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Control and Management of Pension Funds in an Insurance Firm

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Resumo

O presente relatório surge no âmbito da conclusão do Mestrado em Finanças e decorre da realização de um estágio curricular na empresa Real Vida Seguros, S.A, entre fevereiro e junho de 2022. No decurso da sua atividade, a empresa comercializa serviços de seguros, maioritariamente seguros de vida e saúde. No entanto, apresenta também outra vertente de atividade, ligada ao investimento em carteiras e gestão de fundos de pensões, de modo a realizar uma proteção e minimização dos riscos assumidos pelos particulares e instituições que investem nestes produtos financeiros. Assim, a empresa tem como objetivo rentabilizar os ativos que possui através do investimento nos mercados financeiros, procurando níveis de rentabilidade dos fundos de pensões que lhe permitam responder às responsabilidades futuras. Compete assim à Real Vida Seguros, S.A. assegurar uma excelência na gestão de fundos alheios.

Deste modo, face a estas responsabilidades futuras características dos fundos de pensões, este relatório pretende denotar a estratégia utilizada pela empresa na gestão desses fundos, tendo por base o processo de decisão de compra e venda dos ativos que compõem as carteiras dos mesmos fundos. Os objetivos passam por perceber o pensamento dos gestores dos fundos nesses momentos de decisão, de modo a entender qual a análise dos ativos realizada e a estratégia macroeconómica definida. O relatório incluirá ainda uma abordagem às atividades realizadas pela equipa de controlo destes fundos, de modo a denotar a importância deste controlo nas decisões tomadas.

Neste sentido, o relatório irá focar-se primeiramente no enquadramento teórico do setor dos seguros, especificamente no setor dos fundos de pensões; de seguida, irá apresentar uma exaustiva descrição do processo de gestão dos fundos, por parte da empresa, assim como as atividades de controlo realizadas; por último, irá apresentar uma conclusão geral da experiência profissional, assim como algumas possíveis melhorias a implementar.

Abstract

This report comes under the scope of the conclusion of the Master in Finance and is the result of an curricular internship in the firm Real Vida Seguros, S.A, from February until June of 2021. In the course of its activity, the company commercializes insurance services, more specifically life and health insurance. However, the firm is also connected to other sector of activity, linked to pension funds management, in order to protect and minimize the risks assumed by the individuals and organizations that invest in these financial products. As so, the firm has the objective of making its assets profitable, through the investment in the financial markets, seeking levels of profitability that allow it to meet future liabilities. Therefore, it is incumbent upon Real Vida Seguros, S.A. to ensure excellence in the management of third-party funds.

Thus, this report intends to denote the strategy used by the firm in the management of these funds, based on the purchasing or selling decision process of the assets that constitute the portfolios of the funds managed. The main objectives are to understand the line of thinking of fund managers, to comprehend the asset analysis carried out and the macroeconomic strategy defined by them, with the support of the firm's administration. The internship report will also include an approach to the activities carried out by the control team of the funds, to denote the importance of this control in the decisions taken.

Therefore, the report will focus primarily on the theoretical framework of the insurance sector, specifically on the pension funds component; then, it will present an exhaustive description of the fund management process, as well as the control activities carried out; finally, it will be presented the general conclusions of this professional experience and some possible improvements to be implemented.

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1. Introduction

The internship reported was written with the objective of complete the Master in Finance and was based on the curricular internship carried out at the Portuguese insurance firm Real Vida Seguros, S.A., for a period of approximately four months, between February and June of 2021. This firm has as its main activity the commercialization of insurance services, being the major focus on the life insurance sector. In the year of 2013, Real Vida Seguros was acquired by the financial group Patris Investimento, being included in this group, that is specialized in the investments, asset management and brokerage segments.

Consequently, after the acquisition, the firm reinforced its presence in the portfolio and pension fund management sectors, utilizing the first one as a way of obtaining the necessary liquidity to fulfill the future responsibilities, that are a characteristic of the insurance activity of Real Vida Seguros. Also, the firm started to manage portfolios and fund of other organizations. In fact, a life insurance and a pension fund present the same characteristic of being a liability to the firm, that must be paid in the future, mainly in medium or long term, being essential for the firm to invest its assets, in order to make enough profit to answer these future responsibilities. As so, Real Vida Seguros, S.A. is responsible for managing other people's assets and savings, obligating the firm to guarantee a management of excellence, fulfilling the legal requirements and the management policies defined in internal multidisciplinary meetings.

Thereby, facing the risk of the pension fund management, and knowing that the main objective of a firm is to achieve profits in its businesses, it is important to understand the strategy defined by Real Vida Seguros, S.A. in the moments of deciding about buying or selling an asset of a certain pension fund, to be able to better acknowledge the analysis made to those assets, as much as the existent control of the traders' activity. Furthermore, it is also important to know the procedures implemented in the firm to manage the risks associated with the pension fund management activity, mainly focused on the pension fund management, studying the coverage carried out with financial instruments, given the current situation of the financial markets, characterized by the high volatility in the asset prices.

The curricular internship falls within the Asset Management area, ore specifically in the management and control of pension funds, as I was integrated in the Backoffice team, that is accountable for controlling the activity of the traders responsible for the pension fund management. Subsequently, I also had direct contact with those managers and the rest of the pension fund management team, following the activities carried out by them, in order to understand the reasoning behind each decision taken. As so, the main objectives of the internship were to acquire a deep knowledge about the operations related with the pension fund control, to be able to better understand the importance of those tasks in the moment of decision, as well as obtain a complete learning about the decision-making process of the firm, in the moment of buying or selling a security that is present in the portfolio of a pension fund.

The activities performed during the internship were thought to meet these proposed objectives, consisting in activities related with the processes of controlling and managing the pension funds in the portfolio of the firm. In the first aspect, the tasks involved: register the operation conducted by the traders in the support software used by the firm, comparing the information provided by the traders with the one sent by the brokerage institution; processing of daily information about the pension fund portfolios, such as calculating the value of each funds' participation units, taking in account the total value of the portfolios at the end of the day, reporting information to the competent authorities, such as Associação Portuguesa de Fundos de Investimento, Pensões e Patrimónios/Portuguese Association of Pension, Investment Funds and Patrimony (APFIPP), as well as carrying out some tests to control the quality of information and management of pension funds. Regarding the activities of the fund management team, I was asked to support in activities of analysis of historical financial ratios of assets, through technical analysis, as well as analyze the current global macroeconomic situation, giving my opinion on the perspectives on the future of the world economy and the future behavior of the prices of the financial assets analyzed by the team. Accordingly, this report will have as the base of knowledge these activities developed during the internship, as much as the knowledge acquired through the interaction with the employees of Real Vida Seguros, S.A.

This internship report will approach these two different sides of the firm's activity related with its pension funds: on one hand, I will learn and explain how it is done the control of the funds, what information they consider as being important and the day-to-day activities that they perform; on the other hand, I will also explain what is the process of decision related with the movements of securities in and out of those funds, how the managers think and decide how to sell or buy a security and in what way the information given by the control team is essential in that process.

The main motivation for chosing this topic was that, in my opinion, this topic is very interesting, important, and pertinent because, although there are many authors that study the performance of pension funds in a certain time period and geography, or even propose new strategies to manage pension funds, I think that I can give my contribute, not only to evaluate the performance, but also to explain how the managers decide, what they think in the moment of taking a decision related with these funds. So, I think I can bring some information that, without the direct contact with the managers, it is difficult to obtain, as other authors and studies do not have access to information that is private to the company.

The report will be focused on one main research question: how does a firm control and manage its pension funds? Of course, the work presented will be with the evidence of just one firm, as many others can have different strategies. However, as I believe that to properly answer that question, I must understand other topics related with pension funds, I will support my work with some other questions, as: understand the importance of pension funds in the activity of insurance firms; know how the asset management team control the performance of those funds; realize how managers decide in the moment of buying or selling a security and what information they use in those moments; lastly, point the regulatory institutions that control those funds and the rules that managers must follow.

In order to achieve the objective of this report, it will initially present a theoretical framework that addresses the insurance sector, that is necessary to understand the activity performed by the company, as well as a review of the existent literature on pension funds and their management. Thus, the Chapter 2 corresponds to this theoretical approach of fundamental concepts for the report. Chapter 3 presents the history of the firm where the internship was made, as well as its activity related with the management of pension funds; Chapter 4 focuses on explaining the control and decision processes in the management of those funds; Finally the main conclusions of the work carried out and the professional experience are presented, as well as some suggestions of possible improvements to be implemented in the firm.

2. Literature Review

In order to establish a theoretical background, fundamental to understand this internship report, it must be summarized the information present in the literature, related with the most important topics of the research question, proposed to be studied. As so, the literature review will start by explaining the basic concepts of the insurance market that are completely essential to understand the internship report, as much as some definitions of asset and liability management. On this part it will also be showed some evidence of the importance of the insurance market in the financial markets, as, for instance, in the reduction of the systematic risk. Then, it will focus more on the existent literature related with pension funds, its importance and growth in the country where the internship was made (Portugal) and in the world, and the institutions responsible for supervising the activity of the firms that manage those funds. Lastly, it is discussed some strategies of management of pension funds, existent in the literature, as much as some bias that pension funds managers may present.

2.1 Introduction to the insurance market

Focusing on the insurance market, it is important to state some definitions of basic concepts that are essential to understand the activity of insurance firms. First, more important than the size of the insurance market, we may acknowledge that this activity is different than any other economic activity, as it has interventive characteristics in fields that are important for the society, as people's and goods protection or the management of the wealth of savers. Also, the insurance market has a role of incentive to economic growth, as it helps the financing of governments and firms in the long run, helping to stabilize the economy and the wellbeing of the society as an all (APS, 2021).

As so, the insurance activity has the main objective of reducing the risk exposure of individuals or institutions, that face situations of uncertainty about the future, and acknowledging that risk, behave like rational agents, wanting to protect themselves against it, reducing the probability of occurring a bad scenario or decreasing the consequences of that risk. The assumption of this risk is different from person to person, depending on personal beliefs and the level of risk adversity of the individual. If the financial agent decides to not take an insurance contract, he is fully exposed to the risk.

However, to be possible to transfer the risk is necessary the existence of an entity (the insurance firm) that agrees to take all the consequences that can occur from an uncertain future event. Hence, the uncertainty and risk are transferred to the insurance firm, as the client is sure that if the worst scenario happens, will not face any consequences. According to the Autoridade de Supervisão de Seguros e Fundos de Pensões / Supervision Authority of Insurance and Pension Funds (ASF), an insurance contract states that the insurance provider assures to deal with the risk of someone else, paying indemnifications in case of occurrence of the risky event. The events that the insurance firm assumes its risk are stated in the insurance contract, as much as the amount that the client must pay to the insurance firm (the insurance prize). Some of the insurance contracts are legally required and others are optional, as individuals and institutions are free to decide if they want to engage an insurance contract to protect themselves against the risk.

In summary, the goal of an insurance firm is to eliminate or decrease the negative impact of a certain event, whose certainty is unknown for the individual covering that risk. Those events are a consequence of the interaction and the life in a society, not necessarily resulting from a dangerous situation.

Another relevant aspect that should be mentioned is the difference between the life insurance and the non-life insurance sectors, because these two sectors have different characteristics, as the life insurance sector deals with insurance against events that implicate the individual himself (as the event of death of the individual), while the non-life insurance is related with the insurance of goods that belong to the individual. An insurance firm is considered a life insurance or non-life insurance firm if only dispose life insurance products or non-life insurance services, respectively. If the company has the two types of services, it will be characterized as a mixed insurance firm, and it is obligated by law to have a separate management and accounting of the two activities (ASF, 2019). However, according to the legislation in Portugal, if the firm is a mixed insurance company, the management of the different activities sectors must be done separately as well, including the accounting of these activities, in order to not harm the interests of the beneficiaries of the insurance services (Decreto-Lei n.º 94-B/98 art.º 9). According to the same legislation, the life insurance sector englobes life and death insurance, capital insurance and Retirement Savings Plans, while the non-life insurance activities are related with work accidents, car insurance and others.

The insurance market has the characteristic that its firms may need to answer to responsibilities in the future, in the occurrence of the events insured by the clients. As so, it is crucial to have a team responsible for the asset and liability management, so the company has enough assets in the moment of payment of its liabilities. This Asset and Liability Management (ALM) can be defined as the responsible management of assets and liabilities of the insurance contracts of the firm and is essential to manage the risk exposure that insurance firms face.

2.2 Growth and importance of the insurance market

As discussed earlier, the insurance market has a social importance that is higher than its impact on the economy or the financial system. However, it is important to state how the market has evolved through the years, its recent growth and how this evolution can affect the financial system and the economic situation.

So, according to the last available data from the APS (2021), it is notorious that, as the Portuguese economy as an all, the insurance market also suffered from the impact of the Covid-19 pandemic situation, with the decrease of the production in the market. As we can see in Table 1, the reduction of the total insurance production was around 19% in 2020, caused by the huge fall in the production of the life insurance sector (around 50%). Furthermore, in the same year, the total amount of production of life insurance was around 4559 million euros, when the non-life insurance sector presented an amount of 5364 million euros, being the first year where this last sector had an higher amount of production when compared to the first one.

According to the same document, the Portuguese market represent only 1.3% of the

Evolution of the Insurance Market

				Percentual Change		Absolute Change	
	2018	2019	2020	2019	2020	2019	2020
Life insurance sector	8123	6993	4559	13.91%	-34.81%	-1130	-2434
Non-life insurance sector	4827	5209	5364	7.91%	2.98%	382	155
Total production	**12950**	**12202**	**9923**	**-5.78%**	**-18.68%**	**-748**	**-2279**

Table 1 - Evolution of Insurance Market. Data from APS (2019)

European insurance market, meaning that our country has a really small influence in Europe, opposite to France and Germany, that represent 22.4% and 20.8% respectively. The life insurance sector represents more importance than the non-life insurance sector, different than what we can see in Portugal.

Furthermore, there is literature that state the relationship between the insurance sector and the economic growth. According to Ege (2011), based on data of twenty nine developed countries, between 1999 and 2008, there is evidence of a positive correlation between the rise of the insurance market and the economic growth. This fact can justify the decrease of the insurance sector in the period of the Covid-19 pandemic, as the global economy fell. Also, there is evidence that focuses on the high importance that the insurance sector represents to the financial stability of the economy, as it acts as a conduit for individuals and firms to transfer risks to institutions that are better suited to take and handle them. Consequently, there are projects that, without the insurance market, would not be taken. Traditionally, insurance firms have a lower systemic risk than banks, what led to the prudential rules to be less extensive, compared to those applied to the banking sector. However, this view does not take into account the growing interaction of the insurance industry with the financial markets and financial intermediaries, that, from a financial stability perspective, has a huge importance. Lastly, Martin & Pankoke (2014) show that traditional insurance activity in the life, non-life and reinsurance sectors do not contribute to systemic risk or to increase the vulnerability of the insurer. However, some less traditional activities (as CDS underwriting) can increase it, making life insurers more vulnerable than non-life insurers, as a consequence of the higher leverage they present.

2.3. Pension funds

After the introduction to the insurance market, it is now important to understand the existent literature related with pension funds, as it is the main topic of my internship report. First, I will define what is a pension fund and its main characteristics, switching then to discuss the evolution and growth of this market. Then, I will analyze the literature to find evidence related with the management of those funds, and some characteristics of the managers in the moment of decision, in order to compare that evidence with the behavior of the managers of Real Vida Seguros.

First, according to APFIPP, the Portuguese association of investment and pension funds (APFIPP, 2022), a pension plan represent contracts that state the right to receive a periodic yield, every time that an event established in the contract happens, as, for instance, the retirement of the individual. As so, when those events happen, the pension fund is obligated to pay that yield to the individual or institution. These plans defined in the contract can be classified into two different categories, according to the existence of a definition of the benefit of that plan, or not. The main difference is that the defined benefit plans are managed in order to have an amount of capital that is enough to pay that benefit, having floating contributions, while the ones that do not have an established benefit in the contract, the contributions are defined, and the benefit will vary according to the total amount of contributions and its capitalization. Also, there are the mixed plan that have characteristics of both plans defined earlier.

As so, associated to these pension plans, there are pension funds that, according to the APFIPP, represent autonomous property and receive periodic funds, that are established in the pension fund contract. These funds must be used only with the purpose of funding the pension plans, as the goal of the management organizations is then to invest them, with the objective of having profits, to be able to face the future responsibilities. Accordingly, the management of these funds must be careful to avoid unnecessary risk and control the necessary sources of risk, as it is present in the financial market investments. In the pension funds contracts, there are usually three parts: the managing institutions, the associates that contribute to the fund with periodic payments and the beneficiaries that will enjoy the pension in the future.

There are two main classifications when it is discussed the topic of pension funds, as they can be considered to be open or closed, according to the characteristics presented. The main difference relies in the connection between the beneficiaries of the fund: the fund is considered as being closed if there is a laboral or social connection between the beneficiaries, while if this connection does not exist the fund is considered to be an open fund. Also, to be an open fund, the management of the fund must only concern to the managing entity. In the case of closed pension funds, there is a higher degree of freedom to adjust the fund to the particular needs of the beneficiaries, as the management of the fund will be in line with their objective. The total value of the pension funds is divided by the number of existent participation units, that can be acquired by the beneficiaries.

As we can see in Table 2, in the end of 2021, there were in the Portuguese market 240 pension funds, being 133 closed funds and 107 open funds. As so, the close funds represented 55.4% of the total funds and the open funds 44.7%. Compared to 2020, there was an increase of the number of pension funds, from 234 in 2020 to 240 in 2021, consequence of the increase of the number of open funds, as went from 99 to 107, contrasting with the decrease of one closed fund. In terms of value under management, the data shows an huge difference between closed and open funds, as the first ones represent around 85.2% of the total money under pension fund's management, while the open fund sector only has a weight of 14.8% of the total amount. Comparing these amounts to the ones of 2020, it can be showed an increase of around

2.7% of the amount englobed in closed pension funds, while the open funds had an increase of almost 17.3%, giving the perspective that, although there is an huge discrepancy between the amount of money under management in the different types of pension funds, the ones that are considered as open funds are growing at a higher rate, what can lead to a decrease of this difference between the two.

Size of the Pension Fund Market

	2021	
	Number of pension funds	**Value of pension funds in € (thousands)**
Closed funds	133	20 548 297 €
Open funds	107	3 576 567 €
Total	**240**	**24 124 864 €**

Table 2 – Size of the Pension Fund Market. Data from ASF (2020)

The pension funds should be managed by entities with capabilities of assuring a high-quality management of the fund, that can be institutions only focused on the management of pension funds, or can be insurance firms, that are legally able to explore this activity. The firm responsible for the management of the pension funds must identify a depositary, meaning a national credit institution where the assets of the funds are deposited. Pension funds have associates, that are the agents responsible for financing the fund with contributions, usually firms that have the goal of giving its employees a pension in their retirement. If the associate is the beneficiary of the fund, then it is an open fund, otherwise it is a close pension fund (APFIPP, 2022). The extinction of the pension funds can happen, authorized by the regulatory authority, in three main cases: the goal of the fund is already accomplished, there are no beneficiaries nor participants of the fund or the associate doesn't pay the minimum fee accorded in the contract (Instituto de Seguros de Portugal, 2011).

The management of pension funds implicates high levels of responsibility, consequently causing the need of having regulators and supervisors of the activity of the management team. This regulation is carried by ASF that supervises the pension funds and the firms responsible for their management, with the help of daily information sent by the management entities and inspections to the offices of those entities. The commercialization of the pension fund contracts is also regulated by the Comissão do Mercado de Valores Mobiliários / Securities Market

Commission (CMVM). This regulation must be carefully chosen because, as Davis (2000) states, the regulation of life insurance activities and pension funds must not be identical. Also, there is evidence that personal rules are superior to quantitative restrictions for pension funds, although, in certain time periods, these prudent personal rules may also be desirable to the life insurance market, particularly in competitive life sectors in developed countries.

According to the last data from ASF (2020), available in the institution's website, there were, in 2020, eighteen entities that are responsible for managing pension funds, being 8 of them insurance firms and the other 10 firms that are specialized in the management of portfolios and funds. The insurance firms represent around 16.8% of the market share, while the specialized firms represent a share of around 83.2% of the market, what shows a clear advantage for this type of firms, that is natural as insurance firms do not approach the management of pension funds as their primary activity. In the final of 2020, Real Vida Seguros was the 9th firm in the Portuguese ranking, managing 16 funds, with the value of 221 million of euros, corresponding to a market share of 1%.

2.4 Pension fund management

At this point of the literature review, it is important to analyze the existent literature related with the management of pension funds, with the aim of comparing those studies with the process that Real Vida Seguros, S.A. managers defined for the pension funds of the firm.

As discussed earlier, the management of a pension fund is a process that should be done with the higher degree of responsibility, as the pension that will be paid to the retired person will depend on the accumulated value of the assets that constitute the fund, at the time of retirement. As so, the value of the fund and the amount of pension received are explicitly correlated and, although the annuitization is defined in the pension fund contract and there is some risk sharing across generations, the benefit scheme is only able to pay the pension equal to its proportion of the value of the total assets of the fund. Furthermore, the value of the pension fund's assets is going to increase over time, because of the contributions and its returns, being this last part dependent on the asset allocation and portfolio decisions of the fund managers. As the returns of the fund are compounded over time, a small change in those returns can lead to huge changes in the value of the pension fund at the time of the retirement of the beneficiary (Tonks, 2005).

2.4.1. Strategies and Biases on the Management of Pension Funds

Consequently, as the managers hold an immense responsibility managing the funds, the report must present some empirical evidence related with the management and biases of those managers. First, according to Blake (1998), the different types of pension funds can be compared to different combinations of call and put options on the underlying assets of the fund, with the exercise price being related with the value of its liabilities. If this rational is applied, the value of the option is dependent on the size and volatility of the pension fund surplus, that leads to the managers wanting to manage this surplus and the surplus risk using ALM techniques, as it is discussed later in this chapter of the literature review.

Although, following a study conducted by Tonks (2005), the evidence shows that, on average, the performance of the fund managers doesn't add much value to the fund compared to a passive strategy of investment, there are still managers that perform well, and other that perform poorly. So, find the reasons of the poor performance of some of them is an important issue in this area.

The first perspective of the origin of the problem is presented by Davis (2005) and focuses on the existence of home bias in the decision-making process of the managers. As so, with evidence from a wide range of Organization for Economic Co-operation and Development (OECD) countries, the pension systems are well place to benefit from the fact that international investment improves the risk-return relationship. However, pension fund managers seem to have low proportions of foreign assets in their portfolios, even lower than the restrictions imposed by law, that are already too restrictive, compared to what would be suggested by the market forces. This idea of home bias is corroborated to the Portuguese market, by Carla & Lopes (2015), that studied the existence of that bias in the Portuguese Planos Poupança Reforma (PPR) pension funds.

The second bias is that managers tend to oversell stocks that performed poorly, in order to impress, as they seem to be evaluated by their individual stock selection, rather than the aggregate portfolio performance (Lakonishok et al. 1991). This bias can hurt the performance of the fund because, as Eshraghi (2011) states, in his study related with the impact of overconfidence in mutual funds, the overconfidence of the managers tends to decrease the fund returns, evidence that is persistent across different investment styles. Although this study is not related with pension funds directly, the similarities between pension and mutual funds in the management strategies lead us to think that the consequences of the overconfidence would be similar.

Another aspect that should be mentioned is the effects of manager replacement in the performance of the fund. There is empirical evidence that the change in the manager of a fund that is having a good performance, before that change, suffers a deterioration after the replacement, as the new manager spends about one year to achieve good results. Opposite to this idea, the same study finds that, in funds without any change, managers with longer contract underperform (Alda, 2016). As so, the literature shows that the solution of the problems of pension fund management is not related with the substitution of the manager. Stewart & Yermo (2008) states that, instead, should be held in a more balanced representation of stakeholders in the governing body of the fund, higher levels of expertise and implementation of codes of conduct because of the conflict of interests.

2.4.2. Assets and Liabilities Management in Pension Funds

As stated earlier in the internship report, the pension funds are characterized by the need to respond to futures responsibilities, as the assets of the fund must be used to cover up those obligations. So, in the management of these funds, the managers must have in mind the process of assets and liabilities management (ALM), in order to be sure that the fund includes the necessary assets to not fail the need of the beneficiaries of the pensions. Because, usually, these funds present long-term responsibilities, the portfolio of investment of the funds are also focused on long-term investments, with long-term assets.

The managers of pension funds must, then, be careful with the solvency capacity of the fund, meaning its capacity of paying the obligation with the assets available in the portfolio. In order to control this situation, the managers should be looking to the ratio between the assets and liabilities related with each specific fund, with the focused being in the obligation of the value of the assets to be higher than the value of the liabilities, at all the time. According to the data available in last ASF report, the solvency margin of the pension funds increased in 9.2%, as the majority of the Portuguese market presented levels of the funding ratio higher than 100%, demanded by the Portuguese Central Bank.

According to Boender et al. (2008), the ALM techniques can also help identifying the risks that pension funds are exposed to, and the consequent impact of those risks in the value of the fund. The main goal of the manager is to obtain the higher rate of return possible in the investments made, but this seek for returns must respect the risk management strategies and procedures, that usually are supported in ALM techniques, in order to ensure that the pension fund management is being efficient and in line with the risk exposure desired by the managing institution and the beneficiaries. As so, the impact of the management decisions is not restricted to the managing firm, as the beneficiaries are also hurt by the inappropriate management.

This idea is corroborated by the study developed by Bogentoft et al.(2001) that focused on the application of ALM techniques on the management of pension funds and concluded that the asset management must be conducted with the rule of the value of those assets being higher than the value of the liabilities that the fund has.

There are also some studies that try to understand the importance of the ALM techniques in insurance firms, with the goal of understanding its importance in this sector. The evidence presented in Europe and Japan, countries that are responsible for more than 65% of the insurance sector in the world, states that most of the firms has a formal ALM policy implemented, as well as teams that are only responsible for this activity (Smink & van der Meer, 1997). This was corroborated by a study done by the ASF, in the line of the previous one, to understand the degree of implementation of ALM techniques in Portuguese insurance firms, being the conclusions similar to the one presented for the Europe as an all. In fact, the study shows that more than two thirds of the insurance firms in Portugal have ALM techniques implemented, with a higher relevance in the life insurance sector, as it presents more risks than the non-life insurance activity. This information confirms that ALM is important in analyzing the profitability, liquidity, and risks of the investments, being necessary to implement a committee responsible for this activity, in order to achieve excellence in the pension fund management.

2.4.3. Asset Allocation in Pension Funds

Other important aspect to understand in the pension fund management is the asset allocation in the investment portfolios, as the managers have a wide range of assets they can choose from. Usually, because of the lower degree of risk presented, bonds represent the majority of the pension funds´ assets, as it may vary according with the characteristics defined in the contract. The managers must respect and follow the asset allocation specified in the contract, that results from the goals of the beneficiaries, meaning that if they want more risk, seeking for higher returns, they can allow managers to conduct a strategy based on a higher allocation on the equity market, for instance.

The asset allocation decision has presented an high importance in the returns achieved by pension funds, as much as the security selection and market timing. The impact of these variants in the returns is studied by Hensel et al. (1991), that compared the performance of the pension fund portfolio with the one presented by an hypothetical portfolio, that didn't include a particular asset allocation decision, that was made in the real portfolio. However, those authors found difficulties in defining the alternative portfolio, as in the case of the asset allocation, it is not obvious, because if the zero-risk asset is the alternative, then the asset allocation is almost the single decision that impact the return of the fund. However, when a well-diversified portfolio is the alternative, the asset allocation decision can have almost the same impact as any other decision, for instance, the security selection. The study shows that market timing and security selection reduced the return of the fund, while specific asset allocation policies increased it, although this impact is very small.

In the same line of thought, Blake et al. (1999) studied the impact of the asset allocation decisions in the performance, with the goal of contradicting the older studies that presented this decisions as the most important ones, like Bogle (1994). Using data from 300 pension funds from the U.K., the study shows that the strategy of asset allocation is responsible for the majority of the variations in the pension fund portfolio returns, while the decisions of market timing and asset selection seem to have a smaller impact.

Furthermore, although these authors tried to show that the importance of this topic was not as huge as stated in earlier studies, the fact is that this topic represents still represents a high importance. Comprehensively, other authors tried to study the dynamics of asset allocation and the relationship between the asset allocation strategy and the future returns of the funds, in order to establish a correlation between the asset allocation strategy and the return of the fund. The evidence shows that, although there is a relationship between the expected rate of return of the fund and the weight of equity in the portfolio, this connection is weak. In terms of correlation between the future returns of the fund and the expected rate of return and the percentage of equity in the portfolio, only the second variable is shown to be correlated with the future returns (Amir & Benartzi, 1998).

When the asset allocation strategy is discussed, it is important to remind that, usually, this strategy is influenced by the restrictions defined in the pension fund contract. As so, the managers are not completely free to choose the asset allocation as they want, as it is normal to have maximum weights for each asset class. In the same way, these weights vary from fund to fund, as consequence of the objectives of the future beneficiaries of the fund. One of the variants that affect these terms is the age of the future beneficiaries, as older individuals are usually more risk averse, leading to a lower exposure of the pension portfolio to the equity market. In fact, an increase of 1 year in the average age of the active participants of the fund leads to a reduction of around 0.5 percentage points in the exposure to equity. Also, this effect is stronger in the larger funds and the age factor is stronger in the active participants of the fund when compared to all the participants, what makes sense as retirees do not possess any human capital (Bikker et al. 2012).

Following the importance of this topic, the ASF conducts an analysis of the asset allocation in the Portuguese pension funds every financial quarter. According to the last data available, present in the Figure 1, almost half of the assets of the funds were bonds (49%), with a higher influence of government bonds, rather than private ones. Although, the participation in investment funds was the asset class with higher representativity in the pension funds' portfolios, with a percentage of 36% of the total value of the funds. It is also shown that the weight of firm equity is very low, similar to the percentage of liquidity of the funds, even smaller than the weight of real estate investments.

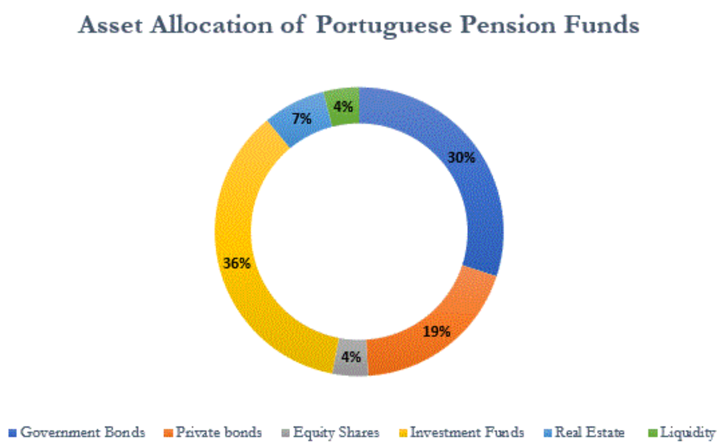

Figure 1 - Asset Allocation in Portuguese Pension Funds. Data from AFS (2021)

3. Real Vida Seguros, S.A.

In this third chapter of the internship report, it is presented the history of the firm where the internship occurred, as well as the explanation of its activity and the pension funds managed by the firm.

3.1. History of the Company

In order to better understand the activity of management of pension funds by Real Vida Seguros, S.A., is mandatory to present its history and the path that was followed until reach the patamar of being able to perform this activity.

The history of the firm starts at 1988, as a group of shareholders from the region of Porto, following a project initiated in the final of that year, founded the firm named Real Seguros, S.A. This firm was based in Porto and had the goal of exploring the insurance sector, with the focus on the non-life insurance one.

After one year from the start of its activities, the firm was already established in the Portuguese insurance market, leading to the will to start to offer insurance services of the life sector, diversifying its activity. As so, it was created the firm Real Vida Seguros, S.A. that was fully owned by Real Seguros, S.A. and had the goal of increasing the position of the last one in the Portuguese insurance market.

However, the name of the firm still suffered more changes in its history. In 1999, as the Portuguese bank BPN – Banco Português de Negócios - bought the firm, the names passed to be BPN Seguros de Vida, being changed again 4 years latter to Real Vida Seguros, S.A. in order to strongly establish the brand in the Portuguese market and achieve a stronger image.

With the world financial crisis of 2008, the firm was struggling to keep its business open, it was started a nationalization of the firm, making the separation between the firm Real Seguros, S.A and Real Vida Seguros, S.A., as the second one was owned by BPN and, in that moment, passed to be a private firm of exclusively public capital. In September 2013, the firm was bought by the Patris Investimentos, a group of firms associated with the insurance and savings market, allowing the firm to be part of a company that was specialized in asset management, investments, and brokerage. The company was already known for being independent and having a strong financial position, but this acquisition permitted it to gain recognition in the activities of savings and investment products, reinforcing its position in these sectors.

With this objective, in December of 2016, the firm concluded the process of buying of around 96.5% of the equity and voting rights of the company Banif Pensões – Sociedade Gestora de Fundos de Pensões, S.A., as much as the full equity of Finibanco Vida, S.A. Both firms were incorporated in Real Vida Seguros, S.A. one year later, leading to an increase in the firm's market share and the value of its business, allowing it to create a more diversified asset portfolio, that presented better solvency levels and ratios. This was also the starting point for the firm to start exploring the activity of management of pension funds, as the ones that were managed by Banif Pensões transited to the firm, being its responsibility to oversee them.

Nowadays, according to the Annual Report (2021) of the firm, its main objective is to "protect and minimize the risks of individuals and institutions and monetize their patrimony trough excellent solutions, with rigor and assuring the creation of value e the sustainability of the business" (page 20). The firm assents its activity in a group of values that must follow at all the time: client satisfaction, credibility, rigor, excellence and professionalism, employee appreciation and promoting teamwork.

3.2. Real Vida Seguros' Activity

As it may seem logical from the historic path of the firm, the focus of activity of the company is related with life insurance services, providing labor and financial insurance, as well as capitalization insurance and Unit Linked insurance. The capitalization insurance is characterized for having guaranteed capital, while the Unit Linked insurance presents a higher risk and is associated with investment funds. In this last case, the capital is variable, as the value to be received by the beneficiary is dependent on the value of the participation units of those funds. Usually, these insurance instruments are designated ICAES. There is also an emphasis of the sector of pensions and pension funds management.

Accordingly, and because it is the aim of the internship report, it is crucial to present the activity of the firm in this sector of pension fund management. Hence, nowadays, the firm is responsible for managing 16 pension funds, with different characteristics, including open and closed funds.

Regarding the open funds, there are 5 funds managed by the company, that are now listed: Fundo de Pensões Real Reforma Jovem, Fundo de Pensões Real Reforma Ativa, Fundo de Pensões Real Reforma Sénior, Fundo de Pensões Real Reforma Garantida and Fundo de Pensões Real Previdência Empresas. There are other three that are not managed by the firm but are controlled by it: Fundo de Pensões Aberto Optimize Capital Pensões Ações, Fundo de Pensões Aberto Optimize Capital Pensões Equilibrado and Fundo de Pensões Aberto Optimize Capital Pensões Moderado.

The first five funds presented in Table 3 are pension funds that are property of Real Vida Seguros, S.A., while the other three are responsibility of the firm Optimize Investment Partners, being Real Vida Seguros only responsible for the control of the management of the funds. The first pension fund presented was created in 2008 and is commercialized simultaneously with the following three of the list presented before, although are focused on different needs of the beneficiaries. These four funds englobe equity shares, bonds, real estate investments and liquidity, in different wights that follow the risk profile of the beneficiaries. The one designated as Real Reforma Jovem has the target of investors that are risk lovers, meaning that the risk aversion is low, and that are comfortable with long-term investments, while the Real Reforma Ativa pension fund is destinated to individuals that have a degree of risk aversion that is not low nor high and prefer median-term investments and the Real Reforma Sénior and the Real Reforma Garantida are ideal for investor that are risk averse and have a short-term investment strategy. The Real Previdência Empresas, as the name states, was constituted to respond the needs of firms, as it differs from the other ones in the fact that are only accepted collective adherences, as it is suited for investors with the same characteristics as in the case of the pension fund Real Reforma Ativa.

The pension funds managed by Optimize are open to individual or collective adherence and propose solutions for investors with high propensity for risk, moderate risk aversion or high risk aversion, as the first one has a higher weight of equity share in the portfolio, the second one is balanced between equity and bonds and the last one is almost fully constituted by bonds.

As discussed earlier, the main goal of each fund is to finance the future responsibilities of those funds, mainly to pay pensions to the beneficiaries. Hence, it is necessary to establish profit levels that allow the firm to answer those obligations, with the control of the level of risk, without this level increase the maximum allowed at any time. According to the information given by the firm, it is possible to analyze the performance of the open funds discussed in the last year, as it is exposed in Table 3.

	YTD 2021
Real Reforma Jovem	-10.53%
Real Reforma Ativa	-11.73%
Real Reforma Sénior	-9.00%
Real Reforma Garantida	-10.01%
Real Previdência Empresas	-8.14%
Optimize Capital Pensões Ações	-13.70%
Optimize Capital Pensões Equilibrado	-11.45%
Optimize Capital Pensões Moderado	-8.90%

Table 3 - Performance of Open Pension Funds

As it clear, the performance of the pension funds has not been good in the last year, when compared to the same period of 2021, as every fund is presenting a Yield to Date negative, and only three of them are higher than -10%. In fact, with the current macroeconomic panorama in the world, the financial markets are suffering, as it is exposed in the Figure 2, that states the close value of the S&P 500, with huge falls in the price of bonds and shares, leading the value of the funds to big falls. The funds that are performing better are those that present a lower degree of risk, with less exposure to the equity market, although the bond market is also presenting a poor performance.

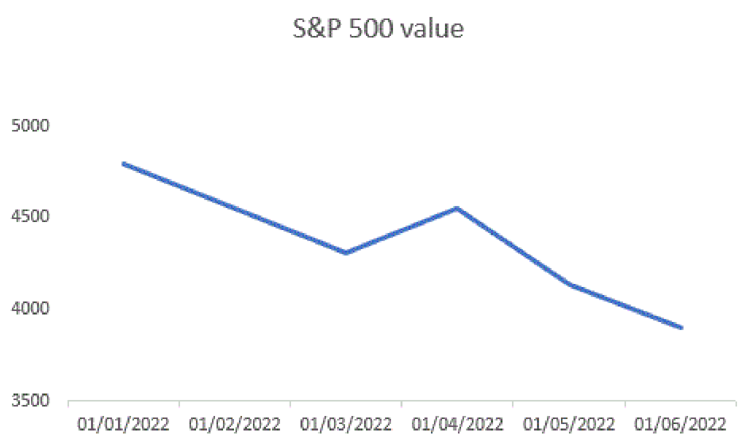

Figure 2 – S&P 500 close value. Data from Yahoo Finance (06/2021)

Regarding the closed pension funds, the firm is responsible for the management of six funds: Fundo Pensões do Papel do Prado BD, Fundo Pensões Papel do Prado CD, Fundo Pensões Banif BD, Fundo Pensões BANIF CD, Fundo Pensões Eletricidade Açores and Fundo de Pensões Real Vida. As it may be perceptible by the names of the funds, and as discussed earlier, these are funds that are composed by a group of participants that have relationships between them, being the fund adapted to their objectives, and, in this case, the beneficiaries are companies. The difference between the funds with the BD and CD in the name is that the first ones the benefit is established in the contract, while in the second case the contributions are defined. The last fund of the list was created by Real Vida Seguros itself, with the goal of paying the pensions of the employees of the firm once they finish the work contract with the firm.

As it was done with the open pension funds, we can also analyze the profitability and performance of the close ones, that are managed by Real Vida Seguros, S.A. In this case, there is a little difference in the management, because the trader responsible for the management of every other fund is not in charge of the management of the Fundo de Pensões Real Vida, although the strategy followed in identical. As so, the Yield to Date of these funds is presented in Table 4.

	YTD 2021
Fundo de Pensões do Papel do Prado BD	-7.36%
Fundo de Pensões do Papel do Prado CD	-5.13%
Fundo de Pensões Banif BD	-9.23%
Fundo de Pensões Banif CD	-11.00%
Fundo de Pensões Eletricidade Açores	-9.68%
Fundo de Pensões Real Vida	-8.64%

Table 4 - Performance of Closed Pension Funds

As it is notorious, the value of the closed pension funds is also decreasing over the last year, in the same percentages as the general of the open funds, as the strategy defined by the firm does not change much from one type of pension fund to another. The ones related with the firm Papel do Prado present the better performance between all the funds, as they are designed for investors with a very low risk seeking, with the exposure to the equity market being minimal.

4. Management of Pension Funds

After presenting the company's activity, as much as the pension funds, whose management is its responsibility, it is now time to approach the main topic of the internship report, meaning the management and control carried out by Real Vida Seguros, S.A. of the pension funds. As so, the focus will be understanding the definition of the strategy that the traders must follow and understand their thoughts in the moment of the transaction of an asset. Furthermore, the report will also address the current strategy of the traders responsible for the management of the pension funds, according to the investment strategy defined by the firm, and the analysis of the company's response to the Covid-19 pandemic situation that affected the financial markets and, consequently, the funds managed.

4.1. The Decision Moment

Therefore, the first aspect that is important to analyze in this chapter is the decision process related with the buy or sell of an asset, by the pension funds' managers, in order to understand the analysis carried out on these assets, and the particularities of the moment of choice, to acknowledge the reasoning behind the decision.

The management team that is responsible for the pension funds in Real Vida Seguros, S.A. has a small dimension, with only two traders, being one of them only in charge for the management of the Fundo de Pensões Real Vida. As so, there is only one trader for ten pension funds managed by the firm. However, there is constant communication between the two traders, sharing opinions on the outlook for the future of financial assets and markets, as well as for the future of the global macroeconomy. Thus, there is no specialization of the team's members by geography or asset class, mainly because of its small size, as it is not large enough for this to happen. Nevertheless, the traders gather more than twenty years of experience in the activity performed in Real Vida Seguros, S.A., as they already faced many different macroeconomic contexts and a huge diversity of moments in the financial markets, characterized by many differences in the feeling of its intervenient, as they operated in many geographies and asset classes.

Looking at the moment of decision without referring to the strategy defined by the firm is not possible, since the moment of purchase or sell of an asset will embrace the policies defined by multidisciplinary investment committees, that are internal to the firm. These groups are composed by elements of the pension fund management team, members of the company's administration, as well as people from the Backoffice team and the team responsible for the commercialization of the funds. Usually, these meetings take place once a month and have the basis of presentations prepared by the fund management team, with the goal of presenting the performance of the funds in that specific month, as much as their ideas and beliefs about the strategy to be followed in the future, given the overview of the global economy. The guidelines and rules to follow in the structure of the portfolios and investment policy are emerged from these meetings, as they present a high importance to the firm, impacting the basic conditions of the decision of buying or selling an asset. Being these guidelines established, although knowing that they must be respected, there is a high degree of independence and operational flexibility in the day-to-day activities of the traders, as they are free to choose the assets that are better to buy or sell at a given moment, respecting the limits of weights for each asset class in the portfolios, established in the pension fund contract, as well as the strategic investment guidelines.

However, there are other factors that affect the decision moment, as the need to carry out an effective diversification of the risk factors present on the portfolios managed, as the main difficulty for the traders is indeed to respond to risk frameworks in which the existing correlations between factors are not historically common or vary very quickly and significantly, causing high volatility in the financial markets. Facing the many factors that influence the decision, the traders must decide which ones are the most important ones, as it was established that the major component of the decision moment should be the beliefs about the future of the macroeconomic situation around the world and its impact on the performance of the asset that is being analyzed. Of course, this should be conciliated with the investment strategy defined by the firm. At the moment, beyond the existent communication between the various teams inside the firm, there is also sharing of opinions with colleagues that work for other organizations related with financial markets, especially the employees of the broker responsible for the movements of assets of the funds managed by Real Vida Seguros, S.A. However, the information shared is not focused on the portfolio management strategy adopted in the firm but only in the beliefs about the future of the global economy and financial markets.

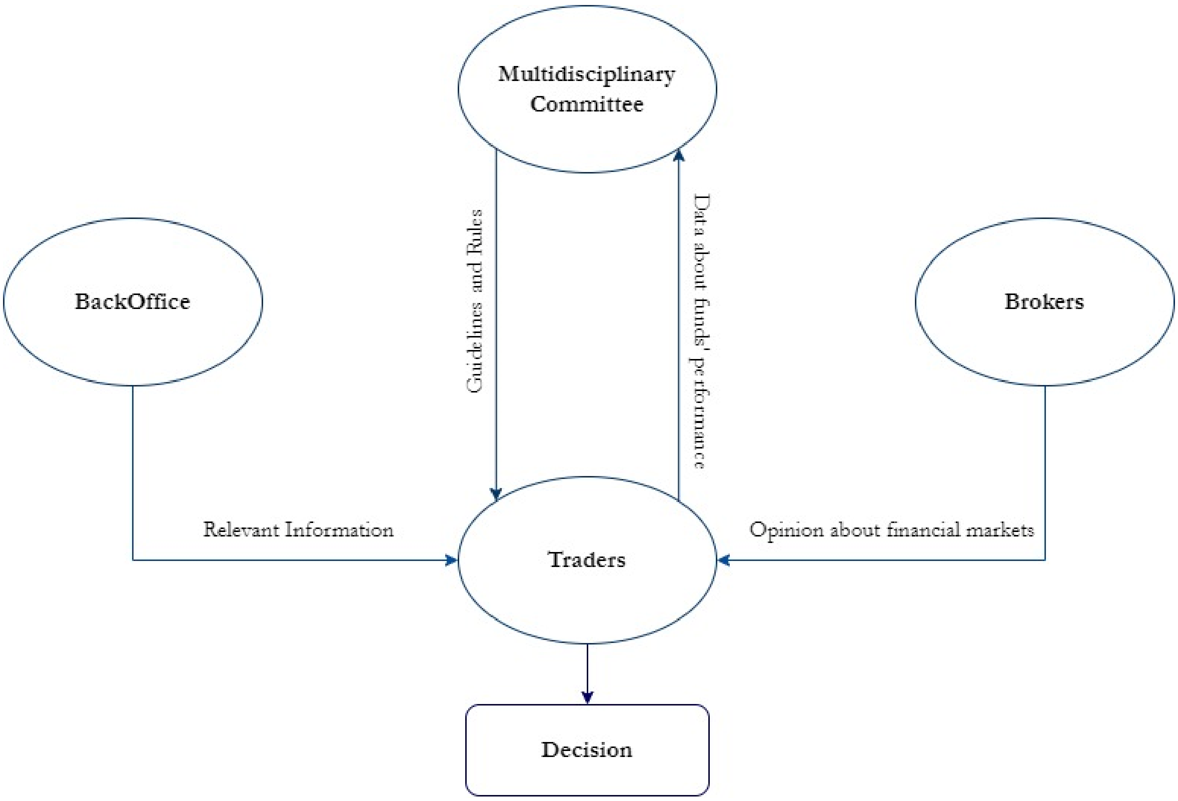

Figure 3 - Relationship between the different agents of the decision process.

4.2. Current Strategy and Asset Analysis

Once the asset purchase and sale decision process is explained, as well as its constraints, it is now important to address the current investment strategy defined by the firm, as well as the traders' beliefs about the future of the assets. This chapter also presents an analysis of each asset class that compose the portfolios of pension funds managed by Real Vida Seguros, S.A.

So, currently, the team decided to adopt two opposite strategies, facing the high uncertainty felt in the financial markets, given the existing military conflict in Eastern Europe, between Russia and Ukraine. This situation, as well as the consequences of the expansionary monetary policy adopted during the pandemic situation, led to the existence, in the opinion of the traders, of an uncontrolled growth of the inflation rate in Europe and the USA, with Central Banks (mainly the European Central Bank) finding difficulties to deal with the situation. Thus, the firm is fully aware that one of those strategies is going to fail, but the adoption of these opposing strategies allows the protection of the funds' performance in the face of a catastrophic situation of falling of the value of the funds, caused by the prediction made turns out to be wrong. These decisions are always taken in a context of great uncertainty, given the huge number of variables that affect the global macroeconomic scenario. On one side of the strategy, the company is adopting an aggressive position in the equity market, assuming percentages of shares in the portfolios very close to the legal maximum limit stipulated on the contract. On the other hand, the firm is also assuming a strong focus on long-term government bonds, exposing the portfolios to a long-term interest rate risk on sovereign debt. So, the firm feels that it is protected against any monetary policy decision by Central Banks, whether they decide to increase the short-term interest rates (to fight inflation). Currently, given the difficult situation in the bond market and the high importance that this type of asset has in the funds' portfolios, the main focus of the strategy of Real Vida Seguros, S.A. is in this area, with the management of the remaining classes of securities becoming less relevant.

Thus, although there are contracts that establishes the percentages of each asset class that the funds can have and there are established guidelines related with the strategy to be followed in the funds' management, the decisions are made fundamentally based on the macroeconomic analysis and on the future perspectives of the performance of the assets, by the management team. Hence, the analysis carried out on the assets focuses on the daily monitoring of world events that may affect the global macroeconomic structure, and then the decisions to buy or sell the assets are based on the perspectives of the future of the markets. In this way, greater relevance is given to this macroeconomic analysis, compared to the technical and individual analysis of each asset. On the other hand, some decisions to buy or sell assets may only be based on the attempt to achieve a good return in the short or medium term. For example, during the internship period, there was a period of time when it was decided to sell an asset, in this case, the shares of the company Wallgreens, which had a good performance, deciding that the liquidity generated by this sale would be more beneficial if it was allocated to a set of assets in the technology sector, which this year has suffered heavy losses – Netflix, Facebook, Warner Bros, Paramount Global – but which fund managers believe that in the medium term can achieve good returns.

In the pension fund management strategy, the company does not include the exploitation of arbitrage opportunities, due to its inability to do so, as it does not have the necessary means to accomplish this activity successfully. In addition, there is also no preferred geography to invest in, as most assets belong to the American and European markets, not because of the managers' personal preference, but because of the greater number of assets that exist in these markets. Thus, we confirm that, in this specific firm, there is no evidence of home bias, that is, there is a clear preference for assets from the traders' country of origin.

4.2.1. Stock Strategy

The approach and analysis made to a stock, which is of interest to a portfolio managed by the company, is always based on the moment lived in the world economy. Although there are times when the search for stocks is made with more focus on the sectors that expect to achieve high profitability, given the macroeconomic perspectives, there are other times when the search for shares is more specific for companies that, due to their particular characteristics, may present good prospects for profitability, and in these situations, there is a greater analysis on the level of trust that the company conveys to fund managers. For example, at the time of the pandemic, the focus shifted more to looking for stocks in cyclical and value sectors – hotels, automobiles, restaurants – rather than stocks characterized by their growth potential. In order to choose from different sectors, an analysis is carried out to understand if there is a large difference in returns between the companies that compose the sector, to see if there is a great relevance in the analysis of the particular company. If there is a high discrepancy between the companies' returns, it may mean that they have different earnings drivers, which may require a more detailed analysis. If companies in a particular sector show similarity in these drivers, individual analysis is waived and the transaction of assets in that sector focuses on the macroeconomic perspectives and their impact on that specific sector.

Therefore, given that the size of the team is small and there is no possibility to carry out this analysis in all sectors, those with the greatest difference in returns between companies are chosen. If the team were larger, the ideal scenario would be to carry out this analysis for all sectors to always achieve stock picking, that is, always choose the companies that present the greatest return in all sectors. However, given the current size of the team, it is only possible to do so in sectors with the greatest discrepancy in returns. For example, in the case of the energy sector, the drivers of company growth are very similar for all companies - oil price, refining cost - so there is not a high need to make an individual approach to each company. However, for example, in the technology sector, this difference in returns between companies is quite significant, so there is a need for a deeper analysis. However, this analysis is based on the team's beliefs about the future of the specific company and not based on market ratios or technical and fundamental analysis of the company. For example, a company that is undergoing a restructuring process may have very low ratios, but there is a conviction that it will be profitable after this process. Therefore, the analysis is based on the team's conviction about the company's future and not based on the search for undervalued companies or with ratios that identify a low price compared to the market.

4.2.2. Bond Strategy

Before approaching the strategy of the firm to purchase or sell bonds, it is necessary to explain the several divisions that can be made in the bond market, depending on the issuing company: government bonds or corporate bonds; bonds of developed or emerging countries; and investment grade bonds or high yield bonds, depending on the rating of the company or country that issues them.

In the case of a government bond, the fund management team focuses on analyzing the yield curve of these bonds for various maturities, and this analysis, reconciled with the macroeconomic perspectives, will lead to the decision of which position they want to take on: short, medium, or long term. For example, the team currently believes that the fact that there is an uncontrolled level of inflation in Europe and the USA, will require Central Banks to raise interest rates to higher levels, which will generate an economic slowdown or even recession. Thus, it will be possible for central banks to better control long-term interest rates, so the company intends to take longer-term positions, to be exposed to interest rate risk that they believe will decrease in the long term.

In the case of a corporate bond, there is an attempt, based on bonds already issued by the same company, for various maturities, to also build a yield curve, and the analysis is carried out in the same way as the analysis of the government bonds, that is, reconciling the information of the yield curve with the macroeconomic analysis. In the case of a bond of a company that has never issued bonds, the focus then becomes the bond's rating, maturity and rate of return.

The decision to invest in high yield or investment grade bonds is made based on the decision whether the existent spread in these types of bonds, compared to government bonds, for a given sector, is sufficient to offset the exposure to higher risk. In this situation, as in the stock strategy, convictions about the macroeconomic future of the world economy carry a great weight, because if there is a conviction (as is the case) of the possibility of a slowdown in the world economic situation or even depression, the greater risk of default by the companies can easily cancel this spread that exists against risk-free bonds. For example, the team at Real Vida Seguros, S.A. believes that in the investment grade bond sector in the United States of America, bonds are beginning to show prices that present a significant spread and may offset the exposure to risk arising from the bond being issued by a firm, instead of a government.

4.2.3. Real Estate Strategy

As far as assets of the real estate sector are concerned, at the moment, there is no strategy defined by the fund management team related to this type of investment. In fact, there are investments in real estate in the portfolios of pension funds managed by Real Vida Seguros, S.A., but these investments were already part of the portfolios at the time the company acquired the firm Banif Pensões, which already managed the funds that are currently entrusted to Real Vida Seguros, S.A.. However, even though in recent years there has been a notable growth in the real estate market in Portugal, the fact that, when the funds were acquired, they had already incorporated several properties, which did not have any associated income, but were non-saleable, that is, could not be withdrawn from the portfolios until an established date, reduced the company's freedom to exploit this growth in this market. This demonstrates that the strategy in the management of pension funds does not always present high degree of freedom of choice, given established legal situations. The first investment with a high weight in a portfolio was only carried out in November 2021, with all other investments being small businesses that had a very low weight in the portfolios, as the percentage destined for real estate was already filled by the non-saleable assets.

4.2.4. Liquidity Strategy

Regarding the control of the liquidity of pension fund portfolios, on a daily basis, the fund management team regulates the liquidity levels of each fund, to denote whether it is necessary to carry out money transfers (in various currencies) to the portfolios that present a lack of liquidity. This control is done through two main documents: the statement sent by the company's futures broker and the daily cash analysis sent by the pension funds' control team. In these liquidity analyses, two situations can generally occur, the first being more frequent: excess or lack of liquidity in the portfolio.

In the event that there is a percentage of liquidity lower than the one established in the specific pension fund contract, the situation is alerted by the control team, and the solution is to sell assets to correct this deficit, causing positions in shares to be usually liquidated. However, only two of the funds managed by Real Vida Seguros, S.A. have this stipulated minimum liquidity: Fundo Pensões do Papel do Prado BD and Fundo Pensões do Papel do Prado CD, with the former having a minimum level of 5% of the value of the portfolio and the latter 10%.

The most common case are situations that there is excess liquidity, resulting from a good performance of the assets in the portfolio, which can lead to a large weight of this asset class. This situation is generally visible through a statement sent by the Real Vida Seguros, S.A. futures broker, which summarizes the excess liquidity in relation to the futures positions assumed by the company in its strategy, in the various currencies in which these positions exist, translated in euros using the exchange rate in force on that day. When this value reaches very high levels, around 2 or 3 million euros, the management team considers that there is too much money sitting at the futures brokerage and then issues an order to transfer a part of this amount to the current accounts. of the respective pension funds, in order to be able to use that money in the purchase of assets. Generally, all funds have a legally established maximum percentage of liquidity, but, in the team's experience, this is almost never achieved as excess liquidity is quickly converted into assets, whether stocks, bonds or even real estate assets.

4.3. Hedging of Risk

Naturally, the portfolios of pension funds managed by Real Vida Seguros, S.A. present risk, since there are investments in assets that present risk, namely stocks, bonds, real estate assets and alternative assets.

As so, there are different hedging strategies for each asset class. However, this coverage is not always carried out, as it depends on the moment experienced in the different markets, so it can be considered that it is a tactical coverage, to respond to certain specific or short-term situations in the market, which increase the specific risk of that asset class rather than systematic coverage. Therefore, there is no defined coverage percentage for each asset class, nor for each specific portfolio, and the amount covered is at the discretion of the pension fund management team, based on its understanding of the impact of a given event. in portfolio risk.

The coverage of the risk, associated with the part of the portfolios that represent company equity, is carried out through positions taken by the firm in the futures market, namely futures on indices of the geographies where each specific fund primarily invests, generally in the Euro Zone and the United States of America, being used, in the case of American assets, the future on the S&P 500, and, in the case of the Euro Zone, the one on the Euro Stoxx 50. In the case of stocks from other geographic areas, the concept is the same, being used futures on indices that represent those regions.

In the case of bonds, the asset class that has the major representation in pension funds, risk coverage can also be done using futures, as, in this case futures on bonds of governments, whose sovereign debt is represented in the funds' portfolios. However, there are not many instruments that allow hedging for credit risk, and the solution would be to use other types of derivatives, different from futures contracts, and the company decided not to carry out this hedging strategy because, in addition to not having a counterparty that makes it possible, it is also not such a practical and cheap strategy. Thus, credit risk is managed not with derivatives coverage, but through its size, that is, those positions that present credit risk must have a reduced weight in the portfolio, in order to limit losses to values that are manageable, in the case that the worst-case scenario becomes reality.

In the case of investments in real estate assets, there are no alternatives to cover the risk associated with them.

Another strategy followed by the company is to cover the risk through the existing levels of liquidity in the portfolio, that is, allocating a greater percentage of the portfolio in liquidity, often close to the maximum allowed. Thus, given that this asset class is not volatile, its greater weight will generate a reduction in the portfolio's risk, which will be more controlled. Likewise, the company also tries to reconcile in its portfolios assets that are not exposed to the same risk factors, thus carrying out an effective diversification of risk factors.

4.4. Response to the Covid-19 Pandemic Situation

As happened all over the world, the operations of Real Vida Seguros, S.A. were also taken by surprise by the Covid-19 pandemic. Although there was already some news, since the end of 2019, about the impact that the disease was having in China, its impact was only felt in the financial markets at the beginning of February 2020. However, from the perspective of the impact that this disease would have in the world and faced with some fear about the world economic situation in that period, the management team of the Real Vida Seguros, S.A. pension funds adopted, since the beginning of that year, defensive positions, that is, a smaller percentage of the class of shares, because of a greater weight of bonds in the funds' portfolios. However, after the emergence of cases of the disease in most European countries and the USA, there were three very complicated weeks, with a very large fall in the financial markets. At that moment, there was a feeling of fear in the team, as there was the possibility of repeating a catastrophic situation, similar to the one that occurred in 2008, which generated very large losses in the company's portfolios, as well as portfolios managed by all companies around the world.

However, after some interventions and speeches made by the leaders of the Central Banks, the expectation was changed, given the way in which they intended to manage monetary policy, accompanied by temporary legal changes in the banking sector, making the team believe that the way to go would be less troubled and different, accompanied by a more competent monitoring by the Central Banks.

So, the firm took positions in cyclical and value assets, believing that this was a public health situation and that, after this situation calmed down, there would be a strong economic recovery, benefiting these assets. Time dictated that this thinking was correct, as that is exactly what happened, with markets recovering since the beginning of March 2020, being growth further imploded after the results of the first vaccine efficacy tests against Covid-19.

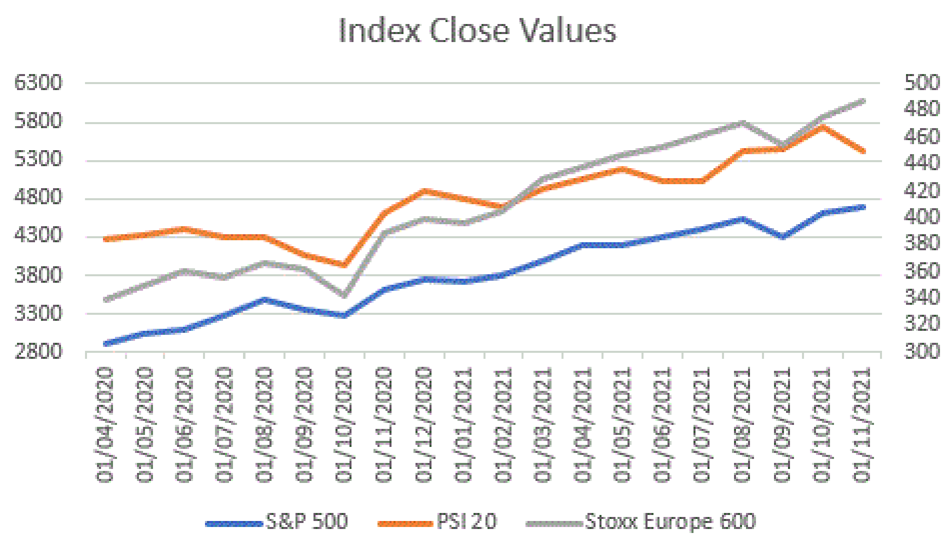

Figure 4 - Index Close Values. Data from MarketWatch (2021)

Despite the success of the strategy adopted, the management team of the pension funds feels that there was a small error in the strategy, as today it recognizes that it should have started to make more aggressive moves, at an earlier stage, mostly reinforcing the weight of bonds in the credit sector, on the portfolio. However, as the situation presented a high level of uncertainty in terms of possible macroeconomic consequences, the strategy chosen was a little more conservative, but, it can be said, accurate, since the belief of confidence in the assumed monetary policy and economic recovery after the problem calmed down turned out to be true.

Of course, since the duration of the pandemic is already long, there were other factors that impacted the macroeconomic situation, which generated small nuances in the company's strategy. However, the main focus was the confidence in the macroeconomic policy applied by the Central Banks, believing in an economic recovery after the conclusion of the public health problem.

5. Control of Pension Funds

After analyzing the company's assets purchase and sale strategy, as well as the decision process associated with a transaction, the focus becomes the activities carried out by the pension funds control team, which ensure the excellence of the managers' activity and is according to the criteria defined by the company. These activities present operational characteristics of major importance for the operation of the company and the commercialization of pension funds and are mainly focused on daily processes, which this report tries to explain.

5.1. Transaction Registration

The first activity performed by the pension fund control team is based on recording the operations carried out by the managers on the previous day, as well as comparing the details sent by the brokerage company with those registered by Real Vida Seguros, S.A.

At the end of each business day, after the company's closing time, the funds management team sends a document, in Excel format, with information on the transactions carried out during that day. Likewise, at the end of the day, the brokerage company sends a document, with information on the same operations, for the company to compare with the information sent by the traders, making sure the information is correct. Therefore, the pension funds control team will carry out a comparison of the decisive elements of the transaction, in other words, amounts transacted, asset price, movement (whether it is a purchase or sale) and amount of commissions payable. In addition to this comparison, there is also a process to confirm the distribution of securities among the different portfolios, which is carried out by the managers, who allocate an amount of the assets traded to each portfolio. In general, the information provided by the managers is in accordance with the information provided by the brokerage firm, because the fund managers work in the same room in permanent contact with the team of the brokerage company involved in the transactions of Real Vida Seguros, S.A. The detected errors are clarified with both sides, and later corrected, according to the solution presented by both of them. Usually, the information sent by the brokerage is assumed to be the most accurate.

After this verification, the operations are entered in the computer program used by the company - Binfólio - in order to be integrated in the portfolios of the pension funds program, to calculate the total value of the fund and, consequently, the value of each Participation Unit. The control team also performs the functions of monitoring transactions in the markets, existing a need to correct the orders placed, in case any information is incorrect. Usually, in these cases, the settlement date of the transaction is not correct, causing its non-completion. This is a situation that must be changed and resolved with the broker, so that all transactions carried out by the managers are effectively settled.

The registration and confirmation of foreign exchange operations are also the responsibility of the control team, with a weekly frequency. The confirmation of currency exchange movements is carried out in exactly the same way, that is, by comparing the information provided by the brokerage company in the document of movements and the information provided internally. After this confirmation, as previously denoted for the operations of financial assets, these movements are also imported into the computer program, in order to be considered when calculating the value of each fund.

5.2. Calculation of the Value of Participation Units

After the confirmation and importation of the asset movements carried out by the managers on the previous day, the control team closes the pension funds in the computer program, in order to complete their activity on the day of the operations. After concluding this step, it becomes impossible to add any operation related to the pension funds for the specific day, usually referring to the previous business day. Thereby, the computer program already integrates all the information on the constitution of the funds, and it is possible to calculate the total value of each fund, since the program has information on the assets that constitute them, as well as the updated price on the date of these same securities.

Once the closing of the pension funds has been concluded and the total value of each one calculated, in the computer program used, the control team starts to report relevant information to various internal departments of the company, as well as to the control authorities of pension funds, namely the APFIPP. Using the information on the total value of the fund, the control team divides it by the number of participation units of each fund, thus obtaining the value of each UP of the pension funds. This value will provide the basis for the price charged by the team of commercialization of pension funds that sell the funds' participation units on a daily basis to customers who are interested in buying them. This information on the daily value of the UPs is also transmitted to APFIPP, through its integration on the website of the control institution, submitting a document produced by the control team of the pension funds.

It is also the responsibility of the control team to carry out daily tests on the movements of the values of the pension funds' portfolios. These tests are executed using an Excel created by the team, which automatically gathers information on the initial value of the portfolio, the final value and the movements of assets under the period analyzed, since it will verify the percentage of the alteration in the final value of the portfolio, that is justified by the asset movements performed. Thus, the team's concern is that this percentage is quite high, in order to confirm that there was no abnormal error in the calculation of the UPs.

5.3. Treasury and Portfolio Analysis

Finally, the control team, in contact with the pension funds management team, carries out daily analyzes of the treasury and portfolios that compose the funds managed by Real Vida Seguros, S.A.

Daily, the control team prepares an Excel with information related to the treasury of each pension fund, focusing on understanding if there is any fund that, in view of future liabilities, usually in the following week, may need an increase of the liquidity class. This information is shared with the fund managers, as well as these alerts of possible inconveniences, and, if they agree, an order is given to increase liquidity, either to transfer money from another portfolio to the one you need, or to sell one of the assets that make up the portfolio. This is a crucial analysis, as it detects and prevents possible inconveniences in the treasury management of the portfolios, such as cases where there are negative balances in a given currency.

The management team, together with the control team, also perform a daily analysis of the securities that make up the portfolios, in order to understand if it still fits the defined strategy or if there is any opportunity to carry out a surplus value, which may be beneficial to acquire liquidity or different assets. This analysis also includes a special attention to assets that show sharp declines, in order to understand if there are others in the market that fit the defined strategy, but do not show such an abrupt decline, as these declines may be a consequence of specific characteristics of that asset and not the market or sector in which it is integrated.

6. Final Considerations

In this last chapter will be presented the main conclusions from the internship developed in the last four months, as much as some suggestions that the firm could use to improve its processes of decision in the moment of buying or selling a security.

The internship that originated this reported showed to be very useful, as Real Vida Seguros, S.A. presented a good opportunity for applying the knowledge acquired during the Master in Finance in the day-to-day activities of a firm, helping to understand how this knowledge can be used in performing activities that are fundamental to the growth of a company. It also helped me to increase my awareness of the environment of a firm and the desire of excellence that it pursues in its activities.

In fact, as discussed during the report, the insurance sector presents a high importance in the economic activity in Portugal, as much as in the well-being of the population, because of the impact it has in the social activity. This importance is increased by the importance this sector also has as an institutional investor in the financial markets, as the insurance activity is characterized by having future responsibilities, meaning that the firms should use the assets available to reach profit levels that allow them to pay those obligations.

According to the data available, the non-life insurance sector has presented a growth trend, while the life insurance one has presented an huge drop in value in the last three years. As so, it is noticed that this last sector is no longer the most important one in terms of production in Portugal. In the final of 2020, in terms of pension fund management, Real Vida Seguros was the 9th firm in the portuguese ranking, managing 16 funds, with the value of 221 million of euros, corresponding to a market share of 1%.

The literature states the high importance that pension funds have in the life of the portuguese population, as the value under management in those funds has increased over the years, with a higher representativeness in the closed funds. As so, and because the management of pension funds implicates high levels of responsibility, these should be managed by entities with capabilities of assuring a high-quality management of the fund. Furthermore, there is an urgency of having regulators and supervisors of the activity of the management team, that is carried by ASF.

Looking into the management of pension funds in Real Vida Seguros, it is perceptible that, although the small dimension of the team, the members have a great experience performing this activity and have performed it in many geographies and economical panoramas. In the moment of decision about buying or selling an asset, there is a relatively high degree of freedom, although there are guidelines that the managers must follow in those moments. These rules are stated in meetings that englobe many sectors of the firm that are related with pension fund activity of Real Vida Seguros.

During the analysis of what asset is right to be part of a portfolio or to sell, the managers do not use any technical analysis or valuation and are not mainly focused on ratios that can indicate the performance of the asset. Instead, the primary focus in the moment of decision is based on a macroeconomic analysis of the current and future economic situation and in the beliefs of the managers. Then, according to those, it is evaluated the impact of the future economic paradigm in the price of the asset, being this analysis the definitive aspect in the decision of buying or selling the assets.

There are many procedures that the management and control team perform every day, in order to assure the excellence in the management of the pension funds. These activities englobe the management of the risk of the portfolios, the liquidity existent and every operation aspect related with the asset operations performed by the management team.

In my opinion, there are a few adjustments that the firm can make in order to improve its activity. First, I think that the firm should think about increasing the number of members of the management team, to be able to perform technical analysis of each asset that are thinking about buying or selling. This topic was brought up by one of the managers of the funds, as he stated that, with the current dimension of the team, it impossible to achieve a stock picking in every sector, and some decisions made that they decide to be good are based only in the conviction of the managers, not in technical analysis. Second, in my opinion, it should be bigger proximity between the management and the control team, as there can be some issues in the activity based on the distance between the two teams, in the aspect that the control team should have a higher intervention in the definition of the strategy to be followed.

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