Deutsche AM Multi Asset Group
Myth and reality of modern Multi Asset management

Passion to Perform
Multi Asset at Deutsche Asset Management

Introduction
Multi Asset as integral part of Active Asset management

With €462 bn AuM, more than 500 experts in research and investment as well as over 80 years of client history, Deutsche AM is one of the world’s leading active asset managers.

Deutsche AM Multi Asset Group manages €91 bn in assets across a defined set of global investment strategies with different risk characteristics.

Proven long-term track record in institutional composites; successful platform of mutual funds with >15x 4/5-star funds.

In-depth expertise in modern asset allocation and risk management and leader in MA Innovation.

Source: Deutsche Asset Management. As of March 2016.
Multi Asset – a growing, successful business

Overview

- 50 Portfolio managers
- 5 Mutual fund strategies**
- 160 Inst. mandates
- €47bn AuM
- €10bn NNA*
- €44bn Notional
- 54% growth 2014 - 2015
- 5★ 9 Mutual funds
- >80% over 3y horizon
- 1st & 2nd Quartile
- 16.7% Alpha*** over 10 years in Inst. Composites (1.1% p.a.)

* NNA in 2015
** Total of 65 single funds, including bespoke solutions for key distribution channels.
*** Compounded annual performance, AuM weighted over Target Risk/Target Return/Benchmark composites. As of July 2015
Source: Morningstar, Deutsche Asset & Wealth Management Global MIS, own calculations. As of H1/2015

Data for EMEA region
Multi Asset Group EMEA
Providing goal-based solutions to our clients and thought leadership

Markets

Financial markets are
- complex
- globally interconnected
- increasingly correlated

Diversification has become more difficult

The number and choice of asset classes and investment styles have grown tremendously

Financial Repression is the 'new cycle'
.. and nominal interest rates have become negative

Filter the noise
Reduce complexity
Focus on key risk & performance drivers
...based on a solid investment framework

Multi Asset Group

Focus on four core pillars

1. Strategic Allocation
2. Tactical Allocation
3. Portfolio Construction
4. Risk Overlay Management

We offer and manage strategies that provide solutions to client objectives and goals

Clients

What are my goals and objectives?
— Total Return or Income?

Risk comfort zone
— What drawdown can I sustain?

Constraints
— Regulatory or self-imposed?
Book of Business
Our investment strategies and solutions

COMPREHENSIVE AND COMPETITIVE

- Total Return
- Income
- Specialties
- Benchmark
- Convertibles

Total Return
Maximizing return for given risk budget

Income
Maximizing probability of reaching target

Pension
Accumulation & Decumulation (LDI, DB & DC)

Risk Overlay
Managing downside risk

Source: Deutsche Asset Management, Global MIS. As of February 2016.
Why Multi Asset?

The „new market normal“ and why Multi asset is relevant
The big picture
Debt overhang will constrain policy normalization

Central banks: Balance sheets ($ bn)

Global debt increase** ($)

We are living in a world of ample liquidity

* Liabilities of private households and nonprofit organizations as a % of disposable income. As of December 2014.
Source: Bloomberg Finance L.P., Deutsche Asset & Wealth Management
Implications
The new market normal

The risk-return ratio has become asymmetric. Turn volatility into opportunity.

1 As of April 2016. Source: Bloomberg.
2 Source: BofA Merrill Lynch Global Research. Using the BofA ML global fixed income index GFIM. Includes bonds that mature in the following 12 months. As of May 2016.
3 DAX Index from 01.08.2015 till 29.04.2016. Source: Bloomberg.
Excursus: What is normal?
Diversification, risk and return in the “new normal”

Relatively “easy” diversification over the last 15 years

The Risk-return relationship is changing

- In the past, relatively “simple” portfolios with bonds and equities have been sufficient to generate an attractive risk-return profile and good diversification
- To achieve the same returns as in the past, investors need to take significantly more risk going forward
- Diversification is becoming more difficult to achieve as correlations between traditional asset classes have been increasing
Why Multi Asset?
What is the (simple) Objective

<table>
<thead>
<tr>
<th>Equity*</th>
<th>Multi Asset “comfort” zone**</th>
<th>Fixed Income***</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="chart1" alt="Maximum annual drawdown of global equities" /></td>
<td><img src="chart2" alt="Multi Asset “comfort” zone" /></td>
<td><img src="chart3" alt="Multi decade bond market rally is about to end" /></td>
</tr>
</tbody>
</table>

**Multi Asset – the diversified and managed allocation of various asset classes – matching the clients risk-return objective**

Note:  
* MSCI World Total Return Net Dividends Index denominated in EUR to end of April 2016.  
** Total Returns of weighted buckets (MSCI World denominated in EUR and Barclays Global Aggregate Corporate EUR hedged) since 2000, yearly rebalanced. 2-Year holding period. 
*** Yield on 10-year generic German government bonds, in %.

How do we manage modern Multi Asset

An introduction
The gateway to global institutional AM expertise
Putting together and leveraging the best-of Deutsche AM

- Strategic Asset Allocation (SAA) advisory
  - With regard to economic as well as regulatory risk (e.g. Solvency II SCR*)

- Tactical Asset Allocation (TAA)
  - Integrated or as an overlay

- Multi Strategy
  - Style diversification, e.g. through efficient allocation of active and passive** style buckets

- Gateway to best building blocks and expertise of Deutsche AM
  - Modular approach

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* E.g. for insurance Multi Asset solutions, in cooperation with GCG Solutions
** E.g. Smart Beta in cooperation with Passive.

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*Equity*
- Equity Income
- European Equities
- SMC
- Quant, CROCI, ...

*Fixed Income (incl. Credit, FX)*
- IG, HY
- Covered Bonds
- Loans
- …

*Alternatives (incl. Cmdty)*
- Liquid (HF, RF)
- Illiquid (RE, PE)
- …

*Passive*
- Beta
- Strategic Beta
- …

*External Strategies*
- China bonds***
- …
Investment approach  
Focusing on four core pillars of our Multi Asset investment process

<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategic Allocation</th>
<th>Tactical Allocation</th>
<th>Portfolio Construction</th>
<th>Risk Overlay Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build optimal portfolio that achieves long-term return (or income) target within a given risk budget</td>
<td>Add alpha through active cross-asset risk allocation</td>
<td>Add active alpha through smart implementation of asset allocation</td>
<td>Add asymmetry/convexity through systematic risk-overlay</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drivers</th>
<th>Strategic Allocation</th>
<th>Tactical Allocation</th>
<th>Portfolio Construction</th>
<th>Risk Overlay Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversification across asset classes and investment styles*</td>
<td>High conviction cross-asset class views across CIO active platform</td>
<td>Conscious choice of alpha vs. beta</td>
<td>RO is like buying an option and hence comes at a cost</td>
<td></td>
</tr>
<tr>
<td>Return vs. Income target</td>
<td>... combined in a risk-budgeted way</td>
<td>Selection alpha (Single name and Fund selection, ‘Best of AM’)</td>
<td>The benefit is that it reduces and risk-manages draw-downs</td>
<td></td>
</tr>
<tr>
<td>Liquidity vs illiquidity premium</td>
<td>Focus on risk contribution</td>
<td>Structural convexity through derivative implementation</td>
<td>… and keeps losses limited with a given comfort-zone</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impact</th>
<th>Strategic Allocation</th>
<th>Tactical Allocation</th>
<th>Portfolio Construction</th>
<th>Risk Overlay Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAA</td>
<td>TAA</td>
<td>PC</td>
<td>RO</td>
<td>Drawdown</td>
</tr>
<tr>
<td>SAA</td>
<td>TAA</td>
<td>PC</td>
<td>RO</td>
<td>Drawdown</td>
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<td>Drawdown</td>
</tr>
<tr>
<td>SAA</td>
<td>TAA</td>
<td>PC</td>
<td>RO</td>
<td>Drawdown</td>
</tr>
</tbody>
</table>
Investment approach
Focusing on four core pillars of our Multi Asset investment process
Excursus
Myth versus reality of Diversification

YoY asset classes performance (ranked)*

<table>
<thead>
<tr>
<th>Year</th>
<th>US Sov.</th>
<th>MSCI EM</th>
<th>REITS</th>
<th>EM Debt</th>
<th>HY Credit</th>
<th>MSCI DM</th>
<th>REITS</th>
<th>MSCI DM</th>
<th>Portfolio</th>
<th>EM Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>+12.30%</td>
<td>+78.51%</td>
<td>+27.94%</td>
<td>+8.29%</td>
<td>+22.19%</td>
<td>+21.24%</td>
<td>+28.03%</td>
<td>+10.39%</td>
<td>+9.46%</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>+8.70%</td>
<td>+69.18%</td>
<td>+19.83%</td>
<td>+8.02%</td>
<td>+19.80%</td>
<td>+13.02%</td>
<td>+19.58%</td>
<td>+4.31%</td>
<td>+6.85%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>+4.00%</td>
<td>+28.76%</td>
<td>+18.88%</td>
<td>+6.34%</td>
<td>+18.62%</td>
<td>+8.38%</td>
<td>+3.41%</td>
<td>+5.24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>+0.35%</td>
<td>+28.00%</td>
<td>+15.11%</td>
<td>+3.11%</td>
<td>+18.22%</td>
<td>+2.86%</td>
<td>+8.17%</td>
<td>+2.83%</td>
<td>+3.20%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>+0.00%</td>
<td>+26.56%</td>
<td>+12.24%</td>
<td>+2.62%</td>
<td>+13.75%</td>
<td>+2.33%</td>
<td>+7.60%</td>
<td>+1.60%</td>
<td>+2.80%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>+1.66%</td>
<td>+21.11%</td>
<td>+11.31%</td>
<td>+0.88%</td>
<td>+13.21%</td>
<td>+1.94%</td>
<td>+5.59%</td>
<td>+1.47%</td>
<td>+1.37%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>+19.25%</td>
<td>+13.95%</td>
<td>+5.85%</td>
<td>+0.04%</td>
<td>+12.89%</td>
<td>+0.09%</td>
<td>+3.87%</td>
<td>+0.81%</td>
<td>+1.02%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>+21.46%</td>
<td>+19.92%</td>
<td>+2.86%</td>
<td>+2.33%</td>
<td>+12.24%</td>
<td>+2.33%</td>
<td>+7.60%</td>
<td>+1.60%</td>
<td>+2.80%</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>+37.72%</td>
<td>+38.04%</td>
<td>+16.52%</td>
<td>+0.00%</td>
<td>+2.24%</td>
<td>+0.00%</td>
<td>+1.02%</td>
<td>+0.00%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Traditional Multi Asset yielding satisfying results**

<table>
<thead>
<tr>
<th>Index</th>
<th>10y perf</th>
<th>Vol</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI World</td>
<td>73.4%</td>
<td>13.4%</td>
</tr>
<tr>
<td>JPM Global Gov Bond</td>
<td>69.6%</td>
<td>8.6%</td>
</tr>
<tr>
<td>50-50 portfolio</td>
<td>71.8%</td>
<td>7.4%</td>
</tr>
</tbody>
</table>

Past performance is not a reliable indicator of future returns.
Source: Deutsche Asset Management, Deutsche Bank. As of May 2016.


Deutsche Asset Management
Strategic Asset Allocation as a starting point
Combining strategic risk-return forecasts with diversified risk contribution

Optimized SAA portfolios …

<table>
<thead>
<tr>
<th>Expected return</th>
<th>0%</th>
<th>1%</th>
<th>2%</th>
<th>3%</th>
<th>4%</th>
<th>5%</th>
<th>6%</th>
<th>7%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected volatility</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

… with diversified risk contribution

<table>
<thead>
<tr>
<th>Diversification impact</th>
<th>0%</th>
<th>2%</th>
<th>4%</th>
<th>6%</th>
<th>8%</th>
<th>10%</th>
<th>12%</th>
<th>14%</th>
</tr>
</thead>
</table>

Diversified, strategic portfolio that optimizes return for given risk profile

Source: Deutsche Asset Management. As of March 2016.
Strategic Asset Allocation
Using existing diversification potential

Marginal risk-return contributions

* Change of the risk-return profile of a 50% Equities Europe / 50% Sovereigns Eurozone portfolio, when adding 1% of various asset classes.
Strategic: Harvesting long-term risk premia
Risk premia in credit and equity markets

High yield credit risk premia vs. default rate

Small/Mid Cap versus broad equities

Credit and equity risk premia are well-known and researched and exhibit long-term cycle patterns. Watch out for turning points when spreads don’t compensate for defaults anymore or recessions for SMC.

Excursus: Style investing
Collecting risk premia over time

Performance of Factor* and MSCI World since 1999

Relative Performance of Factors* vs. MSCI World

Past performance is not a reliable indicator of future returns.
* Time series refer to MSCI Factor Indexes.
Tactical: Flexible allocation of risk budgets
Exploiting market opportunities across a global asset class universe

EM Equities: Valuations at a turning point?

Global Equity Style dispersion

Leveraging expertise and investment ideas across our global active investment platform

Past performance is not a reliable indicator of future returns.
Tactical: Global tactical asset allocation
Implementing diversified asset allocation views

Global TAA allocation over time

Global TAA Track record

Alpha contribution through discretionary, diversified risk taking across a global asset class universe

* gTAA signals can be flexibly applied to different SAA portfolios. Please be aware, that the application is justified if the asset classes choice is close to the historical SAA breakdown. Inclusion of further asset classes might lead to relative adjustments in the active weights.

Excursus: Market timing …
… versus “time in the market”

The impact of missing out on the best as well as the worst days is significant. Note, that periods of high volatility are clustered, an autocorrelation effect.

Study period since 1995. Total returns shown are p.a., indices in € unhedged.
Source: Deutsche Asset Management. As of March 2016.
Risk overlay management – How it works over time
Example: Strategic pension fund portfolio with and without overlay

Benchmark: 30% MSCI EMU (TR), 65% iBoxx Euro Overall Index All Mats., 5% JPMorgan Euro Cash 3 Months. Threshold level for the fund: 95%, whereas the threshold is raised by 5% if the fund is 10% above the threshold. Money market interests assumed to be reflected by JPM 3M EUR Cash. Calculation is after costs, including transaction costs.
For illustrative purposes only.
Past performance is not a reliable indicator of future returns.
Source: Deutsche Asset & Wealth Management
Risk overlay management
Increasing risk-return characteristics in the long run

Balanced strategy with/without overlay*

<table>
<thead>
<tr>
<th>Year</th>
<th>Balanced Portfolio</th>
<th>Portfolio + Overlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>90</td>
<td>110</td>
</tr>
<tr>
<td>2007</td>
<td>110</td>
<td>130</td>
</tr>
<tr>
<td>2008</td>
<td>130</td>
<td>150</td>
</tr>
<tr>
<td>2009</td>
<td>150</td>
<td>170</td>
</tr>
<tr>
<td>2010</td>
<td>170</td>
<td>190</td>
</tr>
<tr>
<td>2011</td>
<td>190</td>
<td>210</td>
</tr>
<tr>
<td>2012</td>
<td>210</td>
<td>230</td>
</tr>
<tr>
<td>2013</td>
<td>230</td>
<td>250</td>
</tr>
<tr>
<td>2014</td>
<td>250</td>
<td>270</td>
</tr>
</tbody>
</table>

Sharpe Ratio

- Balanced Portfolio: 42%
- Balanced + Overlay: 61%

Performance year-over-year

Balanced Portfolio vs Portfolio + Overlay

* Calculation based on the Deutsche AWM MAG RIC Germany model portfolio. Risk budget at 7%, with ratchet feature.
Past performance is not a reliable indicator of future returns.
Outcome-oriented and goal-based Investing

Defining the investment objective is key
What is your objective? The outcome matters

- „Smooth“ journey
- Maximizing return for a given risk budget
- Short(er) term investment horizon
- Convexity and asymmetry (watch the embedded option premium)

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**Total-Return vs. Income, both Multi-Asset, but different client objective**

- Harvest long-term multi asset Income Premia
- Include non-traditional Income
- Long(er) term investment horizon
- Risk overlay as „airbag“. Risk comfort-zone is larger than for TR

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**Risk Budgeting**
- Risk Allocation

**MA-Asset Alpha**
- Diversified Multi strategy

**Multi-Asset Beta**
- Well diversified across all asset classes, currencies etc

**Equity Income**
- Traditional

**Fixed Income**
- Traditional

**Non-traditional Income**
- Vol premia
- Convertibles, Real Estate, etc.
Objective and framework matters
Example: Decumulation plan under different market scenarios

Payout leads to very different outcome in future wealth … despite the same yield

Example:
- Initial wealth: € 100,000
- Decumulation plan: 100% in equities (7% annual return)
- Payout: € 5,000 per year over 20 years

Case 1: Luck – “good start”
- Plan sells risky assets with gains in the beginning

Case 2: Bad luck – “bad start”
- Plan sells risky assets with losses in the beginning

Wealth development after annual payouts
- The issue of *ordinary* decumulation plans:
  - Bad performance in the beginning can have significant influence on future wealth outcome

The Solution: Multi Asset Decumulation
- Proprietary target-oriented risk budgeting eliminates negative timing effects significantly
And finally … a Quiz

Behavioural Finance
Decision making under uncertainty
Do investors analyse well?

The Monty Hall problem

- There are three doors: A, B, and C
- Behind one door is the big prize, the other two are blanks
- You get to select one door
- The game show host opens a losing door that is not yours
- After one losing door has been revealed, should you switch?

Analysis

- At the start, the chance of selecting the right door is 1/3
- Obviously, picking the right door and then switching makes you lose, and vice versa.
- Imagine a series of 30 games:
  - With a 1/3 chance, you would expect to have picked the correct door 10 times while choosing the losing door 20 times
  - If you switch every time, you would win 20 times out of 30!

➤ Switching doors doubles the chance to win!
A behavioral objection

- We just saw that switching optimizes your probability of success
- Rational theory economists would say that if you don't switch, you are being irrational

But …
- Suppose you switch and it turns out that you had the right door to begin with …
- How would you feel?
- Maybe there is more to decision making than pure rationality!
- Real investors are „regret averse“ whereas rational investors are not
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