



**MarketPsych** Data

**REFINITIV**<sup>®</sup>  
DATA IS JUST  
THE BEGINNING<sup>®</sup> 

# What We Do

## Unstructured Data

## Structured Data

### MARKETS & FINANCE NEWS



**GameStop stock slide accelerates; Yellen promises scrutiny**

3:58PM EST

**Wall Street ends higher amid upbeat earnings, economic data**

4:15PM EST

**U.S. factory orders beat expectations in December**

11:29AM EST

**SEC seeks public input on possible money market fund reforms**

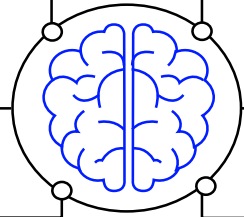
2:08PM EST

**Buttigieg: Talks ongoing on additional transportation sector assistance**

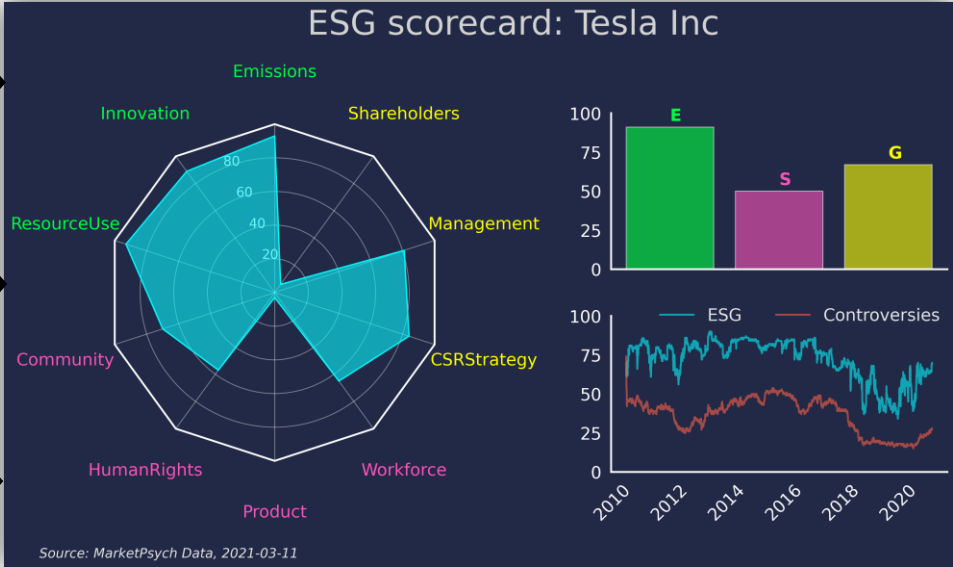
3:43PM EST

### Yellen seeks to 'understand deeply' GameStop frenzy as market regulators meet

WASHINGTON U.S. Treasury Secretary Janet Yellen said on Thursday that she and financial market regulators needed to "understand deeply" what happened in the recent trading frenzy involving GameStop Corp and other retail stocks before taking any action.

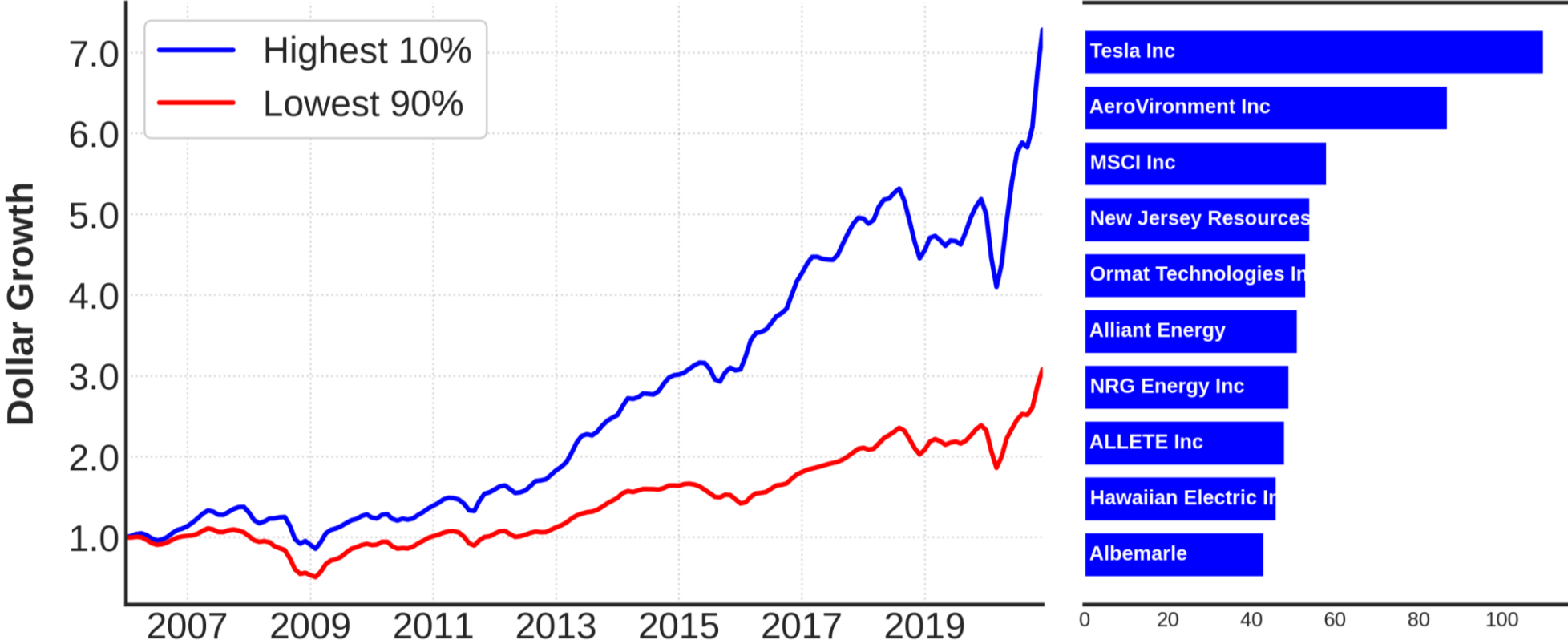


Natural  
Language  
Processing



# Data Sample: Rows are snapshots

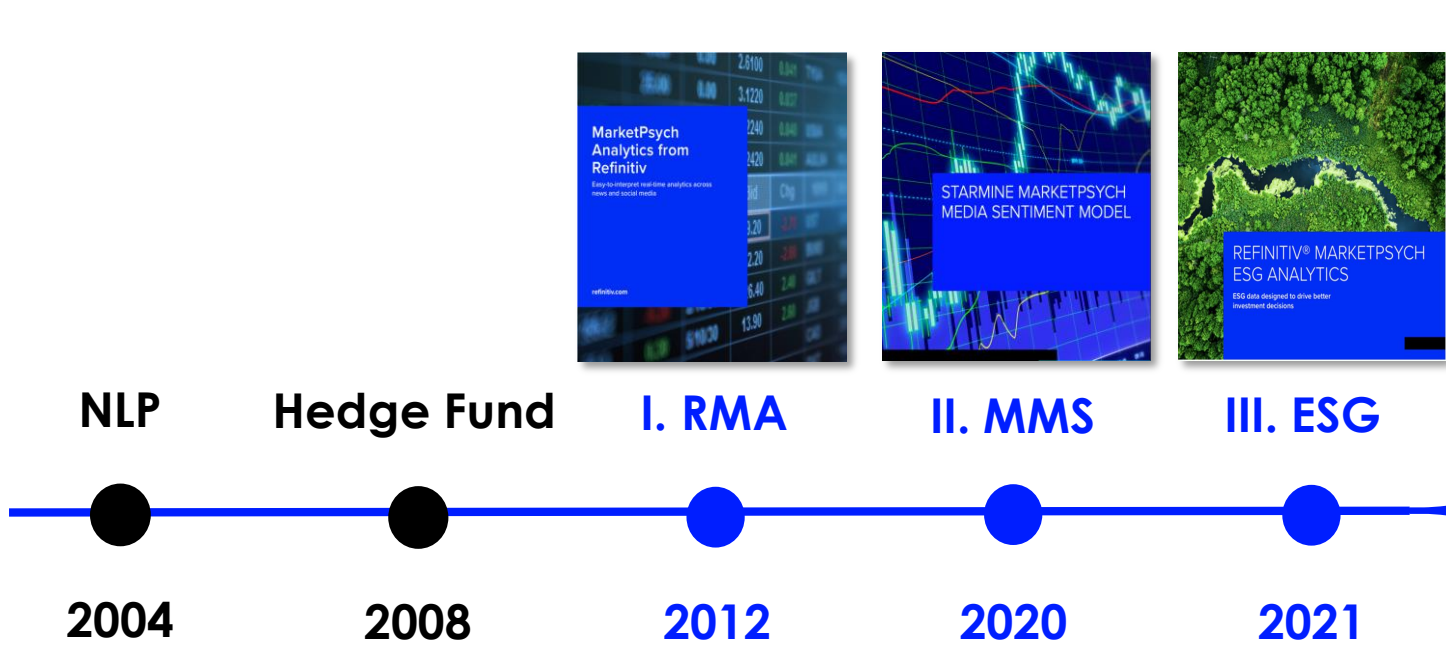
## Environmental Investment (Russell 3000)



Russell 3000 companies; Equal-weight; Monthly rotation; 30 days lookback; environmentalInvestment; Jan/2006 - Jan/2021; Spread:  $\mu=5.7\%$  (2.55);  $\sigma=8.4\%$

Source: MarketPsych Data

# About Us



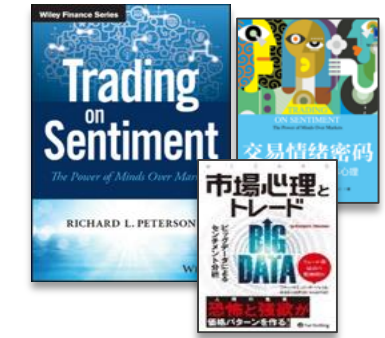
- Three books published
- First social media fund
- Outperformed the S&P500

Partnership with Refinitiv  
(exclusive data channel)

## Clients in 25+ countries:

- Pension funds
- Industry
- Low latency
- Universities
- Governments
- Brokers

## 90+ academic papers



# Our Methodology

Creating structured data

# From Unstructured to Structured Data

+6,000

News and social media sources



RESTAURANTS

Shares of China's Luckin Coffee plummet 80% after investigation finds COO fabricated sales

PUBLISHED THU, APR 2 2020 9:01 AM EDT  
UPDATED THU, APR 2 2020 11:31 AM EDT



+110,000

Equities, countries, indices, bonds, currencies, commodities, cryptos

- China
- Luckin Coffee
- Bearishness
- Management Investigation

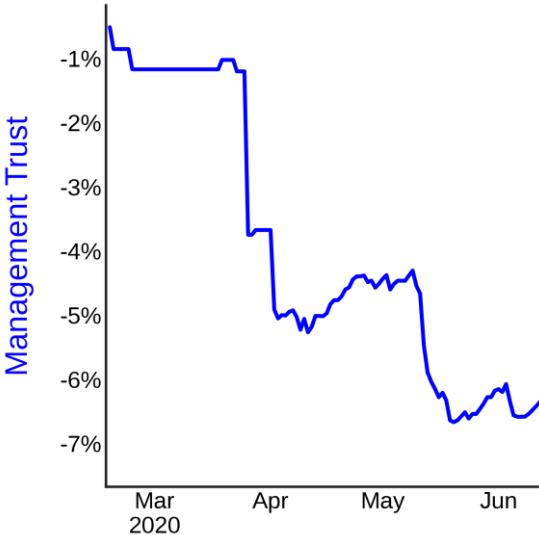


+4,000

Meanings

1998 - now

Daily, hourly, minutely



+100

Scores



# Data Sample: Columns are Time-Series

Asset		Timestamp	Source	Counters			Scores [-1, 1]				
assetCode	ticker	windowTimestamp	dataType	systemVersion	mentions	buzz	managementTrust	workplaceSentiment	emissions	litigation	...
5068928737	LKNCY	2020-04-02T19:30:00.000Z	News	MP:4.0.0	1416	3433.5	-0.1255	-0.0280	NaN	0.1014	...
5068928737	LKNCY	2020-04-03T19:30:00.000Z	News	MP:4.0.0	2693	4973.0	-0.0412	-0.0183	-1.0	0.1160	...
5068928737	LKNCY	2020-04-04T19:30:00.000Z	News	MP:4.0.0	273	521.5	-0.0345	-0.0096	NaN	0.1611	...
5068928737	LKNCY	2020-04-05T19:30:00.000Z	News	MP:4.0.0	274	674.5	-0.0801	-0.0297	NaN	0.0756	...
...	...	...	...	...	...	...	...	...	...	...	...
5068928737	LKNCY	2020-04-04T19:30:00.000Z	Social	MP:4.0.0	453	670.0	-0.0500	-0.0015	NaN	0.0672	...
5068928737	LKNCY	2020-04-05T19:30:00.000Z	Social	MP:4.0.0	295	677.5	-0.0221	-0.0103	NaN	0.0295	...
5068928737	LKNCY	2020-04-06T19:30:00.000Z	Social	MP:4.0.0	632	1028.5	-0.0301	0.0005	NaN	0.0214	...
5068928737	LKNCY	2020-04-07T19:30:00.000Z	Social	MP:4.0.0	629	634.0	-0.0331	-0.0032	NaN	0.0457	...

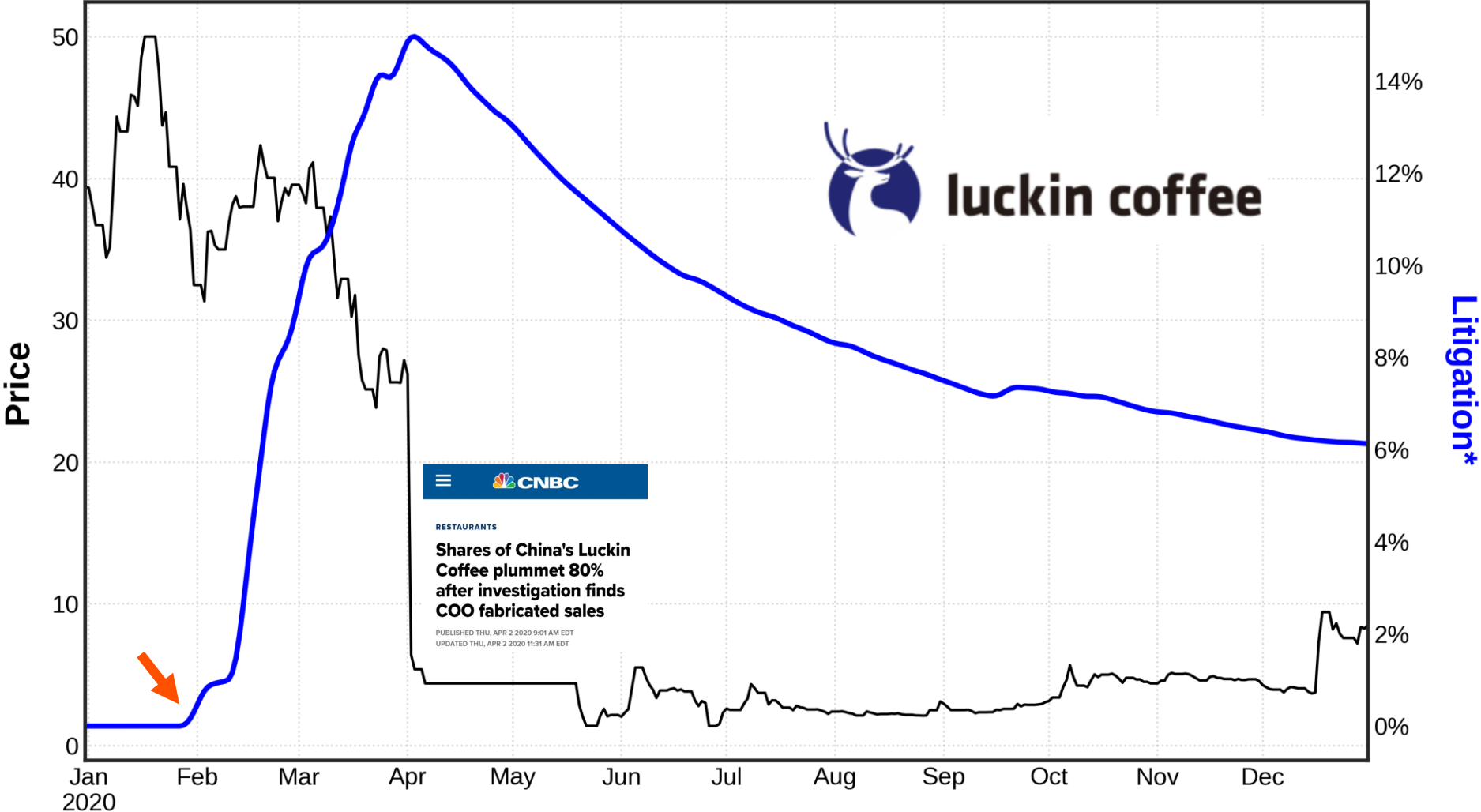
Companies  
(+110,000)  
Countries  
(250)

Daily  
Hourly  
Minutely

News  
Social  
Headlines  
News+Social

ESG Advanced package  
ESG Core package

# Data Sample: Columns are Time-Series



\*News and social media; DMA(365).

Source: MarketPsych Data

# Data Sample: Rows are Snapshots

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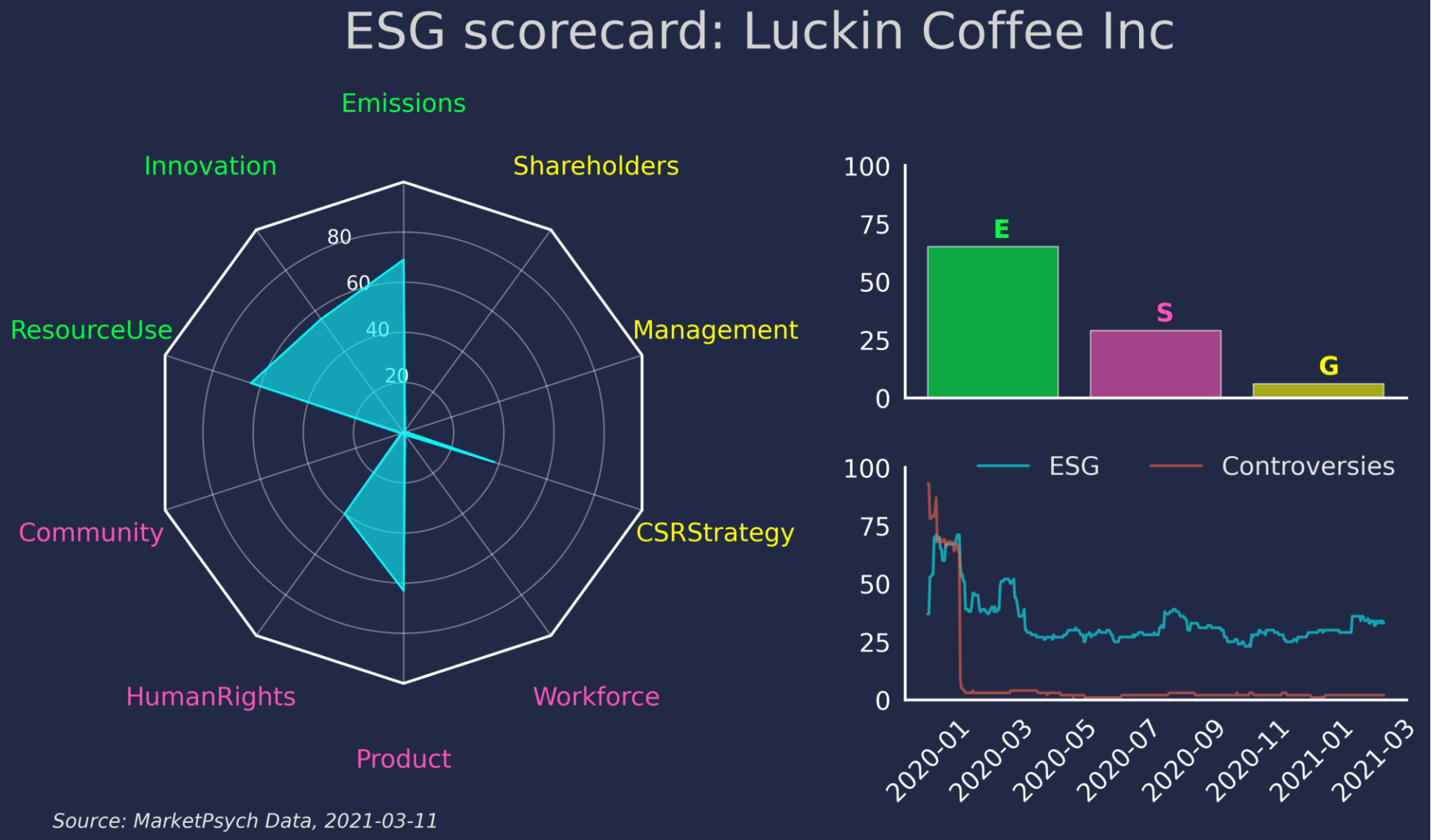
Companies  
(+110,000)  
Countries  
(250)

Daily  
Hourly  
Minutely

News  
Social  
Headlines  
News+Social

ESG Advanced package  
ESG Core package

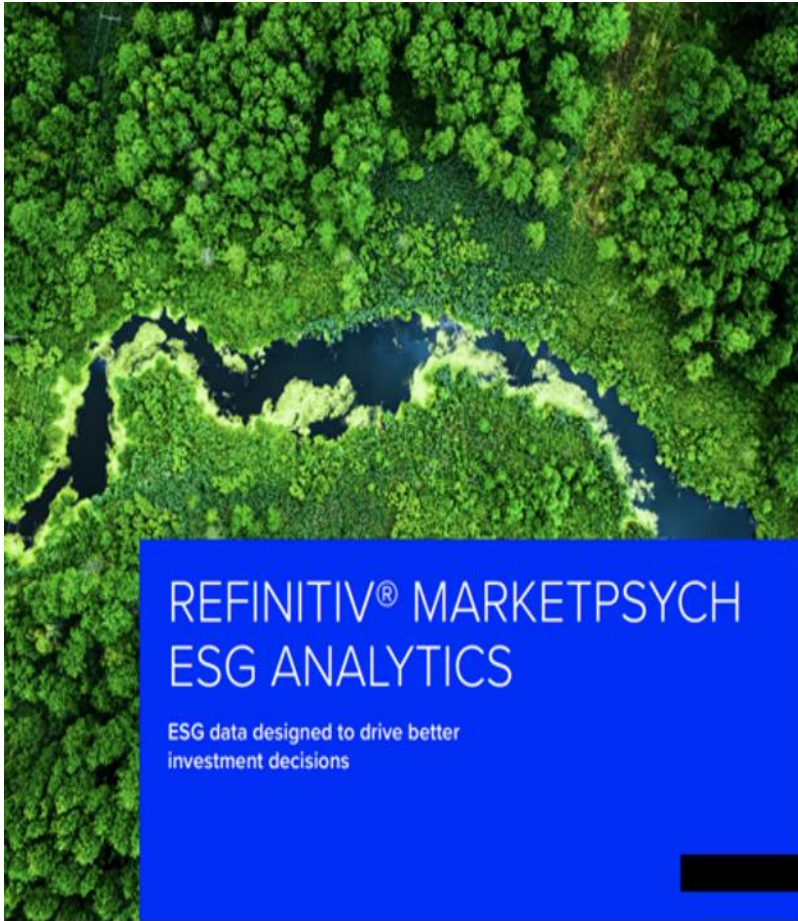
# Data Sample: Rows are Snapshots



# External ESG Profiling

Media Analytics in the ESG Space

# Refinitiv MarketPsych ESG Analytics



- **Wide coverage:** 110,000+ companies and 250 geopolitical entities
- **Long history:** 1998 to the present.
- **Multi-language:** 12 languages.
- **Point-in-time:** Systematic company inclusion.
- **AI-based:** Machine learning NLP system.
- **Highly granular:** 100+ controversies and topics (*Advanced only*)
- **Real-time:** 60-second, hourly, and daily updates (*Advanced only*)
- **News and Social Media Separate:** Distinct News and Social (*Advanced only*)
- **Mappings:** to Refinitiv ESG, the SASB framework, and U.N. Sustainable Development Goals (SDGs).

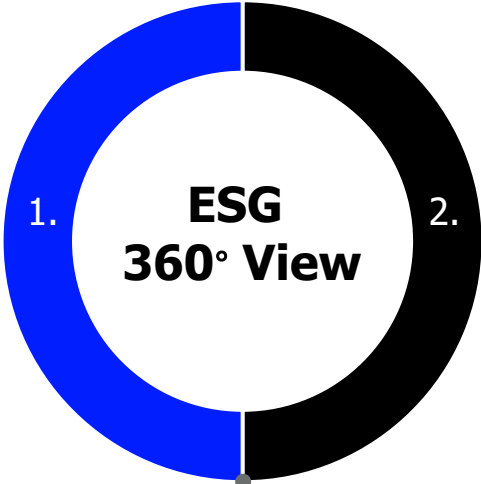


# Refinitiv v MarketPsych

## Company Reporting Based Rating



Company's own view of itself



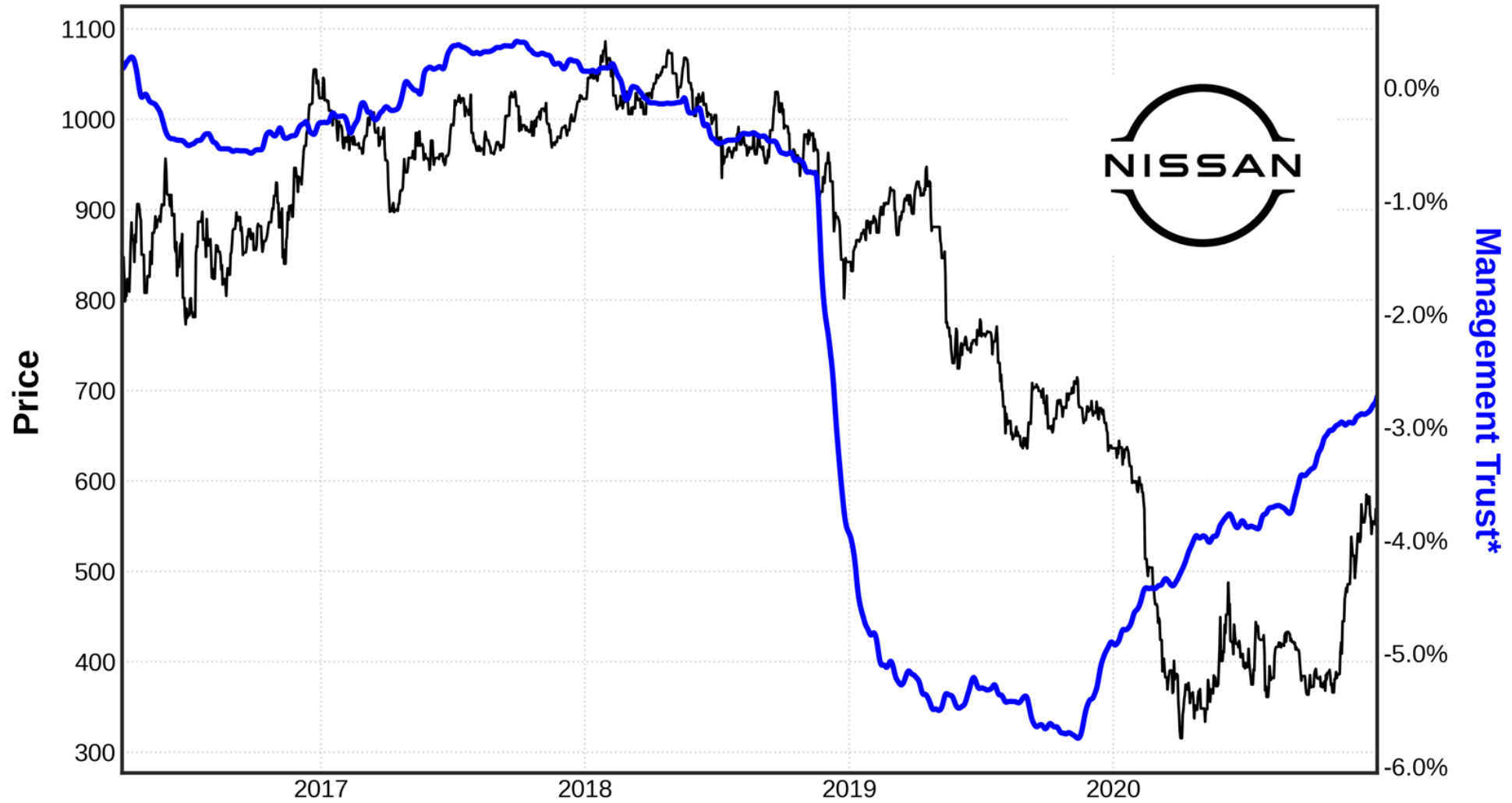
## Media ESG Sentiment



Public's perception about a company

Key Differences	Refinitiv	MarketPsych
Source	Corporate Filings & RTRS News	4000+ Prem. News & 2000+ Social Media
Data Collection	AI & Human Analysts	AI & NLP
Frequency of Updates	Weekly	Minutely
Point in Time	No (H2 2021)	Yes
Rating Methodology	Aligned Across All Pillars & Categories	

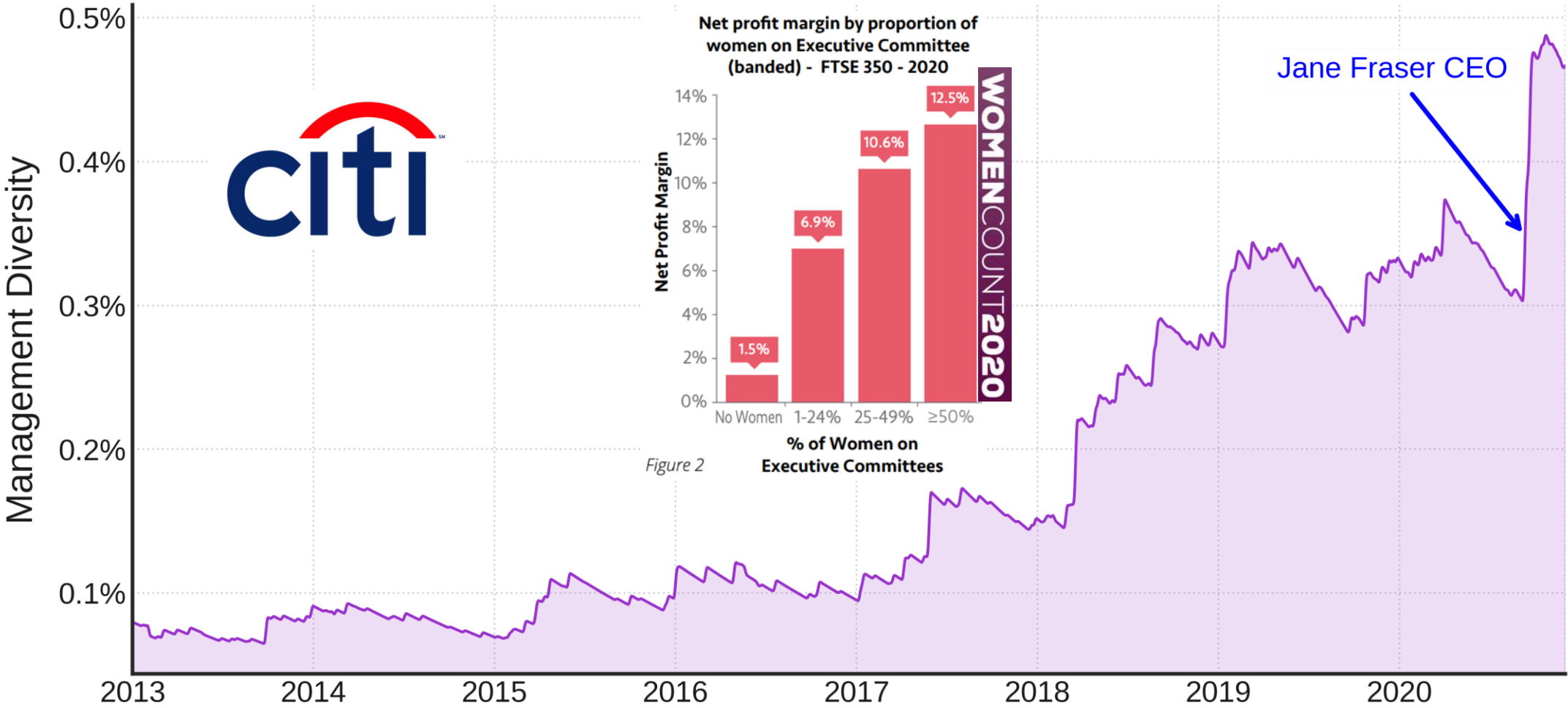
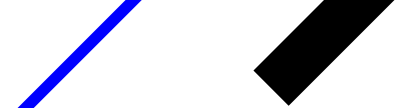
# Source: External View



\*News and social media; DMA(365).

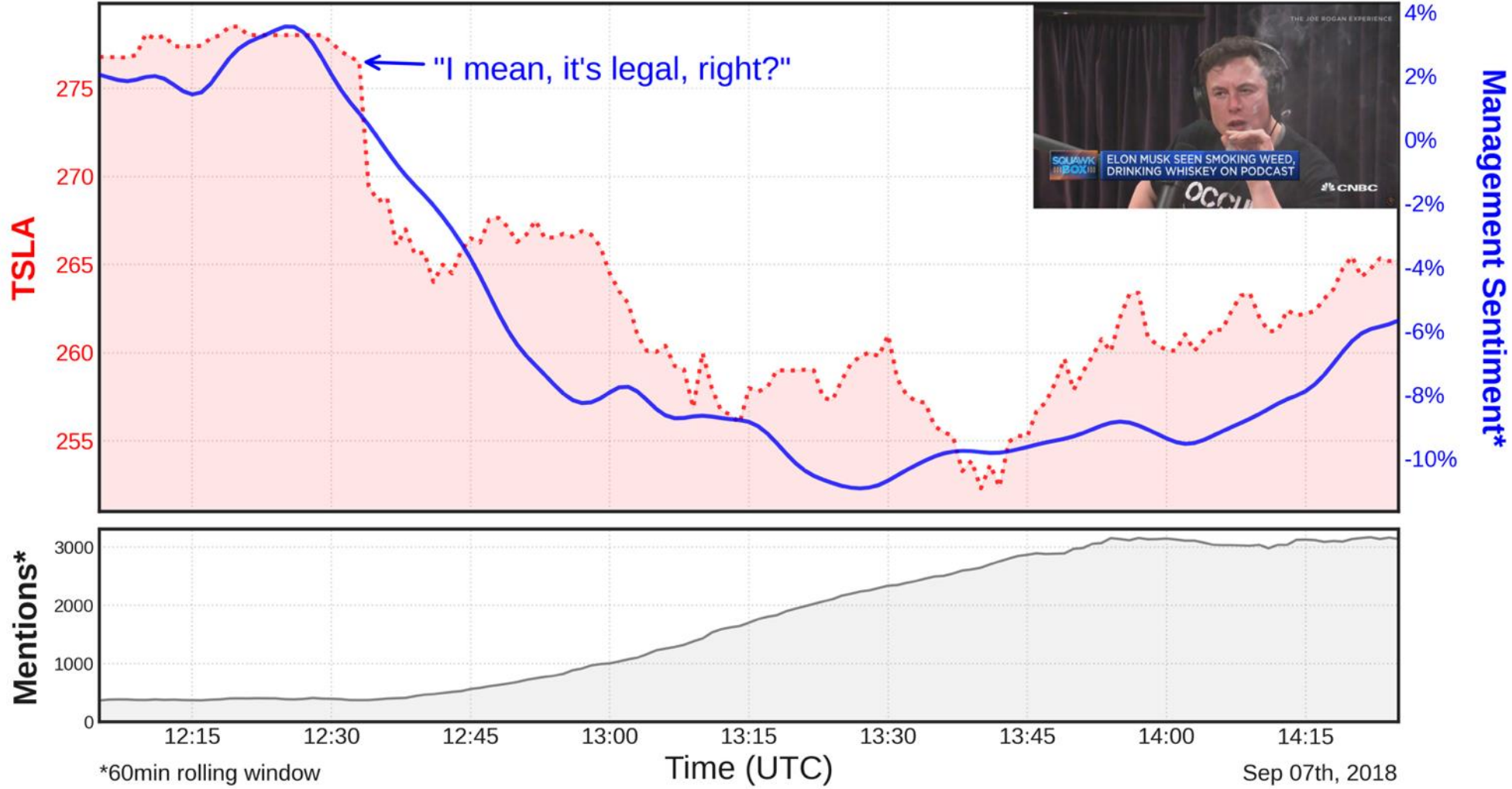
Source: MarketPsych Data

# Data Collection: Natural Language Processing



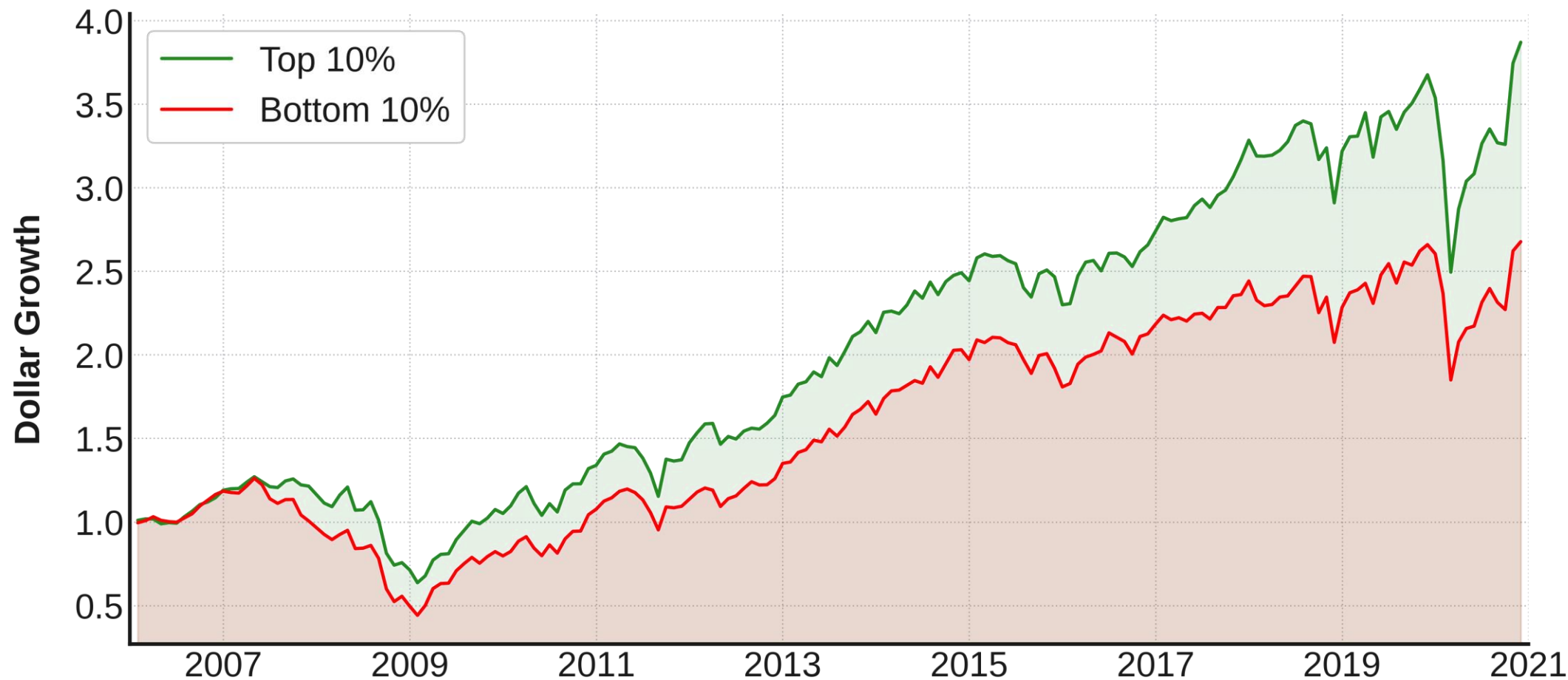
News and social media; 1000d EWMA.

# Frequency of Updates: Minutely



# Point in Time: Yes

## Management Sentiment (S&P 500)

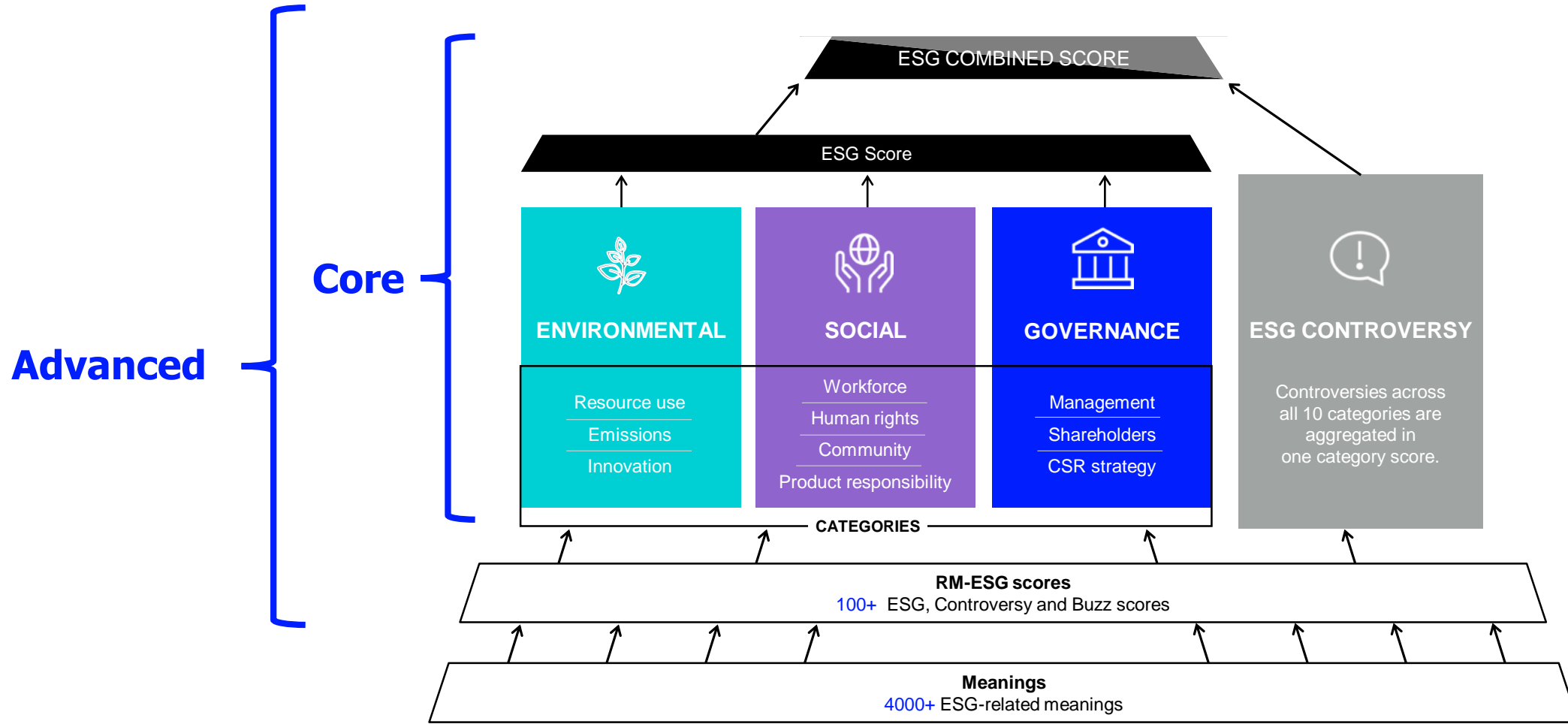


S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=2.2\%$  (1.42);  $\sigma=6.0\%$

# Product Details

Designing Ingestible ESG Feeds

# Two Package Formats



# Two Packages

## Company or Country

### CORE PACKAGE (similar to Refinitiv layout)

- ❑ 17 Scores
  - 1 Buzz score
  - 1 ESG
  - 1 ESG Controversy
  - 1 ESG Combined
  - 3 Pillar scores
  - 10 Category scores
- ❑ 365 days EWMA.
- ❑ Intra-Industry rankings: 1 to 100
- ❑ Aggregated from news and social media

### ADVANCED PACKAGE

- ❑ 111 or 163 Raw Scores (CMPNY or COU)
  - 1 Mentions score (CMPNY only)
  - 11 Buzz scores
  - 10 Category scores
  - 9+ Category Controversies scores
  - 80+ RM-ESG scores
- ❑ + 17 scores in the Core Package
- ❑ Minutely, hourly and daily.
- ❑ Unranked scores: -1 to 1
- ❑ Separate feeds for headlines, news and social media sources

# Company ESG Scores

## Emissions

ClimatePolicy  
AirborneEmissionsImprovement  
AirborneEmissionsControversy  
CarbonEmissionsImprovement  
CarbonEmissionsControversy  
Recycling  
EnvironmentallInvestment  
RenewableEnergy  
RenewableEnergyPolicy  
PollutionImprovement  
PollutionControversy  
IndustrialAccident

## Resource Use

EnvironmentalControversy  
SupplyChainSustainability  
EnergyEfficiencyEfforts

## Innovation

SustainabilityImprovement  
SustainabilityControversy  
SustainableInnovation  
SustainablePackaging

## Shareholders

AntiTakeoverDevices  
AccountingSentiment  
AccountingControversy  
AccountingRestatement  
ShareholderRightsControversy  
CreditControversy  
SecuritiesControversy  
TaxFraudControversy  
ProfitWarning  
EarningsDecline  
InsiderDealingControversy  
ActivistInvestorActivity  
ProxyFight

## Management

ManagementSentiment  
ManagementDiversity  
QualityMgmtSystems  
ManagementTrust  
ManagementControversy

## CSR Strategy

CSRActivities

## Product

ProductSentiment  
ProductControversy  
PrivacyEfforts  
PrivacyControversy  
Innovation  
AdvertisementDeceptive  
RnDControversy  
CustomerSatisfaction

## Community

Trust  
PublicHealthSupport  
Charity  
AccessAffordability  
Anger  
AntiCompetitiveActs  
Lobbying  
PublicHealthControversy  
EthicsControversy  
CorruptionControversy  
RegulatoryIssues  
ClassActionLawsuit  
IPControversy  
LegalPenalty  
Litigation  
CrimeControversy

## Human Rights

HumanRightsEfforts  
HumanRightsControversy  
ChildLabor  
LaborExploitation  
CriticalCountriesControversy

## Workforce

WorkplaceSentiment  
WorkplaceSafetyEfforts  
WorkplaceSafetyControversy  
WorkplaceDevelopment  
DiversityEfforts  
DiversityControversy  
Benefits  
WorkLifeBalance  
WageFairness  
Layoffs  
LaborDispute  
WageControversy  
BenefitsControversy

# Country ESG Scores

## Environment

Sustainability  
SustainabilityPolicy  
SustainableInnovation  
SustainablePackaging  
EnvironmentalEfforts  
ForestHealth  
MarineProtection  
NatureProtection  
EnvironmentalInvestment  
PlantBasedDiet  
Desertification  
Overfishing  
WildlifeTrafficking  
FactoryFarming  
AgriculturalStress  
AgAnimalStress  
AgCropStress  
Hunger  
SeaLevelRise  
Warming

## Resource Use

EnvironmentalControversy  
EnergyEfficiency  
oversyEnergyEfficiencyPolicy  
RenewableEnergyDevelopment  
RenewableEnergyPolicy  
SupplyChainSustainability  
UnsustainableActivities

## Emissions

EmissionsPolicy  
AirborneEmissionsImprovement  
CarbonEmissionsImprovement  
CarbonEmissionsControversy  
PollutionImprovement  
Recycling  
CarbonTaxDirection  
ClimateChangeOppVsRisk  
AirborneEmissionsControversy  
PollutionControversy  
IndustrialAccident

## Society

Innovation  
RnD  
InternetAccessImprovement  
DataPrivacy  
EducationEfforts  
LiteracyEfforts  
SocialExpenditures  
SocialEquality  
SocialMobility  
PrivacyControversy  
Misinformation  
EthicsControversy  
Corruption  
IntellectualPropertyTheft  
LegalActivity  
Crime  
CyberCrime  
Homicide  
Terrorism  
ViolentCrime  
War  
Employment  
EmploymentForecast  
FinancialCrime

## Human Rights

ImmigrationSentiment  
MinorityEquality  
GenderEqualityEfforts  
ChildLabor  
ForcedLabor  
LaborExploitation  
HumanRightsEfforts  
HumanTrafficking  
MinorityViolence  
ViolenceAgainstWomen

## Culture

PublicSentiment  
WorkplaceConditions  
WorkLifeBalance  
LaborDevelopment  
WageFairness  
WorkplaceSafetyControversy  
Layoffs  
LaborDispute  
WageInequality

## Community

Trust  
CharityAwareness  
PovertyAlleviation  
PublicHealthEfforts  
Fertility  
SmokingManagement  
DiseaseManagement  
HumanDiseaseGI  
HumanDiseasePulm  
FreshWaterAccessEfforts  
Addiction  
Anger  
PublicHealthControversy  
Malnourishment  
MalnourishmentYouth  
ObesityAwareness  
Smoking  
DiseaseBurden  
AddictionManagement  
AccessAffordability

## Economics

TariffsDown  
FreeTrade  
FinancialSystemInstability  
CreditControversy  
UnfairMarkets  
BusinessFraud  
Sanctions

## Leadership

GovernmentSentiment  
GovernmentTrust  
GovernmentInstability  
PoliticalProcessSentiment  
GovernmentAccountingSentiment  
BusinessLeadersSentiment  
GovernmentAnger  
GovernmentCorruption  
LeadershipCrime

## Politics

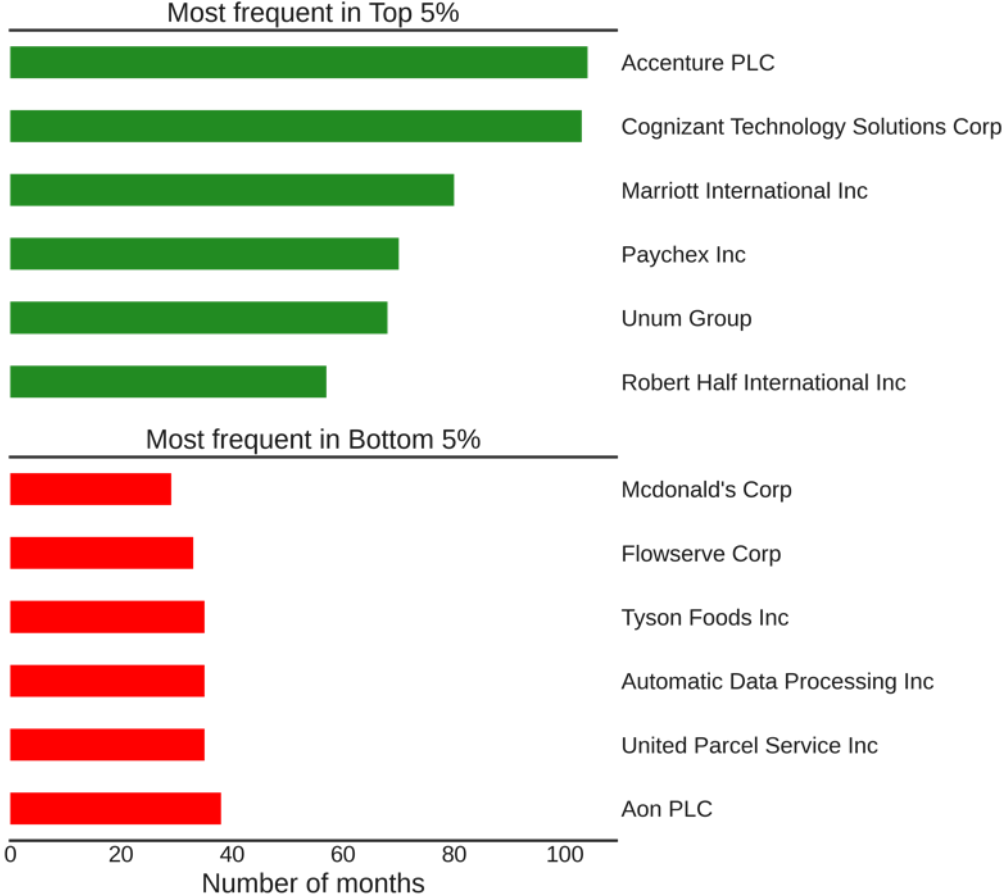
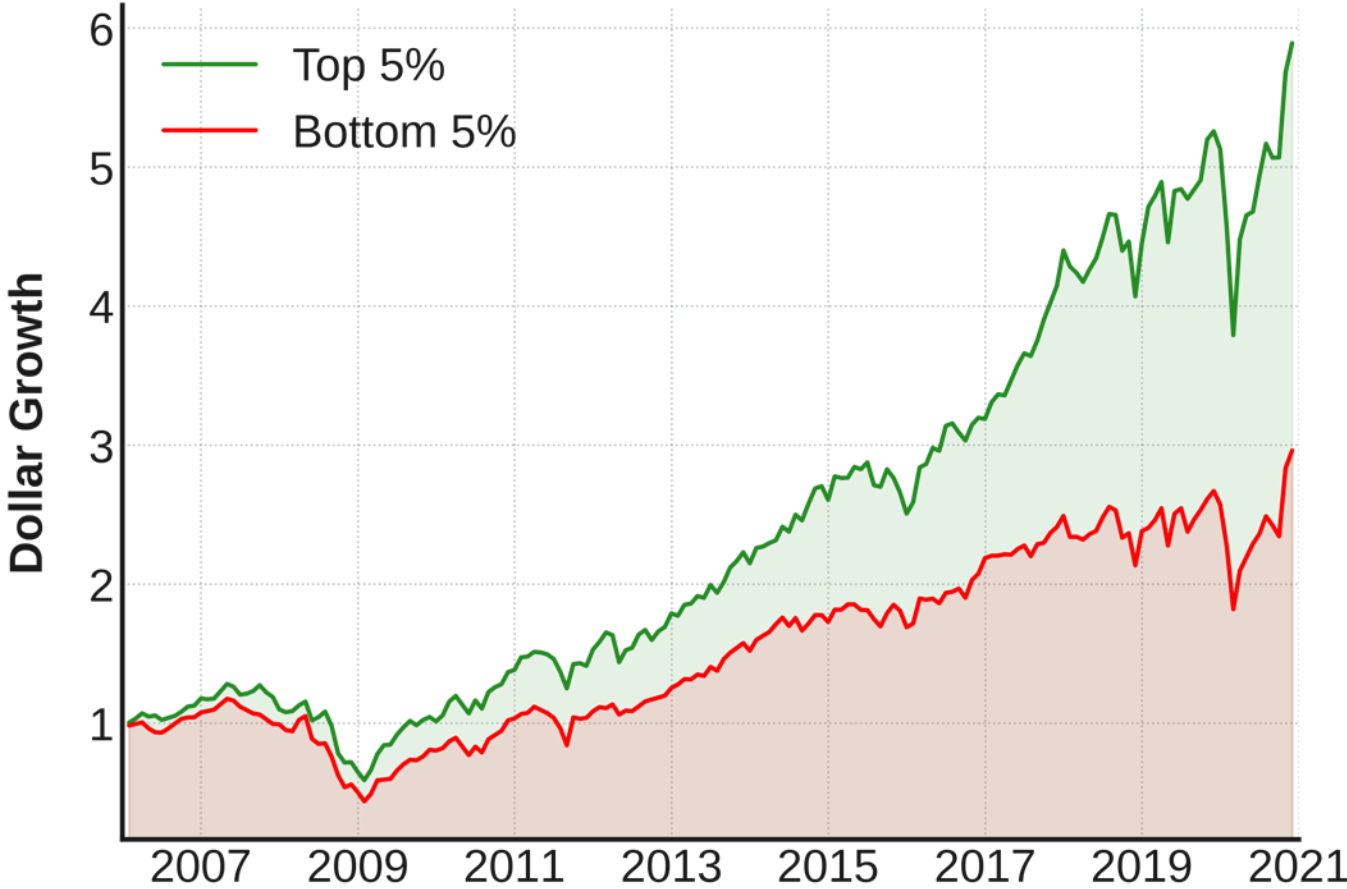
CivicEngagement  
CivilSocietyPartnerships  
PoliticalOppositionActivity  
FreedomOfAssembly  
FreedomOfSpeech  
FreedomOfReligion  
VotingRights  
PropertyRights  
PublicDivision  
SocialUnrest  
PoliceBrutality  
GovernmentRepression  
ConstitutionalRevision  
VotingFraud  
Autocracy

# Use Cases - Companies

Portfolio Formation & Risk Management Case Studies

# Use Case #1: Portfolio Formation

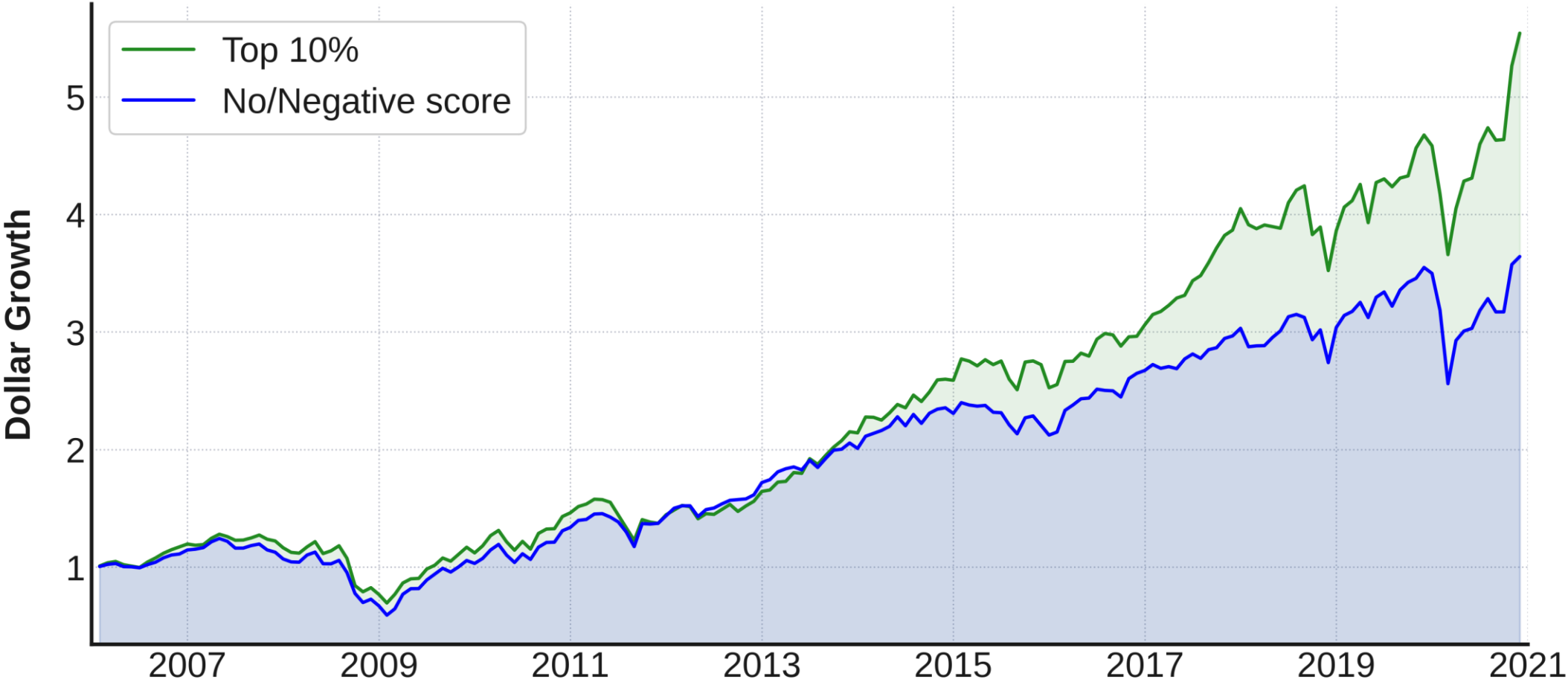
Investing in High **Workplace Sentiment** (S&P500)



S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=4.4\%$  (1.83);  $\sigma=9.0\%$

# Use Case #2: Finding Winners

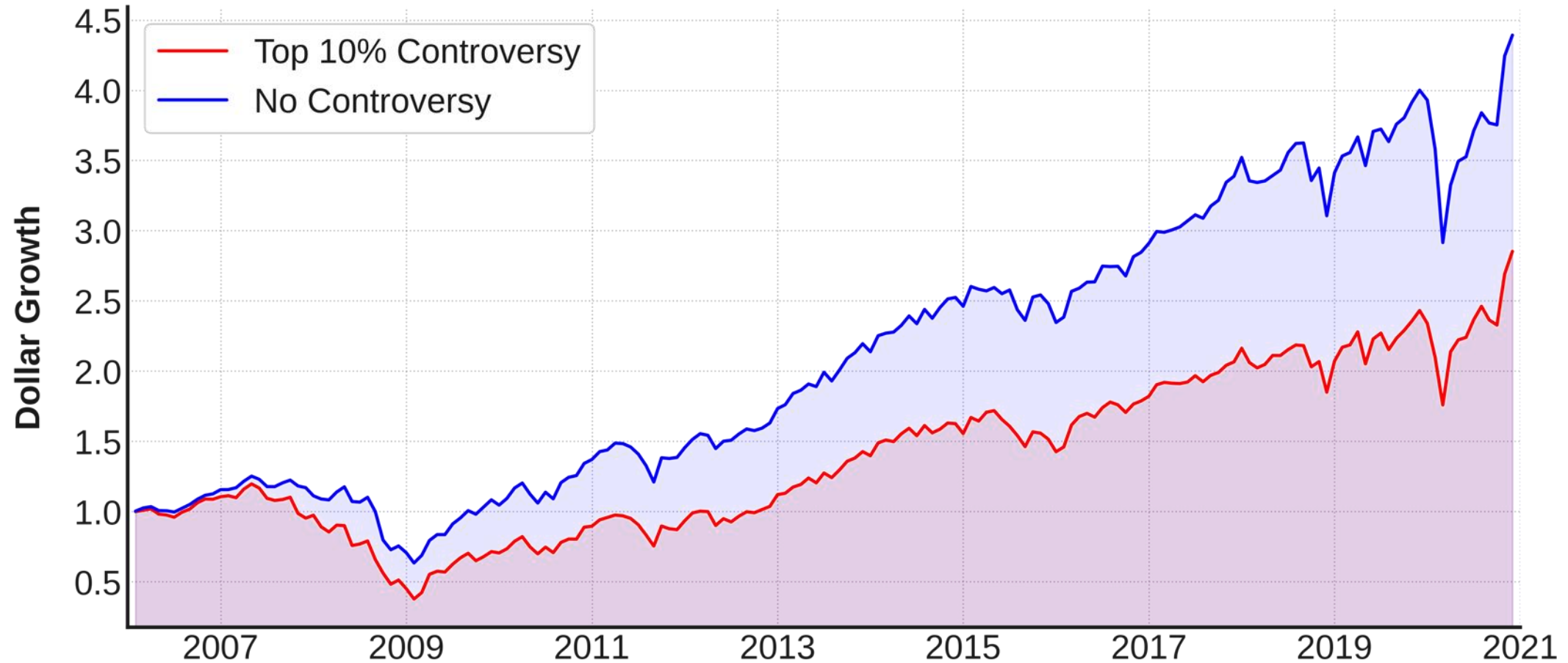
Investing in High Innovation (S&P 500)



S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=2.8\%$  (1.73);  $\sigma=6.2\%$

# Use Case #3: Risk Management

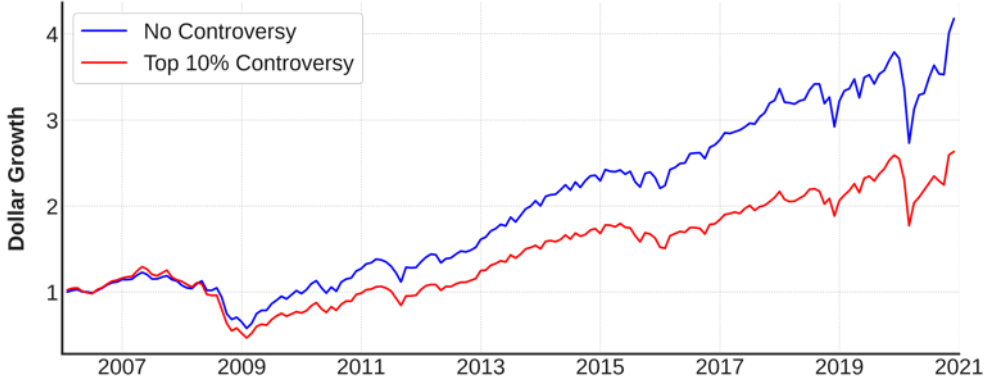
## Avoiding High **Accounting Controversy**



S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=2.0\%$  (0.90);  $\sigma=8.6\%$

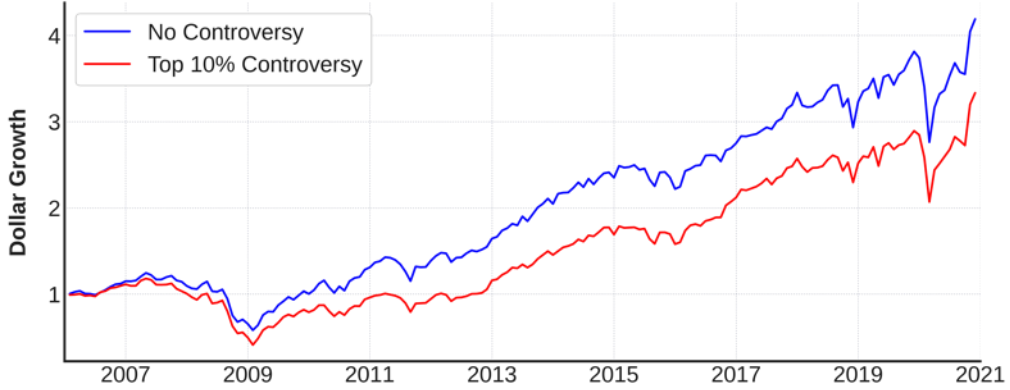
# Use Case #3: Risk Management

### Activist Investor Activity



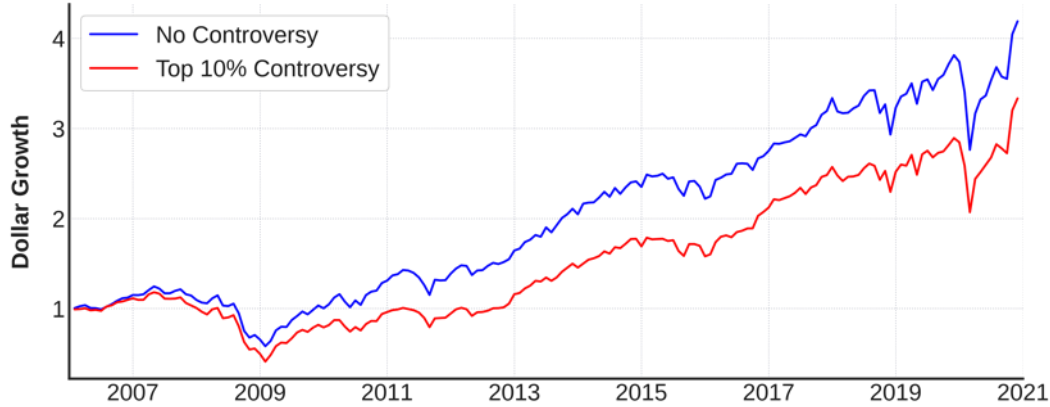
S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=2.9\%$  (2.24);  $\sigma=4.9\%$

### Insider Dealing Controversy



S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=1.0\%$  (0.64);  $\sigma=6.3\%$

### Regulatory Issues



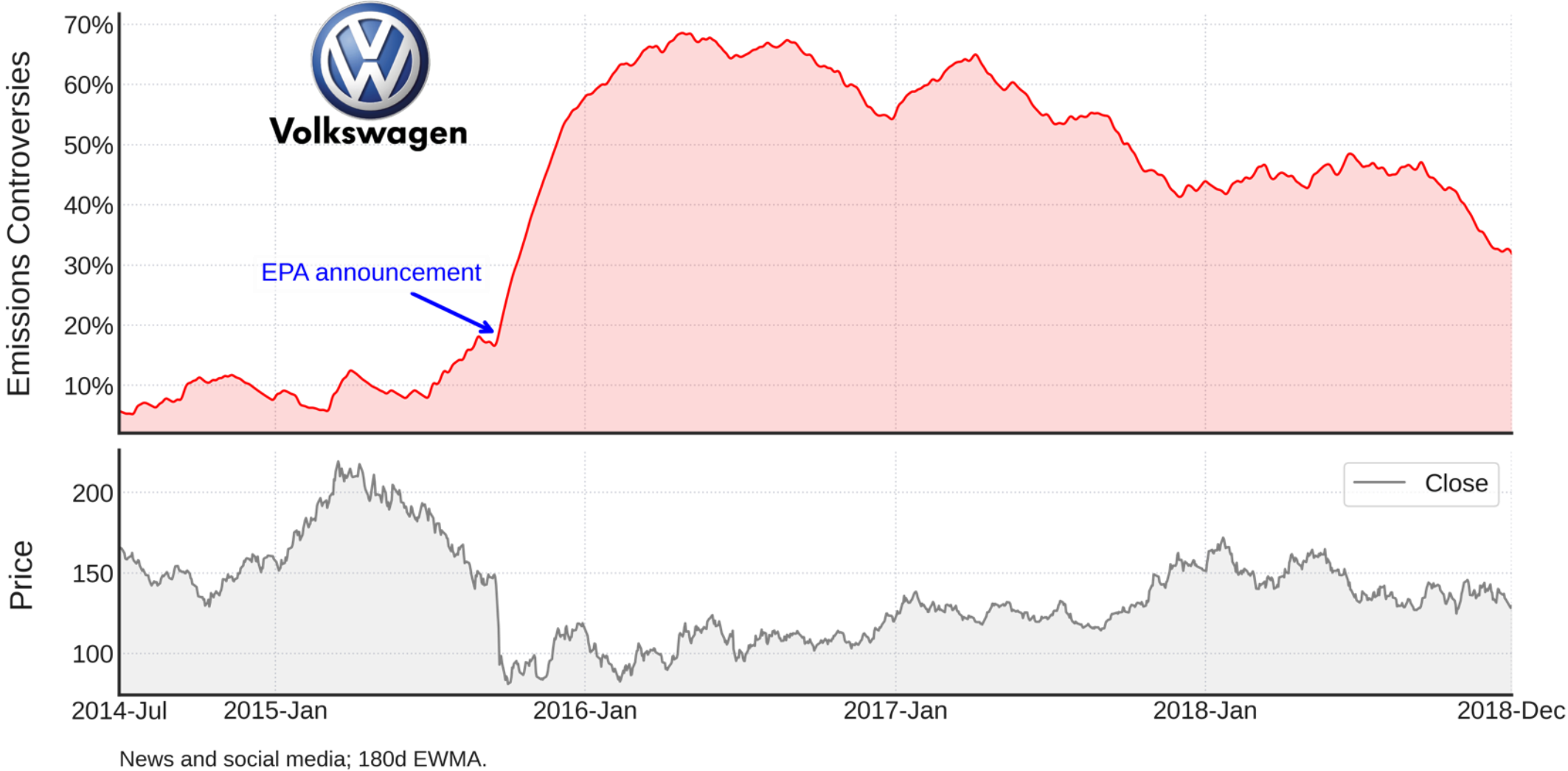
S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=1.1\%$  (0.79);  $\sigma=5.5\%$

### Sustainability Controversy

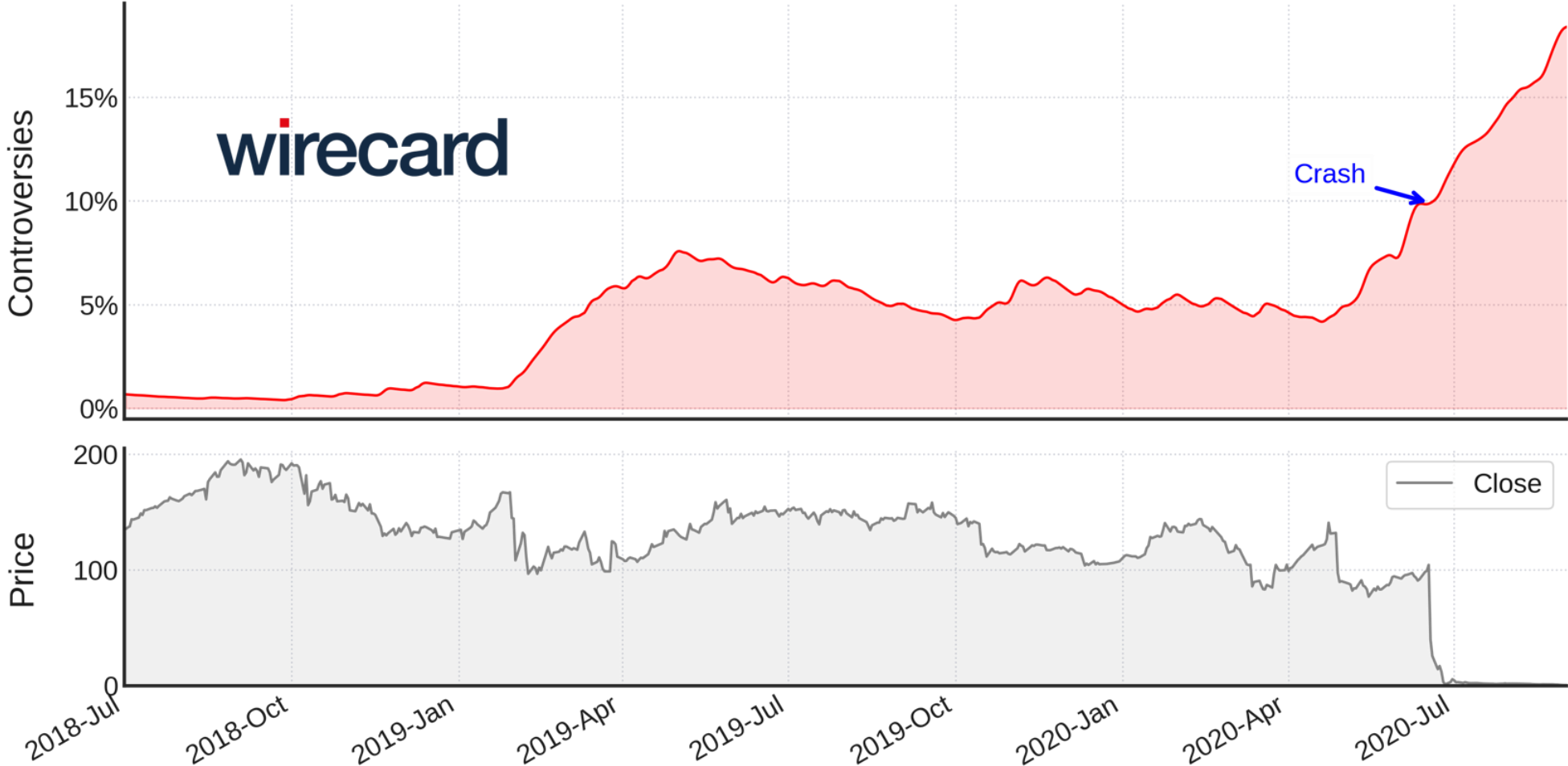


S&P500 companies; Equal-weight; Monthly rotation;  
Jan/2006 - Dec/2020; Spread:  $\mu=2.3\%$  (0.94);  $\sigma=9.4\%$

# Use Case #4: Quantifying Issues



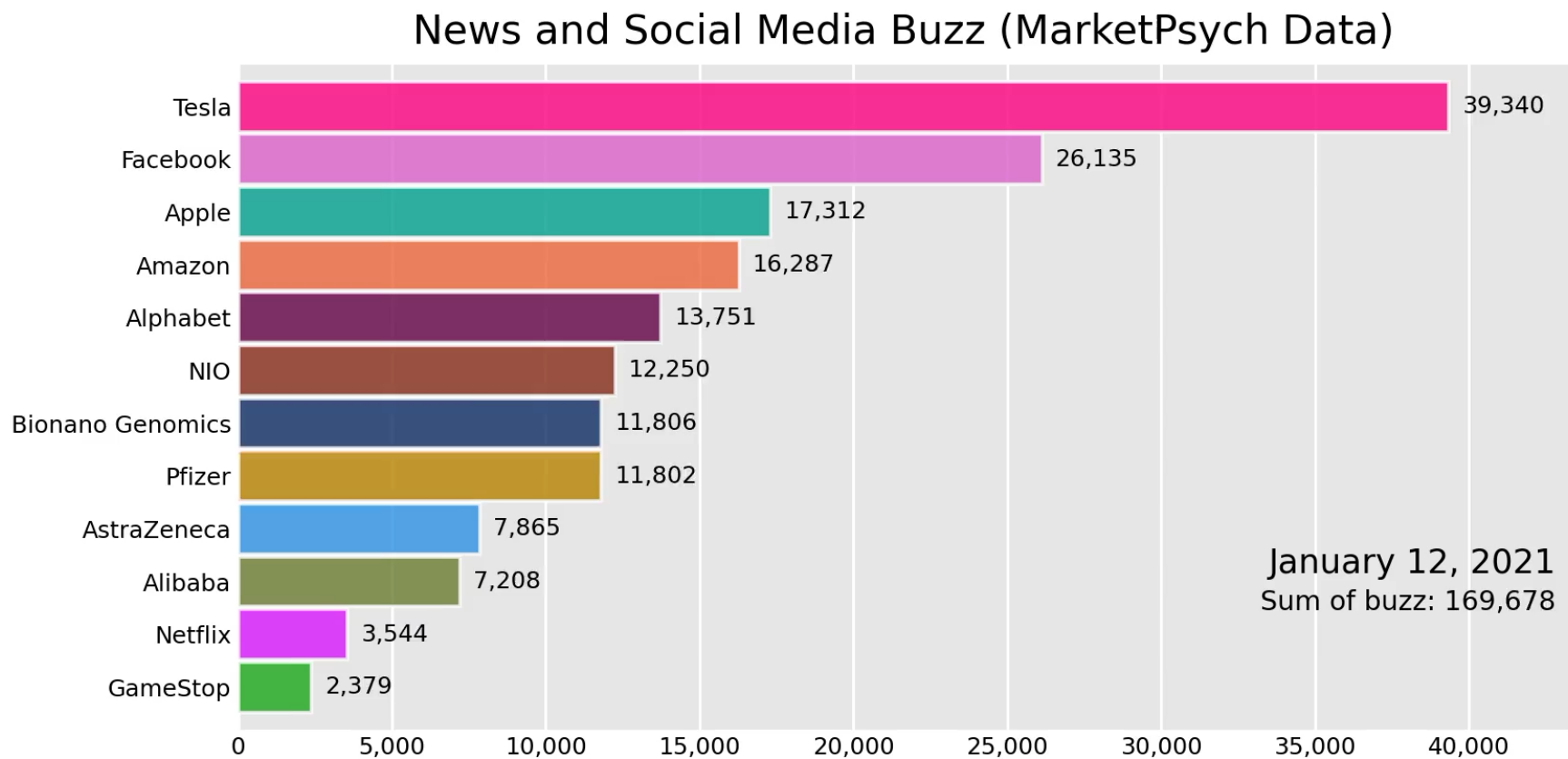
# Use Case #4: Quantifying Issues



News and social media; 180d EWMA.

# Use Case #5: Buzz tracking

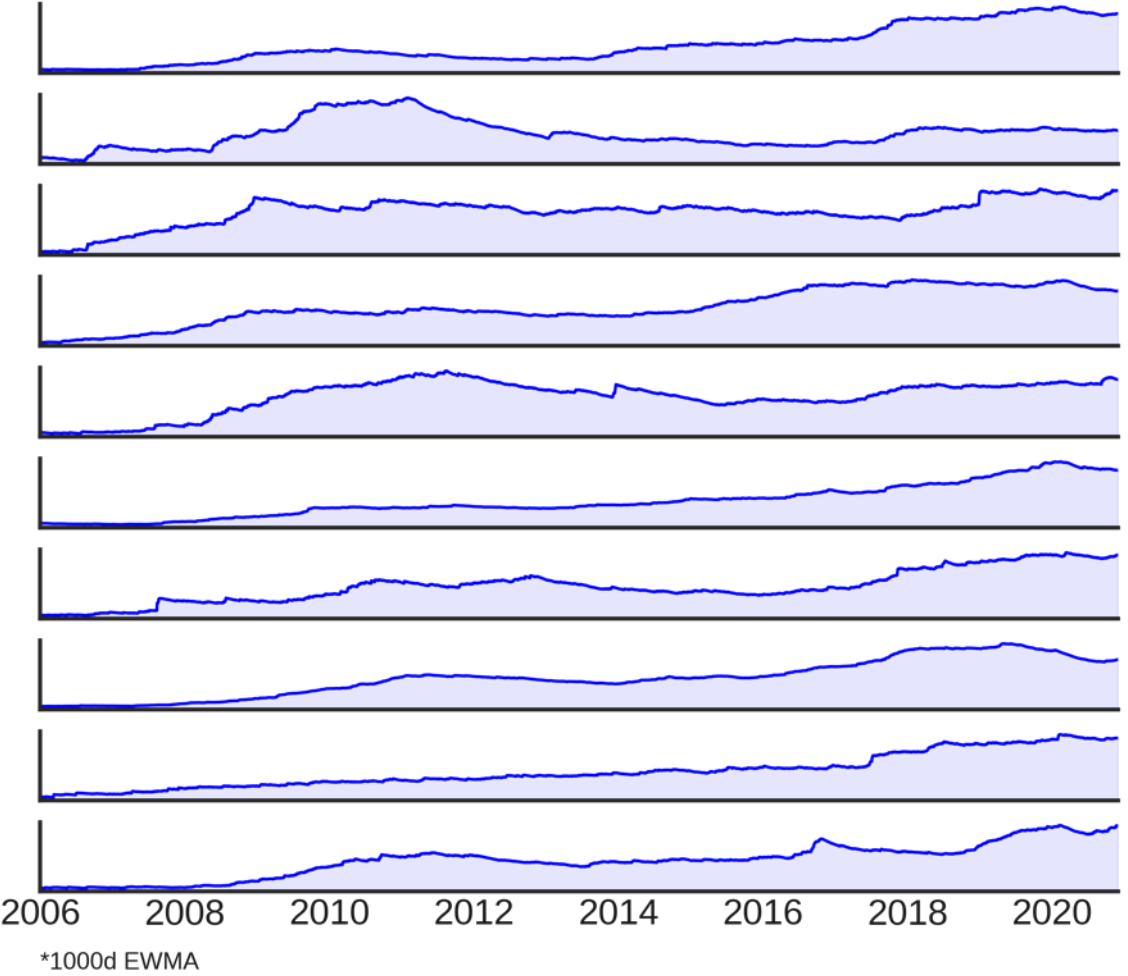
Tracking most talked about companies in social media.



# Use Cases - Countries

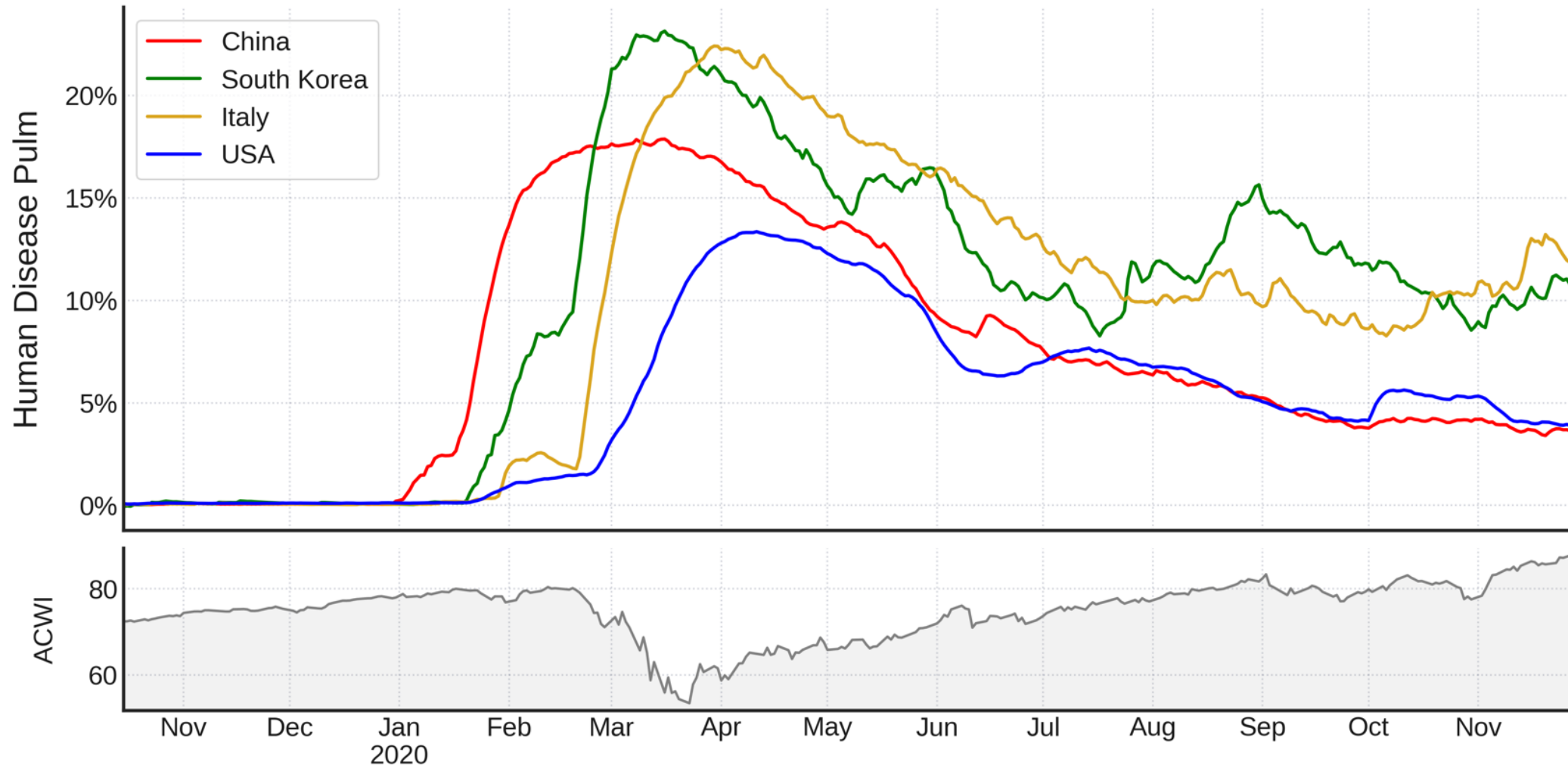
Portfolio Formation & Risk Management Case Studies

# Use Case #6: Macro Investing (E)



\*News and social media; Top 100 by Buzz; 01/01/1998 - 30/Nov/2020

# Use Case #6: Macro Investing (S)

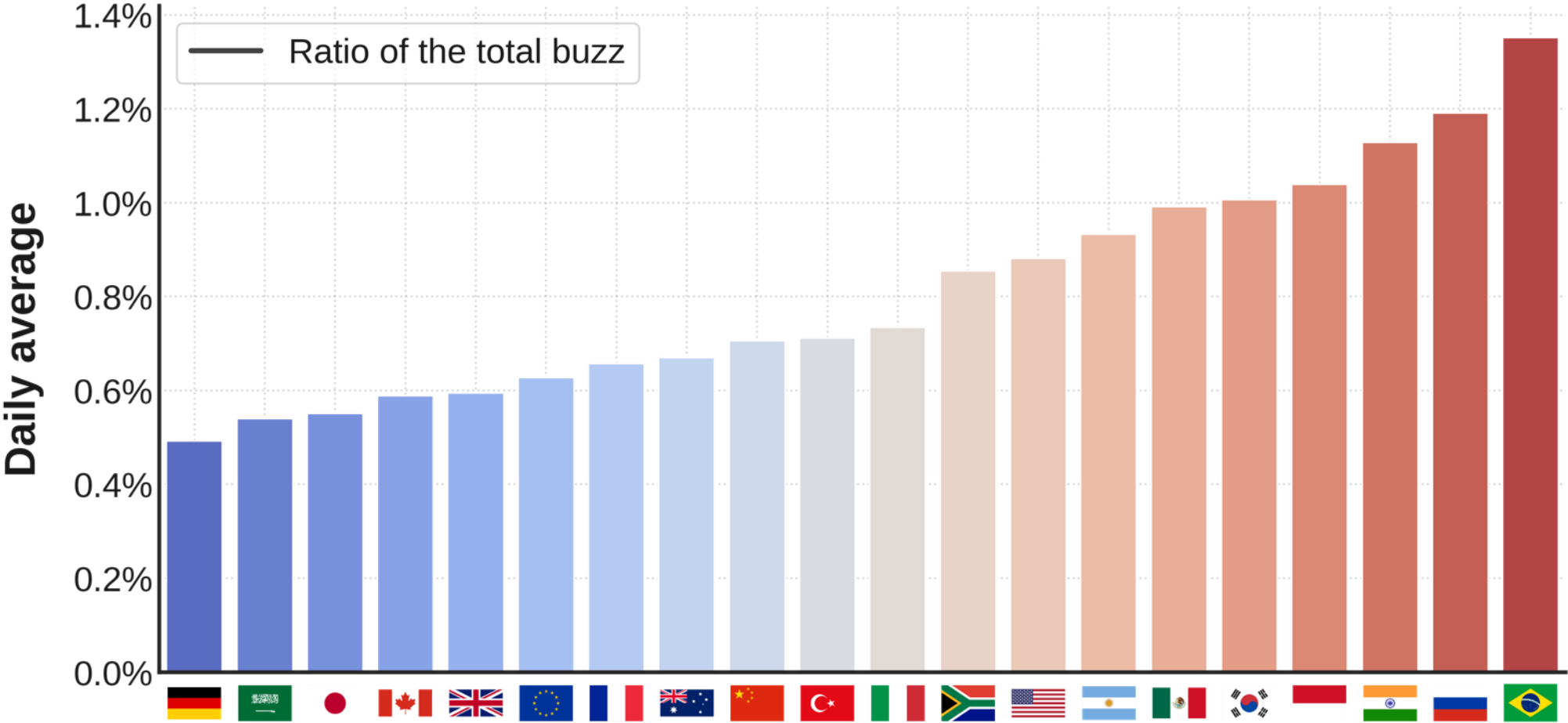


News and social media; 30d EWMA

Source: MarketPsych Data

# Use Case #6: Macro Investing (G)

## Government Corruption

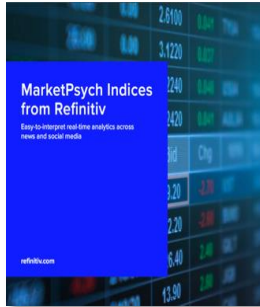


\*Media (news and social) reports of fraud, deceit, and corruption in government; G20; 26/Sep/1999 - 30/Nov/2020

Source: MarketPsych Data

# Our Products

## I. RMA



### Business and market themes

1. Commodities
2. Companies (by region)
3. Countries
4. Country markets
5. Currencies
6. Cryptocurrencies

## II. MMS



### Predictive model for stocks

1. U.S.
2. North America
3. Asia
4. Europe
5. Emerging markets

## III. ESG



### ESG themes

1. Companies
2. Countries



Core    Advanced