TELA's Investment Report Group: Guidelines to authorized pension providers for drawing up a return-risk table

26 April 2017

Return-risk table

Pension provider nn	dd.mm.yyyy				mm-mm / yyyy	24 months
Return-risk table at fair value*	**Basic breakdown**		**Risk breakdown**		**Return % on cap.emp.**	**Volatility**
	M €	%	M €	%	%	%
Fixed-income investments	**Tot. X,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**	**Tot. z,z-%**	
Loans receivable**	x,x	y,y	x,x	y,y	z,z-%	
Bonds	x,x	y,y	x,x	y,y	z,z-%	Vola
Bonds of public corporations	x,x	y,y	x,x	y,y	z,z-%	
Bonds of other corporations	x,x	y,y	x,x	y,y	z,z-%	
Other fin. market instruments and deposits**	x,x	y,y	x,x	y,y	z,z-%	
Equity investments	**Tot. x,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**	**Tot. z,z-%**	
Quoted shares	x,x	y,y	x,x	y,y	z,z-%	Vola
Private equity investments	x,x	y,y	x,x	y,y	z,z-%	
Unquoted shares	x,x	y,y	x,x	y,y	z,z-%	
Real estate investments	**Tot. x,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**	**Tot. z,z-%**	
Direct real estate investments	x,x	y,y	x,x	y,y	z,z-%	
Real estate investment funds and joint investments	x,x	y,y	x,x	y,y	z,z-%	
Other investments	**Tot. x,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**	**Tot. z,z-%**	
Hedge fund investments	x,x	y,y	x,x	y,y	z,z-%	Vola
Commodity investments	x,x	y,y	x,x	y,y	z,z-%	
Other investments	x,x	y,y	x,x	y,y	z,z-%	
Investments in total	**Tot. x,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**	**Tot. z,z-%*** **	**VOLA**
Impact of derivatives			**Tot. x,x**	**Tot. y,y**		
Investments at fair value, total	**Tot. x,x**	**Tot. y,y**	**Tot. x,x**	**Tot. y,y**		

Modified duration of the bond portfolio **x,x**

For footnotes *, ** and * , see the next page.**

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Footnotes to the return-risk table

* TELA's six largest members (Elo, Ilmarinen, Varma, Veritas, Keva and the State Pension Fund) publish their data in accordance with this table at the end of each quarter. TELA compiles the quarterly data into the following summary: https://www.tela.fi/en/quarterly_information_by_pension_provider.

In keeping with the regulations and guidelines of the Financial Supervisory Authority (FIN-FSA), the bodies supervised by FIN-FSA publish the indicators "Breakdown of investments at fair value" and "Net return on capital employed" in the notes to the financial statements and in interim reports: https://www.finanssivalvonta.fi/globalassets/fi/saantely/maarayskokoelma/2012/14_2012/14_2012_liitetiedot.xlsx (in Finnish).

** Includes the interest accrued

*** Net return on investments at fair value in total, with any income, expenses and business costs not allocated to individual investment categories taken into account

About classification 1/3

- **The Financial Supervisory Authority's new regulations and guidelines** for pension insurance companies constitute the starting point for classification in the return-risk table:
  - Regulations concerning accounting and financial statements → Notes to the accounts → Indicators → Net return on investments for the capital employed (at fair value)
- The indicators in the notes to the accounts required by FIN-FSA and the return-risk tables compiled by TELA share the objective of classifying investments in accordance with their real risk character. The classification hierarchies are almost identical with the exception of bonds, which TELA's table divides into two sub-categories: Government bonds and Other bonds.
- Since the classification is based on principles, slight differences may arise between actors when the classification is applied

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About classification 2/3

- **Fixed-income investments**
  - Loans receivable as in the starting point
  - Bonds include both government bonds and other bonds
    - The bonds of public corporations comprise bonds issued or guaranteed by governments and other public corporations
    - The bonds of other corporations comprise bonds issued by enterprises, financial institutions and other non-public corporations. Property-linked debt funds are also classified here if they are purely debt instruments
  - Bonds also include convertible bonds and index-linked bonds
  - Other financial market instruments and deposits mostly as described in the starting point. In addition, other receivables and liabilities (cash, cash in bank, purchase-money claims and loans, and collateral for derivatives)

- **Equity investments**
  - Quoted shares also include balanced funds if they cannot be placed anywhere else
  - Private equity investments include private equity funds, mezzanine investments, infrastructure investments and investments in forestry and agriculture. Property-linked debt funds are also classified here if the risk included in them is closer to share risks
  - Unquoted shares also include unquoted property investment companies and parallel investments

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About classification 3/3

- **Real estate investments**
  - Real estate investments mainly as in the starting point

- **Other investments**
  - Hedge fund investments include all types of hedge fund units regardless of the fund's strategy
  - Other investments include items that cannot be placed in any other investment types. Examples are property-linked debt funds whose risk is difficult to classify as either a share type or a loan type risk. Then the investment cannot be classified into other corporations' bonds or private equity investments

Risk breakdown

- The risk breakdown is the distribution according to the risk exposure, using the classification of the table, which includes the impact of derivatives.
- The “risk” of derivatives and the risk of the corresponding underlying asset are two different things.
- The risk breakdown uses the delta-adjusted market value of the underlying asset for equity derivatives and interest rate derivatives:
  - Delta-adjusted = the underlying asset of futures and forward contracts and the underlying asset of options multiplied by the option delta, or the risk effect of derivatives; the abbreviation risk-adjusted is also used
- By using the line “Impact of derivatives” to equalize the risk exposure, the sums of the basic asset breakdown and the risk breakdown can be made equal.
- When derivatives are recorded in the risk distribution, they are not adjusted for duration.
- Currency derivatives are recognized at market value both in the basic asset breakdown and in the risk breakdown. Depending on the hedging purpose, they can be classified in three different ways:
  - On the same line with the underlying instrument if the hedging applies to a single instrument
  - Divided into asset categories relative to currency-denominated investments if the hedging applies to a currency risk
  - Other investments if the currency derivatives are used to hedge against risks other than currency risks or if the currency risk of investment assets is hedged.

Returns

- The MWR rates of return are calculated and reported according to the Financial Supervisory Authority's guidelines (the modified Dietz method, see next page) for the investment types specified in the basic asset breakdown of the return-risk table
  - MWR = money-weighted return
- Rates of return are reported for commodity investments and for the sub-group 'other investments' only if the reporting is sensible, i.e. when investments have not been made only by means of derivatives (capital employed > 0)
- The total rate of return also includes returns and expenses not allocated to investment types as well as the operating expenses of investment. Then the rate of return is the same as that calculated according to the Financial Supervisory Authority's regulations in the specification 'Net return on investments for the capital employed'.

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Calculation formulas 1/3

- **MWR return**
  - is calculated from the beginning of the calendar year to the review date
  - is calculated according to the guidelines of the Financial Supervisory Authority by using the modified Dietz method

    $$r(T) = [MV(T) - MV(0) - \Sigma C(t)] / [MV(0) + \Sigma \{w(t) * C(t)\}]$$

    where MV is the market value, C(t) is the net cash flow and

    $$w(t) = [T - t] / T$$

  - is calculated for allocations following the basic asset breakdown

- **Modified duration**
  - is calculated by using the investment-specific maturity return
  - is calculated for the bond allocation in accordance with the basic asset breakdown

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Calculation formulas 2/3

- **Return for parts of a year**
  - it is assumed that the MWR returns r(t,0,m1) and r(t,0,m2) are known from the start of the calendar year (YTD) to the dates m1 and m2 in the same year $(0 < m1 < m2 \leq 1)$
  - m1 and m2 show how much of the year has passed until these dates; the return for the whole year t would be written as r(t,0,1)
  - the return r(t,m1,m2) for the period between the dates is
    r(t,m1,m2) = (1 + r(t,0,m2))/(1 + r(t,0,m1))-1
  - thus, the MWR returns for periods are treated here without taking into account any differences in capital weights that may exist between periods
- **Average return over several years when the first or the last year is not a whole year**
  - the annual average return for a period exceeding one year where MWR returns are obtained for n calendar years (years 1, 2,..., n) and where the first or (and/or) last year is not a whole year, is as follows

$$\bar{r}(1,m1;n,m2) = [(1+r(1,m1,1))*(1+r(n,0,m2)*\prod_{t=2}^{n-1}(1+r(t,0,1))]^{1/(n-1+m2-m1)} - 1$$

  - thus, the MWR returns for periods and calendar years are treated here without taking into account any differences in capital weights that may exist between periods

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Calculation formulas 3/3

- **Volatility**
  - is calculated at the annual level
  - is calculated for a period of two years using the formula

    S(T) = s * √12

    where

    s = √ {Σ {w(t) * [r(t) – E(r(t))]^2}}

    where r(t) is the logarithmic historical monthly return, which is (in order of preference)

    - TWR
    - MWR (Ytdn-Ytdn-1)
    - MWR (Mtd)

    and w(t) is the allocation size
  - is calculated from monthly observations because not all parties are necessarily able to report figures calculated from weekly observations
  - is calculated for a period of 24 months; if a longer period were used, the weight of the latest observations would be too low
  - is calculated for the allocation of investments in bonds, quoted shares and hedge funds in accordance with the basic asset breakdown and for the total allocation

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The open currency position as the percentage of the market value of investment assets in TELA's risk-return table

- The amount of the open currency position is calculated for each currency in euros by adding the delta-adjusted underlying assets of the currency derivatives to the value of the investments denominated in a foreign currency.
  - For funds, the open currency position can be calculated, for instance, by separating the fund investments into individual currencies or by treating the funds according to the quote currency.
- The euro amounts obtained for each currency are added up as a net sum.
- The cross currency derivatives between two foreign currencies are noted on the basis of whether they increase or decrease each currency.
  - For example, in a USD/JPY foreign exchange forward, purchases of dollars increase the USD-denominated open currency position, and sales of yens decrease the JPY-denominated position.

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About numerical values

- Fair values include the current market value and the accrued interest
- Within the framework of the authorities' regulations and guidelines, each actor decides independently on the valuation principles applied to investment instruments. Consistency and openness are also taken into account when valuation principles are used and specified.
- Accuracy level of figures:
  - Capital items, MEUR, one decimal
  - Rate of return, one decimal
  - Rate of volatility, one decimal
  - Modified duration, one decimal

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General

- Many parties publish the return-risk table on their public website and the figures are unaudited.

Glossary

- Modified duration
  - Describes the sensitivity of the value of fixed-income investments to changes in interest level: the longer the duration, the greater the interest risk
- Hedge fund
  - A fund which in its investment strategy seeks low dependence of returns on the return of, for instance, stock and interest markets. A hedge fund's strategy may be to increase the risk (e.g. derivatives or leverage) or to decrease the risk (e.g. derivative hedging, short selling)
- Mezzanine
  - A hybrid of debt and equity financing. When repaid, ranked before equity but after a debt granted on normal terms
- Private equity
  - Investment in an unlisted enterprise that needs, for instance, early-stage R&D funding (seed money, venture capital) or capital for a new growth phase. Private equity investments are usually made through private equity funds. The funds select the final portfolio companies.
- Balanced fund
  - A fund that can invest in both shares and interest-rate instruments
- Volatility
  - A risk indicator that describes the fluctuation of return. The higher the risk, the greater the volatility. (Example: the above formula for calculating volatility applied to return-risk tables). Mathematically: annualized standard deviation.

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