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Risk Budgeting In The Asset Allocation Process

Roundtable Performance Attribution

ZURICH

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Introduction

- **What is risk budgeting?**
- **Developing a risk budgeting concept: What is vital?**
- **How to implement risk budgeting in the practice?**
- **Combining risk & performance for controlling & improving the investment process**
- **Lessons learned: experiences at VP Bank, Liechtenstein**

What is Risk Budgeting?

- Risk Budgeting (or Risk Allocation) is the process of...
 - ...decomposing the aggregate risk of a portfolio (or even of the entire investment process) into its constituents (risk factors or drivers) on a quantitative basis,
 - ...setting risk limits (risk budgets) to each asset class (or even single asset), factor and/or investment manager (ex ante),
 - ...allocating assets in compliance with risk budgets,
 - ...monitoring the use or abuse of risk budgets on an ongoing basis,
 - ...analyzing the results (ex post) and improving the investment process.



Developing a risk budgeting concept: What is vital?

Developing a risk budgeting concept: What is vital? (I)

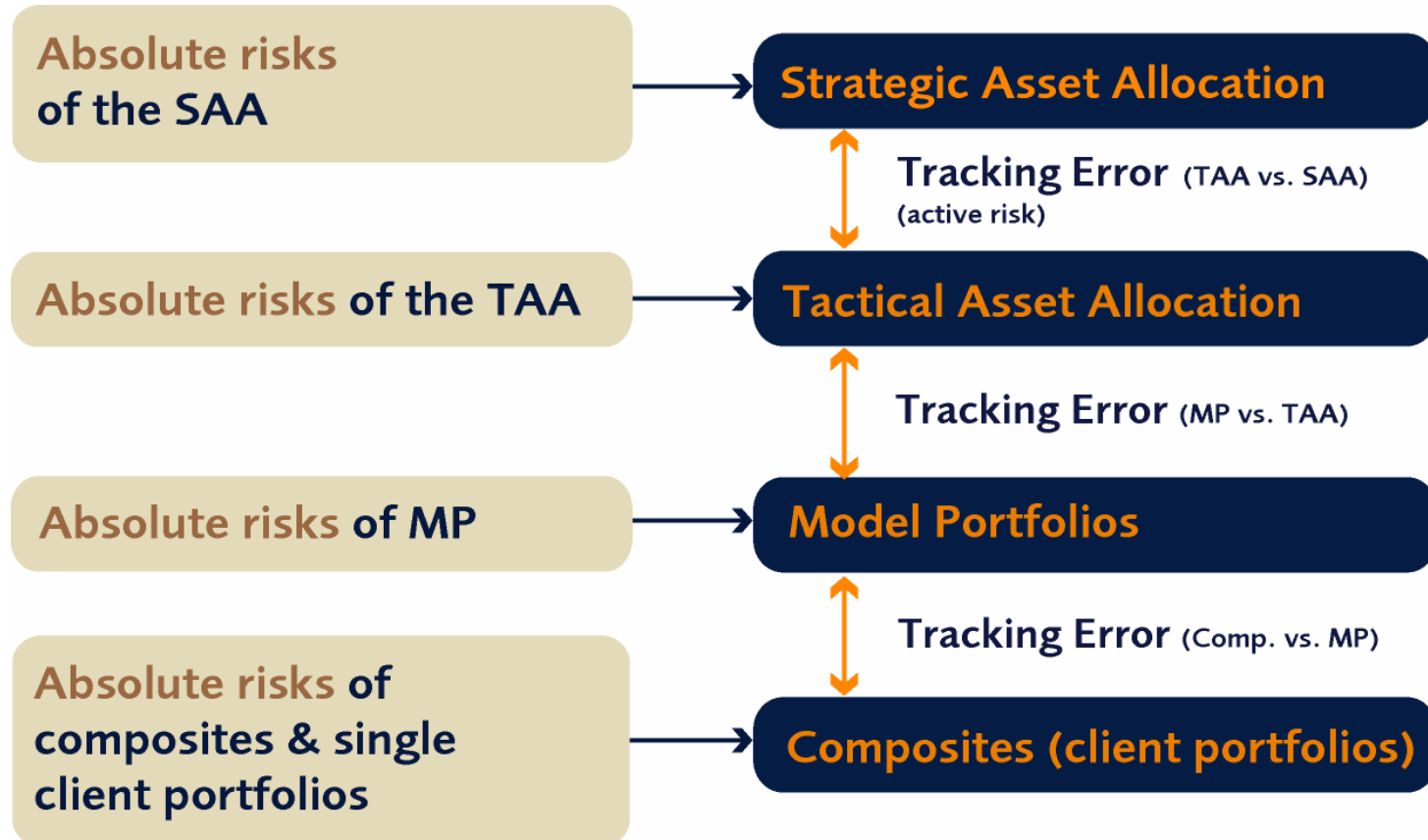
- **Analyze your investment process thoroughly: Your risk budgeting concept must reflect your investment process**
- **Every risk budgeting concept depends on the risk environment of a company => Determine your risk appetite!**
- **Use different types of risk parameters (absolute & relative risk parameters)**
- **Determine the level of sophistication: Complexity (model risk!) versus simplicity (insufficient exactness is useless) => If you use complex models, they should be approved**
- **Make a feasibility study (Management Commitment, financial resources, Know how, IT resources...)**

Developing a risk budgeting concept: What is vital? (II)

- Allocate the risk budgets according to the common organization rule "congruence between tasks, competences and responsibilities"
- Determine an incentive scheme (incentives *and* sanctions!) which is binding
- Beware of conflicts of interest that might arise (see example: giving only relative risk budgets and ignoring absolute risks)
- Don't pack everything into one single concept; use different concepts for different businesses (e.g. one for investment funds and one for PM-mandates)

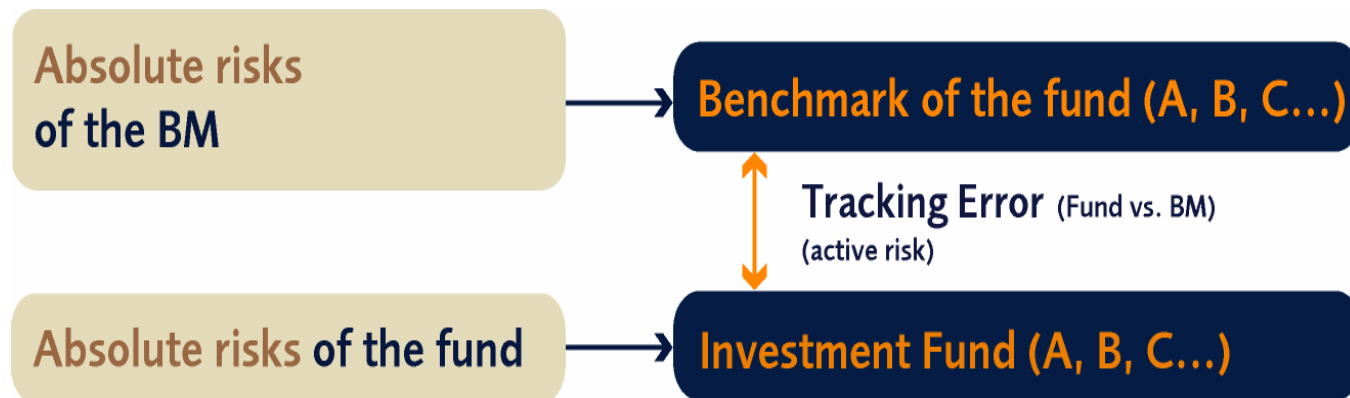
Developing a risk budgeting concept: What is vital? (III)

A possible risk budgeting concept for the investment process



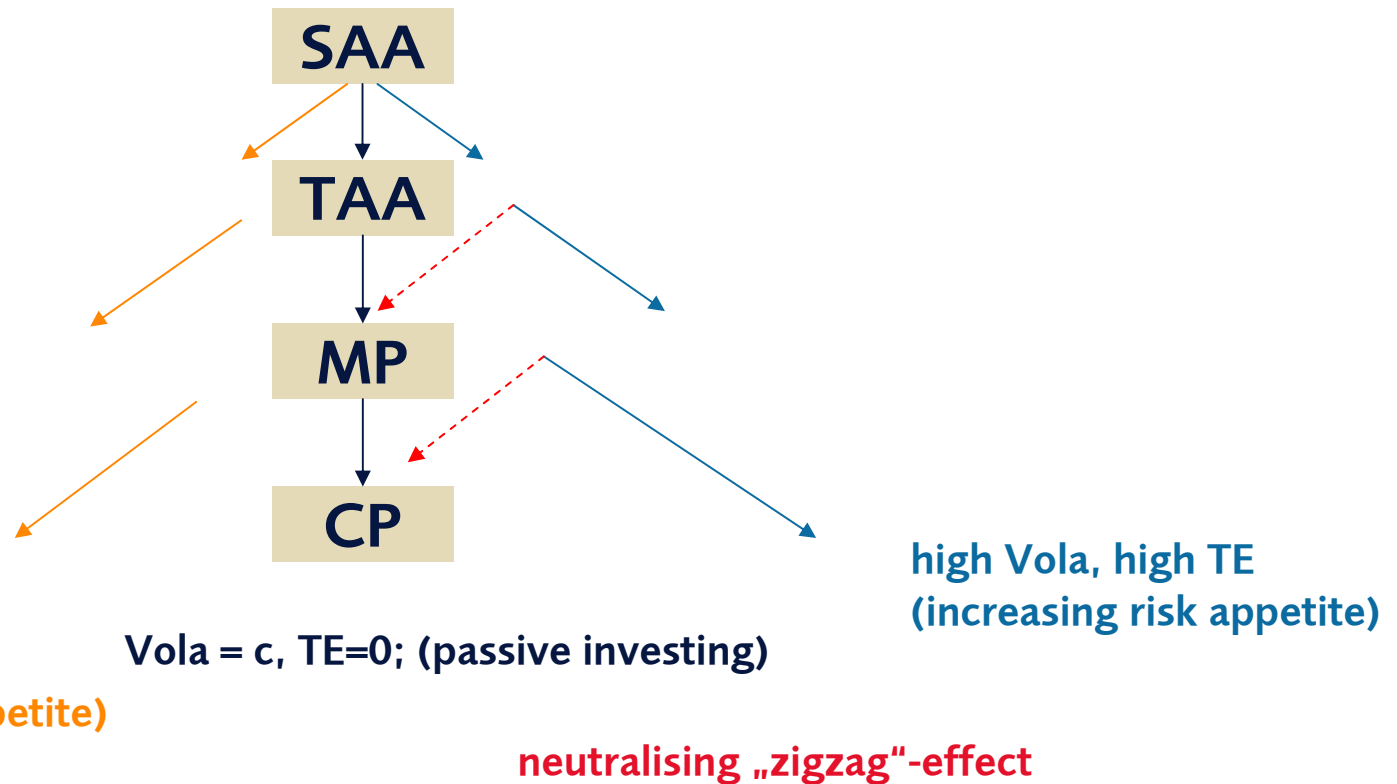
Developing a risk budgeting concept: What is vital? (IV)

A possible risk budgeting concept for investment funds



Developing a risk budgeting concept: What is vital? (V)

Beware of possible conflict of interest by relying solely on active risks:

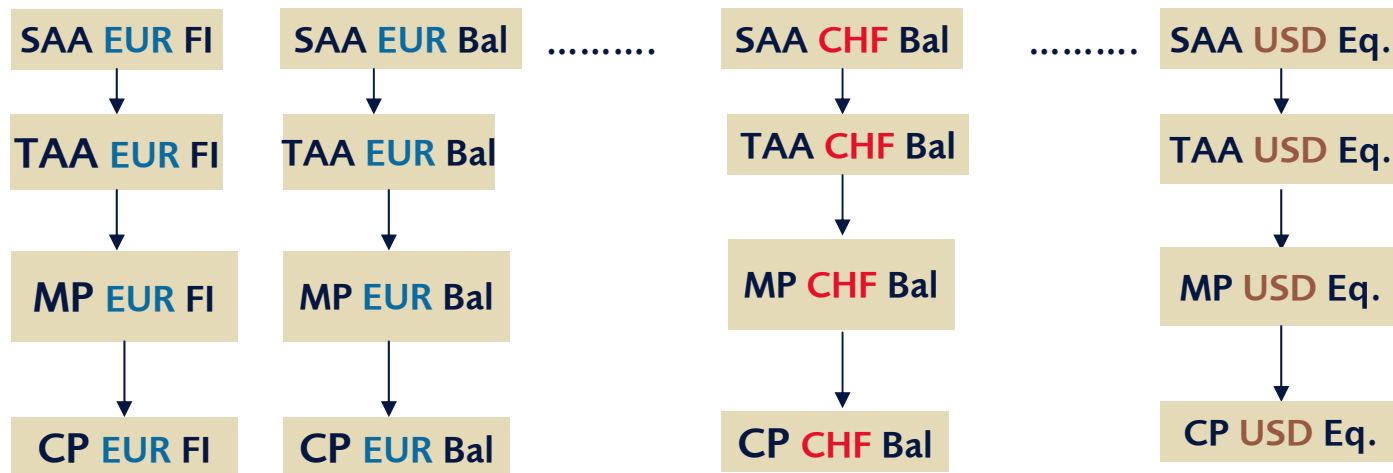


Developing a risk budgeting concept: What is vital? (VI)

Your risk budgeting concept has to cover...

-different reference currencies (CHF, EUR, USD, GBP...) and

-investment profiles (fixed income-, balanced-, equity mandates etc.)...



Developing a risk budgeting concept: What is vital? (VII)

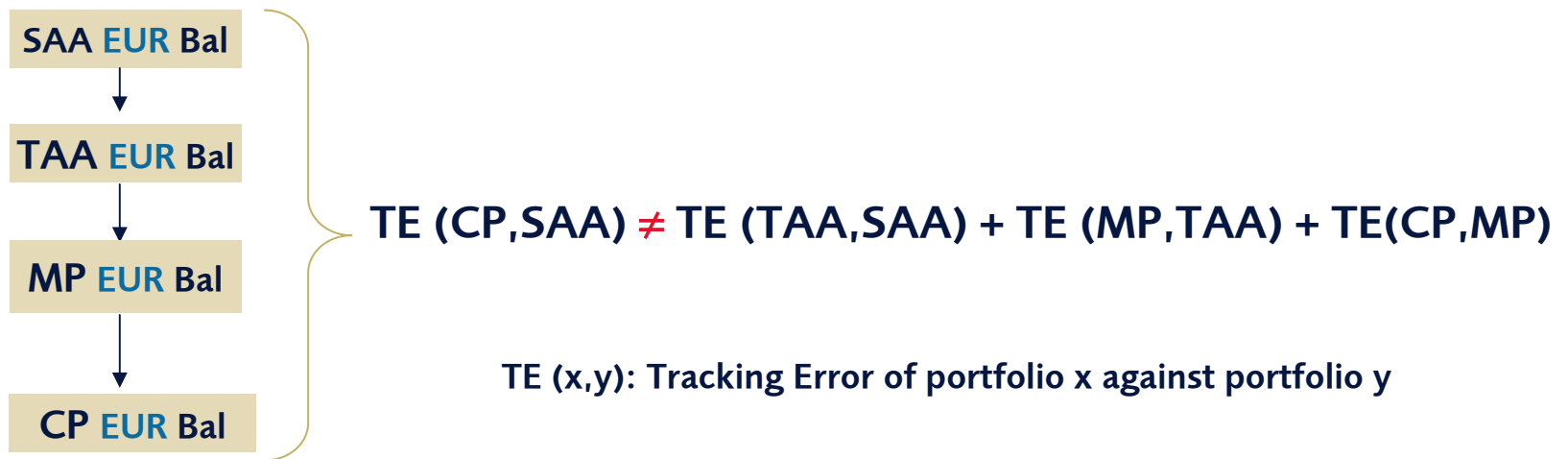
Your risk budgeting concept has to cover...

...risk budgets for single steps (layers) of the investment process (SAA, TAA, MP, CP) and also for the entire investment process



Developing a risk budgeting concept: What is vital? (VIII)

Notice: Risk numbers are not additive!





How to implement risk budgeting in the practice

How to implement risk budgeting in the practice (I)

- **Create a project team with decision makers and get the commitment of the management or Board**
- **"Make or Buy"-decision for the Risk Management System**
 - => Buy:**
 - + approved system and risk model**
 - + maintenance & future development**
 - "black box"**
 - high costs (ongoing)**
 - => Make:**
 - + Know how, better understanding**
 - + independence**
 - Model risk**

How to implement risk budgeting in the practice (II)

- Beware of the huge amount of numbers to be calculated (especially when risk parameters of hundreds of client portfolios have to be calculated) => automation is vital!
- Determine controlling and reporting frequencies (daily, weekly, monthly...)
- Define tailor-made reports
- Attention should be paid to regulatory issues (e.g. banking secrecy laws, outsourcing guidelines etc.)

How to implement risk budgeting in the practice (III)

- Do not only take into account current asset classes (bonds, equities, investment funds, cash...) but make allowance for further asset classes (private equity, hedge funds, gold, commodities...)
- Also consider the following points:
 - interfaces to existing applications
 - if your Risk Mgt. System is web-based, use pseudonyms
 - use appropriate dummies for non covered assets
 - ...



Combining risk & performance for controlling and improving the investment process

Combining risk & performance (I)

- Beware of information ratios (IR= active return/active risk)
 - IR = 1 (a very good IR?)
 - => IR = 1 can result from $0.1\%/0.1\%= 1$ (very low active return divided by a very low active risk) but also from
 - => high active return divided by a high active risk
(e.g. $3\%/3\%$)
- Implementing risk attribution should be combined with implementing performance attribution

Combining risk & performance (II)

A possible risk & performance reporting scheme (a)

SAA	BM	Vola.	TE	Beta	Currency Risk	Ind. Risk	Style Risk	Select. Risk	VaR (%)	Mac. Dura.	Mod. Dura.	Term Struct.	Spread Risk
SAA EUR FI.	"Cash"	...	...	...						
SAA EUR bal.	"Cash"	...	...	...						
SAA EUR Eq.	"Cash"	...	...	...						
TAA													
TAA EUR FI.	SAA EUR FI.	...	...	...						
TAA EUR bal.	SAA EURbal.	...	...	...						
TAA EUR Eq.	SAA EUR Eq.	...	...	...						
MP													
MP EUR FI.	TAA EUR FI.	...	...	...						
...									
Comp.													
Cp. EUR FI.	MP EUR FI.	...	...	...						
...									

Combining risk & performance (III)

A possible risk & performance reporting scheme (b)

SAA	Perf. SAA ... TWR Q2 2005	Perf. BM TWR Q2 2005	realised active returns	realised active risk	Information ratio	...
SAA EUR FI.						
SAA EUR bal.	...					
SAA EUR Eq.	...					
TAA						
TAA EUR FI.						
TAA EUR bal.	...					
TAA EUR Eq.	...					
...						



Lessons learned: experiences at VP Bank, Liechtenstein

Lessons learned: experiences at VP Bank (I)

- **Risk budgeting is an evolutionary process!**
=> You need time to get the real feeling for risk parameters appropriate to the company's and clients' risk tolerance and risk capacity
- **Interpret the numbers correctly, e.g take into account the home bias based on regulatory issues**
- **Implementing risk budgeting boosts your risk management knowledge as well as your investment management knowledge**

Lessons learned: experiences at VP Bank (II)

- **More and more stakeholders (institutional and even private clients, consultants, regulators) demand sophisticated risk reports**
=> Clients appreciate this service (competitive edge)
- **One further (XLOS) benefit: You can use your Risk Mgt. tool also for other purposes or new business opportunities (e.g. lombard loans)**
- **You need investment managers who are keen on applying new techniques (if only investment controllers use this techniques, you discuss permanently cost issues although risk management costs are costs of doing business)**

Lessons learned: experiences at VP Bank (III)

- **If you define too tight risk budgets, they will be violated frequently. Therefore,**
 - **it's better using intervals (e.g. 5-7% instead 5.5%)**
 - **it reduces rebalancing or transaction costs, which can be vital for performance**
- **On the other hand, risk budgets never enforced lose their value (therefore, use intervals and enforce compliance)**
- **Don't underestimate problems associated with non-coverage of assets or asset classes (difficult to define appropriate dummies => extensive backtesting)**

Lessons learned: experiences at VP Bank (IV)

- Implementation of risk budgeting is very demanding and time consuming (developing a concept, selection & specification of the appropriate risk mgt. system, getting mgt. commitment and budgets, educating employees etc.)
- Again, risk budgeting is an evolutionary process: "Fine tuning" never ends.
- Is risk budgeting worth the trouble?

"Emphasizing its faults is like discovering iron in the Stone Age and getting complaints about rust" (Bever, Kozun, Zvan 2000)

Dr. Yücel Özkaya, Head of Investment Controlling
25 January 2006

Thank you for your attention

Appendix

VP Bank Group

- One of the largest banks in Liechtenstein
- Clients from more than 50 countries
- AuM of CHF 27.6 billion
- About 600 employees
- Focus on Private Banking
- Quoted at the Swiss Stock Exchange

History of the VP Bank Group

One of the largest banks in Liechtenstein

- 1956** Founding of the Verwaltungs- und Privat-Bank Aktiengesellschaft
- 1974** First initial public offering of shares to the public and employees; 1st publicly traded company in Liechtenstein
- 1983** Quoted at the Swiss Stock Exchange
- 1988** Founding of subsidiaries in Zurich and Luxembourg
- 1995** Founding of subsidiary in the British Virgin Islands in cooperation with the Allgemeines Treuunternehmen (ATU)
- 2004** Founding of VP Vermögensverwaltung GmbH, Munich
- 2005** Opening of the representative office in Moscow

VP Bank Group world-wide



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Service Aktiengesellschaft
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Product range

Investment instruments

- VP Bank funds
- Structured products
- Pension and insurance products
- Money market investments (time deposits, fiduciary time deposits and call money)
- VP Bank medium-term notes
- Savings accounts

Financing instruments*

- Credits
- Mortgages
- Trade finance (bank guarantees, letters of credit, documentary collection, etc.)



Services

- Asset management
- Advisory mandate
- Financial planning (incl. investments, taxes, pensions, insurance, etc.)
- Purchase and sale of securities on domestic and foreign stock exchanges
- Foreign currency and precious metals trading
- Documentation (asset statements, account statements, interest and balance declarations, tax statements, etc.)
- Safe custody account management
- Account management
- E-banking
- Counter transactions
- Payment transactions
- Means of payment (credit card, Maestro card, etc.)
- Checks and bills of exchange
- Trust services (IGT)
- Formation and management of funds (IFOS)

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