

Methodology of Wealth Management Research

1. Principles of Wealth Management Research

1.1. Independence of Wealth Management Research

The "Directives on the Independence of Financial Research," issued by the Board of Directors of the Swiss Bankers Association (SBA), came into force on 1 July 2003, and were revised on 1 July 2008. One of the purposes of the Directives is to avoid or limit any potential conflicts of interest associated with the preparation of financial research reports, or at least to require proper disclosure. Clients who make their investment decisions based in part on recommendations made by financial analysts should be able to rely upon the objectivity, good faith and due diligence of analysts' research.

➔ SBA "Directives". pdf (Jan. 2008)

UBS Wealth Management Research (WMR) fully complies with the requirements of these SBA Directives. WMR has strictly defined research principles, processes and methods that support WMR analysts and other staff to ensure that they meet the compliance rules during the production of research. WMR's principles and practices are described below.

1.2. Behavioral and ethical standards at UBS

Financial Research Analysts are required to observe high standards of integrity and ethical behaviour. Among other considerations, these standards have the following features:

- Adherence to the highest standards of professional behaviour and ethics
- Abiding by all relevant laws, rules and regulations (including insider trading laws) as well as familiarity with guidelines, manuals and best business practices
- Observing the guidelines and principles for a optimal commercial and ethical conduct, in particular, including identifying and dealing with actual or possible conflicts of interests.

1.3. Organizational and functional principles

In order to offer independent recommendations focussed on UBS private clients, Wealth Management Research is organizationally and functionally separate from the business groups UBS Investment Banking and UBS Global Asset Management as well as from the securities trading and sales or credit departments.

Analyses and recommendations are all based on relevant and publicly available information as well as on third-party studies, but are made with no privileged information.

The remuneration paid to financial analysts is influenced by the performance of their investment recommendations, but it is completely independent of revenues (or performance targets) of any specific securities trading or sales transactions. Among other factors, the analyst's seniority and experience as well as the overall performance of job-related duties, his or her abilities and leadership, and the quality and accuracy of the analyst's research and analysis may form the basis of their compensation, but factors such as, for example, contributions to UBS's investment banking business are never part of an analyst's compensation.

WMR has a process in place to ensure that Financial analysts do not receive from covered companies privileges, gifts, business entertainment or any other favours that might influence their independence. In the same way, it is generally forbidden to the individual analysts to hold executive

office or have some other significant influence at the company she or he covers, as well as being generally prohibited from acquiring, either directly or via third parties, any securities of these companies for their personal account.

The research analysts may neither distribute research results internally (e.g., to the Investment Banking department) nor externally (e.g., to the analyzed company) in order to have the report verified or even approved prior to publication. Research publications and recommendations are generally disseminated electronically, and in some cases made available in printed form. They are made available to all the recipients in a client category (recipient group) within and outside the bank at the same time.

1.4. Dealing with conflicts of interest

WMR is always obliged to adhere to UBS's principles concerning identification, dealing with and disclosing of conflicts of interests. In connection with this, WMR has a robust, global information barrier ("Chinese Wall") in order to prevent the flow of sensitive, non-public information. Training on conflicts of interest is held regularly. Potential conflicts arising out of publication of research before, during and after Investment Banking transactions are monitored. In addition editorial and peer reviews of research are done prior to publication.

1.5. Principles of methodology

WMR offers comprehensive research coverage of the main asset classes and markets for UBS private clients. The analyses are performed in a consistent framework, and decisions are based on systematic evaluation of drivers. Although valuation of assets plays an important role in the processes, the analyses also consider qualitative elements, momentum and special factors.

One chief objective of WMR is to contribute to the investment performance of UBS-managed and advised client portfolios as well as to support client advisors managing clients' assets. It is generally concerned with generating outperformance relative to a predetermined benchmark, or strategic asset allocation (SAA).

2. Determining the Economic Framework

2.1. Economic Research

WMR provides consistent macroeconomic research views on the major industrialized economies. It consistently focuses and adapts its research to the needs of clients and provides in-depth analysis on specific topics considering WMR's global investment strategy. WMR also provides analysis on thematic investment ideas and research about the Swiss real estate market.

2.1.1 Methods & Processes

WMR provides forecasts on GDP growth, inflation and central bank behavior for the covered countries. On a weekly basis, analysts forecast high-frequency data releases, which serve as inputs for short-term calls and trading strategies. Analysts comment on the most important releases as soon as possible. Real estate analysts maintain a tool, which provides general information for each municipality in Switzerland.

Economists make use of both the views of other research houses as well as of their own proprietary econometric models to make their forecasts. In the case of Switzerland, WMR also uses its own quarterly business surveys among Swiss corporates to make their forecasts.

Surveys and models are regularly updated and backtested. Also, model results and proposed forecast changes are challenged in regular meetings among economists as well as other analysts.

Macroeconomic forecasts are presented in various publications

2.2. Foreign Exchange Research

WMR provides targeted, high-quality Foreign Exchange (FX) recommendations to UBS clients and adds value to the clients and the bank by guiding them and intensively communicating with WMR's partners.

2.2.1 *Methods & Processes*

Medium- and long-term investment advice for FX markets is provided. This advice covers generic recommendations on structured products (not specific to a certain Valor) as well as positioning in the underlying FX market. WMR uses a standard set of econometrical models to evaluate exchange rates (Purchasing power parity, interest rate parity, risk indicators and others). WMR also consults a variety of brokers and evaluates their ideas before formulating our forecasts and recommendations.

2.2.2 *Forecasts*

WMR makes forecasts on major currency pairs and presents potential trading strategies wherever we see an opportunity in the market. When evaluating the opportunity, we look at the spot exchange rate, interest rate differentials and assess market volatilities.

2.3 Interest rate forecasts

2.3.1 *Methods & Processes*

WMR provides medium- and long-term investment advice on Fixed Income markets. This advice includes broad recommendations reflecting our expectations for the development of interest rates. WMR uses a standard set of econometric models for its interest rate forecasts. WMR also consults a variety of brokers and evaluates their ideas before formulating our own forecasts and recommendations.

2.3.2 *Forecasts*

WMR makes interest rate forecasts. WMR forecasts 3-month Libor and 10-year government bond yields for major markets and for markets offering portfolio diversification. WMR uses different econometric models based on macroeconomic variables as well as other important variables that influence markets, like risk appetite, volatility, commodity prices and equity indices.

3. Decision on Investment Strategy / Tactical Asset Allocation

3.1. Global Investment Strategy

WMR manages and guides the strategy process that sets and communicates the tactical asset allocation (TAA) views of WMR and the UBS Global WM&BB Investment Committee on major asset classes, markets, and currencies.

3.1.1 *Methods & Processes*

Investment cases within WMR rely on a common decision-making framework based on valuation and market analysis. Valuation analysis aims to establish a fairly valued estimate that is justified by expected long-term economic fundamentals. Then, market behaviour analysis assesses cyclical influences and the themes that drive markets at the various points in time. For example, timing indicators are used to check whether extreme sentiment has moved the risk premiums away from long-term values.

3.1.2 Ratings

In most instances, WMR's analysis and decision-making results in a TAA, i.e., active portfolio weights. To communicate these weights, seven ratings are applied (strong underweight, underweight, moderate underweight, neutral, moderate overweight, overweight, strong overweight). TAA recommendations determined by the Global WM&BB Investment Committee are communicated to client advisors and clients.

4. Research on Traditional Asset Classes

4.1. Bond Research

WMR provides a credit view and investment opinion on certain issuers and issues.

4.1.1 Methods & Processes

To assess the credit quality of an issuer, the research analysts analyze both the financial risk and the business risk of a company. These risks and other factors are considered and reviewed regularly. Fundamental credit factors relate primarily to the industry environment, the firm's strategic orientation and goals, to business practices, and to the firm's operating and financial characteristics and trends. The main factors analyzed relate to financial, industry, business, strategic, liquidity, event, and legal risks and further risks or other technical factors.

Usually the most important factor of a credit analysis is the financial risk of an issuer. Therefore the individual credit assessment of the company may start with a comparison of the key financial credit ratios relative to a peer group. These median credit ratios for a certain risk class are either calculated by WMR or, if available, derived from S&P's target ratios. The financial analysis needs to be done "through the cycle" and several adjustments, e.g., for off-balance sheet debt, may need to be made. Financial factors analyzed for corporates include, among other factors, analysis of leverage ratios, cash flow, interest coverage ratios and profitability. Every sector has its own characteristics and different ratios therefore have to be used, depending on whether, for example, the sector is a financial sector, cyclical sector, or regulated sector.

4.1.2 Ratings

WMR Credit Rating Scale

| WMR Credit Rating Terminology | WMR Definition |
|--------------------------------|--|
| AAA | Issuer / Bonds have exceptionally strong credit quality. AAA is the best credit quality. |
| High AA Mid AA Low AA | Issuer / Bonds have very strong credit quality. |
| High A Mid A Low A | Issuer / Bonds have high credit quality. |
| High BBB Mid BBB Low BBB | Issuer / Bonds have adequate credit quality. This is the lowest Investment Grade category. |
| High BB Mid BB Low BB | Issuer / Bonds have weak credit quality. This is the highest Speculative Grade category. |
| High B Mid B Low B | Issuer / Bonds have very weak credit quality. |
| High CCC | |

| | |
|--------------------|---|
| Mid CCC Low CCC | Issuer / Bonds have extremely weak credit quality. |
| CC C | Issuer / Bonds have very high risk of default. |
| D | Obligor failed to make payment on one or more of its financial commitments. This is the lowest quality of the Speculative Grade category (technical default). |

WMR Credit Trends

| WMR Terminology | WMR Definition |
|-----------------|--|
| Improving | The WMR Credit Trend reflects the analyst's expectation that the company's credit fundamentals will improve. |
| Stable | The WMR Credit Trend reflects the analyst's expectation that the company's credit fundamentals will remain stable. |
| Deteriorating | The WMR Credit Trend reflects the analyst's expectation that the company's credit fundamentals will deteriorate. |
| Watch + | Increased likelihood of UBS WMR Credit Rating upgrade(s). |
| Watch – | Increased likelihood of UBS WMR Credit Rating downgrade(s). |

4.2. Emerging Market Research

WMR aims to offer to internal and external clients of WMR coherent and innovative views on the key trends and issues in the emerging markets universe, and actively identifies investment risks and opportunities.

4.2.1 Methods & Processes

WMR provides recommendations for fixed income investments in sovereign and quasi sovereign bonds in emerging markets with a focus on external debt. WMR defines a universe of investment suitable securities on which it is able to provide research. There is regular communication of favorite bond picks and the recommended Emerging Markets External Debt Strategy.

Wealth Management Research bases its recommendations on the bonds of emerging market sovereigns on various factors, including fundamental macroeconomic and debt indicators and an assessment of a country's ability and willingness to pay. The analysis is complemented by considering the valuations of a model that compares the spreads and yields of the sovereign's bonds against its own historical performance as well as relative to peers in the same ratings bucket. In other words, we look at absolute and relative performance.

The forecast horizon for an overweight, underweight or neutral recommendation in the debt strategy is one year. When selecting specific bonds, the model aims at the expected return. This relies on the WMR US Treasury yield forecast and a forecast for the expected spread of the sovereign's debt over US Treasuries in one year's time.

4.3. Equity Research

Wealth Management Research aims at analysing and rating companies that are interesting to the clients of UBS Global WM&BB.

4.3.1 Methods & Processes

Typically, stocks are added to WMR's coverage after WMR management suggests a company to equity research analysts for review based on a number of factors (including size of client box positions). Before initiating coverage of a company, the equity research analysts must conduct sufficient due diligence to have a reasonable basis for all recommendations provided.

To formulate their investment opinions, equity research analysts have access to data published by the companies and can access the research of third-party research providers such as brokers, specialized data vendors and others.

The input is analyzed and consolidated into a 'Financial Model' to support the formulation of the equity research analyst's absolute and relative ratings. Equity research analysts have the possibility to adopt a variety of valuation methodologies, including a multiple comparison against a predefined peer group (MSCI-based) and a discounted free cash flow model.

4.3.2 Ratings

The relative stock view is defined as follows:

| Relative View | Definition of the relative recommendation |
|----------------------|--|
| <i>Outperform</i> | Expected outperformance versus benchmark. |
| <i>Marketperform</i> | Expected performance in line with benchmark |
| <i>Underperform</i> | Expected underperformance versus benchmark |

The view is based on a relative performance approach in a regional sector context. The benchmark is usually defined as MSCI Region Level 1/2/3. Exceptions are possible where a different MSCI benchmark is more appropriate.

The absolute rating is defined as follows:

| Absolute Rating | Definition of the absolute recommendation |
|------------------------|--|
| <i>Buy</i> | We believe the stock is undervalued relative to its current market price |
| <i>Hold</i> | We believe the stock's current valuation is in a fair range |
| <i>Sell</i> | We believe the stock is overvalued relative to current market price |

In addition, WMR provides absolute-return recommendations on theme-based baskets, on single stocks, and structured products (Global Equity Recommendations), using a variety of methods. These range from identifying long-term trends with an economic, demographic, technological or financial character (by analyzing economic, demographic or other data, or analyzing trends about investment styles using quantitative analysis of market prices of stocks and indices) to Technical Analysis (by e.g. specifying a stop-loss and a target price, and/or to using expected maximum yields, maturities and barriers.

Furthermore, Equity Top Lists provide an up-to-date selection of favoured stocks in the MSCI sectors or selected MSCI regions, designed to offer sector and regionally focused investment ideas. To account for the relative size and diversity of each sector, the number of stocks varies. Some issues relevant for portfolio construction are considered, such as size, (sub-) sector diversity and strategy and regional exposure. Hence, the Equity Top Lists are not just a collection of WMR's Buy/Outperform recommendations. The Equity Top lists are updated daily and contain stocks that are at least rated Hold/Marketperform.

5. Research on Additional Asset Classes

5.1. Commodity Research

WMR focuses on thematic and strategic investments in commodities. It offers cash yield enhancement strategies and trading recommendations for active clients. To ensure adequate understanding, WMR regularly educates clients on commodity investing.

5.1.1 Methods & Processes

WMR uses several approaches to evaluate commodity prices. Key long-term factors behind commodity prices are supply, demand, inventories, production costs (marginal costs) and regulatory

changes. In the short run, risk aversion, foreign exchange movements, investment flows and technical factors are also taken into consideration.

5.1.2 Forecasts

WMR gives 1-3 months' trading ranges, 9-12 months' price targets, and sets the commodity strategy (overweight, underweight and neutral of individual commodities like oil).

6. Other Research Activities

6.1. Thematic Research

WMR analyzes the impact of long-term social, economic, demographic, financial, environmental and geopolitical trends (e.g., climate change, retirement, aging demographic, etc.) on global financial markets, and offers specific investment recommendations based on these themes and targeted to individual private investors

6.1.1 Methods & Processes

The basis for themes is often found in demographic, macroeconomic, and scientific projections, that WMR then converts into economic forecasts and other potential scenarios. For example, WMR has used demographic projections from the UN to discuss population aging, retirement, urbanization and climate change. These trends are then recast using econometric models to produce economic projections and energy use scenarios, for example. The outcomes of these scenarios and projections are then applied to financial markets generally and securities markets specifically to provide financial guidance and make the themes investable.

Numerous groups within WMR are involved in thematic research. Different functional and geographic groups are assigned a wide range of responsibilities, depending on the topic being covered. The work that these groups produce is then compiled to produce the overall thematic research views.

Long-term themes can be developed as "Strategic Calls" and can also form the basis of the UBS research focus publication from WMR. A Strategic Call seeks to exploit investment opportunities among a wide range of asset classes. The calls are based on long-term trends and themes, and have a corresponding investment horizon and holding period assumption of greater than 12 months. Consequently, the views expressed in a Strategic Call can at times diverge from shorter-term tactical recommendations. The Strategic Calls are reviewed by, and subject to the approval of, a fixed committee of senior executives within WMR. This committee aims to ensure a consistency of views and methodology.

6.2. Socially Responsible Investments

The focus of WMR regarding Socially Responsible Investments (SRI) is the analysis of opportunities and risks arising from sustainability challenges such as climate change, water scarcity or demographic developments and the identification of factors which could have a material effect on company performance (e.g. energy efficiency opportunities, obesity risks for food companies). These insights are leveraged to publish theme research (see 6.1) as well as to create so-called best-in-class SRI lists for equities and bonds. WMR substantially contributes to the establishment of discretionary and non-discretionary SRI solutions for our private clients.

6.2.1 Methods & Processes

Research on sustainability themes: Three focus area (water, climate change and demographics) with high sustainability relevance have been defined.

Research on best-in-class: Stocks and bond issuers that obtain above-average sustainability ratings from external specialized SRI rating agencies are preselected for the respective SRI universe. Subsequently, a plausibility check is done by WMR, applying a negative screen on some controversial issues such as weapons, tobacco or nuclear power production.

6.2.2 Ratings

For the WMR equity universe (best-in-class) we use Innovest, a well-known SRI rating agency. Innovest's evaluation of a company on environmental, social and governance (ESG) issues is based on more than 120 performance factors, including innovation capacity, governance, human capital and environmental opportunities and risks. Performance is expressed relative to the sector peers and is communicated via a simple rating of AAA to CCC. Companies with an above-average sustainability rating (AAA, AA, A) are taken into consideration for the WRM universe. For the WMR bond universe we additionally obtain ESG ratings of countries and supranationals from Centre Info, another specialized SRI rating agency.

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