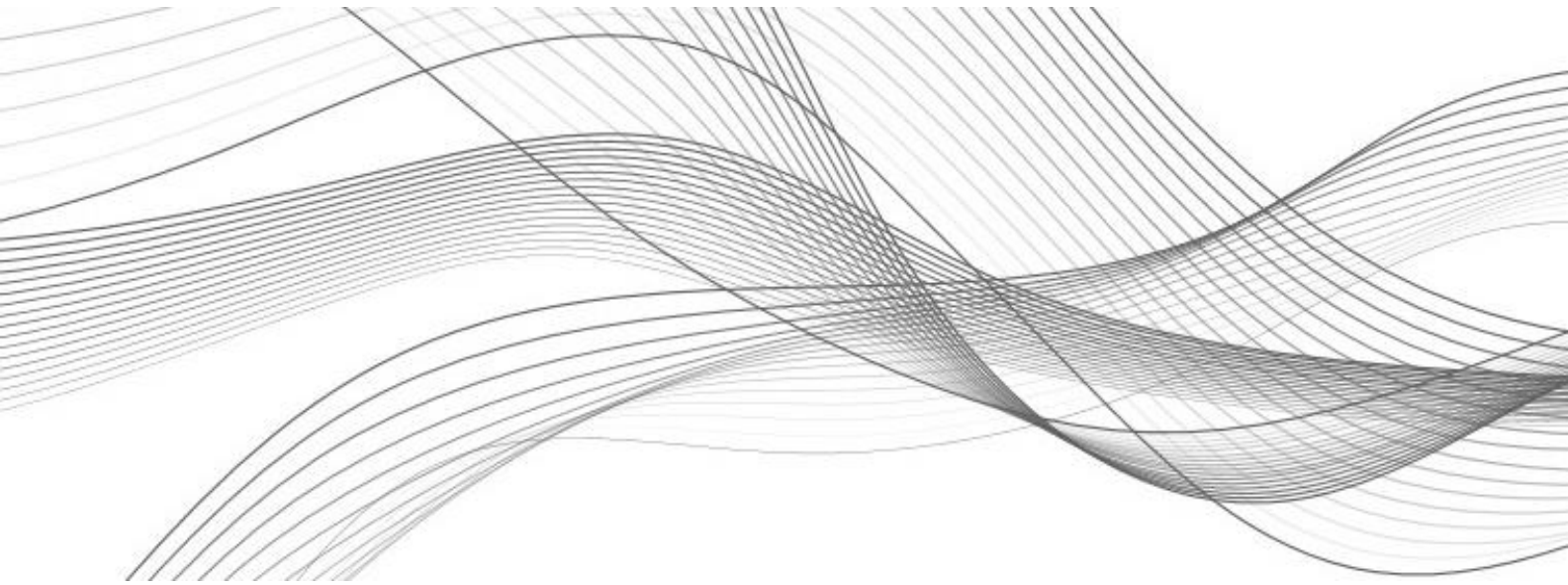
UBS Quant Research

Data, Models and Analytics

Tear Sheets



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Analyst Data

Tags	Format	Method	Publication	Investment Horizon
Estimates, Analyst Forecasts	csv	sftp or email	Intraday	Any < 12 months
Related Research:	UBS Neo Research			

Point-in-time and intraday UBS analyst estimate data

Description

A wide range of valuation and accounting data points per stock direct from UBS analysts across the full global universe of coverage of about 3,450 firms. Available back to 2003 or delivered live.

Historical Data

Point-in-time daily, weekly or monthly data from 2003 onward.

30-minute updates available from early 2021.

Methodology

Company analysts cover about 3,450 companies, arranged into global teams by sector (plus macro sector analysts).

We perform quality checks and have an Investment Review Committee to review significant changes to forecasts.

Our WIRE database contains both historical and forecast accounting data maintained by UBS company analysts.

Analysts are required to input forecasts on all accounting items for at least five years forward.

Integrated financial statements (e.g. cash flow items flow through from income statement and balance sheet).

Analyst data stats:

UBS coverage universe	3,450 global stocks
History	Point-in-time from 2003
Quality	Data quality checks and Investment Review Committee
Frequency	30-minute intraday updates available
Analysts	Award-winning global analyst team

Data Shape

Standard format includes long-form data split across two files. One file contains company metadata with IDs, name, etc. The other contains the estimates. Each file contains the companies that have had an update since the file was last run. Customised feeds are available.

Analyst Upside & Downside Rankings

Tags	Format	Method	Publication	Investment Horizon
Estimates, Analyst Forecasts	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	< 12 months
UBS Quant Answers API:	/api/analyst_data/analyst_rankings			
Related Research:	Quantitative Monographs "What Information is in Analyst Upside Rankings?"			

Finding analysts' 'best ranked ideas' on the upside and downside

Description and Methodology

We've used a point in time database containing daily time-stamped UBS analysts price targets for global coverage back to 2008. We tie each stock to the lead analyst at each point in time and calculate the forecast upside or downside for each stock. We then apply a ranking to each stock under the analyst's coverage, ranking by upside from most to least. We find that this simple method yields an effective way to determine what could be each analyst's 'best ranked idea'.

With over 300 lead stock covering analysts at UBS, this means we have the potential to uncover numerous high conviction ideas. This straightforward approach shows that analysts generally have a handful of high conviction ideas on both the upside and downside. Going down the rankings, the efficacy of the signal fades. This is a simple approach that can be used to quickly determine potential high conviction ideas.

Historical Data

Data is initially available from August 2023, with longer history available on request.

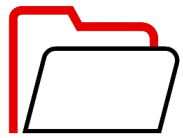
Data Shape

Data frame containing analyst coverage, ratings, price targets and rankings based on upside and downside potential.

Data example: analyst upside and downside rankings

dt	analyst_email_address	sedol	name	recommendation	close_price	price_target	upside	upside_ranking	downside_ranking
2023-11-15	joe.bloggs@ubs.com	1234567	Company A	Buy	81.25	110	1.353846	1	19
2023-11-15	joe.bloggs@ubs.com	2345678	Company B	Buy	57.2	74	1.293706	2	18
2023-11-15	joe.bloggs@ubs.com	3456789	Company C	Buy	114.6	145	1.265271	3	17
2023-11-15	joe.bloggs@ubs.com	4567890	Company D	Buy	19.94	23.5	1.178536	4	16
2023-11-15	joe.bloggs@ubs.com	5678901	Company E	Neutral	73	85	1.164384	5	15

Capacity Analysis



Tags	Format	Method	Publication	Investment Horizon
Portfolio Management, Long only	csv, xlsx	Bespoke request	Monthly	> 1 month
Related Research:	Quantitative Monographs "What is your fund's capacity?"			

Determine your fund's capacity using a suite of different methods

Description

Our interactive model estimates capacity using five different methods. It allows the user to input a fund's holdings and change adjustable drivers.

Capacity analysis is important for determining how large your fund can get before hitting its capacity. It is also of interest when launching new funds to determine how large it could possibly be.

Historical Data

Historical analysis is available dependent on the particular index used.

Methodology

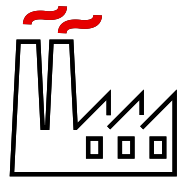
We have built an interactive model that estimates capacity using five different methods. These methods consider a variety of variables including market statistics and statistics from a fund.

Data Shape

The output is two dataframes spread across two sheets. One contains the assumptions used in the model, the other has the estimates. With a bespoke request the file is an interactive model which allows you to change your assumptions.

Input Parameter:	Capacity Estimates:
Portfolio holdings	Average capacity (m)
Benchmark index	Excess capacity
Currency	Historical alpha decay
Max ownership	Market turnover
Efficient fund ADV (%)	Fund turnover
Days to liquidate	Stock level liquidation
Trading days in period	Maximum ownership
Efficient benchmark ADV (%)	
Target excess return	

Carbon Score



Tags	Format	Method	Publication	Investment Horizon
ESG, Sustainability	csv, json, xlsx	UBS Quant Answers API or Excel	Weekly	> 1 month

UBS Quant Answers API:	/api/proprietary_factors/carbon
Related Research:	Quantitative Monographs "Alternative carbon metrics" Quantitative Monographs "Carbon and crowding"

What do your companies look like from a carbon perspective?

Description and Methodology

We consider three carbon metrics:

- carbon emissions to sales (aka carbon intensity)
- emissions to earnings (a crude measure of carbon risk) and
- emissions to market cap (associated with a portfolio's carbon footprint)

For each stock, we compute the percentile rank of the stocks versus its region and sector by these three metrics and take the average to get an overall composite carbon score.

Companies with a low composite score:

- should be efficient in producing their goods and services from a carbon perspective
- will make only a small contribution towards your portfolio's carbon footprint
- will hopefully have a lower exposure to carbon risk

Historical Data

Data is available from 2005 for a universe of about 9,000 stocks. Latest data is updated weekly; historical data is yearly.

Data Shape

Single floating point score per security. In Portfolio Analytics the portfolio and benchmark level weighted average values are reported.

In Portfolio Analytics stock level carbon scores, and the portfolio and benchmark level weighted average carbon score, are reported.

Data example: carbon composite score time series

date	SEDOL	name	composite_factor
31/12/2015	BAQPCW0	Company A	0.0344827
30/12/2016	BAQPCW0	Company A	0.0333333
29/12/2017	BAQPCW0	Company A	0.0333333
31/12/2018	BAQPCW0	Company A	0.2333333
31/12/2019	BAQPCW0	Company A	0.3118279
31/12/2020	BAQPCW0	Company A	0.4408602
31/12/2021	BAQPCW0	Company A	0.4193548
31/12/2015	2B418KB	Company B	0.4367816
30/12/2016	2B418KB	Company B	0.4111111
29/12/2017	2B418KB	Company B	0.3555555
31/12/2018	2B418KB	Company B	0.1888888
31/12/2019	2B418KB	Company B	0.1720430
31/12/2020	2B418KB	Company B	0.1612903
31/12/2021	2B418KB	Company B	0.1397849

China Company Visits

Tags	Format	Method	Publication	Investment Horizon
Sentiment, China	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	> 1 month
UBS Quant Answers API:	/api/proprietary_factors/china_company_visit			
Related Research:	Quantitative Monographs "Can we trade on company visits in China?"			

Stocks with company visits by different types of investors

Description and Methodology

Based on the communication activities between investors and listed companies in China, from WIND Institution Field Research Dataset, we aggregate the number of company visits, as well as the number of visitors by different investor types.

This allows users to quantify the institutional investor attention, from both onshore and offshore investors, towards their China A-share portfolios.

Please refer to our publication "Can we trade on company visits in China?" for more details.

Historical Data

Data available from 1 January 2013 to date.

Data example: number of visits and number of investors

Ticker	Date	Announcement Date	Survey Date	Activity Type Ref	Survey Type Code Ref	Number of all investors	Number of offshore investors	Number of onshore mutual funds
688217 CH Equity	28/10/2022	25/10/2022	07/09/2022	due_ diligence	onsite	22	0	9
688212 CH Equity	28/10/2022	25/10/2022	08/09/2022	due_ diligence	onsite	69	0	23
688700 CH Equity	28/10/2022	25/10/2022	15/09/2022	due_ diligence	onsite	26	0	4
002987 CH Equity	28/10/2022	25/10/2022	02/10/2022	due_ diligence	onsite	8	0	1
688700 CH Equity	28/10/2022	25/10/2022	02/10/2022	due_ diligence	video_ meeting	16	0	3
000338 CH Equity	28/10/2022	25/10/2022	15/10/2022	due_ diligence	onsite	4	0	0
002920 CH Equity	28/10/2022	25/10/2022	15/10/2022	due_ diligence	video_ meeting	9	0	5
300382 CH Equity	28/10/2022	25/10/2022	15/10/2022	others	video_ meeting	62	0	29
300587 CH Equity	28/10/2022	25/10/2022	15/10/2022	due_ diligence	onsite	15	0	2
300638 CH Equity	28/10/2022	25/10/2022	15/10/2022	others	online_ meeting	60	0	25

China News Sentiment

Tags	Format	Method	Publication	Investment Horizon
Sentiment, China	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	Any
UBS Quant Answers API:	/api/proprietary_factors/china_news_sentiment			
Related Research:	Quantitative Monographs "Can we trade on news sentiment in China?" Quantitative Monographs "News Sentiment Barometer in China: which sectors..."			

Domestic news sentiment in China: stock and sector

Description and Methodology

Based on DataYes News Sentiment Dataset, we apply proprietary aggregation to calculate the total news sentiment score, as the sum of all sentiment scores across all news reports, for each stock, on each day.

The new factor integrates both the level of domestic investor attention and the direction of sentiment as well. Moreover, we observe positive correlation between news sentiment and retail investor sentiment in China.

Users can use this dataset to quantify the domestic sentiment from mass media and retail investors in China across their portfolios. Please refer to our publication "Can we trade on news sentiment in China?" for more details.

News Sentiment by Sector

Implied sector positioning is also available. We calculate the sector weights within the top (highest sentiment) decile and bottom (lowest sentiment) decile within the universe and then subtract one from the other to arrive at an implied sector weight.

Please refer to our publication "News Sentiment Barometer in China: which sectors and styles does our model favour?" for more details

Historical Data

Data available from 1 January 2016 to date.

Data example: aggregate sentiment scores

Ticker	Date	Name	News Number	Sentiment Mean	Sentiment Score Sum
000001	28/10/2022	Ping An Bank Co. Ltd.	57	0.119028	6.784618
000002	28/10/2022	China Vanke Co., Ltd	130	0.169880	2.208382
000004	28/10/2022	Shenzhen GuoHua Network Security Technology Co.Ltd.	1	-0.517900	-0.517900
000006	28/10/2022	Shenzhen Zhenye (Group) Co. Ltd.	1	0.189440	0.189440
000008	28/10/2022	China High-Speed Railway Technology Co. Ltd.	10	0.478760	0.478763
000009	28/10/2022	China Baoan Group Co., Ltd.	20	0.872310	1.744627
000012	28/10/2022	CSG Holding Co., Ltd.	8	0.251574	2.125910
000016	28/10/2022	Konka Group Co., Ltd.	10	0.543030	0.543029
000017	28/10/2022	Shenzhen China Bicycle Company (Holdings) Co., Ltd.	6	0.106287	0.637723

China Offshore Ownership

Tags	Format	Method	Publication	Investment Horizon
Positioning, China	csv, json, xlsx	UBS Quant Answers API or Excel	Quarterly	Any

UBS Quant Answers API: /api/proprietary_factors/china_offshore_ownership_factors

Related Research:
Quantitative Monographs "Who is the smart money in China?"
Quantitative Monographs "What you need to know about quant investing in China"

Idiosyncratic insights from aggregate active positions and flows of offshore investors

Description and Methodology

Skillful offshore investors deliver sizable alpha in China, and a significant portion of that is orthogonal to common factors, i.e. idiosyncratic.

Based on institutional holdings from the DataYes Stock Connect Holdings, UBS adds proprietary calculation logic to measure both mutual fund and hedge fund investors' holdings, allowing users to analyse their China A-share portfolios against these investors' aggregate active positioning.

To infer investors' active positioning from their holdings, we first construct separate aggregate portfolios for hedge funds and mutual funds. Active weights are in turn computed by comparing aggregate portfolio weights against benchmark weights across all Northbound eligible stocks, cap-weighted. Please refer to our paper "Who is the Smart Money in China?" for more details.

Offshore Ownership by Sector

Sector weights implied by offshore ownership are also available.

Historical Data

Data available from January 2017 to date.

Data example: active weight by institution type

Date	Ticker	Company Name	Northbound All Active Weight	Northbound Hedge Fund Active Weight	Northbound Mutual Fund Active Weight	Northbound Score
18/10/2022	600519-CN	Kweichow Moutai Co., Ltd.	3.0%	4.6%	2.6%	0.995
18/10/2022	300750-CN	Contemporary Amperex Technology Co., Ltd.	2.1%	0.3%	2.4%	0.994
18/10/2022	600887-CN	Inner Mongolia Yili Industrial Group Co., Ltd.	1.2%	0.3%	1.4%	0.993
18/10/2022	002475-CN	Luxshare Precision Industry Co. Ltd.	0.5%	0.4%	0.5%	0.993
18/10/2022	603501-CN	Will Semiconductor Ltd.	0.4%	0.5%	0.4%	0.992
18/10/2022	601012-CN	LONGi Green Energy Technology Co Ltd	1.2%	0.3%	1.4%	0.991
18/10/2022	600309-CN	Wanhua Chemical Group Co. Ltd.	0.5%	0.4%	0.5%	0.990
18/10/2022	300059-CN	East Money Information Co., Ltd	0.5%	0.2%	0.5%	0.988
18/10/2022	603259-CN	WuXi AppTec Co., Ltd.	0.3%	0.2%	0.3%	0.985

China Onshore MF Ownership

Tags	Format	Method	Publication	Investment Horizon
Positioning, China	csv, json, xlsx	UBS Quant Answers API or Excel	Quarterly	> 3 months
UBS Quant Answers API:	/api/proprietary_factors/china_onshore_ownership_mf_factors			
Related Research:	Quantitative Monographs "Identifying fund managers' skills using peer cohorts"			

Positioning from a selected subset of skilful onshore mutual funds in China

Description and Methodology

Based on daily fund performance from the WIND Mutual Fund Performance Dataset, UBS uses proprietary fund selection model to identify fund managers' skills by anchoring funds against their peer cohorts, and selects the best funds in each cohort.

Using the quarterly top equity holdings from the WIND Mutual Fund Holding Dataset, we aggregate the top equity positions of all the onshore mutual funds and selected mutual funds. This allows users to analyse their China A share portfolios against these investors' aggregate positioning.

Onshore Ownership by Sector

We provide sector weights implied by China onshore mutual fund performance. Weights are updated on the first calendar day of every month.

Historical Data

Data available from March 2005 to date.

Data example: aggregate positioning by fund group

Date	Ticker	Company Name	All Mutual Funds' Holding Value (Rmb bn)	All Mutual Funds' %Hold	Selected Funds' Holding Value (Rmb bn)	Selected Funds' % Hold
31/10/2022	601677-CN	MTALCO	5.251	19%	3.470	13%
31/10/2022	002088-CN	LYEM	1.467	14%	1.084	10%
31/10/2022	601058-CN	SAILUN GROUP	6.095	17%	3.427	9%
31/10/2022	603300-CN	HUATIE	1.738	15%	0.872	8%
31/10/2022	000012-CN	CSG	1.518	9%	1.350	8%
31/10/2022	002597-CN	JHSY	2.717	12%	1.727	7%
31/10/2022	603678-CN	TORCH ELECTRON	2.467	9%	2.102	7%
31/10/2022	002884-CN	LINGXIAO	0.814	10%	0.550	7%
31/10/2022	002046-CN	BEARING-SCI&TECH	0.847	13%	0.433	6%
31/10/2022	002876-CN	SUNNYPOL	1.109	12%	0.609	6%

China Southbound Ownership

Tags	Format	Method	Publication	Investment Horizon
Positioning, China	csv, json, xlsx	UBS Quant Answers API or Excel	Dailly	Any
UBS Quant Answers API:	/api/proprietary_factors/china_southbound_ownership_factors			
Related Research:	Quantitative Monographs "Who is the smart money in Hong Kong?"			

Positioning from China Southbound, global hedge funds and mutual funds in HK

Description and Methodology

Based on institutional holdings from the DataYes Stock Connect Holdings, UBS adds proprietary calculation logic to quantify insights from three types of participants across the equity markets in Hong Kong:

- onshore China investors who access HK shares via Southbound Stock Connect
- overseas and domestic HK hedge fund investors
- overseas and domestic HK mutual fund investors

Our dataset allows users to analyse their HK shares portfolio against these investors' aggregate active positioning. To infer investors' active positioning from their holdings, we first construct separate aggregate portfolios for southbound, hedge funds and mutual funds. Active weights are in turn computed by comparing aggregate portfolio weights against benchmark weights across all Southbound eligible stocks, cap weighted.

Historical Data

Data available from March 2017.

Data example: aggregate positioning by fund group

Date	Ticker	UBS South-bound Score	Active Weight of South-bound Investors	Active Weight of Global Hedge Funds	Active Weight of Global Mutual Funds	Active Weight of All Investors	Change in Active Weight of South-bound Investors	Change in Active Weight of Global Hedge Funds	Change in Active Weight of Global Mutual Funds	Change in Active Weight of All Investors
28/2/2022	981-HK	1	1.06%	0.72%	-0.12%	0.19%	0.08%	0.07%	-0.01%	0.02%
28/2/2022	1024-HK	0.98	0.19%	1.77%	0.08%	0.47%	0.13%	0.07%	0.01%	0.03%
28/2/2022	586-HK	0.97	0.07%	0.12%	-0.01%	0.03%	0.03%	0.02%	-0.01%	0.00%
28/2/2022	998-HK	0.97	0.31%	0.14%	-0.03%	0.04%	0.01%	0.01%	0.00%	0.00%
28/2/2022	268-HK	0.97	0.32%	0.16%	0.06%	0.11%	0.05%	0.02%	0.00%	0.01%
28/2/2022	9992-HK	0.96	0.20%	0.63%	-0.12%	0.09%	0.02%	0.04%	-0.01%	0.01%
28/2/2022	3800-HK	0.96	0.27%	0.48%	-0.03%	0.11%	0.05%	0.09%	0.00%	0.02%
28/2/2022	1171-HK	0.95	0.47%	0.15%	-0.04%	0.05%	0.10%	0.02%	-0.01%	0.01%
28/2/2022	6078-HK	0.95	0.25%	0.14%	-0.02%	0.04%	0.06%	0.03%	-0.01%	0.01%
28/2/2022	1951-HK	0.95	0.18%	0.13%	-0.04%	0.02%	0.04%	0.03%	-0.01%	0.00%

Clustering

Tags	Format	Method	Publication	Investment Horizon
Sectors, Portfolio Management	csv, json, xlsx	UBS Quant Answers API or Excel	On demand	Any
Related Research:	Quantitative Monographs: "Clustering: A Practical Guide"			

Novel and flexible evolutionary clustering framework

Description and Methodology

Our clustering framework presents a high level of process visibility. To address different problem spaces and clustering scenarios, we decouple the process and allow the interchange of the component parts (feature selection, distance, supervision, clustering, and evaluation).

Our constrained clustering allows the use of constraints to limit the number and size of each cluster. Our additional evolutionary clustering layer produces results that are stable through time, identifiable and exhibit lower turnover than is seen using other clustering techniques.

For more control of clustering parameters, distance metrics, features, frequencies, etc., bespoke clusters can be created using both our constrained and evolutionary clustering algorithms.

Historical Data

History varies on frequency and other parameters.

Reports

Resulting cluster reporting includes:

- Stock level cluster labels
- Cluster location coordinates by factor metric
- Distance measures from stock to cluster centroids
- Distance measures between cluster centroids
- Stock level distance matrix

Parameters for bespoke clusters:

Universe	Use our custom universes or provide your preferred stock universe.
Feature set	Select sets of fundamental and macro factor exposure data to consider in the clustering calculation.
Feedback	Guide the clustering process by influencing the attractiveness of companies towards a common centroid, for example with fundamental analysts' co-coverage.
Size tolerance	Constraint on the percentage tolerance for cluster size differences.
Distance calculation	Euclidean distance measurement is currently available.
Centroids	Number of clusters required; this number is fixed.
Calculation date	Calculate clusters at the date required, format YYYY-MM-DD.

Additional parameters for evolutionary clustering:

Centroids	Maximum that will be produced by evolutionary clustering.
Evolution layers	Number of layers to use in the evolutionary clustering process.
Frequency	Frequency of evolution layers.
Bijective match	Choose whether similarity between evolutionary layers should be one way or bijective.

Commodity Forecasts

Tags	Format	Method	Publication	Investment Horizon
Macro, Commodities, Estimates	csv, json, xlsx	sftp or email	Daily; Forecasts updated ad hoc	> 1 month

Point-in-time estimates for commodities, macro strategies and precious metals

Description and Methodology

We have daily history back to 2017 for point-in-time estimates across a range of commodities, FX, precious metals and yields.

We currently provide estimates up to five years forward. Items available listed on the right:

Historical Data

Data available from 2019.

Alumina	Manganese Ore
Aluminium	Molybdenum
AUDUSD	Nickel
AUS 10YR Bond Yield	Oil
Cobalt	Palladium
Copper	Platinum
Dap	Real GDP
EURUSD	Rhodium
Ferromanganese	SF Coking Coal
GBPUSD	Silver
Gold	Thermal Coal
HD Coking Coal	Tin
Inflation	Uranium
Interest Rates	US 10YR Bond Yield
Iron Ore	Zinc
Lead	

Data example: Aluminium forecasts

Effective Date	Item	Forecast Period	Forecast Value	Units	Item Description
11/10/2022	ALUMINIUM	2021Q4	1.05	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2022Q1	0.9525	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2022Q2	0.9525	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2022Q3	0.9525	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2022Q4	0.9525	$US/lb	Aluminium LME ($US/lb)
...	...	...	...	...	...
11/10/2022	ALUMINIUM	2025Q1	1.1	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2025Q2	1.1	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2025Q3	1.1	$US/lb	Aluminium LME ($US/lb)
11/10/2022	ALUMINIUM	2025Q4	1.1	$US/lb	Aluminium LME ($US/lb)

Comprehensive Crowding

Tags	Format	Method	Publication	Investment Horizon
Risk, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Daily, 8pm BST	1 week – 3 months

UBS Quant Answers API: /api/proprietary_factors/crowding

Related Research:
- Quantitative Insights "A Definitive Approach to Crowding"
- Quantitative Monographs "Alpha from Crowding Momentum"
- Quantitative Monographs "Crowding Momentum and Sector Rotation"
- Quantitative Monographs "An Australian Approach to Crowding"
- Quantitative Monographs "Understanding crowding in China"

A proprietary and comprehensive crowding score

Description

Our composite crowding factor is based on a combination of multiple external and internal data sets. It is a complementary blend of:

- prime brokerage data
- stock loan data
- 13F regulatory filings
- proprietary data

This provides a good overall lens for positioning information, and a dynamic daily score.

This approach encompasses information on both the long and short sides and is a more stable and reliable path than attempting to define crowding through incomplete data sets or secondary approaches such as price movements, factor spreads, or various correlations. More critically, it has higher informational content.

Crowding Aggregation by Sector

Our crowding aggregate rolls up stock level crowding scores to sector aggregates within a universe, enabling side-by-side comparison of stocks and sectors.

Historical Data

Data is daily, published at 8pm BST for the previous business day.

Daily history from mid 2017.

Data available for 10-12,000 global stocks.

Data Shape

Single floating point score per security.

In Portfolio Analytics stock crowding quintiles are reported, with a summary of portfolio and benchmark level weights in each quintile.

Regional Crowding: Australia and China

We have used alternate data sources for institutional holdings in the crowding score that could offer better insight into the positioning of managers in Australia and in China.

These two data sets are available daily via separate APIs in UBS Quant Answers.

Data example: Comprehensive Crowding score

SEDOL	Date	Comprehensive Crowding Score
B1CD253	25/10/2022	2.87105
B1CD253	26/10/2022	4.28671
B1CD253	27/10/2022	5.81593
B1CD253	28/10/2022	6.35625
B1CD253	29/10/2022	7.53088
5267639	25/10/2022	-3.45065
5267639	26/10/2022	-4.51215
5267639	27/10/2022	-5.31093
5267639	28/10/2022	-3.79371
5267639	29/10/2022	0.63146

Crowding Momentum Alpha

Tags	Format	Method	Publication	Investment Horizon
Alpha, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Daily, 8:30pm BST	1 week – 3 months
UBS Quant Answers API:	/api/proprietary_factors/crowding			
Related Research:	Quantitative Insights "A Definitive Approach to Crowding" Quantitative Monographs "Alpha from Crowding Momentum" Quantitative Monographs "Crowding Momentum and Sector Rotation"			

Alpha from our Comprehensive Crowding factor combined with momentum

Description

Our 'crowding momentum' factor can be incorporated into various types of equity strategies. We examine changes in our comprehensive crowding score and where in the crowding distribution those occur for maximum effectiveness.

Our 'crowding momentum' factor is defined as increases in crowding combined with negative one-month momentum in the most long crowded names, and also decreases in crowding combined with positive one-month momentum in the most short crowded names.

On the long side, the most crowded names that are becoming more crowded coupled with recent poor relative performance should do the best. On the short side, the most short crowded names that are becoming more short and have had relatively good recent performance should do the worst.

Data example: Crowding Momentum

SEDOL	Crowding Score	1m Price Momentum	Crowding Factor Change	Crowding Momentum
B28SLD9	-0.4166	-0.1689	0.5430	0
BDSFG98	3.2138	-0.2051	7.2487	1
B1Y1PC2	-1.7036	0.4380	0.2255	0
6109893	-4.3640	-0.1635	-1.3436	-1
2655583	0.6758	-0.1267	-0.6062	0
BMCKSV8	-2.3901	-0.2538	-0.5962	0
B607XS1	-1.6513	-0.1090	-2.2143	0
2986153	1.8496	-0.2585	8.4496	1
2478650	-4.3577	0.1476	-12.3607	-1
BG12Y04	-1.3652	-0.2288	0.5573	0

Historical Data

Daily history from June 2017.

Data available for 10-12,000 global stocks.

Data Shape

Data provided with 'Comprehensive Crowding'.
Additional fields:

- Change in crowding factor: Single floating point score per security.
- 1m price momentum: Single floating point score per security.
- Crowding Momentum: Pre-calculated 1, 0 or -1 values for long and short crowding momentum names.
- Country and sector are provided.

Default Risk

Tags	Format	Method	Publication	Investment Horizon
Risk, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	Any
UBS Quant Answers API:	/api/proprietary_factors/default_risk			
Related Research:	Global Quantitative Research Monographs "How to avoid 'Torpedoes'"			

Measurement of a company's likelihood of default

Description

Our implementation of the KMV Merton distance-to-default model guides as to the relative likelihood of default of companies.

The model estimates the proximity of a corporate default event, given the company's level of gearing and equity volatility. It views a company's equity as a European call option on its assets, and can be used to calculate the probability that a company will default on its debt within a one-year time horizon.

The number of "days to default" is assessed using gearing and volatility.

Historical Data

Monthly history from 1985, depending on company reports.

Daily history from 2016.

Data Shape

Single floating point score per security and date.

Data example: distance to default for a selection of stocks

Date	SEDOL	DISTANCE_TO_DEFAULT
2022-08-02	6954985	9.9723862
2022-08-03	B23XW70	9.1293487
2022-08-04	B296314	10.2394879
2022-08-05	B3R1D52	10.2349872
2022-08-06	B84GSC7	9.8347898
2022-08-09	BTPJH25	9.8234576
2022-08-10	BYVLXJ9	9.3468798
2022-08-11	6439567	9.4587945
2022-08-12	6954985	9.7023751
2022-08-13	B23XW70	10.2340980
2022-08-16	B296314	10.4509804
2022-08-17	B3R1D52	10.6098600
2022-08-18	B84GSC7	10.4098598

Factor Values

Tags	Format	Method	Publication	Investment Horizon
Factors, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	1 – 12 months
UBS Quant Answers API:	/api/factors/factor_values			
Related Research:	Quant Research "Style Guide"			

Factor scores from across UBS Quant's extensive factor library

Description

Daily factor scores from UBS Quant's extensive generic factor and style factor library. Factors can be used for back-testing, screens or constructing quantitative portfolios. They can be produced on global, regional, country or sector universes and are available in standardised format to enable fair comparison of stocks across different items.

Underlying data is drawn from FactSet, IBES and other sources. Scores are calculated daily using the latest underlying data at the time of generation (so there is no look ahead bias).

Historical Data

Price factors are available from 1984. Most estimates and fundamentals factors are available from at least 2000.

Some factors start later depending on availability of individual data items.

Methodology

Various methodologies are used for different factors. A per factor description is available from the API. More details on construction are available on request.

Data example: factor data for a selection of stocks

Dt	SEDOL	Volatility (1m)	Revision to 12m fwd DPS FS (1m)
2022-08-02	6954985	0.2940	-0.6440
2022-08-02	B23XW70	0.5457	-0.0181
2022-08-02	B296314	0.1793	0
2022-08-02	B3R1D52	0.4055	0.6620
2022-08-02	B84GSC7	0.2210	0.1530
2022-08-02	BTPJH25	0.4596	0.2010
2022-08-02	BYVLXJ9	0.8751	null
2022-08-03	6439567	0.2642	0.9290
2022-08-03	6954985	0.2978	-0.6450
2022-08-03	B23XW70	0.5508	-0.1800
2022-08-03	B296314	0.1840	0
2022-08-03	B3R1D52	0.3968	0.6620
2022-08-03	B84GSC7	0.2236	0.1530

Data Shape

All factor values (per security, date, factor name) are floating point decimals. Most are stored as unitless ratios such as Earnings Yield, but some are converted to z-scores where it is sensible for cross-industry comparison.

In Portfolio Analytics stock level and portfolio and benchmark level factor values are reported for a wide range of Value, Growth and Quality factors.

Global Economic Forecast Database

Tags	Format	Method	Publication	Investment Horizon
Macro	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	Any
UBS Quant Answers API:	/api/macro_strategy/economic_timeseries			
Related Research:	UBS Neo "Economic Forecast Database"			

Macro indicator forecasts from UBS Economists and Strategists

Description

The UBS Global Economic Forecast Database covers 35+ economies and tracks 25+ indicators including GDP, inflation, labour market, financial and fiscal indicators, policy rates, FX, gold and oil prices.

The database compiles the forecasts from 25+ Economists and Strategists from across the world covering North America, Latin America, Eurozone, EMEA, and APAC along with a historical snapshot dating back to the late 1990s. It serves as a quantitative measure of UBS's macro views.

Historical Data

Data publication starts from 2023; historical snapshot starts late 1990s.

Typically updated daily; but this is variable and may be intraday or less frequent.

Data Shape

One row with six columns per forecast/actual value ingested.

Data set includes roughly 150k data points.

Indicators and Regions covered:

GDP	EU
Consumer prices	G7
CPI	Asia (ex Jap, inc. Aus & NZ)
Labour market	Latin America
Policy Rates	Emerging EMEA
Interest Rates	Advanced economies
Fiscal indicators	Emerging & Developing
Population	
Oil prices	
FX	

Data example: Real GDP year-on-year

Publish Date	Screen Name	Date	Category	Value	Status
11/07/2023	gdp_real_yoy	31/12/2025	US	2.53428	estimate
11/07/2023	gdp_real_yoy	31/12/2024	US	0.11028	estimate
11/07/2023	gdp_real_yoy	31/12/2023	US	1.41647	estimate
11/07/2023	gdp_real_yoy	31/12/2022	US	2.06172	actual
11/07/2023	gdp_real_yoy	31/12/2021	US	5.94680	actual
…	…	…	…	…	…
11/07/2023	gdp_real_yoy	31/12/1996	US	3.77268	actual

Global Risk Appetite Index

Tags	Format	Method	Publication	Investment Horizon
Macro	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	Any
UBS Quant Answers API:	/api/macro_strategy/global_risk_appetite_index			
Related Research:	Quantitative Monographs "Risk Appetite Indices"			

Measuring global market sentiment as a macro investment strategy tool

Description

Our Risk Appetite indices provide a single aggregate measure of relative risk-adjusted performance across a range of assets (e.g., for the Global Risk Appetite index the assets are sovereign bonds and equity indices). Specifically, they measure how many units of incremental return investors have been paid for each unit of incremental risk taken across the chosen range of assets. More colloquially, they answer the question, "how have markets paid recently for taking more risk?"

The higher the indicator level, the stronger the recent relative performance of riskier assets in the basket.

The aggregated risk appetite indicator is calculated using a weighted linear regression of a six-month returns measure ("return") on a one-year risk measure of volatility ("riskiness") on a series of equity and bond indices. "Return" and "Riskiness" are calculated as the asset return and risk in excess of the aggregated 1M overnight interest rate.

The Global Risk Appetite Index includes broad country-based equity and bond indices, across a wide range of emerging and developed countries. The Equity-Only Risk Appetite Index includes only the equity indices (i.e. it excludes the bonds) from the Global Risk Appetite basket and reflects the relative performance of more volatile stock indices (emerging) versus lower-volatility, developed stock indices.

They help identify periods of overbought risky assets (when the Global Risk Appetite Index is high) which might drive profit taking. Conversely, they can suggest periods of oversold risky assets (when the Global Risk Appetite Index is low), opening the opportunity for cheap riskier asset investing.

Data example: Daily index levels

Date	Global Risk Appetite Index	Equity Risk Appetite Index
2024-03-12	0.94406	-1.74257
2024-03-11	0.75047	-1.69228
2024-03-08	0.85612	-1.72572
2024-03-07	0.68723	-2.05021
2024-03-06	0.60797	-1.98624
2024-03-05	0.40780	-2.15261
2024-03-04	0.53867	-2.20425

Historical Data

Daily data from 2005.

Data Shape

Two index level data points per date.

Hybrid Risk Models

Tags	Format	Method	Publication	Investment Horizon
Risk, Portfolio Management	csv, json, xlsx	UBS Quant Answers API or Excel	On demand	Any > 1 week

UBS Quant Answers API: /api/risk_models

Related Research:
Quantitative Monographs "Does your risk model forecast your risk?"
Quantitative Monographs "Getting exposure to crude oil the Quant way"
Quantitative Monographs "Insight into your portfolio: Risk and Performance"

Robust and flexible risk models; an essential tool for all portfolio managers

Description and Methodology

The UBS Hybrid Risk Models have an innovative structure and unique flexibility of construction. They are customisable: create your own bespoke risk model or use our pre-calculated models.

Most risk models use either a time series or cross-sectional approach. Style risk factors are well suited to a cross-sectional approach, while market, region, sector and macro risk factors are better modelled with a time series approach. The UBS Hybrid Risk Model incorporates both of these. We use the Expectation Maximisation (EM) algorithm to estimate the model and by including Bayesian priors we may reduce sampling errors and speed up the convergence of the EM algorithm.

Macro Factors

Include a variety of customisable factors in your risk model. For example: Oil and other commodity prices, bond yields, spreads, currencies, etc.

Historical Data

Risk models are stored for six months.
Bespoke risk model calculation available from 2005 or beyond, dependent on risk model specification.
The risk model universe covers over 36,000 lines of stock.

Reports

Factor volatility I Correlation matrix I Stock residual volatility I Betas I Factor returns I Residual returns I Stock returns I Factor weights I Style values I Bayesian priors I Style flags I Normalisation stats I etc.

Create and calculate your own bespoke risk model:

Custom market factor	Use our market universes or your own custom market factor.
Extend universe	Add a wider universe factor to the model, especially for concentrated market indices.
Macro factors	Choose from a wide selection of macroeconomic indicators and commodities
Thematic baskets	Use UBS custom baskets as macro factors, including stable and more transient themes in the market.
Countries/regions	Optional, selection as defined by user
Style Factors	Choose from our long list of available cross-sectional style factors
Periodicity	Daily, weekly or monthly data frequency
Data window	From 6 months to 7 years of data in your model
Forecast Horizon	Change your risk forecast horizon
Bayesian tau	Change weighting towards or away from the beta priors
Exponential half-life	Change exponential weighting in the factor calculation
Currency	Choose any base currency for the model calculation
Factor weighting	Market cap, square root market cap or equal weighting for creation of market, sector and country factors

Industry Network Intelligence

Tags	Format	Method	Publication	Investment Horizon
Analyst Estimates, Macro	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	Any
UBS Quant Answers API:	/api/network/graph/multi			
Related Research:	UBS Quant "Systematic Informational Advantage in 2024" Quantitative Monographs "Introducing the Industry Network Intelligence"			

Understanding the relationships that drive stock prices and company growth

Description

The Industry Network Intelligence captures relationships between companies and macro drivers. We collect and connect the company and industry knowledge of our fundamental analysts to build a network, with the aim to understand the key drivers of company performance and provide a rich source of information for future quantitative research. At the core of our approach lies the unique combination of our fundamental and macro knowledge, drawn from the vast expertise of our large team of analysts, and access to powerful quant and strategy knowledge and data sets.

The Network includes connections across companies and industries allowing the user to understand, discover, and analyse events and scenarios. The most impactful Edges are identified by over 300 UBS lead analysts. All analysts can contribute, with relationships or 'Edges' assigned relative importance of High, Moderate or Low. All relationships are fully attested, with dual levels of attestation when Edges are mapped between multiple covering lead analysts.

Data Shape

Daily data covers all Edges in the Network and Edge details including Edge type and relevance, date and lead analyst.

Edge Types: Supplier, Partner, Investor, Competitor, Customer, Price, various Macro, Economics & Strategy and Evidence Lab data sets.

Node Types: Company, Country, Region, Commodities, FX Pairs, Global Indicators, Agricultural Products, Food Products.

Universe: Global, including 3,450 UBS-covered companies.

Historical Data

Built from late 2023; complete data from Q2 2024.

Data example: Industry Network Intelligence

Edge Type	Relevance	Date	From Node Type	From Node Key	From Node Name	From Node Analyst	To Node Type	To Node Key	To Node Name	To Node Analyst
Competitor	moderate	2024-02-19	Company Universe	0123456	Company A	Analyst.2 @ubs.com	Company Universe	1234567	Company B	Analyst.1 @ubs.com
Revenue Exposure	moderate	2024-02-19	Country	DE	Germany		Company Universe	1234567	Company B	Analyst.1 @ubs.com
Competitor	low	2024-02-19	Company Universe	2345678	Company C	Analyst.1 @ubs.com	Company Universe	1234567	Company B	Analyst.1 @ubs.com
Price	moderate	2024-02-19	Commodity	crude_oil	Crude Oil		Company Universe	1234567	Company B	Analyst.1 @ubs.com
Competitor	high	2024-02-19	Company Universe	3456789	Company D		Company Universe	4567890	Company E	Analyst.3 @ubs.com
Supplier	high	2024-02-19	Company Universe	5678901	Company F	Analyst.3 @ubs.com	Company Universe	6789012	Company G	

Intangible Capital

Tags	Format	Method	Publication	Investment Horizon
Factors, Valuation	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	> 1 month
UBS Quant Answers API:	/api/proprietary_factors/intangibles			
Related Research:	Quantitative Monographs "Value Rising: Can Intangibles Enhance Value?"			

Enhanced definition of book to price that capitalizes internally developed intangibles

Description

We have created an enhanced definition of book to price that capitalizes internally developed intangibles: Research & Development Expense (R&D) and Selling, General and Administrative Expenses (SG&A).

We calculate knowledge capital, amortizing 100% of R&D and 30% of SG&A each period.

We calculate intangible book to price as the sum of knowledge capital, organizational capital and common equity divided by market capitalization, where knowledge capital is the amortized R&D expense and organizational capital is the amortized SG&A expense.

Historical Data

Some developed region coverage from 1991, other regions vary.

Data Shape

Fields: Intangible B/P. Single floating point score per security per date.
Universe: Global.

Data example: Book Yield including Intangible Capital

SEDOL	date	Country	Sector	bookyield_incl_intang_capital
6092539	31/10/2022	JP	Industrials	2.294075
6010207	31/10/2022	JP	Materials	4.436708
6865560	31/10/2022	JP	Health Care	1.943616
6883807	31/10/2022	JP	Health Care	0.246134
6885074	31/10/2022	JP	Health Care	0.440824
6357733	31/10/2022	JP	Industrials	3.689270
6805469	31/10/2022	JP	Materials	1.896583
6021395	31/10/2022	JP	Industrials	1.496149
6173906	31/10/2022	JP	Real Estate	0.289110
6895448	31/10/2022	JP	Utilities	1.802278
6037734	31/10/2022	JP	Financials	2.732963
6038469	31/10/2022	JP	Materials	3.610105
B0120R1	31/10/2022	JP	Real Estate	1.504826
BD6C2P9	31/10/2022	JP	Financials	0.131256

Key Calls

Tags	Format	Method	Publication	Investment Horizon
Estimates, Analyst Forecasts	csv, json, xlsx	UBS Quant Answers API or Excel	Daily	< 12 months

UBS Quant Answers API: /api/analyst_data/analyst_key_calls

Related Research: APAC Key Calls Valuation and Performance; UBS Key Calls

Analyst high conviction ideas in APAC

Description and Methodology

Curated by stock covering analysts and product management, UBS APAC Key Calls represents a list of our highest-conviction, bottom-up ideas across the APAC region. These are stocks where UBS has a differentiated view, approach or evidence. Constituents can be Buys or Sells in any market, with a minimum ADV of $5m. They have a typical timeframe of 3-9 months. They represent the key fundamental research calls within the APAC coverage universe.

Currently only analysts within the APAC region have their stocks on this list. The stock list returned for a given date will be the Key Call list as of the prior day.

Historical Data

Data is available from July 2023.

Data Shape

Data frame containing top stock picks, analyst coverage, price targets, recommendations and date of recommendations.

Data example: APAC Key Calls

dt	analyst_email_address	sedol	name	country	sector	price_target	price_target_date	recommend-ation	recommend-ation_date
2024-01-05	joe.bloggs@ubs.com	1234567	Company A	CN	Materials	110	2023-12-29	Buy	2023-03-30
2024-01-05	joe.bloggs@ubs.com	2345678	Company B	ID	Industrials	74	2023-11-30	Buy	2021-09-16
2024-01-05	joe.bloggs@ubs.com	3456789	Company C	KR	Financials	165000	2024-01-04	Buy	2022-03-04
2024-01-05	joe.bloggs@ubs.com	4567890	Company D	AU	Utilities	23.5	2023-12-11	Buy	2020-01-21
2024-01-05	joe.bloggs@ubs.com	5678901	Company E	TW	Industrials	85	2023-11-05	Buy	2023-10-19

Machine Learning Earnings Growth

Tags	Format	Method	Publication	Investment Horizon
Alpha, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Monthly	Any

UBS Quant Answers API:	/api/proprietary_factors/ml_earnings /api/market_stats/earnings_growth_aggregation
Related Research:	Quantitative Monographs "Humans vs Machines: Which are better at forecasting earnings growth?" Quantitative Monographs "Forecasting earnings growth in Japan using..."

Proprietary Earnings Growth model taking a Machine Learning approach

Description

Inputs include a variety of macroeconomic, sector and quantitative factors to produce forecasts of future earnings (and earnings growth). Back-testing the model shows it generally predicts earnings growth more accurately than consensus and forecasts become more accurate towards the point the earnings are realised.

Consensus forecasts tend to absorb information slowly, especially further from announcement date. Machine learning models are more likely to generate negative earnings growth forecasts and also adapt to new information more quickly than consensus.

Historical Data

Monthly data available from 2011.

Methodology

We apply a machine learning technique that incorporates the factors driving earnings growth through time and produces earnings growth forecasts from these. Our model uses a gradient-boosting regression (GBR) process. The inputs to the model come from three distinct groups:

- Betas to macroeconomic factors - from our default Quant Answers Hybrid Risk Models in each region e.g. interest rates, currency, commodities;
- Sector (the first GICS level);
- Quantitative factors - effective point-in-time factors across the Quality, Value, Momentum and Risk spaces, guided by prior research.

Data Shape

ML Forecast EPS Growth next 12 months; floating point value per stock per date.

ML Earnings Yield next 12 months; floating point value per stock per date.

Global coverage of ~10,000 stocks.

Aggregated Earnings Growth by market

ML Earnings forecasts are also available aggregated at global, regional, country and sector level. The top 3,000 largest stocks globally are used. Two types of market statistics are available: Machine Learning Forecast Earnings Growth Aggregation and Consensus Forecast Earnings Growth Aggregation. Aggregate, mean and median forecasts are available.

The top 3000 largest stocks globally are covered, subject to having both ML and Consensus growth forecasts, excluding those with less than -100% or greater than 500% growth forecast (from either ML or consensus) in the next 12 months.

Data example: Machine Learning Earnings Growth

sedol	Date	ml_EPS_growth_ntm	ml_earnings_yield_ntm
6092539	31/10/2022	-0.5346000	0.7995353
6010207	31/10/2022	-0.1498732	0.0812273
B0120R1	31/10/2022	0.1230373	0.1408366
BD6C2P9	31/10/2022	-0.4382912	0.0797218
2017327	31/10/2022	0.3902982	0.2489302
4834108	31/10/2022	-0.5192830	0.1294840
7088429	31/10/2022	-0.9493000	0.1239873
BD6G507	31/10/2022	0.3122500	0.2578371

Macro Strategy Regimes

Tags	Format	Method	Publication	Investment Horizon
Macro	csv, json, xlsx	UBS Quant Answers API or Excel	monthly	> 1 month

UBS Quant Answers API:	/api/macro_strategy/economic_regimes /api/macro_strategy/economic_regimes_forecast_distribution /api/macro_strategy/economic_regimes_forecast_distribution_metrics /api/macro_strategy/economic_regimes_total_returns
Related Research:	European Equity & Derivative Strategy "Outlook and ideas"

Market regimes analysis from the Equity Research Strategy team

Description

Business cycle analysis drives the Equity Strategy team's macro scoring. Many strategists will look to forward-looking business cycle indicators and some will even analyse them through the lens of 'regimes', as we do - downturns, recoveries, expansions and slowdowns. We take business cycle analysis several steps further by acknowledging the uncertainty inherent in leading index signals.

Data Shape

Four endpoints are available:

- Economic Regimes: Probability of each of four regimes on a given date
- Forecast distribution: Sampled distribution of index levels per regime
- Forecast distribution metrics: Regime mode and standard deviation in index points based on input extrapolation period
- Returns: Country, sector and style returns per regime

Methodology

Leading indicators are a good place to start when assessing the trend for forward-looking equity markets. The strength and momentum of a leading index should also give us information on the strength and momentum for equity markets. Using historical patterns of strength and momentum, we can calculate the unusualness of recent data and categorise the market into four regimes:

- High and rising (expansion)
- High and falling (slowdown)
- Low and falling (downturn)
- Low and rising (recovery)

We do this because returns, volatility and skew can vary significantly through the business cycle. Understanding regimes is a window into the potential distribution of returns given business cycle conditions.

Historical Data

Monthly data from 2000.

Data example: returns to factors, sectors and countries by regime

aggregation_factor	low_and_falling	low_and_rising	high_and_rising	high_and_falling
historic_returns_by_index	-1.647%	2.908%	2.353%	0.085%
ES	-2.080%	2.818%	2.417%	-0.011%
GB	-1.702%	2.265%	2.113%	0.165%
Consumer Discretionary	-1.511%	3.938%	2.998%	-0.067%
Energy	-1.828%	1.445%	2.512%	0.676%
Industrials	-1.683%	3.955%	2.947%	0.020%
Growth_Least Preferred Rel Bmk_EPS Growth (12m trailing)	-0.113%	0.305%	0.083%	-0.080%
Growth_Most Preferred Rel Bmk_EPS Growth (12m trailing)	-0.160%	-0.168%	0.082%	-0.032%

MacroSense

Tags	Format	Method	Publication	Investment Horizon
Macro, Factors, Risk	xlsx	UBS Neo	monthly	> 1 month
Related Research:	Quantitative Monographs "Surfing the macro wave" Quant Research "MacroSense"			

Macroeconomic Sensitivity Analysis Tool

Description

This tool estimates the sector, country and style impact of the macroeconomic scenario given as input by the user. It is built using the UBS Hybrid Risk Model.

We built an interactive tool where you can enter in changing Macro Conditions and see the sensitivities to Sector, Country, Style and individual securities.

Historical Data

Analysis is latest month only.

Methodology

Given the importance of macro risk, we built a forecast model to estimate the potential impact of changing macro conditions on share prices. The model is based on the projected beta generated by the UBS Hybrid Risk Model. Based on the model, we designed an interactive tool (Macrosense), by which users can easily set up their own assumptions on macro conditions and get the country, sector and factor views, as well as the estimated performance of individual stocks under their assumptions.

Reports

Reports show the exposed sectors, countries and styles. Most and least exposed stocks are also displayed. Another shows the macro importance over time.

Input Parameter:	Estimates:
Benchmark index	Top 10 stock performance
Macro scenarios, eg:	Bottom 10 stock performance
US 2-Year Yield	Sector impact
Crude Oil	Country impact
Gold	Style impact
EM Currency	Macro factor importance
US Industrial Production	
China market	

Market Statistics

Tags	Format	Method	Publication	Investment Horizon
Macro	csv, json, xlsx	UBS Quant Answers API or Excel	monthly	> 1 month
UBS Quant Answers API:	/api/market_stats			
Related Research:	Quant Research "Style Guide"			

Broad statistics identifying breadth of market opportunities

Description

Three broad types of market statistics are available for clients: cross-sectional dispersion of returns, pairwise correlation of returns, and average index volatility.

For each market we calculate a time series of our three market statistics. Together they help identify the relative breadth of the opportunity set for stock pickers, and give an indication of the likely effectiveness of quantitative strategies.

Historical Data

Monthly data available from 2000 to date.

Methodology

Pairwise correlation of returns is calculated with 12 months of weekly returns.

Cross-sectional dispersion is measured using monthly returns.

Average volatility is measured with 12 months of daily returns, and is sector neutral.

Data Shape

Statistics are calculated for most major markets/indices including key US and Global sector indices. Three data points per market/date.

Data example: market statistics time series

date	cs_dispersion	pairwise_correlation_12m	volatility_12m_index
2022-01-29	0.22776	0.55717	0.32150
2022-02-26	0.32366	0.54354	0.41364
2022-03-31	0.26253	0.41007	0.34530
2022-04-30	0.28908	0.37196	0.29433
2022-05-31	0.33274	0.34192	0.37436
2022-06-30	0.25455	0.30584	0.29750
2022-07-30	0.24851	0.28955	0.30045
2022-08-31	0.29285	0.30542	0.33963

Nowcasting from UBS Evidence Lab

Tags	Format	Method	Publication	Investment Horizon
Macro	csv, json, xlsx	UBS Quant Answers API or Excel, and UBS Evidence Lab	monthly	< 3 months

UBS Quant Answers API:	/api/evidence_lab/nowcasting
Related Research:	US Economic Data: UBS Evidence Lab Nowcasts

Big data nowcasting on key US economic indicators

Description

UBS Evidence Lab leverages high frequency non-traditional big data to generate a Nowcast of key US economic indicators unconstrained by, and often weeks ahead of official government releases. Available key indicators include Auto SAAR, ISM Manufacturing, Retail Sales (Ex-Autos, Ex-Gas), Private Construction, Nonfarm Payrolls and Headline and Core CPI.

Data Shape

Floating point score per metric per date.

Historical Data

Monthly data available from 2012.
Data is released on or around the 25th of each month, prior to the reference month completing.

Methodology

The approach used in modelling the key US economic indicators is largely based on the same methodology macroeconomists have been utilizing to Nowcast GDP. The primary difference to the UBS Nowcasting is timing and leveraging even higher frequency, real-time data inputs, often from third-party alternative data vendors to generate a forecast ahead of official releases.

Depending on third-party data availability, models are periodically reviewed and reassessed to include new or additional inputs in order to refine models, but historical model outputs are based on best available data at time of model construction.

Data example: US Nowcasting Economic Indicators

Period	Date	Nowcast Effective Date	Geography ISO Code	Metric Name	Metric Value
month	30/4/2023	25/4/2023	US	ubs_nowcast_auto_saar	15.8000
month	30/4/2023	25/4/2023	US	ubs_nowcast_auto_saar_mm	0.0680
month	30/4/2023	25/4/2023	US	ubs_nowcast_ism	46.9700
month	30/4/2023	25/4/2023	US	ubs_nowcast_nfp	291
month	30/4/2023	25/4/2023	US	ubs_nowcast_prvt_const	0.0110

Data example: US Nowcasting Retail Sales

Period	Date	Nowcast Effective Date	Geography ISO Code	Metric Name	Metric Value
month	28/2/2023	23/3/2023	US	ubs_nowcast_retail_sales_ex_prelim	0.0043
month	28/2/2023	8/3/2023	US	ubs_nowcast_retail_sales_ex_final	0.0036
month	28/2/2023	8/3/2023	US	first_official_report_retail_sales_ex	0
month	31/3/2023	28/3/2023	US	ubs_nowcast_retail_sales_ex_prelim	0.0033
month	31/3/2023	4/4/2023	US	ubs_nowcast_retail_sales_ex_final	-0.0004

Ownership

Tags	Format	Method	Publication	Investment Horizon
Positioning, Quant, Fundamental	csv, json, xlsx	UBS Quant Answers API or Excel	Weekly	> 1 week
UBS Quant Answers API:	/api/ownership/history_aggregation /api/ownership/history_holding /api/ownership/history_split_by_type			
Related Research:	Quantitative Monographs "Follow the smart money"			

Idiosyncratic insights from aggregate positioning of hedge funds and mutual funds

Description

Skilful active investors deliver consistent and sizable alpha, and a significant portion of that is orthogonal to common factors, i.e. idiosyncratic. Based on institutional holdings from the FactSet Ownership database, UBS adds proprietary calculation logic to measure both mutual fund and hedge fund investors' holdings, allowing users to analyse their portfolios against these investors' aggregate active positioning.

Institutional holdings of onshore and offshore investors in China are also used, as discussed in 'Who is the Smart Money in China?'

Data example: stock active ownership weight

Calendar_ date	SEDOL	Proper_name	Investor_ weight	Active_ weight
04/11/2022	4834108	Schneider Electric SE	2.57%	1.03%
04/11/2022	7088429	AXA SA	1.73%	0.45%
04/11/2022	4682329	Pernod Ricard SA	1.10%	0.32%
04/11/2022	BD6G507	Ferrari NV	0.90%	0.31%
04/11/2022	7309681	BNP Paribas S.A. Class A	1.47%	-0.26%

Historical Data

Monthly data available from end 2004 to date.

Weekly data available from late 2020.

Methodology

Due to the nature of reporting-based data, institutional holdings from the FactSet Ownership database are sparse and not received at any particular frequency. We employ a rollover scheme to transform the data into regular time series.

To infer investors' active positioning from their holdings, we first construct separate aggregate portfolios for hedge funds and mutual funds. Active weights are in turn computed by comparing aggregate portfolio weights against index weights within corresponding universes.

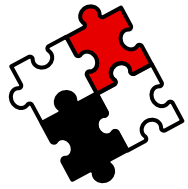
Data Shape

Ownership is delivered via three endpoints:

- Active weight time series by country and sector
- Stock level active weights
- Holding value split by ownership type hedge fund/mutual fund

In Portfolio Analytics a subset of ownership data relevant to the investment universe is reported.

Portfolio Analytics



Tags	Format	Method	Publication	Investment Horizon
Risk, Portfolio Management	csv, json, xlsx	UBS Quant Answers API or Excel	On demand	Any > 1 week

UBS Quant Answers API: /api/portfolio_analytics

Related Research:
- Quantitative Monographs "Does your risk model forecast your risk?"
- Quantitative Monographs "Getting exposure to crude oil the Quant way"
- Quantitative Monographs "How big should your portfolio be?"
- Quantitative Monographs "Insight into your portfolio: Risk and Performance"

Full analysis of your equity portfolio: Risk, Style, Fundamentals and more

Description

Full analysis of both long only and long short portfolios:

Risk Analysis: Portfolio risk analysis with an innovative risk model structure and unique flexibility of construction. Create your own bespoke risk model or use our pre-calculated models. Clear and concise reporting gives a view on where the portfolio is taking risk with full transparency and no black boxes.
See our customisable Hybrid Risk Models.

Aggregate Statistics: Fundamental analysis of the portfolio and benchmark, using analyst forecasts. Essential ratios such as P/E, P/B, Dividend Yield, Earnings Growth, ROE, and our Carbon composite score, among others, are included.

Style Analysis: Style Group portfolio exposures and Style Group performance figures.

Carbon Scores and **Comprehensive Crowding:** Stock-level carbon scores using our research with carbon emissions data. Stock-level crowding quintiles from our proprietary crowding score calculation.

Ownership: Get a view of the stock institutional ownership figures for your stock universe, split by institution type.

UBS Analyst Recommendations: Analyst recommendation and contact details for each stock.

Sector, Country: Country and multi-level sector weights.

Portfolio Analytics reports:	
summary	Tracking Error or Total Risk and summary analysis of the portfolio and benchmark.
risk_summary	Tracking Error or Total Risk of portfolio and benchmark, with factor vs stock-specific split.
risk_factors	Exposure and contribution to risk forecast from risk model factors, with Tracking Error and total risk.
countries	Portfolio and benchmark country positions.
sectors	Portfolio and benchmark sector positions. Four sector levels are available.
styles	Detailed view of style groups, with weighting and average beta.
aggregate_stats	Aggregated portfolio- and benchmark-level fundamental statistics and ratios.
fundamentals	Stock level fundamental statistics and ratios.
ownership	Institutional ownership by type.
recommendation	UBS analyst recommendations and contact details.
proprietary_data	Carbon scores, crowding quintiles at stock level. Portfolio- and benchmark-level summaries.
statistics_check	Stock-level positions, reference data and style flags.
liquidity_summary	Liquidity reporting available in various reports using Median Daily Value Traded over various time periods.
descriptions, logs, warnings, request_details	Descriptions, execution logs, notifications and parameters.
There are 29 reports available from Portfolio Analytics.	

Sector Fundamental Models

Tags	Format	Method	Publication	Investment Horizon
Alpha	csv, json, xlsx	UBS Quant Answers API or Excel	Daily and monthly	1 – 3 months
UBS Quant Answers API:	/api/proprietary_factors/sector_models/banks /api/proprietary_factors/sector_models/real_estate /api/proprietary_factors/sector_models/software /api/proprietary_factors/sector_models/hardware_semis /api/proprietary_factors/sector_models/energy			
Related Research:	Quant Insight: Sector Focus "What Works in the Banks Sector?" Quant Insight: Sector Focus "A Systematic Approach to Real Estate" Quant Insight: Sector Focus "Disentangling Tech: A Look at Software" Quant Insight: Sector Focus "Disentangling Tech: A Look at Hardware & Semis" Quant Insight: Sector Focus "Extracting Alpha: Global Oil & Gas" Nolan			

Sector-specific quant models in collaboration with our fundamental analysts

Description

The fundamental drivers of stocks can vary from sector to sector. We take an integrative approach in building sector-specific alpha models aimed at leveraging fundamental insights through a quantitative lens.

We partner with UBS sector analysts globally to determine how they think about a sector. What are the drivers of their sector? What factors are most important to investors? What macro factors influence their sector? What are potential tailwinds or headwinds that they encounter? We then develop a framework, custom built for each sector, that captures these fundamental insights in a systematic way.

Historical Data

Banks: monthly data from 2010, daily data from 2015
Real Estate, Software, Hardware, Energy: daily data from 2023. Further history may be available on request.

Methodology

Models for each sector are custom built based on the insights from UBS sector analysts. We identify factors that are important in evaluating the sector and incorporate their insights into when these factors are more or less important. Models are built with sensitivity to any potential macro or cyclical drivers.

For example, in Banks, we utilize various macro factors (depending on the region) to time a Value vs Quality rotation. Meanwhile, in Real Estate, we have utilized a multi-factor approach in identifying opportunities as we move through the Property Cycle. As each model is custom built, please refer to the related research links above for details on the bespoke methodology for a specific sector.

Data Shape

Varies by sector: includes floating point scores per security per date, factor names, basket membership, regime status.

Data example: Banks stock signals and factor scores

date	Sedol	region	current_status	basket	factor	factor_score
31/03/2023	1234567	Europe	quality	long	rotce	0.24676
31/03/2023	2345678	Europe	quality	short	rotce	-0.03177
31/03/2023	3456789	US	quality	long	rotce	0.21132
31/03/2023	4567890	Asia ex Japan	value	long	tby	0.23065
31/03/2023	B123456	AU	value	long	tby	0.22534

Style Guide

Tags	Format	Method	Publication	Investment Horizon
Factors	csv, json, xlsx	UBS Quant Answers API or Excel	Weekly or monthly	1 – 12 months
UBS Quant Answers API:	/api/style_guide/factor_performance /api/style_guide/factor_valuations /api/style_guide/index_valuations /api/style_guide/style_guide			
Related Research:	Quant Research "Style Guide"			

Factor performance and valuations across global markets

Description

Styles are at the core of any quantitative process. We provide a comprehensive overview of style factor returns and valuation. Style returns can be returned in USD or local currency, at a variety of frequencies, and on an absolute basis. Style basket valuations are available using a range of metrics. The "Style Guide" API returns a range of pre-calculated analytics for all our Value, Momentum, Quality, Growth, Size and Risk styles.

These style indices are also part of the Portfolio Analytics module in UBS Quant Answers.

Historical Data

Style factor returns data varies by market, generally starting from 1996-2000.

Methodology

Style factor returns are calculated size and region neutral for Momentum, Growth and Risk factors. Size factors are region neutral and Value factors are created region, size and sector neutral. Baskets are formed using cap weighted thirds, sampled monthly.

Data Shape

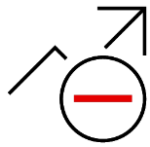
Single floating point score per security and date. Monthly or daily data per style, available in USD or local currency and in price or total returns.

In Portfolio Analytics portfolio and benchmark weights in a wide range of styles are reported.

Data example: style factor performance Book Value Yield in Australia

Rebalance Frequency	Currency	Return Type	Date	Cumulative Strategy Return; Neutral Weighted; Value		
				Long Short	Most Preferred Rel Bmk	Least Preferred Rel Bmk
BM	local	total	2022-01-29	104.829	102.380	97.551
BM	local	total	2022-02-26	108.264	103.209	95.145
BM	local	total	2022-03-31	112.600	106.309	94.192
BM	local	total	2022-04-30	109.703	104.305	94.839
BM	local	total	2022-05-31	109.931	105.311	95.557
BM	local	total	2022-06-30	108.154	103.886	95.809
BM	local	total	2022-07-30	104.008	102.348	98.630
BM	local	total	2022-08-31	105.160	102.459	97.830

Stock Loan Alpha



Tags	Format	Method	Publication	Investment Horizon
Alpha	csv, xlsx	sftp	Daily	1 week – 3 months
Related Research:	Quantitative Monographs "Alpha from Stock Loan Data"			

Short-Term Insights: Alpha from proprietary Short Interest and Implied Vol data

Description and Methodology

Our composite alpha score is based on internal research combining stock loan data and proprietary UBS implied volatility data. The composite factor is strong globally and robust within each geographic subregion. Highest and lowest ranked names in several regions and sectors can provide a fundamental approach to implementation.

The model turns over at 80% per week.

Quantitative Research Review

Tags	Format	Method	Publication	Investment Horizon
Alpha, Analyst Survey	csv, xlsx	sftp or email	Intraday or monthly	1 month
Related Research:	Q-Series "Collaborative Intelligence: How to combine human and machine..."			

Unique insight into our lead analysts' views

Description and Methodology

Proprietary UBS data based on scored analyst inputs. Our lead analysts answer seven questions on industry and regulatory conditions, and short-term future catalysts. They answer questions on every stock they cover, building a unique time series. The data is presented as a score per company per question.

The data is captured via (a) a monthly cross-sectional review, and (b) views that are updated when analysts publish company or sector research. Delivery is available as monthly or intraday files via sftp, or as live alerts via email on publication of new responses.

Historical Data

Global monthly data is available from May 2021.
Australian monthly data is available from 2007.
Intraday data is available from November 2022.

UBS Quant Research Data Quality

How do we ensure our data is reliable?

Quant team methods

In the Quant Research team, we write research on techniques, proprietary content and combining idiosyncratic insight. We provide data catering to a wide range of clients and investor types, from hedge funds to pension funds, quant and fundamental. Our content and techniques have been refined over 25 years of continuous development.

We implement our models in Python code and store them in our controlled Gitlab repository. All our models are subject to peer review both at the research stage and when implemented and changed in production.

Data checks

We apply controls to check processes have run, their frequency and their resulting data shape and size.

We apply data quality checks before and after calculation. If we have all the datasets to compute a result set, we proceed; if we are missing a dataset or part of it, the calculation will not start. Additionally, we have controls that execute on the result set produced and compare its shape and structure with the one produced on the previous period. The comparison helps us determine any unusual result set, from a structural point of view. Control and monitoring algorithms, consistent with the likelihood and experience of particular issues, are used to alert us about possible data quality issues that could potentially arise. If so, remediation action is taken as soon as possible.

Data sources

In order to deliver our proprietary data sets and analytics, we use multiple raw data sources from both internal and external providers. UBS data providers are subject to UBS' policies on vendor management and onboarding, which includes due diligence checks and terms.

We are in regular contact with our data suppliers. Platform automation includes buffer time to allow for normal delays.

Data delivery and scheduling

We use delivery methods most suited to the data set and client. These methods include:

- UBS Neo
- Email
- SFTP
- Quant Answers - Excel add-in
- Quant Answers - API

We deliver data at varying frequencies, appropriate to each data set. This is often at daily frequency (Monday to Friday), but may be intraday, weekly, monthly or quarterly.

Support

The Quant Research team has a global presence, providing cover for urgent queries around the clock.

Quant Answers platform support: ubs-quant-answers@ubs.com
Other technical queries: ol-res-quants-tech@ubs.com

Links

UBS Quant Answers web page:	www.ubs.com/quantanswers
UBS Quant Research:	https://neo.ubs.com/quantitative
UBS Research legal agreements:	https://neo.ubs.com/legal
UBS Business Continuity Planning:	https://www.ubs.com/global/en/investment-bank/regulatory-directory/bcp.html
UBS Privacy statement:	https://www.ubs.com/global/en/legal/privacy.html

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