

Asset Allocation Implementation with Structured Guaranteed Investments

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Abstract

Starting with empirical studies which show, that at least in the long run, investments in stocks achieve a noticeably higher average return than investments in bonds, we discuss alternative innovative investments to manage the higher risks incorporated with stocks compared to bonds. We show, that all three described structured guaranteed instruments are equivalent from an economic point of view and that their main difference is their institutional setup, i.e. how the capital- and FX protection is build or tailored into the different investment products to fulfill different needs of different customer types. Building the bridge to the efficient market theory, where prices serve as proper signals for relevant information, and where market- versus single stock selection is regarded as superior, we show that structured guaranteed products provide a sound method to implement an asset allocation decision from fixed income instruments to equity markets in a highly efficient and cost effective way. This is especially the case for an international asset allocation, when for example domestic or foreign bonds are switched into international equity markets for the reason to achieve a higher return. We find that those investments provide an ideal method to manage or to reduce the tremendous increase in risk attached to this shift, even without selling the unwanted assets. We also show, that in this context the modern innovative investments can be understood as portfolio insurance instruments, where all three described products create economically comparable capital- or downside risk protection.

Keywords

Investment horizon, shortfall risk, equity participation notes, equity index certificates, guaranteed funds, capital protection, diversification, strategic/tactical asset allocation, transaction costs, index tracking, retail/institutional investors, packaged basket trades, modern portfolio theory, efficient market hypothesis, signals, stock picking, active/passive portfolio management, bottom up/down approach, risk management, portfolio insurance.

I. Introduction: Investments in bonds or stocks - Performance considerations: In the case an investor intends to allocate some of his funds to equities instead to bonds because of expected **higher returns** he can use the following traditional possibilities:

1. Individual stock selection which requires, however, research or buying of information, or more general **high transaction costs**. Additionally, and this is especially true for smaller or private investors, there is often not enough capital available to establish **diversification** which could lead to severe capital losses.
2. Professional managed **funds** have often the disadvantage of high fees (front up fees, and so on) combined with an underperformance relatively to the respective markets or indices. Similar to point one is that the right selection seems to be the crucial issue.
3. Last but not least equity **warrants** which, however are highly speculative instruments with the risk of a total capital loss.

Empirical studies as well as experience indicate (1) that for specific periods but in any case in the long run equities **outperform** fixed income investments. This is for example the case for the periods 1969-1990 or 1975-1995 (2) in Germany. However, a very important observation can be made. The outperformance is created by a few years - or even months - only (3). The advantage in one year is very often much higher than the disadvantage in the following years. Therefore, the **investment horizon** plays a crucial role because the **profile of risk and expected return** of the different asset classes -bonds and stocks - shows a significant different distribution over time, i.e. over the investment horizon. In average bonds are connected to a lower risk, defined as volatility or standard deviation/variance from their mean value of yield or price, compared to stocks. The risk to suffer a loss but also the chance to achieve higher returns results in higher expected returns of stocks over bonds in the long run, i.e. under a long investment horizon. In other words under a short investment horizon the fund allocation to equities is connected to a **high shortfall risk** (4), i.e. the investor is exposed to a growing risk of capital loss. (5) This experience or more general the risk aversion of german (private) investors may be one of the reasons for their cautious stance towards equity investments or for their unwilling-ness or **irrational** behavior not to allocate sufficient funds to stock markets. However, there is a new class of **modern or innovative investments** such as structured (guaranteed) securities like **equity-participation notes (EPNs)** and **equity index**

certificates (EICs) as well as **guaranteed funds (GF)** which open the doors to allocate assets to more volatile markets such as (international) equity, commodity or foreign exchange markets. The key feature is **risk reduction** or **risk management**. Unwanted risks like capital redemption-losses or FX risks are identified and hedged out and restrictions like income in form of regular minimum coupon payments for example for actuarial liabilities can be tailored, and so on. Those guaranteed cash flows out of a structured investment make the main difference to investments in plain vanilla cash equity products or equity warrants.

With growing success German and foreign investment houses and fund managers started to offer more and more capital redemption and/or FX guaranteed products to their German, Swiss, and Austrian institutional and private client base in the form of EPNs, EICs, and guaranteed funds (**footnote 3**). Those products obviously fulfill the needs of institutional as well as private investors to allocate their funds to more volatile (speculative) markets with higher expected returns without risking their invested capital. But **risk reduction** or creating more certainty has its **price**. First of all, guaranteed investments have an inherent **risk** of an **opportunity loss** compared to a bond investment. If the guaranteed product pays back only the DM amount invested originally without any additional capital gain or interest at maturity, then the investor suffers a capital loss in real terms because of the **inflation** rate. Additionally, in comparison to a 5 year German mortgage bond yielding 5.54 % p.a. a guaranteed 5 year investment should create a capital gain of roundabout 31 % to break even. If this is not the case the purchase of the mortgage bond would have been advantageous.

II. Structured (guaranteed) capital investments: In this section the above mentioned 3 innovative structured investments are briefly described before asset allocation implications are discussed.

The second **price** for risk reduction the investor has to bear, or the **price** for the **capital protection**- and/or FX hedge, is mirrored in the fact, that guaranteed investments only provide **less return** compared with the respective markets or indices they duplicate. However, as described below, the exception proves the rule. There is a clear **trade-off** between protection and performance achievable. The capital guarantee, the protection of

the invested amounts, or the hedge can be build in **different ways** or incorporated into **different investment products**: From an economic point of view they are all equivalent. (6)

1. Participation notes (PNs) are bonds which have a coupon or redemption value **linked** to the performance of a single asset or to asset classes like commodities, equities, FX, and so on. To acquire a PN means to gain long term exposure to the respective asset or asset class with reduced risk. The typical **EPN** structure comprises a zero- coupon bond, which pays back par at maturity (delivers the capital protection) and in the simplest case an European call option, for example on an equity index (**DAX, CAC-40, FTSE-100, S&P, NIKKEI 225**, and so on). Links to single stocks or to baskets are also common practice as well as complex structured or **exotic** options, embedded in the underlying bond or base instrument. For example, if a fund manager wants to avoid the FX exposure incorporated in a foreign index, he would buy a bond with an embedded quanto option, which transfers the payout from the foreign stock index in his home currency, so that any negative effects of FX rate fluctuations are excluded. Quantooption offer an ideal opportunity for the investor to achieve a **higher return** from a foreign equity index compared to the return of the respective market by using a higher yielding currency (7). Combining the protection, i.e. the bond investment with higher expected returns of a different more risky asset class, i.e. the stock investment, provides a very attractive package for the investor indeed. If a fund manager expects that in Europe the major equity markets will outperform the bond markets, he can invest some of his funds (or coupons) in a so-called **rainbow bond (option)** with a link to the main European equity indices (**DAX, CAC-40, FTSE-100**, and so on). If the stock markets turn sour or do not perform, he gets back his invested capital at maturity. When the structure is implemented, there is even no need to sell the unwanted fixed income assets to create room for the stock investment.

For **evaluation** purposes and for understanding **pricing** during the life of an EPN, the instrument is divided into its **2 components**, for example into a DM denominated 5 year **zero-coupon bond** with a price of 86 % (5.64 % yield), which guarantees a redemption of 100 % at maturity. For sake of discussion, the bond is linked to the Japanese equity market. If a 5 year European at the money **call option** on the NIKKEI 225 costs 24 %, the bond pays a **participation** of roundabout 95 % of the performance of the NIKKEI

225 index. At **issue date**, both components add to 100 %. At **maturity**, the zero-coupon bond redeems at par, i.e. the guaranteed redemption price, and the value of the NIKKEI call option expires worthless. **During life** of the EPN, an interest rate decline or increase in the same size affects the bond price in a **symmetric** way, i.e. the price increase equals the price decline. This is, however, not the case for the price changes of the NIKKEI 225; the influence of an increase of the stock market on the bond is higher than the decrease.

Price movements during life of the EPN may behave tricky because of the **market hike absorption effect**, which results from the mixture, i.e. the combination of bonds and options incorporated in the capital guaranteed investment: In the starting phase of the product and with moderate price movements of the stock market, the value or performance of the EPN provides **less return** compared with the respective markets or indices it mirrors, because the bond **absorbs** some of the equity market performance.

Basically, the participation rate is determined by **2 variables**: The volatility of the respective stock market, and the interest rate levels. Both determine the price of the option incorporated in the underlying instrument. As rule of thumb: The lower the volatilities and the higher the interest rates, the higher the participation rate, and vice versa.

2. Another interesting index linked product is the **Equity Index Certificate (EIC)**, which provides **the same return** compared with the respective markets they duplicate (8). They are issued for a vast amount of international equity markets with a maturity between 1 to 3 years and with cash settlement at maturity. Trading EICs represents **packaged basket trades** and are index futures, index options and stock basket surrogates. They provide investors an opportunity to take an interest in an equity market index without the necessity of trading the individual underlying stocks for **index tracking** and **rebalancing** reasons. The main **difference** to trading **stocks** are, that EICs in Germany do not have attached voting rights and do not pay dividends. EICs are liquid and highly fungible instruments; they are traded in small denominations, contrary to EPNs; that is the reason why they are an interesting instrument for **retail** investors. The main **difference** to EPNs is that EICs are **not** provided with an embedded capital or **downside protection** but in many cases with a **FX guarantee**, so that the EIC fluctuates with the respective stock market ups and downs, but any negative effects of the FX rate are excluded. The investor, however, can easily **create a capital guarantee** or downside protection by buying an at the money put

option on the respective stock index. Because the **hedge** costs money, the net return of the EIC (total return of EIC minus hedging/protection costs) is **less** compared to the respective market. Finally, the **economic outcome** of an EPN and an EIC with an attached capital protection are the same.

3. In the mid of 1990, the first **Guaranteed Fund (GF)**, targeted for German retail investors was issued. In the meantime all major fund manager arms of banks offer this product with growing success (9). GFs have a **fixed term maturity**, normally after 2-4 years with links to all major international stock markets/indices, including emerging markets. Most of the GFs offered provide an **iron capital guarantee** slightly below par. However, captured **capital gains** after a stock market hike are not guaranteed, which could easily be done via a **dynamic hedge**. The capital, as well as the FX guarantees are done by the fund managers via hedging transactions in the respective equity- and FX markets. Base investments used by the fund managers for each respective market include single stocks, EICs, zero bonds, bonds, warrants, OTC- and exchange listed options and other future contracts. An interesting aspect is, that those funds have to be issued abroad, for example out of Luxembourg, because the **regulatory authority** in Germany argues, that **risk reduction** in funds should be done by **diversification** and not by **hedging** instruments like put options.

The **value** of a GF is dependent on the capital amount guaranteed, but also on the participation they offer. Depending on the markets the GFs mirror, the **participation rate** is between 40 %-60 % of the respective index or indices; the majority of funds, however, pay participations between a range of 60 %-80 %. As a rule of thumb, below a participation of 60 %, an investor will be **better-off** buying a bond. Another critical issue are **transaction costs** incorporated with the purchase of a GF. Front end fees up to 3 %-5 % are common, and additional management and custodian fees shoot total costs easily up to 6 %, a pretty high price for creating risk reduction or capital protection. Despite all critics, GFs might be useful, if a **risk averse** investor shifts capital to highly volatile markets, like Asian- and/or emerging markets with huge return potentials, or when equity markets are between 2 cycles or at the end of one cycle where the perceived risk to loose money is high (10).

Because GFs are basically a **combination** of bonds and options, they **behave similar** to EPNs. Especially, their pricing behavior as well as the evaluation is much similar to EPNs.(11). This is true for all the 3 discussed guaranteed investments, their **economic aspects** are pretty similar. The only difference is the **institutional setup**, i.e. the capital protection, and so on, is incorporated into a investment product, tailored for **different customer segments and needs**.

III. Performance Relevance of the Asset Allocation Process - Why Asset Allocation ?

Asset allocation happens - or fails to happen. In any case it is regarded as the single most important investment decision to create **(out)performance** as discussed further below.

This section presents some **basics** of asset allocation in a nontechnical way (12) before illustrating some **advantages** of using structured (guaranteed) investments to **implement** an asset allocation decision in a **cost efficient** way.

The philosophy of asset allocation is based on the principles of **modern portfolio theory (MPT)**, the science of combining assets or different asset classes like bonds, stocks, and cash reserves on a domestic or international level to **maximize expected return** and **minimize risk** (13). In this context, an investor seeks to achieve his optimal portfolio structure or asset allocation defined under his individual risk and reward preferences. (Tactical) asset allocation is a **dynamic process**, a dynamic strategy which over- or underweights asset classes or markets which are not fairly priced or plays liquid vs. illiquid assets, and so on. It is based on the assumption that markets are to some extent inefficient in the short term but efficient in the long run. One of the main **aims** of the (tactical) asset allocation decision is to achieve a **higher expected return** by **reallocating** funds from one asset class, for example bonds into stocks. In particular, the following **3 principles** are widely accepted among investors: **1.** There is a trade-off between risk and expected return. **2.** Diversification can help to lower risk without reducing expected return at the same time. **3.** The stance towards risk, i.e. the risk preference is an important variable in portfolio selection.

In **section I**, we discussed the performance relevance of investments in stocks. But how to put a portfolio together? In general, there are **2 different** approaches:**1. Stock picking**, or the individual selection of undervalued stocks via **fundamental** or **technical** methods

or research; is also called the bottom up approach. Those **active portfolio selection** strategies work under the assumption of an **asymmetric information distribution** in security markets, or in the language of the **Efficient Market Hypothesis (EMH)**, that past and publicly available information is not fully reflected in stock prices (14). With the help of producing **costly private information**, for example through research or simply through better knowledge, the individual develops superior asset **selection**, or **screening** and **timing** abilities than the average investor. **2. Market selection** or top down approach, where basic interrelations for example portfolio optimization techniques to balance expected return and risk as described in the **MPT** and/or the development of the national economy, interest rate levels, etc. which are assumed to influence stock prices in a similar way, play the **major** role. Characteristic for this approach to optimize an asset allocation decision is the idea that market or price developments of single assets or asset classes/portfolios can be described sufficiently by an **index** or **benchmark**. (15). Those **passive** portfolio selection strategies (16) work under the assumption, that the **search** for additional costly private information is futile because security markets are **efficient**. In the terminology of the economics of information and uncertainty, stock prices provide the right **signals** for relevant information. (17). This means that stock prices are priced properly, a conclusion which has **negative implication** for the power of **traditional security analysis** to identify undervalued assets.(18). **Index tracking portfolios** are an example for this approach (19).

Focusing primarily on **single stock selection** can lead to an underestimation of the market selection principle. Experience as well as a series of empirical studies show, that portfolio managers do not outperform the market or index/benchmark on a lasting basis (20). The exception proves the rule. Additional studies show (21), that the success or failure of an investment and/or variation in the returns of a portfolio can be assigned substantially to the **asset allocation decision** and to a lesser extent to individual stock picking. If an investor shares the opinion, that getting the market decision right is the **critical issue**, i.e. that the asset allocation decision is the most **important** investment decision, then there is little necessity to spend time, money, or any other **scarce and costly resources** for stock picking to outperform the market or to beat an index.

IV. Asset allocation with structured equity index products: The modern or innovative structured investments like **EPNs**, **EICs**, and **guaranteed funds (GFs)** as described in **section II**, meet the requirements of the above described asset allocation process, which makes individual stock selection superfluously. An **EPN**, a **EIC** or a **GF** mirror a portfolio, which tracks the performance of a specific security market or index.

There are several **advantages** to use structured investment for asset allocation purposes:

1. Structured equity index products provide a sound method to **implement** or to **adapt** an asset allocation decision quickly, efficiently and in a **cost** effective way. This is vital in **global** investing because of high **transaction costs** for international investing. For example, buying an **EIC** mirroring a specific equity market will be a much easier and a cheaper instrument of **diversification** than running into an **index tracking** with all its costly adjustments or **rebalancing**, which have to be made when the market moves.

Purchasing a structured equity index product means no rebalancing effects, because this is part of the product offered. The investor replicates a market or index without running into the accompanying **transactions** and **administrative costs** such as commissions, custodial fees, and so on. Much of the underperformance of traditional portfolio managers can be attributed to **transaction costs**, like trading commissions and other fees. Transaction costs can easily eat the added value from a professional managed portfolio approach. Trading structured equity linked products reduces the cost of implementing an asset allocation decision or makes it even feasible. They are an ideal instrument for index oriented fund managers for fine tuning.

2. Another key issue is **risk reduction**, **risk management** or **risk planning** when using structured equity index products to shift funds to international investments. Normally, an investor feels more comfortable about investing in its own local market but is not so familiar to invest abroad. However, international investing can create for specific periods significant **higher returns** because there are huge disparities between the best and worst performing markets (22). Sometimes, even without the necessity to increase risk, which can be seen by switching out from German into international equities in the period of 1975-1995. However, the **increase of risk** reallocating funds from bonds to stocks is tremendous for the same period (23). If an investor does not feel comfortable with the

perceived risks like FX- or a capital loss risk, or simply is unable to judge specific risks of international investments, he might stay away from those markets with the effect of a smaller opportunity for return or performance.

As mentioned above in the asset allocation section, the **risk preference** of the investor is the most important variable in the portfolio selection process. Trading the **innovative** instruments, described in **section II**, provide the opportunity to **manage** or to **plan** the **risk components** of the respective (foreign) investments relative to the investor's **risk preference** by stripping out unwanted risks. If for example an investor likes a specific foreign equity market, but not the attached FX risk he can buy a respective **EIC** or **EPN**, hedged or quantoed in his home currency.

The outcome is a kind of **portfolio insurance (24)**. The investor implemented a new asset allocation decision by **changing** his bond into an equity portfolio. Because he is risk averse, he seeks for capital protection. The **pay off** of his new equity portfolio incorporates an at the money call option with limited downside risk, i.e. the capital protection, and an unlimited upside potential. This, in turn equals the payoff of an **EPN**. To achieve this type of portfolio insurance there is even no need to **sell** the unwanted fixed income asset to create room for the stock investment. Alternatively, the fund manager could buy shares and a put option to protect the more riskier assets or to achieve a **similar** portfolio insurance effect or payoff out of his new investment.

Finally, all 3 discussed innovative structured (guaranteed) investments, the **EPNs**, the **EICs** with an attached long put option, and the **GFs** are a **variation** on the concept of **portfolio insurance**. From an economic point of view (payoff function) they are all equivalent. Their main difference is to **whom** they are tailored to, to retail or to wholesale, which explains the main differences in the participation rates, margin (profit, transaction costs, management fees), volume, denomination, and so on. **EPNs** are tailored to institutional clients - mainly to pension- and insurance funds managers -, **EICs** to both, to retail and institutional customers, including mutual funds managers, and **GFs** are a typical retail product.

3. The investment policy of many **institutional clients** like pension funds and insurance companies is subject to **constraints** or limits for asset classes, for maximum amounts, which can be invested in each asset class or region, and so on; or sometimes investors

simply do not have the know how to manage specific markets properly. Using a structured investment like an **EPN** leaves a fixed income type investor in his familiar asset class giving him at the same time the opportunity to participate in the **targeted** foreign equity-, FX-, or commodity markets without selling his underlying base or fixed income asset. Even the payoff resulting from the link to the targeted market can be tailored as coupon payment. The investor simply changed the **risk reward profile** of his base asset or implemented an asset allocation decision in a **synthetic** way. This is usually much **cheaper** than liquidating unwanted holdings and purchasing the desired assets.

4. But structured investments like **EPNs**, **EICs** and **GFs** offer also the opportunity to **control risk** relative to the investor's **benchmark**. Benchmarks normally mirror a specific split between asset classes such as stocks and bonds or they have specific limits on individual countries or regions of the world. While the portfolio optimizer keeps track of the risk-return interrelation, the instruments enable the investor to take **specific risks** versus the benchmark where he expects the greatest return opportunities. An implementation of the new asset allocation decision can be done quickly and in a cost effective way.

5. In the case where **institutional** investors can **not** enter into **derivatives** like index futures or index options to change their asset allocation, because simply they lack **approval** or they are not allowed to use derivative products which settle cash, structured investments like **EPNs** and **EICs** can be tailored as exchangeable notes where for example the investor is entitled to physical delivery of the respective asset or asset class/index. Structured equity index products can be viewed as **packaged basket trades** and therefore can serve as **surrogate** for exchange- or OTC traded derivatives like **index futures** or **index options** to implement quickly and cost effectively a new asset allocation decision if the investor's operational setup, controlling, mark to market, legal or other requirements do not allow a proper use of derivative instruments.

Structured equity index products are advantageous to or more convenient to trade as index futures and index options in 2 ways. First of all because there is no need to roll over positions at expiration of the contract, and second stock index options are available with a limited maturity of several months only.

6. For **retail investors** who share the thinking ,that getting the market decision right is critical for their investment performance and who **lack sufficient capital** to hold diversified portfolios, structured equity participation notes like **EICs** make it possible to allocate even small amounts to international capital markets. Again, no tracking error nor rebalancing costs, and so on. Compared to **mutual guaranteed index funds**, EICs are a clear alternative for asset allocation purposes. First of all because of higher **liquidity** but also because of lower **transaction costs** (no front end fee and other management commissions). If retail investors are interested in an equity linked return, they have only the choices to invest in mutual funds or in equity linked warrants if they do not want to invest in shares directly. However, to build a well diversified portfolio would incorporate huge transaction costs relative to the typical small investments done by retail clients .This would be an uneconomic or irrational investment behavior. So for small investors, those **packaged basket trades** called **EICs** provide a very attractive investment under diversification and asset allocation considerations.

7. At the end of **stock market cycles**, or in the transition phase between 2 cycles, structured guaranteed products can be a clear alternative to hold **cash** and/or **bonds**. At the end of a **baisse** period, normally, the average or risk averse investor will be reluctant to shift his investments to stocks; he still fears to loose capital. On the other side, at the end of a **hausse** cycle, where typically retail investors jump on the band wagon, the described capital protected innovations may prevent them from major losses.

V. Conclusion: Starting with empirical studies which show, that at least in the long run, investments in stocks achieve a noticeably higher average return than investments in bonds, we started to discuss alternative innovative investments to manage the higher risks incorporated with stocks compared to bonds. We found, that the 3 structured guaranteed instruments, the EPNs, the EICs with attached put options, and the GFs are equivalent from an economic point of view, and that their main difference is their institutional set up, i.e. how the capital- and FX protection is build or tailored into the different investment products to fulfill different needs of different customer types. Building the bridge to the efficient market theory, where prices serve as proper signals for relevant information and where market- versus single stock selection is regarded as superior, we found that

structured guaranteed products provide a sound method to implement an asset allocation decision from fixed income instruments to equity markets in a highly efficient and cost effective way. Especially, in the case of international asset allocation, when for example domestic or foreign bonds are switched into international equity markets - for the reason to achieve a higher return -, structured guaranteed investments provide an ideal method to manage or to reduce the tremendous increase in risk attached to this shift, even without selling the unwanted assets. We showed, that in this context the modern innovative investments can be understood as portfolio insurance instruments, where all 3 described products create economically comparable capital- or downside risk protection. Regarding the pricing or the trade-off between capital protection, and the performance of the guaranteed investments there is enough room for improvement. Especially, if participation rates are below 60 %, which is the case with many of the guaranteed funds, then the investor is better off to keep his original bond investment and not to allocate. Also, the maturities of some of the innovative instruments should be lengthen, because equity or synthetic equity investments in average outperform fixed income markets only in the long run.

Endnotes

1. This is confirmed by a well known study of Stehle and Hartmond (1991), who show for the period between 1954-1988 that the average yields from equity investments were noticeably higher than investments in bonds. This study took also taxes and inflation into consideration. The results are in line with similar findings in the U.S.A., see: Stehle, R. and Hartmond, A., Durchschnittsrenditen deutscher Aktien 1954 - 1988, in: Kredit und Kapital, 24. Jg. 1991, Heft 3, pp 371-411; see also studies from: Deutsche Bank, Risikoprämien am deutschen Kapitalmarkt, 1993, p 9; Dobberke, K., Die Aktie lohnt das Risiko, in: Die Bank 6/93, pp 343-346
2. For the period 1969-1990 see: Leoni, W. and Gerstenberger, G., Rendite, Risiko und Anlagehorizont unterschiedlicher Assts, unpublished Working Paper, Spring 1992, pp 9-26; and for the period 1975-1995: Schlotthauer, K.-H., Euro vor der Tür, in: 12. Tagung der Deutschen AFIR-Gruppe, (April 1996), p 18
3. See Leoni and Gerstenberger, Spring 1992, pp 19-20; Stehle and Hartmond, 1991, p.387
4. To the concept of shortfall risk see: Leibowitz, M. and Henrikson, R, Portfolio Optimization with Shortfall Constraints: A Confidence Limit Approach To Managing Downside Risk, in: Financial Analysts Journal, March-April 1989, pp 34-41; Leibowitz, M. and Kogelman, S., Asset Allocation Under Shortfall Constraints, in: Journal of Portfolio Management, Winter 1991, pp 18-23; Rohweder, H.C., Bestimmung anlegerspezifischer Benchmark-Portfolios, in: Die Bank 1/92, pp 23-29; Albrecht, P., Maurer, R. and

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5. The risk that an investor does not achieve his minimum requested return, i.e. the shortfall risk, decreases with the lengths of the investment horizon, but only if the targeted yield is below the yield of the respective asset class - and vice versa; see: Leoni and Gerstenberger, Spring 1992, pp 33-39; Rohweder, pp 26-27
 6. Because the same principles apply to all the 3 structured investments, the first, i.e. the EPN is discussed in more detail
 7. With a higher yield or higher bond coupon, which means a lower NPV for the zero-bond, the investor is able to spend more on the index option. With other words he can buy more participation
 8. Similar investment products, called Index Participation Units (IPUs) are traded at the Toronto Stock Exchange and the American Stock Exchange. IPUs seem to be - compared to EICs - a better surrogate for stocks, because they have voting rights attached and pay dividends
 9. For the last 6 months a capital inflow of DM 2.5 bil. into guaranteed funds from German investors is estimated. For an overview over GFs, targeted for German retail investors see: Manager Magazin, 8/96, pp 92-94
 10. For additional remarks see section IV, No. 7 of this essay
 11. There are some small differences. For example, in the case of GFs, the market hike absorption effect results from the fact that the put option used for the capital hedge or protection, absorbs some of the performance of the equity market, and not the bond which is the case regarding EPNs
 12. There are many dimensions of the asset allocation process. Especially, the distinction between strategic and tactical asset allocation is broadly used. For further discussions of asset allocation theory see: Arnott, R.D. and Fabozzi, F.J., (Reader), Active Asset Allocation, 1992; Rudolph, B., Theoretische Ansätze und Umsetzung der Anlageplanung, in: Cramer, J.-E. und Rudolph, B., Handbuch Anlageberatung und Vermögensverwaltung, 1995, pp 25-42; Hielscher, U., Asset Allocation, in: Kredit und Kapital, 24. Jg. 1991, Heft 2, pp 254-270
 13. The path-breaking theory of Harry Markowitz (1952, 1959) describes a normative investor behavior and a portfolio diversification based on how securities co-move (are correlated). He laid the ground work for the (strategic) asset allocation and for the Capital Asset Pricing Model (Sharpe 1963, 1964); see Markowitz, H. M., Portfolio Selection, Journal of Finance 1952, pp 77-91 and: Portfolio Selection-Efficient Diversification of Investments, 1959; Sharpe, W. F., A Simplified Model for Portfolio Analysis, in: Management Science, Vol. 9, 1963, pp 277-293 and: Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk, in: Journal of Finance, Vol. 19, 1964, pp 425-424 see also: Hielscher, 1991 and Rudolph, 1995, pp 32-35
 14. An extensive empirical research on stock price behavior (random walk hypothesis) in the mid of the sixties culminated in the so-called Efficient Market Hypothesis (Fama 1970) which believes in true stock prices and disbelieves in security analysis to add value see: Fama, E. F., Efficient Capital Markets: A Review of Theory and Empirical Work, in: Journal of Finance, Vol. 25, No. 2, 1970, pp 383-417;
 15. See Sharpe 1963

16. For the distinction between passive and active portfolio management see: Rudolph, 1995, p 39 and the original work from: Treynor, J. L. and Black, F., How to Use Security Analysis to Improve Portfolio Selection, in: Journal of Business, Vol.46, No.1, 1973, pp 66-86
17. See Hopf, M. W., Informationen für Märkte und Märkte für Informationen, 1983, pp 22-47, esp. p 40 and the cited original literature; see also: Kaas, K. P., Marketing und Neue Institutionenökonomik, in: ZfbF, Sonderheft 35, 1995, pp 1-17
18. See Schmidt, R. H., Aktienkursprognose. Aspekte positiver Theorien über Aktienkursveränderungen, 1976
19. The believe that replication of market portfolios, or index tracking, is the most efficient but at least the most cost effective and least risky way to manage portfolios is a clear implication of both theories, the MPT and the EMH
20. Studies of mutual- and pension funds performance indicate, that fund managers in general have been unable to outperform the market over extended periods of time, see Farrell, J. L., Guide to Portfolio Management, 1983, pp 22-25 and pp 321-340; see also: Hopf, M.W., Verbindung zwischen Modellansätzen zur Portfolio Selection, Aktienanalyse und Kapitalmarkttheorie, Dipl.-Arb. Frankfurt 1975, pp 71-73 and the cited literature
21. See the 2 studies of Brinson, G.P., Hood, I. R. and Beebower, G. L., Determinants of Portfolio Performance, in: Financial Analysts Journal, July-August 1986, pp 39-44; same: Determinants of Portfolio Performance II - An Update, in: Financial Analysts Journal, May-June 1991, pp 40-48; for a critical discussion of the results and the methodology of both studies see also: Stephan, Th. G., Strategische Asset Allocation in Lebensversicherungsunternehmen, 1995, pp 29-40; see also Sharpe (1992), who found out that more than 90 % of the variation of the Fidelity Magellan Fund could be explained by passive returns; Sharpe, W. F., Asset Allocation: Management Style and Performance Measurement, in: Journal of Portfolio Management, Vol.18, No.2, 1992, pp 7-19, p 13
22. See figures for annual performances in U.S. Dollars of world equity markets in the period between 1977-1992; in: Crowell, R. A., Derivatives and Global Tactical Asset Allocation, in: Klein, R. A. and Lederman, J., The Handbook of Derivatives & Synthetics, 1994, pp 459-470, p 463
23. See figures from Leoni and Gerstenberger, Spring 1992, p 28 ; from Schlotthauer, April 96, p 18; and from Rohweder, 1/92, p 24 and 27
24. For more details regarding this concept see: Albrecht, P. and Maurer, R., Portfolio Insurance: Strategien zur Wertsicherung von Aktien-Portefeuilles, in: Blätter der Deutschen Gesellschaft für Versicherungsmathematik, Band 10, Heft 3, 1992, pp 337-362

