

# REFINITIV MARKETPSYCH ANALYTICS

## USER GUIDE

MARKETPSYCH ANALYTICS VERSION 4.0

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## ABOUT THIS DOCUMENT

### INTENDED READERSHIP

This guide is primarily intended for individuals with responsibility to develop applications to consume Refinitiv MarketPsych Analytics (RMA) messages. The information contained within this document is also of use to anyone working with the associated archive files.

### IN THIS GUIDE

This document describes the format of RMA output images. It is applicable to both the live data and the archive files. All assets referenced in this guide are generated using RMA version 4.0.

### FEEDBACK

If you have any comments on this document, please contact the Thomson Reuters Machine Readable News team at [MachineReadableNewsProductManagement@refinitiv.com](mailto:MachineReadableNewsProductManagement@refinitiv.com).

## CHAPTER 1 INTRODUCTION

### OVERVIEW

Refinitiv MarketPsych Analytics (RMA) analyze news and social media in real-time. Powered by MarketPsych Data's natural language processing (NLP) engine, the scores are derived from millions of articles published daily in thousands of global media outlets. They are numerical insights designed to drive better decisions. The scores - herein referred to as indices, scores or metrics - are delivered as real-time data series that can easily be incorporated into your investment and analysis processes, quantitative or qualitative.

Three types of indicators are provided:

- Emotional indicators such as **Anger**, **Fear** and **Joy**
- Macroeconomic metrics including **Earnings Forecast**, **Interest Rate Forecast**, **Long vs. Short**
- ESG measures including **CarbonEmissionsControversy**, **ManagementTrust**, and **WorkplaceSafety**
- Buzz metrics on the asset level, i.e., **Buzz**, and on market-moving topics for that asset, such as **Litigation**, **Regulatory Crackdown**, **Mergers** and **Volatility**

The indicators are updated every minute for companies, sectors, regions, countries, commodities and energy topics, indices and currencies. They can be translated directly into spreadsheets or charts that can be monitored by traders, risk managers or analysts – or they can be plugged straight into your algorithms for low frequency or longer-term asset allocation or sector rotation decisions.

### ESG OVERVIEW

In version 4 MarketPsych's NLP engine was forked to produce unique media-based ESG data. The three broad types of ESG indicators provided are thematic:

- **Environmental (E)** indicators such as **Recycling**, **CarbonEmissionsImprovement**, and **ForestHealth**
- **Social (S)** metrics including **WorkplaceConditions**, **PublicHealthEfforts**, and **Misinformation**
- **Governance (G)** measures like **ManagementTrust**, **CivicEngagement**, and **SocialUnrest**

In addition to traditional ESG scores, Controversy and Buzz scores are also provided:

- **Controversy (C)** scores including **AirborneEmissionsControversy**, **IndustrialAccident**, and **TaxFraud**. All controversy scores are unipolar buzz metrics.
- An **ESG Buzz** score is provided. It is a proxy for media attention, and it is comprised of the number of ESG-relevant references to a given asset (company or country) in the media.

The scores are delivered in two packages, the Advanced and the Core. The **Advanced** dataset consists of hundreds of scores published minutely (60-seconds), hourly, and daily for each asset. The **Core** dataset consists of seventeen scores published daily for each asset.

The seventeen Core scores include ESG overall, Pillar and Category scores. The seventeen Core scores are published as a single daily percentile-rank score ranging from 1 to 100. the **ESG**, **ESG Combined**, and **ESG Controversies** scores are weighted aggregates of all underlying ESG scores for the company or country. The three **Pillar** scores summarize the asset's ranking on each of the three E, S, and G groupings. More granular, the ten **Category** scores are aggregated according to ten themes that themselves comprise the three E, S, and G pillars.

The scores can be ported directly into spreadsheets or charts to be monitored by researchers, risk managers, or investors – or they can be plugged straight into quantitative algorithms for asset allocation and timing decisions.

### CONTACT INFORMATION

#### For Production Customers

Production customers should direct their RMA questions or support issues via one of the following:

- Phone: Call +1 877-814-3571 and choose option 2.

- Electronic: Visit the “Contact Us” or “RAISE A CASE” link on [My Refinitiv](#). In filling out the form, type in “Refinitiv MarketPsych Analytics” as the product name.

## For Trial Customers

Trial customers are provided access to a dedicated support team to assist with technical questions during the trial integration phase. During the trial, all questions should be sent directly to the MRN Support team at [MRNSupport@refinitiv.com](mailto:MRNSupport@refinitiv.com).

## DOCUMENTATION AND NOTIFICATIONS

Client-facing documentation may be found on the RMA My Account page, located [here](#). Other information may be found on the MRN (Machine Readable News) SFTP site, as described in Chapter 16.

Clients are advised to subscribe to service alerts regarding the live and archive Refinitiv MarketPsych Analytics (RMA) services. To subscribe, go the Service Alert-Edit Subscriptions page, [here](#). Then check the box at Application -> Media Applications -> Refinitiv Machine Readable News -> Refinitiv MarketPsych Analytics. Then click the [Update](#) button at bottom right.

For updates on releases of new versions of RMA, clients should sign up for Product Client Notifications (PCNs). This will send advance email notifications on relevant releases and updates. To sign up for PCNs on RMA Scores, go to the PCN subscription page, [here](#). Search for Refinitiv MarketPsych Analytics and click on the box to the left. At the bottom of the page make sure that the box for “All Client impacts”, or at least “For Action” under that, is checked. Then click the [submit](#) ➔ link in the lower or upper right to confirm your selection.

## CHAPTER 2 WINDOW LENGTHS AND UPDATE FREQUENCIES

### OVERVIEW

RMA's are asset-level scores on a collection of content. There are two time-related metrics that determine RMA scores. The **window length** determines what range of content is scored in generating a set of RMAs. For live content, all content collected by MarketPsych within that time period will be incorporated into the corresponding window. The **update frequency** determines the time between consecutive RMA scores. (See Chapter 5 for more information on content types.)

### FILE NAMING CONVENTION

For files on the SFTP site, the convention for denoting the combination of window length and update frequency shall be

*W[Period Length]\_U[Period Length]*, where *W* denotes window length and *U* denotes update frequency.

Period lengths can be any of the following:

- 01M: 1 minute
- HOU: hourly (60 minutes)
- DAI: daily (1440 minutes)
- 365: yearly (365 days)

### AVAILABLE COMBINATIONS

Window Length	Update Frequency	SFTP File Abbreviation
1 minute	1 minute	W01M_U01M
1440 minutes / 24 hours	1 hour	WDAI_UHOU
1440 minutes / 24 hours	Daily, at 3:30 Eastern time	WDAI_UDAI
365 days	Daily, at 3:30 Eastern time	W365_UDAI

### HOU EXAMPLE

To illustrate with the WDAI\_UHOU data, one series of RMA scores occurs with data collected between December 22, 2016 15:00:00 UTC and December 23, 2016 15:00:00 UTC, a 1440-minute / 24-hour **window length**. The next set of scores would occur with data collected between December 22, 2016 16:00:00 UTC and December 23, 2016 16:00:00 UTC, because of the 60-minute **update frequency**.

### ESG CORE DATA EXAMPLE

The Core ESG data set is the only one utilizing the W365\_UDAI format. For example, one series of RMA scores occurs with data collected between December 22, 2019 20:30:01 UTC and December 22, 2020 20:30:00 UTC, a 365-day (365) **window (W) length**, hence W365. The next set of scores would occur with data collected between December 23, 2019 20:30:01 UTC and December 23, 2019 20:30:00 UTC, because of the daily (DAI) **update (U) frequency**.

### DAILY UPDATE FREQUENCY ANOMALY

Daily update frequency refers to RMA windows that end at 3:30pm Eastern time. Because this time zone is subject to daylight savings time adjustments, there is a biannual anomaly around the 24-hour / 1440-minute window length. When a daylight savings hour is added or subtracted in the previous 24 hours, the time since the last update can be 25 or 23 hours, respectively. As a result, the window length also changes to 25 or 23 hours.



## CHAPTER 3 GENERAL COMMENTS ABOUT SCORE VALUES

### ”NA” SCORE VALUES

As mentioned in Chapter 2, all RMAs are based on relevant text collected over a window of content.

If over that window there is no relevant text identified for a particular score, then the correct score value is “NA”, not zero, and the score will appear blank. For example, this could happen for the governmentTrust score on Australia (AU) if there were no discussions of trust or mistrust in the Australian government found in media over the content collected in that window.

NA differs in meaning from true zero in that true zero represents the presence of text corresponding to positive and negative values that add up to zero. In other words, a zero value reflects that relevant text was found and its sentiment implications net to zero. In contrast, NA represents the absence of any relevant text and of any resultant measurement.

Note that when the Buzz is zero, this means that no values were detected for any of the scores and thus all score values necessarily will be NA. See Chapter 5 for more information on Buzz.

To facilitate analysis, Daily (DAI) data files are “filled” with 0 Buzz on days when there was no buzz. Hourly (HOU) and minutely (01M) are not filled, and records without buzz are omitted.

### NEGATIVE VALUES IN UNIPOLAR SCORES

The scores are marked as ranging from either -1 to 1 or 0 to 1, corresponding to bipolar and unipolar scores, respectively. In practice, those denoted as “unipolar” can in fact range below 0, although not below -1. This occurs because unipolar scores reflect the orthogonal nature of many single emotions and topics. A negative comment such as, “I don’t enjoy owning this stock” is not emotively equivalent to, “I am pessimistic about the stock’s prospects” or “I am angry with the company’s management.” The initial statement is specifically one of negative Joy, which decreases the overall Joy score for assets related to that company. When there are many such negative Joy comments for an asset, the Joy score itself may show negative values.

Nonetheless, in practice unipolar scores are positive over 90% of the time, because language typically reflects positive assertions.

Thus, in the sections below we will mark this range as “0 to 1\*\*”.

## ESG SCORE VALUE CONSIDERATIONS

### ESG Core Values Have Positive Tonality

Higher values on the Core RMA are designed to have a subjectively positive meaning. The Core scores range from 1 to 100, wherein 1 is subjectively bad and 100 is subjectively good. A 100 score is given to the most positive asset in the selected time period and grouping. For example, when the Overall, Pillar, and Category scores are high (closer to 100), they are reflecting net positive commentary from the news and social media sources on those topics within the category.

### ESG Advanced Values Have Positive Tonality

**Advanced scores** range from -1 to 1. A high score on a given score is intended to have a subjectively positive meaning, while a negative score indicates there are more subjectively negative comments in the media regarding that theme. Most of the Advanced RMA scores are bipolar, ranging from -1 to 1. On average, media coverage is more typically negative, attuned to identifying problems and emerging dangers, so as a result, most RMA scores have negative median and average values. Higher values are more subjectively positive (in contrast to the Controversy scores, as described below).

## ESG Controversy Values Have Negative Tonality

All ESG Controversy scores are unipolar and measure only the prevalence of subjectively negative themes, events, and commentary. These scores range from 0 to 1 and have the opposite subjective meaning (**high scores are subjectively negative**) versus non-controversy scores. For example, the non-controversy governmentTrust score consists of trusting references to the government and its institutions net of negative references. If there are more mistrustful references to the government than trusting references, the score will be a negative value. However, if the controversy score UnsustainableActivities has a positive value, then the higher value is subjectively negative.

## CHAPTER 4 UNDERLYING CONTENT SOURCES

### OVERVIEW

RMAs are evaluated on three different content sets: news, social media, and the combined content. Press releases are excluded from news. History on all content dates to the beginning of 1998 for all assets except cryptocurrencies. Cryptocurrency history extends back to 2009.

### LANGUAGES COVERED

Exclusively English-language text is used until February 2020, at which time Arabic, Chinese, Japanese, and Portuguese-language news sources were included in MarketPsych's real-time translation and analysis engine. In January 2021 Dutch, French, German, Indonesian, Italian, Korean, Russian, and Spanish language sources were added.

### NEWS

Reuters news is present in the entire historical news dataset, as are a host of mainstream news sources collected by MarketPsych Data. During 2005, the archive began including Internet news content collected by LexisNexis. The LexisNexis content is restricted to those from top international ESG and business news sources, top regional news sources, and leading industry and ESG sources. In 2017 MarketPsych Data added additional cryptocurrency specific sources to the cryptocurrencies asset class feed. The ESG news content set includes an additional 2,000 ESG-focused news providers.

### SOCIAL MEDIA

The social media collection process is more diverse. It begins in 1998 with Internet forum and message board content. Starting in late 2008, LexisNexis social media content was added. Starting in late 2009, tweets were included. Using popularity ranks measured by incoming links, this includes generally the top 20% of blogs, microblogs, and other financial and ESG social media content. MarketPsych Data also included content from hundreds of less-popular asset-specific blogs and forums.

Note that the entire LexisNexis social media content set for top source ranks is included in the country (COU) social media dataset, while other assets contain specifically selected social media content sources. The ESG sources include an additional 1,000 sources hand-selected from watchdog groups, environmental NGOs, and social monitors.

## CHAPTER 5 FIELDS GENERIC TO ALL ASSET CLASSES

### ID

The id field identifies the data row. It is composed according to the following:

```
{feedFamilyCode}:{windowTimestamp in yyyy-mm-dd_hh.mm.ss}.{data Type}.{assetClass}
```

### Feed Family Code

The feedFamilyCode field describes the “feed” that delivers the raw content being scored by the RMA system. For RMA it is “mp”, because MarketPsych Data centrally collects and filters the content scored by RMA.

### Other Components

See Incoming Sources section below on the dataType field and the Asset Code section for a list of assetClass values.

### ASSET CODE

The assetCode field represents the code used to denote the asset scored, where the asset code type varies by Asset Class.

Asset Class	Asset Class Abbreviation	Type of Asset Code Identifier
Individual companies	CMPNY CMPNY_AMER CMPNY_APAC CMPNY_EMEA	Organizational PermId
Individual companies - ESG Advanced	CMPNY_ESG_ADV	
Individual companies - ESG Core	CMPNY_ESG_COR	
Company groups	CMPNY_GRP	MarketPsych-originated code
Currencies	CUR	Three-character ISO-4217 code
Agricultural commodities	COM_AGR	Topic code
Energy & material commodities	COM_ENM	
Countries	COU	Topic code, referring to the home country. Also corresponds to ISO 3166-1 code.
Country markets	COU_MKT	
Individual countries - ESG Advanced	COU_ESG_ADV	
Individual countries - ESG Core	COU_ESG_COR	
Cryptocurrencies	CRYPTO	The coinmarketcap.com ticker identifier

### WINDOW TIMESTAMP

As mentioned in Chapter 2, RMAs are based on content aggregated over a trailing window. The windowTimestamp field represents the endpoint of that period.

It is expressed in ISO-8601 format: “yyyymmddThh:mm:ss.000Z”, where “000” represents the milliseconds and “Z” represents the time zone. The time zone is GMT/UTC.

### INCOMING SOURCES

The dataType field represents the type of content source(s) on which these RMAs are based.

There are three possible values:

- “News” for news
- “Social” for social media
- “News\_Social” for the combined content
- “News\_Headline” for news headlines

See Chapter 4 for more information on these sources.

## SYSTEM VERSION

The systemVersion field represents an overall build for the MarketPsych Analytics. Different versions may lead to different scores as enhancements are made and bugs are fixed. It is thus used for version control.

It consists of a three-level version string preceded by an “MP” prefix denoting the MarketPsych scoring engine, e.g., “MP:4.0.09”.

The third digit of the System Version increases by one, for all asset classes, in conjunction with monthly updates to the companies coverage list.

## MENTIONS

Mentions value is a simple rolling count of the number of references detected to an entity in the media. The value is an integer. The Mentions count is present for the Companies, Currencies, and Commodities assets only.

## BUZZ

The buzz fields represent a sum of entity-specific ESG-related words and phrases used in score computations. It can be non-integer when any of the words/phrases are described with a “minimizer”, which reduces the intensity of the primary word or phrase. For example, in the phrase “less concerned” the score of the word “concerned” is minimized by “less”. Additionally, common words such as “new” may have a minor but significant contribution to the Innovation score. As a result, the scores of common words/phrases with minor score contributions can be minimized.

## REFINITIV ESG DATA FRAMEWORK

The RM-ESG scores were designed to parallel, when possible, the Refinitiv ESG data framework. The Refinitiv ESG product is an independent ESG dataset that captures and calculates over 450 company-level ESG measures. The underlying measures are based on considerations around comparability, impact, data availability and industry relevance that varies across each industry group.

As in the RM-ESG, these Refinitiv ESG measures are grouped into 10 categories that reformulate the three pillar scores and the final ESG score, which reflects the company’s ESG performance, commitment and effectiveness based on publicly reported information. The category scores are rolled up into three pillar scores – environmental, social and corporate governance. The pillar weights are normalized to percentages ranging between 0 and 100. A more detailed description is available in the user guide here: <https://www.refinitiv.com/en/sustainable-finance/esg-scores#methodology>.

The RM-ESG Core data was designed to be directly comparable to the core scores in the Refinitiv ESG data. The RM-ESG Core scores utilize the same industry-based weightings and percentile ranking operations as the Refinitiv ESG product. A key difference, and value-add, between the two products is the primary perspective taken by the ESG reporting: external media (RM-ESG) versus internal corporate documents (Refinitiv ESG).

## CHAPTER 6 COMPANIES AND COMPANY GROUPS

### COMPANIES ASSETS

RMA Companies data covers more than 20,000 active companies from over 120 countries, across the feeds and archives. In general, these companies were selected for inclusion based on domicile, listed market capitalization, and/or economic/industry significance. Coverage includes all companies that are or were constituents of a company groups asset. Coverage is updated monthly.

A list of the covered companies and monthly changes in coverage is available on the MRN SFTP site. See Chapter 16 for information on the files and how to access them.

### Constitution of AMER, APAC, and EMEA Regional Groups

The CMPNY asset class consists of companies domiciled in the following countries. Clients who subscribe to a regional asset class receive companies domiciled in the respective region.

#### CMPNY\_AMER

Companies included in the Americas (CMPNY\_AMER) sub-grouping include those domiciled in the following countries.

Asset Code	Country
AR	Argentina
BB	Barbados
BR	Brazil
CA	Canada
CL	Chile
CO	Colombia
CW	Curacao
EC	Ecuador
JM	Jamaica
KY	Cayman Islands
MX	Mexico
PA	Panama
PE	Peru
PR	Puerto Rico
PY	Paraguay
US	United States
VE	Venezuela
VG	Virgin Islands (British)

## CMPNY\_APAC

Companies included in the Asia and Pacific (CMPNY\_APAC) sub-grouping include those domiciled in the following countries.

Asset Code	Country
AU	Australia
AZ	Azerbaijan
BD	Bangladesh
CN	China
FJ	Fiji
GE	Georgia
HK	Hong Kong
ID	Indonesia
IN	India
JP	Japan
KG	Kyrgyzstan
KR	South Korea
KZ	Kazakhstan
LK	Sri Lanka
MH	Marshall Islands
MN	Mongolia
MO	Macau
MY	Malaysia
NZ	New Zealand
PG	Papua New Guinea
PH	Philippines
PK	Pakistan
SG	Singapore
TH	Thailand
TW	Taiwan
VN	Vietnam

## CMPNY\_EMEA

Companies included in the Europe, Middle East, and Africa (CMPNY\_EMEA) sub-grouping include those domiciled in the following countries.

Asset Code	Country
AE	United Arab Emirates
AT	Austria
BE	Belgium
BH	Bahrain

BM	Bermuda
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EG	Egypt
ES	Spain
FI	Finland
FR	France
GB	United Kingdom
GG	Guernsey
GI	Gibraltar
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IL	Israel
IM	Isle of Man
IQ	Iraq
IS	Iceland
IT	Italy
JE	Jersey
KE	Kenya
KW	Kuwait
LB	Lebanon
LU	Luxembourg
MA	Morocco
MC	Monaco
MT	Malta
NG	Nigeria
NL	Netherlands
NO	Norway
OM	Oman
PL	Poland
PT	Portugal
QA	Qatar
RO	Romania
RU	Russia
SA	Saudi Arabia
SE	Sweden
SK	Slovakia
TG	Togo
TR	Turkey
TZ	Tanzania
UA	Ukraine
ZA	South Africa
ZM	Zambia



## COMPANY GROUPS ASSETS

RMA Company Groups data covers 128 assets corresponding to groups of companies assembled according to domicile, market capitalization, and/or business classification. Another 39 correspond to general industry group references in the media.

Many of these correspond to grouping in the hierarchical Thomson Reuters Business Classification (TRBC) system. In descending order of hierarchy, the four levels are economic sector, business sector, industry group and industry. For more information on TRBC, please see <https://my.refinitiv.com/content/mytr/en/product/thomson-reuters-business-classification.html/>. All TRBC codes below are extant in the TRBC 2020 system.

The 128 assets are characterized by their constituents. 28 are composed of US-based companies, while 29 are for non-US companies and another 71 are global. 29 resemble equity indexes and are filtered chiefly by market cap ranks, while the other 71 are composed according to a combination of TRBC code, domicile, and market cap above \$100 million USD.

Note that because these groups are calculated with approximate point-in-time composition, all the asset codes used here were invented for this application. They are not RICs.

### US-based Company Groups (28)

#### Index-oriented Assets (5)

All internal rankings are by market capitalization.

Asset Code	Description	Resembling Index
MPTRXUS30	Top 30 US-based companies	Dow Jones Industrial Average
MPTRXUS500	Top 500 US-based companies	S&P 500
MPTRXUS1000	Top 1000 US-based companies	S&P 1000
MPTRXUSMID2000	Ranks 2001-3000 of US-based companies	Russell 2000
MPTRXUSNAS100	Top 100 Nasdaq-based companies	Nasdaq 100

#### TRBC Economic Sector-based Assets (10)

Asset Code	TRBC Description	TRBC Code
MPTRXUSENE	Energy	50
MPTRXUSMAT	Basic Materials	51
MPTRXUSIND	Industrials	52
MPTRXUSYCY	Cyclical Consumer Goods & Services	53
MPTRXUSNCY	Non-Cyclical Consumer Goods & Services	54
MPTRXUSFIN	Financials	55
MPTRXUSHLC	Healthcare	56
MPTRXUSTEC	Technology	57
MPTRXUTL	Utilities	59
MPTRXREL	Real Estate	60

**TRBC Business Sector-based Assets (5)**

Asset Code	TRBC Description	TRBC Code
MPTRXUSI4	Transportation	5240
MPTRXUSY3	Cyclical Consumer Services	5330
MPTRXUSY4	Retailers	5340
MPTRXUSN1	Food & Beverages	5410
MPTRXUSF4	Real Estate	5540

**TRBC Industry Group-based Assets (3)**

Asset Code	TRBC Description	TRBC Code
MPTRXUSOILS	Oil & Gas Related Equipment and Services	501030
MPTRXUSAERO	Aerospace & Defense	521010
MPTRXUSREIT	Residential & Commercial REITs	601020

**TRBC Industry-based Assets (5)**

Asset Code	TRBC Description	TRBC Code
MPTRXUSOILE	Oil & Gas Exploration and Production	50102020
MPTRXUSWAST	Environmental Services	52203010
MPTRXUSAIRL	Airlines	52406010
MPTRXUSHBLD	Homebuilding & Construction Supplies	53203010
MPTRXUSBANK	Banks	55101010

**Non-US- based Company Groups (100)****Index-oriented Assets (29)**

All internal rankings are by market capitalization.

Asset Code	Description	Resembling Index
MPTRXAU500	Top 500 Australia-based companies	ASX All Ordinaries
MPTRXBR50	Top 50 Brazil-based companies	IBRX 50
MPTRXCA250	Top 250 Canada-based & Toronto-listed companies	S&P/TSX Composite
MPTRXCL40	Top 40 Chile-based companies	IPSA 40
MPTRXCN300	Top 300 China-based companies	CSI 300
MPTRXEM50	Top 50 Emerging markets-based companies	MSCI 50
MPTRXEU50	Top 50 pan-European companies	EURO STOXX 50
MPTRXFR40	Top 40 France-based companies	CAC 40
MPTRXDE30	Top 30 Germany-based companies	Deutsche Börse DAX 30
MPTRX4000	Top 4000 Global companies	Thomson Reuters 4000
MPTRXHK50	Top 200 Hong Kong-listed companies based in Hong Kong and China	Hang Seng
MPTRXIN50	Top 50 India-based companies	Nifty 50
MPTRXIN500	Top 500 India-based companies	S&P BSE 500
MPTRXJP2000	Top 2000 Japan-based companies	Japan 2000
MPTRXJP225	Top 225 Japan-based companies	Nikkei 225
MPTRXKR100	Top 100 South Korea-based companies	KOSPI Composite Index

MPTRXKR30	Top 30 South Korea-based companies	KOSPI 30
MPTRXMY30	Top 30 Malaysia-based companies	FTSE Bursa Malaysia KLCI
MPTRXNL50	Top 50 Netherlands-based companies	AEX index
MPTRXWIG30	Top 30 Poland-based companies	WIG30
MPTRXRU50	Top 50 Russia-based companies	RTS
MPTRXSG30	Top 30 Singapore-based companies	FTSE Straits Times
MPTRXZA100	Top 100 South Africa-based companies	JSE FTSE 100
MPTRXES35	Top 35 Spain-based companies	IBEX 35
MPTRXCH20	Top 20 Switzerland-based companies	Swiss Market
MPTRXTW100	Top 100 Taiwan-based companies	TAIEX
MPTRXTH50	Top 50 Thailand-based companies	SET100 Index
MPTRXGBMID250	Ranks 101 – 350 UK-based companies	FTSE Mid 250
MPTRXGB100	Top 100 UK-based companies	FTSE 100

## Global Company Groups (71)

### TRBC Economic Sector-based Assets (60)

Covering Global, Australia, China, Eurozone, Japan, United Kingdom regions

Asset Code	TRBC Description	TRBC Code
MPTRXENE	Energy	50
MPTRXMAT	Basic Materials	51
MPTRXIND	Industrials	52
MPTRXYCY	Cyclical Consumer Goods & Services	53
MPTRXNCY	Non-Cyclical Consumer Goods & Services	54
MPTRXFIN	Financials	55
MPTRXHLC	Healthcare	56
MPTRXTEC	Technology	57
MPTRXUTL	Utilities	59
MPTRXREL	Real Estate	60

### TRBC Industry Group-based Assets (3)

Asset Code	TRBC Description	TRBC Code
MPTRXCOAL	Coal	501010
MPTRXBIOT	Biotechnology & Medical Research	562020
MPTRXT11	Semiconductors & Semiconductor Equipment	571010

### TRBC Industry-based Assets (3)

Asset Code	TRBC Description	TRBC Code
MPTRXGOLD	Gold mining and processing	51201060
MPTRXPREC	Non-Gold Precious Metals & Minerals	51201010
MPTRXGAMI	Casinos & Gaming	53301030

### TRBC Hybrid-driven Assets (5)

Asset Code	TRBC Description	TRBC Code
MPTRXPKB	Construction Materials	512020

	Construction & Engineering	522010
	Homebuilding & Construction Supplies	532030
MPTRXPEJ	Leisure Products	532050
	Hotels & Entertainment Services	533010
MPTRXWIND	Wind Systems & Equipment	5020101011
		5910101023
MPTRXSOLR	Solar Electric Utilities	5910101022
		5020101013
		5020101014
MPTRXE14	Renewable Energy	5020
	Renewable Utilities	5910101011
	Renewable IPPs	5910102012

### Industry Groups and ETFs (39)

References to ETFs, industries, sectors, and market scores associated with a focused business activity were aggregated into 39 scores, new for version 4.

ETF3D	3D-Printing Industry
ETFAI	Artificial Intelligence (AI) Industry
ETFAIRL	Airlines Industry
ETFARMY	Defense & Aerospace Industry
ETFAUTO	Automobile Industry
ETFBANK	Bank Industry
ETFBIOT	Biotechnology Industry
ETFBUILD	Construction Industry
ETFCOMS	Telecom Industry
ETFEMM	Emerging Markets
ETFENE	Energy Sector
ETFFIN	Financials Sector
ETFFINTECH	Fintech Industry
ETFFOOD	Food and Beverage Industry
ETFGOLD	Gold Mining Industry
ETFGREEN	Renewable Energy Industry
ETFHLC	Healthcare Sector
ETFIND	Industrials Sector
ETFINFRA	Infrastructure Industry
ETFMAT	Materials Sector
ETFMINE	Precious (Gold and Silver) Metals Mining Industry
ETFMOVE	Transportation Industry
ETFNANO	Nanotechnology Industry
ETFNCY	Non-Cyclicals Sector

ETFOILGAS	Oil & Gas Industry
ETFRES	Real Estate Sector
ETFRETAIL	Retail Industry
ETFROBO	Robotics Industry
ETFSI	Semiconductor Industry
ETFTEC	Technology Sector
ETFTRIP	Tourism Industry
ETFUS2000	Russell 2000 & Related ETF References
ETFUS30	DJIA & Related ETF References
ETFUS500	S&P 500 & Related ETF References
ETFUSNAS	NASDAQ Composite & Related ETF References
ETFUTL	Utilities Sector
ETFWORLD	Global Stock Markets
ETFWWW	Internet Industry
ETFYCY	Consumer Cyclical Sector

## Constitution of AMER, APAC, and EMEA Regional Groups

The CMPNY asset class consists of companies domiciled in the following countries. Clients who subscribe to a regional asset class receive companies domiciled in the respective region.

### CMPNY\_AMER

Companies included in the Americas (CMPNY\_AMER) sub-grouping include those domiciled in the following countries.

Asset Code	Country
AR	Argentina
BB	Barbados
BR	Brazil
CA	Canada
CL	Chile
CO	Colombia
CW	Curacao
EC	Ecuador
JM	Jamaica
KY	Cayman Islands
MX	Mexico
PA	Panama
PE	Peru
PR	Puerto Rico
PY	Paraguay
US	United States
VE	Venezuela
VG	Virgin Islands (British)

**CMPNY\_APAC**

Companies included in the Asia and Pacific (CMPNY\_APAC) sub-grouping includes those domiciled in the following countries.

<b>Asset Code</b>	<b>Country</b>
AU	Australia
AZ	Azerbaijan
BD	Bangladesh
CN	China
FJ	Fiji
GE	Georgia
HK	Hong Kong
ID	Indonesia
IN	India
JP	Japan
KG	Kyrgyzstan
KR	South Korea
KZ	Kazakhstan
LK	Sri Lanka
MH	Marshall Islands
MN	Mongolia
MO	Macau
MY	Malaysia
NZ	New Zealand
PG	Papua New Guinea
PH	Philippines
PK	Pakistan
SG	Singapore
TH	Thailand
TW	Taiwan
VN	Vietnam

**CMPNY\_EMEA**

Companies included in the Europe, Middle East, and Africa (CMPNY\_EMEA) sub-grouping includes those domiciled in the following countries.

<b>Asset Code</b>	<b>Country</b>
AE	United Arab Emirates
AT	Austria
BE	Belgium
BH	Bahrain
BM	Bermuda
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany

DK	Denmark
EG	Egypt
ES	Spain
FI	Finland
FR	France
GB	United Kingdom
GG	Guernsey
GI	Gibraltar
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IL	Israel
IM	Isle of Man
IQ	Iraq
IS	Iceland
IT	Italy
JE	Jersey
KE	Kenya
KW	Kuwait
LB	Lebanon
LU	Luxembourg
MA	Morocco
MC	Monaco
MT	Malta
NG	Nigeria
NL	Netherlands
NO	Norway
OM	Oman
PL	Poland
PT	Portugal
QA	Qatar
RO	Romania
RU	Russia
SA	Saudi Arabia
SE	Sweden
SK	Slovakia
TG	Togo
TR	Turkey
TZ	Tanzania
UA	Ukraine
ZA	South Africa
ZM	Zambia

## Constitution of Company Groups Assets in the RMA Archives and Feed

The constituent companies of these assets change over time. In the archives, the TRBC-based constituent lists are refreshed monthly starting on January 1, 1998.

In the live data, the systemVersion value will increase with each monthly update.

## COMPANIES AND COMPANY GROUP RMA SCORES

The 54 RMA scores for the companies and company groups carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	connoting optimism, future-tense positive	0 to 1*
pessimism	connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*
loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*
disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
violence	violent crime, terrorism, and war	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	immediate and short-term timeframes versus long term	-1 to 1
longShort	buying, net of references to shorting or selling	-1 to 1
longShortForecast	forecasts of buying, net of forecasts of shorting or selling	-1 to 1
priceDirection	price increases, net of price decreases	-1 to 1
priceDown	price decreases	0 to 1*
priceForecast	forecasts of asset price rises, net of references to forecasts of asset price drops	-1 to 1
priceUp	price increases	0 to 1*
marketRisk	positive emotionality and positive expectations net of negative emotionality and negative expectations. Includes factors from social media found characteristic of speculative bubbles – higher values indicate greater bubble risk. Also known as the “Bubbleometer.”	-1 to 1



topVsBottom	asset price topping, expensive valuations, and excessive speculation versus bottoming and relatively inexpensive prices	-1 to 1
overvaluedVsUndervalued	expensively versus cheaply-valued asset prices	-1 to 1
volatility	volatility in market prices or business conditions	0 to 1*
analystRating	upgrade activity, net of references to downgrade activity	-1 to 1
debtDefault	debt defaults and bankruptcies	0 to 1*
dividends	dividends rising, net of references to dividends falling	-1 to 1
innovation	innovativeness	0 to 1*
earningsDirection	rising earnings, less those of declining earnings	-1 to 1
earningsForecast	expectations about improving earnings, less those of worsening earnings	-1 to 1
accountingSentiment	positivity about accounting fundamentals, net of references to negativity about accounting fundamentals	-1 to 1
accountingNegative	negativity about accounting fundamentals	0 to 1*
accountingPositive	positivity about accounting fundamentals	0 to 1*
accountingRestatement	accounting restatements	0 to 1*
revenueDirection	rising revenue, less those of declining revenue	-1 to 1
revenueForecast	expectations about improving revenue, less those of worsening revenue	-1 to 1
intangiblesSentiment	positivity about accounting intangibles, net of negativity	-1 to 1
productQuality	positivity about product quality, net of negativity	-1 to 1
laborDispute	labor unrest and work stoppages	0 to 1*
layoffs	staff reductions and layoffs	0 to 1*
litigation	litigation and legal activity	0 to 1*
insiderLongShort	insider buying versus selling	-1 to 1
managementSentiment	positive traits of a company's management team, net of negative	-1 to 1
managementChange	changes in a company's management team, net of references to stability in the management team	-1 to 1
managementTrust	trust expressed in a company's management team, net of references to reports of unethical behavior amongst the management team	-1 to 1
partnership	partnership or collaboration activity	0 to 1*
mergers	merger or acquisition activity	0 to 1*
cyberCrime	cyberattacks and data breaches	0 to 1*
futureVsPast	references to future events, net of references to past	-1 to 1

## CHAPTER 7 COMPANIES ESG

### COMPANY ESG OVERVIEW

There are 36 Advanced scores and 44 Controversies scores for the Companies **ESG asset class**. These scores are constructed in a similar fashion to the RMA. In the ESG product they are called Advanced scores.

The Advanced scores are themselves aggregated and weighted into 10 Category scores, 3 Pillar scores, and 1 overall score – the “Core” ESG scores. The weighting schema is available in the product white paper.

The Core scores are available solely as a daily data feed. The Core scores are integers derived from percentile rankings, ranging from 1 to 100. Scores of 100 represent the most subjectively positive rank, while scores of 1 represent the most negative rank.

### Hierarchy of Scores from Advanced to Core

The relationship between the Core Pillars and Categories and the Advanced RMA scores is depicted below. The taxonomy of the scores is hierarchical with the Advanced scores aggregated into the Category scores, the Pillar scores, and the Overall ESG scores. The Pillars are denoted by E, S, and G. The company categories are Emissions, Environmental, Resource Use, Community, Human Rights, Product, Workforce, CSR Strategy, Management, and Shareholders. The Controversy column flags a controversy RMA with a “Y.”

pillar	category	name	controversy
E	Emissions	airborneEmissionsControversy	Y
E	Emissions	airborneEmissionsImprovement	N
E	Emissions	carbonEmissionsControversy	Y
E	Emissions	carbonEmissionsImprovement	N
E	Emissions	climatePolicy	N
E	Emissions	environmentalInvestment	N
E	Emissions	industrialAccident	Y
E	Emissions	pollutionControversy	Y
E	Emissions	pollutionImprovement	N
E	Emissions	recycling	N
E	Emissions	renewableEnergy	N
E	Emissions	renewableEnergyPolicy	N
E	EnvironmentalInnovation	sustainabilityControversy	Y
E	EnvironmentalInnovation	sustainabilityImprovement	N
E	EnvironmentalInnovation	sustainableInnovation	N
E	EnvironmentalInnovation	sustainablePackaging	N
E	ResourceUse	energyEfficiencyEfforts	N
E	ResourceUse	environmentalControversy	Y
E	ResourceUse	supplyChainSustainability	N
S	Community	accessAffordability	N
S	Community	anger	Y
S	Community	antiCompetitiveActs	Y
S	Community	charity	N
S	Community	classActionLawsuit	Y

S	Community	corruptionControversy	Y
S	Community	crimeControversy	Y
S	Community	ethicsControversy	Y
S	Community	iPControversy	Y
S	Community	legalPenalty	Y
S	Community	litigation	Y
S	Community	lobbying	Y
S	Community	publicHealthControversy	Y
S	Community	publicHealthSupport	N
S	Community	regulatoryIssues	Y
S	Community	trust	N
S	HumanRights	childLabor	Y
S	HumanRights	criticalCountriesControversy	Y
S	HumanRights	humanRightsControversy	Y
S	HumanRights	humanRightsEfforts	N
S	HumanRights	laborExploitation	Y
S	Product	advertisementDeceptive	Y
S	Product	customerSatisfaction	N
S	Product	innovation	N
S	Product	privacyControversy	Y
S	Product	privacyEfforts	N
S	Product	productControversy	Y
S	Product	productSentiment	N
S	Product	RNDControversy	Y
S	Workforce	benefits	N
S	Workforce	benefitsControversy	Y
S	Workforce	diversityControversy	Y
S	Workforce	diversityEfforts	N
S	Workforce	laborDispute	Y
S	Workforce	layoffs	Y
S	Workforce	wageControversy	Y
S	Workforce	wageFairness	N
S	Workforce	workLifeBalance	N
S	Workforce	workplaceDevelopment	N
S	Workforce	workplaceSafetyControversy	Y
S	Workforce	workplaceSafetyEfforts	N
S	Workforce	workplaceSentiment	N
G	CSRStrategy	cSRActivities	N
G	Management	managementControversy	Y
G	Management	managementDiversity	N
G	Management	managementSentiment	N
G	Management	managementTrust	N

G	Management	qualityMgmtSystems	N
G	Shareholders	accountingControversy	Y
G	Shareholders	accountingRestatement	Y
G	Shareholders	accountingSentiment	N
G	Shareholders	activistInvestorActivity	Y
G	Shareholders	antiTakeoverDevices	N
G	Shareholders	creditControversy	Y
G	Shareholders	earningsDecline	Y
G	Shareholders	insiderDealingControversy	Y
G	Shareholders	profitWarning	Y
G	Shareholders	proxyFight	Y
G	Shareholders	securitiesControversy	Y
G	Shareholders	shareholderRightsControversy	Y
G	Shareholders	taxFraudControversy	Y

## COMPANY CORE ESG SCORES

The Category, Pillar, and ESG scores rely on a complex weighting scheme described in the product white paper. Category scores are the most granular Core scores. Each Core score is percentile ranked from 1 to 100 in relation to the companies within the same industry, with data, for that period. The table below lists buzz and each Core score with a description and numerical range for each. Please see the white paper for more detail on the calculation of each Core score.

Score	Description:	Range
Buzz	Total number of relevant ESG references to a company	0 to Inf
ESG Score	Weighted composite score calculated from Advanced RMA Scores	1 to 100
ESG Combined Score	Equals the ESG Score when the ESG Controversies Score is higher than the ESG Score. However, if the ESG Score is higher than the ESG Controversies Score, then a simple average of those two scores is used for the Combined Score.	1 to 100
ESG Controversies Score	An aggregate of media reports about a company's practices in violation of principled environmental, social, and governance behaviors.	1 to 100
<b>PILLAR SCORES</b>		
Environment Pillar Score	Aggregate of references to a company's positive environmental impacts and support	1 to 100
Social Pillar Score	Aggregate of references to a company's net social benefits	1 to 100
Governance Pillar Score	Aggregate of references to quality and sustainability in corporate governance	1 to 100
<b>CATEGORY SCORES</b>		
Emissions Category Score	Measures a company's commitment and effectiveness towards reducing environmental emissions in the production and operational processes	1 to 100
Environmental Innovation Category Score	Reflects a company's reduction of environmental impact and the creation of new market opportunities through new green technologies and design	1 to 100

Resource Use Category Score	Reflects a company's energy efficiency and supply chain sustainability	1 to 100
Community Category Score	Measures the company's commitment towards being a good citizen, protecting public health and respecting business ethics	1 to 100
Human Rights Category Score	Measures a company's effectiveness at respecting fundamental human rights	1 to 100
Product Category Score	Reflects a company's capacity to produce quality goods and services honoring the customer's health and safety, integrity and data privacy	1 to 100
Workforce Category Score	Measures job satisfaction, workplace safety, maintaining diversity and equal opportunities, and development opportunities for the company's workforce	1 to 100
CSR Strategy Category Score	Reflects a company's sustainability reporting	1 to 100
Management Category Score	Measures a company's commitment and effectiveness towards following best practice corporate governance principles	1 to 100
Shareholders Category Score	Measures a company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices	1 to 100

## COMPANY ADVANCED ESG SCORES

There are 36 specific Advanced ESG scores and 44 Controversy scores for the companies. Additionally, the ten (10) category and the ten (10) daily category controversy scores are included. The category scores are aggregations of the 80 Advanced ESG and ESG controversy scores. All Advanced scores except Mentions and -Buzz carry six significant digits past the decimal point. In addition to the overall Buzz score, 10 category -Buzz scores are also provided. Negative numbers have a leading minus (-) sign. The table below summarizes the fields. For more information on those with range "0 to 1\*\*", see Chapter 3 above. The blue-highlighted rows represent category data fields. The grey-highlighted rows precede controversies for each category.

Score	Description: <i>references in news and social media to...</i>	Range
mentions	simple count of the number of references to the company detected in the media	0 to Inf
buzz	sum of the absolute values of all ESGVars referring to an ESG-related concept for a company	0 to Inf
emissionsBuzz	count of references to emissions	0 to Inf
emissions	all category references to a company's commitment and effectiveness towards reducing environmental emission in the production and operational processes as well as references to environmental emissions by the company	-1 to 1
emissionsControversies	aggregate of the emissions category controversy references	0 to 1*
airborneEmissionsImprovement	company progress towards reducing GHG, particulate and other emissions net of references to increases	-1 to 1
carbonEmissionsImprovement	company progress towards reducing GHG, particulate and other emissions net of references to increases	-1 to 1
climatePolicy	company policies to reduce GHG, particulate and other emissions net of references to policy violations	-1 to 1

environmentalInvestment	investments in clean technologies, waste reduction, sustainability, and social impact	0 to 1*
pollutionImprovement	improvements in polluting waste net of references to expansion in polluting waste	-1 to 1
recycling	company recycling activities and policies	-1 to 1
renewableEnergy	renewable energy sources	0 to 1*
renewableEnergyPolicy	renewable energy policies associated with the company	-1 to 1
<i>Emissions Controversies Scores</i>		
airborneEmissionsControversy	carbon emissions and carbon dioxide release	0 to 1*
carbonEmissionsControversy	airborne emissions such as gas leaks and flare-offs, radiation, and carbon dioxide release	0 to 1*
industrialAccident	industrial accidents including fuel transport spills, mining accidents, and radiation leaks	0 to 1*
pollutionControversy	growing waste and pollution burden	0 to 1*
environmentalInnovationBuzz	count of environmental innovation references	0 to Inf
environmentalInnovation	a company's reduction of environmental impact and the creation of new market opportunities through new green technologies and design as well as references to production of environmentally damaging chemicals and socially unsustainable activities	-1 to 1
environmentalInnovationControversies	aggregate of the environmental innovation category controversy references	0 to 1*
sustainabilityImprovement	growth in sustainable corporate activities net of references to unsustainable practices	-1 to 1
sustainableInnovation	environmentally-friendly products, use of clean technologies, and green construction	0 to 1*
sustainablePackaging	sustainability in packaging and packaging materials	-1 to 1
<i>Environmental Innovation Controversies Scores</i>		
sustainabilityControversy	socially unsustainable business activities including gambling, firearm manufacture, alcoholic beverage distribution, and tobacco production	0 to 1*
resourceUseBuzz	count of references to resource use	0 to Inf
resourceUse	a company's energy efficiency and supply chain sustainability as well as a company's energy wastefulness and inefficiencies	-1 to 1
resourceUseControversies	resource use-related category controversies	0 to 1*
energyEfficiencyEfforts	energy efficiency net of references to energy waste	-1 to 1
supplyChainSustainability	supply chain sustainability net of references to unsustainable practices in the supply chain	-1 to 1

<i>Resource Use Controversies</i>		
environmentalControversy	environmental and community damage resulting from polluting activities	0 to 1*
communityBuzz	count of community references	0 to Inf
community	the company's commitment towards being a good citizen, protecting public health and respecting business ethics as well as public anger, corruption, and legal scandals associated with a company	-1 to 1
communityControversies	community category controversies associated with the company	0 to 1*
accessAffordability	products and services as inexpensive and accessible net of references to being overpriced or exclusive	-1 to 1
charity	a company's involvement in charitable activities including community support and volunteerism	0 to 1*
publicHealthSupport	a company's products, services, or activities in support of public health net of references to harm to public health	-1 to 1
trust	trusting net of mistrustful comments	-1 to 1
<i>Community Controversies Scores</i>		
anger	anger towards a company, its management, and its products or services	0 to 1*
antiCompetitiveActs	monopolistic or anti-competitive practices	0 to 1*
classActionLawsuit	a class action lawsuit against a company	0 to 1*
corruptionControversy	involvement in corrupt activities and practices	0 to 1*
crimeControversy	criminal activity involving a company or its management	0 to 1*
ethicsControversy	ethics violations or deceitful practices by a company	0 to 1*
iPControversy	patent infringement, intellectual property violations, and patent trolling activities	0 to 1*
legalPenalty	legal penalties and fines	0 to 1*
litigation	lawsuits, class actions, or legal charges due to illegal activities	0 to 1*
lobbying	lobbying activities and initiatives	0 to 1*
publicHealthControversy	products or services damaging public health	0 to 1*
regulatoryIssues	regulatory, legal, and rule violations	0 to 1*
humanRightsBuzz	count of human rights-related references	0 to Inf
humanRights	efforts to support human rights as well as violations of human rights including child labor, labor exploitation, human rights violations, and sanction violations	-1 to 1
humanRightsControversies	human rights category controversies associated with the company	0 to 1*
humanRightsEfforts	initiatives supporting human rights globally or in the workforce	-1 to 1

<i>Human Rights Controversies Scores</i>		
childLabor	child or underage labor use	0 to 1*
criticalCountriesControversy	business dealings in violation of sanctions	0 to 1*
humanRightsControversy	human rights breaches in any aspect of operations	0 to 1*
laborExploitation	use of prisoner labor, forced labor, or labor exploitation	0 to 1*
productBuzz	count of product-related references	0 to Inf
product	a company's capacity to produce quality goods and services honoring the customer's health and safety, integrity and data privacy as well as violations of data privacy, product flaws, deceptive advertising, unethical research, and customer dissatisfaction.	-1 to 1
productControversies	product category controversies associated with the company	0 to 1*
customerSatisfaction	satisfied customers net of references to dissatisfied customers	-1 to 1
innovation	corporate, management, and product innovation	0 to 1*
privacyEfforts	data security and privacy net of references to violations	-1 to 1
productSentiment	general products and services in a positive tone, net of a negative tone	-1 to 1
<i>Product Controversies Scores</i>		
advertisementDeceptive	misleading advertising	0 to 1*
privacyControversy	violations of customer privacy	0 to 1*
productControversy	product flaws, recalls, and injuries	0 to 1*
rdControversy	research and development controversies	0 to 1*
workforceBuzz	count of workforce category references	0 to Inf
workforce	job satisfaction, workplace safety, maintaining diversity and equal opportunities, and development opportunities for the company's workforce as well as references to employee accidents, layoffs, labor disputes, bias, and declining or limited benefits at a company	-1 to 1
workforceControversies	workforce category controversies associated with the company	0 to 1*
benefits	benefits offered at the firm.	-1 to 1
diversityEfforts	promoting equal opportunities, minority promotions, and diversity in the workplace net of references to discrimination and lack of opportunity based on gender, ethnicity, or national origin.	-1 to 1
wageFairness	wage fairness net of references to pay disparities	-1 to 1
workLifeBalance	work life balance and amenities supporting such	-1 to 1
workplaceDevelopment	abundant training and development opportunities net of limited training and development activities	-1 to 1
workplaceSafetyEfforts	the work environment as healthy and safe net of references to unhealthy or exploitative working conditions	-1 to 1



workplaceSentiment	positive perceptions of the workplace and working environment net of negative	-1 to 1
<i>Workforce Controversies Scores</i>		
benefitsControversy	disruption, elimination, or erosion of benefits	0 to 1*
diversityControversy	workplace discrimination and obstacles to advancement due to race, ethnicity, sexual orientation, and gender	0 to 1*
laborDispute	disagreement and discord between labor, labor unions, and management	0 to 1*
layoffs	layoffs, furloughs, and staffing cuts	0 to 1*
wageControversy	unfair wage issues, payment delays, and wage controversies	0 to 1*
workplaceSafetyControversy	workplace abuse, exploitation, and safety violations	0 to 1*
cSRStrategyBuzz	count of references to a company's sustainability reporting	0 to Inf
cSRStrategy	a company's sustainability reporting	-1 to 1
cSRStrategyBuzz	all controversies related to a company's sustainability reporting category	0 to 1*
cSRActivities	Global Reporting Initiative (GRI) and sustainability reporting including CSR, health and safety, and energy efficiency reporting	0 to 1*
managementBuzz	count of relevant references to a company's management	0 to Inf
management	a company's commitment and effectiveness towards following best practice corporate governance principles as well as management scandals associated with a company	-1 to 1
managementControversies	management category controversies	0 to 1*
managementDiversity	management racial, ethnic, sexual orientation, and gender diversity net of references to uniformity	-1 to 1
managementSentiment	positive statements about corporate management net of negative	-1 to 1
managementTrust	overall trusting statements about corporate management net of mistrustful comments	-1 to 1
qualityMgmtSystems	use of safety protocols and systematic management	0 to 1*
<i>Management Controversies Scores</i>		
managementControversy	inappropriate or rule-breaking management behavior	0 to 1*
shareholdersBuzz	count of relevant references to a company's treatment of shareholders	0 to Inf
shareholders	a company's effectiveness towards equal treatment of shareholders and the use of anti-takeover devices as well as shareholder and financial controversies at a company	-1 to 1
shareholdersControversies	shareholders category controversies	0 to 1*

accountingSentiment	positive versus negative perceptions of accounting practices	-1 to 1
antiTakeoverDevices	antitakeover devices and poison pill structures	0 to 1*

#### Shareholders Controversies Scores

accountingControversy	accounting controversies at a company such as irregular accounting	0 to 1*
accountingRestatement	corporate misstatement or restatement of earnings or other accounting items	0 to 1*
activistInvestorActivity	engagement by activist investors and hostile takeover activity	0 to 1*
creditControversy	increased risk of default or business failure	0 to 1*
earningsDecline	declining earnings, lowered guidance, and negative earnings surprises	0 to 1*
insiderDealingControversy	market manipulation, insider sales, and insider dealings	0 to 1*
profitWarning	earnings warnings	0 to 1*
proxyFight	proxy battles and hostile bids to take control of a company	0 to 1*
securitiesControversy	decreasing dividends, secondary offerings, share sales, and securities fraud	0 to 1*
shareholderRightsControversy	controversies surrounding shareholder rights issues	0 to 1*
taxFraudControversy	reports of tax regulation noncompliance, tax dodging, or tax fraud	0 to 1*

## CHAPTER 8 CURRENCIES

### CURRENCIES ASSETS

There are 45 currencies, listed in the table below.

Asset Code	Currency
ARS	Argentine Peso
AUD	Australian Dollar
BDT	Bangladeshi Taka
BTC	Bitcoin
BRL	Brazilian Real
CAD	Canadian Dollar
CLP	Chilean Peso
CNY	Chinese Yuan Renminbi
COP	Colombian Peso
CZK	Czech Koruna
EGP	Egyptian Pound
EUR	Euro
HKD	Hong Kong Dollar
HUF	Hungarian Forint
INR	Indian Rupee
IDR	Indonesian Rupiah
IRR	Iranian Rial
ILS	Israeli Shekel
JPY	Japanese Yen
MYR	Malaysian Ringgit
MXN	Mexican Peso
NZD	New Zealand Dollar
NGN	Nigerian Naira

Asset Code	Currency
NOK	Norwegian Krone
PKR	Pakistani Rupee
PEN	Peruvian Sol
PHP	Philippine Peso
PLN	Polish Zloty
RON	Romanian Leu
RUB	Russian Ruble
SAR	Saudi Riyal
SGD	Singapore Dollar
ZAR	South African Rand
KRW	South Korean Won
SEK	Swedish Krona
CHF	Swiss Franc
TWD	Taiwanese Dollar
THB	Thai Baht
TRY	Turkish Lira
USD	U.S. Dollar
UAH	Ukrainian hryvnia
AED	United Arab Emirates Dirham
GBP	United Kingdom Pound Sterling
VEF	Venezuelan Bolívar
VND	Vietnam Dong

### CURRENCIES RMA SCORES

The 33 RMA scores for the currencies asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	references connoting optimism, future-tense positive	0 to 1*
pessimism	references connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*

loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*
disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
violence	violent crime, terrorism, and war	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	references to immediate and short-term timeframes versus long term	-1 to 1
marketRisk	positive emotionality and positive expectations net of negative emotionality and negative expectations. Includes factors from social media found characteristic of speculative bubbles – higher values indicate greater bubble risk. Also known as the “Bubbleometer.”	-1 to 1
longShort	buying, net of references to shorting or selling	-1 to 1
longShortForecast	forecasts of buying, net of references to forecasts of shorting or selling	-1 to 1
priceDirection	price increases, net of references to price decreases	-1 to 1
priceDown	references to price decreases	0 to 1*
priceUp	asset price increases	0 to 1*
priceForecast	forecasts of asset price rises, net of references to forecasts of asset price drops	-1 to 1
priceMomentum	currency price trend strength, net of references to trend weakness	-1 to 1
topVsBottom	net references to asset price topping, expensive valuations, and excessive speculation versus bottoming and relatively inexpensive prices	-1 to 1
overvaluedVsUndervalued	expensive versus inexpensive valuation	-1 to 1
volatility	volatility in market prices or business conditions	0 to 1*
carryTrade	carry trade	0 to 1*
currencyPegInstability	the instability of a currency peg, net of references to the stability of a currency peg	-1 to 1
futureVsPast	references to future events, net of references to past	-1 to 1

## CHAPTER 9 AGRICULTURAL COMMODITIES

### AGRICULTURAL COMMODITIES ASSETS

There are 20 agricultural commodities being scored. The asset codes correspond to Thomson Reuters topic codes found in news stories.

Asset Code	Commodity
RAPOIL	Canola
CTTL	Cattle
COC	Cocoa
COF	Coffee
COR	Corn
COT	Cotton
HOGS	Hogs
TMBR	Lumber
OATS	Oats
ORJ	Orange Juice
POIL	Palm Oil
RICE1	Rice
SOIL	Soybean Oil
SOY1	Soybeans
SUG	Sugar
WHT	Wheat
WOO	Wool
RAPOIL	Canola
CTTL	Cattle
COC	Cocoa

### AGRICULTURAL COMMODITIES RMA SCORES

The 40 RMA scores for the agricultural commodities asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	references connoting optimism, future-tense positive	0 to 1*
pessimism	references connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*
loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*

disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
violence	violent crime, terrorism, and war	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	references to immediate and short-term timeframes versus long term	-1 to 1
longShort	buying, net of references to shorting or selling	-1 to 1
longShortForecast	forecasts of buying, net of references to forecasts of shorting or selling	-1 to 1
priceDirection	price increases, net of references to price decreases	-1 to 1
priceDown	references to price decreases	0 to 1*
priceForecast	forecasts of asset price rises, net of references to forecasts of asset price drops	-1 to 1
priceUp	asset price increases	0 to 1*
topVsBottom	net references to asset price topping, expensive valuations, and excessive speculation versus bottoming and relatively inexpensive prices	-1 to 1
overvaluedVsUndervalued	references to expensively versus cheaply-valued asset prices	-1 to 1
volatility	volatility in market prices or business conditions	0 to 1*
consumptionVolume	Increasing, net of decreasing, commodity consumption	-1 to 1
productionVolume	Increasing, net of decreasing, commodity production	-1 to 1
regulatoryIssues	regulatory changes affecting the commodity	0 to 1*
supplyVsDemand	surplus supply and lack of demand, net of references to supply shortage and high demand	-1 to 1
supplyVsDemandForecast	expectations of supply outstripping demand, net of references to expectations of demand outstripping supply	-1 to 1
acreageCultivated	increases in acreage and crop cultivation, net or references to decreases in acreage and crop cultivation	-1 to 1
agDisease	commodity disease	0 to 1*
agStress	production stress related to disease, water, or weather	0 to 1*
subsidies	subsidies affecting commodity prices	0 to 1*
subsidiesSentiment	increases in subsidies, net of references to decreases in subsidies	-1 to 1

<u>weatherDamage</u>	commodity weather risk and damage	0 to 1*
futureVsPast	references to future events, net of references to past	-1 to 1

## CHAPTER 10 ENERGY & MATERIAL COMMODITIES

### ENERGY & MATERIAL COMMODITIES ASSETS

There are 36 energy & material commodities being scored. The asset codes correspond to Thomson Reuters topic codes found in news stories.

Asset Code	Commodity
ANGS	Asian Natural Gas
ALU	Aluminum
BIODSL	BioDiesel
BIOF	Biofuels
CO2	Carbon Credit
COA	Coal
CBLT	Cobalt
CPPR	Copper
CRU	Crude Oil
DIAM	Diamonds
DIESEL	Diesel Fuel
EUNGS	EU Natural Gas
BIOETH	Ethanol
RFO	Fuel Oil
MOG	Gasoline
GOL	Gold
HOIL	Heating Oil
IRN	Iron
JET	Jet Fuel
LNG	Liquefied Natural Gas
LITH	Lithium
NAP	Naphtha
NGS	Natural Gas
NKL	Nickel
NSEA	North Sea Oil
PALL	Palladium
PLAT	Platinum
RAREE	Rare Earth Minerals
RUB	Rubber
SLVR	Silver
STEE	Steel
TIN1	Tin
USCRU	US Crude
URAN	Uranium
ZNC	Zinc

### ENERGY & MATERIAL COMMODITIES RMA SCORES

The 36 RMA scores for the energy & material commodities asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.



Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	references connoting optimism, future-tense positive	0 to 1*
pessimism	references connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*
loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*
disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
violence	violent crime, terrorism, and war	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	references to immediate and short-term timeframes versus long term	-1 to 1
longShort	buying, net of references to shorting or selling	-1 to 1
longShortForecast	forecasts of buying, net of references to forecasts of shorting or selling	-1 to 1
priceDirection	price increases, net of references to price decreases	-1 to 1
priceDown	references to price decreases	0 to 1*
priceForecast	forecasts of asset price rises, net of references to forecasts of asset price drops	-1 to 1
priceUp	asset price increases	0 to 1*
topVsBottom	net references to asset price topping, expensive valuations, and excessive speculation versus bottoming and relatively inexpensive prices	-1 to 1
overvaluedVsUndervalued	references to expensively versus cheaply-valued asset prices	-1 to 1
volatility	volatility in market prices or business conditions	0 to 1*
consumptionVolume	increasing, net of decreasing, commodity consumption	-1 to 1
productionVolume	increasing, net of decreasing, commodity production	-1 to 1

<u>regulatoryIssues</u>	regulatory changes affecting the commodity	0 to 1*
<u>supplyVsDemand</u>	surplus supply and lack of demand, net of references to supply shortage and high demand	-1 to 1
<u>supplyVsDemandForecast</u>	expectations of supply outstripping demand, net of references to expectations of demand outstripping supply	-1 to 1
<u>newExploration</u>	new ventures/exploration	0 to 1*
<u>safetyAccident</u>	safety accidents	0 to 1*
<u>futureVsPast</u>	references to future events, net of references to past	-1 to 1

## CHAPTER 11 COUNTRIES

### COUNTRIES ASSETS

There are 252 countries or regions being scored. Note that these scores are based on text not only of the country/region, but also based on cities and other place names inside those geographies.

The asset codes correspond to Thomson Reuters topic codes for geopolitical units. The table below is sorted by Country/Region.

Asset Code	Country/Region
AF	Afghanistan
AX	Aland Islands
AL	Albania
DZ	Algeria
AS	American Samoa
AD	Andorra
AO	Angola
AI	Anguilla
AQ	Antarctica
AG	Antigua and Barbuda
AR	Argentina
AM	Armenia
AW	Aruba
AU	Australia
AT	Austria
AZ	Azerbaijan
BS	Bahamas
BH	Bahrain
BD	Bangladesh
BB	Barbados
BY	Belarus
BE	Belgium
BZ	Belize
BJ	Benin
BM	Bermuda
BT	Bhutan
BO	Bolivia
BQ	Bonaire
BA	Bosnia And Herzegovina
BW	Botswana
BV	Bouvet Island
BR	Brazil
IO	British Indian Ocean Territory
VG	British Virgin Islands
BN	Brunei
BG	Bulgaria
BF	Burkina Faso
BI	Burundi

Asset Code	Country/Region
KH	Cambodia
CM	Cameroon
CA	Canada
CV	Cape Verde
KY	Cayman Islands
CF	Central African Republic
TD	Chad
CL	Chile
CN	China
CX	Christmas Island
CC	Cocos Islands
MF	Collectivity of Saint Martin
CO	Colombia
KM	Comoros
CD	Congo
CK	Cook Islands
CR	Costa Rica
CI	Cote D'Ivoire
HR	Croatia
CU	Cuba
CW	Curacao
CY	Cyprus
CZ	Czech Republic
DK	Denmark
DJ	Djibouti
DM	Dominica
DO	Dominican Republic
EC	Ecuador
EG	Egypt
SV	El Salvador
GQ	Equatorial Guinea
ER	Eritrea
EE	Estonia
ET	Ethiopia
EZ	Eurozone
FK	Falkland Islands
FO	Faroe Islands
FJ	Fiji

Asset Code	Country/Region
FI	Finland
FR	France
GF	French Guiana
PF	French Polynesia
TF	French Southern Territories
GA	Gabon
GM	Gambia
GE	Georgia
DE	Germany
GH	Ghana
GI	Gibraltar
GR	Greece
GL	Greenland
GD	Grenada
GP	Guadeloupe
GU	Guam
GT	Guatemala
GG	Guernsey
GN	Guinea
GW	Guinea-Bissau
GY	Guyana
HT	Haiti
HM	Heard Island
HN	Honduras
HK	Hong Kong
HU	Hungary
IS	Iceland
IN	India
ID	Indonesia
IR	Iran
IQ	Iraq
IE	Ireland
IM	Isle of Man
IL	Israel
IT	Italy
JM	Jamaica
JP	Japan
JE	Jersey
JO	Jordan
KZ	Kazakhstan
KE	Kenya
KI	Kiribati
XK	Kosovo
KW	Kuwait
KG	Kyrgyzstan
LA	Laos
LV	Latvia

Asset Code	Country/Region
LB	Lebanon
LS	Lesotho
LR	Liberia
LY	Libya
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
MO	Macau
MK	Macedonia
MG	Madagascar
MW	Malawi
MY	Malaysia
MV	Maldives
ML	Mali
MT	Malta
MH	Marshall Islands
MQ	Martinique
MR	Mauritania
MU	Mauritius
YT	Mayotte
MX	Mexico
FM	Micronesia
MD	Moldova
MC	Monaco
MN	Mongolia
ME	Montenegro
MS	Montserrat
MA	Morocco
MZ	Mozambique
MM	Myanmar
NA	Namibia
NR	Nauru
NP	Nepal
NL	Netherlands
NC	New Caledonia
NZ	New Zealand
NI	Nicaragua
NE	Niger
NG	Nigeria
NU	Niue
NF	Norfolk Island
KP	North Korea
MP	Northern Mariana Islands
NO	Norway
OM	Oman
PK	Pakistan
PW	Palau

Asset Code	Country/Region
PS	Palestinian Territory
PA	Panama
PG	Papua New Guinea
PY	Paraguay
PE	Peru
PH	Philippines
PN	Pitcairn
PL	Poland
PT	Portugal
PR	Puerto Rico
QA	Qatar
CG	Republic of the Congo
RE	Reunion
RO	Romania
RU	Russia
RW	Rwanda
BL	Saint Barthelemy
SH	Saint Helena
KN	Saint Kitts and Nevis
LC	Saint Lucia
PM	Saint Pierre
VC	Saint Vincent
WS	Samoa
SM	San Marino
ST	Sao Tome and Principe
SA	Saudi Arabia
SN	Senegal
RS	Serbia
SC	Seychelles
SL	Sierra Leone
SG	Singapore
SX	Sint Maarten
SK	Slovakia
SI	Slovenia
SB	Solomon Islands
SO	Somalia
XS	Somaliland
ZA	South Africa
GS	South Georgia and the South Sandwich Islands
KR	South Korea
SS	South Sudan

Asset Code	Country/Region
ES	Spain
LK	Sri Lanka
SD	Sudan
SR	Suriname
SJ	Svalbard
SZ	Swaziland
SE	Sweden
CH	Switzerland
SY	Syria
TW	Taiwan
TJ	Tajikistan
TZ	Tanzania
TH	Thailand
TL	Timor-Leste
TG	Togo
TK	Tokelau
TO	Tonga
TT	Trinidad and Tobago
TN	Tunisia
TR	Turkey
TM	Turkmenistan
TC	Turks and Caicos
TV	Tuvalu
UG	Uganda
UA	Ukraine
AE	United Arab Emirates
GB	United Kingdom
US	United States
UM	United States Minor Outlying Islands
VI	United States Virgin Islands
UY	Uruguay
UZ	Uzbekistan
VU	Vanuatu
VA	Vatican
VE	Venezuela
VN	Vietnam
WF	Wallis and Futuna
EH	Western Sahara
YE	Yemen
ZM	Zambia
ZW	Zimbabwe

## COUNTRIES RMA SCORES

The 48 RMA scores for the countries asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	references connoting optimism, future-tense positive	0 to 1*
pessimism	references connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*
loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*
disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	references to immediate and short-term timeframes versus long term	-1 to 1
marketRisk	positive emotionality and positive expectations net of negative emotionality and negative expectations. Includes factors from social media found characteristic of speculative bubbles – higher values indicate greater bubble risk. Also known as the “Bubbleometer.”	-1 to 1
budgetDeficit	a budget deficit, net of references to a surplus	-1 to 1
businessExpansion	businesses expanding, net of references to contraction	-1 to 1
consumerSentiment	positive consumer sentiment, net of references to negative consumer sentiment	-1 to 1
creditEasyVsTight	credit conditions being easy, net of references to credit conditions being tight	-1 to 1
economicGrowth	increased business activity, net of references to decreased business activity	-1 to 1

economicUncertainty	uncertainty about business climate net of confidence and certainty	-1 to 1
economicVolatility	increasing economic volatility, net of economic stability	-1 to 1
financialSystemInstability	financial system instability, net of references to financial system stability	-1 to 1
fiscalPolicyLooseVsTight	fiscal policy being loose, net of references to fiscal policy being tight	-1 to 1
inflation	consumer price increases, net of references to consumer price decreases	-1 to 1
inflationForecast	forecasts of consumer price increases, net of forecasts of consumer price decreases (deflation)	-1 to 1
infrastructureSentiment	positive net of negative references to institutions, facilities, transportation, and industry	-1 to 1
innovation	innovativeness	0 to 1*
investmentFlows	investment inflows, net of references to investment outflows	-1 to 1
tariffs	references to tariffs and duties rising net of falling	-1 to 1
taxCorporate	references to corporate taxes rising net of falling	-1 to 1
taxDirection	overall references to taxation rising net of falling	-1 to 1
taxForecast	net forecast of taxes rising versus falling	-1 to 1
tradeBalance	exports, net of references to imports	-1 to 1
unemployment	unemployment rising, net of references to unemployment falling	-1 to 1
unemploymentForecast	unemployment rising, net of references to unemployment falling in the future tense	-1 to 1
governmentAnger	anger and disgust about government officials and departments	0 to 1*
governmentCorruption	fraud, deceit, and corruption in government	0 to 1*
governmentInstability	governmental instability, net of references to governmental stability	-1 to 1
politicalSentiment	positive sentiment expressed about political parties and institutions net of negative sentiment	-1 to 1
regimeChange	regime change	0 to 1*
sanctions	sanctions or embargoes emanating from or against a country	0 to 1*
tradeWar	references to trade conflict	0 to 1*
tradeTalks	references to trade negotiations	0 to 1*
socialInequality	social inequality	0 to 1*
socialUnrest	social unrest and calls for political change	0 to 1*
cyberCrime	cyberattacks, data leaks, and electronic espionage	0 to 1*
terrorism	terrorist threats and activities	0 to 1*

<u>violentCrime</u>	criminal violence	0 to 1*
<u>war</u>	war and militant activity	0 to 1*
<u>agriculturalStress</u>	agricultural failures and production deficiencies	0 to 1*
<u>coldWave</u>	unusually cold weather	0 to 1*
<u>drought</u>	lack of rain with environmental consequences	0 to 1*
<u>earthquake</u>	seismic activity	0 to 1*
<u>fire</u>	forest, brush, and structural fires	0 to 1*
<u>flood</u>	rising water levels with economic consequences	0 to 1*
<u>heatwave</u>	unusually hot weather	0 to 1*
<u>humanInfectiousDisease</u>	presence and outbreaks of contagious or epidemic diseases	0 to 1*
<u>hunger</u>	human caloric deficiency	0 to 1*
<u>volcanicActivity</u>	volcanic eruption	0 to 1*
<u>windStorm</u>	cyclonic storms and extreme wind weather events	0 to 1*
<u>diseaseBurden</u>	reports of diseases burdening public health systems, including treatments for those diseases	-1 to 1
<u>humanDiseaseGI</u>	reports of gastrointestinal disease	-1 to 1
<u>humanDiseasePulm</u>	reports of respiratory and pulmonary disease	-1 to 1
<u>futureVsPast</u>	references to future events, net of references to past	-1 to 1



## CHAPTER 12 COUNTRIES ESG

### COUNTRIES RMA CORE SCORES: OVERALL, PILLAR, AND CATEGORY

There are 68 specific Advanced ESG and 64 Controversy scores for the Countries ESG asset class. These Advanced scores roll up into the Core ESG dataset: 10 Category scores, 3 Pillar scores, 1 Overall ESG score, 1 Combined ESG score, 1 ESG Controversy score, and 1 Buzz score.

Each of the 17 Core scores (except Buzz) is a composite of the indicators underlying it. The Overall and Pillar scores are 365-day exponentially weighted averages of the underlying Advanced scores. The Category scores are unweighted 365-day exponentially weighted averages of the underlying Advanced scores.

The Core scores are available solely in daily frequency. The Core scores are represented as integers derived from percentile rankings, ranging from 1 to 100. Scores of 100 represent the most subjectively positive rank, while scores of 1 represent the most negative rank.

See the product white paper for more details on weighting.

#### Hierarchy of Scores from Advanced to Core

For ease of reference, the UN Sustainable Development Goals (SDGs) are listed in the table below. A count of the RMA scores associated with each is presented in the rightmost column.

SDG number	SDG description	Number of indicators
1	No Poverty	1
2	Zero Hunger	8
3	Good Health and Well-Being	12
4	Quality Education	3
5	Gender Equality	4
6	Clean Water and Sanitation	1
7	Affordable and Clean Energy	4
8	Decent Work and Economic Growth	12
9	Industry, Innovation and Infrastructure	7
10	Reduced Inequalities	9
11	Sustainable Cities and Communities	4
12	Responsible Consumption	7
13	Climate Action	7
14	Life below Water	2
15	Life on Land	4
16	Peace, Justice and Strong Institutions	14
17	Partnership for the Goals	2

The relationships between the Core Pillars and Categories and the Advanced RMA scores is depicted below. The taxonomy of the scores is hierarchical with the Advanced scores aggregated into the Category scores, the Pillar scores, and the Overall ESG scores. The Pillars are denoted by E, S, and G. The company categories are Emission,

Environmental, Resource Use, Community, Human Rights, Product, Workforce, CSR Strategy, Management, and Shareholders. The Controversy column flags controversy scores with a “Y”. The farthest right column suggests one or more UN Sustainable Development Goals (sdg) relevant to each score.

pillar	category	name	controversy	sdg
E	Emission	airborneEmissionsControversy	Y	11
E	Emission	airborneEmissionsImprovement	N	11
E	Emission	carbonEmissionsControversy	Y	11,13
E	Emission	carbonEmissionsImprovement	N	11,13
E	Emission	carbonTaxDirection	N	13
E	Emission	climateChangeOppVsRisk	N	13
E	Emission	emissionsPolicy	N	13
E	Emission	industrialAccident	Y	6
E	Emission	pollutionControversy	Y	
E	Emission	pollutionImprovement	N	12
E	Emission	recycling	N	12
E	Environmental	agAnimalStress	Y	2
E	Environmental	agCropStress	Y	2
E	Environmental	agriculturalStress	Y	2
E	Environmental	desertification	Y	15
E	Environmental	environmentalEfforts	N	9
E	Environmental	environmentalInvestment	N	9
E	Environmental	factoryFaRMang	Y	2
E	Environmental	forestHealth	N	15
E	Environmental	hunger	Y	2
E	Environmental	marineProtection	N	14
E	Environmental	natureProtection	N	15
E	Environmental	overfishing	Y	14
E	Environmental	plantBasedDiet	N	
E	Environmental	seaLevelRise	Y	13
E	Environmental	sustainability	N	12
E	Environmental	sustainabilityPolicy	N	12
E	Environmental	sustainableInnovation	N	9,12
E	Environmental	sustainablePackaging	N	12
E	Environmental	warming	Y	13
E	Environmental	wildlifeTrafficking	Y	15
E	ResourceUse	energyEfficiency	N	7
E	ResourceUse	energyEfficiencyPolicy	N	7
E	ResourceUse	environmentalControversy	Y	
E	ResourceUse	renewableEnergyDevelopment	N	7
E	ResourceUse	renewableEnergyPolicy	N	7
E	ResourceUse	supplyChainSustainability	N	9

E	ResourceUse	unsustainableActivities	Y	12
S	Community	accessAffordability	N	
S	Community	addiction	Y	3
S	Community	addictionManagement	N	
S	Community	anger	Y	
S	Community	charityAwareness	N	
S	Community	diseaseBurden	Y	3
S	Community	diseaseManagement	N	3
S	Community	fertility	N	
S	Community	freshWaterAccessEfforts	N	6
S	Community	humanDiseaseGI	Y	3
S	Community	humanDiseasePulm	Y	3
S	Community	malnourishment	Y	2
S	Community	malnourishmentYouth	Y	2
S	Community	obesityAwareness	Y	2
S	Community	povertyAlleviation	N	1
S	Community	publicHealthControversy	Y	3
S	Community	publicHealthEfforts	N	3
S	Community	smoking	Y	3
S	Community	smokingManagement	N	3
S	Community	trust	N	
S	Culture	laborDevelopment	N	4
S	Culture	laborDispute	Y	8
S	Culture	layoffs	Y	8
S	Culture	publicSentiment	N	3
S	Culture	wageFairness	N	5,8,10
S	Culture	wageInequality	Y	5,8,10
S	Culture	workLifeBalance	N	3
S	Culture	workplaceConditions	N	8
S	Culture	workplaceSafetyControversy	Y	8
S	HumanRights	childLabor	Y	8
S	HumanRights	forcedLabor	Y	8
S	HumanRights	genderEqualityEfforts	N	5
S	HumanRights	humanRightsEfforts	N	
S	HumanRights	humanTrafficking	Y	8
S	HumanRights	immigrationSentiment	N	
S	HumanRights	laborExploitation	Y	8
S	HumanRights	minorityEquality	N	10
S	HumanRights	minorityViolence	Y	10
S	HumanRights	violenceAgainstWomen	Y	5
S	Society	corruption	Y	16
S	Society	crime	Y	16

S	Society	cyberCrime	Y	
S	Society	dataPrivacy	N	
S	Society	educationEfforts	N	4
S	Society	employment	N	8
S	Society	employmentForecast	N	8
S	Society	ethicsControversy	Y	
S	Society	financialCrime	Y	
S	Society	homicide	Y	16
S	Society	innovation	N	9
S	Society	intellectualPropertyTheft	Y	
S	Society	internetAccessImprovement	N	9
S	Society	legalActivity	Y	
S	Society	literacyEfforts	N	4
S	Society	misinformation	Y	
S	Society	privacyControversy	Y	
S	Society	RND	N	9
S	Society	socialEquality	N	10
S	Society	socialExpenditures	N	3
S	Society	socialMobility	N	10
S	Society	terrorism	Y	
S	Society	violentCrime	Y	16
S	Society	war	Y	
G	Economics	businessFraud	Y	
G	Economics	creditControversy	Y	
G	Economics	financialSystemInstability	Y	10
G	Economics	freeTrade	N	17
G	Economics	sanctions	Y	
G	Economics	tariffsDown	N	17
G	Economics	unfairMarkets	Y	
G	Leadership	businessLeadersSentiment	N	
G	Leadership	governmentAccountingSentiment	N	
G	Leadership	governmentAnger	Y	
G	Leadership	governmentCorruption	Y	16
G	Leadership	governmentInstability	Y	16
G	Leadership	governmentSentiment	N	
G	Leadership	governmentTrust	N	10
G	Leadership	leadershipCrime	Y	16
G	Leadership	politicalProcessSentiment	N	
G	Politics	autocracy	Y	
G	Politics	civicEngagement	N	16
G	Politics	civilSocietyPartnerships	N	
G	Politics	constitutionalRevision	Y	

G	Politics	freedomOfAssembly	N	16
G	Politics	freedomOfReligion	N	16
G	Politics	freedomOfSpeech	N	16
G	Politics	governmentRepression	Y	16
G	Politics	policeBrutality	Y	
G	Politics	politicalOppositionActivity	N	16
G	Politics	propertyRights	N	10
G	Politics	publicDivision	Y	
G	Politics	socialUnrest	Y	
G	Politics	votingFraud	Y	
G	Politics	votingRights	N	16

## Advanced Scores Definitions and Ranges

Category scores are the most granular Core scores. The table below lists the Core scores with a description and numerical range for each.

Score	Description:	Range
Buzz	Total number of relevant ESG references to a country, its regions, or its cities	0 to Inf
ESG Overall Score	Composite score calculated from Advanced RMA Scores	1 to 100
ESG Combined Score	Equals the ESG Score when the ESG Controversies Score is higher than the ESG Score. However, if the ESG Score is higher than the ESG Controversies Score, then a simple average of those two scores is used for the Combined Score.	1 to 100
ESG Controversies Score	An aggregate of media reports about a country's practices in violation of principled environmental, social, and governance behaviors.	1 to 100
PILLAR SCORES		
Environment Pillar Score	Aggregate references to quality of country's environmental management	1 to 100
Social Pillar Score	Aggregate references to a country's social health	1 to 100
Governance Pillar Score	Aggregate references to quality of country governance	1 to 100
CATEGORY SCORES		
Emissions Category Score	Measures a country's commitment and effectiveness towards reducing environmental emissions.	1 to 100
Environmental Category Score	Reflects a country's capacity to reduce the environmental costs and burdens for its citizens and develop new environmentally-friendly technologies	1 to 100
Resource Use Category Score	Reflects a country's capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions.	1 to 100
Culture Category Score	Measures a country's effectiveness towards citizen satisfaction, healthy lifestyles, balanced workplaces, and equal opportunities for its population	1 to 100

Society Responsibility Category Score	Reflects a country's capacity to support citizens' health and safety, integrity, entrepreneurial activities, education, and data privacy.	1 to 100
Human Rights Category Score	Measures a company's effectiveness towards respecting the fundamental human rights conventions.	1 to 100
Community Category Score	Measures the country's commitment towards being a good global citizen, protecting public health and disease burden	1 to 100
Economics Category Score	Measures the country's economic activity, opportunities, trade, and rights	1 to 100
Political Rights Category Score	Measures a country's effectiveness towards equal treatment of citizens and participation in the political process	1 to 100
Leadership Category Score	Measures a country's commitment and effectiveness towards open and trusted governance.	1 to 100

## COUNTRIES ESG ADVANCED SCORES

The below table lists the 132 Countries Advanced scores (68 ESG and 64 Controversy ESG), 10 category buzz scores, 10 category scores, and 10 category controversy scores. A description of each score is available in the middle column and its numeric range is viewable in the rightmost column. Excepting the buzz, category buzz and the mentions scores, the values carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range "0 to 1\*", see Chapter 3 above. The blue-highlighted rows represent category data fields. The grey-highlighted rows precede controversies for each category.

While the 16 Core scores are available only in a Daily (DAI) feed, the Advanced scores are available in the 60-second (minutely, 01M), hourly (HOU), and daily (DAI) feeds.

Score	Description: references in news and social media to...	Range
mentions	a country, its regions, or its cities	0 to Inf
buzz	ESG issues in a country, its regions, or its cities	0 to Inf
emissionsBuzz	the count of relevant emission references	0 to Inf
emissions	a country's commitment and effectiveness towards reducing environmental emissions as well as specific areas in which a country is underperforming in the management of harmful emissions	-1 to 1
emissionsControversies	emission category controversies	0 to 1*
airborneEmissionsImprovement	a country's progress towards reducing all GHG, particulate, and other harmful chemical emissions net of references to increases in such emissions	-1 to 1
carbonEmissionsImprovement	a country's progress towards reducing carbon dioxide emissions net of references to increases	-1 to 1
carbonTaxDirection	increases in carbon taxes net of decreases	-1 to 1
climateChangeOppVsRisk	climate change as a national opportunity versus a risk	-1 to 1

emissionsPolicy	country policies to address climate change and reduce GHG, particulate, and other emissions net of references to violations of such policies	-1 to 1
pollutionImprovement	improvements in polluting waste net of references to expansion in polluting waste	-1 to 1
recycling	recycling activities and policies	-1 to 1
<i>Emissions Controversies Scores</i>		
airborneEmissionsControversy	airborne emissions such as gas leaks and flare-offs, radiation, and carbon dioxide release	0 to 1*
carbonEmissionsControversy	airborne carbon dioxide emissions and increases of such	0 to 1*
industrialAccident	industrial accidents including fuel transport spills, mining accidents, and radiation leaks	0 to 1*
pollutionControversy	a growing waste and pollution burden for a country	0 to 1*
environmentalBuzz	the count of environmental references regarding the country	0 to Inf
environmental	a country's capacity to reduce the environmental costs and burdens for its citizens and develop new environmentally-friendly technologies as well as reports of environmental degradation and stress in a country	-1 to 1
environmentalControversies	environmental category controversies	0 to 1*
environmentalEfforts	initiatives to repair, reverse, or heal environmental damage net of references to ongoing environmental damage	-1 to 1
environmentalInvestment	investments in nature reserves, clean technologies, waste reduction, sustainability, and social impact initiatives	0 to 1*
forestHealth	reforestation policies and woodland health net of references to deforestation and woodland degradation	-1 to 1
marineProtection	initiatives to protect, repair, reverse, or heal marine damage net of references to ongoing overfishing, whaling, and degradation of the marine environment and resources	-1 to 1
natureProtection	initiatives to preserve nature in reserves and conservation areas net of references to degradation or loss of nature preserves	-1 to 1
plantBasedDiet	plant-based diets	0 to 1*
sustainability	sustainable activities net of references to unsustainable effects	-1 to 1
sustainabilityPolicy	country sustainability policies including on climate, economic development, governance, and energy use net of references to violations or weakening of existing policies	-1 to 1
sustainableInnovation	environmentally-friendly products, use of clean technologies, clean energy design and development, and green construction	0 to 1*
sustainablePackaging	sustainability in packaging and packaging materials	-1 to 1

<i>Environmental Controversies Scores</i>		
agAnimalStress	problems and disease burden in animal agriculture leading to reduced supplies	0 to 1*
agCropStress	problems and disease burden in plant agriculture leading to reduced supplies	0 to 1*
agriculturalStress	problems in the agricultural sector related to weather, salinity, climate change, and other natural causes	0 to 1*
desertification	increasing aridity and loss of farmland to desert	0 to 1*
factoryFaRMang	factory farming and CAFO operations	0 to 1*
hunger	domestic hunger, malnourishment, and famine	0 to 1*
overfishing	overfishing, whaling, and marine policy infractions	0 to 1*
seaLevelRise	sea level rises pertinent to the country	0 to 1*
warming	temperature increases in a country, its cities, and its regions	0 to 1*
wildlifeTrafficking	wildlife trafficking, poaching, and trade	0 to 1*
resourceUseBuzz	the count of references regarding a country's resource use	0 to Inf
resourceUse	a country's capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions as well as reports of energy waste and use and production of fossil fuels	-1 to 1
resourceUseControversies	resource use category controversies	0 to 1*
energyEfficiency	energy efficiency efforts net of energy waste	-1 to 1
energyEfficiencyPolicy	national energy efficiency policies net of references to violations of such policies	-1 to 1
renewableEnergyDevelopment	development and investment in renewable energy sources	0 to 1*
renewableEnergyPolicy	renewable energy policies and initiatives	-1 to 1
supplyChainSustainability	supply chain sustainability versus inefficiency and waste	0 to 1*
<i>Resource Use Controversies Scores</i>		
environmentalControversy	energy waste	0 to 1*
unsustainableActivities	socially unsustainable business activities	0 to 1*
communityBuzz	the count of references to community-related issues for a country	0 to Inf
community	the country's commitment towards being a good global citizen, protecting public health and disease burden as well as the reports of public ill-health	-1 to 1
communityControversies	community category controversies	0 to 1*
accessAffordability	cost of living as inexpensive net of references to being overpriced	-1 to 1



addictionManagement	efforts to manage addictive illnesses, positive net of negative	-1 to 1
charityAwareness	a country's involvement in charitable activities including foreign aid and donations	0 to 1*
diseaseManagement	a country's medical research and development of treatments addressing epidemic diseases	-1 to 1
fertility	decreasing female fertility net of references to rising birthrates	-1 to 1
freshWaterAccessEfforts	freshwater access net of references to restrictions on the availability of potable water	-1 to 1
povertyAlleviation	low poverty and policies to reduce poverty net of increasing poverty and absence of such policies	-1 to 1
publicHealthEfforts	a country's activities in support of public health net of references to poor public health	-1 to 1
smokingManagement	declining smoking net of references to increasing smoking and high smoking prevalence	-1 to 1
trust	trusting comments towards a country net of mistrustful comments	-1 to 1

### Community Controversies Scores

addiction	addiction and addictive illnesses in a country	0 to 1*
anger	angry comments regarding a country's governance, policies, practices, and values	0 to 1*
diseaseBurden	a country's population disease burden	-1 to 1
humanDiseaseGI	declining infectious gastrointestinal disease prevalence in a country net of references to increasing prevalence	-1 to 1
humanDiseasePulm	declining infectious respiratory disease prevalence in a country net of references to increasing prevalence	-1 to 1
malnourishment	malnourishment and poor food nutrition	0 to 1*
malnourishmentYouth	malnourishment and poor food nutrition among the country's young	0 to 1*
obesityAwareness	obesity and an increasingly overweight population	0 to 1*
publicHealthControversy	poor public health services, health problems, and unhealthy lifestyles	0 to 1*
smoking	increasing smoking and high smoking prevalence	0 to 1*

cultureBuzz	the count of references to a country's culture category	0 to Inf
culture	a country's effectiveness towards citizen satisfaction, healthy lifestyles, balanced workplaces, and equal opportunities for its population as well as references to employment conflicts and wage inequality	-1 to 1
cultureControversies	culture category controversies	0 to 1*
laborDevelopment	abundant training and development opportunities net of limited training and development activities	-1 to 1

publicSentiment	positive perceptions of the society, economic opportunities, and the workplace net of negative	-1 to 1
wageFairness	wage fairness net of references to pay disparities	-1 to 1
workLifeBalance	benefits offered at the country.	-1 to 1
workplaceConditions	perceptions of the work environment as healthy net of references to exploitative working conditions	-1 to 1
<i>Culture Controversies Scores</i>		
laborDispute	disagreement and discord between labor, labor unions, and management	0 to 1*
layoffs	layoffs, furloughs, and staffing cuts	0 to 1*
wageInequality	unfair wage issues, payment delays, and wage controversies	0 to 1*
workplaceSafetyControversy	workplace abuse, injuries, exploitation, and safety violations	0 to 1*
humanRightsBuzz	the count of references to human rights issues in a country	0 to Inf
humanRights	a company's effectiveness towards respecting the fundamental human rights conventions as well as reports of human exploitation in a country	-1 to 1
humanRightsControversies	human rights category controversies	0 to 1*
genderEqualityEfforts	female empowerment net of references to exploitation of women	-1 to 1
humanRightsEfforts	policies for and improvement of human and labor rights net of worsening of such rights	-1 to 1
immigrationSentiment	positive sentiment expressed towards immigration and immigrants net of negative	-1 to 1
minorityEquality	support of minority rights for racial, ethnic, gender, and sexual-orientation minorities net of persecutory expressions	-1 to 1
<i>Human Rights Controversies Scores</i>		
childLabor	child labor in a country or in that country's supply chains	0 to 1*
forcedLabor	forced labor in a country or in that country's supply chains	0 to 1*
humanTrafficking	human trafficking in a country's population, immigrant community, or supply chains	0 to 1*
laborExploitation	labor law violations and abuses in a country or in that country's supply chains	0 to 1*
minorityViolence	exploitative and abusive behavior towards minorities	0 to 1*
violenceAgainstWomen	abusive behavior towards women and girls	0 to 1*
societyBuzz	the count of references to society category issues in a country	0 to Inf

society	a country's capacity to support citizens' health and safety, integrity, entrepreneurial activities, education, and data privacy as well as reports of social dysfunction & unhealthy conflict	-1 to 1
societyControversies	society category controversies	0 to 1*
dataPrivacy	data security and privacy net of references to violations	-1 to 1
educationEfforts	strong educational systems net of references to weak	-1 to 1
employment	increasing employment net of references to unemployment	-1 to 1
employmentForecast	increasing employment forecasts net of references to unemployment forecasts	-1 to 1
innovation	corporate, management, and product innovation	0 to 1*
internetAccessImprovement	internet access and affordability net of references to weak access and unaffordability	-1 to 1
literacyEfforts	literacy net of references to illiteracy	-1 to 1
RND	increases in research and development spending net of decreases	-1 to 1
socialEquality	social equality net of references to inequality	-1 to 1
socialExpenditures	social spending and development programs net of references to deficiencies in the social safety net	-1 to 1
socialMobility	social mobility net of references to fixed classes in a society	-1 to 1
<i>Society Controversies Scores</i>		
corruption	corrupt practices in the society	0 to 1*
crime	crime of any type	0 to 1*
cyberCrime	cyberattacks, hacking, and internet scams	0 to 1*
ethicsControversy	ethical conflicts and problems in a society	0 to 1*
financialCrime	illegal financial activities	0 to 1*
homicide	homicides in a country	0 to 1*
intellectualPropertyTheft	patent and intellectual property theft	0 to 1*
legalActivity	lawsuits and litigation in a society	0 to 1*
misinformation	misleading advertising	0 to 1*
privacyControversy	violations of customer privacy	0 to 1*
terrorism	terrorism pertaining to a country	0 to 1*
violentCrime	violent crimes within a country	0 to 1*
war	warfare pertaining to a country	0 to 1*
economicsBuzz	the count of references to economic issues in a country	0 to Inf
economics	a country's economic activity, opportunities, trade, and rights as well as economic controversies including financial fraud, business weakness, and crime	-1 to 1

economicsControversies	economics category controversies	0 to 1*
freeTrade	free trade expansion, decreasing protectionism, and reductions in tariffs net of the opposite	-1 to 1
tariffsDown	tariffs falling net of tariffs increasing	-1 to 1

#### *Economics Controversies Scores*

businessFraud	tax evasion, fraud, earnings restatements, and regulatory noncompliance	0 to 1*
creditControversy	increased risk of default or business failure	0 to 1*
financialSystemInstability	stability of the financial system net of instability	-1 to 1
sanctions	sanctions and sanctions violations	0 to 1*
unfairMarkets	market manipulation, insider sales, and insider dealings	0 to 1*

leadershipBuzz	the count of leadership references for a country	0 to Inf
leadership	a country's commitment and effectiveness towards open and trusted governance as well as a country's leadership weaknesses and public anger about governance	-1 to 1
leadershipControversies	leadership category controversies	0 to 1*
businessLeadersSentiment	positive perceptions of business leaders net of negative	-1 to 1
governmentAccountingSentiment	positive perceptions of government accounting net of negative	-1 to 1
governmentSentiment	positive perceptions of government institutions and leaders net of negative	-1 to 1
governmentTrust	trust towards government institutions net of mistrust	-1 to 1
politicalProcessSentiment	positive perceptions of political parties and the political process net of negative	-1 to 1

#### *Leadership Controversies Scores*

governmentAnger	anger towards government leaders and institutions	0 to 1*
governmentCorruption	inappropriate or rule-breaking behavior by government institutions and leaders	0 to 1*
governmentInstability	rumors of government leadership turnover	0 to 1*
leadershipCrime	criminal activity among government leaders and political figures	0 to 1*

politicsBuzz	count of references to political issues in a country	0 to Inf
politics	a country's effectiveness towards equal treatment of citizens and participation in the political process as well as weaknesses in political rights	-1 to 1
politicsControversies	politics category controversies	0 to 1*

<u>civicEngagement</u>	public engagement in the political process and voting net of lack of participation	-1 to 1
<u>civilSocietyPartnerships</u>	partnerships between governments and NGOs net of absence of or restrictions on NGO activities	-1 to 1
<u>freedomOfAssembly</u>	freedom to assemble net of restrictions on assembly	-1 to 1
<u>freedomOfReligion</u>	freedom of worship net of restrictions	-1 to 1
<u>freedomOfSpeech</u>	freedom of speech liberties net of restrictions	-1 to 1
<u>politicalOppositionActivity</u>	engagement by political opposition in the political process	-1 to 1
<u>propertyRights</u>	freedom of property ownership net of restrictions	-1 to 1
<u>votingRights</u>	voting rights net of restrictions on and violations of such rights	-1 to 1

#### *Politics Controversies Scores*

<u>autocracy</u>	authoritarian governance	0 to 1*
<u>constitutionalRevision</u>	efforts to revise a country's constitution	0 to 1*
<u>governmentRepression</u>	government and police repression of the public and the media	0 to 1*
<u>policeBrutality</u>	public abuse by the police forces	0 to 1*
<u>publicDivision</u>	fragmenting and division within the society	0 to 1*
<u>socialUnrest</u>	social unrest, demonstrations, and turbulence	0 to 1*
<u>votingFraud</u>	election rigging and fraud	0 to 1*

## CHAPTER 13 COUNTRY MARKETS

### COUNTRY MARKETS ASSETS

There are 62 countries or regions with the largest economic output being distributed. The asset codes correspond to Thomson Reuters topic codes for geopolitical units.

The table below is sorted by Country/Region.

Asset Code	Country/Region
DZ	Algeria
AR	Argentina
AU	Australia
AT	Austria
BD	Bangladesh
BE	Belgium
BR	Brazil
CA	Canada
CL	Chile
CN	China
CO	Colombia
CZ	Czech Republic
DK	Denmark
EG	Egypt
EZ	Euro-zone
FI	Finland
FR	France
DE	Germany
GR	Greece
HK	Hong Kong
HU	Hungary
IN	India
ID	Indonesia
IR	Iran
IQ	Iraq
IE	Ireland
IL	Israel
IT	Italy
JP	Japan
KZ	Kazakhstan
KW	Kuwait
MY	Malaysia

Asset Code	Country/Region
MX	Mexico
MA	Morocco
NL	Netherlands
NZ	New Zealand
NG	Nigeria
NO	Norway
PK	Pakistan
PE	Peru
PH	Philippines
PL	Poland
PT	Portugal
QA	Qatar
RO	Romania
RU	Russia
SA	Saudi Arabia
SG	Singapore
ZA	South Africa
KR	South Korea
ES	Spain
SE	Sweden
CH	Switzerland
TW	Taiwan
TH	Thailand
TR	Turkey
UA	Ukraine
AE	United Arab Emirates
GB	United Kingdom
US	United States
VE	Venezuela
VN	Vietnam

### COUNTRY MARKETS RMA SCORES

The 42 RMA scores for the country markets asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

The table below is broken into four sections: bonds, rates, real estate, and stocks. Each has its own buzz.

Score	Description: references in news and social media to the country's major stock indexes and shares traded in that country...	Range
bondBuzz	sum of all references to the country's bonds and debt (excluding corporate debt) in that country	0 to Inf
ratesBuzz	sum of all references underlying the centralBank, debtDefault, interestRates, interestRatesForecast, and monetaryPolicyLooseVsTight RMA	0 to Inf
realEstateBuzz	sum of all references underlying the commercialRealEstateSentiment, residentialRealEstateGrowth, residentialRealEstateSales, residentialRealEstateSentiment, and residentialRealEstateValues RMA	0 to Inf
stockIndexBuzz	sum of all relevant references feeding into the RMA	0 to Inf
bondSentiment	overall positive references, net of negative references	-1 to 1
bondNegative	overall negative references	-1 to 1
bondPositive	overall positive references	-1 to 1
bondOptimism	optimistic references	-1 to 1
bondPessimism	pessimistic references	-1 to 1
bondTrust	trustworthiness, net of references connoting mistrust	-1 to 1
bondFear	fear and anxiety	0 to 1*
bondStress	arousal and intensity, weighted towards distress	0 to 1*
bondSurprise	unexpected events and surprise	0 to 1*
bondUncertainty	uncertainty and confusion	0 to 1*
bondCreditRisk	debt defaults, late payments, and bankruptcy	-1 to 1
bondVolatility	volatility in bond and debt values	0 to 1*
centralBank	country central bank references	0 to 1*
debtDefault	debt defaults and bankruptcies in a country	0 to 1*
interestRates	interest rates rising, net of references to rates falling	-1 to 1
interestRatesUp	interest rates rising	0 to 1*
interestRatesDown	references to rates falling	0 to 1*
interestRatesForecast	forecasts of interest rates rising, net of forecasts of rates falling	-1 to 1
interestRatesForecastUp	forecasts of interest rates rising	0 to 1*
interestRatesForecastDown	forecasts of interest rates falling	0 to 1*
monetaryPolicyLooseVsTight	monetary policy being loose, net of references to monetary policy being tight	-1 to 1
commercialRealEstateSentiment	positive references to commercial real estate, net of negative references	-1 to 1
residentialRealEstateGrowth	residential real estate expansion, net of references to contraction	-1 to 1

residentialRealEstateSales	residential real estate sales rising, net of references to sales decreasing	-1 to 1
residentialRealEstateSentiment	positive references to residential real estate, net of negative references	-1 to 1
residentialRealEstateValues	residential real estate values rising, net of references to declining values	-1 to 1
stockIndexSentiment	overall positive references, net of negative references	-1 to 1
stockIndexNegative	overall negative references	0 to 1*
stockIndexPositive	overall positive references	0 to 1*
stockIndexOptimism	references to optimism	0 to 1*
stockIndexPessimism	references to pessimism	0 to 1*
stockIndexTrust	trustworthiness, net of references connoting mistrust	-1 to 1
stockIndexFear	fear and anxiety	0 to 1*
stockIndexStress	arousal and intensity, weighted towards distress	0 to 1*
stockIndexSurprise	unexpected events and surprise	0 to 1*
stockIndexUncertainty	uncertainty and confusion	0 to 1*
stockIndexMarketRisk	positive emotionality and positive expectations net of negative emotionality and negative expectations. Includes factors from social media found characteristic of speculative bubbles – higher values indicate greater bubble risk. Also known as the “Bubbleometer.”	-1 to 1
stockIndexPriceDirection	stock price increases, net of references to price decreases	-1 to 1
stockIndexPriceDown	stock price decreases	0 to 1*
stockIndexPriceUp	stock price increases	0 to 1*
stockIndexPriceForecast	forecasts of stock price rises, net of references to forecasts of asset price drops	-1 to 1
stockIndexPriceForecastDown	forecasts of stock price drops	0 to 1*
stockIndexPriceForecastUp	forecasts of stock price rises	0 to 1*
stockIndexTopVsBottom	references to asset price topping, expensive valuations, and excessive speculation net of bottoming and inexpensive prices	-1 to 1
stockIndexOvervaluedVsUndervalued	references to expensive, net of cheap, valuation	-1 to 1
stockIndexVolatility	volatility in stock market prices	0 to 1*



## CHAPTER 14 CRYPTOCURRENCIES

### CRYPTOCURRENCY ASSETS

RMA Cryptocurrencies data covers more than 150 active cryptocurrencies. Cryptocurrencies were selected for inclusion based on listed market capitalization and/or technological significance. Coverage includes all cryptocurrencies present in the coinmarketcap.com ranking of the top 20 cryptocurrencies by market capitalization starting in November 2017. Coverage is updated monthly to include new entrants from the top 20 list. Once covered, cryptocurrencies remain in the feed until trading activity ceases.

A list of the covered cryptocurrencies and monthly changes in coverage is available on the MRN SFTP site. See Chapter 16 for information on the files and how to access them.

### CRYPTOCURRENCY RMA SCORES

The 54 RMA scores for the cryptocurrency asset class carry six significant digits past the decimal point. Negative numbers have a leading minus (-) sign. The table below summarizes these fields. For more information on those with range “0 to 1\*”, see Chapter 3 above.

Score	Description: <i>references in news and social media to...</i>	Range
sentiment	overall positive references, net of negative references	-1 to 1
negative	overall negative references	0 to 1*
positive	overall positive references	0 to 1*
optimism	references connoting optimism, future-tense positive	0 to 1*
pessimism	references connoting pessimism, future-tense negative	0 to 1*
joy	happiness and affection	0 to 1*
loveHate	love, net of references to hate	-1 to 1
trust	trustworthiness, net of references connoting corruption	-1 to 1
anger	anger and disgust	0 to 1*
disagreement	dispute net of agreement and conciliation	-1 to 1
fear	fear and anxiety	0 to 1*
gloom	gloom and negative future outlook	0 to 1*
stress	arousal and intensity, weighted towards distress	0 to 1*
violence	violent crime, terrorism, and war	0 to 1*
surprise	unexpected events and surprise	0 to 1*
timeUrgency	urgency and timeliness, net of references to tardiness and delays	-1 to 1
uncertainty	uncertainty and confusion	0 to 1*
emotionVsFact	all emotional sentiments, net of all factual and topical references	-1 to 1
shortVsLongTerm	references to immediate and short-term timeframes versus long term	-1 to 1
marketRisk	positive emotionality and positive expectations net of negative emotionality and negative expectations. Includes factors from social media found characteristic of speculative bubbles –	-1 to 1

	higher values indicate greater bubble risk. Also known as the “Bubbleometer.”	
longShort	buying, net of references to shorting or selling	-1 to 1
longShortForecast	forecasts of buying, net of references to forecasts of shorting or selling	-1 to 1
priceDirection	price increases, net of references to price decreases	-1 to 1
priceDown	references to price decreases	0 to 1*
priceForecast	forecasts of asset price rises, net of references to forecasts of asset price drops	-1 to 1
priceUp	asset price increases	0 to 1*
priceMomentum	currency price trend strength, net of references to trend weakness	-1 to 1
topVsBottom	net references to asset price topping, expensive valuations, and excessive speculation versus bottoming and relatively inexpensive prices	-1 to 1
overvaluedVsUndervalued	references to expensively versus cheaply valued asset prices	-1 to 1
volatility	volatility in market prices or business conditions	0 to 1*
adoption	acceptance and widespread adoption	0 to 1*
adoptionForecast	forecasts of acceptance and widespread adoption	0 to 1*
anonymity	user anonymity in transactions	0 to 1*
attack	hacks and other cyberattacks related to the coin	0 to 1*
codeSentiment	overall positive references to the code base, net of negative references	-1 to 1
codeUpgrade	code upgrades and enhancements	0 to 1*
criminalActivity	criminal activity involving the cryptocurrency or community	0 to 1*
developerSentiment	overall positive references to the development team, net of negative references	0 to 1*
fOMO	fear of missing out	0 to 1*
fork	fork in the blockchain	0 to 1*
forkForecast	forecasts of a fork in the blockchain	0 to 1*
hodl	holding on for dear life	0 to 1*
innovation	innovativeness	0 to 1*
litigation	litigation and lawsuits involving the cryptocurrency or community	0 to 1*
majorityAttack	majority of miners attacking the blockchain	0 to 1*
noobs	amateur and naive investor activity	0 to 1*
regulatoryCrackdown	regulatory crackdown on cryptocurrency-related activities	0 to 1*
regulatoryIssues	tax or securities authority’s intervention or legislation	0 to 1*
scam	fraudulent activity or references to scams associated with the cryptocurrency	0 to 1*

transactionSpeed	fast versus slow transactions speeds for the cryptocurrency	-1 to 1
vulnerability	vulnerabilities or weaknesses in the code	0 to 1*
softwareUpgrade	references to core software enhancements for the blockchain or application	0 to 1*
partnership	references to collaborations	0 to 1*
futureVsPast	references to future events, net of references to past	-1 to 1

## CHAPTER 15 CONSTRUCTING RMA WITH GREATER WINDOW LENGTHS

### BACKGROUND

RMAs are constructed internally as Buzz-weighted averages across various news and social media content sources. Custom RMA on greater window lengths can be constructed based on RMA of shorter window lengths.

### CREATING CUSTOM RMA WINDOW LENGTHS

Users may construct custom RMAs of varying window lengths from Buzz-weighted averages of minutely RMA data.

For example, for a given company (*assetCode*), content source (*dataType*) and datetime (*windowTimestamp*), let  $Buzz_0, Buzz_{-1}, \dots, Buzz_{-(N-1)}$  and  $RMA_0, RMA_{-1}, \dots, RMA_{-(N-1)}$  represent the corresponding Buzz and RMA minutely data over the trailing  $N$  minutes. Then the Buzz-weighted average RMA over the trailing  $N$ -minute window length may be explicitly calculated as:

$$(Buzz_0 * RMA_0 + Buzz_{-1} * RMA_{-1} + \dots + Buzz_{-(N-1)} * RMA_{-(N-1)}) / (Buzz_0 + Buzz_{-1} + \dots + Buzz_{-(N-1)})$$

### COMPARING CONSTRUCTED RMA DATA TO ACTUAL RMA DATA

Note that the daily (WDAI\_UDAI) and hourly (WDAI\_UHOU) RMA data, which use a 24-hour/1440-minute trailing window<sup>1</sup>, cannot be reproduced perfectly using minutely RMA data (W01M\_U01M). This is because textual content is aggregated in the daily and hourly feeds based in part on their online availability (*publication timestamp*). Articles are excluded from the daily and hourly feeds 24 hours after publication, whereas content in the minutely feed is aggregated solely by its time of acquisition by MarketPsych crawlers (*crawl timestamp*). See “Timing of Social Media Articles in Archive” for more information about timestamps. The greater the delay between the publication and crawl timestamps, the fewer 1440-minute RMA windows will include that content. As a result, the Buzz of the artificially reconstructed 24-hour RMA will always match or exceed that of the actual 24-hour RMA.

---

<sup>1</sup> See “Daily Update Frequency Anomaly” section above for exceptions to when WDAI\_UDAI data does not cover a 24-hour window.

## CHAPTER 16 MRN SFTP SITE: DATA AND REFERENCE FILES

### OVERVIEW

Refinitiv provides live and archive RMA data over SFTP.

Data is formatted as tab-delimited text files. Archive files are compressed in .zip format.

Production clients can access the full history, while trial clients may access a more limited period. Files for the two client types are stored in different directories.

The SFTP site also contains useful reference files for the Companies and Cryptocurrencies offerings:

- Listings of live and obsolete assets
- Mappings to common identifiers, including CUSIP, ISIN, and SEDOL for companies and coinmarketcap.com tickers and name identifiers for cryptocurrencies.
- Changes in coverage

### ACCESS

Production and most trial users are granted access to the SFTP site. Trial users who convert to paid customers should have their credentials upgraded to full-history access. Users should contact their sales specialist or account manager to obtain login credentials.

The SFTP site is available on public internet at [sftp.news.refinitiv.com](https://sftp.news.refinitiv.com), or 3.225.149.227 / 3.222.233.255:22 using key file authentication. SFTP file directories will include root /mrn-mi-w/Files/ at the beginning of all file paths

### WINDOW LENGTHS AND UPDATE FREQUENCIES

Chapter 2 explained that RMA are produced over varying window lengths and update frequencies. The excerpted table below shows which combinations are available.

Window Length	Update Frequency	SFTP File Abbreviation
1 minute	1 minute	W01M_U01M
1440 minutes / 24 hours	1 hour	WDAI_UHOU
1440 minutes / 24 hours	Daily, at 3:30 Eastern time	WDAI_UDAI
365 days	Daily, at 3:30 Eastern time	W365_UDAI (Core ESG only)

### FILES

Each file contains all the scores for an asset class, for a certain window length and update frequency.

#### Non-zero Buzz Records and Files

Only rows with non-zero Buzz appear in these files. Moreover, if there are no non-zero Buzz rows to include in a file, then that file will not be published.

#### Directory Structure

*{Package}/{Asset Class}/{Time Bucket}/{Time Abbreviation}*

- *{Package}* can take one of the following values:
  - PRO: Professional Quant
  - Mapping: Mapping files

- *{Asset Class}* can take one of the following values:
  - CMPNY: all individual companies
  - CMPNY\_AMER: individual companies domiciled in the Americas
  - CMPNY\_EMEA: individual companies domiciled in Europe, the Middle East, and Africa
  - CMPNY\_APAC: individual companies domiciled in Asia and the Pacific
  - CMPNY\_ESG\_ADV: all individual companies, advanced ESG data feeds
  - CMPNY\_ESG\_COR: all individual companies, core ESG data feeds
  - CMPNY\_GRP: company groups
  - COM\_AGR: agricultural commodities
  - COM\_ENM: energy & material commodities
  - COU: countries
  - COU\_ESG\_ADV: countries, advanced ESG data feeds
  - COU\_ESG\_COR: countries, core ESG data feeds
  - COU\_MKT: country markets
  - CRYPTO: cryptocurrencies
  - CUR: currencies
- *{Time Bucket}* describes the history of data in the files, and can take one of the following values:
  - monthly- provides monthly packaged files for all history up to the latest complete month. Files can expect to be posted 10 to 15 days after month's end.
  - daily- provides daily packaged files for the last complete 42 days, Files 43 days and older will be deleted.
  - minutely- provides hourly and minutely packaged files for the last 48 hours
- *{Time Abbreviation}* describes the combination of window length and update frequency, as per the table above
  - W01M\_U01M
  - WDAI\_UHOU
  - WDAI\_UDAI\*
  - W365\_UDAI

\*Note- new WDAI\_UDAI files will be posted at 15:30 ET.

## File Naming

*{Package}.Archive.{Asset Class}.{Time Abbreviation}.{Time Period}.{System Version, converted}.txt*, such that

- *{Package}* as per above
- *{Asset Class}* as per above
- *{Time Abbreviation}* as per above
- *{Time Period}* will be in “yyyymmdd-hhmm” format. Note that boundaries are according to UTC and mark the end of the content window.
- *{System Version, converted}*. The systemVersion value, “MP:4.0.0” will be converted to “0400”. Note that this string's length reaches five characters when the third number in the systemVersion exceeds 9, e.g., “4.0.10” will be converted to “04010”.

## Fields

See Chapter 5 for information on fields that are generic to all RMA asset classes.

- id

- assetCode
- ticker: only for Companies. Note that ticker is generally not point-in-time, although it can vary across System Version values.
- windowTimestamp
- dataType: "News", "Social", "News\_Social", or "News\_Headline"
- systemVersion, excluding its prefix
- mentions
- buzz
- non-generic scores: sentiment, managementTrust, et al.

## Sort Order

- assetCode
- datatype

## File Examples

The below is a truncated screenshot of a Company's ESG Advanced archive file. This format is shared with all asset classes in RMA v4 except ESG Core. The file is labelled to emphasize key aspects of the data presentation.

Unseen columns continue off the image to the right.

						sustainability	sustainabilityPolicy	agriculturalStress	hunger
id	assetCode	windowTimestamp	dataType	systemVersion	buzz				
mp:2020-01-01_20.30.00.Social.COU_ESG.AU	AU	1/1/2020 20:30	Social	MP:4.0.0	1889.5	0.025404	0.016142	0.01032	0.002646
mp:2020-01-01_20.30.00.News_Social.COU_ESG.AU	AU	1/1/2020 20:30	News_Social	MP:4.0.0	9925.4	0.020654	0.007153	0.01204	0.002922
mp:2020-01-01_20.30.00.News_Headline.COU_ESG.AU	AU	1/1/2020 20:30	News_Headline	MP:4.0.0	452.5	0.00221	0.001105	0.00442	0
mp:2020-01-01_20.30.00.News.COU_ESG.AU	AU	1/1/2020 20:30	News	MP:4.0.0	8035.9	0.019537	0.00504	0.012444	0.002987
mp:2020-01-01_20.30.00.Social.COU_ESG.SG	SG	1/1/2020 20:30	Social	MP:4.0.0	226	0.039823	0.017699	0.022124	
mp:2020-01-01_20.30.00.News_Social.COU_ESG.SG	SG	1/1/2020 20:30	News_Social	MP:4.0.0	1416.5	0.042358	0.021179	0.009884	
mp:2020-01-01_20.30.00.News_Headline.COU_ESG.SG	SG	1/1/2020 20:30	News_Headline	MP:4.0.0	52	0.057692	0.038462	0.019231	
mp:2020-01-01_20.30.00.News.COU_ESG.SG	SG	1/1/2020 20:30	News	MP:4.0.0	1190.5	0.042839	0.02184	0.00756	
mp:2020-01-01_20.30.00.Social.COU_ESG.US	US	1/1/2020 20:30	Social	MP:4.0.0	35168.4	0.009696	0.00354	0.008701	0.000284
mp:2020-01-01_20.30.00.News_Social.COU_ESG.US	US	1/1/2020 20:30	News_Social	MP:4.0.0	101490.3	0.009671	0.004064	0.007449	0.000256
mp:2020-01-01_20.30.00.News_Headline.COU_ESG.US	US	1/1/2020 20:30	News_Headline	MP:4.0.0	3863	0.00233	0.001294	0.004918	0.000259
mp:2020-01-01_20.30.00.News.COU_ESG.US	US	1/1/2020 20:30	News	MP:4.0.0	66321.9	0.009657	0.004342	0.006785	0.000241
mp:2020-01-01_20.30.00.Social.COU_ESG.YE	YE	1/1/2020 20:30	Social	MP:4.0.0	25			0.12	0.08
mp:2020-01-01_20.30.00.News_Social.COU_ESG.YE	YE	1/1/2020 20:30	News_Social	MP:4.0.0	618.5	0.001617		0.053355	0.069523
mp:2020-01-01_20.30.00.News_Headline.COU_ESG.YE	YE	1/1/2020 20:30	News_Headline	MP:4.0.0	72			0.013889	0.027778
mp:2020-01-01_20.30.00.News.COU_ESG.YE	YE	1/1/2020 20:30	News	MP:4.0.0	593.5	0.001685		0.050548	0.069082

This is the 2-digit ISO code (Reuters topic code) for each country.

Separate data feeds delivered from news, social media, and news headlines. News\_Social is an aggregate score.

The 152 country scores cover a variety of ESG themes and controversies.

Advanced ESG scores range from -1 → 1, while ESG controversy scores range from 0 → 1. The value is the percentage of all references to the country (buzz) containing this theme. No score is due to no media coverage of that theme.

Note Yemen has no sustainabilityPolicy references (YE) and relatively higher agriculturalStress and Hunger values. Singapore has no hunger references (SG).

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An example of an ESG Core data file is seen below:



Industry TRBC code and name included.		The PermID for each Company.		The 3 ESG scores, 3 Pillar scores, and 10 Category scores extend off-screen.									
windowTimestamp	industry	industryName	assetCode	ticker	name	buzz	ESG	ESGCombined	ESGControversies	Environment	Governance	Social	ResourceUse
2020-11-24T20:30:00.000Z	531010	Automobiles ar	4297089638	TSLA	Tesla Inc	1035773.5	55	45	35	97	24	40	96
2020-11-24T20:30:00.000Z	534020	Diversified reta	4295905494	AMZN	Amazon.com Inc	788378.5	59	44	28	82	31	67	71
2020-11-24T20:30:00.000Z	571060	Computers, pho	4295905573	AAPL	Apple Inc	712672	62	41	21	91	27	66	84
2020-11-24T20:30:00.000Z	572010	Software and IT	4297297477	FB	Facebook Inc	682180	25	19	13	69	13	24	51
2020-11-24T20:30:00.000Z	572010	Software and IT	4295907168	MSFT	Microsoft Corp	378710.5	66	50	34	96	41	87	93
2020-11-24T20:30:00.000Z	521010	Aerospace and	4295903076	BA	Boeing Co	363803.5	52	37	21	76	19	63	69
2020-11-24T20:30:00.000Z	572010	Software and IT	4296301199	TWTR	Twitter Inc	246384.5	24	18	13	65	15	21	56
2020-11-24T20:30:00.000Z	531010	Automobiles an	4295877341	7201	Nissan Motor Co Ltd	176582.5	57	38	20	90	18	52	73
2020-11-24T20:30:00.000Z	531010	Automobiles an	4295869244	VOW3	Volkswagen AG	172094	52	38	23	89	27	37	93
2020-11-24T20:30:00.000Z	571060	Computers, pho	4295882451	5930	Samsung Electronics	167676.5	66	47	27	97	16	79	95
2020-11-24T20:30:00.000Z	551010	Banking service	8589934175	WFC	Wells Fargo & Co	155185.5	37	26	16	88	18	36	86
2020-11-24T20:30:00.000Z	501020	Oil and gas	4295894740	BP	BP PLC	152095.5	68	63	58	95	29	69	89
2020-11-24T20:30:00.000Z	522030	Professional an	4295869662	WDI	Wirecard AG	151260.5	37	21	5	67	9	43	35
2020-11-24T20:30:00.000Z	521010	Aerospace and	4295884955	AIR	Airbus SE	147905.5	49	33	17	91	19	48	77
2020-11-24T20:30:00.000Z	543010	Food and drug r	4295905298	WMT	Walmart Inc	145720.5	83	57	31	93	74	81	97

Buzz is the number of ESG references in the past 365 days. All other Core ESG scores are 1 to 100 percentile ranks. Larger numbers are subjectively positive. Note that companies are percentile-ranked according to their Industry.

Note Wirecard has a low (5) Controversies score and low values are subjectively bad. Note BP has a high Environmental score (95) because companies are rated according to an Industry comparison (Oil), and BP has committed to go carbon-neutral.

## Timing of Social Media Articles in Archive

As background, there are three timestamps used in assigning timestamps to content.

- **Publication time:** a timestamp from the data itself that may be assumed to represent when the content was published
- **Acquisition time:** MarketPsych-assigned timestamp, for when MarketPsych obtained the data. For some content sources, the difference between the publication time and acquisition time is consistently ~1 second or less, but for certain significant social media sources this can average in the tens of minutes. This large difference is especially problematic for certain sources that MarketPsych did not collect live.
- **Aggregation time:** MarketPsych-assigned timestamp describing when the component RMA scores from content are finalized. For aligning live feed data and pro forma archives, aggregation time showed the best performance.

For all asset classes except cryptocurrencies, over different periods, the timestamp used for archive calculation changed.

- 1998 - February 2013: publication time
- March 2013 - August 2015: acquisition time. For RMA data that uses a 1440-minute/24-hour window length, the live feed and all archives are aggregated from article acquisition time to publication time plus 24 hours.
- September 2015 - present: aggregation time.

For cryptocurrencies, the publication time was used until April 1, 2018, at which time aggregation time is used for archive calculation.

Using aggregation time, although single-minute differences between the live feed and archive buzz remain, they affect well under 1% of buzz scores in the minute-window data.

## Archive Backfills

As might be expected for data derived from numerous textual sources, the processing of MarketPsych Analytics undergoes intermittent changes to its content inputs and filtering algorithms. These changes generally are introduced in the live data and in monthly archive updates, on a pro forma basis. Full-history RMA archives are backfilled to reflect these content changes on an occasional basis, often in tandem with a major version upgrade.



## Non-zero Buzz Records

Only rows with non-zero Buzz appear in these files, except for daily updating files (WDAI\_UDAI) for non-Companies data.

## VERSION UPDATES

The file system version is updated in one of three digits. The first digit of the version is updated (e.g., from version 3 to 4) approximately every three years due to advancements in the NLP and overhauls in source constituents. Such major versions are run in production in parallel while customers upgrade over 12 to 18 months. For the most recent major versions, version 2 NLP was frozen in March 2014, version 3 NLP was frozen in March 2017, and version 4 NLP was frozen in December 2020.

The second digits in the version number are updated if an urgent patch is made. For example, between versions 3.0/3.1 and 3.2/3.3 a source-level change affecting media acquisition led to excessive buzz in some assets. The change was identified, its effect was quantified, and a minor version update restores the feed to regain consistency from that source. The second digits are also updated when a forked sub-feed is launched. For example, the cryptocurrency sentiment feed was forked from v3.0 and launched as v3.1 due to minor NLP changes to account for cryptocurrency source-specific linguistic differences.

The third digits of the version number are updated monthly to reflect the inclusion of IPOs, company additions, corporate name changes, mergers, and buyout activity. These minor version updates include additional corporate aliases and changes in corporate aliasing. Updates reflected in second and third version number digits do not reflect NLP or text analysis alterations.

## COMPANIES AND CRYPTOCURRENCIES REFERENCE FILES

Companies and cryptocurrencies reference files serve several purposes. The files list companies and cryptocurrencies that can be found in the archive scores. Reference files add supporting information on the company or cryptocurrency and on its primary quote. Additionally, for companies the third-party identifiers – CUSIP, ISIN, and SEDOL – are also available. CUSIP and ISIN require a license with Standard & Poor's for CUSIPs. ISINs are included because some ISINs are CUSIP-based. SEDOL access requires a license with the London Stock Exchange.

Please contact your Account Manager or Sales Specialist if you are interested in viewing these third-party identifiers for companies and have a requisite license. Refinitiv will contact the identifier issuer(s) to verify the license(s).

## Directories

### Companies

*/MAPPING/RMA4/CMPNY/[BASIC/CUSIPISIN/SEDOL/CUSIPISINSEDOL]/*

Notes:

- The third level directory is permissioned according to user's combination of licenses for third-party identifiers. Access will be given to exactly one such directory. By default, users are granted access to the BASIC directory.

### Cryptocurrencies

*/MAPPING/RMA4/CRYPTO/[BASIC]/*

## Asset Lists and Mappings Files

### Companies

*RMA.Companies.[BASIC/CUSIPISIN/SEDOL/CUSIPISINSEDOL].{System Version, converted}.txt*

Notes:

- *{System Version, converted}*. The systemVersion value, "MP:4.0.0" will be converted to "0400". Note that this string's length reaches five characters when the third number in the systemVersion exceeds 9, e.g., "4.0.10" will be converted to "04010".

Fields:

- PermId: Thomson Reuters organizational identifier.
- companyName
- countryOfDomicile: two-character ISO 3166-1 country code
- TRBCEconomicSector: plain-text description of Thomson Reuters Business Classification (TRBC) economic sector
- status: "active" if the PermId may be scored in a live feed. Otherwise, "inactive".
- RIC: main RIC for this company.
- ticker: Because ticker is in the score files, it shall be populated for all companies. Private companies shall have a MarketPsych-designated ticker beginning with "PVT-".
- marketMIC: ISO 10383 code for market or exchange identification. Value may differ from similar value maintained by London Stock Exchange.
- CUSIP: only available in files with "CUSIPISIN" in the file name
- ISIN: only available in files with "CUSIPISIN" in the file name
- SEDOL: only available in files with "SEDOL" in the file name

Values on inactive companies shall attempt to represent their most recent values, including after delisting. Some values may be blank.

### Cryptocurrencies

*RMA.Crypto.[BASIC].{System Version, converted}.txt*

Notes:

- *{System Version, converted}*. The systemVersion value, "MP:4.0.0" will be converted to "0400". Note that this string's length reaches five characters when the third number in the systemVersion exceeds 9, e.g., "4.0.10" will be converted to "04010".
- For cryptocurrencies, the System Version begins at MP:3.1.05.

Fields:

- assetCode
- cryptocurrencyName
- status: "active" if the cryptocurrency may be scored in a live feed; otherwise "inactive".

### Changes File

The second is a file of changes since the previous System Version.

### Companies

*RMA.Companies.Changes.{System Version, converted}.txt*, such that

- *{System Version, converted}*. The systemVersion value, “MP:4.0.0” will be converted to “0400”. Note that this string’s length reaches five characters when the third number in the systemVersion exceeds 9, e.g., “4.0.10” will be converted to “04010”.

File contents:

- First line: “RMA Companies list for systemVersion [systemVersion] was created on [yyyy-mm-dd].”
- Further lines:
  - “PerId [xxxxxxxxxx], [companyName], became active.”
  - “PerId [xxxxxxxxxx], [companyName], became inactive.”

## Cryptocurrencies

*RMA.Crypto.Changes.{System Version, converted}.txt*, such that

- *{System Version, converted}*. The systemVersion value, “MP:4.0.0” will be converted to “0400”. Note that this string’s length reaches five characters when the third number in the systemVersion exceeds 9, e.g., “4.0.10” will be converted to “04010”.

File contents:

- First line: “RMA Cryptocurrencies list for systemVersion [systemVersion] was created on [yyyy-mm-dd].”
- Further lines:
  - “assetCode [xxxxxxxxxx], [cryptocurrencyName], became active.”
  - “assetCode [xxxxxxxxxx], [cryptocurrencyName], became inactive.”

## TRIAL ACCESS COMPARED TO PRODUCTION ACCESS

As mentioned in the overview to this chapter, trial clients can access less data than can production clients, and from a different directory. Thus, the files are the same, but the time duration is less.

Following are the key differences in directory structure for trial clients compared to production clients:

- Root directory is /RMA\_TRIAL, instead of /RMA
- The third-level directory denotes the amount of data

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