Insurance companies and pension funds: assessing the dynamics of their assets and liabilities

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1. Introduction

Insurance companies and pension funds (ICPF) have become increasingly important within the financial sector, accounting for 14% (EUR 6.9 trillion) of the financial assets of the euro area financial sector (2010Q3 data), while in Portugal, at the end of 2010, they represented about the same share (75 EUR billion)[2].

In these economies, an ageing population coexisting with inadequate social security schemes has driven families to look for alternatives to complement their income after retirement. Life expectancy increased 5 years in the last 20 years up to 79.6 in 2009 in Portugal; in the euro area, it rose from 77.3 in 1995 to 80.7 in 2008. As a consequence, the weight of the population over 65 years increased from 13% in 1990 to 17.9% in 2010, in Portugal, and from 14.1% in 1990 to 18.3% in 2010, in the euro area. Moreover, associated with lower fertility ratios, the aged dependency ratios[3] have been increasing. In Portugal, over that period, it went up from 20% to 26.7%, and in the euro area from 20.9% to 27.5%. In other words, considering that the inverse dependency ratio can be interpreted as how many independent workers have to provide for one dependent person (pension), this indicator decreased from around 5.0 to 3.7 in the past 20 years, which clearly jeopardizes the sustainability of pay-as-you-go systems.

Families are therefore faced with the need for complementary schemes when they retire. At the same time, ICPF are highly innovative, having developed a range of products that compete with banks' deposits for households' savings. In fact, insurance technical reserves (ITR) represented 19% of the households' financial assets in Portugal at the end of 2010, comparing to 10% in 1997. In terms of households' financial wealth, these shares go up to 13% in 1997 and 35% in 2010. In the euro area ICPF liabilities accounted for 30% of the total households' financial wealth (2010Q3 data). These numbers clearly illustrate how much these financial instruments have been competing with deposits for the households' investments.

As a consequence, ICPF have assumed a pivotal role for the assets they hold and manage, which makes them

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[2] This document was prepared on the basis of the information available as of 18 March 2011.

[3] Number of people aged over 65 years divided by the number of people aged between 15 and 64 years.

major players as institutional investors. In the euro area, ICPF financial assets amounted to 74.3% of gross domestic product (GDP) and they held 20% of the total debt securities issued by euro area governments and 57% of the mutual fund shares issued by euro area investment funds (2010Q3 data). In Portugal, at the end of 2010, their financial assets represented 51% of GDP, of which 18% were vis-à-vis non-residents; they held 6.4% of domestic public debt securities (4.0% in 2006) and 18.8% of domestic mutual fund shares/units (6.8% in 2006).

The remainder of this study is structured as follows. In section 2 we describe the data sources used and the compilation procedures implemented by *Banco de Portugal* regarding ICPF statistics. The composition and evolution of financial assets and liabilities of ICPF in Portugal, complemented with the trend observed at euro area level, is examined in section 3. We conclude with some final remarks and considerations for the future.

2. Data sources and compilation procedures

The main data source for the compilation of ICPF statistics by *Banco de Portugal* is the Portuguese Insurance and Pension Funds Supervisory Authority (*Instituto de Seguros de Portugal* or ISP, in its Portuguese acronym). Although prior to March 2007 data were already being delivered to *Banco de Portugal*, with the ongoing developments for these statistics at the level of the European System of Central Banks (ESCB), a new informal agreement between *Banco de Portugal* and ISP was established in order to meet in the forthcoming data requirements. For that purpose *Banco de Portugal* provided bridging tables with an indicative correspondence between accounting items and ESA95[4] instruments. The terms under which ISP provides *Banco de Portugal* with data are the following:

Table 1 – Stock data reported by ISP to Banco de Portugal (since March 2007)

Sector	Frequency	Timeliness[5]	Detail
IC	Quarterly	T+50d	Assets – ITR-related assets (with counterpart information) Liabilities – ITR
	Annually	T+50d	Assets – other than ITR-related assets (with counterpart information) Liabilities – liabilities other than ITR (with counterpart information)
		T+9M	Assets – other than ITR-related assets + final balance sheet data (with counterpart information)
PF	Quarterly	T+50d	Assets – ITR-related assets (with counterpart information)
	Annually	T+9M	Liabilities – pension funds' technical reserves

These data are accounting-based and therefore they present some methodological deviations from the ESA95 concepts and European Central Bank (ECB) requirements which have to be overcome through statistical estimations.

The estimation procedures carried out by *Banco de Portugal* in the compilation of ICPF statistics and the ICPF financial accounts refer to the following:

a) *IC representative assets vs. complete balance sheet on the assets' side*
Non-representative assets are available on an annual basis and they account for around 10% of total assets. In the estimation procedure, the weight of representative assets within each instrument is

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[4] European System of National and Regional Accounts 1995 (ESA 95).

[5] d = days; M = months.

assumed to remain constant throughout the year. The estimation is of good quality since the weight of non-representative assets remains fairly stable over the years.

b)   IC ITR-liabilities vs. full balance sheet on the liabilities' side
The liabilities data provided quarterly (ITR) encompass the great majority of total liabilities. Quarterly data for shares, loans and other accounts are assumed to be equal to the last year available (in terms of structure). The estimation is of good quality since the estimated instruments account for a relatively small part of total liabilities (around 10%).

c)   Counterpart information for ITR
There is no counterpart detail for non-life ITR. The structure of premiums by counterpart sector (made available by the National Statistical Institute, or NSI) is applied to stocks. There is no available information to confirm the estimate but the premiums' structure seems a reasonable assumption.

d)   Home approach vs. host approach
The IC reference population used by the supervisory authority follows the home approach, while the industry association (*Associação Portuguesa de Seguradores* or APS, in its Portuguese acronym) provides annual data for IC according to the host approach. The latter liabilities are compared to the former and their ratio is applied to the balance sheet data. This estimation is thought to give reasonable results since, contrary to the activity of foreign companies in Portugal, the activity of Portuguese companies outside Portugal is not significant.

e)   Quarterly PF liabilities
Information of ITR is only available on an annual basis. The estimation procedure is the following: the last information available is replicated each quarter until a new year becomes available; the quarterly stocks are then revised through a linear interpolation of the annual stocks.

f)   Derivation of "transactions" and "revaluations and other volume changes"
The compilation of ICPF statistics by *Banco de Portugal* occurs in the framework of the financial accounts thus ensuring consistency with different statistical domains, namely monetary and financial statistics, b.o.p.-i.i.p. and securities statistics, through the so-called hierarchy of sources. Transactions are obtained from counterpart data or derived from the stocks variation deducted of revaluations and other changes. Reclassifications are obtained through changes in the population or counterpart data. Revaluations are computed both from counterpart data and from the use of reference indexes for each main instrument.

g)   Breakdown of ICPF between IC and PF
In the current financial accounts' compilation framework we follow a process of hierarchy of sources where initial data sources are replaced with others that we consider more accurate and reliable in order to achieve internal consistency within the accounts. In this process, counterpart data for ICPF is only available for the sector as a whole and therefore the distinction between IC and PF is not carried over until the final stage of the compilation cycle. In order to cope with ECB requirements on ICPF statistical data, we developed a system based on the relative share of each subsector on the whole sector in the raw data. Once the stocks are calculated, the transactions have to be derived. We first isolate specific reclassifications and/or other changes that we know. Then, we take the revaluations from the financial account of ICPF and we derive the implicit (de)valuation rate, which we then apply to the stock of the previous period for IC and PF separately. The transactions are then obtained by residual. This procedure assumes that the de/revaluations in the financial instruments affect IC and PF equally; its major

advantage is the consistency with the financial accounts.

Data for the ICPF sector as a whole are available since 1997Q4, and since 2006Q1 for IC and PF separately, both in terms of stocks and transactions. This is in line with the requirements set by the ECB under the short-term approach for ICPF statistics.

3. Key indicators for ICPF in Portugal

ITR represented 45% of GDP in 2010, as compared to 22% in 1997. They accounted for almost 90% of ICPF total liabilities. The evolution by type of activity is displayed in Figure 1, where we can observe that the outstanding amounts of ITR have increased at a relatively high pace from 1997 to 2007, and since then the growth rate has been much smaller, even slightly negative in 2008. The relative weight of insurance life reserves increased from 38% in 1997 to 66% in 2010, while non-life insurance decreased from 17% to 9%, and pension fund reserves from 45% to 25%. The evolution in the PF sector has also been determined by administrative transfers of certain autonomous funds to the State, namely in 2004 regarding the banks' pension funds and in 2010 concerning three pension funds of a large telecommunications' company. Nonetheless, these numbers reveal the impressive growth of ICs activity over the past years. When we analyse this evolution in terms of transactions, in Figure 2, it is very clear the 2008-crisis effect; this year was preceded of three consecutive years of large increases, with a peak in 2005, which still occurred until mid-2008 but were eventually cancelled out by massive withdrawals towards the end of the year as a consequence of the final near collapse that hit the financial markets throughout the world. Signs of recovery are already present in 2009 and 2010. Again, it should be noted that in December 2010, three pension funds were integrated in the State, thus originating a withdrawal from the PF sector amounting to 2.8 EUR billion.

Figure 1 – ITR by type activity
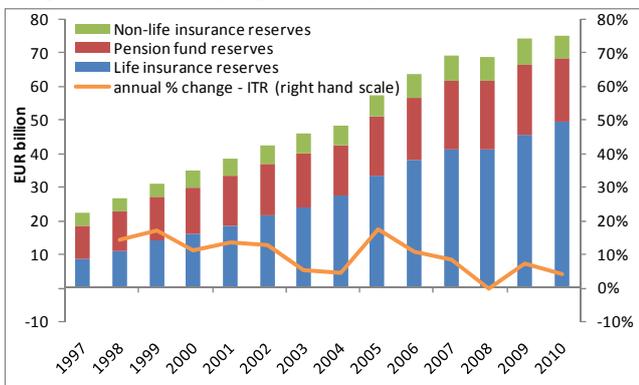
Figure 2 – ITR by type activity, transactions
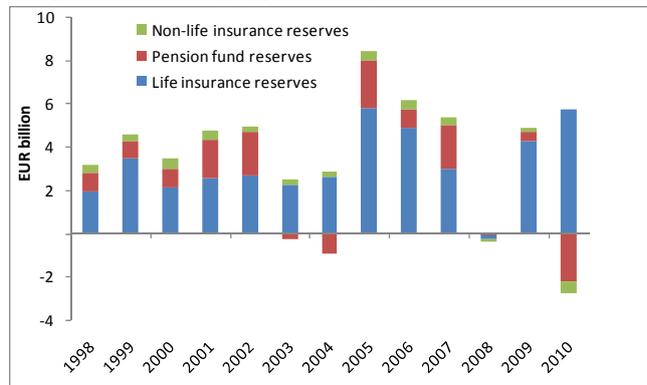
Figure 3 – ITR by type – 2010
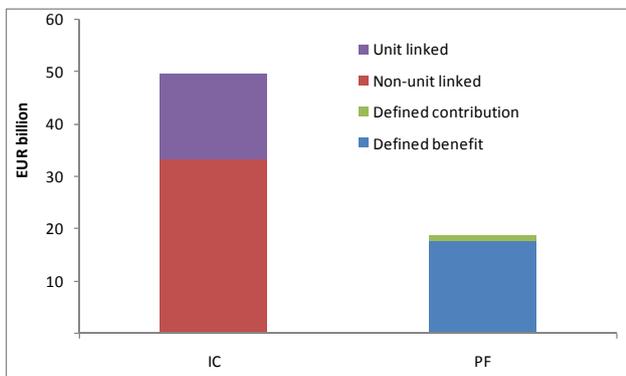
Figure 3 illustrates the distribution of ITR by type. In the case of IC, at the end of 2010 unit-linked plans represented around 1/3 of the reserves, a share that has remained relatively stable for the past five years. In the case of PF, the overwhelming majority (94%) of pension plans were defined benefit schemes as it has been the case since 2006. This provides evidence of a risk-aversion profile in the ICPF activity in Portugal.

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By and large, households are the main counterpart for ITR (around 95% for the whole sector at the end of 2010). Taking IC alone, there is also some activity *vis-à-vis* non-financial corporations related to non-life insurance (4%). The activities with non-residents are marginal, linked to reinsurance in most cases.

It is thus not surprising that the relative weight of ITR in the households' financial assets has been increasing over the past 13 years: from 10% in 1997 to 19% at the end of 2010, amounting to 75.7 EUR billion (Figure 4). Of these, 71.7 EUR billion is *vis-à-vis* resident ICPF and the remainder *vis-à-vis* non-residents or non-financial corporations in the case of non-autonomous pension funds. In terms of households' financial wealth, these shares go up to 13% in 1997 and 35% in 2010. ITR are the third most important financial investment of households, next to 'currency and deposits' and 'shares and other equity', while mutual fund shares (MFs) play a major role. Again, looking at Figure 5, the 2008-crisis effect is striking in terms of withdrawals of 'shares and other equity' (MFs in particular) and increases in more liquid and low-risk instruments, such as 'currency and deposits'.

Figure 4 – Households' financial assets
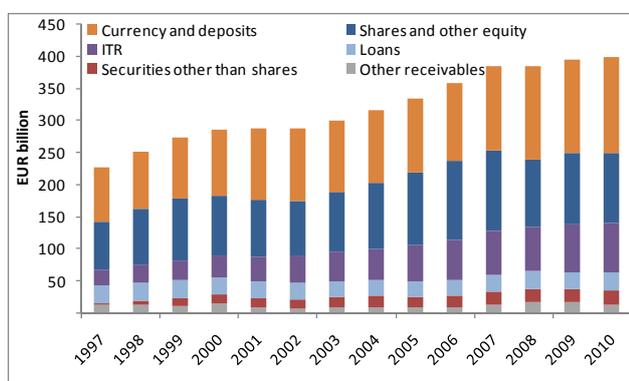
Figure 5 – Households' financial assets, transactions

Figure 6 – ICPF financial assets
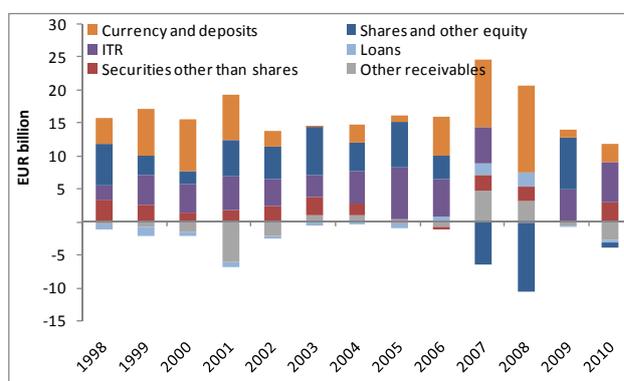
We turn now to the financial assets of ICPF, in Figure 6. 'Securities other than shares' amounted to 55.9 EUR billion, representing circa 2/3 of total assets at the end of 2010 (53% in 1997). 'Shares and other equity' reduced their relative weight from 24% to 6% throughout this period, which was mainly caused by devaluations in 2008. Since then, in turn, ICPF seem to have been investing more in mutual fund shares, with its share reaching nearly 10% at the end of 2010 which compares to 1.4% in 1997.

Looking at the portfolios of IC and PF separately, the structure is somehow different, as we can see in Figures 7 and 8. Clearly, the major weight of 'securities other than shares' comes from IC investments where they represent around 70% (47.3 EUR billion at end-2010). As for PF, although securities have also the largest share (47% at end-2010, with 8.7 EUR billion), MFs represent circa ¼ of the portfolio, with 4.4 EUR billion at end-2010. Non-financial assets represent 2% (1.1 EUR billion at end-2010) for IC and 10% (1.9 EUR billion at end-2010) for PF.

Figure 7 *– IC financial assets*
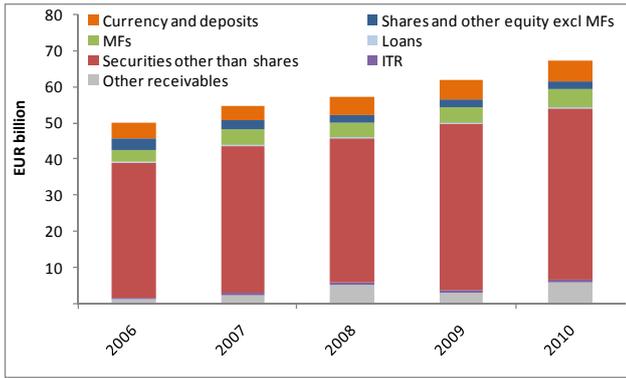
Figure 8 *– PF financial assets*
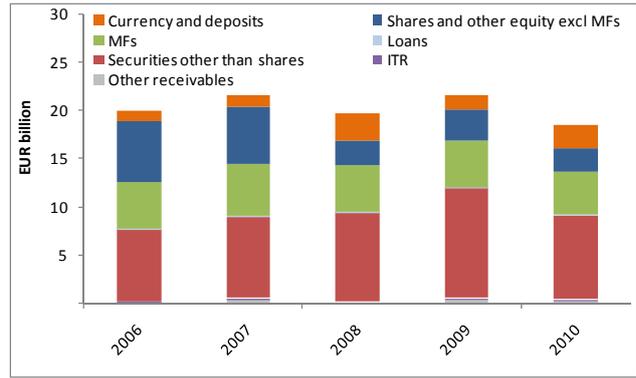
Figure 9 *– IC and PF financial assets, by area – 2010*
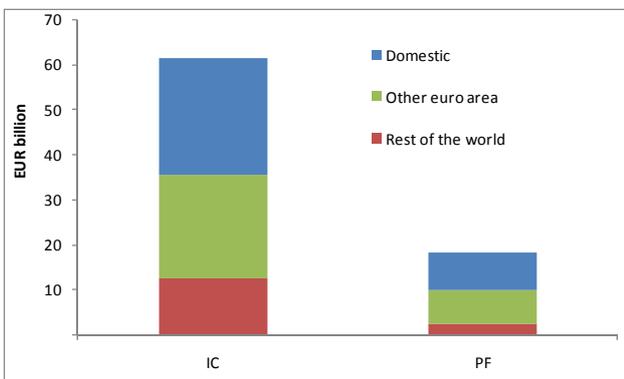
As for the geographical breakdown of financial assets, both for IC and PF, domestic and residents in other euro area countries are the main counterparties, each having weights averaging 40% over time. The relative share of other countries is higher for IC than for PF (20% *vs.* 13% at end-2010).

This distribution for total assets varies across financial instruments as we will see.

Figure 10 *– ICPF securities' holdings, by counterpart*
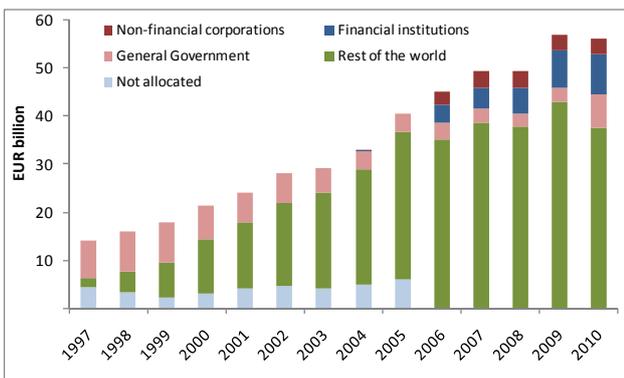
Starting with securities other than shares, observing Figure 10 we conclude that the increase over time resulted in an increase in the exposure to the non-resident sector (including in this case both euro area and other countries). When we analyse IC and PF separately (Figures 11 and 12), based on information from 2006 onwards, we conclude that for both sub-sectors most of this exposure is *vis-à-vis* the financial and the public sector. Interestingly, throughout 2010 IC invested significantly in domestic public debt, possibly attracted by the high return rates. On the other hand, after a significant increase in 2009, PF reduced their investments in debt securities in 2010, mainly regarding public debt from other euro area countries and securities issued by residents in other countries. This was largely due to the transfer of pension funds mentioned above. For both IC and PF, the exposure to debt issued by the corporate sector is not as significant.

***Figure 11** – IC securities' holdings, by counterpart*
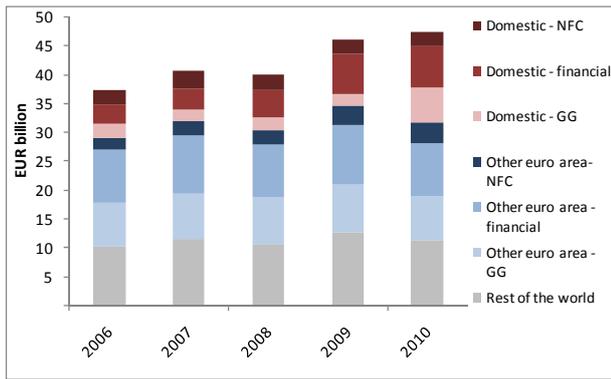
***Figure 12** – PF securities' holdings, by counterpart*
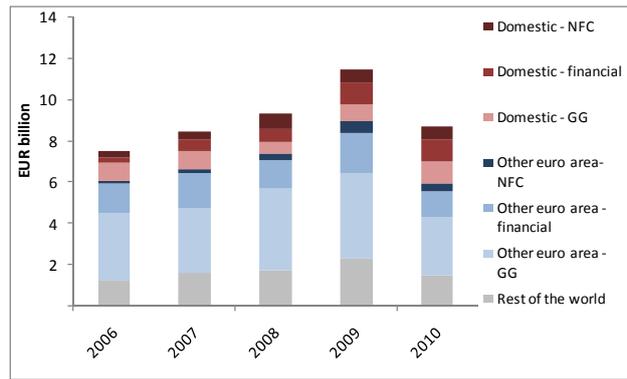
Turning now the attention to shares and other equity excluding MFs, the situation is quite different as we can see from Figures 13 and 14. In the first place, it is not surprising that the relative share of the corporate sector increases significantly as opposed to the financial sector; secondly, the exposure to the domestic sector is much higher in comparison to the securities market. The effects of the 2007-2009 financial crises are quite evident for both sub-sectors, as the decrease in outstanding amounts was mainly due to strong devaluations of quoted shares. However, while for IC there was some partial recovery in the subsequent years, justified both by new investments and revaluations, for PF the 2008 levels remained barely unchanged (even taking into account the 2010 effect related to the transfer of three funds), which could be an indication of more risk-aversion stance in the management of pension funds, shifting their investments towards less risky assets, namely debt securities, as we saw above.

***Figure 13** – IC shares' holdings, by counterpart*
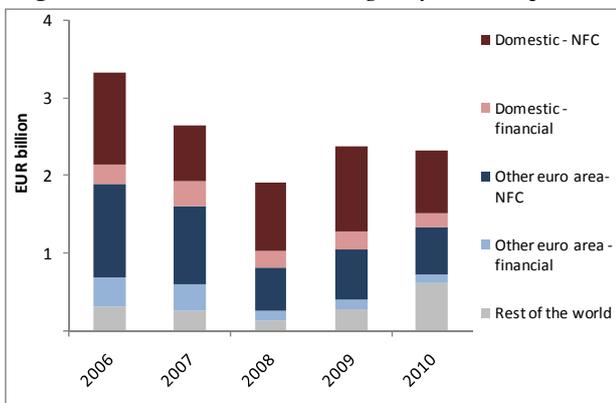
***Figure 14** – PF shares' holdings, by counterpart*

***Figure 15** – IC and PF MFs, by area – 2010*
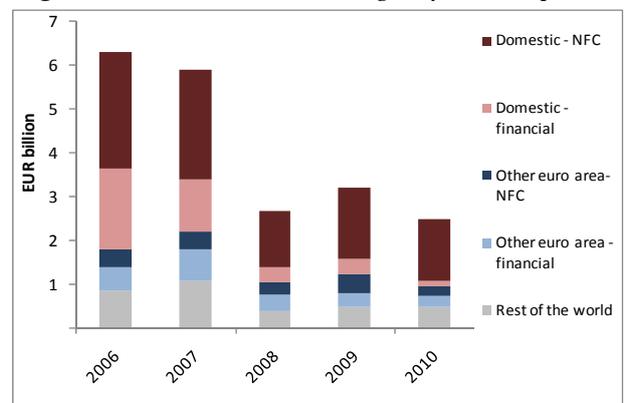
Finally, regarding MFs, which represent circa ¼ of the PF portfolio, we can see in Figure 15 that the main counterparts are mostly residents in other euro area countries amounting to 2.4 EUR billion at end-2010 which corresponds to 54%. This results nonetheless from a shift between other euro area and domestic MFs, since that the relative weight of the latter increased from 24% in 2006 to 41% at end-2010. The same trend was registered in the case of IC: at the end of 2010, domestic MF represented 63% (42% in 2006) and euro area MF 33% (53% in 2006).

From the perspective of the MF domestic sector, holdings of ICPF increased from 6.8% in 2006 to 18.8% in

2010 in terms of total issues, thus illustrating further the relevance of this sector as a key player in the financial markets.

4. Future challenges

In this section we elaborate on the main challenges statisticians are faced with concerning ICPF statistics. Gouveia and Quevedo (2010) and the ECB report on Financial Integration in Europe (2011) provide a good overview. These issues deserve a careful assessment and, although intertwining, they are of a different nature. On the one hand, we have changes in the activities and regulatory regimes of IC and PF, and, on the other hand, we have policy-makers and analysts demanding for more complete, detailed and timely data. It is up to the statistical community to find the right balance.

We start with the **current developments in the industry and the forthcoming regulatory changes**. Included here we have, e.g., higher cross-border activities, pension reforms and new solvency requirements for insurance corporations and pension funds. According to the ECB report on Financial Integration in Europe (2011), it has been observed some movements towards a higher centralised pan-European management concerning IC, driven by efficiency gains and competitive advantages. Moreover, the fact that a company can be registered in any member state of the European Union,[6] and that the registration can be easily transferred to another Member-State, poses additional challenges for data collection. An important recent development which may affect the pension funds sector is that many European countries have introduced or started to introduce reforms aimed at safeguarding the sustainability of their retirement income systems. These reforms include steps to strengthen the link between pension benefits and contributions; to extend the contribution period to qualify for a final pension; and to diversify sources of retirement provision so that private pension funds play a larger role in securing adequate retirement income. With regard to the envisaged review of the insurance corporation's requirements in compliance with Solvency II Directive, one of the primary aims of the Directive is to produce more consistent solvency standards that will protect consumers across all markets. For this purpose, the Solvency II regime is intended to achieve a high degree of convergence in regulatory standards across Europe. For this purpose, harmonised reporting templates[7] are being developed at the European economic area level.[8] Finally, with regard to solvency of pension funds, the IORP[9] Directive's minimum prudential requirements include solvency rules for defined benefit schemes. These solvency rules are currently the same as those that apply to life insurance undertakings. The suitability of Solvency II for pension funds needs to be considered in a rigorous impact assessment, examining notably the influence on price and availability of pension products.

All the aspects described above have necessarily to be taken into account by compilers when changing their compilation systems in order to meet **users' requirements**, such as, i) balance sheets by type of business (non-life; life – unit-linked and non-unit-linked; reinsurance; defined benefit pensions and defined contribution pensions); ii) further improvement of timeliness; iii) ESA2010. The new ESA will entry into force in 2014 and it will include two specific chapters dedicated to the issue of insurance, social insurance and pensions, reflecting its increasing importance for the society. In terms of financial instruments, a more detailed breakdown is introduced, namely in terms of a) non-life insurance technical reserves (F.61); b) life

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[6] Council Regulation (EC) No 2157/2001 of 8 October 2001 on the Statute for a European company (SE).

[7] The Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) is in the process of developing harmonised reporting templates for supervisory purposes in the case of insurance corporations, for that purpose the ECB is co-operating closely with the aim to reduce reporting burden to reporting agents.

[8] At present, the contracting parties to the EEA Agreement are the European Union and its 27 members plus Iceland, Liechtenstein and Norway.

[9] IROP – Institutions for Occupational Retirement Provisions.

insurance and annuity entitlements; (F.62) c) pension entitlements (F.63); d) claims of pension funds on pension managers (F64); e) entitlements to non-pension benefits (F65); and f) provisions for calls under standardised guarantees (F.66). More importantly, there will be a new supplementary table on liabilities with pension schemes in social security that tackles the information gap in national accounts for specific pension schemes such as government unfunded defined benefit schemes with government as the pension manager and social security pension schemes. Considerable work has already been done in this respect within the framework of the Eurostat/ECB Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government. One of the main objectives of the Task Force relates to modelling and estimating pension scheme data, and investigating possible methodological issues that may arise. Within this context, benchmark calculations have been carried out by the Research Centre for Generational Contracts of Freiburg University (RCG) for 19 EU member states. On the basis of this experience the RCG developed a model to calculate pension entitlements for the social security and the government employee pension scheme in Portugal upon request of *Banco de Portugal* that will be used as a benchmark to the results of other Portuguese pension models that may eventually be developed in the future.

To conclude, despite the significant improvements achieved so far concerning ICPF data, there is still a long way to run. In this respect the alignment of statistical and supervisory reporting is of utmost importance. *Banco de Portugal* has devoted a special attention to this financial subsector, developing a statistical framework that meets the European System of Central Banks' statistical standards for ICPF, using available supervisory data.

Assessing the dynamics of ICPF assets and liabilities, in a timely and integrated way, will become more and more relevant in a context where an ageing population coexists with inadequate social security schemes driving families to look for alternatives to complement their income after retirement. ICPF will keep a pivotal role for the assets they hold and manage, which makes them major players as institutional investors in the financial markets, and, therefore, their behaviour should be monitored both for financial stability and macro-prudential analysis' purposes. Our job as statisticians is to provide the best quality data for this endeavour.

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