

# Deka Investment

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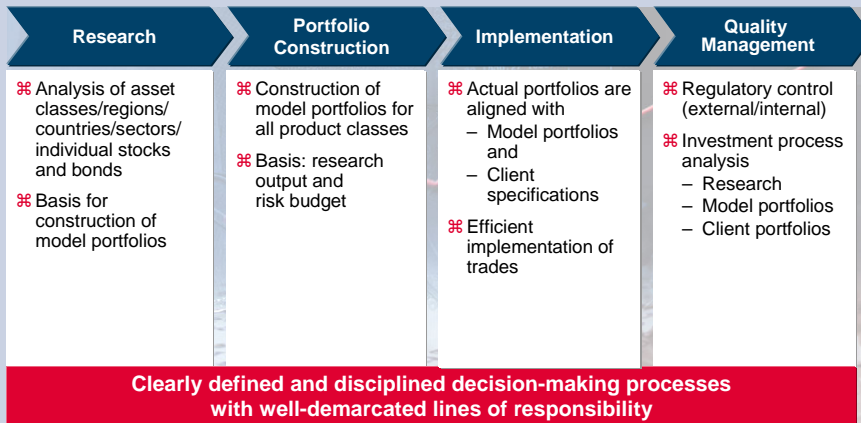
## Agenda

1. Introduction
2. Risk Management
3. Risk based Supervision



## Our Investment Process

The key to success

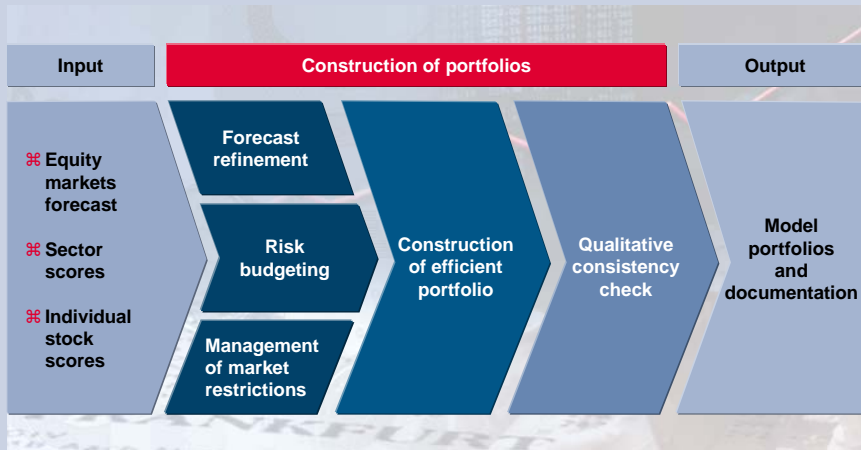


## Agenda



## Portfolio Construction Equities

### Process flow



## Forecast refinement

### Conversion of scores to returns



#### Return refinement:

Transformation of stock and sector scores/signals to alpha forecasts

$$\alpha = IC \cdot \sigma(\alpha) \cdot Z\text{-score}$$

#### Return refinement based on:

- Z-scores of all scores/signals
- Residual volatilities of stocks/sectors
- Information coefficient of research forecasts

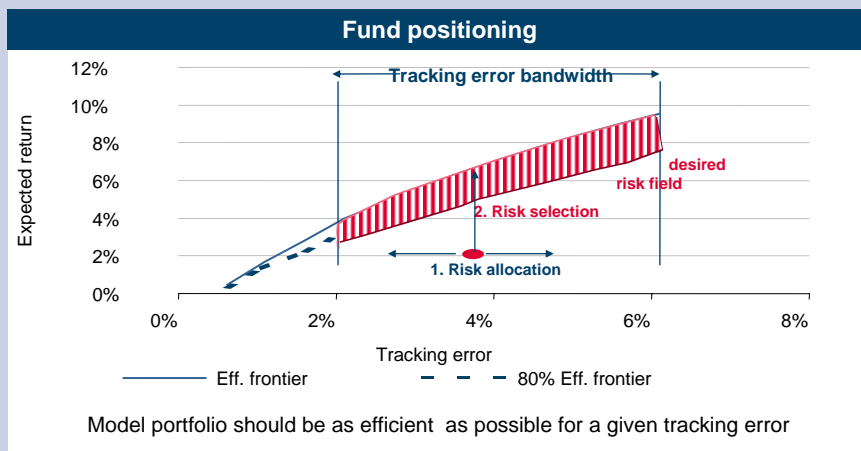
## Risk budgeting

### Specification of tracking error

| Portfolio characteristics   | Target risk/return profile  |  |                |                 |      |                 |     |                   |     |                     |     |
|---|---|--|----------------|-----------------|------|-----------------|-----|-------------------|-----|---------------------|-----|
| <b>Investment focus</b><br>Germany  | <b>Target contribution p.a.</b>   |  |                |                 |      |                 |     |                   |     |                     |     |
| <b>Benchmark</b><br>HDAX  | <table border="1"> <thead> <tr> <th></th> <th>Tracking Error</th> </tr> </thead> <tbody> <tr> <td>Total portfolio</td> <td>3,5%</td> </tr> <tr> <td>Stock selection</td> <td>65%</td> </tr> <tr> <td>Sector allocation</td> <td>25%</td> </tr> <tr> <td>Market contribution</td> <td>10%</td> </tr> </tbody> </table> |  | Tracking Error | Total portfolio | 3,5% | Stock selection | 65% | Sector allocation | 25% | Market contribution | 10% |
|   | Tracking Error  |  |                |                 |      |                 |     |                   |     |                     |     |
| Total portfolio   | 3,5%  |  |                |                 |      |                 |     |                   |     |                     |     |
| Stock selection   | 65%   |  |                |                 |      |                 |     |                   |     |                     |     |
| Sector allocation   | 25%   |  |                |                 |      |                 |     |                   |     |                     |     |
| Market contribution   | 10%   |  |                |                 |      |                 |     |                   |     |                     |     |
| <b>Investment universe</b><br>%Securities: Stocks from Germany<br>%Foreign currencies: no                               |   |  |                |                 |      |                 |     |                   |     |                     |     |
| <b>Investment restrictions</b><br>%Tracking error target: 3,5% p.a.<br>%Tracking error bandwidth $1\% \leq TE \leq 5\%$ |   |  |                |                 |      |                 |     |                   |     |                     |     |

## Construction of the Efficient Portfolio

### Positioning of funds relative to efficient frontier



## Qualitative Consistency Check



### ⌘ Leveraging of research calls

- „Have risk where confidence is high, have less risk where confidence is low“

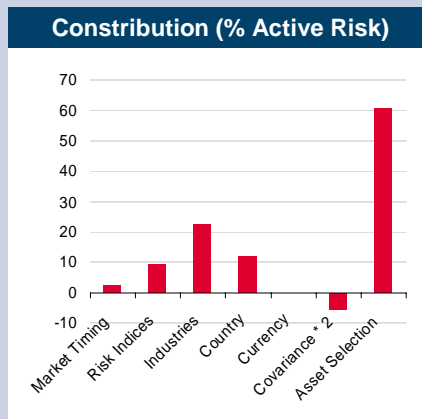
### ⌘ Elimination of factor bets

- „Have risk where you know something, have no risk where you know nothing“

## Qualitative Consistency Check

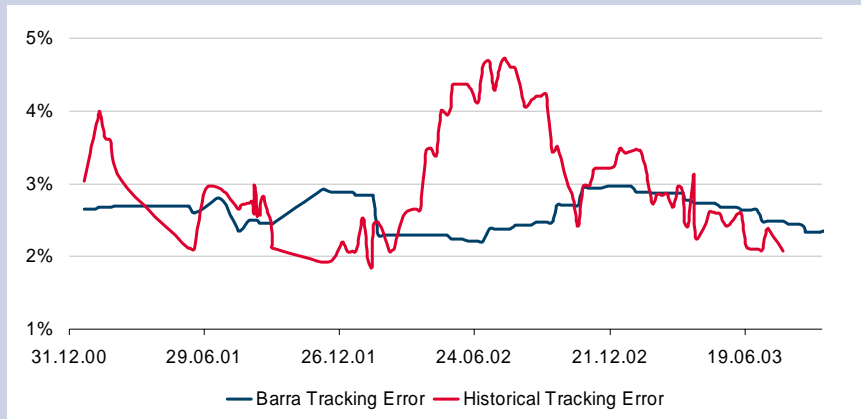
### Controlling portfolio- $\beta$ with regard to market forecasts

| RISK DECOMPOSITION |                     |                                 |
|--------------------|---------------------|---------------------------------|
|                    | Risk<br>(% Std Dev) | Contribution<br>(% Active Risk) |
| Market Timing      | 0,94                | 15,81                           |
| Risk Indices       | 1,45                | 37,96                           |
| Industries         | 1,15                | 23,99                           |
| Country            | 0,72                | 9,43                            |
| Currency           | 0,44                | 3,43                            |
| Covariance * 2     | N/A                 | -14,44                          |
| Asset Selection    | 1,15                | 23,82                           |
| Active             | 2,36                |                                 |
| Benchmark          | 16,65               |                                 |
| Total              | 17,72               |                                 |
| Beta:              | 1,06                |                                 |



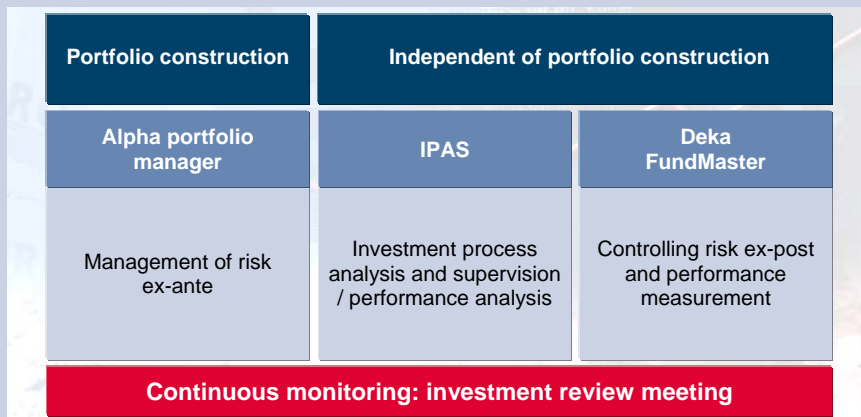
## Qualitative Consistency Check

Testing of risk models (track record)



**„Deka**  
Investment

## Quality Management



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## Agenda



## Risk based Supervision

### Comments



- ⌘ European funds managers have had to face up to a steady stream of new legislation as the EU strives to achieve its goal of a single financial services market by 2005.
- ⌘ Impact of Second Basel Accord is not just relevant to the banking community but also to investment management firms.
- ⌘ Proposals in the Risk Based Capital Directive (RBCD), translate Basel in a manner which applies to investment firms as well as banks.

## Risk based Supervision

### Regulatory Bodies



- ⌘ Europe:  
European Commission
- ⌘ Germany:  
BaFin (Bundesanstalt f. Finanzdienstleistungsaufsicht)
- ⌘ Netherlands:  
PVK (Pensions and Insurance Supervisory Authority)
- ⌘ Switzerland:  
BPV/FOPI (Federal Office of Private Insurance)
- ⌘ United Kingdom:  
FSA (Financial Services Authority)

## Risk based Supervision

### Regulation



- ⌘ Derivative Regulation, in conjunction with § 51 of the Investment Act, implemented into **German law** are based on **EU-Directives**.
- ⌘ The Investment Act provides investment management companies with additional options (derivatives) for structuring the investment and risk profiles for their investment funds.
- ⌘ For existing investment products, the additional options are available only after the relevant fund rules have been modified.
- ⌘ The methods and systems used for limiting exposure are regulated by the Derivative Regulation.

## Risk based Supervision Regulation



⌘ The Derivative Regulation requires the establishment of a risk management.

⌘ The risk management must take into account all relevant risk factors, such as market risk, credit risk, operational risk, and other risks (e.g., reputation risk, liquidity risk, etc.).

⌘ As a general rule (§ 6 of the Derivative Regulation), investment management companies must apply a recognised **value at risk** model („qualified method“)

## Risk based Supervision Regulation



⌘ The recognised value at risk model (VaR) is based either on historical simulation or on the variance-covariance method, to assess the market risk.

⌘ An appropriate VaR limit system must be established and documented for each investment fund.

## Risk based Supervision Regulation



⌘ The VaR of an investment fund may not exceed twice the VaR of the comparable benchmark fund used to calculate the maximum risk limit.

⌘ The investment management company must monitor the quality of the VaR method on a daily basis through back-testing (§ 14 of the Derivative Regulation) and,

⌘ report any discrepancies to the Federal Financial Services Regulatory Authority.

## Risk based Supervision Regulation



⌘ The investment management company must exercise the care of a reasonable merchant (*prudent man rule*) in managing the fund for the account of the investors.

⌘ The investment management company shall act independently of the depositary bank (§ 9 Inv Act).

## Risk based Supervision

### Monitoring



⌘ The investment management company is obligated to regularly send the BAFin *via* remote data transmission a list of all assets (asset schedule) for each of its funds on a daily basis.

⌘ The investment management company is obligated to report to the BAFin each transaction for its funds.

## Value at Risk



The different measurement approaches allowed :

⌘ Variance-covariance approach

Assumption of normal distribution of the portfolio returns.

Therefore:

$$\sigma^2(R_{p,t+1}) = x_t^T \sum x_t$$

$$VaR = \alpha \sigma^2(R_{p,t+1})$$

$\alpha$  typically equals 2.33, corresponding to a 99% confidence interval

## Value at Risk



### ⌘ Historical simulation approach

Based on a ranked sample selection of historical daily price changes (histogram).

Identification of the observed change at a given confidence level in the histogram.

Application on the current portfolio value to identify the VaR at the given confidence level.

## Cost of Regulation



The most basic aim of portfolio construction is to achieve an optimal risk return tradeoff taking into account given restrictions.

But constraints mean lower expected return for a given level of risk.

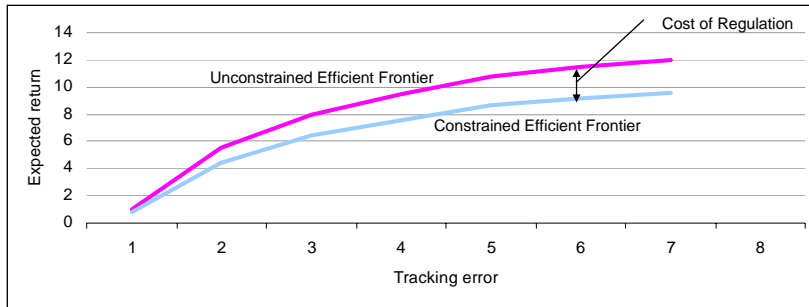
**Objectives:** optimal risk return tradeoff

**Constraints:** liquidity, investment horizon, and importantly regulation

**Result:** Constraints lower the efficient frontier

## Cost of Regulation

### Shift of efficient frontier



Constraints lower the efficient frontier

## Attachement



## Risk based Supervision in European Countries



### Europewide

- ⌘ UCITS: European mutual funds that can be marketed in all EU countries.
- ⌘ UCITS Directive provides the framework for cross-border sales.
- ⌘ Required risk management process equal to German regulation including daily reports on fund exposures including VaR and reports on utilisation against exposure limits.

## Risk based Supervision in European Countries



### ⌘ Netherlands: PVK

- ⌘ Effective January 1, 2006, pension funds in the Netherlands will be subject to new tests of funding adequacy and additional reporting and disclosure requirements under the Financial Review Framework (FTK).

### ⌘ Switzerland: BPV/FOPI

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### ⌘ United Kingdom: FSA

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Thank you  
for your attention!

