

*Explanation of data fields available in the three data packages, Risk Outlook, Credit Risk and Bundled (Risk Outlook and Credit)

Risk Outlook = Categorical Early Warning of Risk

Credit Risk = Implied Rating, Probability of Default, Peer Probability of Default

Bundle Package = Risk Outlook + Credit Risk, (Probability of Default, Peer Probability of Default, Implied Rating)

Example of the Bundle Package Data Fields

date	bbg_ticker	bfai_ticker	proper_name	sector	iso_country	currency	pod	peer_group_pod	implied_rating	risk_outlook
2021-09-09	881 HK	881.HK	Zhongsheng Group Holdings Ltd.	Retail Trade	HK	HKD	0.00939	0.118976	BBB	Low
2021-09-09	1117 HK	1117.HK	China Modern Dairy Holdings Ltd.	Process Industries	HK	HKD	0.12073	0.104808	B	Medium
2021-09-09	992 HK	992.HK	Lenovo Group Limited	Electronic Technology	HK	HKD	0.0167	0.139621	BBB	Medium
2021-09-09	HPCL IN	HPCL.IN	Hindustan Petroleum Corporation Limited	Energy Minerals	IN	INR	0.07026	0.071304	B	Neutral
2021-09-09	MEDC IJ	MEDC.IJ	PT Medco Energi Internasional Tbk	Energy Minerals	ID	IDR	0.2083	0.092367	CCC	Neutral
2021-09-09	179 HK	179.HK	Johnson Electric Holdings Limited	Producer Manufacturing	HK	HKD	0.01648	0.123162	BB	Neutral
2021-09-09	600350 CH	600350.CH	Shandong Hi-speed Co. Ltd. Class A	Transportation	CN	CNY	0.03624	0.025579	BB	Low
2021-09-09	300498 CH	300498.CH	Wen's Foodstuff Group Co., Ltd. Class A	Process Industries	CN	CNY	0.01344	0.030814	BBB	Neutral
2021-09-09	23 HK	23.HK	Bank of East Asia Ltd.	Finance	HK	HKD	0.03843	0.056745	BB	Medium
2021-09-09	TMB TB	TMB.TB	TMB Bank Public Company Limited	Finance	TH	THB	0.11339	0.048881	B	Medium
2021-09-09	PTT TB	PTT.TB	PTT Public Co., Ltd.	Energy Minerals	TH	THB	0.03609	0.094699	AA	Medium
2021-09-09	144 HK	144.HK	China Merchants Port Holdings Co., Ltd.	Transportation	HK	HKD	0.02331	0.056337	BB	Neutral
2021-09-09	000831 CH	000831.CH	China Minmetals Rare Earth Co. Ltd. Class A	Non-Energy Minerals	CN	CNY	0.00033	0.028098	BB	Neutral
2021-09-09	PNB PM	PNB.PM	Philippine National Bank	Finance	PH	PHP	0.08217	0.034196	B	Medium

Detailed Explanation of Data Fields Risk Outlook Package

1. Risk Outlook

date	bbg_ticker	bfai_ticker	proper_name	sector	iso_country	currency	risk_outlook
2021-09-09	881 HK	881.HK	Zhongsheng Group Holdings Ltd.	Retail Trade	HK	HKD	Low
2021-09-09	1117 HK	1117.HK	China Modern Dairy Holdings Ltd.	Process Industries	HK	HKD	Medium
2021-09-09	992 HK	992.HK	Lenovo Group Limited	Electronic Technology	HK	HKD	Medium
2021-09-09	HPCL IN	HPCL.IN	Hindustan Petroleum Corporation Limited	Energy Minerals	IN	INR	Neutral
2021-09-09	MEDC IJ	MEDC.IJ	PT Medco Energi Internasional Tbk	Energy Minerals	ID	IDR	Neutral
2021-09-09	179 HK	179.HK	Johnson Electric Holdings Limited	Producer Manufacturing	HK	HKD	Neutral
2021-09-09	600350 CH	600350.CH	Shandong Hi-speed Co. Ltd. Class A	Transportation	CN	CNY	Low
2021-09-09	300498 CH	300498.CH	Wen's Foodstuff Group Co., Ltd. Class A	Process Industries	CN	CNY	Neutral
2021-09-09	23 HK	23.HK	Bank of East Asia Ltd.	Finance	HK	HKD	Medium
2021-09-09	TMB TB	TMB.TB	TMB Bank Public Company Limited	Finance	TH	THB	Medium
2021-09-09	PTT TB	PTT.TB	PTT Public Co., Ltd.	Energy Minerals	TH	THB	Medium
2021-09-09	144 HK	144.HK	China Merchants Port Holdings Co., Ltd.	Transportation	HK	HKD	Neutral
2021-09-09	000831 CH	000831.CH	China Minmetals Rare Earth Co. Ltd. Class A	Non-Energy Minerals	CN	CNY	Neutral

A forward-looking risk outlook: This is expressed categorically as High, Medium, Low and Neutral, it is a level of “unrecognised” risk, where the market has not yet curated and distilled this into equity prices or a risk process.

The unforeseen risk level present in a target company is numerically summarised as a forward-looking risk factor. The term “Unforeseen” is key and refers to the increased levels of intrinsic risk present in a company that has not yet been transacted into security prices, in either equity or credit markets, potentially both.

Most current processes and systems detect risks in a coincident manner once the risk has crystallised in asset price movement. Risk Outlook provides 3-6 months of early warning, enabling active investment managers & risk officers to reduce their holdings, take appropriate hedging measures or trigger a risk assessment. This is essential for Active Managers and Risk Officers covering large exposures as they are able to act on their coverage companies long before the stress is reflected in security prices and liquidity dries up.

The Risk Outlook decision-model is driven by both structured data (financial statements, analyst forecasts, asset sales, market prices etc.) and unstructured data (regulatory reporting, news coverage, annual report footnotes). The core innovation lies in systematic extraction of meaningful events that predicate increase in intrinsic risk and subsequent conditional combinatoric sense-making to transform the unforeseen risk into a categorical label that is easy to use in most investment and risk processes. The framework comprises four building blocks that represent a holistic human analyst decision making process prevalent in the industry:

1. Fundamentals (Changes in Intrinsic Risk in a company)
2. Risk Events (Public information not yet reflected in financial statements)
3. Behavioural (Shifts by the top buy-side allocators and sell-side analysts)
4. Markets (Actual transactions in securities reflecting the transmission of risk into asset prices)

Detailed Explanation of Data Fields Credit Risk Package

1. Probability of Default
2. Peer Probability of Default
3. Implied Rating

Credit Risk

date	bbg_ticker	bfai_ticker	proper_name	sector	iso_country	currency	pod	peer_group_pod	implied_rating
2021-09-09	881 HK	881.HK	Zhongsheng Group Holdings Ltd.	Retail Trade	HK	HKD	0.00939	0.118976	BBB
2021-09-09	1117 HK	1117.HK	China Modern Dairy Holdings Ltd.	Process Industries	HK	HKD	0.12073	0.104808	B
2021-09-09	992 HK	992.HK	Lenovo Group Limited	Electronic Technology	HK	HKD	0.0167	0.139621	BBB
2021-09-09	HPCL IN	HPCL.IN	Hindustan Petroleum Corporation Limited	Energy Minerals	IN	INR	0.07026	0.071304	B
2021-09-09	MEDC IJ	MEDC.IJ	PT Medco Energi Internasional Tbk	Energy Minerals	ID	IDR	0.2083	0.092367	CCC
2021-09-09	179 HK	179.HK	Johnson Electric Holdings Limited	Producer Manufacturing	HK	HKD	0.01648	0.123162	BB
2021-09-09	600350 CH	600350.CH	Shandong Hi-speed Co. Ltd. Class A	Transportation	CN	CNY	0.03624	0.025579	BB
2021-09-09	300498 CH	300498.CH	Wen's Foodstuff Group Co., Ltd. Class A	Process Industries	CN	CNY	0.01344	0.030814	BBB
2021-09-09	23 HK	23.HK	Bank of East Asia Ltd.	Finance	HK	HKD	0.03843	0.056745	BB
2021-09-09	TMB TB	TMB.TB	TMB Bank Public Company Limited	Finance	TH	THB	0.11339	0.048881	B
2021-09-09	PTT TB	PTT.TB	PTT Public Co., Ltd.	Energy Minerals	TH	THB	0.03609	0.094699	AA
2021-09-09	144 HK	144.HK	China Merchants Port Holdings Co., Ltd.	Transportation	HK	HKD	0.02331	0.056337	BB
2021-09-09	000831 CH	000831.CH	China Minmetals Rare Earth Co. Ltd. Class A	Non-Energy Minerals	CN	CNY	0.00033	0.028098	BB

1. Probability of default

Probability of default: this is built to reflect more of a distance to downgrade (in the case of banks distance to capital stress).

This is a percentage measure of the probability a firm will default over the next 12 months. The higher the percentage the worse the credit outlook for the firm is and vis-a-versa the lower the better the credit situation.

This probability of default measure has been built using structural models, however it has been trained looking at the real world of how you would assess thousands of different patterns of company stress. This is in contrast to most industry models which are built on very sparsely populated default pattern examples which are not a universal reflection of credit risk. This allows for the probability of default to operate in the real world of many different patterns of company stress. Instead of being constrained to just default it mirrors the patterns which would usually change the condition of a rating and can be seen a proxy for a distance to rating downgrade. The higher the percentage probability of default the more chance there is of a subsequent ratings downgrade.

Different companies in different sectors have to be treated in a different way, especially in the definition of assets and liabilities. The incumbent models are usually generic and fail to recognise these key differences in sectors. This data is built from sector specific models covering property, banks, insurance, non-financials etc.

An example is Financial institutions (Banks) which have been notoriously difficult to fit to this type of credit model given the complexity of their balance sheets. This has been redefined in line with recommendations from regulatory bodies such as the IMF. We use risk weighted assets (RWA) as a way of assessing the credit strength of banks which makes the probability of default a strong proxy for a distance to capital stress a more important measure than the credit rating. In relation to banks the higher the probability of default percentage the higher the capital stress they are facing. This is a unique innovation in the industry.

2. Peer probability of default

To isolate out if the probability of default for a certain company is idiosyncratic or not, we provide a sector, geography peer probability of default measure. This allows you to isolate out if this credit situation is individual to the company or a sector wide occurrence.

3. Implied Rating

An implied rating for each company: re-invented by BFAI, which we believe is more closely related to reality and is structurally in advance of the incumbent ratings industry

As part of the fundamentals view of a company we provide this specific credit view of a company. We will rate companies using the following ratings buckets; AA, A, BBB, BB, B and CCC.

Contrary to incumbent structural models in the market which dampen volatility and institute very tight bands around probability of default, we reflect the true state of the firm. We create much more accurate classification of the credit situation of an issuer and do not issue a large swathe of false positives unlike other providers.

Rating agencies often lag in incorporating recent market and fundamental developments to accurately update their views in time. This is especially pronounced in segments of issuers which are new to the market, trade with wide spreads or operate in emerging economies like China. We present a solution which aggregates issuance specific information to impute issuer's credit rating at times when observations are sparse. This enables you to anticipate future potential ratings changes and act in a more timely manner.

Improving relationship between the probability of default (PoD) and the reality of the companies rating: The automated Implied Credit Rating provides unrestricted, unbiased and uninterrupted assessment of credit risk. It is unrestricted by any commercial agreement as long as the underlying data is available. It is unbiased as it systemizes the stress patterns and exact preferences of a human analyst's decision-making process without bias. It is uninterrupted, as a rating change is generated as soon as new information is presented without the typical delay at the traditional rating agencies.

Creating a strong relationship to the reality of all live ratings for a large set of issuers rather than link to a restrictive library of observed defaults: Our Automated Implied Credit Rating provides the algorithmic alternative to a rating analyst at an agency. It models the decision making patterns identified by a human analyst albeit in a timely and scalable fashion with ingesting both probability of default and additional financial information.