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Pension Fund Use of Alternative Investments and Derivatives: Regulation, Industry Practice and Implementation Issues

INTERNATIONAL ORGANISATION OF PENSION SUPERVISORS

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ABSTRACT

Pension Fund Use of Alternative Investments and Derivatives: Regulation, Industry Practice and Implementation Issues

The financial and economic crisis had a profound impact on the financial position of pension funds[2] in most countries. Whilst the magnitude of these losses is primarily related to the severity of the crisis, it appears that shortcomings in the implementation of investment strategies significantly amplified the deterioration of the financial position of some pension funds. In particular, many pension funds have increasingly invested in alternative investment categories and complex products in recent years. Subsequently, the financial and economic crisis heightened the concern of pension regulatory and supervisory authorities regarding pension funds' use of alternative investments and derivatives.

The Organisation for Economic Co-operation and Development (OECD) and International Organisation of Pension Supervisors (IOPS) conducted a survey across the IOPS and OECD member base to evaluate pension funds' exposure to alternative investments and derivatives. The information garnered from the survey and discussed in this paper, provides a valuable indication of pension fund practices with respect to these investments and establishes whether the IOPS '*Good Practices in the Risk Management of Alternative Investments by Pension Funds'* are being implemented.

This paper is divided into five main sections. The first section reviews the regulation in place which aims to manage the potential risk exposures that alternative investments and derivatives present. This provides a useful backdrop for then evaluating the current market practices of pension funds' investment in such instruments. The second section canvasses the implementation issues that a number of pension funds have faced in attempting to implement their investment strategies with the inclusion of alternative and derivative instruments. The third section highlights the potential risks that pension funds face when investing in alternative investments and derivatives, followed by the fourth section reviewing current risk management practices observed by pension funds in managing these risk exposures. The paper finally concludes with observations which can be translated into lessons for consideration by supervisory authorities when developing future pension fund regulation and supervision practices of alternative investments and the use of derivatives, whilst also taking into account the IOPS Good Practices.

[1] This Working Paper was prepared by Taliya Cikoja and Nina Paklina of the IOPS Secretariat in association with Mr. David Rijsbergen and Mr. Jurgen Willemsen, both of De Nederlandsche Bank. Members of the German delegation to IOPS also participated in the development of this paper.

[2] In EU countries, the document may not apply to those pension funds and pension plans that fall outside the scope of the EU Directive 2003/41/EC of the European Parliament and of the Council of 3 June 2003 on the activities and supervision of institutions for occupational retirement provision, e.g. pensions funded via book reserves.

Keywords: Portfolio Choice; Investment Decisions; Government Policy and Regulation; Pension Funds; Other Private Financial Institutions; Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure

JEL codes: G11 G18 G23 G32

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1. INTRODUCTION

1. The financial and economic crisis had a profound impact on the financial position of pension funds in most countries. For defined benefit (DB) pension funds, declining asset prices combined with a lower yield curve led to a considerable deterioration in the funding ratios. Defined contribution (DC) pension plans also suffered significant losses due predominately to a global decline in asset prices. Whilst the magnitude of these losses is primarily related to the severity of the crisis, it appears that shortcomings in the implementation of investment strategies significantly amplified the deterioration of the financial position of some pension funds. In particular, many pension funds have increasingly invested in alternative investment categories and complex products in recent years, with such investments typically characterised by wide mandates for active investment strategies, exposure to complex products, substantial degree of leverage and illiquid underlying assets.

2. As noted in the IOPS '*Good Practices in the Risk Management of Alternative Investments by Pension Funds*'[3] (IOPS Good Practices), there is no precise definition of alternative investments. The nature of alternative investments is dynamic and ever-evolving, and closely linked to the development of financial markets. In practice, alternative investments are characterised by properties that distinguish them from traditional investments (i.e. stocks, bonds, cash or property), such as, the application of innovative financial products and derivatives, the use of extensive leverage, illiquidity of underlying investments, a greater reliance on the skill of the investment manager and the absence of a meaningful performance benchmark.

3. A non-exhaustive list of commonly agreed types of alternative investments would typically include investments such as: hedge funds, private equity, securitised real estate investments, etc. The different characteristics of alternative investments have implications for their risk profile. Key issues that are characteristically more relevant for alternative investments include counterparty risk, liquidity risk, integrity risk, operational risk, limited transparency, valuation weaknesses, control issues and conflicts of interest.

4. For pension funds, the main attraction of alternative investments is the pursuit of improved risk-adjusted returns of investment portfolios. Alternative investments may provide the opportunity to better manage or lower the overall portfolio risk through proper diversification of assets. Thus, in turn this would provide a more efficient investment mechanism for gaining exposure to certain assets and thereby allow for the possibility to improve the risk-adjusted return of an investment portfolio.

5. Derivatives are financial contracts whose price is determined by the value of an underlying asset, commodity, rate, index or event. The basic types of derivative contracts are forwards, futures, options, swaps, and swaptions (an option on a swap). Derivatives can also be classified along three main criteria. First, there are some derivatives - like standardised futures and options - which are traded on an exchange like any other financial asset, while others - like swaps - are traded in the over-the-counter (OTC) market. A second, related classification of derivatives concerns their degree of complexity. Basic types are known as plain vanilla products. The more complicated derivative structures (which are always traded in the OTC market) are known as exotic derivatives. These tend to be option-based contracts (exotic options). Derivatives can also be classified according to the type of underlying assets (e.g., equity derivatives, foreign exchange derivatives, interest rate derivatives, commodity derivatives or credit derivatives).

6. Conversely, the use of derivative instruments in a pension fund can be for a variety of purposes. Their two main purposes for long-term investors such as pension funds are first, as a substitute to direct

[3] http://www.iopsweb.org/dataoecd/47/20/40010212.pdf?contentId=40010213

investment in the underlying asset due to, for example, liquidity, market timing, tax or other reasons, and second as a risk control mechanism. Basic derivative contracts can be used by pension funds to hedge their risk exposure to specific financial instruments, both on the asset and liability side. This may be done by setting a floor on the potential losses arising from an equity portfolio, as an example. Additionally, derivatives can also be used to change the characteristics of the fund's portfolio investments, such as the duration of the fixed income portfolio.

7. Further, the use of derivatives among pension funds may increase with the move towards market valuations in many jurisdictions, especially in a defined benefit context, as pension funds move to match their assets more closely to liabiltieis in this context (to prevent excess volatility on the plan sponsor's balance sheet). Asset-liability management techniques (such as liability-driven investment) are heavily reliant on these instruments for risk management purposes.

8. However, derivatives can also be used for other - more controversial - purposes, including speculation[4] and leveraging of portfolios, which may come into conflict with the basic objectives of a pension fund. While derivatives and, more generally, leveraging can have return-enhancing properties on investment portfolios, their use for this purpose can also expose pension funds to major losses in adverse scenarios due to the multiplier effect of leveraging on returns reverses.

9. Exposure to derivatives is also growing indirectly, via the use of alternative investments that have embedded derivatives, such as hedge funds, mortgage-backed securities (MBSs), Collateralised Debt Obligations (CDOs), and other structured products.

10. Although pension regulatory and supervisory authorities recognise that there is potentially a role for alternative investments and the use of derivatives within pension funds' portfolios, there are a number of major risks inherent in these instruments. Riskier strategies are often inherent in alternative investments. Such investments are often complex, illiquid or opaque, and therefore require careful scrutiny and analysis, and in many cases, more rigorous review and monitoring than most traditional investment products - particularly when potentially vulnerable investors, such as pension fund members and beneficiaries, are involved.

11. Three major risks with the use of derivatives are market transparency, counterparty risk and liquidity risk. These risks are particularly evident in the case of OTC derivatives, where there is no central exchange to collate and disseminate pricing information and to act as an intermediary, ensuring adequate posting of capital and collateral (margin calls). During the financial and economic crisis, such counterparty risks were a major concern for pension funds. Further, alternative investment products with embedded derivatives, including MBSs and CDOs, as well some derivative products like Credit Default Swaps (CDS), were at the heart of the crisis, acting as both triggers and transmission mechanisms for the crisis that led to a seizure of liquidity and bank failures.

12. Recent experiences suggest that increased complexity in the implementation of pension fund investment policy and its subsequent impact on the pension fund's risk profile lead pension funds to underestimating the possible risk exposures associated with the investment implementation process. In general, the shortcomings in portfolio implementation were related to: (i) alternative investments and the use of derivatives, (ii) investment risks such as liquidity risks, refinancing risks, the impact of leverage and valuation issues, and (iii) the design of investment mandates. Additionally, in many cases, outsourcing (parts) of the investment processes was also a contributing factor.

[4] Speculation in this paper is taken to mean transactions involving unusual and considerable levels of risk which hope to take advantage of short-term market moves for commensurate levels of gain (as opposed to investments which are normally longer-term transactions based on fundamental analysis).

13. Subsequently, the financial and economic crisis heightened the concern of pension regulatory and supervisory authorities regarding pension funds' use of alternative investments and derivatives. Pension supervisors raised concerns that the pension funds which they oversee did not fully understand the products they were in vesting in, or have the necessary risk management systems to cope with them.

14. In this regard, the IOPS approved a set of Good Practices, in 2008 designed to provide guidance to pension funds as to the risk management arrangements pension supervisors would expect pension funds using such instruments to have in place.

15. The IOPS, along with the OECD conducted a survey to evaluate pension funds' exposure to alternative investments and derivatives. Thus, a questionnaire was sent in 2010 to regulatory and supervisory authorities of private pension funds within IOPS and OECD membership, from which 32 responses were received.[5] Approximately half of the respondents oversee well developed pension systems, with the remainder covering newer pension systems.

16. The objective of the survey was to provide the OECD and IOPS with greater insight into alternative investment and derivative exposure in pension funds. The information garnered from the survey and discussed in this paper, provides a valuable indication of pension fund practices with respect to these investments and establishes whether the IOPS Good Practices are being implemented. Thus, in turn the information gathered would contribute to the further development of pension fund regulation and supervision regarding these investments.

17. The remainder of this paper is divided into five main sections.The next section reviews the regulation in place which aims to manage the potential risk exposures that alternative investments and derivatives present. This includes the authorisations and restrictions that various pension supervisory authorities have in place, as well as requirements for inclusion in pension fund investment strategies and disclosure to members. This provides a useful backdrop for then evaluating the current market practices of pension funds' investment in such instruments.

18. The second section canvasses the implementation issues that a number of pension funds have faced in attempting to implement their investment strategies with the inclusion of alternative and derivative instruments. The third section highlights the potential risks that pension funds face when investing in alternative investments and derivatives. The central aim of this section is to describe the inherent risks that a pension fund is potentially exposed to and to highlight the importance of an appropriate and adequate risk management framework in order to mitigate these risks.

19. Thus, the fourth section reviews the current risk management practices observed by pension funds in managing these risk exposures highlighting areas of weakness and scope for further improvement. The paper finally concludes with observations which can be translated into lessons for consideration by supervisory authorities when developing future pension fund regulation and supervision practices of alternative investments and the use of derivatives, whilst also taking into account the IOPS Good Practices.

[5] Australia, Austria, Belgium, Bulgaria, Canada, Chile, Colombia, Cost Rica, Czech Republic, Estonia, Germany, Hong Kong, Israel, Japan, Korea, Mexico, Netherlands, Norway, Pakistan, Poland, Portugal, Romania, Serbia, Slovak Republic, South Africa, Spain, Swaziland, Switzerland, Thailand, Turkey, Ukraine, United Kingdom (UK).

2. REGULATION & PRACTICE

20. The use of alternative investments and derivatives in pension fund investment portfolios creates a number of unique risk exposures. Consequently, supervisory authorities across several jurisdictions have put in place regulation in the form of various authorisation requirements and/or restrictions, including quantitative and qualitative limits, in order to manage such potential risks. The following provides a summary of the relevant regulation in place.

2.1 Authorisation and Restrictions

Alternative Investments

21. In most of the respondent countries, pension funds are authorised to invest in alternatives assets either directly and/or indirectly. Only a few respondents stated that use of alternative investments is prohibited in their jurisdictions.[6] Given the recent financial and economic crisis, some jurisdictions are considering the introduction of regulation concerning investment in alternative instruments.

22. However, most authorities stated that pension funds can invest in a broad range of alternative investments including, but not limited to, hedge funds, private equities, real estate, infrastructure, structured products, commodities, and currency.[7] Whilst in several jurisdictions only certain types of instruments are authorised.

Box. 1 Alternative Investments – Selected Authorisations

Real Estate - Serbian pension funds can only invest in real estate, as can Bulgarian pension funds in addition to infrastructure investments. Costa Rican pension funds are also able to invest in real estate as well as structure products.

Structured Products – Together with Costa Rican funds, Korean pension funds are only able to invest in structured products as a means of alternative investment.

Hedge Funds – Mexico, Poland and Swaziland all prohibit investment in hedge funds.

Commodities – Both Estonia and Mexico prohibit their pension funds from investing in commodities.

23. Approximately half of the respondent authorities reported that pension funds are permitted to invest in alternative assets both directly and indirectly for at least some asset classes.[8] Whilst a majority of the remaining countries indicated that pension funds can directly invest in at least some alternative asset classes, with only a small number of countries allowing only indirect investment.[9]

[6] As is the case in Pakistan, Ukraine, and for mandatory pension funds in the Slovak Republic

[7] Germany considers that the category 'real estate' includes Real Estate Investment Trusts (REITS) for the purposes of this report. REITS are not specifically regarded as alternative investments in Germany. Structured products normally also include Asset Backed Securities (ABS) and Credit Linked Notes (CLN). For the purposes of this report these were indicated in the category 'others'.

[8] As is the case in Australia, Austria, Bulgaria, Canada, Chile, Colombia, Germany (both by Pensionsfonds and Pensionskassen), Mexico, Norway, Portugal, Spain, Swaziland, Switzerland and Thailand

[9] Direct investment – Belgium, Costa Rica, Czech Republic, Estonia, Germany (only for commodities), Hong Kong, Israel, Korea, the Netherlands, Romania, Serbia South Africa, and the United Kingdom. Indirect

Box 2. Alternative Investments - Direct and Indirect Investment

Chile - pension funds can directly invest only in structured products and currency, whereas when investing indirectly through closed ended funds, mutual funds and exchange traded funds (ETF) a broad spectrum of alternative investment options are authorised including hedge funds, private equity, real estate, infrastructure, structured products, commodities and currency.

Switzerland - direct alternative investments are only allowed under certain conditions, that is, the ability of the pension fund to absorb the risks, the adequacy of the due diligence process, the knowledge and skills possessed by the pension fund, etc. However, every potential commitment must be covered in cash and more commonly diversified structures are usually required (e.g. fund of funds).

Japan - although the Government Pension Investment Fund (responsible for investment operations for public pension schemes), is authorised to perform indirect alternative investments, it does not undertake such investments in practice. To perform such an investment, the Fund needs to obtain approval from the Ministry of Health, Labour and Welfare. Generally, pension funds (both public and private) are authorised to indirectly invest in alternative instruments using trust contracts with financial institutions.

South Africa – allows direct and indirect investment in alternative investments, including derivatices, hedge funds and private equity funds and the look-through principle is applied in the disclosure and whilst applying the relevant spreading limitations. Derivative instruments must be disclosed in the underlying categories of assets.

24. In the large majority of the respondent countries, pension funds can invest directly in unlisted real estate and infrastructure companies or projects.[10] In a number of countries specific restrictions apply to investing directly in alternative assets. These restrictions are usually based on a percentage of the pension fund's assets, with some jurisdictions also limiting the type of asset which can be invested in.

investment – Japan (public and private pension funds), Poland and the Slovak Republic (for voluntary pillar).

[10] With the exception of Chile, Colombia, Costa Rica, Hong Kong, Japan, Korea, Romania, Serbia and the Slovak Republic (both for mandatory and voluntary private pension schemes).

Box 3. Alternative Investments - Restriction on Direct Investments

Canada - direct investment in real estate is subject to quantitative limits which include 5% for a single property and 25% in aggregate. However, as of 2009, the Canadian Government proposed amendments to the present pension fund investment framework which will remove the quantitative limits in respect of resource and real property investment.

Germany - Pensionsfonds are allowed to invest directly up to 10% of the share capital of infrastructure companies or projects. Whilst Pensionskassen can invest up to 1% of the restricted assets only under the condition that the company is located in a member state of the EEA or OECD and that it provides the annual accounts/financial statements to the investor.

Norway - direct investment by pension funds in unlisted real estate companies is authorized, however, investment in projects is not permitted.

Thailand - provident pension funds may make investments in real estate/ infrastructure companies, but are not permitted to invest in projects.

Chile - pension funds are not authorised to invest directly in unlisted real estate and infrastructure companies or projects, however, they are permitted to invest in securities (listed stock and bonds) issued by infrastructure companies.

Hong Kong - investment in equity of unlisted real estate and infrastructure companies is not permissible. However, investment in debt of such companies would be permitted if the debt securities met qualitative requirements (generally BBB ratings).

Derivatives

25. In general, most countries allow pension funds to use derivatives. It was noted that those countries that do not authorise the use of alternative investments also prohibit investment in derivatives as well, with the exception of only some jurisdictions which allow investments in alternative vehicles, although prohibit investment in derivatives.[11]

26. Limited restrictions were reported on the type of derivative contract allowed, with the exception of net short positions which are banned in almost half of the respondent countries. In addition, a number of countries also apply a restriction on OTC derivatives, whilst others do not allow OTC contracts which involve certain types of charges.[12] It was observed that restrictions on the use of derivatives often involved either the counterparty having a minimum credit rating, or where the underlying asset must be held by the pension fund.

[11] As is the case in Poland and Swaziland.

[12] Bulgaria, Germany (both for Pensionsfonds and Pesionkassen), Poland and South Africa apply restrictions to OTC derivatives.

Box 4. Derivatives - Restrictions

South Africa – a number of restrictions for the use of derivative instruments are being imposed especially in respect of netting, types of allowable derivative transactions and counterparty risk. Investment in derivative products is only allowed for effective portfolio management and investment hedging purposes and no speculation is allowed. No shorting is allowed and all positions must be covered.

Mexico - only ‘plain vanilla’ options with standard components such as an expiration date and straightforward strike price (i.e. no ‘exotic’ options) are permitted where the counterparty must achieve a minimum credit rating.

Romania - authorises the use of derivatives only in cases where pension funds have the underlying asset in their portfolio.

Chile - imposes a number of restrictions on the main types of derivatives (e.g. futures, options, forward contracts, swaps, OTC contracts). However, the 2008 pension reforms authorised the use of derivatives for investment purposes and expanded the eligible underlying assets for hedging (e.g. currency, stocks, interest rates, stock index, and bond index). In the same year, an amendment to the regulation was also introduced relating to currency hedging that allowed pension funds to increase the amount of currency contracts with foreign counterparties.

Hong Kong - also imposes restrictions, where swaps, net short positions, forward contracts and over-the-counter contracts (except currency forward contracts) are not permissible. Mandatory Provident Funds (MPF) may invest up to 10% of fund assets in futures and options contracts that are traded on an exchange approved by the supervisory authority. Investments in futures and options must not result in the fund becoming leveraged. MPFs may also invest in convertible bonds and up to 5% of fund assets in call warrants. Put warrants can be used for hedging purposes only. CFCs are permitted only for hedging and transaction settlement purposes.

27. In all respondent countries, derivatives are mainly used for hedging purposes particular against currency risk and to contribute to efficient portfolio management. European countries noted that the use of derivatives is prescribed by the prudent person principle set by the EU Directive, which allows the use of derivatives for the reduction of investment risk or to facilitate efficient portfolio management. Many jurisdictions also allow use of derivatives for investment purposes.[13] However, the vast majority of countries prevent engagement in derivatives transactions for leverage.[14] The majority of respondent countries indicated that they prohibit the use of derivatives for speculative purposes.

[13] With the exception of Bulgaria, Korea, Norway, Poland and Slovak Republic (for mandatory funds) and Thailand.

[14] Except for Canada, Israel, Mexico and the UK where leverage is permitted.

Box 5. Derivatives - Hedging Purposes

European Countries – EU Directive 2003/41/EC of the European Parliament and of the Council of 3 June 2003 states: the activities and supervision of institutions for occupational retirement provision must meet the requirement for pension institutions to avoid excessive risk exposure to a single counterparty and to other derivative operations.

Japan - the law generally allows investment in derivatives (both direct and indirect investments) to mitigate risk of price fluctuation of the underlying assets.

Slovak Republic - mandatory funds considered to have the most risky portfolios, that is, investment in overseas securities, must hedge at least 20% of the net asset value of the fund against currency risk, with this limit rising to 50% in a balanced pension fund (zero currency exposure is allowed in conservative funds).

Germany - derivative transactions are only permitted if derivatives are used for the purposes of hedging, acquisition preparation and yield-enhancing operations under specific conditions and in a limited way. The use of derivatives in short selling, however, is not permitted.

Hong Kong - currency forward contracts (CFCs) may be used for transaction settlement purposes.

Sount Africa – derivatives are allowed for hedging and effective portfolio management.

28. In addition, most jurisdictions require that derivative contracts be held until maturity, with some countries also authorising derivatives trading.[15]

2.2 Quantitative Limits

Alternatives

29. In a large majority of countries where pension funds are allowed to invest in alternative instruments, regulations impose specific quantitative limits on portfolio investments applying to these investments. However, several countries indicated that they do not apply quantitative limits (outside single investment limits, etc).[16]

30. The quantitative limits applied can be split into two categories. First, one group of countries imposes relatively high and consequently non-restrictive limits. These have been observed as high as 70% of a pension fund's portfolio. Whilst the second group includes jurisdictions with relatively low quantitative limits on alternative investments in the 2-30% range, which is therefore considered more restrictive. It was noted that these restrictions are generally imposed for alternative investments as a whole, although some jurisdictions have only placed limits with respect to certain alternative investment vehicles.

[15] Derivatives trading is permissible in Australia, Israel, Mexico, South Africa, Spain and Switzerland

[16] Australia, Belgium, Canada, Israel, Japan, the Netherlands and UK

Box 6. Alternative Investments - Quantitative Limits

Chile - a general limit ranging between 10 and 20 % of assets under management applies for all 'restricted' investments, depending on the type of a pension fund. This does not take into consideration other illiquid and under investment grade instruments which may include investment vehicles with alternatives as underlying assets. Conservative investment pension funds are not authorised to invest in this type of instruments.

Czech Republic - places 5% limit on majority of alternative investment categories. A 70% max limit would apply for structured products and other investments as unit trusts, securities, movables and real estate, if listed in the OECD regulated markets.

Mexico - applies a 10% limit on private equity, infrastructure and structured products and a higher limit of 30% on currency.

Cost Rica - applies a 10% limit on investment in private equities issued by companies registered in the country and 5% limit on infrastructure products (capital protected notes).

Romania - investments in private equities are limited to 2% and in commodities to 3 % for mandatory pension funds, whilst the limit for voluntary pension funds is set at 5% for both.

South Africa – the prudential investment limits apply a look-through principle whereby the fund has to look-through the different levels and disclose the assets underlying the alternative investment. The relevant limits for asset classes apply to derivative instruments. This principle however, does not apply to hedge funds and private equity funds and investments therein must be disclosed under those investment categories.

Slovak Republic - (voluntary tier) applies a limit of 30% of net asset value (NAV) on real estate.

Swaziland - has introduced limits ranging between 15% (private equity) and 30% (for infrastructure and structured products).

Switzerland - applies 15% overall limit on alternative investments, however, a 10% limit applies for structured products and 30% limit on currency. These limits have an indicative value in the sense that it is possible to move away from them in certain conditions, when the safety of the achievement of the contingency goals are guaranteed.

Germany - limits Pensionskassen investments in private equity to 15% and hedge funds and commodities to 5% of the restricted assets. German Pensionskassen can only indirectly invest in commodities.

31. Other types of quantitative restriction also apply. Almost half of the respondent countries limit investments in a single alternative investment vehicle and /or single issuer/ group generally to either 5% or 10%, with the limit varying by credit rating in some jurisdictions. Certain countries also have limitations on mutual funds ranging from 5% to 20% of NAV, where these restrictions can apply to either a single mutual fund or all types of mutual funds. Whilst in some countries where no quantitative investment limits apply (including for single investment vehicles), pension fund managers must not excessively concentrate investments in certain investment products in order to comply with statutory obligation to manage pension assets securely and efficiently to provide adequate post-retirement benefits to their members.[17]

Derivatives

32. A majority of jurisdictions indicated that restrictions are placed on the use of derivatives. However, it was noted that the restrictions are dependent on how the derivative instruments are used. If derivative instruments are used for hedging purposes, often no restrictions or less restrictive limits are

[17] As is the case in Japan.

placed on the pension fund. Whilst it was observed that should a pension fund use derivatives for investment purposes, far narrower quantitative limits are applied.

Box 7. Derivatives - Quantitative Limits

Chile - for hedging purposes, the pension funds can use derivative products to hedge up to 100% of their investments. However, for investment purposes, pension funds are limited to 3% of the total assets under management and 4% of pension funds' assets by counterparties.

Estonia - up to 10% of the value of the assets of a pension fund can be invested in derivatives, with the exception of foreign exchange hedging.

Mexico - derivative exposure is included in the overall asset class limits of the portfolio. Thus, derivatives must fulfil maximum VaR limitations.

Germany - for both Pensionsfonds and Pensionskassens, derivative use is limited to 7.5% of the total assets of the portfolio at the last balance sheet date. This limit applies to acquisition-preparation operations and yield-enhancing operations. Yield-enhancing operations occur when the securities actually held in a portfolio are used in order to increase returns via financial derivatives. Generally, acquisition-preparation operations and yield-enhancing operations only use certain derivative instruments which are assigned to this specific purpose and are thus permissible. For hedging operations, the volume of balance sheet items hedged by these instruments may not exceed 100% of the portfolio of assets as the latest balance-sheet date. If derivatives are used for the purpose of a pre-emptive purchase taking place within one year or the purpose of an increase in profit, each instrument has to follow a limit of a maximum 7.5% of the total capital and if an acquisition is occurring in more than one year a 5% limit applies to the total capital.

Austria – the supervisory authority applies minimum standards for risk management, and where a Pensionskassen is not assessed as meeting these requirements, investments in derivatives are restricted to a maximum of 5% of the portfolio.

Hong Kong – Mandatory Provident Funds may invest up to 10% of fund assets in futures and options contracts that are traded on an exchange approved by the supervisory authority. Funds may also invest up to 5% of fund assets in warrants that do not contain a put warrant.

Mexico - for OTC contracts an International Swaps and Derivatives Association (ISDA) master agreement must be signed and the counterparty must satisfy minimum credit rating standards, according to which a percentage of the assets under management can be invested (5% for AAA rating, 3% for AA and 1% for A).

South Africa – Look through principle applies and the assets underlying the relevant derivative instrument must be disclosed in the asset category with the different limits applying thereto. The investment in hedge funds and private equity funds is limited to 10% respectively with an overall combined limit of 15% in these to investment classes.

Table 1: Quantitative Limits on Alternative Investments

Country	Total	Hedge funds	Private Equity	Infrastructure	Real estate	Currency	Commodities	Structured Products	Others
Australia	No limits[18]								
Belgium	No limits								
Canada					25%				
Chile[19]									
Columbia			40%						
Costa Rica			10%					5%	
Czech Republic[20]		5%	5%	5%		5%	5%	70%	70%
Germany Pensionskassen		5%	15%		25% REITS	30%	5%		
Hong Kong						30%[21]			10% REITS
Israel	No limits								
Mexico			10%	10%		30%		10%	
Netherlands	No limits								
Norway	7%								
Poland		10%	10%	10%	10%	10%	10%	10%	10%
Portugal	10%								
Romania[22]			2%				3%		
Slovak Republic (voluntary funds)					30%				
South Africa[23]		10%	10%		25%				
Swaziland	15%				25%		10%	Look-through principle applies	
Switzerland[24]	15%					30%		10%	
Turkey	No limits								15% warrants 20% venture capital
UK	No limits								

[18] No limits (in all countries). Does not refer to single investment limits

[19] The general limit ranging between 10 to 20% of AUM depending on the type of pension fund applies for all 'restricted investments' that includes investment vehicles with alternatives as underlying assets.

[20] Structured Products and Others limit if listed in OECD, 5% if not.

[21] Minimum exposure to Hong Kong dollar investments

[22] Limits apply to mandatory pension funds, whereas a limit of 5% is fixed for voluntary pension funds investing in private equity and commodities. Commodities limit is overall with a sub-limit of 10% for gold and 5% for other commodities.

[23] Refer also to Box 6. Alternative Investments – Quantitative Limits. Real estate limit is overall with additional limites depending on the issuer.

[24] Refer to Box 6. Alternative Investments Quantitative Limits

2.3 Qualitative Restrictions

Alternatives

33. The majority of countries acknowledged applying a variety of qualitative and/or indirect restrictions on pension fund investments in alternatives, whether they are fiduciary or prudential. Most commonly these involve the requirement to follow the prudent person rule.[25] This implies establishing an investment policy which is adapted to the characteristics of the pension fund and the investment strategy is appropriately diversified. Further, in most jurisdictions there is a regulatory requirement for pension funds to establish and manage effective risk management systems for the monitoring and control of the risk exposures associated with investing in alternative investments. As such, in some countries in order to enhance this prudential requirement, the supervisory authority has provided additional guidelines regarding the conduct of investment business by pension funds for specific types of assets (see additional information under '5.3 Guidance').

34. In approximately half the jurisdictions, other qualitative restrictions commonly in use relate to non-transparent investments and non-listed investments.[26] Restrictions on leveraged investments are in force in almost half of the countries. Some countries, however, impose restrictions on alternative investments via caps on fees or charges. Other jurisdictions limit real estate investments to local companies, with a similar restriction applying to private equity investments.

35. The majority of countries require pension funds to assess the underling nature of the assets they are investing in, that is, to apply a 'look through' process. It was noted that in some jurisdictions pension funds must have their alternative investments approved by the supervisory authority. However, in some countries where such legislative provisions do not exist, the supervisory authority expresses strong expectations that pension funds will actively make themselves aware of the nature and materiality of their exposure.[27]

Derivatives

36. Qualitative restrictions on pension funds investments in derivatives are applied in some form in all countries.[28] As with alternative investments, these are normally applied via the prudent person rule, although reinforced in certain countries by specific guidelines, as well as risk management requirements. For instance, in some countries fund managers are required to develop an investment policy to manage derivatives both for hedging or investment purposes The requirements include, among other aspects, to

[25] According to the rule fiduciaries/trustees are expected to perform their duties and obligations with regard to pension plan management, including investment of plan assets, with the care, skill, prudence and diligence, acting as persons of ordinary prudence would exercise in dealing with their own property – see 'Prudent Person Rule Standard for the Investment of Pension Fund Assets', OECD Financial Market Trends, N83, November 2002

[26] Non-transparent investments restrictions apply in Austria, Chile, Colombia, Germany, Hong Kong, Israel, Japan, Mexico, Swaziland, Switzerland, Thailand and UK. Non-listed investment restrictions apply in Belgium, Columbia, Czech Republic, Estonia, Germany, Hong Kong, Israel, Japan, Mexico, Portugal, the Slovak Republic (voluntary pillar), South Africa, Swaziland, Switzerland and Thailand.

[27] As is the case in Australia, Costa Rica, Czech Republic, Hong Kong, Romania and the Slovak Republic (voluntary tier).

[28] Except in Colombia, Romania and the Slovak Republic with respect to investment of assets of mandatory pension funds

establish procedures and systems that ensure updated information about the type of risk hedged, the profit or loss position, as well as the effect on the return and risk of the total portfolio, is made available so that it can be appropriately assessed. Other requirements include developing a risk management policy which addresses matters related to operating risk, legal risk, counterparty risk, liquidity risk and market risk.

37. Some countries apply requirements in terms of knowledge and experience. A number of these requirements are mandated by regulation, where Investment and Risk Committees of pension funds, for example, or derivatives traders must have professionally accredited training and experience in alternative investments and derivatives. Similarly, other regulatory requirements in some jurisdictions include ensuring an adequate risk-management function, sufficient qualification of staff, determining obligations for the internal audit function, developing internal guidelines and information and reporting responsibilities. Whilst in other countries, the supervisory authority must authorise the pension fund to use derivative instruments subject to passing a certification exam validated by a panel of independent experts.

38. A significant number of jurisdictions indicated that they have specific requirements for derivative counterparties, such as establishing a minimum risk rating for OTC counterparties or the requirement for the use of a Clearing House. In certain countries, only authorised counterparties, such as banks, can be used to execute transactions. Whilst in other countries, the supervisory authority must authorise the Clearing House and/or the counterparty to the transaction.

Box 8. Derivatives - Qualitative Limits

Bulgaria - counterparties in forward currency contracts and interest rate swap transactions can only be banks and investment intermediaries satisfying a minimum credit rating level defined by law. The counterparties cannot be affiliated with the pension insurance company which is managing the pension fund.

Chile -the derivatives counterparties, both Clearing Houses and OTC counterparties, are to be approved by the supervisory authority. In the case of OTC counterparties, the authority considers a minimum credit risk rating of A for foreign banks and AA for local banks.

Hong Kong - futures and options must be traded on an approved exchange, and warrants must be listed on an approved exchange, so that the exchange will be the central counterparty. Convertible bonds must be listed or meet the minimum credit rating requirement for a debt security as determined by the supervisory authority. Currency forward contracts may only be acquired from either an authorised financial institution or an eligible overseas bank that satisfies a minimum credit rating as determined by a credit rating agency approved by the supervisory authority.

Thailand - the counterparty for OTC derivatives must be a bank established under specific law, or alternatively an approved commercial bank, derivatives' broker or derivatives' dealer. These requirements are consolidated along with debt securities issued by the same counterparty.

South Africa – Derivative instruments may not be used to circumvent any principle or limit set out in the prudential regulations. Trustees must ensure they are aware of all relevant risks and leverage associated with derivative instruments and leverage must be disclosed in an understandable manner. In addressing the risk relating to a specific instrument or counterparty, trustees are required to perform a due diligence taking into account all the risks relvant to such instruments.

2.4 Market Practice

Current

39. In most countries surveyed, pension funds have only a limited exposure to alternative investments and derivatives - generally falling in the 1-3% range of total assets. Only a limited number of

countries reported over 5% exposure[29]. Interestingly, of those countries which reported a greater than 5% exposure it was noted that the pension fund systems primarily composed of DB retirement plans, or where DC plans are required to provide guarantees. There are some notable exceptions, where investment in alternative assets by pension funds ranges between 10-30%.[30] However, these are considered unusual cases, and are likely due to the nature and level of development of the respective capital markets.

40. A number of respondents reported difficulty in providing statistical data with respect to specific asset classes of alternative investments. Data collected for supervisory purposes by some jurisdiction often falls into the category of 'other assets'. In addition, it should be noted that certain assets in some countries are not considered to be 'alternative', such as securitised real estate.[31]

Box 9. Alternative Investments - Data Collection Issues

Australia - does not collect detailed asset allocation statistics with alternative investments mostly being grouped under the 'other' class of assets. However, anecdotally, amongst funds with exposures, the regulatory authority Australian Prudential Regulation Authority (APRA) believes that hedge fund investment is approximately 5% and private equity exposure approximately 10-20%. Whilst securitised real estate is not considered an alternative investment, pension funds commonly invest between 10-20% of pension fund assets in that area.

Canada - also does not gather such data. However, in view of the Office of the Superintendent of Financial Institutions (OSFI), the exposure to alternative investments is considered to relatively low for the majority of regulated pension plans.

[29] i.e. Japan, the Netherlands, Belgium and Switzerland

[30] Swaziland (with 31% in securitized real estate investment and 20% investment in currency products) and Colombia (where 12% of pension funds assets invested in private equity

[31] As in the case in Australia

Table 2 summarises the exposure of pension funds to alternative investment assets in various respondent countries.

	Total (% of Total Assets)	Hedge Funds (%)	Private Equity (%)	Infrastructure (%)	Securitised Real Estate (%)	Others (%)
Belgium	7.12	1.3 (including private equity)			2.27	0.25 Derivatives 3.30 Swaps
Bulgaria				0.96	1.75	3.49 Investment property
Chile						
Columbia			12.18			
Costa Rica	3.23				3.20	0.03
Czech Republic	2.07	0.39	0.03		0.10	1.55
Estonia	1.0 - 2.0					
Germany Pensionkassen[1]	1.80	0.70	0.20[3]			0.90 ABS and CLN
Israel	1.62	0.63	0.20		0.14	0.65
Japan	7.40[3]	5.70	0.40		1.10	0.10
Mexico[2]	1.51		0.75	0.50		0.26 Derivatives
Netherlands	6.20	3.40	2.80			
Poland	3.20			3.10		0.10
Portugal	1.90	1.36			0.54	
Romania	0.0		0.0			
Serbia	1.10					1.10
Spain	1.02	0.09	0.40		0.53	
Swaziland				2.80	31.0	20.40 Currency
Switzerland	5.69	3.27	1.0			1.42
UK	1.50	1.50				

Note 1 -In Germany private equity includes infrastructure as an asset class. (Numbers are as of financial year 2009).

Note 2 - The total reported for Mexico represents a share, in addition to an investment in derivatives using market value for the latter. In case of delta-weighted exposure of derivative instruments is considered, the total reaches 4.083% of assets under management (AUM).

Note 3 – 7.40% of the total assets of private enterprises' pension funds. Public pension (Employees' Pension and Basic Pension) funds do not undertake alternative investments.

41. Approximately, one third of respondent countries noted observable differences between types of pension funds exposed to alternative assets, with larger pension funds usually more exposed[32] and DB pension funds using these instruments more in order to match their liabilities[33]. Some countries with mandatory systems also noted that voluntary pension funds tend to make more use of such alternative investment instruments.

42. Although not all pension supervisory authorities were able to respond (due to limitations in their data collection process), it appears that pension funds in most countries use external fund managers to handle their alternative investments. It was also noted that there are a number of countries which are

[32] i.e. in Australia, Belgium, Canada, the Netherlands, Portugal, Serbia and South Africa. In Serbia only the largest pension funds can invest in real estate.

[33] As is the case in Australia and Portugal

exceptions to this general trend, rather investments are managed in-house, as may also be the case with larger pension funds in other countries[34].

43. Alternative investments also tend to be more expensive to manage than traditional investments, with fees that may be as high as 1.5-2% of assets under management plus an additional performance-related fee of 10-20% (of the investment return). For smaller pension funds, or more generally, pension funds that do not have well-developed internal investment and risk management teams, delving into alternative investments often requires the use of fund of funds which adds another layer of cost. As pension funds become increasingly experienced with alternative investments, direct investment into single funds is the increasingly preferred route, though it does require a substantial degree of diversification to avoid excessive exposure to a single manager.

44. There are a number of ways in which a pension fund may invest in alternative assets. In some countries, this may be performed indirectly through closed ended funds, mutual funds and/or exchange traded funds (ETF) and for investment in private equity, pension funds generally use investments funds[35]. Some jurisdictions authorise pension funds only to undertake alternative investments through the establishment of contacts with financial institutions.[36] Whilst in other countries, pension funds make use of external fund managers, but have also hired independent consulting groups to assist in due diligence checks of their alternative investments.

45. The survey results noted that whilst most pension funds investments in alternative instruments are conducted through external managers, their role is diminishing in favour of ETFs. A number of countries indicated that ETFs were gaining prominence amongst their pension funds, although varying uses of ETFs was noted. In some countries their use varies depending on each individual pension fund's decision, whilst in others ETFs are generally used for exposure to international stock indices. Restrictions on the use of ETFs were also noted. Mandatory pension funds in certain jurisdiction found investing in ETFs becoming more difficult following legislative changes, though the exposure of some voluntary pension funds remains high. Whilst other countries limited investment in ETFs to a certain percentage level of a pension fund total assets, or only to be used for investing in particular assets, such as gold.

Box 10. Exchange Traded Funds - Restrictions

Slovak Republic – the growth or balanced portfolios of the mandatory pension funds are generally invested in ETFs, however, due to legislative changes this is becoming increasingly prohibitive. However, investment by voluntary pension funds can be as much as 40% - 60%.

South Africa – limits the use of pension funds investing in ETFs to 2.5% of the fund's total assets.

Thailand –allows pension funds to invest through the use of ETFs, however, this is only restricted to when investing in gold.

Future Estimates

46. The position of respondent countries was divided with respect to future projections for pension funds' exposure to alternative investment strategies. One set of countries considered that the share of

[34] i.e. Bulgaria, Chile, Costa Rica, Estonia, Poland and Serbia

[35] As is the case in Chile

[36] As required in Japan

alternative investments in the total investment portfolio of pension funds may increase in future. Alternatively, others countries expect pension funds' exposure to remain at the current level. It was also suggested that the exposure to alternative investments for smaller pension funds will decrease due to further tightening of risk management standards. One third of respondents could not give their views on future prospects for the use of alternative investments often citing the uncertain regulatory environment regarding these instruments including at the European level, but also more generally on a global basis.

47. Only a few of respondent countries expect pension funds to contribute to revival of the securitization market. Commenting on the main challenges to pension funds playing such a role, respondents noted that a lack of knowledge and skills investing in alternative and derivative products is the main obstacle.

3. IMPLEMENTATION ISSUES

48. For a typical pension fund, the portfolio management process starts with the formulation of a portfolio strategy, which is largely determined by the investment objectives, financial market expectations and constraints of the pension fund. It is important that the strategy is in accordance with both the pension fund's willingness to run risks as well as its ability to bear those risks. Hence, a pension fund needs to first determine its 'risk appetite' (objective). The risk appetite of a pension fund defines the level of risk it is prepared to accept in order to realise its objectives. The scope for risk-taking is limited by the fund's 'risk bearing capacity' (constraint), which is the degree of risk it can afford to take. This risk bearing capacity depends on several factors. Therefore, it is essential that the (risk profile of the) portfolio strategy is considered in relation to the complete financial design of a particular pension fund.

49. For most pension funds this design is determined by elements such as the fund's liability structure, its investment strategy and expected returns on its investments. For DC funds the main considerations are the risk profile of the members of the fund and their ultimate target return or income goals. Moreover, the financial design for DB pension funds is also defined by the fund's ability to increase contributions, its agreements with the sponsor regarding supplementary contributions and its indexation policy. Hence, the portfolio strategy of a pension fund cannot be treated in isolation from the other elements in the portfolio management process such as the implementation and monitoring of the portfolio.

50. The implementation process can be defined as the conversion of a targeted strategic investment policy into an actual investment portfolio. It is important to note that the implementation process closely interacts with the portfolio strategy and the monitoring design. The financial crisis has emphasised the importance of an adequate implementation process, as the magnitude of the losses of some pension funds were amplified by shortcomings in the implementation of investment strategies. Recent experiences suggest that the increased degrees of freedom and complexity in the implementation of the investment policy and its subsequent impact on the risk profile lead pension funds to underestimate the possible risks in the implementation process.

51. On a general level, the observed shortcomings in portfolio implementation relate to an increased investment in alternatives and use of derivatives. It is important to note that other factors, such as the design of investment mandates, participation in securities lending programmes and the outsourcing of (parts of) investment processes also contribute to the observed shortcomings in the implementation process and are not limited to the context of alternatives and derivatives. These elements, however, are beyond the scope of this paper.

52. As discussed, for pension funds, the main attraction of alternative investments is the possibility to improve the risk-adjusted return of investment portfolios through diversification, whilst derivatives are

used mainly for substitution, hedging and asset-liability matching (ALM) purposes, though also sometimes, more controversially, for speculation and leverage.

53. The type of alternative investment or derivative used by a pension fund should therefore be determined by and be compatible with its risk appetite and risk bearing capacity. As discussed, riskier strategies are often inherent in alternative investments (due to their complexity, illiquidity etc.) and may not therefore be appropriate for all pension funds. Likewise, the issues of transparency and counterparty risk related to derivatives means that they can only safely be used by pension funds with appropriate risk management capabilities, and, in most cases, only for risk reducing purposes.

54. By investing in alternative investments in the context of active asset management, pension funds have often attempted to access alternative risk premiums that are less correlated with the more traditional risks such as equities, credits and interest rates. However, the different characteristics of alternatives may increase the risk level in the implementation process and therefore demand higher requirements of a pension fund's risk management framework. Alternative investments generally exhibit properties such as extensive use of leverage, application of innovative financial products and derivatives, illiquidity of the underlying assets, greater reliance on the skill of the investment manager and the absence of a meaningful performance benchmark. Moreover, correlations between asset classes tend to increase during periods of financial crisis. As such, many of the diversification benefits envisioned in the portfolio strategy with the inclusion of alternative investments may not (fully) materialise during times of financial crisis.

55. Hedging is a main purpose for the use of derivatives in implementing an investment policy, particularly against interest rate risk and currency risk. Although the financial crisis highlighted the value of hedging financial risks, it also showed that exposure to derivatives may be accompanied by risks that are not always adequately managed and well understood. Especially in the case of OTC contracts, derivative positions gave rise to unexpected liquidity risks and counterparty risks. As the risk awareness and investment management sophistication of pension funds increases, it is more likely that pension funds will hedge part of their investment risks and that the use of derivative instruments will increase.

4. POTENTIAL RISK EXPOSURES

4.1 Potential Risks

56. The following explores the nature of the potential risks that pension funds may be exposed to, and should be mindful of, when implementing their investment strategy.

Leverage in the use of derivatives

57. Pension funds are sometimes exposed to increased risks from leverage indirectly through the use of derivatives or via external investment vehicles.

- Pension funds may invest in leveraged products that involve exposures entered into with borrowed funds, such as real estate, infrastructure, CDOs, CLOs, hedge funds and private equity.

- Leverage may arise from instruments employed for risk management, such as interest rate swaps. Such instruments are used to convert exposures to long-term fixed rates (typically arising from long-term liabilities) into exposures to short-term interest rates. By doing so, the balance sheet (from an exposure point of view) is lengthened. Although the exposure to long-term rate changes is reduced, an additional exposure to short term interest rates is created. Hence, liquidity and refinancing risks arise. Basis risk might also arise from the transformation.

- Pension funds may be exposed to leverage by issuing loans or from participation in securities lending programs, which may also lengthen the balance sheet.

- Leverage may arise from exposures to certain "alternative" trading strategies, such as so-called 'basis trades'. These are transactions that acquire long ('buy') and short ('sell') positions in virtually identical products. The underlying notion is that the risks imposed by these buy and sell transactions nearly cancel each other out, leaving a desired net exposure to a specific risk factor. These strategies generally result in a high degree of leverage as very limited net investments are required.

Liquidity risks

58. Unexpected liquidity needs may arise during times of stressed market conditions, which may force pension funds to sell assets at unfavourable prices. Needs for liquidity may stem from margin calls and the rolling over of (currency) contracts. At the same time, the availability of liquid assets might be constrained. During the financial crisis it became apparent that in some cases:

- Market liquidity was insufficient to readily divest assets, e.g. in the case of investments in non-regulated markets such as hedge funds, private equity, CDOs, CLOs and real estate.

- Investments in alternatives and equity and fixed-rate instruments that took the form of unit holdings were subject to constraints in investment and divestment, such as long notice periods and redemption fees. Moreover, some DC pension funds that offer member investment choice faced liquidity problems due to the total freezing of redemptions. In these instances, liquidity risks manifested in the form of suspension of redemptions of pension fund investments in unit trusts, which held illiquid assets such as direct real estate.

- Liquidity needs may arise from currency mismatches, which for example originate from exposures in foreign currency contracts.

- It furthermore appears that the occurrence of liquidity risks often, but not always, coincides with the use of leverage.

Refinancing risks

59. Pension funds may be exposed (indirectly) to significant refinancing risks. Such refinancing risks arise from the fact that certain investment vehicles in which pension funds invest, have to refinance the loans they enter into. Examples of investments involving a significant level of leverage are private equity, real estate and hedge funds. During the financial crisis many of these vehicles subsequently faced soaring refinancing costs.

Counterparty risks and concentration risks

60. Pension funds may be subject to large concentrations in counterparty credit risk. Counterparty risks (concentrations) may also materialise through indirect exposures such as derivative positions. Examples of such risks during the financial crisis include the collapse of large multinational conglomerate corporations which offered a number of different financial services products (i.e. insurance, investment products, etc).

Operational risks

61. In periods of financial crisis the investment process, as well as the decision making process and control processes may be stressed, leading to increased operational risks. As a consequence, pension funds may not be able to adequately and timely manage unexpected events (e.g. liquidity dry-ups, market crashes, or bank failures), thereby exacerbating losses.

Modelling risks

62. While modelling risks encompass the entire portfolio management process, from an implementation context, modelling is a key factor in the construction of the portfolio and in the performance measurement. Modelling risks are even more critical for alternative assets and illiquid investments. Pension funds need to be aware that objectives may not be achieved where modelling issues lead to inadequate risk analysis or improper investment choice. Therefore, models used need to encompass all material risks, including those that only become apparent during exceptional market circumstances.

4.2 Investment mandates and agreements

Investment mandates

63. On a deeper level, losses in the implementation process result from inadequate or incomplete investment mandates with fiduciary asset managers. Investment mandates may allow too much discretion to the asset manager. During the crisis, instances were recorded of funds that had given tracking error mandates to asset managers without attaching sufficient further limitations. Such mandates allowed significant discretion for asset managers to deviate materially from the strategic benchmark.

Outsourcing

64. Many pension funds have outsourced important parts of their investment process to fiduciary managers. In several cases, however, information flows are insufficient to enable timely identification and adjustment of risks. In other cases, risk management is outsourced to the same external party that is also responsible for asset management, which endangers an adequate separation of interests. Also, in some cases the selection of external asset managers (due diligence process) was left to external parties that did not operate independently (adverse incentives). Investments may thus be selected that are less than optimally aligned with stated investment policies.

Valuation issues

65. The financial crisis emphasised the difficulty to accurately value investments in illiquid assets. As a result, certain investments may be improperly valued on the balance sheet. This is mainly due to a lack of reliable market prices (real estate) or a lack of adequate valuation models (complex products). A related problem is the absence, at pension funds, of sufficient internal capacity to adequately value complex investments. Funds thus have to rely on third parties, which in many cases are insufficiently independent to provide truly impartial asset valuations. As a result, several pension funds have been unaware of their investments' true value.

5. RISK-MANAGEMENT

5.1 Current Practice

66. When it comes to the practice of pension funds investing in alternative and derivatives, only a few supervisory authorities confirmed that pension funds in their jurisdictions have a full understanding of

these instruments and that they undertake suitably rigorous assessments before committing funds to them. General concern was noted that recognition of the complexity of alternative assets and derivative products and their underlying risks, as well as skills in the management of these was not substantially sufficient.

67. Varying degrees of risk management understanding were noted. One authority observed a significant variance in pension funds' aptitude and understanding, whilst another supervisor noted the understanding and risk management was generally adequate given that the use of alternative investments in their jurisdiction is fairly limited (both in terms of number of pension funds and amount of assets) and usually undertaken by external fund managers and /or via collective investment vehicles (which limits the risks related to alternative investments).

68. With respect to the legislative framework (or otherwise) for pension funds and their required level of knowledge of investments, several authorities commented that the pension funds must have such an understanding, being legally bound to do so. While the position of other authorities is based on confidence that investment managers/trustees have adequate knowledge (or could obtain external advice) and that they rigorously undertake assessment before committing funds. Despite this, some supervisory authorities have noted poor quality advice provided by investment advisors and/or managers on such investments and their inclusion is appropriate for a pension fund's investment strategy.

69. Half of respondents qualified the ability of funds to understand alternative investments/derivatives and undertake such assessments as only partially satisfactory, whilst a number of authorities considered that pension funds are accomplishing these duties only to a limited extend. In this respect, some supervisory authorities noted that pension fund exposure to risks related to alternative investments and derivatives are often not being properly measured. A number of jurisdictions indicated the need for greater reliance on ex ante risk management methods (i.e. stress testing, VaR measures, etc.), whilst others recommended improvement of ongoing risk control and monitoring programs, particularly for counterparty risks.

70. Views of the supervisory authorities on the adequacy of risk management systems put in place to monitor and control alternative investments and derivatives and the accuracy of valuation methods used were divided. Again more than half of respondent authorities assessed the risk management systems and valuation methods used by pension funds in their jurisdiction considering them to be partially satisfactory, whereas only a limited number of authorities expressed their full satisfaction. Two authorities viewed management systems and alternatives valuation techniques as fairly inadequate.

71. During the financial and economic crisis, supervisory authorities observed weaknesses in risk management control or mitigation citing non-compliance with investment limits or requirements for investments to fit with the overall risk profile of the pension fund, together with a lack of information provided for pension plan members about the risks characteristics associated with these investments.

72. With respect to the capacity of the pension funds to explain adequately their alternative/derivative investment strategy to their members and beneficiaries (including the potential risks involved), the vast majority of authorities considered there to be considerable room for improvement. Only four authorities were fully satisfied with pension funds' communication policies. One third of authorities considered the policies as partly satisfactory, with the other third of respondents considering that pension funds are succeeding only to a limited extent. Five countries rated communication policies in relation to use of alternative/derivative instruments as unsatisfactory. A number of countries noted that introduction of new disclosure requirements/regulations was currently being considered and may be implemented in future where deemed appropriate.

73. Supervisory authorities were also asked to appraise their own knowledge and preparedness in understanding derivatives, structured products and alternative investments. Seven respondent authorities judged supervisors' knowledge and expertise as fully satisfactory, with more than half authorities estimated this faculty as partially satisfactory. A few authorities considered that they possessed expertise only to limited extent, whilst one authority replied that the knowledge in this area was insufficient.

74. In a view of increased technicality and complexity, as well as the constantly evolving nature of derivatives and alternative investment industry, a number of supervisory authorities are putting in place specific training programmes for their staff in this field.

5.2 Investment Strategy and Disclosure

75. Almost all authorities stated that they impose regulatory requirements on pension funds in their respective jurisdictions to address alternative investments and derivatives in their investment policy document and/or risk management strategy. Often these documents are required to address the appropriateness and intended use of alternative investments and derivative instruments in a pension fund's investment strategy, highlighting the potential risk exposures associated with such investments and how they are to be mitigated. In addition, the valuation methodology and policy is also expected to be addressed.

76. European countries noted that their regulations conform to the general requirements as stated in the EU Directive, which requires a written statement of investment policy to be established and reviewed periodically (at least each three years) and immediately in case of significant change of investment policy. Whilst the EU Directive does not specifically require alternative investments and/or derivatives to be addressed within the written statement of investment policy, it does prescribe that the underlying principle of the prudent person rule should be adhered to.

Box 11. Investment Strategy and Disclosure

Austria - Pensionskassen have to draw up a written investment policy, which must include the admissibility and the strategies of investment in derivative products and assets which are not traded on a regulated market and /or are traded on a venture capital market.

Belgium - the supervisory authority expects pension funds to prescribe the use, valuation and management of derivatives in their written investment policy.

Portugal - a pension fund investment policy statement must describe the policy towards derivatives and address the following items: types of products, purpose, inherent risks, conditions under which they will be used, financial markets in which they operate limits of their use and maximum potential loss allowed. With respect to alternative investments the investment policy should specify limits on non-harmonised funds and their investment strategy, the limits on investments in currencies than Euro and limits on real estate. Further in 2009, a new regulation on risk management and internal control requirements were adopted.

Canada -the use of derivatives should be authorised by the document establishing the pension plan and fund. In such cases, the written statement of investment policies and procedures should relate the use of derivatives to the objectives and obligations of the pension plan and contain detailed information including: type of acceptable derivative instruments, proportion of asset portfolio to be allocated, purpose of use (hedging, index replication, etc), authorised managers to use derivatives, trading limits and how OTC products are to be managed.

Israel – a requirement of regulation is that every pension fund must publish in its financial reports, its exposure to alternative assets. If a pension fund sold alternative assets during the year, the pension fund must report on the amount of assets that was sold and the profit (or loss) on the sale.

South Africa – pension funds must have an investment strategy and quantative investment spreading are disclosed in the annual returns submitted to the regulatory authority.

5.3 Guidance

77. The large majority of jurisdictions do not provide specific guidance to pension funds with respect to investment in alternative instruments and derivatives. Only relatively few authorities issue specific guidance on the use of these financial products. Such guidance tends to refer to the establishment of appropriate risk management frameworks, taking into consideration matters such as the fund's circumstances, the risk and return profile, diversification, liquidity and cash flow requirements, asset valuation methodologies and monitoring procedures.

Box 12. Supervisory Authority Guidance - Alternative Investments and Derivatives

Australia - examples of guidance provided by the APRA include superannuation circulars, guidance notes on risk management and investment, and from time to time, letters addressed to pension fund trustees regarding specific matters of interest, such as valuation of unlisted assets.

Canada - the derivative guidelines which have been issued outline key issues that administrators and management of federally regulated pension plans are expected to consider when incorporating derivative instruments into their investment and risk management strategies.

Netherlands, - the supervisory authority has issued a policy rule in 2007 which provides the key principles for pension funds in assessing risk management for alternative investments.

Japan - where the law does not impose specific restrictions on the use of alternative investments and derivatives, guidelines were introduced requiring pension fund managers to pay due attention to the following issues when selecting specific investment assets: the compatibility of the assets with the purposes of the fund, the impact of investing in such assets on the risk and return of the total pension fund assets, liquidity of such assets, the necessary expenses for investing in or managing these assets, the professional ability of investment trustees and any conditions associated with investing in such assets.

South Africa – in the process of drafting a guidance on investment in derivative instruments, hedge funds and private equity funds.

6. LESSONS LEARNED

6.1 IOPS Good Practices

78. Most countries require pension funds to observe the good practices on pension funds' use of alternative investments and derivatives as outlined in the IOPS guidance (IOPS Good Practices) (refer to Box 13).[37] However, several countries noted that their regulations do not contain provisions in relation to the IOPS recommendation for pension funds to establish transparent and appropriate communication strategy with stakeholders regarding alternative investments. In addition, some jurisdictions do not have a requirement to address performance measurement. Whilst in certain countries, their regulation do not specifically consider IOPS guidelines with respect to an assessment of the quality of risk management of the external fund managers, establishment of adequate contract terms, or monitoring such contracts.

[37] IOPS Good Practices for Risk management of Alternative Investments by Pension Funds http://www.iopsweb.org/dataoecd/47/20/40010212.pdf?contentId=40010213 – The Good Practices are currently under revision with a new draft due for approval by the IOPS by the end of 2011.

Box 13. IOPS Good Practices in Risk Management of Alternative Investments by Pension Funds

1. ***Characteristics of alternative investments***

   - Act with due diligence when assessing alternative investments to ensure appropriate account of the specific risk and return characteristics of alternative investments is taken.

2. ***Portfolio policy & investment strategy***

   - Take into consideration that investment in alternative assets fits with the overall strategy having regard to the pension fund's total risk profile, the total investment portfolio and the nature and size of the liabilities, ensuring adequate diversification.

3. ***Due diligence***

   - Have a clear understanding of the risk characteristics of the alternative investments which is supported by timely analysis of the risk profiles of the investment strategies and the capacities of the managers of the funds, including the quality of the risk management conducted.

4. ***Contract terms and monitoring***

   - Establish adequate contract terms which should include clear and unambiguous terms and conditions, supported by regular monitoring of compliance.

5. ***Communication***

   - Develop transparent communication with stakeholders regarding alternative investments.

6. ***Outsourcing***

   - Where used, remains the responsibility of the pension fund, thus ensuring adequate risk management of alternative investments.

7. See http://www.iopsweb.org/dataoecd/47/20/40010212.pdf?contentId=40010213

79. A large number of countries acknowledged that specific regulatory requirements have already been introduced and/or new initiatives are currently being considered which aim at further improving pension funds' risk management systems, in particular with respect to the most complex and high-risk investment vehicles.

80. This final section outlines possible lessons for the risk management and supervision of pension funds. It consists of two subsections. The first subsection addresses lessons that are relevant for the portfolio implementation process. The second subsection includes the consequences for supervision, and supervisory frameworks, and the lessons which may be gleaned.

6.2 Investment implementation process

81. *Pension fund board of trustees*: The pension fund board is responsible for matching the risk profile of the investment portfolio with the risk appetite and risk bearing capacity of the pension fund and its beneficiaries. This entails more than determining the portfolio strategy, but also involves the implementation and monitoring process. A holistic approach of the investment process ensures that the risk profile of the actual investments matches the risks envisioned in the portfolio strategy of the pension fund.

It is important for the pension fund board to be ‘in control’ of the entire portfolio management process and a sufficient level of expertise regarding this process. As the financial and economic crisis highlighted, the actual risk exposures of some pension funds far outweighed the risk level envisioned, thus putting pressure on the pension fund’s risk bearing capacity.

82. IOPS Good Practice 1 states that pension funds should have in place appropriate risk assessment and risk management of alternative instruments. Being responsible, the pension fund board should ask itself if the available information and design of the decision process allows for adequate and independent decision making. As noted in IOPS Good Practice 2, pension fund boards need to have a comprehensive understanding of the overall risk profile and characteristics of alternative investment assets, particularly in relation to the structure of the pension fund before an investment is made. As such, the pension fund board must assess whether the risk management framework is at balance with the level of complexity of the investment portfolio. Engagement in complex derivatives, for instance, may involve a need to adjust the pension fund’s liquidity risk management, so that sufficient liquid assets are available in the event that additional collateral must be provided. Such an example illustrates the awareness of a pension fund in assessing its potential risk exposures when making an investment in alternative investments or derivative instruments.

83. *Investment mandates*: Investment mandates with external managers and fiduciaries need to be recorded in full and transparently. IOPS Good Practice 4 suggests that mandates issued to an asset manager should include a coherent and complete set of agreements, which align the level of investment risk with the objectives of the pension funds. Such agreements may relate to, among other things, permitted asset classes or the distribution of investments across countries and sectors. Other possible constraints may include concentration limits regarding individual counterparties and/or issuers, adherence to minimum credit ratings, restrictions surrounding the use of deposits and minimum requirements imposed on, for instance, money market instruments. Such clear and unambiguous terms may have alleviated some of the increased risk exposures that a number of pension funds found themselves in during the financial and economic crisis. Moreover, pension funds should ensure that an adequate due diligence process is undertaken for investment and manager selection. As such, supervisors should expect that pension funds boards have set selection criteria and a clearly documented policy for these processes.

84. *Risk management and control framework:* The observations in this paper illustrate the need for a risk management framework that is sufficiently robust to identify, assess and manage the risks inherent in the investment implementation process. Inadequate risk management most certainly contributed to material losses for pension funds with respect to investment in alternative assets and derivative instruments, particularly during the financial and economic crisis. IOPS Good Practices 2 indicates that pension fund’s investment in alternative assets is expected to fit with the pension fund’s overall strategy taking into account the pension fund’s total risk profile. This is particularly underscored by the findings above where supervisors raise concerns that many pension funds do not fully understand the products they invest in or that they lack the necessary risk management systems to cope with the accompanied risks. Thus, the current practice in some jurisdictions of placing qualitative requirements in terms of knowledge and experience could prove to be helpful and provide a further dimension to the risk management framework.

85. *Monitoring*: Since the environment and the actual risk profile of the portfolio may change over time, as was keenly observed during the financial and economic crisis, portfolio management requires continuous monitoring and steering. The pension fund, asset manager and supervisory authority must therefore have a sufficient system for monitoring risk exposures and their evolution. Risk reports should provide the fund with sufficient insight to explain the realised returns on investments. The information flow must be timely, allowing the risk profile to be assessed, and adjusted if need be at the portfolio level. This was seen as a particular weakness of pension funds during the financial and economic crisis. Thus, IOPS Good Practices 2 and 3 encourage pension funds to establish an adequate monitoring program which

assesses the diversification and risk profiles of the investment strategies on a regular basis. In addition, information also needs to be available for sharing with members and beneficiaries, especially in a mandatory system.

86. *Additional risks:* The investment implementation process may significantly influence the risk profile of pension funds. Active management and outsourcing may give rise to additional risks, such as liquidity risks, refinancing risks, concentration risks, counterparty risks and valuation issues. Moreover, pension funds and supervisors need to be aware of the risks arising from leverage. As investment in alternative investments and derivative instruments during the financial and economic crisis highlighted, pension funds (and supervisor authorities) need to be aware of the impact that these risk factors may have and incorporate them in their assessment process when relevant. This requires the establishment of a risk management framework that supports the entire portfolio management process and that considers the adequacy of available resources within the fund such as staff expertise, systems, reporting processes and capacity to outsource as supported by IOPS Good Practice 1.

87. *Liquidity risk framework*: Liquidity risk forms an important risk factor in the management and supervision of pension funds. As outlined in IOPS Good Practice 2 it is essential for the investment policy to take into account the pension fund's total risk profile together with the nature and size of the liabilities. The potential impact of liquidity risk on pension funds underlines the need for a suitable risk management and control framework that takes into consideration various, and often interrelated risk exposures. The financial and economic crisis challenged the conventional wisdom that liquidity risks play a minor role for pension funds due to pension liabilities having long maturity dates. The subsequent contagion and counterparty risk exposures resulted in liquidity difficulties for many pension funds. Moreover, the common view that pension funds are typical long term investors may need revision. When assessing the investment horizon, careful consideration needs to be given to factors that may shorten the effective horizon of investments, such as: periodic rebalancing transactions, active management, (cash) collateral calls or other unexpected liquidity needs. Such factors may lead to higher turnover levels and shorter effective holding periods. The shorter horizon may prevent pension funds from realising expected liquidity and term premia, thereby hampering the aimed return generation process. Hence, when determining their strategic investment policy, pension funds need to consider the possible impact that certain investment strategies can have on their investment horizon.

6.3 The supervisory process

88. The financial and economic crisis, together with the results of the OECD survey of 32 jurisdictions evaluating pension funds' exposure to alternative investments and derivatives as discussed in this paper, have highlighted some valuable lessons for supervisory authorities. As noted above, a number of the identified concerns with respect to the investment implementation process may be alleviated by the greater implementation of the IOPS Good Practices. This in turn, requires monitoring and reinforcement by respective supervisory authorities within the capabilities of their supervisory frameworks. However, additional lessons for supervisory authorities may be garnered also as described below.

89. *Supervisory assessment*: It is clear that a supervisory assessment reviewing the risk profile of the actual pension fund investments against the risk appetite and risk bearing capacity of the pension fund is all the more relevant with respect to alternative investments and derivative instruments, as many pension funds are not always aware of their exposure to the underlying risks. Many of the risks and pitfalls of the portfolio strategy and investment implementation process often only come to light after detailed and in-depth analysis. As such, when aiming to obtain a thorough and full understanding of the nature of the underlying investment risks within a pension fund, supervisory assessments should be sufficiently comprehensive in this regard and consequently evaluate the extent to which the pension fund is undertaking its own detailed and thorough due diligence.

90. *Solvency requirements*: The financial and economic crisis highlighted that due consideration and assessment to the potentially considerable additional risks that stem from the investment implementation process resulting in solvency concerns for pension funds needs to be made. As demonstrated by the crisis, an assessment of solvency requirements based on the investment risk of strategic target portfolios or passive benchmarks could be insufficient given the substantial additional risks that may arise in the implementation process. Moreover, the findings in this report indicate that diversification benefits may not fully materialise during periods of financial stress. As such, assumed diversification benefits should be regarded with care. Thus, stress testing may be a useful tool for supervisory authorities to identify concentrations in investment portfolios across the pension sector.