REGULATION OF INSURANCE COMPANY AND PENSION FUND INVESTMENT

OECD REPORT TO G20 FINANCE MINISTERS AND CENTRAL BANK GOVERNORS

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I. Introduction

1. Investment regulations are a key aspect of the regulatory framework imposed on insurers and pension funds to limit risk taking. As governments look to institutional investors' contribution to better support the growth of the real economy, the way in which investment regulations impact institutional investors' investment behaviour has become an area that has gained increased attention. In particular, the difficulties in some countries of intermediating financing to long-term investment and small and medium sized enterprises (SMEs) in the current economic climate has hastened a desire to understand the investment behaviour of institutional investors and the impact of regulation.

2. The last decade has witnessed a significant wave of reforms governing the regulation of financial services across the globe. The insurance sector in particular has been rapidly evolving towards more risk-based requirements for capital, accompanied by an increased emphasis placed on internal risk management processes, structures, and controls. While there has been less movement towards the adoption of explicit risk-based funding requirements in pension regulation, there has nonetheless been an increasing emphasis on qualitative elements with respect to risk management and risk-based supervision.

3. The objective of investment regulation is to ensure that funds accumulated to back the obligations of insurers and pension funds to their policyholders and/or beneficiaries, or otherwise to provide a source of future retirement income, are managed in a prudent manner and in the best interests of policyholders and/or beneficiaries.

4. Investment limits generally take the form of rules by which the pension fund/insurer must abide in regard to investment portfolio allocations.[1] Traditionally, pension funds have been subjected to investment limits in certain classes of assets (e.g., foreign investment) or vehicles (e.g., alternatives). However, these limits have been reduced in many jurisdictions in recent years.

5. Qualitative requirements for investment regulation complement quantitative investment limits with governance and risk management requirements that seek to establish behavioural standards and incentives, ensuring a more comprehensive approach to the management of investment risks.. The prudent person principle in particular is an important qualitative standard to which both pension funds and insurance companies are commonly held accountable in order to ensure that investments are carried out in a prudent manner which considers the best interest of beneficiaries and/or policyholders.

6. This report examines the investment regulations of insurance companies and pension funds, and in particular quantitative investment limits on portfolio allocations. The report draws substantially on existing OECD Insurance and Private Pension Committee (IPPC) and Working Party on Private Pensions (WPPP) work, including information related to investment regulations of insurers and pension funds provided by countries through investment regulation surveys. The IPPC has been collecting data on investment regulations related to insurance over the last year.[2] In the case of private pensions, an annual survey of investment regulation has been sent out through the WPPP since 2002

1 . Risk-based capital requirements, while not establishing any set of fixed investment limits, nonetheless implicitly guide investment behaviour by imposing higher capital requirements for riskier investments.

2 . The responses from EU/EEA countries to the survey of the IPPC have been a mix of Solvency I and Solvency II based responses. Thus, this report reflects both situations but denotes which framework where necessary.

with data available since 2001[3]. This has enabled the IPPC to put together a database on the current investment regulations of OECD and some non-OECD countries of insurers and private pension plans.

7. As a result of the type of information that has been collected to date, the report does not cover potential trustee relationships[4] and their implications for standards of investment, and focuses instead on quantitative and qualitative investment standards imposed by regulation. While the importance of regulation with respect to the risk management and governance processes related to investment is acknowledged, the primary focus of this report is on quantitative requirements.[5]

8. The report first presents a conceptual framework to assess the different regulations that exist across countries for pension funds and insurance companies, including quantitative limits, risk-based requirements and qualitative governance requirements, including behavioural standards. Secondly, the report looks at the existing investment regulations collected from countries through the above mentioned surveys, describing the regulation for pension funds and insurance companies with respect to quantitative limits, risk-based requirements and qualitative requirements. Thirdly, the report provides a preliminary assessment of the implications that these regulations may have on the investment strategies pursued by pension funds and insurance companies.[6]

II. Background

1. Changing approaches to the regulation of insurer investment

9. There has been a clear trend for countries to transition to a risk-based capital regime for the regulation of insurance company solvency. Insurance companies within EU countries will be subject to the Solvency II regime from January 2016. The US introduced a risk-based capital regime in the 1990s. This trend suggests that the standard of insurer solvency regulation is shifting to risk-based regimes, although the treatment of risks in solvency regimes may differ between countries.

10. The Mexican and Swiss solvency regimes involve a combination of risk-based approaches with quantitative investment limits. In Mexico, certain assets covering technical provisions are subject to quantitative investment limits, and qualitative regulations are imposed on certain assets covering technical provisions and the solvency capital requirement.[7] In Switzerland, for assets covering technical provisions of direct insurance companies (tied assets), ceilings are imposed on certain asset classes,[8] which are further required to be traded on a liquid market. While it may be the case that

3. See http://www.oecd.org/finance/private-pensions/annualsurveyofinvestmentregulationofpensionfunds.htm.

4. Trust formations are potentially subject to different standards of accountability and liability in terms of processes and governance.

5. In this respect, while some qualitative requirements relevant to insurance companies have been collected and are analysed here in a limited context, in particular on the prudent person principle and fiduciary duty of care, this information is yet to be widely collected and analysed for the pension fund side.

6. This report on the regulation of insurance company and pension fund investment forms part of the programme of work of the OECD's Insurance and Private Pensions Committee and its Working Party on Private Pensions and has benefited from input from delegates to these bodies as well as from members of the G20/OECD Task Force on Institutional Investors and Long-Term Financing, but does not necessarily reflect their official views.

7. Such limits and regulations are imposed to avoid an inadequate concentration of risks and to limit excessive dependence of investment in a single asset, issuer, economic group or related entities.

8. In Switzerland, besides the Swiss Solvency Test, direct insurers must earmark assets covering technical provisions which are called "tied assets". The quantitative restrictions on investments are

restrictions by asset types may become less common as countries transition to risk-based regimes, limits on concentration or on the nature of the transaction may be maintained or could be strengthened so as to limit undesirable investment strategies. Such requirements are already implicitly imposed under Solvency II through its definition of risk modules.

11. Another relevant development is the strengthening of governance requirements as countries transition to risk-based capital regimes. Most countries require a risk management or investment strategy, but how this is linked to the governance and, more specifically, how the board members monitor this varies.

12. Many countries apply the prudent person principle and its risk management standards to support appropriate investment objectives, with EU countries doing so in accordance with Solvency II requirements. The prudent person principle in Solvency II is defined as requiring insurers to invest their assets considering the security, quality, liquidity and profitability of their portfolio as a whole, including diversification. While not explicitly expressed in the Solvency II Directive, EIOPA guidance indicates that a prudent person regime entails adherence to certain principles such as due diligence and process, care, skill and delegation, duty to monitor, duty to protect policyholders' and beneficiaries' interests and the principle of diversification.[9]

2. Regulation of investment in pension plans and its implications

13. Regulatory frameworks throughout the world establish investment requirements to prevent "excessive" risk exposure in pension plans. In the case of defined benefits (DB) pensions, the regulatory framework generally establishes the need to achieve certain funding ratios. The purpose of these funding ratios is to make sure that there are enough assets backing pension liabilities.

14. In the case of defined contribution (DC) pension plans, especially where they are mandatory, quantitative limits for investment regulations are often imposed, in some cases limiting the exposure to equities and lowering the ceiling as member near retirement and risk tolerance becomes lower. Age-based or life-cycle investment strategies are also increasingly popular as default options in voluntary DC systems, in which specific investment limits can be imposed on the default investments. These regulations are often based on the application of the prudent person approach that is now prevalent throughout OECD countries and which places a fiduciary responsibility on pension fund managers to diversify their investment portfolios and seek the highest returns at acceptable levels of risk through a well-designed investment strategy and process. [10]

15. An OECD report[11] in 2009 confirmed that quantitative investment limits are used to restrict investment policies to those strategies that provide a targeted combination of potential retirement

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imposed on these tied assets, as are limitations and restrictions on assets that can be tied assets. If a direct insurer becomes insolvent, policyholders have a privileged right to the tied assets. The quantitative restrictions imposed on Swiss insurers noted in this document refer to this regime of tied assets, i.e. they are restricted to assets covering technical provisions of direct insurers. The tied asset restrictions apply only to insurance legal entities in Switzerland, i.e. legal entities in foreign jurisdiction of Swiss insurance groups are not bound by the Swiss tied asset regime. In addition, the tied asset regime does not apply to reinsurers.

9 . Article 132 of the Solvency II directive introduces the principle of "prudent person" for the purpose of investment risk management. EIOPA has issued the "Explanatory text on the proposal for Guidelines on the System of Governance" (BoS-13/26, 27 March 2013) for further elaboration.

10 . OECD, *Guidelines on Pension Fund Asset Management* (2005).

11 . OECD, *Investment Regulations and Defined Contribution Pensions* (2009).

income and investment risk.[12] Defining these investment limits at higher levels of security, which may be particularly important where DC plans provide a large portion of retirement income, aim to reduce the downside risk or to minimise the risk of unfavourable outcomes from DC plans.

16. Such regulations can therefore be viewed as broadly equivalent to setting a ceiling on investments in equities and other riskier assets. While such regulations may reduce the potential replacement rates that are attainable, they also reduce the risk of unfavourable retirement income outcomes. Limits based on a lower security level, on the other hand, could increase the range of investment policies available as the share of riskier assets could potentially be larger, increasing the range of possible outcomes including the possibility of achieving a higher replacement rate.

III. The framework for analysing investment regulations

17. In order to analyse the universe of investment regulations, this section provides a conceptual framework to analyse quantitative investment limits, and then describes the features of risk-based regulations and qualitative behavioural requirements which exist.

1. The conceptual framework for quantitative investment limits

18. Quantitative investment limits imposed on pension funds and insurance companies are typically formulaic limits on specific investments which impose a maximum or minimum allowable threshold. These limits form a complex web of requirements, often overlapping, with specific requirements at times being subsets of larger, more general requirements. This nesting and overlapping of requirements along with the wide variety of definitions linked to the requirements present a challenge to cross-country comparison.

19. Table 1 categorises the various types of quantitative investment limits which exist. These limits can be broken down into five general types of categories: investment ***instruments***, the ***vehicle*** with which the instrument is accessed, the ***jurisdiction*** in which the investment originates for both ***geographical*** and ***market-based elements***, and the ***nature of the investment transaction*** itself, and the ***concentration*** of exposure to counterparties.

12 . Instead of focussing on investment returns, the 2009 report analyses risk at the amount of retirement income in a worst case scenario which is defined as retirement income at the 5th percentile.

Table 1. Conceptual framework for quantitative investment limits

Instrument (asset class)	Bank Deposits					
	Listed/ Unlisted	Real Estate (direct limit)				
		Loans				
		Infrastructure				
		Private Equity				
		Equity				
		Credit rating (investment grade)	Fixed Income	Bonds	Government	National Municipal Inflation-linked
					Corporate Bonds Convertible Bonds Subordinated Debt	
				Structured Products	Mortgage-backed securities Asset-backed securities Covered bonds Other	
			Project Bonds (Infrastructure)			
		Commodities				
		Derivatives				
Vehicle (indirect investment)	Retail Fund	Open end Closed end Mutual Funds Money Market UCITS ETF REITs Other				
	Private Fund	Open end Closed end Private Equity Hedge Funds SPVs Real Estate Infrastructure Other				
Jurisdiction	Geographical	Equity				
		Fixed Income	Government Corporate Bonds Other			
		Real Estate Funds Banks Total				
		Currency	Currency matching Unhedged exposure			
	Market-based elements	Non-regulated				
Nature of transaction	Speculation	Derivative use (not hedging) Leverage Short selling Other				
	Securities Financing Transactions	Securities lending Repos Other				
	Cash loans	Borrowing Lending				
Concentration	Single Entity	Single Counterparty Single Intermediary				
	Single Investment	Single Fund Single Sector Single Asset Single Issue				
	Self-investment	Plan sponsor Associated undertakings				
	Ownership/Majority shareholders					

20. Limits on investment in certain ***instruments*** largely pertain to limitations on investment in certain asset classes. Limits may also be imposed based on characteristics of an asset class; for example, on unlisted or non-investment grade securities, or on a subset of a class; for example, mortgage-backed securities within fixed income instruments.

21. Limits may be placed on investment in ***vehicles***, or types of funds, to limit indirect invest in certain asset classes. Specific restrictions may be placed on investment in certain types of funds, for

example private funds not being permitted. However the overall limits on investment in a given asset class usually apply to the funds' total investment in that instrument, including both direct investment and investment through funds. There could be exceptions, for example, in real estate where direct investment may not be permitted even if indirect investment through a REIT is.

22. Restrictions could be linked to ***geographical*** location or where securities are issued or investment take place, or to the nature of the ***market*** (e.g., regulated versus non-regulated). Geographical limits impose limitations by region, which can be an overall restriction on foreign investment or a limit on investment in certain regions, e.g., non-EU or non-OECD markets. National or regional limits may also be imposed indirectly by specifying a certain percentage of assets which must be denominated in the same currency as the liabilities.

23. Limits may be imposed based on the ***nature of the transaction***, and typically restrict the manner or purpose of the investment. For example, the use of derivatives may be limited to hedging purposes, while restrictions may be placed on secondary listing. Limits on the extent of borrowing or lending may also exist.

24. Finally, restrictions on the level of **concentration** of the exposure to certain counterparties are generally in place to limit the exposure to counterparty default. These types of restrictions can be broken down into: limits on a single entity, a single investment, self-investment or investment in a related entity and/or major shareholder. As with limits on instruments, these can be overall restrictions (e.g., no more than 5% of assets can be invested with a single issuer), or can be specific to the individual asset classes (e.g., when no more than 3% of assets can be invested in a single property). Self-investment, which could present a conflict of interest and exposure to own credit risk, is also limited. Ownership limits are commonly defined as a maximum percentage of voting shares in a given company which can be owned.

25. The first column of Table 2 summarises the possible forms that investment regulations can take for each category of restriction. The second column describes how these limits may differ according to certain subgroups of each category. For example, a limit on investment in corporate bonds (an instrument) defined as a percentage of assets under management could vary according to the bond's credit rating, allowing for a higher percentage investment in instruments with a higher credit rating. Cross-country comparisons of investment regulations may be challenging due to the overlap of different types of restrictions which do not neatly correspond across countries.

Table 2. Forms of quantitative investment limits

	Form of limitation (mostly in percentage terms)	*Features which limits may differ by*
Instrument	Assets under management Technical provisions Absolute limit Duration limit Collateral or loan-to-value Asset value recognised	Type of pension or provider Asset class Credit rating Sub-fund Characteristic (liquid, risky, etc.) Funding level Phase (payout vs. accumulation)
Vehicle	Assets under management Instruments invested in	Type of pension Type of counterparty Sub-fund
Jurisdiction	Assets under management Unhedged currency exposure of assets	Geographical jurisdiction Exchange on which assets are traded Sub-fund Type of fund Asset class
Nature of transaction	Assets under management Assets of individual pensioner Collateral as a percentage of assets under management Duration limit Leverage limit Asset value recognised	Single issuer vs. group Asset class Market Geographic jurisdiction Exchange
Concentration	Assets with single counterparty Assets with single intermediary Assets per fund Assets in a single asset Anticipated value of assets invested in single asset Assets in a single sector Limit on sum of 'large' concentrations Assets per issue Absolute limit Percentage of total share of issuer Percentage of total bonds of issuer Percentage of total capital of issuer	Asset class Asset characteristic Credit rating Geographical jurisdiction of issuer Market of issuer Type of fund Single issuer vs. group Fund size

2. The features of risk-based regulation

26. Risk-based capital regulation presents an alternative and/or sometimes complementary approach to quantitative investment limits. In contrast to strict quantitative limits, risk-based requirements, in principle, do not impose hard restrictions on investment, but instead impose a higher risk charge for investments with a higher level of risk, providing an incentive to better manage risks. In addition, the interaction between assets and liabilities is often explicitly recognised in a risk-based regime, providing the incentive for an investment strategy appropriate to the structure and risks of the liabilities. However, in some cases, quantitative limits are used in addition to risk-based requirements to ensure that certain investment strategies or types of transactions are not pursued despite the additional risk penalties imposed.

27. Notwithstanding the differences in approaches across countries, risk-based requirements do tend to share certain features across countries. Definitions of risk-based factors have been moving towards requirements which are more dynamic and comprehensive with respect to risks covered, and more explicitly account for specific risks and the relationship between assets and liabilities as they develop. Regulators are increasingly recognising the value of internal models, so that insurers or pension funds may adapt their calculations to be reflective of their individual risk profile.

28. The types of risk categories which are often incorporated into risk-based capital requirements are market-based risks, liability side risks including premium, reserve, catastrophe and biometric risks such as longevity and behavioural risks such as lapses, credit related risks such as the default or rating migration of a counterparty, and operational risks. As these requirements generally recognise the interaction of assets and liabilities, proper Asset Liability Management (ALM) is encouraged, while a mismatch increases required capital. Most models allow for an explicit benefit from the diversification of risks, and internal models to be used for regulatory capital purposes, although subject to the approval of the supervisor.

29. Risk-based capital requirements in the insurance sector are increasingly based on an economic view of the business which apply market consistent valuation[13], and reflect the risk-adjusted value of the expected future cash flows for both assets and liabilities. In some frameworks, the technical provisions assigned to the liability value include a risk margin on top of the best estimate liability value to cover the uncertainty in future obligations or to represent the capital costs of a transferee's undertaking.[14]

30. Guidelines published for pension supervisors have focused primarily on qualitative requirements with respect to risk management processes, [15] in particular highlighting the prudent person principle and fiduciary duties. Few jurisdictions have implemented risk-based capital requirements for pension funds.

3. Qualitative requirements increasingly coming into play

31. Qualitative requirements are meant to complement quantitative requirements by requiring standards of behaviour for insurance companies and pension funds. These often provide guidelines as to how risk management, governance, controls and processes should be structured and implemented.

32. Qualitative requirements, with respect to risk management processes in particular, are becoming common to strengthen risk awareness, and ensure that unquantifiable risks are monitored. Qualitative requirements relating to prudent person principles and other behavioural standards, such as those relevant to fiduciary duty, may also be required to complement quantitative requirements.

33. Some of the main governance requirements relevant to investment activities/asset management include:

- clearly stating the roles and responsibilities for relevant decisions;
- drawing up an written policy on investment or risk management, which may include setting internal limits on the level of risks;
- ensuring that risk management structures are instituted, and the board(s) are informed and responsible for decisions; and,
- when a non-routine investment is being planned, appropriate discussion and risk management is carried out.

IV. Description of the main investment regulations

1. Quantitative limits on investments

34. Following the conceptual framework developed to analyse quantitative limits, Table 3 lists the OECD countries in which each type of restriction exists for pension funds and insurance companies. The investment regulations of each country are broken down using the classification of quantitative instrument limits set out in the conceptual framework.

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13 . Where values are based on market prices where observable and marked-to-model otherwise.

14 . The risk margin shall be such as to ensure that the value of the technical provisions is equivalent to the amount that an insurance and reinsurance undertaking would be expected to require in order to take over and meet the insurance and reinsurance obligations.

15 . To support governments' implementation of risk-based supervision for pension funds, the International Organisation of Pension Supervisors (IOPS) and their Core Principles state that the objectives of private pension supervision should be risk-based.

Table 3. OECD Countries where each type of quantitative limit exists

	Instrument	Vehicle	Jurisdiction	Nature of Transaction	Concentration
Australia				P, I	P
Austria	P		P		P
Belgium	I	I	I	I	P, I
Canada	I				P
Chile	P, I	P, I	P, I	P, I	P, I
Czech Republic	P	P	P, I	P	P, I
Denmark	P, I	P, I	P, I		P, I
Estonia	P, I		P, I	P, I	P, I
Finland	P	P	P		P
France	P	P			
Germany	P	P	P	P	P
Greece	P	P	P		P, I
Hungary	P	P	P	P	P
Iceland	P	P	P	P	P
Ireland*				P	P
Israel	P, I		P	P	P, I
Italy	P	P	P	P	P
Japan	P, I				I
Korea	P, I	P	P, I	I	P, I
Luxembourg[a]	P		P	P	P
Mexico	P, I	P, I	P, I	I	P, I
Netherlands					P
New Zealand	P			I	
Norway*	P	P	P		P, I
Poland	P, I	P, I	P, I		P, I
Portugal	P	P	P	P	P
Slovak Republic	P	P	P	P	P
Slovenia	P, I	P	P, I		P, I
Spain	P	P	P	P	P
Sweden	P	P	P		P
Switzerland	P, I		P, I	P, I	P, I
Turkey	P, I	P, I	I	P	P, I
United Kingdom				P	
United States	P			P	P, I

Note: P: pension fund, I: insurance company.
a. For Luxembourg, this table only covers CAA supervised funds. Other pension funds are lightly regulated in Luxembourg.
*: Countries where information on insurance regulation has not been submitted on insurance companies.
Most EU/EEA countries are expected to remove quantitative limits on insurance companies as of January 2016, when Solvency II is implemented.

35. The Annual Survey of Investment Regulation of Pension Funds also includes information on a number of IOPS members. Non-OECD countries providing information on their quantitative investment limits for pension funds are shown in Table 4 below. Nearly all of these countries have limits based on the instrument, concentration and jurisdiction of investments.

Table 4. Non-OECD Countries where quantitative limit exists for pension funds

	Instrument	Vehicle	Jurisdiction	Nature of Transaction	Concentration
Albania			x		x
Armenia	x	x	x	x	x
Brazil	x	x	x	x	x
Bulgaria	x	x	x		x
Colombia	x	x	x	x	x
Costa Rica	x	x	x	x	x
Dominican Republic	x		x		x
Egypt	x				x
Gibraltar			x		x
Hong Kong	x	x	x	x	x
India	x		x	x	x
Jamaica	x		x	x	x
Jordan	x	x	x		x
Kenya	x	x	x		x
Former Yugoslav Republic of Macedonia	x	x	x	x	x
Malawi			x	x	x
Maldives	x	x			x
Malta			x	x	x
Mauritius	x		x	x	x
Namibia	x		x	x	x
Nigeria	x	x	x	x	x
Pakistan	x	x	x		x
Peru	x	x	x	x	x
Romania	x	x	x	x	x
Russian Federation	x	x	x		x
South Africa	x	x	x	x	x
Tanzania	x	x	x	x	x
Thailand	x	x	x	x	x
Trinidad and Tobago	x	x	x		x
Uganda	x	x	x		
Ukraine	x		x		x
Zambia	x	x	x	x	x

Source: Annual Survey of Investment Regulation of Pension Funds (OECD, 2014)

a. Assets covered by quantitative limits

Pension funds

36. The valuation basis on which the limits are imposed can vary. The most common definition for pension funds is as a *percentage of the market value assets under management*. However, restrictions may also be imposed only on the *assets backing the technical provisions* (i.e., the actual liability of the pension fund, with any funding surplus being excluded from the restriction), and at times may be stated in *absolute terms*.

37. Limits may also be imposed on the *recognition of the value* of certain assets, for example, Luxembourg only recognises 80% of the value of a real estate property for a CAA supervised fund.[16] The value of mortgage loans in Israel is limited to 60% of collateral value.

38. Requirements may vary for different types of pension funds, with limits differing between mandatory and voluntary plans (e.g., Czech Republic (opt-in), Estonia, Hungary, Slovak Republic). Limits may also vary by the institution providing the pension; in Germany, limits may differ between Pensionskassen and Pensionsfonds. Korea differentiates between personal pension insurance and

16 . Funds under the authority of the Commissariat aux Assurances. Other pension funds are lightly regulated in Luxembourg.

corporate pension plans, Sweden distinguishes between friendly societies, insurance plans and occupational plans and Jordan has different limits for Takaful insurance companies.

Insurance companies

39. Quantitative investment limits, where applicable, are generally applied only to *assets covering technical provisions* for EU countries pre-Solvency II, Mexico, Switzerland, Turkey and South Africa. Thus, no limits are placed on the investment of free or surplus assets (assets not covering technical provisions). By contrast, Israel, Korea, New Zealand and the United States apply quantitative requirements to *all assets or portfolio investments*, which is a wider set of assets. Chile applies quantitative requirements on both technical provisions and regulatory capital for life insurance liabilities and some non-life insurance liabilities.

b. Quantitative limits on the investment instrument

Pension funds

40. Restrictions often take the form of the *maximum percentage of investments* in a certain asset class, though a minimum level of investment may also be imposed, for example, in bonds. For instance, Poland does not allow open pension funds to invest in any government-issued security. Israel requires pension funds to invest a minimum of 30% of assets in earmarked bonds.

41. Restrictions on *unlisted instruments* are quite common where limits can be lower than those for listed instruments; for example, in Italy, unlisted equity investment is limited to 10% of assets, whereas investment in listed equities is not restricted. Likewise, limits on below-investment grade fixed income instruments is often limited or even prohibited, as is the case in Mexico where only investment grade corporate bonds are allowed to be included in investment portfolios.

42. Within the *credit rating* category, restrictions may vary between investment grade securities and non-investment grade, where the latter are often prohibited or limited more strictly than investment grade. A related restriction limits investment with certain *counterparties*, as in Sweden which restricts investment with non-credit institutions. Limits may also vary depending on the funding level of the pension fund; equities are limited to 70% for pension plans in Trinidad and Tobago funded at over 150%; otherwise the limit is 50%.

43. Other features of instruments such as their liquidity, riskiness or maturity may also be the source of a limitation. For example, Chile places a 20% limit on high risk or illiquid investments, Norway has a 5% limit on unsecured loans, and the Czech Republic limits bank deposits to two years. Iceland allows direct investment in real estate only for residential properties.

44. While OECD countries do not tend to set explicit limits for infrastructure investment, some non-OECD countries apply such limits. Bulgaria limits investment in infrastructure bonds to 10% of assets, as does the Dominican Republic with the additional requirement that the financial instruments should be issued by the local government developing infrastructure projects. Kenya has a rather high limit of 90% of assets which can be invested in infrastructure investment, though this limit is in combination with other types of bonds issued by public institutions. Restrictions may also be imposed on self-directed pension plans.

45. Where regulation requires that several fund options be offered to members in DC-type plans, restrictions may vary from one fund to the next to reflect the intended risk profile for each. In Chile, Colombia and Peru, for example, where pension funds offer a number of funds of varying risk profiles, different limits are imposed for each. Alternatively, quantitative rules may apply only to the default fund, as in New Zealand, where 15-25% of the fund must be invested in growth assets (e.g., equity

and real estate). In the Slovak Republic, equity investment is not permitted for voluntary, personal DC plans during the payout phase.

Insurance companies

46. For countries with quantitative investment limits, the maximum limit of *shares* in the portfolio is often 10%, going up to 30 or 40%. In Chile, the ceiling for equities is 40%, and for shares that do not meet a "presence" requirement[17] the limit is 5%. The ceiling for shares in Switzerland is 30% of assets covering technical provisions for direct insurers, and unquoted shares are not permitted as they do not have a liquid market. Shares that are not traded on an exchange have a ceiling of 10% in Turkey.

47. One of the developments of Solvency II, which would likely impact investments, is the capital risk charges for equity investments. Equity listed in EEA or OECD jurisdictions (type 1) will require a 39% risk charge (plus a symmetric adjustment, set at 6.65% in June 2015), while equity listed outside of EEA or OECD jurisdictions will have a 49% risk charge (plus a symmetric adjustment).

48. As *debt securities* tend to be the main investment of insurers, a number of countries mainly have a requirement relevant to its investment grade, i.e., the limit only applies to non-investment grade debt. In this respect, while some countries are specifically defining the admissible credit rating, some place limits on "non-investment grade" debt, which can generally be interpreted as ratings below BBB- or Baa-. Some countries assign a specific credit rating required for debt securities, which are often ratings lower than BBB-, upon which a limit is imposed. There are also a number of restrictions relevant to the issuer and the proportion of issuance, but this is mainly discussed below in the concentration section

49. Belgium is unusual in that, under the Solvency I regime, it has a 10% ceiling on *government debt securities*; all other surveyed countries do not have such a ceiling.

50. Chile limits the exposure to *debt securities* without a credit rating or with a credit rating below BBB through a 5% ceiling. Under Solvency I, Denmark has a 40% ceiling on the total of mortgage-credit bonds, covered mortgage-credit bonds issued by mortgage-credit institutions, banks or ship finance institutions, as well as other bonds issued in the EU. In Slovenia, under Solvency I, debt securities not traded are subject to a 5% ceiling. Switzerland limits investment in asset-backed securities by direct insurers to 10% of tied assets covering technical provisions.

51. Israel and Korea impose a *real estate investment* limit of 15%. Mexico's ceiling on real estate and real estate companies owning or administering the offices of insurers is 25%. In Poland, investment in tangible assets cannot exceed 5% of assets, and investment in accrued rent and interest cannot exceed 3% of assets. Slovenia has a total limit for real estate investment of 30%.

52. In Chile, insurers are required to do a valuation of the property at the time of acquisition. Exposure limits in Chile for life insurers is 25% of technical provisions and regulatory capital, and for non-life insurers is 30% of regulatory capital. Exposure limits in Chile for residential real estate for life insurers is 5% of technical provision and regulatory and for non-life insurers is 5% of regulatory capital. The investment limit in Chile for non-residential real estate subject to leasing to related parties is 5% of required capital and technical provisions for life insurance companies, and 5% of the required capital for non-life insurance companies.

17 . A presence requirement is for shares that do not comply with a minimum level of daily transactions; such shares cannot represent technical provisions and regulatory capital.

53. Under Solvency I, Denmark subjects receivables, mortgaged loans, units in investment, equity investment and other loans issued or guaranteed by banks, mortgage-credit institutions, and insurers to a limit of 40% of assets. *Mortgage loans*, in some cases, are linked to having an insurance contract or satisfying a loan-to-value ratio. Israel requires that mortgage loans be less than 60% of loan-to-value ratio. Switzerland permits mortgage loans up to a limit of 25% of the assets covering technical provisions of direct insurers and with a net loan-to-value not more than 2/3, but with permission can be increased to 80% with certain guarantees. Loans extended without reference to an insurance contract cannot exceed 5% in Turkey.

54. *Non-mortgaged loans* and loans that are not secured have a lower ceiling in a number of countries. Further, in order to be considered as valid to cover the technical provisions of direct insurers, non-mortgage loans in Switzerland can only be with eligible Swiss counterparties with a rating of A or higher. Belgium limits loans (non-mortgage) not secured by collateral by a credit institution or insurer to 5%, and 1% for such loans granted to a single borrower. Canada imposes a 5% limit on non-mortgage loans of total assets for life, property and casualty insurance companies that have less than CND25 million in regulatory capital. Under Solvency I, Denmark limits non-mortgage loans, other loans and securities not covered to 2%. Israel has a ceiling of 3% of insurers' assets for non-mortgage loans, given there is sufficient collateral.

55. For mortgage loans, Chile has an exposure limit of 30% of technical provisions and regulatory capital for life insurers and 30% of regulatory capital for non-life insurers. For non-mortgage loans, Chile limits exposure to 2% for syndicated loans issued by a particular issuer and related parties, 5% for syndicated loans, 5% for commercial loans, and 20% for loans to policyholders with credit insurance which is applicable to technical provisions and the required capital for life insurance companies. As for non-life insurance, the percentage and exposure are maintained, except for commercial loans, where the limit is 10% of the required capital.

56. *Structured notes, structured investments*, convertible notes and non-convertible subordinated notes and securitised debt instruments are limited to 20% in Mexico. Under Solvency I, Slovenia restricts alternative assets to 1%. Switzerland limits overall alternative investments to 10% of assets covering technical provisions, with a 1% limit per single fund, and 5% per fund of funds. In Korea, credit-linked notes, credit-linked deposits, synthetic collateralised debt obligations are required to have an investment grade for the underlying assets, but if the reference entity is a non-resident, then the rating must be at least A- or higher.

57. Estonia and Turkey permit up to 3% of assets covering technical provisions to be invested in respectively *demand deposits and cash*. Mexico has a 20% limit on cash and deposits, while Slovenia limits cash to 3% and deposits to 30%.

58. Assets' *liquidity* characteristics can be considered in establishing investment limits by type of instrument. In Canada, liquidity risk is assessed in the supervisory framework which can in turn affect the insurer's capital target. In Turkey, liquid assets are subject to lower risk charges. Japan's guidelines for the supervision of insurance companies request insurers to set the internal limits on investments in assets which do not have a tradable market and low liquidity. In Korea, a standard formula is used to calculate liquidity risk, based on claims that may arise, and current and supplemental assets.

c. Quantitative limits on the investment vehicle

Pension funds

59. In addition to restrictions on the investment instruments making up the funds' investments which also apply to indirect investment through investment vehicles, limits on investment in funds in general or on certain types of funds are also common, and generally take the form of a maximum

percentage of assets under management. For example, private funds may be expressly forbidden (e.g., Chile, Czech Republic, Korea corporate pensions, Poland OPF, Slovak Republic, Sweden friendly societies), or have a limit (e.g., Denmark, Finland's voluntary plans, Greece, Iceland, Luxembourg's CAA supervised funds, Norway, Slovenia, Spain, Turkey). Limits on the percentage which are invested in specific types of funds may be imposed, with specific limits on investment in closed funds, UCITS, and money market funds. Albania, for example, limits investment in retail funds that invest in a set of indices.[18] Explicit limits on infrastructure funds are not common, although Nigeria imposes a maximum limit of 5% of assets in infrastructure investment funds.

Insurance companies

60. For equities, some countries include *investment fund* limitations which are often combined with limitations on direct investments. For example, under Solvency I, Belgium has a ceiling of 10% for units in collective investment schemes not governed by EU law and a 5% ceiling for property investment funds. In Chile, exposure to investment funds is limited to 10%. The Danish restrictions are layered, but as a first requirement, there is a ceiling of 10% for investment funds or fund of funds investment, with an accompanying restriction on the total exposure to equities and investment funds etc. limited to 70%. In Mexico, investments in equity and equity investment funds are subject to a ceiling of 50% in total, and unquoted shares cannot cover technical provisions. Poland has a similar requirement under Solvency I with a 40% ceiling on listed securities and units in investment funds. The ceiling for shares, convertible bonds and investment funds primarily constituted of shares is 55% in Portugal under Solvency I. Turkey restricts the total investment in shares and investment funds to a maximum 30%.

61. In addition, under Solvency II, as a look-through approach will be required for collective investments undertakings and other funds,[19] risk charges will be applied to the underlying assets. Non-EEA/OECD equity and type 2 investment funds[20], for example, could become less attractive for insurers to invest in.

62. Under Solvency I, Portugal permits up to 50% of investments in land and buildings, credit arising from mortgage loans, shares of real estate companies and holdings of real estate investment fund. Mexico allows up to 5% investment for capital investment funds and limited purpose investment funds, and private equity investment funds and investment in trusts which are intended to capitalise Mexican companies.

d. Quantitative limits based on the jurisdiction of the investment and related restrictions

Pension funds

63. Limits on the *geographical jurisdiction* where investments originate are commonly imposed. These can be overall limits to all foreign investment, for example, in Chile, where non-Chilean

18 . Indices covered include, CAC 40, DAX, FTSE 100, S&P 500, DJIA, Nikkei 225, Sensex, All Ordinaries, and Hang Seng Index.

19 . The look-through approach requires insurers to identify the nature of all underlying assets for the calculation of Solvency Capital Requirement and for the purpose of reporting market risks. Article 84 of the Implementing Measures of Solvency II (http://ec.europa.eu/internal_market/insurance/docs/solvency/solvency2/delegated/141010-delegated-act-solvency-2_en.pdf). EIOPA, *Final Report on Public Consultation No. 14/036 on Guidelines on look-through approach* (EIOPA-BoS-14/171, 27 November 2014).

20 . Type 2 investments are instruments listed on non-OECD/EEA markets or non-listed investment instruments.

investments are limited to 80% of the pension funds' total investment. Alternatively, such limits may depend on the region, as in Finland where limits are imposed on investments outside of OECD countries.

64. Limits around the *currency denomination* of an investment can take two forms. The first is a requirement for a percentage of assets to be invested in the same currency as that of pension liabilities. This is the case in Germany and Mexico where at least 70% of assets must be denominated respectively in Euros and Mexican pesos. While investment in a foreign currency usually implies foreign investment, this is not always the case. The Russian Federation specifies, for the mandatory funded pillar default option, a limit of 80% for Russian government bonds denominated in a foreign currency. The second limits only unhedged currency exposures, as in Austria, Chile, Estonia, Iceland, Portugal, Slovenia and Switzerland.

65. Limits relating to markets can be imposed to restrict investment in non-regulated markets, prohibiting or limiting assets in non-regulated market to a certain percentage. For example, pension funds in Spain may only invest up to 30% of their assets in non-regulated markets. Limits may also be defined in terms of the location of the exchange on which the instrument is traded, as is the case for equity in Brazil and India, for example.[21]

Insurance companies

66. Most OECD countries do not have extensive limitations relative to insurer portfolio investments abroad. Requirements on domestic assets often encompass foreign assets, thereby setting general conditions on risk management and diminishing the need for separate requirements for foreign assets. A number of countries have requirements to ensure that foreign assets have a certain credit rating or are traded on regulated markets. In addition, the manner in which some countries require certain characteristics from markets would also be a requirement relevant to jurisdiction or nature of the market.

67. Chile has an exposure limit of 20% on foreign assets. South Africa has an aggregate limit of 15% on foreign assets. Shares that are not traded on an exchange have a ceiling of 10% in Turkey.

68. While not an outbound investment limitation, New Zealand limits non-residents wishing to investment in 25% or more of certain assets in New Zealand to obtain approval, which is a general requirement not limited to insurers.

69. For *foreign shares*, a number of countries require that foreign shares be listed or on a regulated market. Chile requires that foreign shares be listed on a stock market, the issuers be listed in a foreign regulated registry, and shares be transacted in a country with a sovereign rating of at least BBB, have a daily a turnover of USD 50,000, and the exposure be subjected to a 10% limit. Mexico limits exposure to foreign shares, which must be traded on regulated financial markets of eligible countries, to 20%. In Turkey, foreign shares must be quoted on stock exchanges determined by the Undersecretariat of Treasury. Poland, under Solvency I, only permits assets located in the EU; otherwise, permission is required from the minister in charge to recognise assets located outside of the EU to cover technical provisions.

70. For *foreign debt securities*, Chile requires bonds or other types of debt instruments issued by foreign governments, central banks, other international public institutions, and public or private companies to have at least a BB international credit rating. Chile limits exposure to foreign debt securities with a credit rating below BBB to 5%. In Korea, foreign currency securities are required to have an investment grade or higher rating, and must be issued by a non-resident. Mexico limits

21 . In Brazil this limit does not apply to indirect foreign investment through retail funds.

exposure to foreign debt securities, which must be traded on regulated financial markets of eligible countries, to 20%. In Turkey, foreign fixed or variable income instruments must be issued by ECB or central banks of OECD members, or investment funds which are issued and traded in OECD countries.

71. *Real estate investment* must be located in Switzerland for Swiss direct insurers in order to be eligible to cover technical provisions, and are limited to 25% of technical provisions. Turkey requires real estate invested by insurers to be located in an OECD member country. Chile limits exposure to *foreign real estate* investment which backs operations abroad to 3% of technical provisions and regulatory capital. Korea limits foreign currency holding or real estate holding overseas to 30% of portfolio.

72. With respect to market restrictions, while applicable to both domestic and foreign shares, *equities* must be listed/traded on a regulated market (Czech Republic, Poland), registered with the regulator (Chile, Korea), traded/listed on EU regulated markets (Denmark), traded/listed on EU or OECD market (Portugal), listed on stock exchanges and regulated markets of eligible countries (Mexico), and have a liquid market (Switzerland, for direct insurers).

73. Mexico limits assets, securities or instruments traded on regulated financial markets of eligible countries to 20%. Belgium has a ceiling of 10% for investments in foreign shares and debt securities not traded on a regulated market. Israel requires foreign assets to have a minimum rating of BBB-. Korea requires foreign currency investments to be investment grade or guaranteed by a financial institution that is investment grade.

74. Switzerland and Turkey require *cash and deposits* to be with banks in their country (Switzerland, for direct insurers' technical provisions), or held in banks established in an OECD country (Turkey).

75. In Denmark and Slovenia, 80% of assets that are covering provisions should be *currency matched* to the currency it would be settled in, or as required in Switzerland, net currency mismatch of assets covering technical provisions must be less than 20% of provisions. Denmark and Estonia allow investments in assets denominated in other currencies if the provisions corresponding to the commitments in that currency are less than 7% of provisions.

76. Chile has a test for life insurers selling annuities that requires the insurer to measure the sufficiency of assets of a company to fully pay those annuity payments. This TSA test projects the net cash flows of a company's assets and liabilities and then estimates the reinvestment rate that fully matches the net cash flows over time, and requires that assets must be in UF, which is the inflation-indexed national currency. The TSA allows certain coverage mechanisms, such as derivatives, to include asset s flows with denomination different from UF.

e. Quantitative limits on the nature of the transaction

77. The main purpose of limitations on the nature of transactions is to limit transactions whose primary purpose may not be to meet the liability obligations of the pension fund or insurance company. Speculative investment may be limited, particularly with respect to derivatives, short-selling or leveraging. Other limitations can relate to securities lending or investment in repurchase agreements, or the extent to which the pension fund or insurance company can take loans or provide loans, for example, the provision by pensions of loans to beneficiaries.

Pension funds

78. Limits on *speculative investments* is generally limited to a small percentage of assets or not permitted. For example, the gross position of derivative instruments, which are not used for hedging

purposes, are limited to 3% of assets in Chile. Limits may also be stated in terms of the collateral required, as in Israel where a restriction on the collateral required for options, futures or short sales is limited to a percentage of assets under management.

79. Limits on *securities financing transactions* mostly relate to securities lending or investment in repurchase agreements. Where allowed, these are usually limited to a certain percentage of assets and may vary depending on the geographical jurisdiction or asset class. For example, investment in repurchase agreements in Mexico is limited to government securities.

80. The ability for the pension fund to *lend* to its members or related entities will usually take the form as a percentage of assets under management, where allowed, though certain requirements may be imposed as in Iceland where lending is only allowed to members having real estate as collateral. Where *borrowing* is allowed it is generally limited to a short duration and only for the purposes of short-term liquidity needs, as in Ireland.

Insurance companies

81. In Mexico, derivatives operations are allowed only for hedging purposes, up to the limit that is required to cover the risks, and it may consider up to 58% of the increase in valuation. Mexico requires insurers to have prior authorisation for derivatives transactions, which are limited to futures, options and swaps in recognised markets and OTC, and derivatives transactions have a 58% limitation. OTC transactions should only be carried out with counterparties which are approved by the Bank of Mexico or intermediaries from eligible countries.

82. Hedging related derivatives are free from restriction in Korea, but OTC derivatives are limited to 6% of portfolio assets. While the use of derivatives for hedging purpose is unlimited, there are certain requirements on hedging activities themselves, such as the fair value valuation of the derivative needing to remain between 80-125% of the underlying assets during the hedging period and each hedging transaction being individually identifiable.

83. Chile allows the use of derivatives mainly for hedging purposes and up to 2% of technical provisions and required capital, and applicable to assets associated with derivatives representing technical provisions and required capital. Insurance companies may cover up to 100% of their exposure in foreign currency. Chilean regulation establishes the type of derivatives that can be used by companies for hedging and investment operations (mainly plain vanilla derivatives). It also establishes the required credit rating and exposure limits for derivatives counterparties.

84. Estonia limits the use of derivatives to risk management and when certain conditions are met in terms of counterparty and ability to value the derivative. Japan's guidelines for supervision of insurance companies have a similar item asking for insurers to clarify the purpose, limit and terms of derivatives.

85. Korea does not permit loans for the purpose of speculation in goods and securities, purchasing shares of relevant insurers, and if extended to executives or employees of relevant insurers. Korea also requires that the sum of security deposit for domestic and overseas futures trading is a maximum of 6% of portfolio. Repurchase agreements and securities lending are permitted up to 30% of assets in Mexico.

86. Others requirements detail the nature of the derivatives transaction as Belgium permits derivatives not used for hedging purposes up to a limit of 5%, and Switzerland has a notional limit for non-hedging derivatives of 10%, while the use of derivatives for hedging purposes is unlimited. Further, in Switzerland, short calls can only be made together with the underlying assets, while short puts can only be made together with the sufficient liquidity.

f. Concentration limits

87. Together with diversification requirements, where they exist, concentrations limits remain an area where specific quantitative restrictions continue to apply as quantitative regulations generally become less present. Concentration limits impose restrictions on the level of concentration with a party(ies) or issue of securities, in particular if the party is related.

Pension funds

88. Limits on investment with *single entities* may be placed on exposure to a single counterparty or a single intermediary (e.g., fund manager). These generally take the form of limits on the percentage of assets under management which can be invested with the single entity, though less common, they may also have absolute limits, such as in the Czech Republic where bank deposits are a maximum of 10% of assets or 20m CZK. The limits for deposits in a single bank vary depending on fund size in Hong Kong, with a limit of 25% of assets for funds smaller than HK 8 million, with larger funds subject to a 10% limit. In Namibia and Nigeria, limits on equity depend on the size of market capitalisation of the issuer.

89. Limits may also be imposed on the *total exposure* to large concentrations of investment. Turkey, for example, limits exposure to a single issuer to 10% of assets, but the sum of all exposures over 5% must be less than 40% of assets. Sweden takes an alternative approach, where the limit is raised from 5% to 10% if the sum of these exposures is less than 40% of technical provisions.

90. As with restrictions relating to the investment instrument and vehicles, concentration limits commonly vary by the asset class or fund type. Specific characteristics of the asset may also characterise the limit (e.g., in Chile, concentration limits for approved shares are higher than non-approved, and a concentration limit is set for OTC derivative transactions). In Luxembourg, limits are higher for traded shares than for those that are not. Similarly limits may vary by credit rating, as is the case in Mexico. Limits may also vary depending on the geographical or legal jurisdiction of the issuer, for example in Luxemburg where the concentration limit for investment in non-OECD countries is set at 1% of assets and in Denmark where small, unlisted investments are limited to 0.2% of assets. Finally, limits may vary depending on whether the counterparty is considered to be a single entity or a group, as is the case in Hungary.

91. Concentration limits placed on a *single investment* may take several forms. There may be limits to the amount of assets which can be invested in a single fund or sector, such as Turkey's limit on investment in a single fund at 4% of assets for all retail funds, and 5% for private equity funds. Limits may also be placed with respect to a *single asset*, most commonly a limit on the amount which can be invested in a single piece of real estate, as in Denmark where this is limited to 5% of assets and Slovenia where the limit is 10% of technical reserves. Limits may cover a *single issue* of a security, for example, a limit on the percentage of assets which may be invested in a single bond issue. This is the case in Spain where investment in financial instruments issued by public authorities is limited to 10% of the nominal value of the bond issue. At times, the limits can be set prospectively, as in the Maldives, where single investments in equities and bonds are limited to 10% of the anticipated value of the investment in 12 and 5 months, respectively.

92. Concentration restriction may limit the investment into a *single company's shares or debt*. Rather than being defined as a percentage of assets under management, they are often defined in terms of the percentage of the issuer's shares, bonds, or total capital. For example Chile limits pension funds' total investment in shares and debt to 7% and 12% of the company's capital, respectively.

93. Restrictions on *self-investment* are distinct from other concentration restrictions as they may present a conflict of interest for the pension fund and own credit risk. These restrictions can be

imposed on the plan sponsor itself and/or associated undertakings, and usually take the form of a limit of a percentage of assets under management. These restrictions may vary based on market nature, as in Estonia where investment in associated undertakings is not permitted unless the undertaking is publically listed. They may also vary depending on whether the investment is in a single undertaking or a group, as is the case for Pensionsfond in Germany. The recognition of these assets may also be limited, as self-invested assets are not recognised in Ireland for the purpose of solvency calculations.

94. The United States imposes a requirement which generally provides that if more than 25% of the assets of an investment fund are assets of a single pension plan subject to ERISA, the assets of the investment fund will generally be subject to the ERISA fiduciary duties, with certain exceptions, thus, discouraging undue concentration.[22]

Insurance companies

95. Whether and how countries apply *large exposure limits* vary, even for countries applying risk-based capital regimes. Large exposure rules are common for EU countries that responded on the basis of Solvency I standards (Austria, Belgium, Denmark, Estonia, Greece, Portugal, Slovenia). While there will not be explicit large counterparty exposure measures when Solvency II is introduced, an excess exposure to a single counterparty will increase the Solvency Capital Requirement. In the US, while there are no requirements set by NAIC, there are a variety of limits for single counterparty exposures at the state level. India has a large exposure limitation, while South Africa requires the management of large exposure through diversification requirements. Japan has limits on investments in a single counterparty at 10% of total assets invested in corporate bonds, equity, loans, deposit guarantees and others. In addition, the investment limitation in a single counterparty is set at 3% of total assets invested in lending and guarantees, and this and other large exposures must be reported for monitoring purposes. The net exposure to any counterparty must be below 5% of technical provisions in Switzerland.

96. Under Solvency I, Belgium limits exposure to property investment fund certificate from the same issues to 5% and investments in a property or properties that are located sufficiently close to be deemed a single investment to 10%. In Estonia, Poland, Portugal and Turkey, investment to one immovable property or construction(s) work which proximity enables them to be considered as one property is limited to 10%. A single real estate investment is limited to 10% in Slovenia.

97. In Poland, mortgage-backed loans to the same borrower or a group of borrowers cannot exceed 5% while the limit for non-secured and/or non-mortgaged loans is 1%. In Portugal, securities, short-term debt instruments and loans to the same company cannot be more than 5%, or can rise to 10% so long as it does not constitute more than 40% of technical provisions jointly.

98. Estonia limits securities and loans to one issuer to 5% insurer's assets, with the possibility of being exempt and otherwise having a 40% limit. Israel limits exposure to a single issuer to up to 5% of insurer's assets, with limits on aggregate exposure to the five biggest issuers and business groups. In Chile, quoted shares invested cannot be issued by insurers, pension funds or fund administrators, and insurers cannot hold more than 13% of total shares of a company. In Japan, the law allows exceptions to the quantitative limits when investment limits are unintentionally exceeded as a result of sudden price fluctuations or due to mergers and acquisitions.

99. Korea limits credit extension to a single person/company to 3% of portfolio assets, a single issuer to 7%, and credit extension and shares/bonds of a single issuer to 12%. For subsidiaries that

22 . ERISA generally holds that those who have discretion over the investment of plan assets or administration of the plan are fiduciaries subject to an obligation of fiduciary duty to the plan participants and beneficiaries and prohibitions on self-dealing.

belong in the same group, insurers have a limit of 20% of voting shares and 5% of an affiliated company.

100. Poland, Portugal and Mexico limit of investments in a single issuer or loans to a single borrower to 5% of assets covering technical provisions. In Slovenia, this limit is 10% for a single issuer. Turkey requires that investments in assets from a single issuer (excluding the government) be subject to deduction of collateral received, and not exceed 5% of technical provisions. While not an investment limit a relevant regulation in Turkey is loans from banks and similar financial institutions cannot exceed 20% of an insurer's assets covering technical provisions, and deposits, current accounts, participation account and receivables from credit cards guaranteed by a bank cannot exceed 40% of assets covering technical provisions.

101. In New Zealand, risk charges apply to exposures to a single counterparty or related-groups of counterparties over a certain limit. For example, a life insurer's exposure to a single counterparty, unless it is the New Zealand government or banks, is limited to 10% of total assets. 102. Denmark requires equity investments and loans to a subsidiary undertaking to be registered and limited to 5% for a single entity and 10% towards a group. Israel limits investments in all related parties to 5%, and investment in the controlling entity or a shareholder of an insurer is prohibited. Mexico has a 5 or 10% limit by issuer or issuers in the same group, or individuals and businesses which have a business or family link. Portugal has a 20% limit for companies that have a cross-shareholding arrangement or have a controlling interest or group structure with the insurer.

103. Korea limits credit extension to a principal shareholder or subsidiary to 40% of capital, and to shares/bonds to a principal shareholder or subsidiary at 60% of capital. Life insurers in New Zealand are not permitted to invest in associated persons of the insurer that are not subsidiaries for the purpose of the statutory fund, except for ordinary voting shares with a limit of 2.5% of the value of the fund.

2. Risk-based capital requirements on pension fund and insurer investment

a. Risk-based requirements of pension funds

104. Few OECD countries have developed risk-based capital requirements for pension funds (Denmark, Finland, Ireland, the Netherlands and Sweden).

105. The traffic light system to assess the solvency position of pension funds was introduced for both insurers and pension funds in Denmark in 2001. The minimum solvency margin is defined as 4% of the technical provisions plus 0.3% of risk bearing investments, and pension plans must assess their funding ratio applying stress factors on longevity, asset prices, credit, currency, and interest rates. Funds who maintain a positive funding ratio under all stress tests have a green light. If the solvency margin is breached following a high stress test, pension funds are classified as yellow light, whereas if pension funds breach their solvency margin at a lower stress level, they are classified as red light. Supervision is increased at yellow light, and more serious measures will be taken for funds at red light. The supervisor has flexibility in determining the recovery period allowed on a case-by-case basis (Brunner et al, 2008).[23] The introduction of a diversification allowance has been discussed, as well as

23 . Brunner, G., R. Heinz, R. Rocha (2008), "Risk-Based Supervision of Pension Funds: A Review of International Experience and Preliminary Assessment of the First Outcomes", Policy Research Working Paper 4491, The World Bank.

a more granular definition of sensitivities for asset classes, and alignment of the interest rate stress between assets and liabilities (van Dam & Andersen, 2008).[24]

106. In Finland, a risk-based solvency framework for pension funds was established in 1997, which has since undergone many revisions. The solvency limit is calculated based on risk charges for various asset classes as well as for insurance risks such as disability. A new framework scheduled to enter in force in 2017 expands the risks covered, and maturity will be explicitly accounted for. The framework makes sure that equity, hedge fund and real estate risks are well captured in the modelling as these risks are considered to be significant for pension funds in Finland. Risk charges are to be based on the 97.0% VaR measure over a one-year time horizon, and diversification across all risks is explicitly taken into account by allowing for risk correlations when aggregating the various capital charges to determine the total required capital. The investment return required by the pension fund is contingent on the average solvency of all pension funds as well as the average equity returns of all pension funds. This acts as a counter-cyclical measure, as funds will not be obliged to completely de-risk its investments in situations of financial distress. Partial internal models will be allowed for the purpose of covering risks not included in the framework.

107. Pension funds in Ireland will be required to have a minimum funding requirement which is linked to their fund's asset allocation from 2016. The currently defined requirement for a risk reserve is holding 15% of the value of assets which are not held in cash or bonds in addition to the net impact on value of a 0.5% decrease in interest rates. Funds that do not meet this new requirement will have a recovery period until 2023 to meet the funding requirement (OECD, 2014).[25] The Minister of Social Protection has the discretion to change the level of this requirement as deemed appropriate.

108. The Netherlands first developed funding requirement for its pension funds in 1997, which were updated in the Pensions Act of 2007. The current requirement in force as of 2015 stipulates that pension funds must have a minimum buffer of 5% of the value of technical provisions and 10% for indexed funds. This buffer increases based on exposure to longevity, asset prices and interest rates, and no diversification is allowed for. The risk charges for these risks are based on a 97.5% VaR, over a one-year time horizon. Liabilities are valued based on swap rates. Pension funds are allowed to develop internal models to more accurately capture the risks which they are exposed to. Funding ratios are now calculated based on a 12 month rolling average, and a rolling 10 year recovery plan has been implemented, with a maximum of a five year funding shortfall. These measures could be viewed as a less pro-cyclical mechanism, as funds will not have pressure to sell off assets during short-term, market volatility.

109. Sweden has had a traffic light mechanism for pension fund solvency, similar to that of Denmark, since 2007. The change in regulation was driven by the sharp decrease in funding ratios following the market crash in the early 2000s and the subsequent decrease in interest rates. Market, credit, interest rate, currency and liability risks are assessed based on the fair value of assets and liabilities. The stress factors are based on a 99.5% VaR over a one-year time horizon. If the pension fund does not hold sufficient capital to pass these stress tests, they are classified as having a red light and a more in-depth assessment of qualitative factors, in addition to quantitative factors, are performed to determine the appropriate actions to be taken (Finansinspektionen, 2007).[26]

24 . van Dam, R., E. Andersen (2008), "Risk-Based Supervision of Pension Institutions in Denmark", *Policy Research Working Paper 4540*, The World Bank.

25 . OECD (2014), OECD Reviews of Pensions Systems: Ireland, OECD Publishing. http://dx.doi.org/10.1787/9789264208834-en.

26 . Finansinspektionen (2007), www.fi.se/Folder-EN/Startpage/Reporting/Traffic-light-model/.

b. Risk-based capital regimes of insurance companies

110. While quantitative limits are still quite prevalent for pension funds in OECD countries, quantitative ceilings and floors are becoming less mainstream for insurers due to the movement towards risk-based capital regimes. However, even in risk-based capital regimes, there are variations among countries, with some still explicitly applying such quantitative requirements (Mexico and Turkey have quantitative limits in the more traditional sense, while in Australia and Korea quantitative regulations are focussed on large exposure limits). Additionally, Solvency II leaves scope for the development of quantitative limitations[27]. This suggests that as risk-based capital regimes develop and become more widely applied, some degree of quantitative restrictions may evolve or become necessary in certain circumstances. For example, while Mexico has implemented a risk-based capital regime, they are quantitative limits on certain assets covering technical provisions, and qualitative requirements for certain assets covering technical provisions and the solvency capital requirement. Such requirements are imposed to avoid an inappropriate concentration of risks and to restrict an excessive dependence of investments in a single asset, issuer, economic group or related entities. Switzerland, which also has a risk-based capital regime, applies requirements on the eligible assets that can be invested to cover technical provisions of direct insurers, such as having a liquid market. Thus, the implementation of a risk-based regime does not preclude quantitative requirements, but applies requirements that are different in nature so that risk exposure is controlled by placing certain conditions on the assets.

111. The transition to a risk-based capital regime is a clearly observed trend. EU countries will be subject to the Solvency II regime from January 2016. Many countries have either already adopted a risk-based capital regime (Australia, Canada, Japan, Korea, Mexico, Switzerland, US, South Africa), are scheduled to introduce a risk-based regime (EU countries, Chile, Iceland, Israel), or are considering one (Turkey); some were planning to update their solvency regime (Korea, Canada) (see Table 5). This suggests that the standard of insurer solvency regulation is shifting to risk-based capital regimes, although the risks incorporated and how they are measured may differ between countries.

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27 . In the Directive 2014/51/EU of the European Parliament and of the Council of 16 April 2014 amending Directives 2003/71/EC and 2009/138/EC and Regulations (EC) No 1060/2009, (EU) No 1094/2010 and (EU) No 1095/2010 in respect of the powers of the European Supervisory Authority (European Insurance and Occupational Pensions Authority) and the European Supervisory Authority (European Securities and Markets Authority) states:

Preamble (28) Where risks are not adequately covered by a sub-module, EIOPA should be empowered to develop draft regulatory technical standards in relation to quantitative limits and asset eligibility criteria for the SCR on the basis of the standard formula.

Article 111, 3. By 31 December 2020, the Commission shall make an assessment of the appropriateness of the methods, assumptions and standard parameters used when calculating the Solvency Capital Requirement standard formula. It shall in particular take into account the performance of any asset class and financial instruments, the behaviour of investors in those assets and financial instruments as well as developments in international standard setting in financial services. The review of certain asset classes may be prioritised."

Article 111, 4. In order to ensure consistent harmonisation in relation to the Solvency Capital Requirement, EIOPA shall, subject to Article 301b, develop draft regulatory technical standards to specify quantitative limits and asset eligibility criteria where those risks are not adequately covered by a sub-module.

Power is delegated to the Commission to adopt the regulatory technical standards. Regulatory technical standards shall apply to assets covering technical provisions, excluding assets held in respect of life insurance contracts where the investment risk is borne by the policy holders. They shall be reviewed by the Commission in the light of developments in the standard formula and financial markets.

Table 5. Implementation of risk-based capital regime

	Risk-based capital regime	Transitioning to a risk-based regime (from when)	Plans to develop a risk-based regime
Australia	X		
Austria		X (January 2016)	
Belgium		X (January 2016)	
Canada[a]	X		
Chile		X (Bill in Congress)	
Czech Republic		X (January 2016)	
Denmark		X (January 2016)	
Estonia		X (January 2016)	
France		X (January 2016)	
Germany		X (January 2016)	
Greece		X (January 2016)	
Hungary		X (January 2016)	
Iceland		X (January 2016)	Solvency II implementation
Israel		X (2017)	There are plans to implement the Solvency II framework with local adjustments.
Italy		X (January 2016)	
Japan	X		
Korea	X		Due to raise the confidence levels of insurance risk, interest rate risk, and credit risk to 99%, and include longevity risk.
Luxembourg		X (January 2016)	
Mexico	X (April 2015)		
Netherland		X (January 2016)	
Poland		X (January 2016)	
Portugal		X (January 2016)	
Slovakia		X (January 2016)	
Slovenia		X (January 2016)	
Spain		X (January 2016)	
Switzerland	X		
Turkey[b]			Implementation of Solvency II regime discussed, but no timeframe.
UK		X (January 2016)	
US	X		
EU		X (January 2016)	
South Africa	X (January 2015)		Solvency Assessment and Management (SAM) regime which is being developed based on Solvency II
American Council of Life Insurers	X		
Canadian Life and Health Insurance Association	X	X (new regime from 2018)	

a. Information provided by the Canadian Life and Health Insurance Association. Canada will be implementing a mondernised risk-based solvency regime in 2018.

b. Turkey does not employ a risk-based capital regime, but applies risk coefficients to assets and compares the outcome of this with the outcome from a solvency margin based calculation, and requires insurers to have the higher of the two as their minimum capital

112. With the adoption of risk-based capital regimes, the valuation of assets and liabilities has shifted, for the most part, to market-based and market-adjusted values, although there is divergence in approaches. Japan and New Zealand apply fair value to assets, and many countries employ fair value before implementing solvency modernisation (many EU countries pre-Solvency II, Chile for assets which do not back annuities), and even after transitioning to a risk-based capital regime (Australia for its assets). Switzerland's Swiss Solvency Test requires assets and liabilities to be market consistent, with strict requirements for valuation when an asset does not have observable prices. The United States' approach assumes that fixed income assets will be held at amortised cost for a ten-year holding period at a 95% confidence level. For assets that are not backing liabilities, New Zealand allows the application of amortised costs, assuming that it is a buy-and-hold. In Mexico, a market consistent (economic value) valuation is applied for both assets and liabilities.

113. New Zealand applies fair value to liabilities too, including an allowance for a risk margin. In Japan, long-term insurance liabilities are valued using an "assumed base rate," for assumed interest

and assumed mortality rates at the time of contracting, which is then re-valued using an economic valuation approach, which only recognises increases in insurance liabilities. In Mexico, the value of technical provisions must be equal to the sum of the best estimate and a risk margin. The best estimate is the probability-weighted average of future cash flows, taking into account time value of money using the relevant risk-free interest rate term structure.

114. In addition, the discount rate applied to insurance liabilities will also change the value of liabilities. For example, in Denmark, the long end of the discount yield curve is raised to a level equivalent to normal market conditions and in line with generally agreed long-term projections for growth and inflation for liabilities with maturities of 20 years or longer. These will be extrapolated using an Ultimate Forward Rate (UFR) of 4.2%. The Swiss financial supervisor (FINMA) decided in 2012 to allow an adjusted solvency capital requirement with an increased interest rate used for discounting of liabilities of in-force business for a limited period of three years and restricted to business in-force at that moment.

115. Value-at-Risk (VaR) is the predominant model used for evaluating risk for insurance companies, although there are some variations (Switzerland applies TailVaR, Australia overlays a combined stress scenario test on its VaR approach for life insurers). It appears that the confidence level applied in risk-based regimes is increasingly becoming a 99.5% confidence level, over a one-year time horizon. Japan uses different confidence levels against different risks and their maximum past losses. Korea will be tightening its risk measurement method to a 99% confidence level, from the current level of 95%. In the US, a 10-year holding period is assumed with a 95% confidence level. South Africa will adopt a slightly different approach to risk measurement depending on the term of the insurance contract, with long-term insurance at a 95% confidence level and short-term insurance at a 99% confidence level over a one-year period. New Zealand does not have a formal risk measurement method.

116. Capital requirements may, in some instances, result in pro-cyclical investment behaviour to the extent that assets and liabilities are valued in a market consistent/adjusted manner especially where the capital requirements may not fully take into account the long-term business model. To address such concerns, counter-cyclical mechanisms can be implemented to mitigate pro-cyclical investment behaviour and encourage investment strategy that is balanced with long-term investment considerations.

117. In the event of a market downturn, the value of assets decrease while the value of the liabilities typically does not, or not with the same amplitude as the assets, resulting in a potentially significant reduction of the risk-based solvency/funding ratio. If this ratio falls below the required ratio, the risk in the asset portfolio would have to be reduced by moving to less costly assets, potentially resulting in a fire sale of more 'risky' assets with higher risk charges.

118. Counter-cyclical measures are commonly being implemented to address the problem of volatility and potential pro-cyclical investment behaviour caused by risk-based capital requirements. For instance, as a consequence of the Long-term Guarantee Assessment of EIOPA, Solvency II includes now three counter-cyclical measures: a volatility adjustment, a matching adjustment (both measures dampen the impact of short term fluctuations in credit spreads) and a symmetric adjustment for the equity risk charge (in order to avoid possible pro-cyclical behaviour as a reaction to fluctuations in equity prices).

119. The Australian, New Zealand and Swiss regimes provide the supervisor with the authority to adjust capital requirements or charges in volatile market circumstances. The Danish financial supervisor publishes counter-cyclical measures on its website for insurers to calculate their capital requirement.

120. The system in the United States funds reserves more generously during times of asset price appreciation and applies a risk charge that assumes a 10 year holding period of assets. The Canadian system relies on external ratings to adjust cyclical issues. The Japanese system requires the accumulation of a statutory reserve which functions as a buffer against losses generated by volatility in market prices and as a counter-cyclical measure. Apart from technical provisions, a statutory reserve is accumulated for the Price Fluctuation Reserve (for losses due to the fluctuation of stock price, etc.), the Contingency Reserve (for losses realised when risks exceed expectations) and the Catastrophe Reserve.

3. Relevant qualitative requirements

121. Qualitative requirements mainly pertain to the fit and proper requirements and governance arrangements to ensure that investment decisions are being made taking into account the wider risk management of the insurance company and pension fund.

122. Prudent person or related principles in terms of the fit and proper standards of the manner in which investments are decided have become the main requirements in recent years. Prudent person or other standards link the investment function of the insurance company/pension fund with the best interest of the policyholder/beneficiary.

123. Governance requirements are made to ensure that there is board-level recognition of the level of risk that can be taken, and explicit policies are established to ensure adherence to sound risk management.

Pension funds

124. The Core Principles of Occupational Pension Regulation stress the importance of a prudent person standard to ensure that the management of pension assets is assumed by an expert exercising prudence and diligence. The best interests of plan members should also be taken into account for a strong risk management process. The recommendation also acknowledges the use of quantitative forms of investment regulation, and in particular, quantitative investment restrictions, as a complement to the prudent person standard. Appropriate internal risk controls should also be in place within the governance framework.

125. In some countries, trust-based pension schemes exist, as opposed to incorporated funds. Generally speaking, trustees of trust funds would be subject to a different level of accountability and liability in terms of processes and terms of performance. In this context, avoiding conflicts of interest and adverse incentives take a prominent role. The higher level of accountability would also have implications for asset allocation in trust-based pension schemes.

126. Australia and the United Kingdom have regulation in place requiring that appropriate risk management structures be in place, to monitor, manage and control risk exposures, and that trustees are competent to perform their duties. Germany requires that its Pensionskassen and Pensionsfonds establish proper administrative procedures along with a defined risk strategy and effective internal controls (IOPS, 2008).[28]

127. Qualitative regulation may also require the investment portfolio be appropriately diversified without necessarily imposing quantitative limits to enforce the diversification. This is the case, for example, in Australia regarding investment across asset classes, and in the United States where diversification is expected with respect to the concentration of exposures (except for employee stock ownership plans).

28 . IOPS (2008), Supervisory Oversight of Pension Fund Governance, Working Paper No. 8.

Insurance companies

128. All countries have a behavioural-oriented standard on investment of insurers (see Table 6). These behaviour-oriented standards are particularly important for when countries transition to risk-based capital regimes, and the insurers are expected to make investment decisions based on the principles of the regime. In this context, although many risk-based capital regimes do away with quantitative restrictions, many countries may require insurers to internally set limits on their investments, so while not imposing any limits still expecting insurers to manage their risks in a controlled way. The ultimate objective of imposing such standards is to safeguard the interest of policyholders.

129. The United States and Israel apply a *fiduciary duty*, but this is a broad requirement for all corporations as part of countries' corporate law and is not specific to insurance. Many countries require the *best interest* of policyholders to be taken into account by insurers (Austria, Chile, Czech Republic, Denmark, Germany, Greece, Luxembourg, New Zealand, Poland, Slovakia, South Africa) (see below Table 5). *Due diligence* (Australia, Germany) and *duty of care* (Australia, Chile, Germany, Slovakia Rep.) are also applied, but these standards are generally considered to be part of the prudent person standard.

130. Many countries apply the *prudent person principle* (Austria, Czech Republic, Denmark, Estonia, France, Germany, Iceland, Luxembourg, New Zealand (prudent manner), Portugal, United States (NAIC), Canada, South Africa) with many doing so in accordance with Solvency II requirements. The prudent person principle in Solvency II is defined as requiring insurers to invest their assets held for regulatory purposes so as to ensure the security, quality, liquidity and profitability of their portfolio as a whole, which includes the need to be adequately diversified. While not explicitly expressed in the Solvency II Directive, EIOPA guidance has been that a prudent person regime entails adherence to certain principles such as due diligence and process, care, skill and delegation, duty to monitor, duty to protect policy holders' and beneficiaries' interests and the principle of diversification.[29] Risk management is also a component of the prudent person principle.

131. Switzerland requires investment behaviour which is equivalent to the *prudent investor principle*. In Mexico, the board must have the appropriate quality and technical capacity to monitor and assess investments. In Japan and Korea, stewardship codes[30] are being applied.

132. While explicit in the prudent person and prudent investor principle, linking risk management of investments directly with policyholder protection is becoming the norm in most countries. In Belgium, Luxembourg and South Africa, for policyholders of unit-linked contracts, the supervisor requires that an analysis of the policyholder has to be made (wealth, age, investment horizon, etc.) before investment to ensure that an appropriate investment is made.

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29 . Article 132 of the Solvency II directive introduces the principle of "prudent person" for the purpose of investment risk management. EIOPA has issued the "Explanatory text on the proposal for Guidelines on the System of Governance" (BoS-13/26, 27 March 2013) for further elaboration.

EIOPA's "Final Report on Public Consultation No. 14/017 on guidelines on system of governance" (EIOPA-BoS-14/253, 28 January 2015) clarifies that the Guidelines on System of Governance, at the time of being issued, will not established detailed guidelines on the prudent person principle which could be provided after national supervisory authorities have gained greater experience with the application of the principle to different undertakings. EIOPA, "Guidelines on System of Governance" (EIOPA-CP-13/08, 2013).

30 . In Japan, the Stewardship Codes are principles developed by the Financial Services Agency for voluntary application to institutional investors, including insurers, pension funds and investment managers. As of May 2015, 191 institutional investors have announced their acceptance of the Codes.

Table 6. Standards of behaviour in relation to insurers' investments[1]

	Best interest	Due diligence	Duty of care (reasonable or professional)	Prioritise interest of policyholder	Prudent person	Other standards
Australia[2]		X	X	X		
Austria	X				X	
Chile	X		X			
Czech Rep.	X				X	
Denmark*	X				X	
Estonia*					X	
France					X	
Germany	X	X	X		X	
Greece*	X					
Iceland					X	
Israel						Fiduciary duty and considerations regarding the investments in terms of: expected cash flow, alternative similar investments and their risk and return compared to the investment in question, economic nature of the investment, and profitability of securities.
Japan						Stewardship Code
Korea						Good stewardship
Luxembourg	X				X	
Mexico						Quality and technical capacity of board members.
Netherland					X	
New Zealand	X					Prudent manner
Poland*	X					
Portugal					X	
Slovakia*	X		X			Minimise risks, no overly unfair contracts
Slovenia*						Board to follow good practice of risk management
Switzerland						Equivalent to prudent investor
US					X	
South Africa	X				X	Taking into account any disclosed policy objective
ACLI					X	Fiduciary duty
CLHIA					X	

1. Table 6 only reflects survey responses received and does not make any inference as to the mutual exclusivity of the categories.
2. This is based on legislation applicable to Australian life insurers only.

Note: Where the EU/EEU country is marked with a *, the responses were based on its pre-Solvency II regime. ACLI and CLHIA are the life insurance associations in the United States and Canada, and provided information on the investment regulation regimes in their respective countries.

133. Governance and risk management strategies are considered jointly with qualitative requirements of insurers. When a country transitions to a risk-based capital regime, strengthening governance requirements is critical to ensure that the insurer carries out risk management in accordance with their risk profile. Most countries require a risk management strategy, but how this is linked to the governance and, specifically, oversight of the board of directors varies.

134. Own Risk and Solvency Assessment (ORSA) is a method in which insurers are required to review their risk and solvency beyond the solvency capital requirement.[31] In Australia, if insurers are

31 . In terms of Solvency II, EIOPA has issued a guideline on ORSA. EIOPA, Final report on public consultation No 14/017 on Guidelines on own risk and solvency assessment (EIOPA-BoS-14/259, 28 January 2015).

United States' NAIC Own Risk and Solvency Assessment adopted by its Financial Condition Committee, Risk Management and Own Risk and Solvency Assessment Model Act (6 September 2012).

Canada's ORSA is set out by the Office of Superintendent of Financial Institution's Guidelines on Own Risk and Solvency Assessment (E-19, January 2014).

deemed not to have an appropriate risk management and solvency framework, additional capital can be required.

135. Most countries expect insurers to approach their governance arrangements bearing in mind proportionality (Australia, Mexico, Poland, Solvency II).

136. Requirements relevant to *roles and responsibility* are set at the board and senior management level. There are a number of ways in which requirements are made, as opposed to internal limits that insurers impose upon themselves. Israel's governance requirements are dictated by the Companies Law, which requires the appointment of majority independent directors to the board. New Zealand supports the establishment of a highly independent board.

137. Germany requires insures to have the appropriate segregation of duties to avoid or adequately manage conflict of interest, which would call for the establishment of a front and back office for investments. Japan also requires the clarification of responsibilities between the front, middle and back offices. Insurers are required in Korea to have independent staff that can evaluate the appropriateness of their derivative transactions, and an independent unit attached to the board that monitors risk management. In Mexico, the board must establish a risk management area which is responsible for designing, implementing and monitoring the risk management system and defining the processes for managing and monitoring risks.

138. Some require the establishment of an *investment committee* of the board (Canada, Chile (is recommended), Korea (if necessary), Mexico, India) or the designation of a responsible board member (Canada).[32] Members of the investment committee are expected to be independent and with expertise in financial matters in Chile, as well as having a remuneration policy that avoids excessive risk taking. The investment committees required in Mexico are responsible for selecting the assets and investments to be acquired by the insurer.

139. Most countries require a *written policy on investment strategy and risk management* to ensure that an explicit policy is part of the management of insurers (Australia, Chile, Denmark, Estonia, Germany, Israel, Japan, Korea, Luxembourg, Mexico, New Zealand, Poland, Portugal, Switzerland, Turkey, United States (NAIC)) and India. The prescriptiveness of the governance guidance varies, but this may be more a result of the detail provided in each response and not a reflection of the actual regulatory requirements. Most countries require board approval of the investment and risk management strategy (Australia, Canada, Chile, Japan, Korea, Luxembourg, Mexico, Slovenia, Switzerland, Turkey, United States (NAIC)). Japan requires the active involvement of the CEO in the development of the risk management policy.

140. In Chile, it is recommended that insurer investment policies include an ALM strategy, and determine appropriate assets classes and the maximum risk exposure. This is the case for Solvency II, where the written policies are required for the risk management system, which includes policies on ALM, liquidity, concentration and derivatives. Korea requires insurers to include in their standard for risk management the risk assessment methods and permissible exposure to risks. In Turkey, the annual investment policy of insurers must include diversity, limitations on certain assets, and ALM. South Africa's planned secondary legislation is likely to require insurers to have an explicit investment policy.

32 . While many countries have responded that an internal audit committee or remuneration committee etc. are required, but given the focus of this paper, only descriptions relevant to investment are noted here.

141. Many regulators/supervisors require insurers to report their investment strategy (Australia, Chile, Germany, Switzerland, United States (NAIC)) and some will have the authority to change capital requirements depending on the strategy or risk management structure (Australia).

142. With respect to *liquidity risk*, Solvency II's risk management guidance require EU insurers to develop a written policy taking into account the security, quality, liquidity and profitability of the portfolio as a whole, and the localisation of those assets. Australia, Canada, New Zealand and Turkey do not ask for a specific liquidity requirement, but incorporate it into the general risk management framework. In Switzerland, insurers have to include liquidity as part of their annual capital planning, and insurance groups and the largest insurers are obliged to report this to the supervisor (FINMA) annually. In Chile, companies engaged in the annuity business do not have liquidity requirements, which allow them greater freedom to invest in illiquid assets with longer durations and incentivising the development of long-term investment markets such as leasing, real estate and infrastructure. For Chilean insurers not selling annuities, the regulator carries out an internal report that takes into account the liquidity measures of each company, and includes this in the supervisory assessment of each insurer. In Japan, liquidity is monitored as part of the Early Warning System for supervisory intervention, and insurers are required to establish a risk management policy for liquidity risk.

143. *Internal limits on investments or credit risk assessment requirements* require firms to take into consideration the quantitative investment regulations, and set firm-specific limits in accordance with their risk-bearing and management capacity. Australia requires this to be included in its risk management strategy. Chile recommends insurers to define the level of risk tolerance including those related to investment as well as establish an internal credit risk assessment capacity to avoid excessive dependency on external rating agencies. Israel and Switzerland require the board to set a policy on the exposure/ceiling of the insurer to risks. Switzerland requires that investments in alternative assets take into account the potential conflict of interest between the fund, broker, and external party carrying out the due diligence. In Japan, the supervisory guidelines for insurance companies ask the board of insurers to establish a policy on the exposure/ceiling of the insurers' risk taking. In Korea, the insurer must set limits on risks and transactions. Portugal requires investment policies to include exposure limits to different types of investments. The investment policy of Turkish insurers must include limitations on certain assets, including property and receivables. In addition, Turkish insurers must determine limits par region, market, industry, issuer and currency. US' NAIC handbook includes guidance on insurers' investment strategy including minimum requirements in the management of specific assets such as securities lending and repurchase agreements. South Africa's planned regulation is likely to include requirements of insurers to set limitations on assets.

144. In terms of Solvency II's risk management requirements on assets, *derivatives* can only be used where they facilitate efficient portfolio management or contribute to a reduction of risks.[33] Chile requires the use of derivatives to be articulated in the investment strategy of firms. Korea also requires the board to approve its derivatives strategy taking into account ALM strategies and risk tolerance levels.

145. Developing a policy on the *outsourcing of the investment function* is required by many jurisdictions to be part of the risk management strategy (Australia, Chile, Czech Rep., Slovenia, Turkey, South Africa), and this is subject to supervisory approval in a number of countries (Czech Republic, Luxembourg, Slovenia).

33 . Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II), Article 132, paragraph 4, second sub-paragraph.

V. Selective considerations on investment regulations and investment strategies

1. Quantitative investment regulation vs alternative risk return policies of defined contribution pension funds

146. The regulatory framework for defined contribution (DC) pension plans, especially those where DC plans are mandatory, tend to use a quantitative approach to investment regulations and in some cases limit the exposure to equities, and lowers this ceiling as the member reaches retirement.

147. A few countries have also imposed quantitative performance requirements on pension funds, such as minimum or target investment returns or set limits on quantitative investment risk measures. For example, pension funds may be required to meet a minimum investment return set in absolute terms.[34]

148. Quantitative risk limits may also be imposed on the overall pension fund portfolio to manage risks of the pension fund. For example, in Mexico, pension fund investments are subject to a VaR ceiling, while in Denmark, the mandatory ATP fund and pension funds that operate in the quasi-mandatory system are subject to stress tests on the investment return guarantees they offer.[35]

149. The OECD report (2009)[36] assessed the quantitative investment regulations are used to manage investment policies and provide a certain combination of potential retirement income and investment risk. Defining these investment limits at higher levels of security, which may be particularly important where DC plans provide a large portion of retirement income, aim to reduce the downside risk or to minimise the risk of unfavourable outcomes from DC plans.

150. Under reasonable assumptions regarding risk-return, trade-offs of different asset classes, a quantitative limit for the required return set at a VaR beyond 95% would require moving into relatively conservative investment policies, where the share of assets allocated in bonds is quite large, generally above 60%.

151. The analysis suggested that simple quantitative limits have some advantages over risk-based regulations. Policymakers must consider that regulations could be efficient *a priori* but inefficient *a posteriori* depending on whether the assumptions used for the modelling are realised. They must also assess the complexity and cost of implementing and monitoring the different risk measures. Simple regulations (e.g., a quantitative limit on equities of 30-40%) could achieve the same results as more complicated regulatory approaches (e.g., minimum returns with a certain security level), if the assumptions used for the modelling are realised.

152. The extent to which investment regulation for DC schemes minimises the risk of low replacement rates through restrictions on investment risk depends on the length of the contribution and accumulation period. Long periods render investment policies with a larger share of riskier assets possible, increasing the potential for high replacement rates, but also increasing the risk of shortfall. Short contribution periods combined with limits set at a high security level would steer people and pension funds to conservative investment policies where the goal is to reach a reasonable replacement rate with minimal downside risk.

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34 . Countries with voluntary pension fund systems (e.g., Belgium) have set minimum investment returns.

35 . Stress tests often involve scenario simulations. For example, a regulator's stress test may simulate a 20% drop in equity prices and determine the likely impact of such scenario on the pension fund solvency status.

36 . Antolin et al. (2009), "Investment Regulations and Defined Contribution Pensions", *OECD Working Paper Series in Insurance and Private Pensions No*. 37 doi:10.1787/222771401034.

2. Policies impacting the long-term investment of insurers

153. Many OECD countries have recognised the importance of promoting long-term investment for insurers, and a number have made legislative changes to improve the financing of long-term investment projects. Recently, Belgium, Italy, and Spain enacted amendments to their Solvency I insurance legislation to permit investments in alternative assets. Since December 2013, Belgium permits insurers to attract funds by offering insurance policies designated by the act, and uses the funds to finance qualifying projects. Italy agreed legislation in December 2013, which extends the Solvency I list of eligible assets in which insurers can invest to include financial instruments issued by small and medium-sized enterprises. In 2013, Spain adopted a new rule that permits insurers to invest in alternative market instruments as a proportion of their technical reserves. However, all three legislative initiatives will be replaced once the Solvency II regime is implemented in January 2016.

154. The *asset valuation method* is a key conduit by which long-term investment may be affected. In the absence of long-term assets, which is often the case for insurance products such as annuities, *maturity matching requirements* can strain the ability of insurers to offer long-term products.

155. Well-designed risk-based capital frameworks should encourage an appropriate ALM investment strategy which is in line with the long-term duration of pension and long-term insurance promises. Where the impact of any adverse scenario is taken into account through both the asset and liability side of the balance sheet, an investment strategy which offsets any increase in the liability value, for example through duration matching, should result in a lower capital requirement. Therefore risk-based requirements can, through appropriate recognition of ALM, avoid discouraging long-term investment strategies.

156. For example, Chile has a large annuities market due to the purchase of annuities being one of the two options taken at the time of retirement. Life insurers selling annuities are required to comply with a test (TSA) that measures the sufficiency of assets to repay annuities in full. The TSA encourages duration matching between assets and long-term liabilities, as regulation requires an insurer with insufficient duration matching to set aside additional technical provisions. Given that the optimal duration matching can be achieved through investment in long-term assets, insurers have a strong incentive to invest in long-term assets.

157. Government policies and actions may also introduce incentives to influence investment strategies. In Japan, the government is issuing fiscal loan and investment program bonds to finance SMEs and large-scale, long-term projects, which institutional investors can purchase. In the Netherlands, a Dutch Investment Institution (NLII) and private-sector initiated SME fund was established to promote long-term investment. The NLII aims to facilitate the financing of the real economy by institutional investors. New Zealand introduced the Kiwi Saver scheme in 2006, which promotes long-term investment by adopting measures to encourage individuals to save for retirement, and is subject to a tax credit.

158. Depending on the rules related to the *asset and liability management (ALM)* of insurer investment, the way in which insurers invest in long-term assets can be affected, both in terms of incentives and dis-incentives for investment. While countries recognise the need to better accommodate insurers' desire to invest in long-term assets, as solvency modernisation initiatives permit insurers' investments in accordance with their ALM, measures such as those taken by Belgium, Italy and Spain tend to be more general and indirect which allow such assets to cover technical provisions so long as insurers can justify their risk profile.

159. At the same time, there is recognition that in some circumstances a risk-based capital regime may discourage investments in long-term, illiquid assets. Korea will be changing its risk-based capital

regime to a higher confidence level[37], and notes that insurers may switch to safer assets to compensate for the stricter ratio required. The Canadian Life and Health Insurance Association (CLHIA) states that capital requirements may discourage investment in certain alternative long-term assets.

160. The design of risk-based regulations may ultimately dictate the extent to which these regulations influence investment. Basic designs should encourage appropriate asset liability management (ALM) strategies. However, the security level at which capital requirements are set and the relative attractiveness of one asset class to another will influence the ability to invest in certain asset classes. Regulatory design may also influence incentives for risk management and the diversification of investments.

3. Different modes of counter-cyclical measures

161. There are two potential approaches to address potential pro-cyclical investment behaviour from risk-based capital requirements. The first approach is when measures are prescribed in regulation – this is the case of Solvency II. The second approach is when supervisors have the power to request adjustments to the valuation of liabilities on an *ad hoc* basis. Where assets and liabilities are matched but discount rates for assets and liabilities cash flows are different, the differences in discount rates can create a valuation mismatch between assets and liabilities, and, in periods of market stress, this mismatch could be amplified, creating so-called artificial balance sheet volatility.[38]

162. In Solvency II, there are two main types of measures that follow the first approach and adjust the calculation of the risk-based requirements: the equity dampener, which adjusts the risk charge on equity and provides some capital relief in the event of an equity crash; and adjustment to the discount rate used to value the liabilities to avoid significant changes in the solvency ratios due to the widening or volatility of credit spreads (e.g., the matching and volatility adjustments). Long-term obligations typically do not create an increased need for liquidity in distressed circumstances.

163. The matching adjustment of Solvency II is an adjustment to the discount rate applied in the valuation of highly predictable liabilities which are cash-flow matched using fixed-income assets. The adjustment is equal to the non-default and non-downgrade portion of the spread on the backing asset under the requirement that the matching assets can be held to maturity and that the insurer would not be exposed to price movements that are not related to default or downgrade. This has the effect of reducing the overall balance-sheet volatility of the insurer.[39]

164. The volatility adjustment of Solvency II is designed to prevent pro-cyclical investment behaviour when insurers' liabilities are exposed to short-term volatility. The requirements for the application are less strict than for the matching adjustment and relate mainly to the liquidity management of the insurer. It allows only part of the non-default and non-downgrade spread to be

37 . For the purpose of the paper, risk charge is the percentage at which the individual risk is stressed to calculate the resulting net asset value. Capital charge is the change in net asset value resulting from applying the risk charge (or impact of applying the risk charge). Total required capital is the combination of all capital charges taking into account any diversification allowances in the regulation.

38. This type of volatility is referred to as artificial because it is induced by valuation changes, and does not stem from an asset/liability mismatch.

39. The matching adjustment can turn negative in periods of market exuberance, in which case the effect would be to increase the required provisions in line with asset prices in anticipation of a possible correction. The application of the matching adjustment is subject to strict requirements; notably the insurer must prove that it can hold the assets to maturity and can properly match the cash-flow of assets and liabilities. Long-term assets with a fixed cash-flow profile (such as plain vanilla bonds or loans, but also including infrastructure project bonds) are eligible for the matching adjustment.

included in the discounting of liabilities and is published by EIOPA based on a representative portfolio of assets in a given currency and country.

165. While certain measures in risk-based capital requirements which take into account insurers' long-term business model may dampen pro-cyclical incentives, there may be some challenges in the definition of the respective measures and the accompanying calculations. However, clear and transparent mechanisms enable insurers to incorporate them in their projections, and therefore create (counter-cyclical) incentives for forward-looking risk management and investment decisions of insurers.

166. Adjustment of the target minimum requirement, following the second approach, takes a more direct aim at reducing pro-cyclical incentives. While arguably a more subjective methodology, the general intention is to impose higher minimum requirements in good markets to build up surplus funds, and lower minimum requirements in difficult markets in the hope to avoid fire-sales of assets.

167. Other countries implement alternative valuation methodologies which could have a different impact on the investment strategy. In Chile, fixed-income assets that back technical provisions related to annuities businesses must be valued at amortised cost given that annuities are long-term, with a fixed and guaranteed rate, and with no surrender option. This has prevented the volatility of insurers' equity associated with fluctuations of interest rates in the short-term, and has facilitated long-term investments. Another approach would be to impose a dynamic risk-based funding ratio. For example, Finland takes a more innovative approach for the funded portion of its TyEL pension scheme, for which it imposes a dynamic minimum required investment return. This minimum investment return varies depending on the liability discount rate, the average solvency position of the fund and the average equity return, meaning that entities are not overly penalised for having equities in their portfolios during economic downturns.

168. The United States has indicated that its use of amortised cost accounting for insurance companies does not create a disincentive for the holding of longer duration assets that market-based valuation might create.

4. The admissibility of assets to cover technical provisions for insurers

169. The extent to which the value of an asset is allowed to count towards covering the technical provisions can impact investment incentives. If these requirements favour more short-term or liquid investment, the insurer's ability to invest in more long-term illiquid assets could be impeded. Some countries have included certain conditions for long-term assets to cover technical provisions.

170. For assets to be recognised as covering technical provisions of direct insurers, Switzerland imposes ceilings on the proportion of certain assets, and for some asset classes, the investments have to be traded on a liquid market. A revision due in the Insurance Supervision Act may permit insurers to seek exceptions to assets permitted as tied assets to cover technical liabilities. This could enable specific long-term investments, which do not fulfil the regular set of requirements, to be approved by the supervisor as being part of the technical provisions of insurers.

VI. Conclusions

171. The nature of quantitative investment regulations are evolving as insurance companies and some pension funds are applying risk-based capital regulation. While the overall outcome of applying a quantitative investment regulation and risk-based regulatory regimes may be similar, the shift towards principle-based regulations is clear, particularly in the insurance sector.

172. The experience of Mexico and US with risk-based capital regulation for insurance companies and their continued use of quantitative investment regulation suggest that there is still

scope for quantitative investment limits to play an important role. Countries with risk-based capital regulation may employ supplemental quantitative investment limits, in particular for smaller insurance companies and pension funds. Such firms may have less sophisticated investment operations, which may present a need for a simpler form of regulation to be made available.

173. The conceptual framework for quantitative investment limits points to a complex web of quantitative regulations that are being implemented by various countries, and while quantitative regulations on certain asset classes remain the predominant form of regulation, there are variations in how these are combined. In particular, regulations could increasingly be applied on the nature of the asset, such as based on credit rating, market tradability or on liquidity.

174. Various components of risk-based regulation may have unintended consequences on the investment strategies of insurers. Analysis of valuation, risk charges and counter-cyclical measures make clear that these components may affect investment decisions. There is scope for making adjustments based on policy intention, but these should be fully justified and their impact calibrated before being implemented.

175. Qualitative requirements relating to risk management processes and governance continue to play an increasingly important role for the investment strategies of pension funds and insurance companies. The prudent person principle in particular is becoming an important part of investment management in many countries.

176. As countries try to address the long-term financing needs of their economy, some countries have been taking specific policy measures to address the possibility of long-term investment financing by insurers and pension funds. Any relevant policy measure should take into account prudent ALM strategies, and ensure that a rigorous risk assessment is made when investments in non-routine assets are being contemplated.

177. Greater knowledge and experience of using risk-based regulation may be necessary to be able to better assess the overall impact that the various combinations of investment regulations may have. As countries develop further guidelines, further analysis may be necessary to understand the interaction of investment regulations with actual investment behaviour.