Alternatives to Variable Annuities

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Agenda

- Introduction
- **Overview over alternative unit-linked guarantee products**
  - Unit-linked products including guarantee funds
  - Hybrid products (static and dynamic)
  - iCPPI solutions
  - Index-linked products
    - Single premium tranche products
    - Select Products
- **Comparison of guarantee products**
- **Outlook**

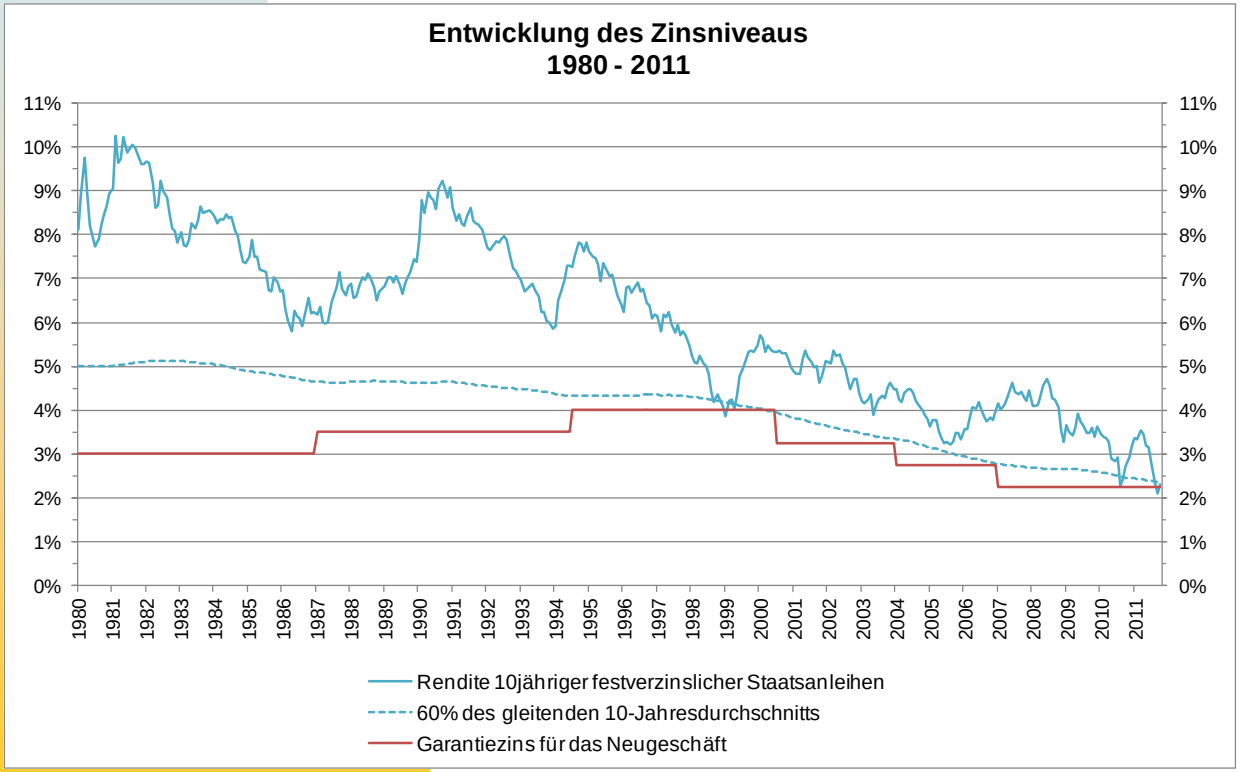
Introduction – background of today's product development

- **Investment guarantees in old-age provision contracts are important**
  - Sometimes required by the legislator
    - E.g. in Germany: occupational pensions and government subsidized policies (so called Riester-contracts)
  - Often requested by clients
    - In many countries, market shares of unit-linked (variable) policies declined heavily after recent stock market crash
    - At the same time, unit-linked policies with investment guarantees have been very successful

- **Current challenges**
  - Traditional products facing several problems
  - Solvency regulations
  - Increasing Transparency Rules and Regulations

Introduction – background of today's product development

- **The current capital market situation with low interest rates and high volatilities puts significant pressure on traditional products with long term guarantees**
- **Example 1: „Old“ guarantees “in the money” (example from Germany)**

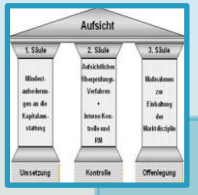


Introduction – background of today's product development

- **The current capital market situation with low interest rates and high volatilities puts significant pressure for traditional products with long term guarantees**
- **Example 2: Guaranteed surrender values for guarantee products in many markets (e.g. Germany)**
  - High volatility of interest rates might cause a significant increase in interest rates in a rather short time period
    - Market values of bonds drop
    - Surrender values are not subject to any „market value adjustment“ (guaranteed surrender values)
  - High surrender could cause significant problems
    - Especially if consumer protection organizations and media advise that under such circumstances policyholders should surrender their policy and invest their money somewhere else

Introduction – background of today's product development

- **Variety of additional challenges**



Solvency II

- In many countries „year to year" cliquet guarantees
- Long term guarantees
- Market consistent evaluation of insurance liabilities shows the significant value of long term guarantees provided in the past

Decreasing technical rates

- Decreasing attractiveness of guarantees for clients
- Especially for short terms to maturity, i.e. insured of higher age
- At the same time: guarantees are highly demanded in this segment

Consumer protection

- Several Examples of misunderstood consumer protection
- e.g. Unisex
- e.g. guaranteed surrender values
- Potential to threaten the whole system

Introduction – background of today's product development

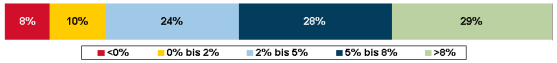
New and upcoming transparency rules

New and upcoming transparency rules

- Disclosure of charges
- Calculation of Risk return Profiles making chances and risks from a client's perspective transparent
  - Calculation of "risk indicators" or risk classes

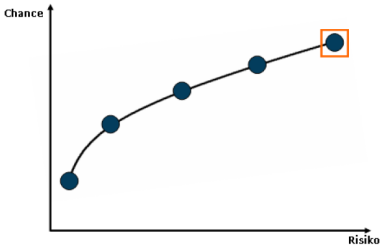
Das folgende Schaubild zeigt die Verteilung dieser Renditen für das gewählte Produkt:

Renditewahrscheinlichkeiten

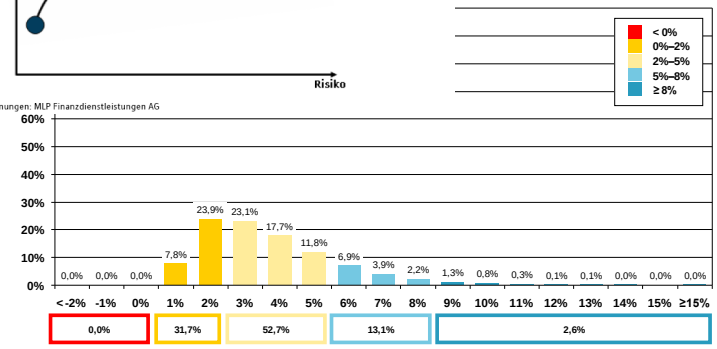


Diese Verteilung können Sie nun mit Ihrer persönlichen Risikoneigung abgleichen. Das von Ihnen gewählte Produkt ordnet sich hinsichtlich eines Chance-Risiko-Profils wie folgt ein:

Chance-Risiko-Profil



Abbildungen und Berechnungen: MLP Finanzdienstleistungen AG



Introduction – background of today's product development

- **This lead to a variety of products developments of unit-linked products with guarantees**
- **In what follows**
  - Overview over the most important concepts besides Variable Annuities

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  - Index-linked products
    - Single premium tranche products
    - Select Products
- **Comparison of guarantee products**
- **Outlook**

High watermark guaranteed funds

Product design

- Family of guaranteed funds (different maturities) with monthly ratchet
- Monthly ratchet makes sure that all premiums paid into the fund are guaranteed at maturity
- If maturity of the policy is after the maturity of the “longest” fund, client’s money is switched
  - either immediately when a new fund is offered (which requires the new fund to come with the previous fund’s guarantee) or when the old fund matures.

Recent developments

- Initially extremely successful in several countries due to very simple marketing
  - 100% premium guarantee, 100% “highest value guarantee”, up to 100% equity exposure
- Not seen as „state-of-the-art“ any more
- Risk-return-profiles show the limit in upside-potential
- Less new business in this product category

Challenges in the current environment

- Cash lock risk has become an issue
  - High volatilities and low interest rates lead to decreasing stock ratios

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High watermark guaranteed funds

- **Why have these funds been developed?**
  - "Ordinary" guaranteed funds are not suitable for regular premiums
    - guarantee = price at inception
    - when investing a subsequent contribution, NAV might exceed the guarantee → not sufficient for return of premium guarantee

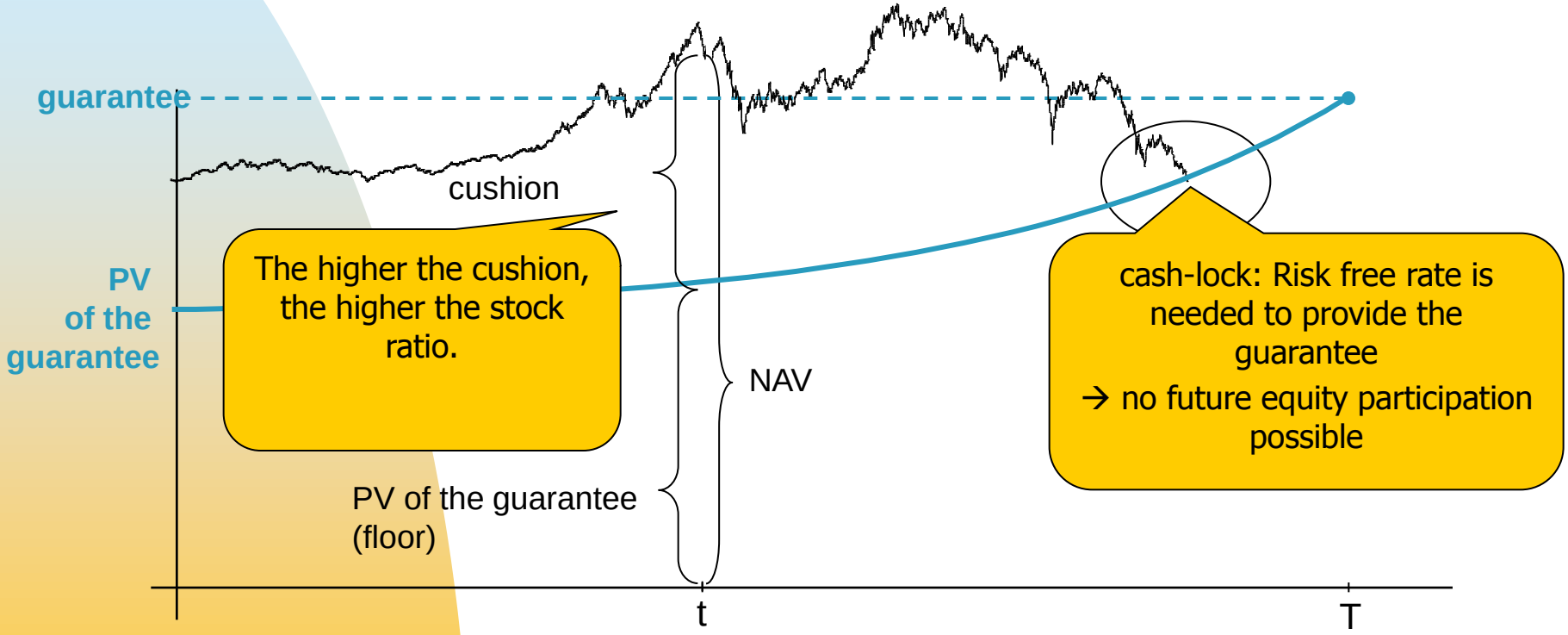
- **This was solved by the following ratchet guarantee:**
  - At inception the fund guarantees that the price at maturity will be at least as high as at inception
  - During the term there is a monthly ratchet-day (pre-specified date)
  - At any ratchet-day, the guarantee is increased to the current fund level, if the fund exceeds the NAV of all previous ratchet-days,
  - → Consequence: Any premium which is invested at any ratchet-day is guaranteed at maturity

High watermark guaranteed funds

- **The funds**
  - Each fund invests in both, risky and risk-free assets
    - permanent re-allocation between the two, depending on the current market situation
    - path-dependent management (CPPI)
      - → cash-lock risk is the largest disadvantage of the concept

High watermark guaranteed funds

- **Excursion: What is CPPI?**
  - split the available capital in a risky and a risk-free investment



  - **rather high cash-lock risk**
    - with every new ratchet, the floor is increased due to the ratchet mechanism
    - PV calculated with “market rate minus fees”

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Different types of Hybrid Products

Product design

- Very simple design: “Zero plus underlying” where traditional life insurance with a guaranteed rate of interest is used as the safe asset
- Typically: Guarantee = premiums paid
- Each premium paid is split in three parts: charges; PV of the guarantee (calculated with the guaranteed rate) → invested in traditional life insurance; Rest → invested in funds
- Many different variants of the product exist

Recent developments

- Rather old concept
- Initially very successful, but product was not understood by many distributors and clients
  - Often marketed like normal unit-linked product without guarantee. If you tick a box, you get a guarantee, that you will get your premiums back. No explanation that ticking the box leads to a significant investment in traditional life insurance
- Product’s fund exposure has decreased due to low interest rates
- However still sold by many providers

Challenges in the current environment

- Problems due to low interest rates
  - For “short term” contracts (sometimes up to 18 years) the product might not be possible any more
- Product modifications arise
- Same challenges as traditional products → mainly traditional allocation

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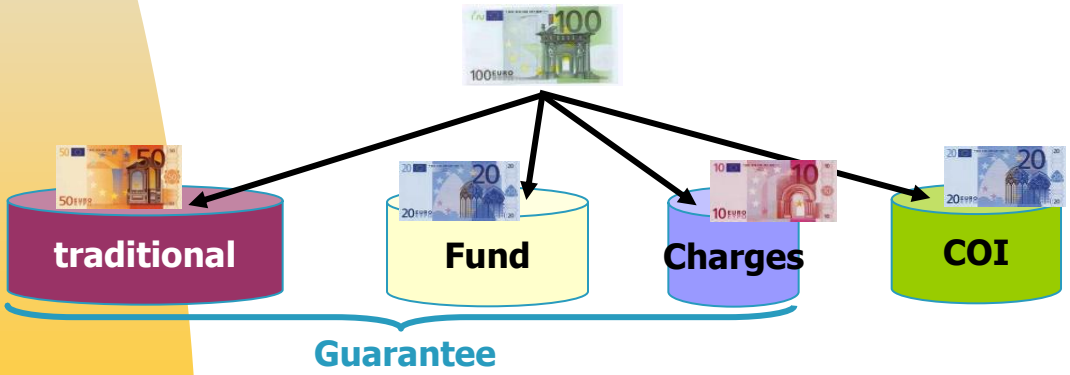
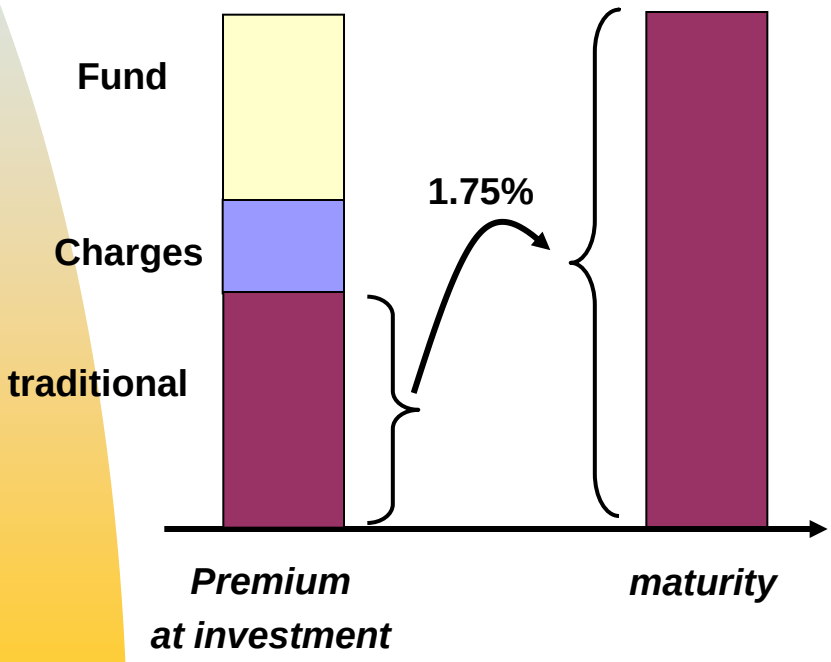
Different types of Hybrid Products

- **„Regular“ Hybrid Products**
  - Mix of traditional and unit-linked insurance
  - Each contribution is split
    - Charges
    - Cost of insurance (COI)
    - PV of guarantee (calculated with guaranteed rate) is invested in traditional insurance
    - The rest is invested in funds



Different types of Hybrid Products

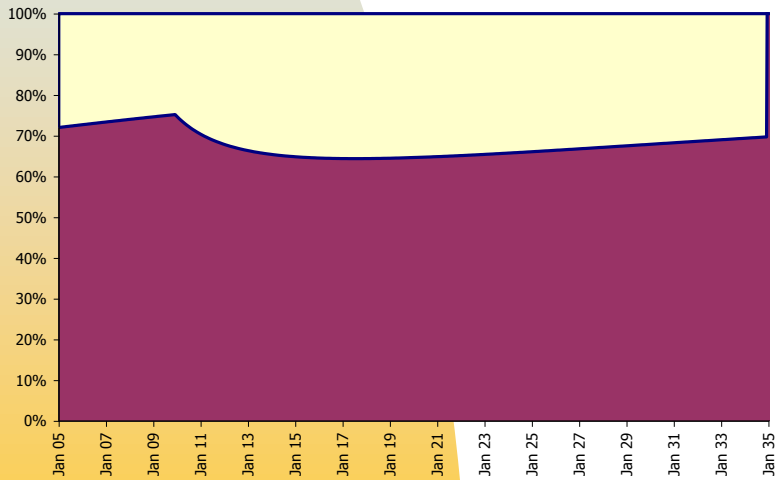
- **„Regular“ Hybrid Products**
  - This is essentially equivalent to a “zero plus underlying” product
  - In particular:
    - The concept is so conservative, that the guarantee can be provided even if fund drops to zero.



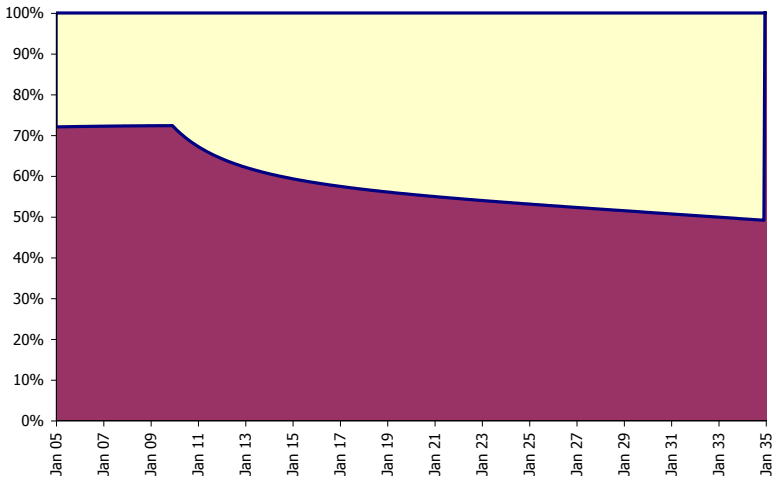
Different types of Hybrid Products

- **Such products are sold as “unit linked plus guarantee” but in reality, the equity exposure is rather small**
  - Example: Term 30 years, typical charges, relative mix between unit-linked (yellow) and traditional (red) over time

fund performance = 0%



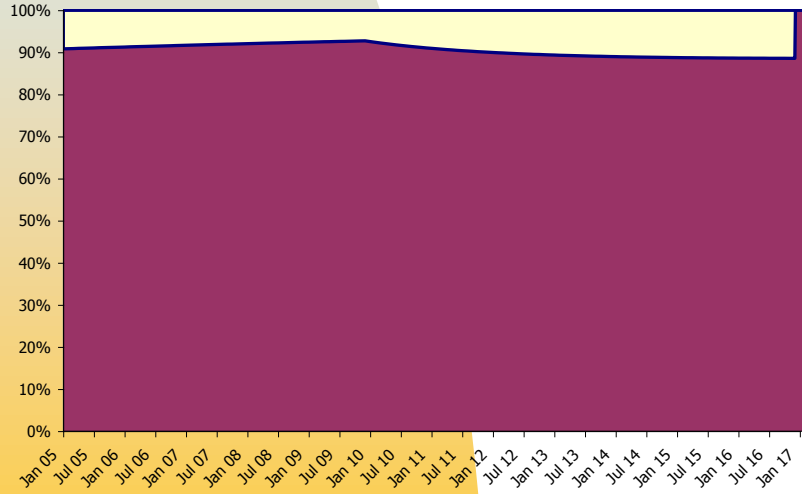
fund performance = 6%



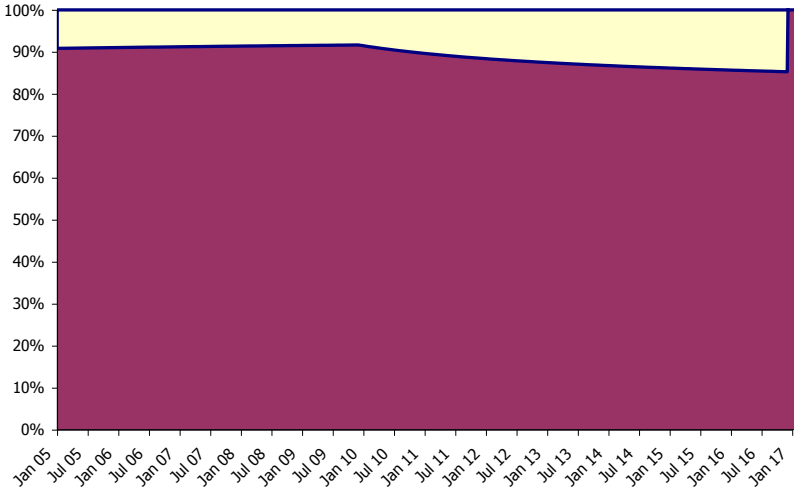
Different types of Hybrid Products

- **Such products are sold as “unit linked plus guarantee” but in reality, the equity exposure is rather small**
  - Example: Term 12 years, typical charges, relative mix between unit-linked (yellow) and traditional (red) over time

fund performance = 0%



fund performance = 6%

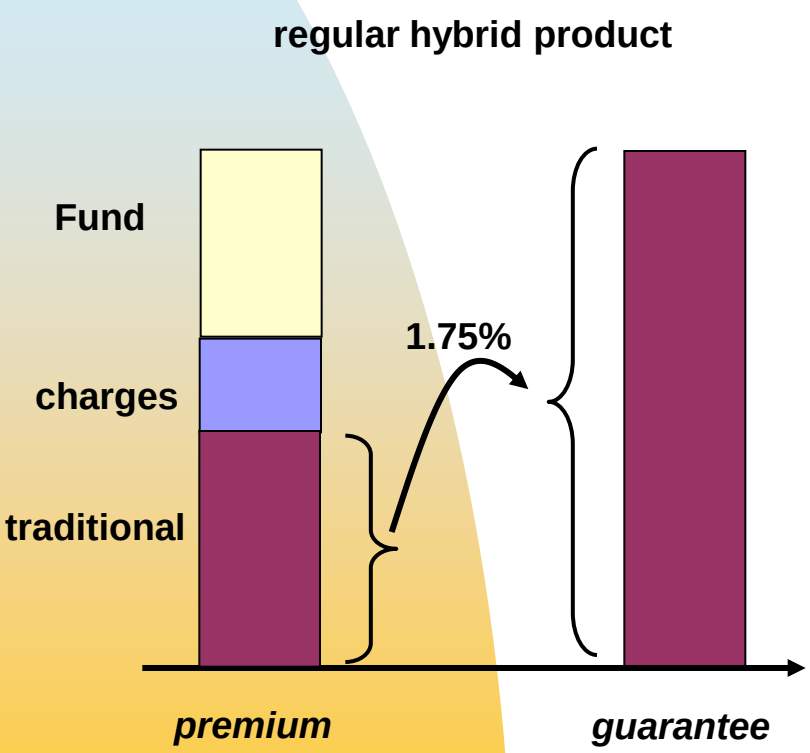


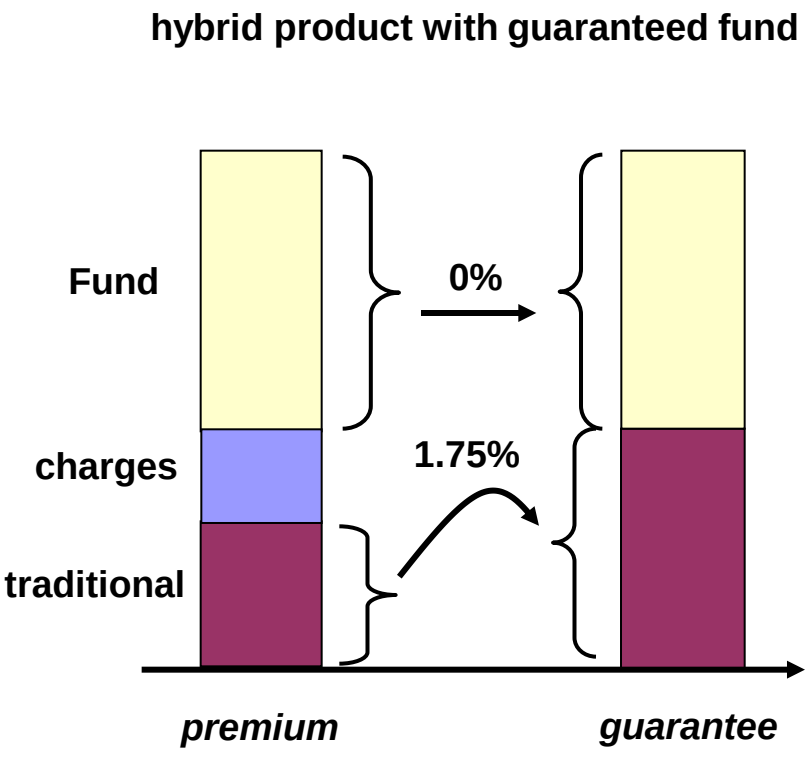
Different types of Hybrid Products

- **Due to the very low fund investments in these products, several improved hybrid products were developed.**
- **In what follows, we explain different versions.**
- **In particular, the last version (dynamic hybrid product) is currently very successful.**

Different types of Hybrid Products

- **Version 1: Same as regular hybrid product but use some guaranteed fund**
  - Example: guaranteed fund = ratchet fund, e.g. FlexPension





Different types of Hybrid Products

- **In this simple idea, certain features of the fund are not considered:**

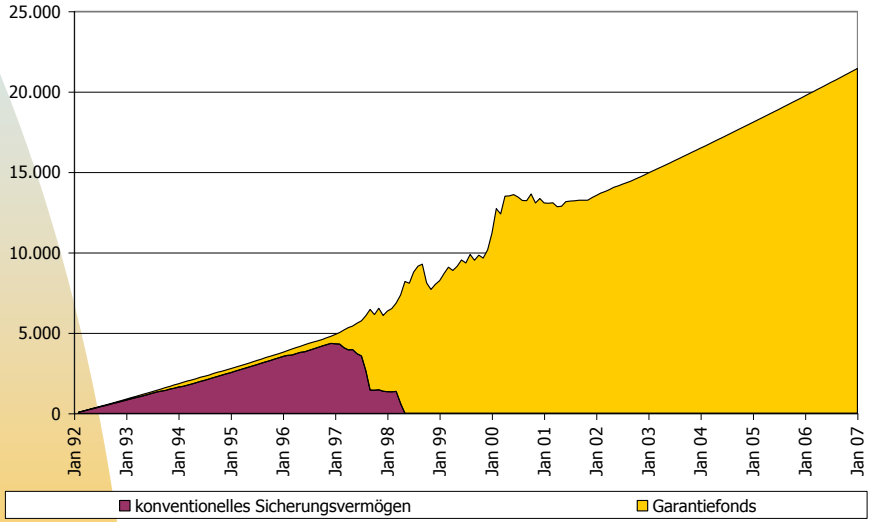
- **Example 1: One year ago, money was invested in the fund. In the meantime a new peak has been reached which is now guaranteed.**
  - This increase in the fund's guarantee can be used to reduce the amount of money invested in the insurer's general assets.
- **Example 2: Money is invested today. The fund's guarantee exceeds the current NAV**
  - → This guaranteed performance can be considered → Less money is required in the general assets.

- **If both effects are considered, the money invested in the general assets will likely be reduced over time.**

- **This product is usually referred to as "2-Topf-Hybridprodukt" ("2-Pot Hybrid Product")**

Different types of Hybrid Products

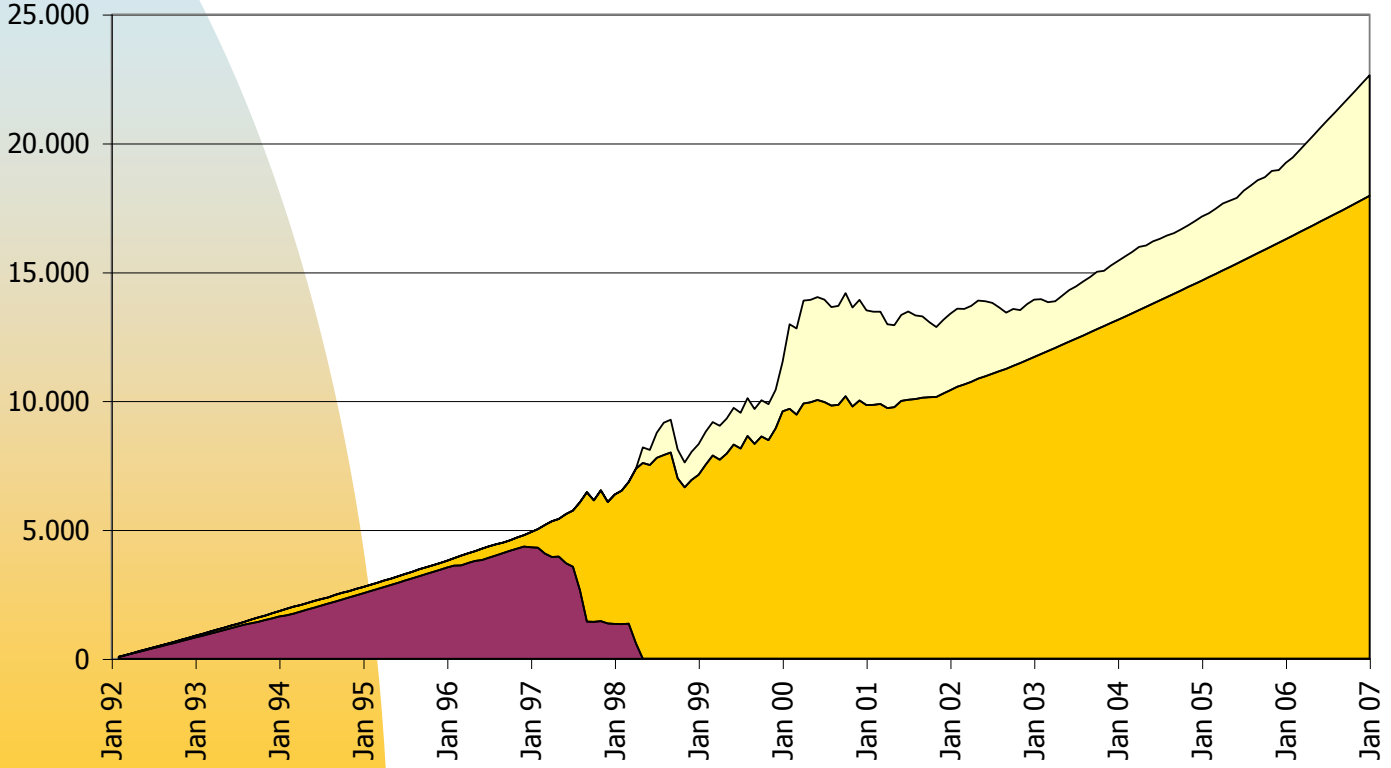
- **The „2-Pot Hybrid Product“**
  - It may happen that after some time, the guarantee in the fund is sufficient (i.e. no more general assets are needed).



- **Then, the fund‘s guarantee exceeds the required guarantee.**
- **The exceeding part can also be invested in funds without guarantee.**
  → so-called 3-Pot Hybrid Product“

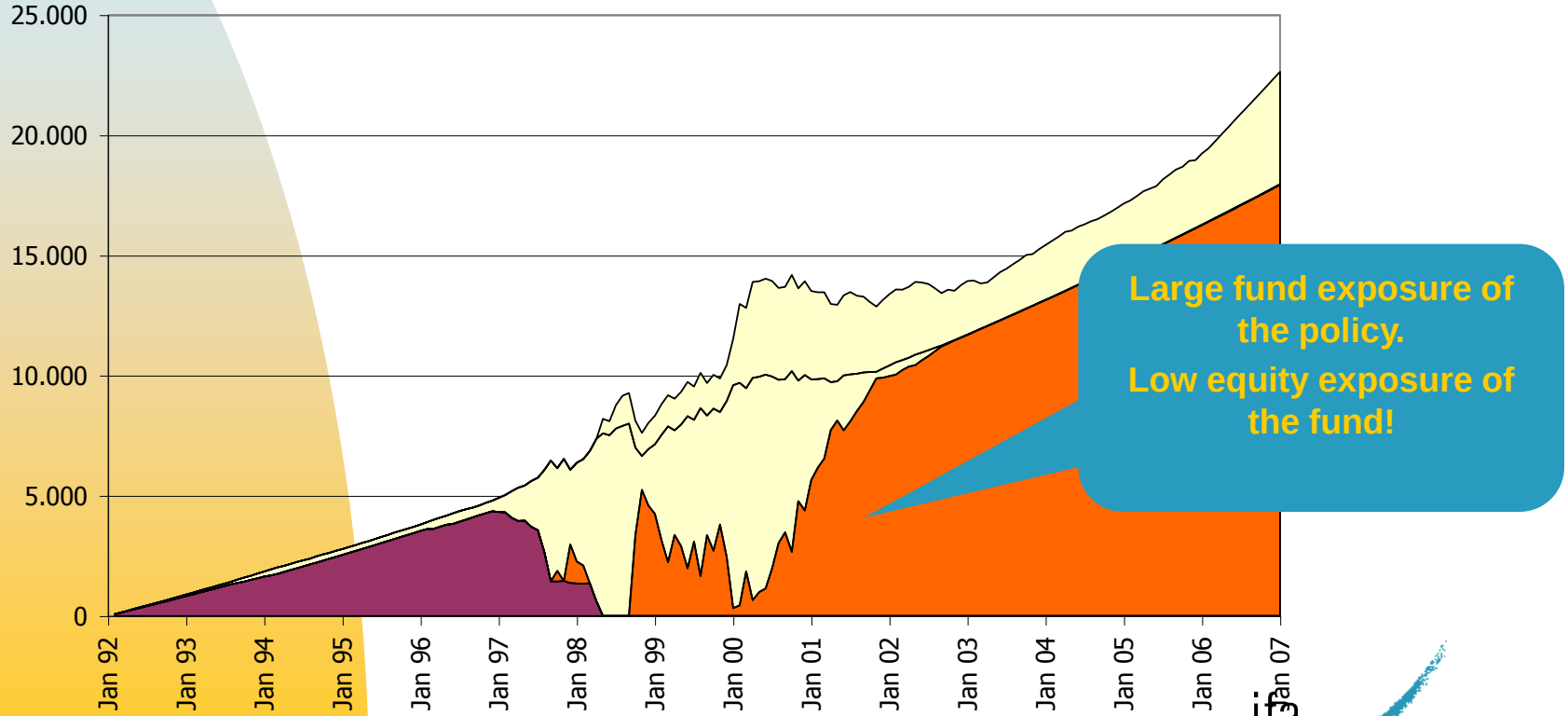
Different types of Hybrid Products

- **3-Pot Hybrid Product - Backtest (15-year policy)**
  - general assets (red), guaranteed fund (dark yellow) and non-guaranteed funds (light yellow)



Different types of Hybrid Products

- **3-Pot Hybrid Product - Backtest (15-year policy)**
  - Disadvantage: Part of the guaranteed fund is not in equity!
  - Advantage of this concept is „not real“ but can be used in marketing, since the guaranteed fund is usually projected with the same rates as an equity fund!



Different types of Hybrid Products

Dynamic Hybrid Products – Product Design

- A dynamic hybrid product is an individual CPPI calculated for each client with the insurer's general assets as riskless asset
- However, most insurers can only perform the calculations (and hence trade) once a month. This significantly increases the gap-risk.
- Guarantee funds used to cover for gap risk (monthly 80% guarantee reset).

Recent developments

- Introduced in 2006 by HDI Gerling in the German market. Within a few months, several providers followed.
  - Currently: More than 20 providers in Germany. About 1 in 3 unit-linked policies sold in Germany is a DHP (source: Towers Watson)
  - First products are offered (or being developed) in several other countries.
- Rather skewed distributions become an issue → Product modifications that deal with that issue

Challenges in the current environment

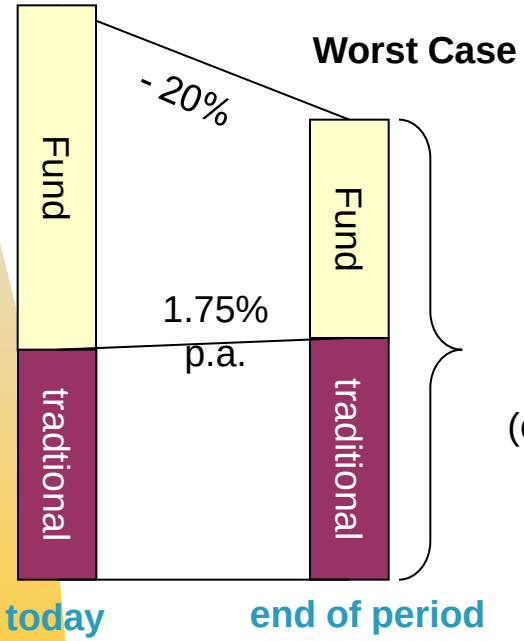
- Low interest rates increase pressure on traditional part of the allocation
- General assets as "safe haven" → Especially in times of high volatilities may have undesired effects for traditional business. → Product designs that reduce trading intensity and/or frequency are an issue.

Different types of Hybrid Products

- **Dynamic Hybrid Product (client individual CPPI)**
  - Basic idea: Insurer has the technology to calculate an individual CPPI for each client
  - However, most insurers can only “act” once a month
    - → This increases the gap-risk significantly
  - Ignoring the gap-risk for a second, a dynamic hybrid product is simply an
    - individual CPPI calculated for each client
    - with the insurer’s general assets as riskless asset

Different types of Hybrid Products

- **Dynamic Hybrid Product**
  - Example: Assume a worst case in equity of 20% within one period



Worst-case policy-NAV
at the end of the period
>=
PV of guarantee
(calculated with guaranteed rate)

Different types of Hybrid Products

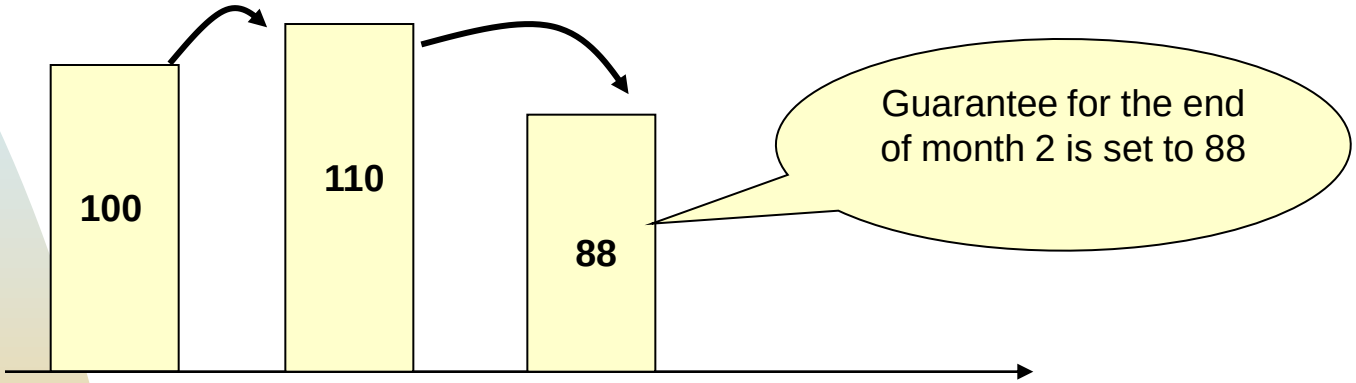
- **Dynamic Hybrid Product**
- **Still open: How is the gap-risk managed?**
- **Solution: Dynamic Hybrid Product with a special risky asset**
  - Risky asset = fund that guarantees to lose no more than 20% per period.

Different types of Hybrid Products

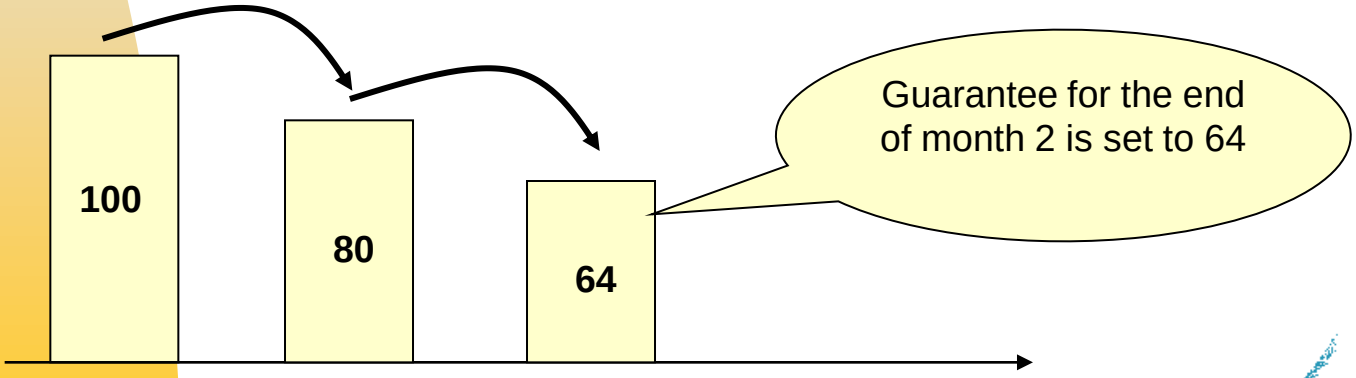
- **Typical fund for this product:**
  - One open-ended fund
  - Define a “period” - Usually 1 month; concept with 1 year also offered.
  - Guarantee of the fund:
    - NAV (end of period) >= 80% of NAV (beginning of period)
    - 80% is arbitrary but used in all existing concepts.
  - The fund’s guarantee is usually managed by “mini-CPPI”
- **Dynamic Hybrid Product is therefore CPPI on CPPI**

Different types of Hybrid Products

- **Guarantee in the fund is rather "weak" and therefore cheap**
  - Scenario 1: fund rises by 10% in first month



  - Scenario 2: fund declines by 20% in first month (worst case)



Different types of Hybrid Products

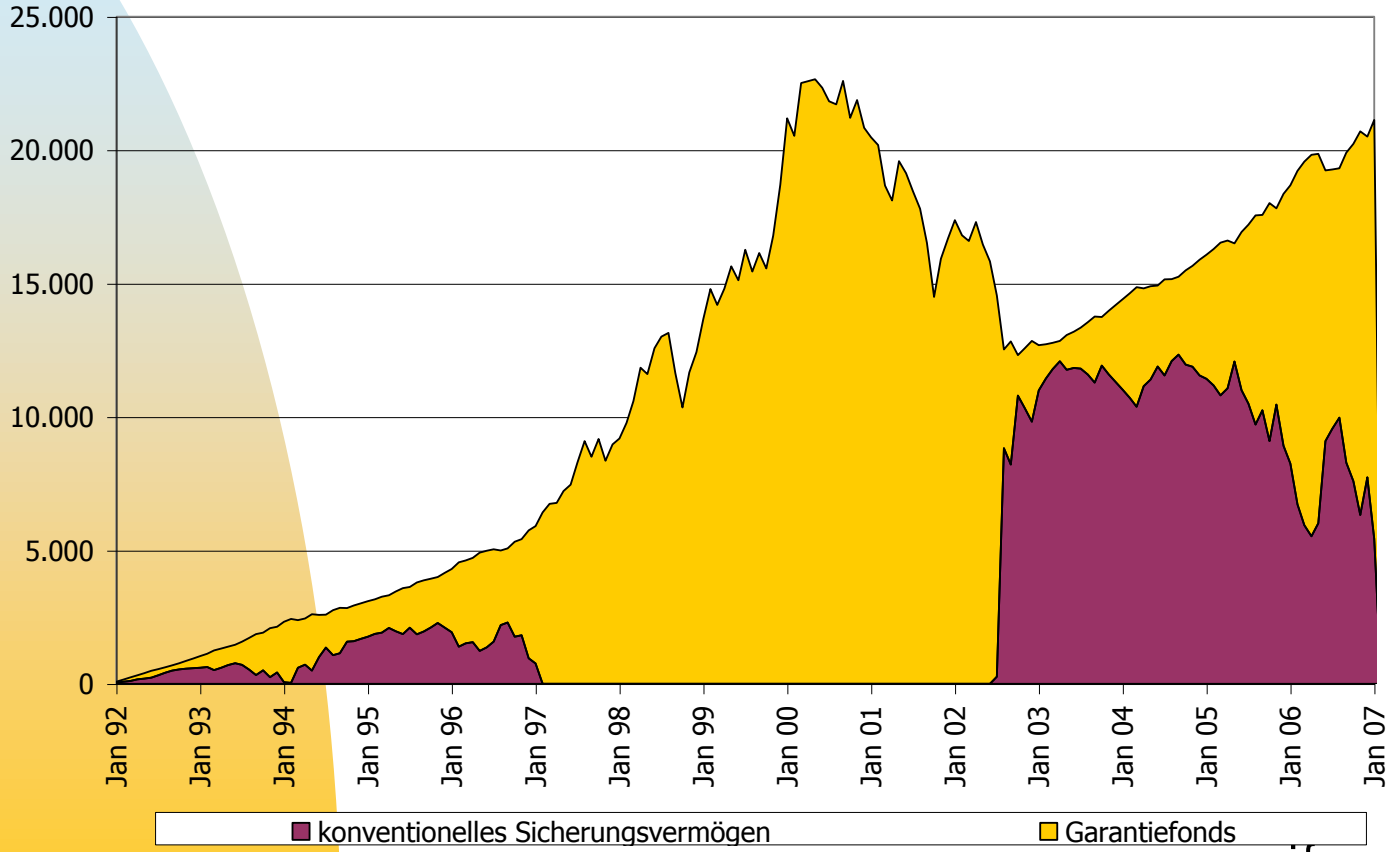
- **Major advantage of this product over ratchet funds:**

- **Cash-lock risk in the fund only within one period**
  → At the beginning of each period, the fund "forgets" the history

- **The "cash-lock risk" within the policy (i.e. allocation in general assets) exists only for "old money"**
  - never for new clients
  - never for new premiums of old clients
  - Furthermore: For 1 € surplus, 5 € can be re-invested in equity.

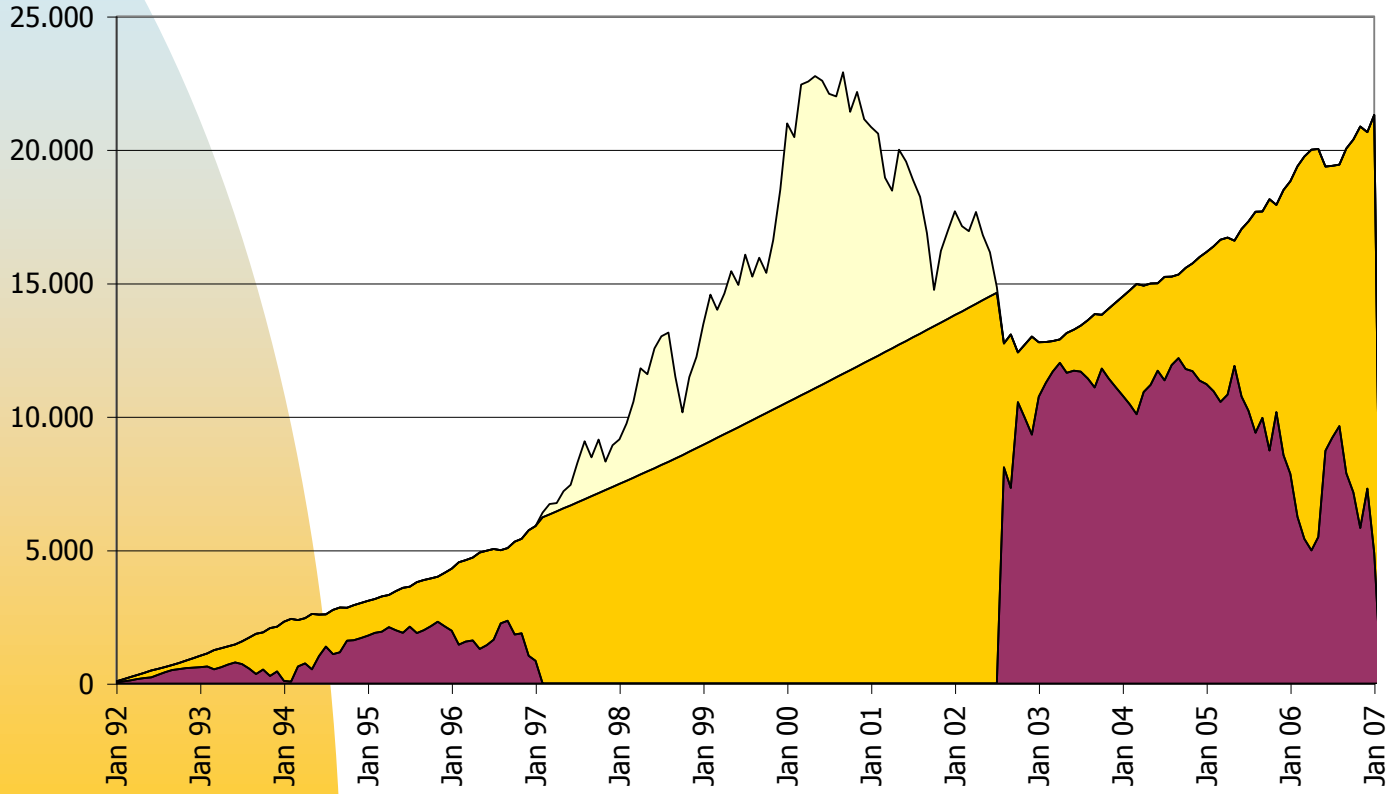
Different types of Hybrid Products

- **Backtest (15-year policy)**



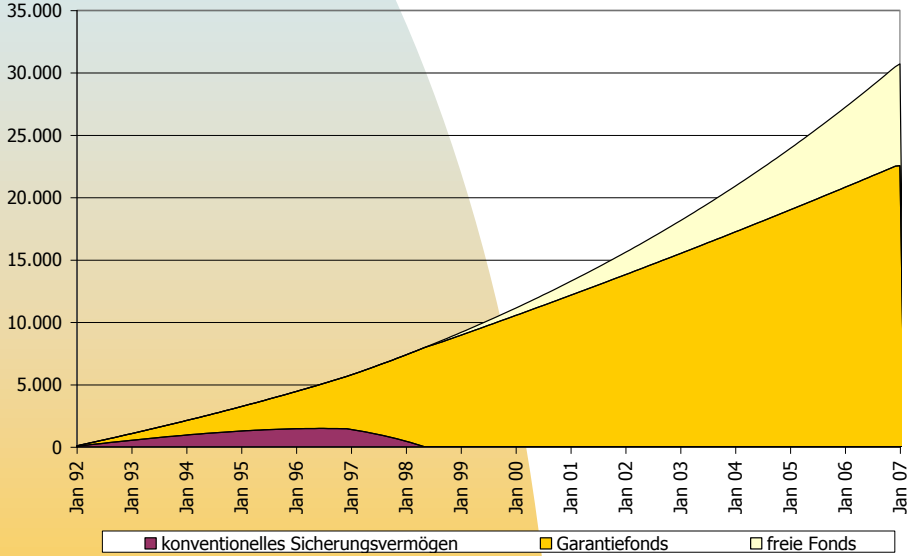
Different types of Hybrid Products

- **Similar idea to „3-Pot hybrid“:**
  - Whenever no money is left in the general assets, some money can be shifted in funds without guarantee (light yellow).

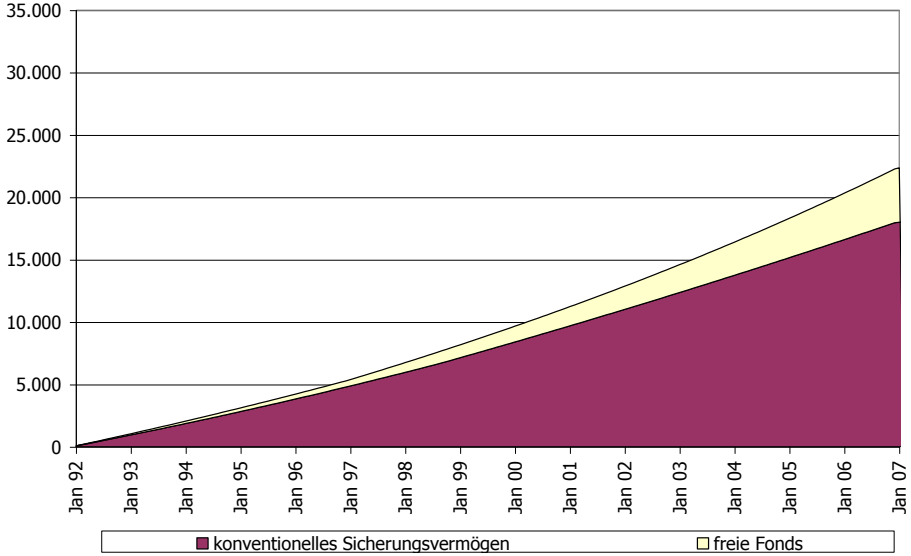


Different types of Hybrid Products

- **Some additional comments - comparison to regular hybrid product**
  - Sample calculation
  - Comments on sample calculations to follow



Dynamic Hybrid



Regular hybrid

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iCPPI

- **Further iCPPI concepts are also available in the market**
  - Based on a daily basis without using guaranteed funds
  - Different risk-less assets used
    - iCPPI performed by the insurer using its traditional assets
    - iCPPI performed by an asset manager or bank using bonds or bond funds

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Structured equity-linked products with guarantees

- **sold in tranches**
  - fixed issue date, fixed time to maturity (of some structured asset)
  - after maturity of the structured asset, arbitrary funds or certificates may be chosen
    - → fixed issue date, flexible time to maturity
- **single premium is invested into the structured asset (usually certificates)**
- **maturity benefit = maturity value of the certificate**
  - clearly defined as a function of one or several underlyings
    - stock indices, baskets, etc.
    - including a maturity value guarantee
- **great variety of different structures possible and in the market**
- **One example follows**

Structured equity-linked products with guarantees

- **Allianz Indexpolice (first tranche)**
  - time to maturity 12 years (Jun 1st 2006 – May 31st 2018)
  - benefit = maximum of
    - 124% of the single premium paid and
    - the so called “mittlere Kursentwicklung” (“average price development”) of Dow Jones EURO STOXX 50 where
      - $$\text{average price development} = \frac{\text{average index price}}{\text{index price at issue}}$$
      - The average index price is given by the arithmetic average of the index price at 12 pre-specified annual dates (end of May of each year)
        - Annual asianing over the whole term!

Select Products

Product design

- Client can choose every year if he wants his accrued account value to participate in the general assets (surplus participation) of the insurer or in some formula-based participation in some equity index
- Client's surplus is used to purchase option on this index participation
- The client's account value cannot fall within a year

Recent developments

- Product has been developed by Allianz in the German market (Allianz IndexSelect)
- Awareness of other insurers about the success and capital efficiency
- Recently: Two insurers „copied" the product in Germany
- Product sold in Switzerland by AXA Winterthur (Protect Plan) is based on the same idea

Challenges in the current environment

- Very little exposure to market risk for the insurer
- Impact only on the conditions of the index participation
- Product proof to be rather "capital efficient"

Select Products

- **Equity-linked product with guarantee issued by insurer**
  - Gross premium guarantee
- **Client can choose every year if he wants to participate in**
  - a security issued annually (index certificate)
  - the general assets of the insurer
- **The value of the index certificate at the end of the year equals**
  - Maximum of
    - the value of the index certificate at the year's beginning
    - the so-called "applicable annual return"
      - Addition of monthly returns of the DJ EuroStoxx50, where negative returns fully apply whereas positive returns are capped
      - The cap is readjusted every year
  - → The client's account value cannot fall within a year

- **Annual decision**
  - Client can decide whether to participate in the general assets or the issued certificate
  - Obligatory participation in the general assets
    - if the portfolio value is less than the guarantee's present value

Agenda

- **Introduction**
- **Overview over alternative unit-linked guarantee products**
  - Unit-linked products including guarantee funds
  - Hybrid products (static and dynamic)
  - iCPPI solutions
  - Index-linked products
    - Single premium tranche products
    - Select Products
- **Comparison of guarantee products**
- **Outlook**

Current trends regarding product comparisons

- **Guarantees …**
  - are legally prescribed in many areas and demanded by clients.
- **The "evolution of guarantee models" was a key issue in product development of recent years.**
  - It becomes more and more difficult to assess advantages and disadvantages of different guarantee models.
  - **The question of the most efficient guarantees is key for clients!**

- **Charges …**
  - in insurance policies are under constant scrutiny of press and public.
- **The "transparent representation of charges" was a key issue in recent years.**
  - In spite of legal requirements for transparency, some charges remain hidden, e.g. fund charges and implicit guarantee charges.
  - **The question of the real charges of products is key for clients!**

Current trends regarding product comparisons

- **Illustrations of unit linked policies are still based on constant fund growth**
  - All funds are projected at the same interest rate, regardless of the level of fund based charges and regardless of the investment strategy of the fund
- **Problems**
  - no consideration of fund charges
  - no consideration of asset allocation within the fund
  - no consideration of explicit guarantee charges (e.g. prices of crash-put options), while guarantee fees of Variable Annuities are considered
  - no consideration of implicit guarantee charges (e.g. path-dependent switches)
  - switches on policy level are underestimated for certain product types

- **Consequences: false incentives for product development and sales**
- **Currently we observe a trend towards use of risk-return profiles instead of traditional illustrations**

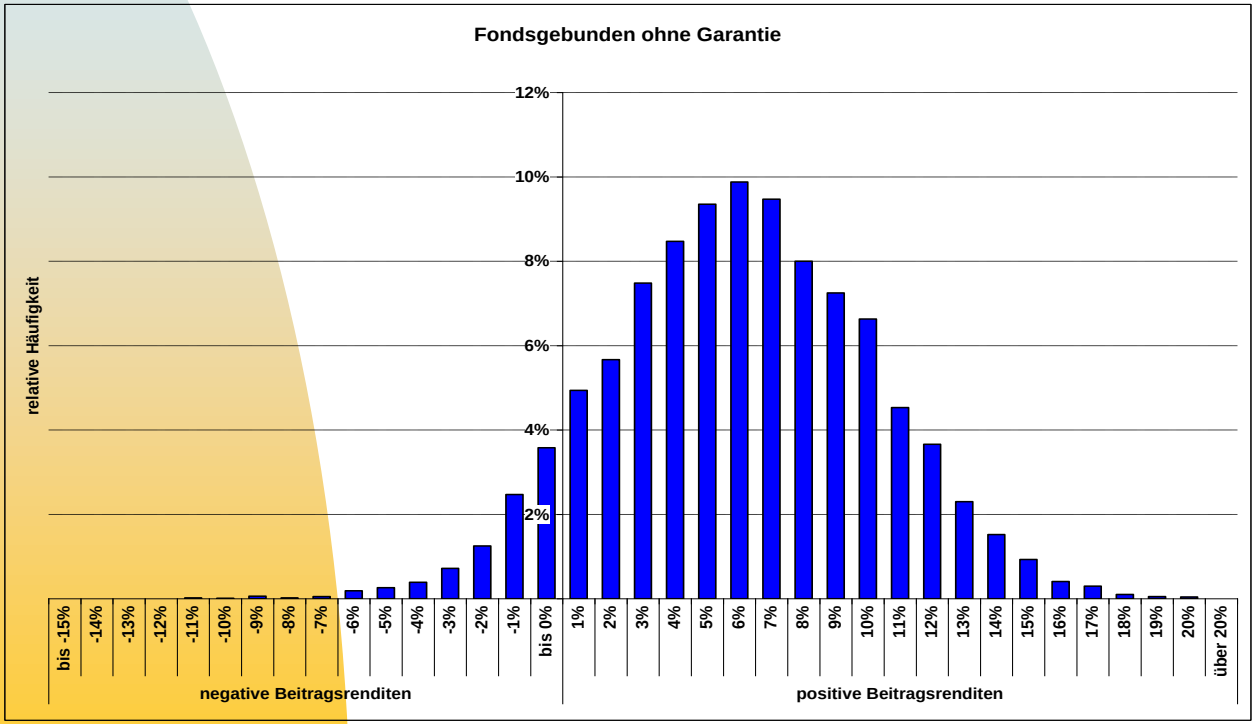
Current trends regarding product comparisons

- **A possible comparison of guarantee products**
  - 1) Start with a stochastic simulation of the capital market
    - I.e. produce many (e.g. 10.000) scenarios of share price developments and possible interest rate developments (based on adequate capital market models and assumptions)
  - 2) Determine for each of these 10.000 scenarios the performance of the insurance policy
    - E.g. in case of a highest-level guarantee fund
      - determine first which shifts between equity and bonds the fund manager performs each day
      - determine then the fund performance after fund charges
      - determine then the benefits of the insurance wrapper
  - 3) Analyse the probability distribution of benefits

  - Such calculations can e.g. be done with tools like ifa-SARA which was used to produce the sample charts in the following.

Current trends regarding product comparisons

- **Typical results of such analyses**
  - Determine the full probability distribution → bar chart
  - The following chart shows the distribution of effective yields on gross premiums paid for a sample unit linked policy with no guarantees:



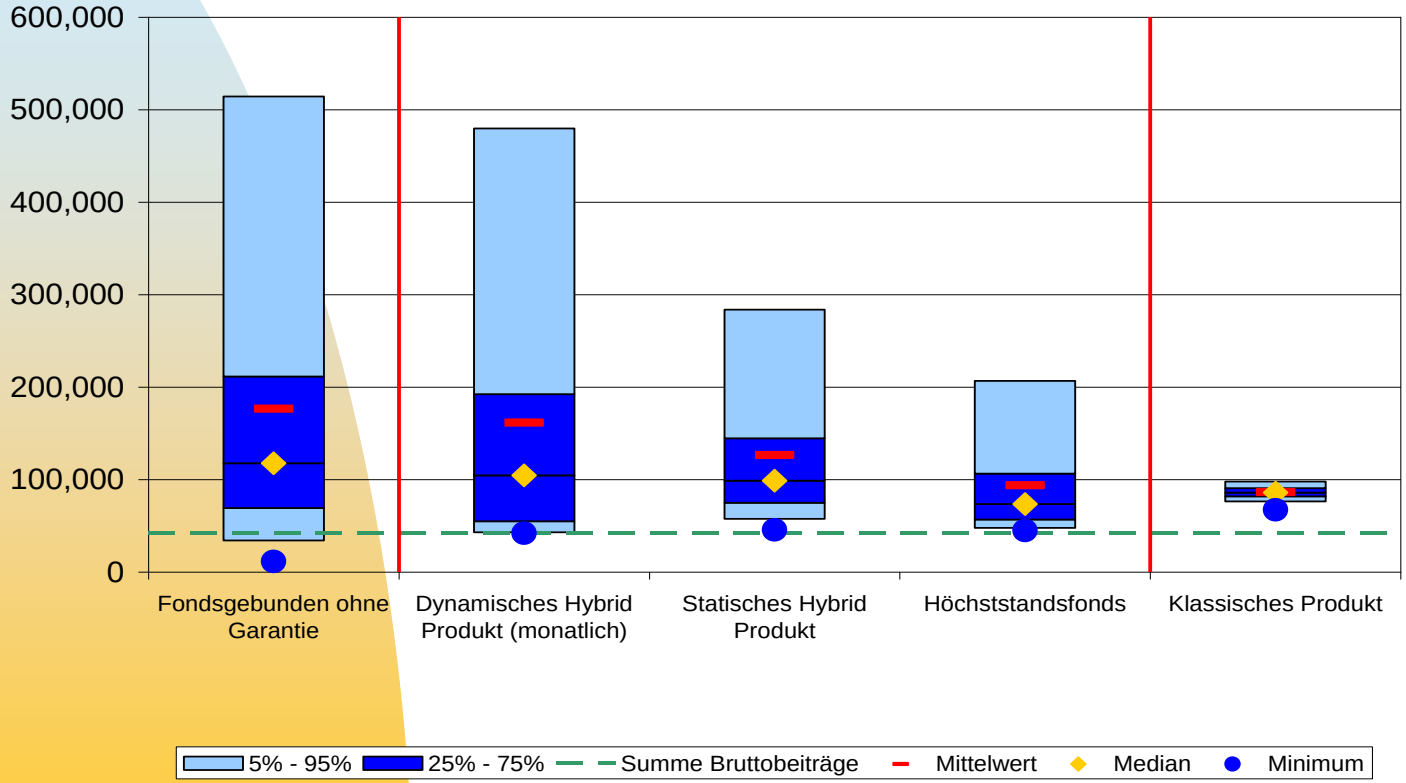
Figures produced by ifa-SARA.

Current trends regarding product comparisons

- **Typical results of such analyses**
  - Determine certain characteristic figures like average benefit (expected value), median, quantiles (e.g. 5%/25%/75%/95%), or other figures like the probability that certain minimum levels of returns are not achieved

Current trends regarding product comparisons

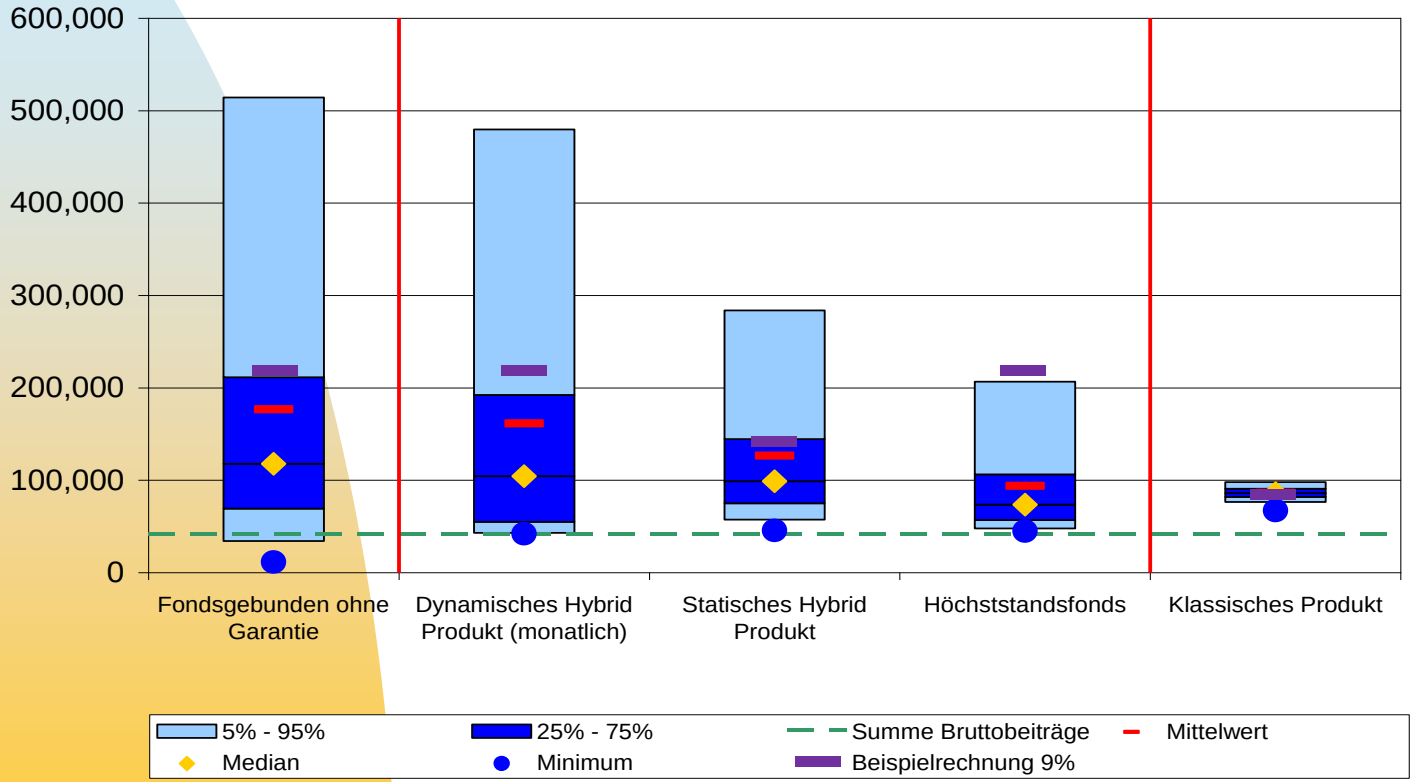
- The following chart compares products based on illustrative(!) assumptions about charges for policy and funds on “typical“ levels for a long term, regular premium contract (long-term equity yield 9% before charges, 20% volatility):



Figures produced by ifa-SARA.

Current trends regarding product comparisons

- **Comparison with illustration at 9% p.a. of the same products**



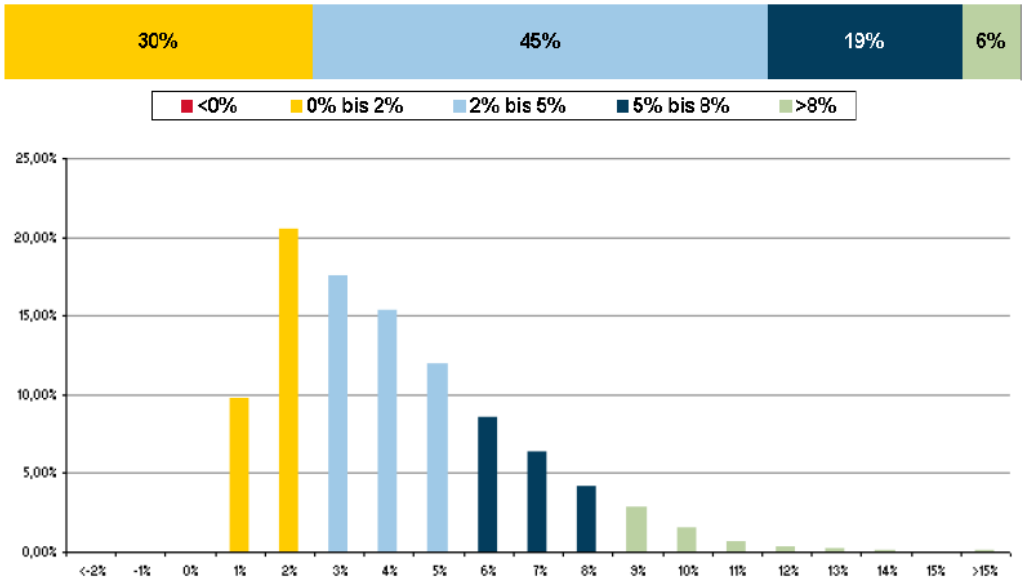
Figures produced by ifa-SARA.

Current trends regarding product comparisons

- **Risk-return profiles are communicated (example of MLP in Germany)**

Ausweis von Renditewahrscheinlichkeiten

Höchststandsgarantiefonds – Beispiel DWS FlexPension



Seite 9 Annahmen: Laufzeit 32 Jahre, mtl. Beitrag 200 EUR, Kosten berücksichtigt

MLP

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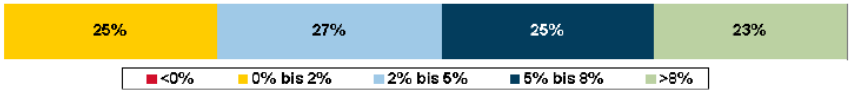
Current trends regarding product comparisons

- **Support for the broker – this is part of the consultation documentation (example of MLP in Germany)**

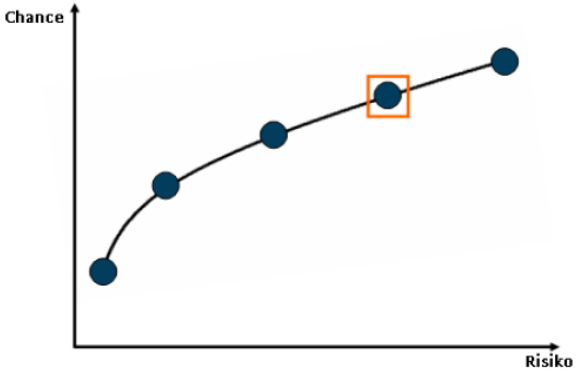
Das folgende Schaubild zeigt die Verteilung dieser Renditen für das gewählte Produkt:

Renditewahrscheinlichkeiten



Diese Verteilung können Sie nun mit Ihrer persönlichen Risikoneigung abgleichen. Das von Ihnen gewählte Produkt ordnet sich hinsichtlich eines Chance-Risiko-Profils wie folgt ein:

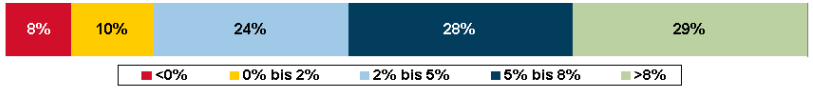
Chance-Risiko-Profil



Abbildungen und Berechnungen: MLP Finanzdienstleistungen AG

Das folgende Schaubild zeigt die Verteilung dieser Renditen für das gewählte Produkt:

Renditewahrscheinlichkeiten



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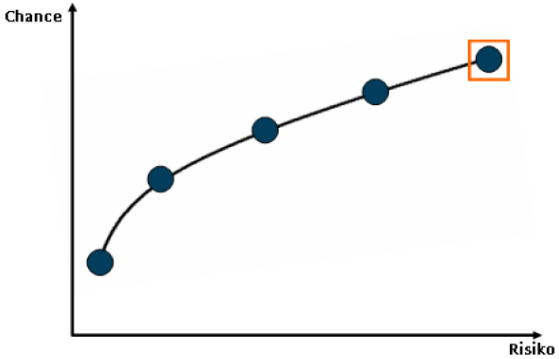

Abbildungen und Berechnungen: MLP Finanzdienstleistungen AG

Current trends regarding product comparisons

- **Consequences**
  - We assume that product comparisons will be used in the future that consider all charges and other possible sources that can reduce product yields (e.g. path dependent switches) based on risk-return profiles.
  - Instead of a product selection based on projected maturity benefits only, the risk profile of clients will be matched with risk-return profiles of products.

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Outlook

- **Current challenges for guarantee products**
  - Low interest rates and high volatilities
  - Rather high and long term guarantees “in the money”
- **At the same time**
  - Demand for high guarantees still existent
- **Convergence of risk management and product development**
  - Re-designing of traditional products
  - De-Risking of Variable Annuities
  - Re-designing of CPPI structures including dynamic hybrid products
- **Many product developments of the upcoming years will be driven by risk management**

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