.0*	*0.2*	*0.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*8.1*	*10.2*	*9.3*	*7.9*	*9.1*	*13.0*
Total investment	**1,122**	**1,292**	**1,308**	**1,339**	**1,444**	**1,613**	**1,897**	**2,160**	**2,294**	**2,176**	**2,287**	**2,319**	**2,356**	**2,494**	**2,467**	**2,659**	**2,748**	**2,738**

Source: authors' elaborations on Bank of Italy's data.

The increasing-net-debt decade was followed by a five-year period (2008-2012) of substantial stationarity, during which the IIP recorded only modest oscillations around a mean value of €350 billion. This happened despite the acute turbulence of financial markets, both at the international and at the national level, in a period characterised by massive policy interventions of the Eurosystem to repair the transmission channel of monetary policy and to ease credit market conditions. The sovereign debt crisis that hit Italy in end-2011 caused the reduction of market value of debt liabilities (see figure 3), which was counterbalanced by the expansion of other investment liabilities, with the latter component being boosted also by the growth of the negative balance on the TARGET2 payment system, i.e. the debtor position of the Bank of Italy vis-à-vis the European Central Bank (ECB). This "substitution" between portfolio and other investment liabilities can be observed more neatly in figure 4.

Finally, the third and last sub-period (2013-2016) recorded a surge of the debtor position up to the historical maximum of € 442 billion in 2014Q1 and then a swift move back to €250 billion at the end of 2016. The main driver of the net IIP dynamics in this period was again the change in the portfolio net position; this time however the income balance moved accordingly with the net IIP, improving when the debtor position was reduced.

After 2008, portfolio investment and other investment balances kept on moving in opposite ways (figures 3 and 4). This phenomenon may reflect, at least to some extent, a higher propensity to substitute long-term liabilities (debt securities are a significant share of portfolio securities) with short-term liabilities (deposits and loans, which are classified in the "other investment" category).

Figure 3: Italy's net international investment position and the investment income balance
(as a percentage of GDP; four-quarter cumulated sums for income; end-of-quarter positions for stocks)
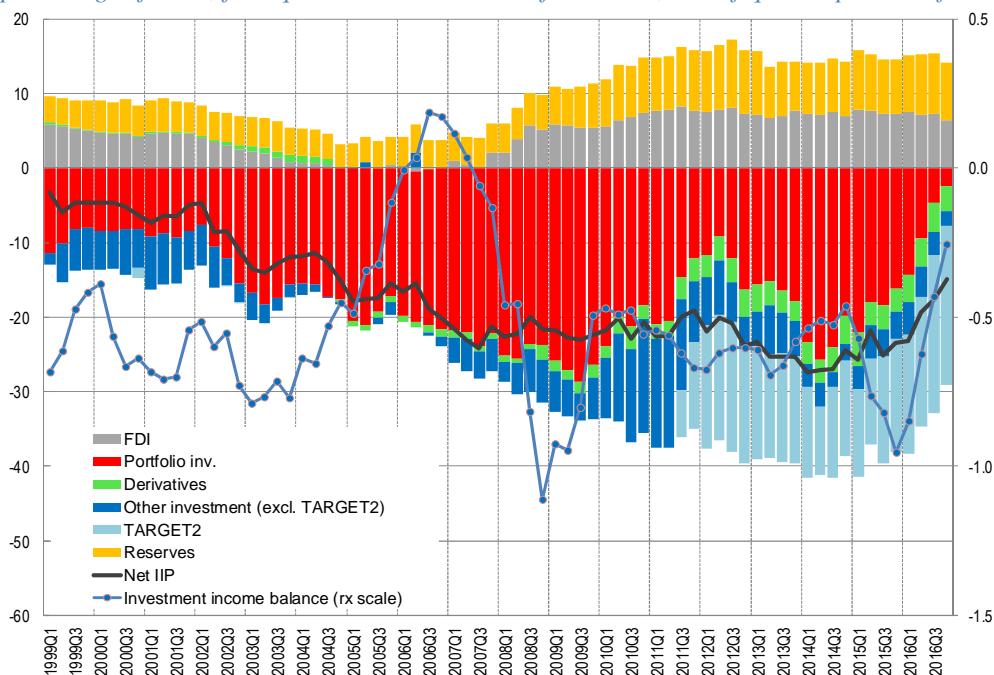
Source: authors' elaborations on Bank of Italy's data and Istat (for GDP).

Figure 4: Portfolio and "other investment" net positions
(€ million; end-of-quarter positions)
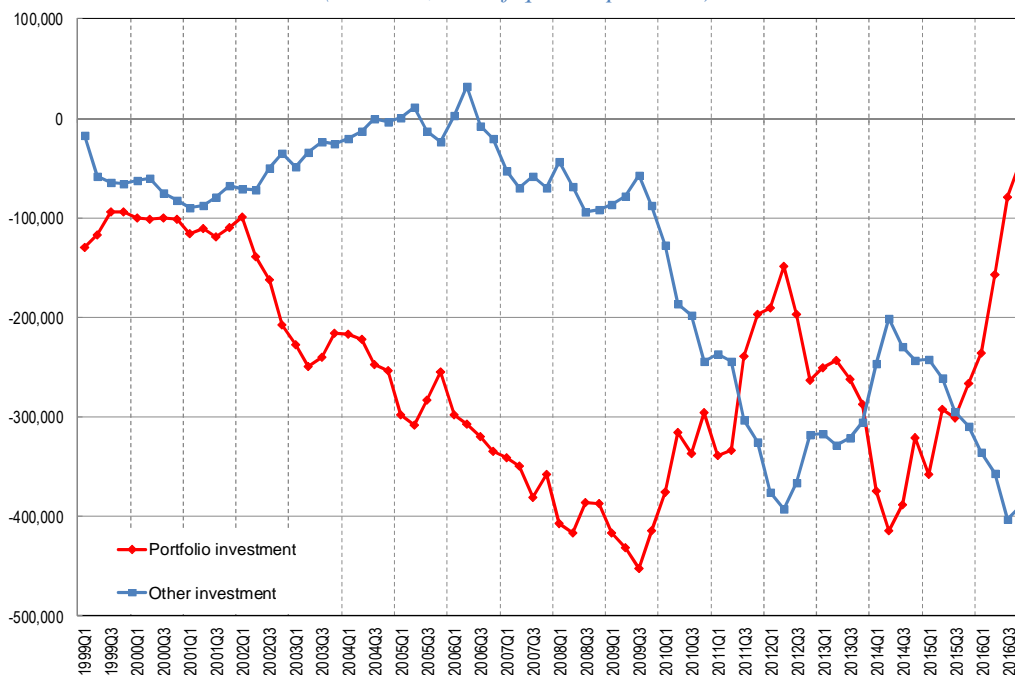
Source: authors' elaborations on Bank of Italy's data.

2.2 The dynamics of yields

After a brief descriptive overview of the composition of Italy's IIP and of its relation with the investment income balance, we now focus on yields, i.e. we inspect how the various instruments on the assets and liabilities side generate yield differentials that concur to determine the income balance.

We define the "yield" of a financial position (*A*) as the ratio between the income flow accrued to the claimant (or owed by the debtor) during a time interval *t* and the market value of the same position at the beginning of the period *t*.

$$y_t^A = Income_t^A / A_t \qquad\qquad (1)$$

Investment income flows are compiled in official balance of payments data according to different methodologies, depending on the investment category. For direct investment, income includes both dividends and reinvested (retained) earnings.[10] Dividends are based on quarterly or annual firm-level surveys (direct reporting); reinvested earnings are given by the difference between current operating profits and distributed dividends.[11] For portfolio investment, income is computed on a security-by-security basis, according to the debtor approach.[12] For other investment (mainly deposits and loans), income is derived from stock values and their respective market yields. Finally, income from reserve assets is derived from Central Bank's internal accounting sources.

It should be noticed that the definition of yield given in (1) is different both from the "effective rate of return" of a financial security (which is based on the instrument's nominal interest rate and its residual maturity) and from the broader concept of "total return", which encompasses also capital gains due to valuation adjustments (capital gains).[13] Since we are interested in the relation between yields and income balance, we disregard the broader notion of total return. Moreover, definition (1) requires to pay attention to a caveat related to the above mentioned methodology for the calculation of income flows (see also footnote 10): under the debtor approach, the yield identified at the time of security issuance is used to calculate the amount of accrued interest in each period to maturity, regardless of contemporaneous market developments and conditions. This approach is at the origin of potential discrepancies between "balance of payments yields" and "market yields": any change in the interest rate curve and in market returns is going to be reflected in "balance of payments yields" with a temporal lag and only to a limited extent. The size of the discrepancy depends on how large is the share of securities having non-constant temporal distribution of accrued interests in the portfolio pool; this should be kept in mind when comparing yields obtained from (1) with market yields.

Although the definition of yield put forth in (1) is based solely upon the income stream generated by the underlying financial position, it is dynamically affected by valuation adjustments of the instrument itself: if the income stream (numerator) is constant over time but the market value (denominator) increases, the yield falls over time. In the next chapter we will present a methodological framework for disentangling the numerator from the denominator effect in the dynamics of income.

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[10] Retained earnings of direct investment enterprises belonging to direct investors are treated as being distributed to the owners and reinvested back by the owners in their enterprises. Given their economic meaning, they get recorded twice in balance of payments statistics: in the current account (as part of the investment income) and in the financial account (as part of FDI investment).

[11] Current operating profits, collected via frim-level surveys, are typically available 9-12 months after the end of the reference year. This implies that the latest preliminary investment income data are subject to (potentially significant) revisions in the following year.

[12] The debtor approach is an application of the so called "accrual principle" adopted in Balance of Payments statistics, which states that income flows are to be recorded on the basis of their reference period of occurrence, instead of when they are actually cash-settled. Since not all securities pay their income evenly through time (just think to the extreme case of a zero-coupon bond), this principle calls for a methodology that allows to distribute the income stream through time. According to the BPM6, there are three possible methodological approaches for calculating income accruing from debt securities: (i) the debtor approach; (ii) the creditor acquisition approach, and (iii) the creditor-market approach. All three deliver the same result if cumulated over the residual maturity of the security, but they do differ in the temporal distribution of the income stream. Italy's balance of payments is compiled according to the debtor approach: a single effective yield, identified at the time of issuance as the borrowing cost born by the issuer, is used to calculate the amount of accrued interest in each period to maturity, independently of market conditions and expectations. This approach allows us to calculate quarterly income also for zero-coupon securities. See IMF's *Balance of Payments and International Investment Position Manual (BPM6)*, Chapter 11

[13] See Curcuru et al. (2013).

After the net international investment position, the yield differential on foreign assets and liabilities is the other most important driver of investment income dynamics. For Italy, the total yield differential is nil on the average of the whole period (see table 3)[14] although its dynamics presents some cyclicality.

Table 3: Yields of different investment categories of Italy's foreign assets and liabilities
(yearly average yield)

Yields on assets	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Portfolio securities	5.7	4.5	3.8	4.6	4.7	4.6	4.4	4.6	4.6	3.6	3.3	2.9	3.1	2.9	2.6	2.3	2.2	2.4
of which: debt securities	7.3	6.6	5.1	5.8	6.3	5.8	5.3	5.9	5.3	4.0	3.7	3.5	3.8	3.5	3.2	3.1	3.0	2.7
of which: equities & fund shares	2.7	2.1	2.2	2.9	2.4	3.0	3.1	2.9	3.7	3.0	2.5	1.9	2.2	2.1	1.9	1.6	1.6	2.1
Other investment	4.2	3.8	4.2	3.6	2.6	2.0	2.4	2.1	2.3	2.6	1.5	0.9	1.0	0.8	0.8	0.9	0.6	0.7
Direct investment abroad	3.4	2.5	2.7	4.0	4.2	4.7	5.3	6.9	7.2	5.8	5.0	4.8	5.1	4.1	4.2	4.7	2.5	2.2
Reserve assets	1.9	2.4	2.2	1.4	1.1	0.7	1.2	1.5	1.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
Total assets	4.7	3.9	3.6	4.1	3.8	3.7	3.8	4.1	4.3	3.6	3.1	2.7	3.0	2.5	2.4	2.5	1.8	1.9

Yields on liabilities	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Portfolio securities	6.0	4.7	3.9	5.0	4.6	4.4	3.7	3.6	4.0	4.7	3.7	3.6	3.9	4.0	3.6	3.2	2.9	2.7
of which: debt securities	7.1	5.3	3.9	4.8	4.2	4.1	3.4	3.2	3.8	4.3	3.6	3.6	3.9	3.9	3.6	3.2	2.9	2.7
of which: equities & fund shares	3.3	3.2	3.7	5.5	6.6	5.5	5.2	4.8	4.5	6.8	3.8	3.7	4.4	4.6	3.5	2.8	2.8	2.9
Other investment	2.9	3.3	3.5	3.1	2.6	2.1	2.2	2.7	2.7	2.4	1.2	0.7	1.0	0.8	0.6	0.5	0.4	0.3
Foreign direct investment	5.1	4.9	5.3	5.2	4.8	3.7	4.4	4.6	4.5	4.1	3.3	3.7	4.4	2.6	3.0	3.2	3.2	2.3
Total liabilities	4.9	4.3	3.9	4.5	4.1	3.7	3.4	3.5	3.7	3.9	2.9	2.8	3.0	2.6	2.5	2.4	2.2	1.9

Differential yields	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Portfolio securities	-0.3	-0.2	-0.1	-0.4	0.0	0.2	0.6	1.0	0.6	-1.1	-0.3	-0.7	-0.8	-1.1	-1.1	-0.8	-0.7	-0.4
of which: debt securities	0.2	1.3	1.2	1.0	2.1	1.7	2.0	2.7	1.4	-0.3	0.1	-0.1	-0.1	-0.4	-0.4	-0.1	0.1	0.0
of which: equities & fund shares	-0.6	-1.1	-1.5	-2.7	-4.2	-2.6	-2.1	-1.9	-0.8	-3.8	-1.3	-1.7	-2.2	-2.5	-1.6	-1.2	-1.1	-0.8
Other investment	1.3	0.5	0.7	0.5	0.1	-0.1	0.2	-0.6	-0.4	0.1	0.3	0.2	0.0	0.0	0.2	0.4	0.3	0.4
Foreign direct investment	-1.8	-2.4	-2.6	-1.2	-0.6	1.0	0.9	2.3	2.7	1.8	1.6	1.1	0.7	1.4	1.2	1.5	-0.6	-0.1
Total investment	-0.2	-0.4	-0.3	-0.4	-0.2	0.0	0.4	0.7	0.6	-0.3	0.1	0.0	-0.1	-0.1	0.0	0.1	-0.4	0.0

Source: authors' elaborations on Bank of Italy's data.

The investment category with the highest average yield has been direct investment (around 4.4 percent per annum on the assets side and 4.0 on the liabilities). The yield differential was on average positive, particularly so between 2004 and 2014 (around 0.6 per cent on average); the sharp decline in 2015 was due to a large extent to the fall in energy prices that hit the revenue generating capacity of energy companies, which are among the largest Italian foreign direct investors.

The portfolio securities' average yields are made up by the rather different trends of the two main components: debt securities and equity and funds shares. Debt securities had a positive yield differential from 1999 to the end of 2007 and especially between 2003 and 2006, when the yield on foreign bonds earned by domestic investors rose above 6 per cent per annum.[15] After the financial crisis the yield gap between assets and liabilities shrank to almost zero, and became slightly negative during the "sovereign debt crisis" (2012 – 2013), when the fall in the value of the liabilities (especially public debt securities) reflected into higher (calculated) yields.

The yield differential of equities and investment fund shares, which is larger than for any other investment category, displays a more volatile dynamics, which is related both to changes in the dividends' distribution policies and to the volatility of market values of the underlying securities. The negative sign recorded throughout the period under scrutiny had two negative peaks in 2003 and 2008, mainly because of a reduction in the market value of domestic equity shares, combined with a still generous dividend policy (which translated into a surge in liabilities yields); the negative yield differential is related with the different composition between assets and liabilities of this investment category: while liabilities are mainly made up

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[14] Financial derivatives have been excluded from our set of assets and liabilities, as they do not generate income streams. Financial flows originating from positions in the form of financial derivatives are recorded in the financial account, within the functional category of "other investment".

[15] When deepening the analysis to a higher detail (e.g. the various instruments within the "portfolio" category) a bit of a caution should be used for data referring to ante-2008, because of a structural change occurred in the data collection methodology: before 2008 only monetary and financial institutions (MFI) were reporting directly their external assets and liabilities; for all other private sectors non-MFI an indirect collection system was in place, based on banks accounts and records. After 2008 the so-called "direct reporting" system was introduced, i.e. a data collection system based on a firm-level survey on external assets and liabilities of resident respondents.

of equities, assets contains a larger part of investment fund shares. Since the latter can be thought of as a "mixture" of equities and debt securities, possibly accruing a lower yield than a "pure equity" basket of securities, this may reflect into a negative yield differential.

Finally, the yield differential on other investment was always positive, with two exceptions in 2005 and in the biennium 2006-2007, when yields on loans and deposits from non-residents increased. Since the second half of 2013, the fall in the interest payable on other investment liabilities has allowed a sustained period of positive differential, even though average levels were lower due to the different monetary policy framework.

3. Methodology and data

We assess and quantify the role played by the various factors affecting the dynamics of the investment income balance by means of a decomposition framework, which is a simplified version of that developed by Knetsch e Nagengast (2016). The methodology allows us to single out three effects:

1. The "stock effect", i.e. the variation of the income flow which is due to changes in the underlying stocks of claims or liabilities.
2. The "yield effect", i.e. the variation caused by the volatility of the accrued yields.
3. The "composition effect", i.e. the variation due to changes in the blend of the income-generating instruments constituting stocks or liabilities.

The decomposition is based on a set of identities. Denoting with A_t and L_t the market values of the stocks of assets and liabilities at the beginning of period t[16], and with a_t and l_t the corresponding income flows accrued during period t, we define and compute the yields for assets and liabilities:

$$y_t^A = a_t/A_t$$
$$y_t^L = l_t/L_t \tag{2}$$

We recall again here that the yields defined in (2) do not include capital gains, since in this paper we focus our attention solely on the investment income balance as recorded in the balance of payments and therefore we are not interested in a wider notion of return. Given (2), the investment income balance b_t can be written as:

$$b_t \equiv a_t - l_t = y_t^A A_t - y_t^L L_t \tag{3}$$

The variation of the balance in one time interval can be expressed as follows. Using the first-difference operator Δ, defined as $\Delta x_t = x_t - x_{t-1}$, equation (3) can be recast as:[17]

$$\Delta b_t = \Delta y_t^A A_{t-1} + y_t^A \Delta A_t - \Delta y_t^L L_{t-1} - y_t^L \Delta L_t \tag{4}$$

Rearranging the right-hand side term, (4) can be restated as:

$$\Delta b_t = (y_t^A \Delta A_t - y_t^L \Delta L_t) + (\Delta y_t^A A_{t-1} - \Delta y_t^L L_{t-1}) \tag{5}$$

The first term in brackets is the stock effect:[18] it quantifies how large is the part of balance variation that is due to changes in the underlying stocks *coeteris paribus*; in other words, it is the change in income balance that would be recorded if interest rates and remuneration policies were constant and the only variation observed were in the level of assets and liabilities. The balance stock effect is given by the assets stock effect

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[16] When implementing the decomposition with quarterly data, we take value of the stock at the beginning of the quarter (i.e. at the end of the previous period); with annual data, we compute the value of the stock in the year as the average of the four quarters.

[17] Formula (4) can be derived from (3) taking first differences and then adding and subtracting $y^A A_{t-1}$ and $y^L L_{t-1}$. Please note the similarity between the discrete-case first differencing with the continuous-case total derivation with respect to time, recalling that $[a(t)c(t)]' = a'(t)c(t) + a(t)c'(t)$.

[18] If A and L were encompassing *all* the assets and liabilities, then the stock effect could be properly labelled "IIP effect". As specified later, we exclude some categories of assets and liabilities from the analysis, so we shall abstain from using the term "IIP effect" when referring to the stock effect.

minus the liabilities stock effect.[19] It should be clarified that, since A_t and L_t are recorded in official balance of payments data at their market value, a variation in the stock of claims or liabilities reflects not only investors' decisions (purchases and sales) but also valuation adjustments (price movements, exchange rates fluctuations) and other changes occurred in statistical methodology or accounting standards.

The second term in brackets in equation (5) is the yield effect, i.e. the part of total income variation which can be attributed to the dynamics of the corresponding yields (or, in other words, to the income-generating capacity of assets and to the onerousness of liabilities), if stocks had remained constant at the level they were at the beginning of the period.

Since assets and liabilities are constituted by a variety of different categories of instruments and contracts, each of them characterized by a different income-generating capacity (or funding cost, in the case of liabilities), then also the *composition* of the stocks has an impact on the dynamics of the investment income balance. Going back to formulas, denoting with w_{jt}^A and w_{jt}^L the weights of the $j \in (1\dots J)$ categories of financial instruments that compose assets and liabilities respectively[20], we have that (3) can be recast as follows:

$$b_t = A_t \sum_{j=1}^{J} w_{jt}^A y_{jt}^A - L_t \sum_{j=1}^{J} w_{jt}^L y_{jt}^L \tag{6}$$

Taking first differences of (6), the dynamic change of the income balance can be so decomposed:

$$\Delta b = \Delta A_t \sum_j w_{jt}^A y_{jt}^A + A_t \sum_j y_{jt}^A \Delta w_{jt}^A + A_{t-1} \sum_j w_{jt}^A \Delta y_{jt}^A$$
$$- \left(\Delta L_t \sum_j w_{jt}^L y_{jt}^L + L_t \sum_j y_{jt}^L \Delta w_{jt}^L + L_{t-1} \sum_j w_{jt}^L \Delta y_{jt}^L \right) \tag{7}$$

Rearranging the right-hand side term, equation (7) can be rewritten as:

$$\Delta b = \Delta A_t \sum_j w_{jt}^A y_{jt}^A - \Delta L_t \sum_j w_{jt}^L y_{jt}^L + A_{t-1} \sum_j w_{jt}^A \Delta y_{jt}^A - L_{t-1} \sum_j w_{jt}^L \Delta y_{jt}^L$$
$$+ A_t \sum_j y_{jt}^A \Delta w_{jt}^A - L_t \sum_j y_{jt}^L \Delta w_{jt}^L \tag{8}$$

The first two terms to the right of the equality sign are the **stock effect**; the third and the fourth term are the **yield effect**; the fifth and the sixth term are the **composition effect**. Table 4 displays the elements of formula (8) split in the two sides of the balance.

Table 4: Decomposition effects for investment income credits and debits

	Credits (Assets)	Debits (Liabilities)
Stock effect	$\Delta A_t \sum_j w_{jt}^A y_{jt}^A$	$\Delta L_t \sum_j w_{jt}^L y_{jt}^L$

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[19] If we apply the decomposition framework on claims and liabilities separately, we have: $\Delta a_t = y_t^A \Delta A_t + \Delta y_t^A A$ and the same applies to liabilities. Formula (5) can therefore be intended as the summation of the effects of assets and liabilities.

[20] It may be obvious but needs recalling that the j varieties do not have to be in equal number between assets and liabilities. We assume them both to be equal to j just for the sake of simplicity.

Yield effect	$A_{t-1} \sum_j w_{jt}^A \Delta y_{jt}^A$	$L_{t-1} \sum_j w_{jt}^L \Delta y_{jt}^L$
Composition effect	$A_t \sum_j y_{jt}^A \Delta w_{jt}^A$	$L_t \sum_j y_{jt}^L \Delta w_{jt}^L$

We apply this methodology to annual and quarterly data of Italy's balance of payments and international investment position for the period 1999-2016. We use both frequencies (quarterly and annual) because each choice has useful features but also some drawbacks. More precisely, the quarterly frequency allows to observe infra-annual dynamics that would be otherwise cancelled out at lower frequencies; for this purpose, quarterly income flows are cumulated over four quarters in order to remove the seasonality characterising income data (coupons and dividends are paid at regular intervals, often in the second quarter of the year), while stocks are taken at their end-of-quarter value. On the other hand, annual data overcome the problem of seasonality, are easier to represent and to compare with aggregate balance of payments and GDP data, and are more appropriate for longer-term analysis; in this case stocks are considered as yearly averages, whereas corresponding income flows are computed as the yearly total of quarterly flows.[21]

Mirroring the four categories of investment income presented in Section 1, we have considered five groups for assets and four for liabilities: portfolio debt securities, portfolio equities and investment shares, other investments (deposits and loans), direct investment, and – only on the assets side – official reserves. Derivatives have been excluded as they do not match with any income flow. Depending on the number of functional categories into which assets and liabilities are disaggregated, the composition effect may be measured with a variable degree of distortion: the two extreme cases are when there is only one category (the composition effect is nil) and when there are as many categories are there are financial instruments (the composition effect is measured in its entirety). Of course such a choice is bounded by data availability, which may be even more restrained when looking at historical data. The next Section presents the main results of the decomposition analysis, based on the annual data (the main results of the exercise based on quarterly data are reported in the Appendix).

4. The decomposition analysis

The analysis is implemented in two steps: in the first one we look at credits and debits income separately; in the second step we look at the balance decomposition. This choice is necessary if we want to understand the actual role of each of the two sides of the balance in the observed changes. The decomposition analysis *per se* is not able to single out this information. Going into the decomposition in two steps is an efficient way to get additional information without introducing more algebra into the decomposition formula. We focus on the changes occurred between four main sub-periods: 1999-2004 (the initial phase of the monetary union); 2005-2007 (the pre-crisis period); 2008-2010 (the first financial crisis) and 2011-2016 (the sovereign debt crisis and its aftermath).

4.1 Investment income earned

Investment income credits increased until the financial crisis of 2008, when they peaked at their maximum value of €78 billion. After that watershed-year, in a global context of falling interest rates and profits, they kept on decreasing smoothly, ending in 2016 at about €44 billion, a value which is below that recorded in 1999 (nearly €47 billion).

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[21] Because of a revision occurred in the data collection methodology ten years ago, there are discontinuities in some of Italy's balance of payments time series between 2007 and 2008. Data with reference period older than 2008 have been reconstructed backwards. The previous (abandoned) approach was based on the collection of cash settlements from banks, also on behalf of their customers. The new approach is based on firm-level surveys on stocks of foreign assets and liabilities (direct reporting). See Cappariello et al. 2012.

Figure 5 depicts the decomposition of the dynamics of investment income credits into the three effects defined above. The black dotted line reports the annual investment income balance (on the right-hand side axis) At first glance we notice that the stock effect is the most relevant, although its relevance lessened to some extent after the financial crisis, when the yield effect started to play a major role. Composition effect does not seem to play a relevant role overall, with the exception of the biennium 2008-2009, when the weights of the four categories shifted significantly. The decomposition with quarterly (annualised) data is available in the statistical appendix, figure A3.

Figure 5: Decomposition of the dynamics of Italy's investment income credits
(€ million; yearly absolute changes)
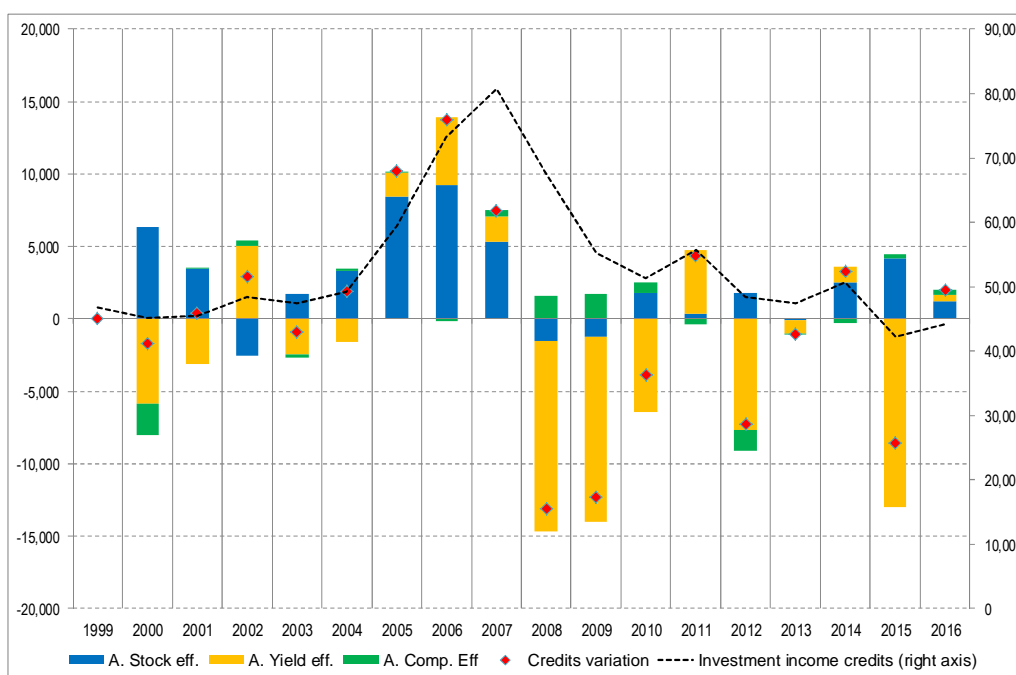
Source: authors' elaborations on Bank of Italy's data.

If we focus on the four sub-periods of interest, the main results worth highlighting are the following:

- Between 1999 and 2004 the stock and yield effects offset each other, the former being positive (resident investors were building up foreign claims) and the latter being negative (due to falling interest rates and exchange rate appreciation after the inception of the monetary union).

- From 2005 to 2007 stock and yield effects acted in the same direction, inducing a surge in the income flow; investor kept on buying foreign assets while in the markets interest rates and prices floated.

- The effects of the international financial crisis erupted at the end of 2007 hit Europe and Italy between 2008 and 2010; a large drop in yields was accompanied by a strong negative contribution of the stock effect, due to both price effects (devaluations) and net sales of resident investors (divestment). Investment income credit flow dropped by nearly 50 per cent. Only the composition effect provided a modest positive contribution, as resident investors tried to rebalance and change their financial position towards better performing categories of investment assets.

- The 2011-2016 period was characterized by larger volatility (see again figure A3 in the Appendix): a brief phase of yields recovery (2011) was followed by a swift yield reduction (2012) and by a resurgence of the stock effect in 2014 and 2015, which reflected an increase in foreign investment (especially towards foreign investment funds), but was offset by a strong negative yield effect in 2015, that to a large extent is attributable to the previously mentioned fall in commodity prices, which hampered the revenue-generating capacity Italian energy companies, which are also among

the largest Italian foreign direct investors; this in turn passed through the yields on the FDI component of foreign investment.[22]

- As a result, earned income flow has been fluctuating since its 2007 peak value around a descending trend. In 2016 the concurrence of the three effects into the positive field lead to a rise investment income, which could signal the start of an ascending trend.

4.2 Investment income paid

The overall dynamics of investment income debit, depicted in Figure 6, is quite similar to that of the credit side, with some differences concentrated in the last three years. As in the previous case, also here the stock effect had a major role in shaping the observed dynamics, especially in the period before the financial crisis. On the liabilities side the composition effect was significantly more relevant than for the credit side, and even more so after 2008, when the substitution from portfolio liabilities to other investment liabilities was influenced by the policy measures of the Eurosystem (especially the APP and the longer-term refinancing operations addressed at the banking sector). The analysis on quarterly data is presented in figure A4 in the Appendix.

Considering the four sub-periods of interest, the following evidence emerges:

- In the first five years after the inception of the monetary union, stock and yield effects often offset each other: foreign investors were taking stakes in Italian economy in a context of declining yields and/or surge in stock prices, resulting in a very modest increasing trend in investment income debit.

- From 2005 to 2007 the accumulation of liabilities eventually made debit income surge, as shown by the strong and positive stock effect in these years,[23] while the yield effect added up to the growth of paid income with a weaker but still positive effect.

- While the stock effect became negative since 2008, as non-resident started to disinvest from Italian assets (retrenching), the negative yield effect kicked in only in 2009, confirming the fact that prices and interest rates in Italy were not immediately affected by the first wave of the financial crisis; paid income therefore reached a maximum in the first part of 2008 before the stock and yield effects combined brought down the debit investment income flow.

- In 2011 debit income increased again, pushed by a surge of the yield effect, mainly due to the increased interest rate paid on Italian debt securities, on the backdrop of the sovereign debt crisis; it was only partially offset by the composition effect, which occurred on the backdrop of relevant policy measures which in part reflected into a substitution of portfolio liabilities with TARGET2 liabilities. After the spike in 2011, the yield effect was always negative (i.e. favourable), pushing for a reduction of the debit income flow, but was almost completely offset by composition and stock effects until the first half of 2015.[24] Since then, investment income started to decrease and, interestingly, all the three effect concurred in the abatement of the liabilities funding costs.

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[22] On the credits side, direct investment is the second largest source of investment income after portfolio income. The share of FDI income dropped from 47 to 33 per cent between 2014 and 2015.

[23] When speaking about debit income, a positive effect is unfavourable, while a negative effect is favourable.

[24] See figure A4 for more detailed infra-annual dynamics. It is worth recalling that monetary policy rate (main refinancing operations rate) that was 3% at the beginning of the monetary union, fell to 1% at the end of 2011 and decreased further to 0.05% at the end of 2014 and to 0.00% in March 2016. The fall in the policy rate pushed down the rates on all the other interest-bearing financial instruments and this was in turn reflected into a negative yield-effect, although the debtors' approach described in footnote n.12 implies that changes in nominal interest rate pass through the yield only via the new emissions.

Figure 6: Decomposition of the dynamics of Italy's investment income debits
(€ million; yearly absolute changes)
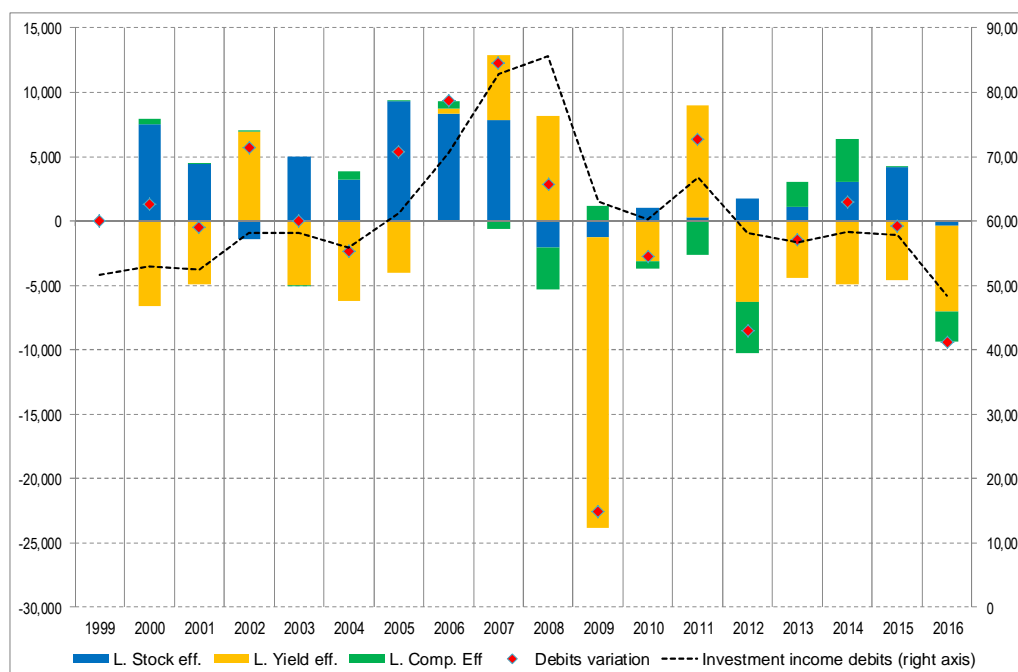
Source: authors' elaborations on Bank of Italy's data.
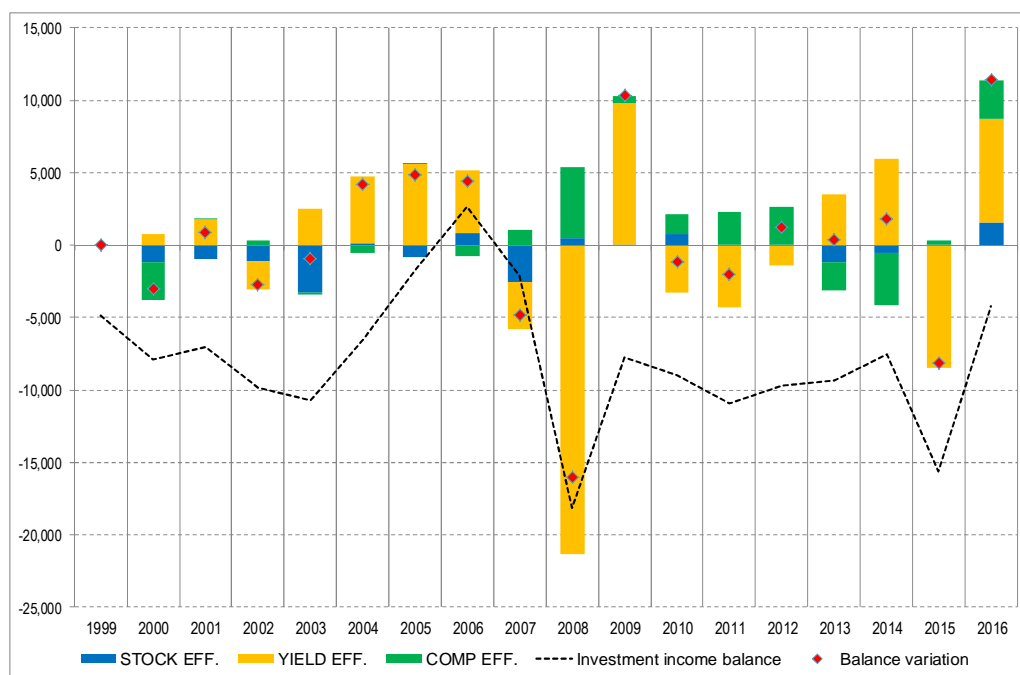
4.3 Investment income balance

The three effects of the decomposition, positive or negative, can be favourable or unfavourable for the dynamics of the overall balance depending on which side (credits or debits) they affect. The natural next step is therefore to look at the decomposition of the *balance*, adding up the two sides of each effect; the result is represented in Figure 7.

The first phenomenon highlighted by the graph is that when decomposing the dynamics of the investment income balance, the stock effect turns out to be less relevant, even more so after 2008. This is due to the fact that assets growth is usually associated with liabilities growth and that valuation adjustments tend to be positively correlated,[25] so that shifts in the value of the stocks often offset each other; what has an impact on the income balance is their differential variation, i.e. the variation of the net position, other things being equal.

The composition effect on the contrary has a more important role when decomposing the balance than when decomposing credits and debits separately. In the turbulent years between 2007 and 2012, this effect was relevant and significantly positive, counterbalancing the yield effect; this can be interpreted as indirect evidence that resident investors were able to restructure effectively their position to limit liabilities burden and sustain assets profitability.

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[25]   Correlation in assets and liabilities valuation adjustments is stronger when foreign assets are made up of investment in neighbouring countries and/or countries highly interconnected in economic terms. Because of contagion, correlation increases during a financial crisis.

Figure 7: Decomposition of the dynamics of Italy's investment income balance
(€ million; yearly absolute changes)

Source: authors' elaborations on Bank of Italy's data.

As the figure points out with full clarity, the yield effect is indeed the main driving force of the investment income balance variation: in the four sub-periods previously identified, it had a key role in shaping the overall balance dynamics and, more precisely:

- In the first four years of the monetary union the investment income deficit oscillated with small variations around a yearly mean value of €8 billion, the yield effect contributed with prevalently positive changes, while the stock effect was mainly negative, reflecting the increase in Italy's net debtor position.

- The yield effect was responsible for the noticeable improvement of the balance in 2004-2006, with the deficit eventually becoming a surplus in the second half of 2006.

- The fast worsening in 2007-2008 was completely pulled by yield variations, while the composition effect brought in modest but positive contributions (rebalancing of assets and liabilities towards more favourable income-generating assets and/or cost-saving liabilities).

- In the 2010-2014 period of oscillations-around-the-mean, yield and composition effect offset each other and the overall investment income balance registered only modest variations.[26]

- The swift widening of the deficit in 2015, entirely due to the yield effect, was followed by an immediate and equally fast recovery in 2016, which was driven by all the three effects, an unprecedented event since 1999.

The results suggest distinctive temporal "roles" for each of the three effects, which are summarised in table 5.[27] The stock effect had an overall modest role, mainly concentrated in the years between the inception

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[26] See figure A5 in the Appendix for infra-annual dynamics.

[27] As pointed out in Knetsch and Nagengast 2016, implementing the decomposition between *t* and *t + n* can be done in two ways: a first approach consists in re-calculating the decomposition for the new time interval Δ*t,* now equal to *n* and not to *1* anymore. A second approach consists in summing up the quarterly changes between *t* and *t + n*. This is the one we followed. However, given the purpose of table 4, the variations are now year-on-year instead of quarter-on quarter. The two approaches lead to results that are consistent in relative terms (i.e. in terms of the relative weight of the three effects) but not in terms of absolute numbers, since the nominal variation to be explained is different. In both cases the "within-period" fluctuations are lost, so, as a general rule, looking at higher frequency decompositions is always to be preferred.

of the monetary union and the eve of the great financial crisis (1999-2007), a period in which foreign investments in Italy grew significantly. The yield effect was always particularly intense; although its relevance tends to appear lower the longer the sub-period of analysis, due to offsetting of negative and positive contributions, it can be clearly noticed that during the financial crisis and in the following years it was the dominant driver of the investment income balance.

Table 5: Decomposition of the dynamics of Italy's investment income balance across sub-periods and in 2016

(€ billion; sum of yearly absolute changes in each period)

	1999-2016	1999-2004	2005-2007	2008-2010	2011-2015	2016
Investment income balance changes	**0.6**	**-1.6**	**4.4**	**-6.8**	**-6.7**	**11.4**
Stock effect	-7.7	-6.4	-2.5	1.3	-1.7	1.6
Yield effect	2.0	7.7	6.7	-14.9	-4.6	7.1
Composition effect	6.3	-3.0	0.2	6.8	-0.4	2.7
Investment income credits changes	**-2.6**	**2.5**	**31.4**	**-29.3**	**-9.2**	**2.0**
Stock effect	44.2	12.3	23.0	-1.1	8.7	1.2
Yield effect	-48.0	-8.0	8.1	-32.3	-16.1	0.4
Composition effect	1.1	-1.8	0.3	4.1	-1.8	0.4
Investment income debits change	**-3.3**	**4.1**	**27.0**	**-22.5**	**-2.5**	**-9.4**
Stock effect	51.9	18.7	25.5	-2.4	10.4	-0.3
Yield effect	-50.0	-15.8	1.4	-17.5	-11.5	-6.7
Composition effect	6.3	-3.0	0.2	6.8	-0.4	2.7

Source: authors' elaborations on Bank of Italy's data.

Finally, the composition effect brought in relevant contributions after 2007; the effect was always positive with the only exception of the biennium 2013-2014 (see Fig. 7) and was stronger on the liabilities side. The increased relevance of this effect after the financial crisis – which is in line with the evidence previously shown in Figure 4 – can be reasonably linked to the Eurosystem's measures aimed at strengthening the transmission channel of monetary policy and at easing credit conditions; the fall in interest rates and the massive assets purchases during the APP[28] induced an instrument-mix rebalancing which translated in a reduction in the cost of liabilities and in lower interest rates.

It may be worth recalling at this point that TARGET2 liabilities (i.e. the liabilities of the Bank of Italy vis-à-vis the ECB) imply the payment of interests to the creditor institution and have therefore an impact on investment income. They however do not affect the current account of Italy as a whole, as the interest paid on them gets counterbalanced by another item recorded in the secondary income: it is the quota of the monetary income redistributed by the ECB (seigniorage)[29] to the national central banks according to their respective capital key.

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[28] APP: (Expanded) Assets Purchase Programme. It includes all purchase programmes under which private and public sector securities are purchased by the Eurosystem to address the risk of a prolonged period of low inflation. From March 2015 until March 2016 average monthly purchases amounted to €60 billion; from April 2016 to the end of the year amounted to €80 billion. APP is part of a package of measures that also include targeted longer-term refinancing operations (TLTRO).

[29] More formally, the "monetary income" that the ECB is distributing to each National Central Bank (NCB) of the monetary union is the net yearly revenue from specific categories of assets (so called "earmarkable assets") held as counterpart to specific kind of liabilities related to money emission (an aggregate called "liability base"). If the value of earmarkable assets exceeds or falls short of the value of its liability base, the difference is offset by applying the marginal rate used by the Eurosystem for marginal refinancing operations. The difference between the net income generated by the earmarkable assets and the liability base and the capital-key quota of the total monetary income accrued to ECB is the redistributed monetary income. The actual TARGET2 position of any member country is therefore neutral in determining the national quota of received monetary income, as the latter is based only on the

5. Income balance and the decline in interest rates

The reduction of interest rates has a positive impact on the investment income balance of countries that are in a net borrowing position (i.e. with a negative IIP), as it is the case for Italy. Indeed, more than half of the improvement recorded by Italy's investment income balance between 2011 and 2016 was due to the yield effect. One may ask how different the balance would be, had the yields on assets and liabilities remained at their "pre-crisis" levels.

To provide a quantitative answer to this question, we consider a counterfactual scenario based on the "pre-crisis yields". In other words, for each investment category, we apply the average yields recorded in the 2000-2007 period to the corresponding stocks in the 2011-2016 periods. Only direct investment incomes are excluded from the exercise, on the premise that their yielding capacity is less correlated with policy rates.[30] This choice hence preserves the large drop observed in 2015 (due to the above mentioned reduction in the profitability due to the fall in energy prices). There is an additional implicit hypothesis which comes together with the idea of computing a "pre-crisis yields" scenario: we need to figure out what happens to TARGET2 liabilities, whose increase was an indirect consequence of the crisis and of the policy interventions that ensued.[31] There are two possible ways of treating the item: a first possibility is to replace T2 liabilities with debt securities or other investment (deposits and loans) or a combination of the two.[32]

A second possibility consists in leaving T2 liabilities in the same functional category (i.e. other investment) and apply to them the pre-crisis yield of that category. The only subtle difference between the two alternatives is in their effect on the current account, since they are almost equivalent as concerns their impact on the investment income balance. More precisely, as we have seen in the previous section, the interest paid on T2 liabilities gets compensated by the monetary income stream recorded in the secondary income item; therefore T2 liabilities have an impact on the investment income balance (they concur to the debit side) but not on the current account balance. As long as the impact on the current account is not involved, the two approaches can be considered as equivalent. For the sake of simplicity we adopt the first approach and assume that in the alternative scenario all T2 liabilities are transformed into inter-bank loans, which are remunerated at the average yield of the other investment category (i.e. a yield which is 220 basis points higher). The higher hypothetical income paid has an impact both on the investment income balance and on the current account.

According to our calculations (Tab. 6), under the "pre-crisis" vector of yields,[33] the investment income balance would have been larger than the recorded balance from 2013 onwards, and increasingly so as the

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[30] capital key. The amount of monetary income received depends on the total net income from earmarkable assets financed with the liability base. (See Bank of Italy, Annual Accounts 2016).

[30] The relation between policy rates, market rates and returns to capital is very complex and not explored here. Loosely speaking, FDI yields are less affected by monetary policy interventions for two kinds of reasons: (i) FDI investors look at long-term returns, which do not necessarily co-move with the policy-targeted short-term interest rates. In the short-run dividend policies are governed by firm-specific considerations; (ii) the "risk-premium" component has a larger role in this investment category: considering a CAPM-like model of returns, policy interventions directly affect the "risk-free component" of the yield, but only indirectly affect the risk premium component, which depends on firm-specific (i.e. issuer specific) features. Since the risk premium component is larger for FDI equities than for other investment instruments, FDI yields are expected to be less correlated with policy rates, other things being equal.

[31] The rise of liquidity provided by the Eurosystem since 2011 was accompanied by the widening of the T2 balances among members of the monetary union. On the economic relation between T2 balance and policy interventions, see Cecioni and Ferrero (2012), Bank of Italy's Economic Bulletin no. 2015-3, and the Annual Report on 2016.

[32] One may observe that this is perfectly in line with the economic origin of T2 liabilities, as their existence can be interpreted as the intermediation of the Eurosystem of cross-border investment relations previously held directly between private sectors of different countries, motivated by operators' propensity to get rid of counterparty risk.

[33] The largest yield differential between the actual data and the "pre-crisis yields" scenario is found for the other investment component, whose average yields for assets and liabilities were 2.9 and 2.8 in the pre-crisis period, and dropped to an average of 0.8 and 0.6 in the 2011-2016 period. Pre-crisis yields for the other categories of assets (debt securities, equities and investment fund shares, and reserve assets) were respectively: 5.8%, 2.8% and 1.5%;

actual yields got lower and lower in the subsequent years. In 2016, if portfolio and other investment yields had remained at their 2000-2007 averages, the investment income deficit would have been about € 12 billion wider.

Table 6: Italy's investment income balance under a "pre-crisis yields" scenario
(€ million)

Year	Actual balance	Scenario balance
2011	-11.0	-8.1
2012	-9.7	-6.2
2013	-9.3	-10.5
2014	-7.5	-12.9
2015	-15.7	-23.5
2016	-4.2	-16.0

Source: authors' elaborations on Bank of Italy's data.

6. Investment income dynamics in the main countries of the euro-area

In order to enlarge the scope of the analysis and gain some useful terms of comparison, we apply the decomposition framework also to the other three largest members of the euro area.[34]

Among them, only Germany had a positive (and improving) net IIP throughout the 1999-2016 period. France's IIP was positive until 2002 and turned negative thereafter, quickly reaching a level comparable to that of Italy in terms of GDP. Spain, conversely, registered a net debtor position throughout the period.[35] Consistently, while the income balance has been positive in Germany since 2004, it has always been negative, in the period considered, in Spain. It is worth noticing that, in spite of the pattern of the net IIP, France registered a positive capital income balance, which expanded between 2003 and 2010.

The results of the decomposition are shown in Figure 8. In the case of Germany, after the first years with a quite stable negative balance, investment income went into a long expansionary period, which can be divided into two phases. The first expansionary phase goes from 2003 to 2011: the investment income went from a deficit (€21 billion) to a large surplus (about €65 billion), sustained by the stock effect (which reflected the IIP improvement) and by an exceptionally strong yield effect in 2004, which was in turn due to a surge in the yield from direct investment abroad and by a favourable spread differential on other investment.[36] This phase was only temporarily interrupted by the financial crisis in 2007-2008, when investment income balance deteriorated, essentially because of the negative contribution of the yield effect; the expansion resumed again in 2009, driven by the yield effect and eventually abated in 2011. A period of stationarity followed thereafter, as a result of the positive contribution of the stock effect – reflecting the ongoing improvement in the IIP, driven by the current account surpluses – offset by the negative yield effect, mainly due to falling interest rates.

A rather similar sequence of phases can be identified for France: after a sudden drop in 2002, entirely due to a negative yield effect, caused by a fall in the income stream from direct investment abroad, the investment income balance went into a long expansionary phase that reached a maximum in 2011. In this expansionary period the yield effect provided often positive contributions, while the stock effect was overall quite modest, with a relevant negative contribution in 2009, associated with a strong worsening of France's

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their 2011-2016 average was 3.2%, 1.9%, and 0.3%. The other liabilities categories (debt securities and equities and investment funds), had pre-crisis yields amounting to: 4.4% and 4.8% respectively, which went down to 3.4% and 3.6% after the crisis.

[34] Due to insufficient data availability, reserve assets positions and revenues have been excluded from the analysis conducted in this chapter.

[35] See Figure A1 in Appendix.

[36] These results are consistent with those found for Germany by Knetsch and Nagengast 2016.

net IIP in the same year.[37] After the peak reached in 2011, the investment income balance decreased in the following year and remained thereafter around a mean value of about €23 billion.

The investment income balance of Spain in the first decade after the inception of the monetary union was driven by the widening of the country's negative net IIP (which went from 34.7% of GDP in 1999 to 93.5% in 2009). In figure 10 this is mirrored in the negative contribution of the stock effect, which was particularly large during the financial crisis. This worsening trend eventually reversed in 2009, sustained by a favourable yield effect, which came to a halt only in 2011, bearing the consequences of the sovereign debt crisis. The composition effect contributed positively to the dynamics of the balance, with a few exceptions, and was able to lessen the negative contributions of the yield effect in 2011 and to bring a significant boost to the balance recovery in the following year. The large positive contributions of the yield effect in 2009 and in 2012 were mainly due to a reduction in the cost of liabilities: in 2009 there was a significant reduction in the payments on debt securities and on other investment liabilities, while in the second half of 2012 the reduction was more evenly spread across all financial categories. From 2008 to 2016 the investment income deficit of Spain decreased from 35.2 to 4.6 euro billion.

Overall, we can compare the developments across countries distinguishing two periods:

- Between 1999 and 2007 (a period that we could label as the "accumulation phase") the investment income balance moved accordingly to the accumulation of net assets (as was the case for Germany) or net liabilities (as was the case for Spain). In France the trend was less well-defined, but it was not consistent with the developments in the IIP; in terms of our analysis this means that the stock effect was often overridden by a yield effect of opposite sign.

- The second period is characterised by the two crises of 2008 and 2011 and by the policy responses that ensued. The first financial crisis affected with different degrees of intensity all countries (with starker effects for Germany and France), while the sovereign crisis involved more seriously Spain (and Italy, as shown in the previous section). Apart from France, all the other countries registered a deterioration of the investment income balance in 2008, with Italy and Spain having a second contraction in 2011, due to adverse yield effect. After the crisis, the Spanish investment income balance reversed the previous negative trend and went into a path of deficit reduction, thanks to the stock effect, which passed from negative to positive, and to the positive yield effect, which reflected the fall in interest rates which followed the sovereign debt crisis and the policy responses that ensued. The same phenomenon had quite different effects on Germany and France: on the backdrop of falling interest rates, these two countries entered a phase of income balance stabilisation. In the case of Germany this was the result of the still positive - though smaller than in the previous phase - contributions of the stock effect, which were able to counterbalance the adverse yield effect. For France the stabilisation was due to a reduction in magnitude of all the three effects that left the surplus at a lower level than its pre-crisis average.

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[37] We recall here that stock effect is not in direct relation with IIP variations, as we excluded derivatives positions and official reserves from assets and liabilities.

Figure 8: Investment income balance decomposition for Germany, France and Spain
(€ million; yearly absolute changes; reserve assets are not considered).

Source: authors' elaborations on ECB, Eurostat and IMF data.

Concluding remarks

Since 1999 Italy's income payments have always been larger than earnings, a natural fact given the net international debtor position of the country, but there is not a clear trend characterising the temporal path of the investment income balance, neither a significant correlation between its variations and IIP developments, if not on a very long term perspective.

In general, the wide increase in the size of external assets and liabilities occurred in the last two decades has magnified the implications of yield variations for the dynamics of the investment income balance, thereby calling for an appropriate tool for disentangling the various drivers: the role of the underlying positions (assets and liabilities), the role of their income generating capacity (income earned and income paid) and the instrument composition within the position.

This paper presents an analysis of the dynamics of investment income balance between 1999 and 2016, based on a decomposition framework similar to that proposed by Knetsch and Nagengast (2016). The framework allows us to identify the role of stock variations (which can be thought of as the "extensive margin" of income flow, i.e. the amount of income-yielding units), the role of yield variations (which can be thought of as the "intensive margin" of income flow, i.e. the contribution of a single income-yielding unit) and the role of composition variations (which can be thought of as an interaction of the two previous effects) in shaping income balance dynamics.

Stock developments seem to play a role on the income balance trend only in a long-run perspective: the stock effect had a relevant role in the first five years after the inception of the monetary union, when assets and (even more) liabilities expanded; after 2007 its influence became weaker. In the short term the key driving force is the yield effect, responsible for all the largest fluctuations. An erratic behaviour of the yield effect is due, among various factors, to the volatility characterising the direct investment component of investment income. The dominance of the yield effect over the other two was particularly strong during the financial crisis and its aftermath. After that water-shed event, the composition effect gained relevance too: its contribution to income dynamics was significant especially between 2008 and 2010, when residents tried to rebalance their positions in order to minimise liability costs and/or sustaining asset profitability. Finally, in 2016 an improvement in the investment income balance seems to have started, as all the three effects (stock, composition, and yield) concurred in reducing income debits: the annual deficit decreased by more than €10 billion with respect to the previous year and was the most relevant contribution to the growth of Italy's current account surplus.

We extended the analytical framework to the other three main economies of the euro area. While for Germany and - until 2008 - Spain the investment income balance dynamics followed more closely IIP developments, for France and Italy the income dynamics was less connected to that of the IIP; yield and composition effects played a more important role. This was more easily visible in the first part of the period under scrutiny (1999-2007), characterised by clear trends in accumulation of net assets (as was the case for Germany) or net liabilities (as for Italy and Spain). For Germany and Spain the accumulation process affected the investment income balance dynamics via the stock effect, while for Italy the positive yield effect was able to "override" the negative stock effect due to a widening IIP.

The "subprime" financial crisis affected with various degrees of intensity all the four countries. In 2008 France was the only one not recording a significant worsening in investment income balance, contrary to what occurred to the other three countries via a negative yield effect.

After 2008, a period of higher volatility followed: the improving trends observed for France and Germany in the previous nine years fainted; the balances of Italy and Spain were first affected by the sovereign debt crisis (2011), which was reflected into a negative yield effect, and then were relieved by the fall of interest rates and by the expansionary policies of the ECB, which reflected into positive yield and composition effects. On the contrary, in France and Germany the income balance stayed closer to 2008 levels in the following years, with only minor fluctuations.
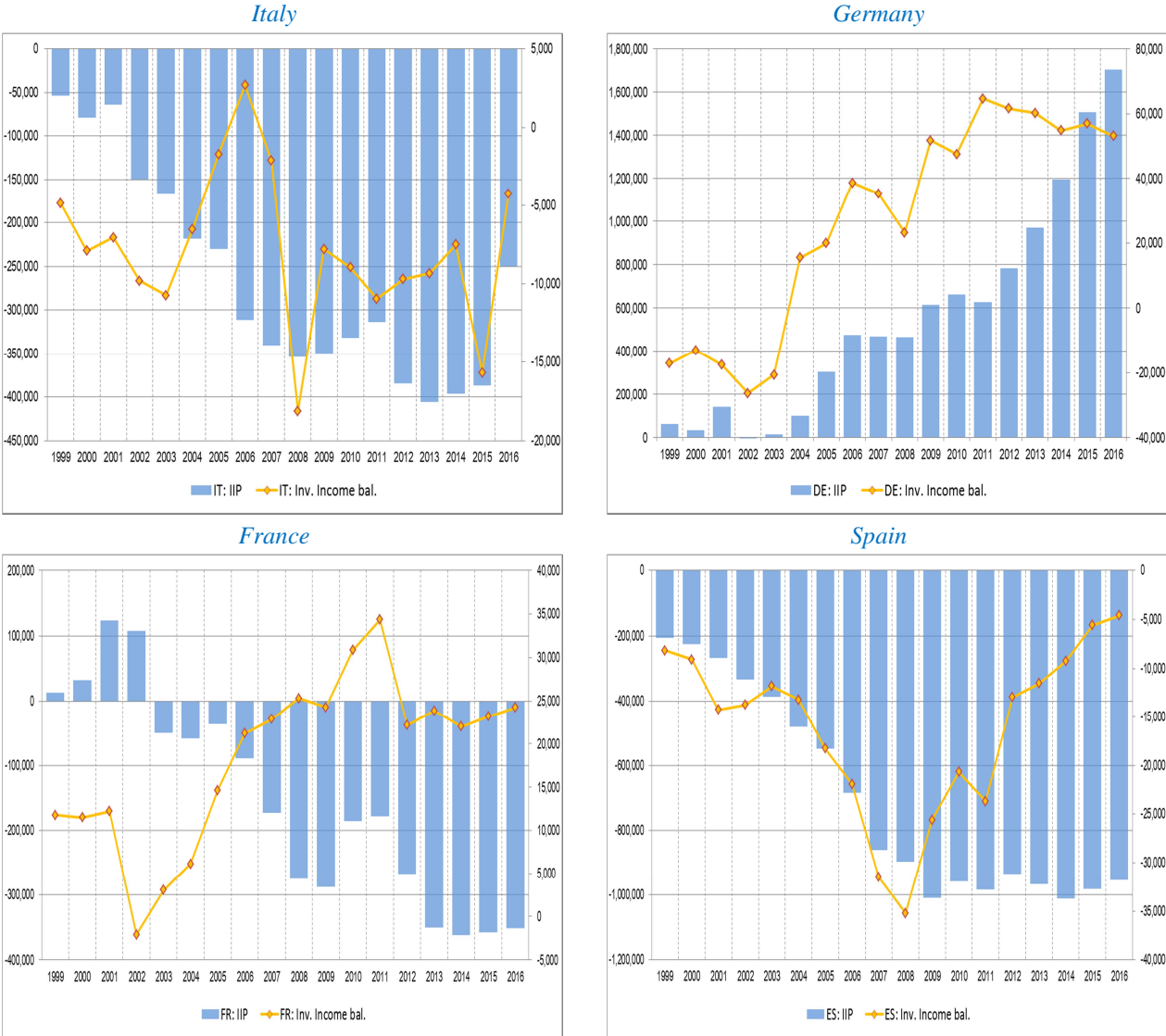
The fall of interest rates ensued after policy interventions of the Eurosystem benefited the investment income balances of net debtor countries via both the "yield channel" and the "composition channel". While the latter is quite difficult to assess without a more disaggregated breakdown of assets and liabilities, the former may be quantified recurring to some simplifying assumptions. According to our calculations, had the yields on assets and liabilities remained on their 2000-2007 averages, the investment income deficit in 2016 would have been about 12 euro billion larger, implying a smaller current account surplus for about 0.7 per cent of GDP. These magnitudes lead us to conclude that the effects of interest rates on the current account are non-negligible, and ought to be taken into account when implementing estimations of cyclically-adjusted current account. A decomposition framework that allows to disentangle yield, stocks, and composition effects may offer a complementary tools to assess how large is the cost of ignoring the financial channel in the relation between the business cycle and the current account.

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Statistical appendix

Figure A1: International investment position and the investment income balance in the four main countries of the euro area

(€million; end-of-year stocks; income scale is on the right-hand axis)

Italy

Germany

France

Spain

Source: authors' elaborations on ECB, Eurostat and IMF data.