



The FCO Cockpit Global Bubble Status Report April 2020



A collaboration of the Chair of Entrepreneurial Risks,
ETH Zurich and Systematic Investment Management AG

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ETH FCO and SIMAG Join Forces

The Financial Crisis Observatory (FCO) is...

- **Part of** the Chair of Entrepreneurial Risks at the Department of Management, Technology and Economics at the **ETH Zurich**
- A **scientific platform** aimed at quantifying in a systematic way the hypothesis that financial markets exhibit a degree of inefficiency and a **potential for predictability**, especially during regimes when **bubbles** develop
- Aiming to **provide warnings** at different time scales (week, month, quarter) on the development of future financial instabilities

Systematic Investment Management AG (SIMAG) is ...

- A **Joint Venture** between **Credit Suisse Asset Management** and an **ETH Zurich spin off**
- A **FINMA-licensed Investment Manager** for collective investment schemes.
- Relying on a **proprietary machine learning engine** specifically designed for **financial markets**
- The first and only investment manager globally which can **systematically leverage ETH's Financial Crisis Observatory (FCO) research insights**

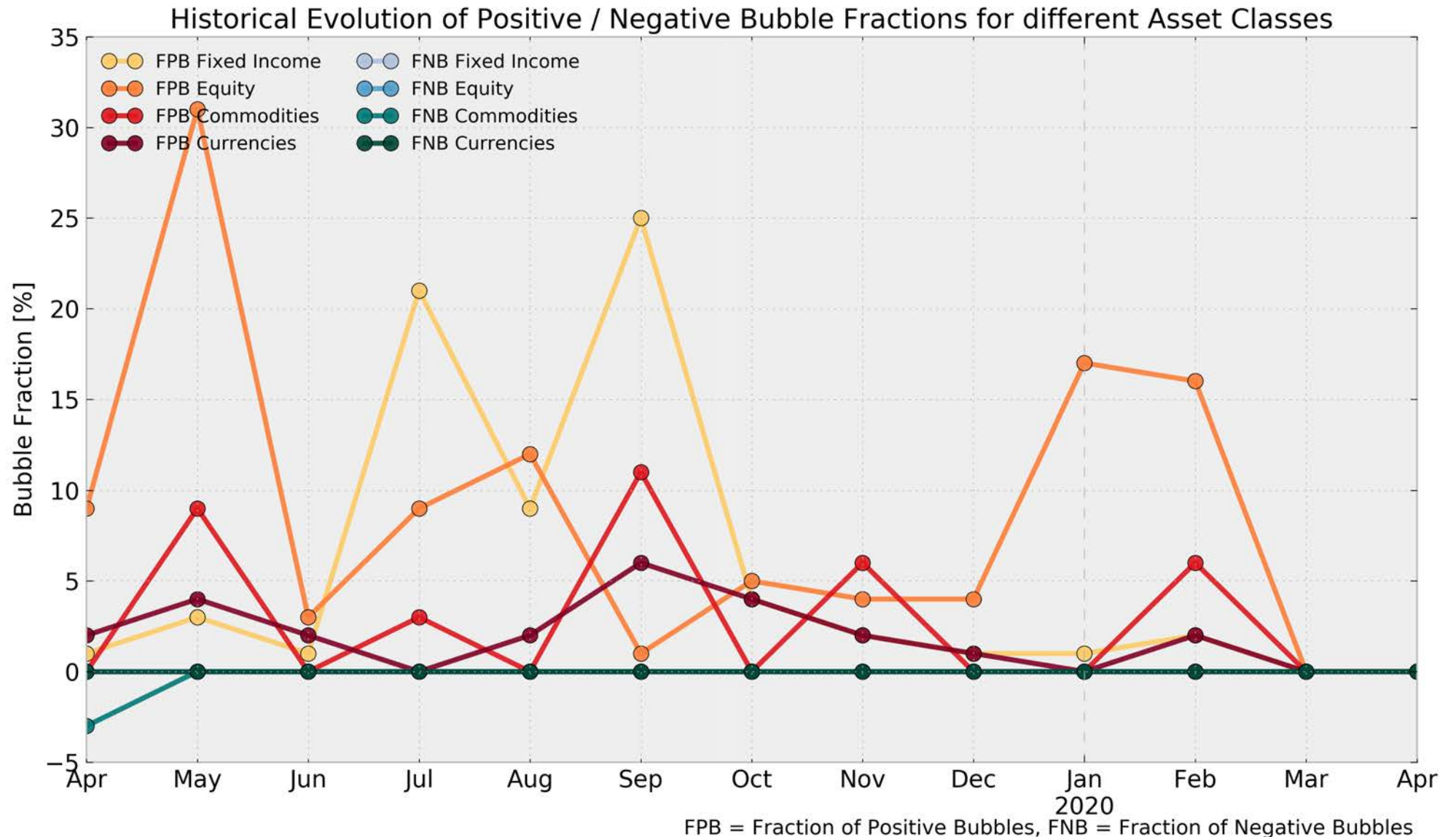
Together we are able to provide you with richer investment content and deeper research insights

Purpose and Benefits

- ▶ The **Financial Crisis Observatory (FCO)** monthly report discusses the historical evolution of bubbles in and between different asset classes and geographies. The purpose of the FCO report is to ascertain which asset classes and sectors are deemed to be **crowded** and to what degree they can develop contagion risks.
- ▶ Today, the report is **used by 600+ institutions world-wide**, including universities, think tanks, sovereign wealth funds, hedge funds, family offices, private banks and pension funds.
- ▶ It delivers the big picture in terms of growing bubbles and instabilities in today's financial markets for **Chief Investment Officers, Senior Researchers, Fund Managers**, and **Independent Financial Advisors**, and all parties with **investment performance responsibility** or **managing financial risks**.
- ▶ The report is the result of an extensive analysis done on the historical time series of about 450 systemic assets and about 850 single stocks. The systemic assets are bond, equity and commodity indices, as well as a selection of currency pairs. The single stocks are mainly US and European equities. The data is from Thomson Reuters.
- ▶ To new readers, we recommend proceeding to the appendix for more detailed information about the methodology and procedures applied in this report.

Access to the FCO analysis data can be granted upon request. Please contact info@simag.com or visit <https://www.simag.com/insights/fco-cockpit/>

General Results – The Big Picture



General Results – This Month's Overview

Category	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
Fixed Income	151	0	0
Government Bonds	52	0	0
Finance and Insurance	20	0	0
Corporate Bonds	79	0	0
Equity	174	0	0
Country Indices	46	0	0
Europe	24	0	0
United States	104	0	0
Commodities	32	0	0
Forex	92	0	0

Covid-19 epidemic situation (<https://er.ethz.ch/Covid-19/Dailyforecasts.html>)

Since March 23. 2020, a group of researchers in the Chair of Prof. D. Sornette is providing daily forecasts for the number of COVID-19 confirmed cases at four time horizons (1-day, 5-day, 10-day and end of the outbreak) and for various countries/regions, based on a phenomenological approach detailed in [1], i.e., employing 3 versions of the generalized logistic growth equation to model the total confirmed cases. See also supplementary reports at <https://er.ethz.ch/Covid-19/publications.html>

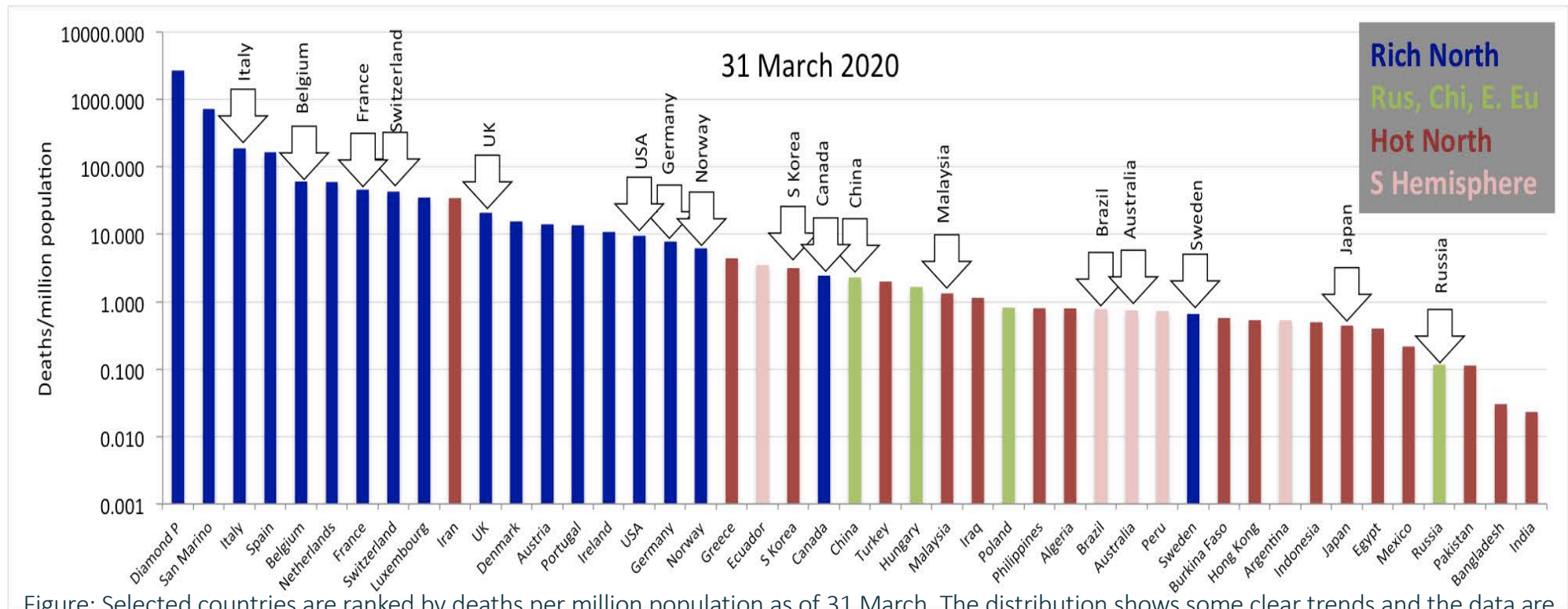


Figure: Selected countries are ranked by deaths per million population as of 31 March. The distribution shows some clear trends and the data are subjectively divided into 4 groups: Rich North countries (blue), Hot North countries (dark red), Southern Hemisphere countries (pink), and East Block countries including Russia, China and East Europe (green). ([Supplements to COVID-19 Confirmed Cases Prediction](https://er.ethz.ch/Covid-19/publications.html), April 01, 2020 at <https://er.ethz.ch/Covid-19/publications.html>)

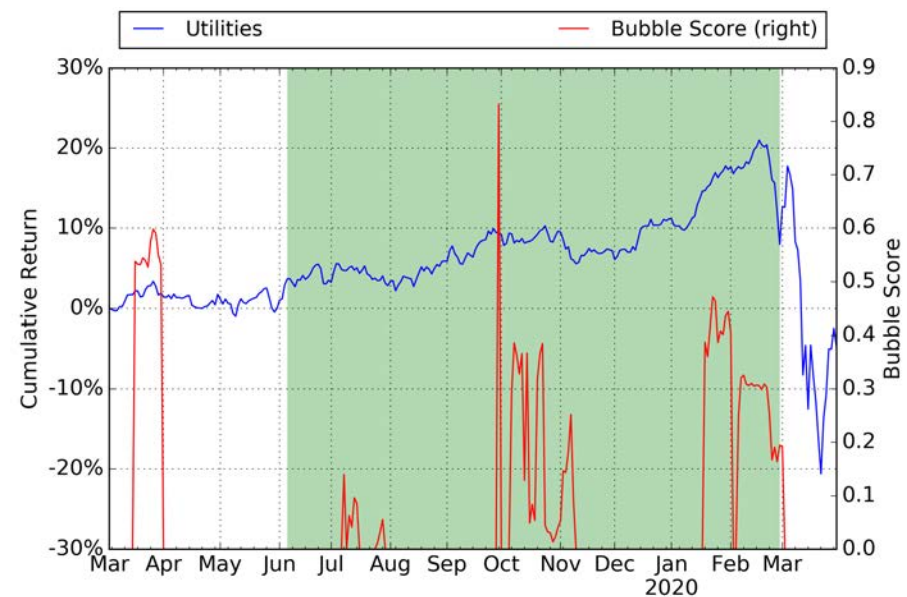
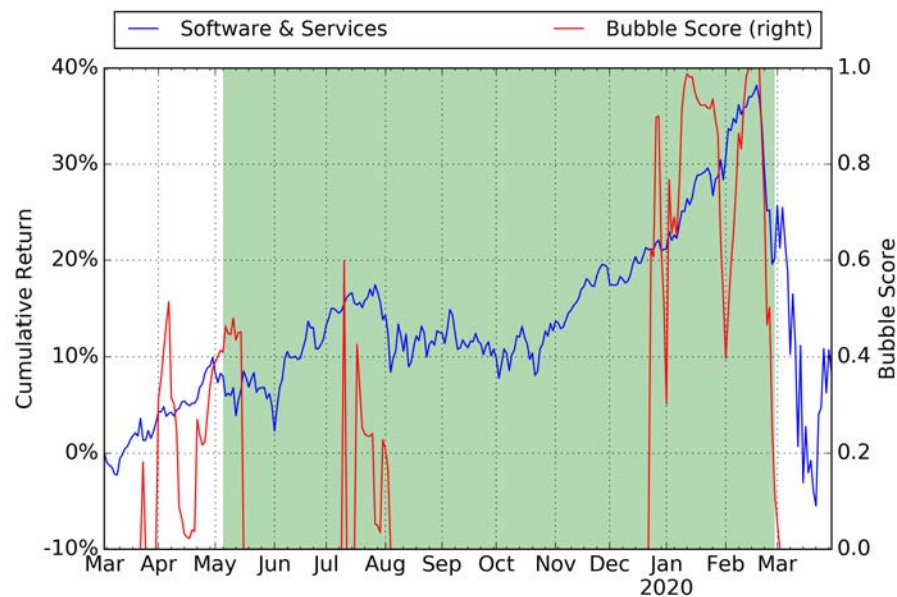
[1] Ke Wu, Didier Darcet, Qian Wang and Didier Sornette, Generalized logistic growth modeling of the COVID-19 outbreak in 29 provinces in China and in the rest of the world, BMC Medicine (submitted 12 March; BMED-D-20-00563) (<http://arxiv.org/abs/2003.05681> and medRxiv: <https://medrxiv.org/cgi/content/short/2020.03.11.20034363v1>)

Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	Apr 1st	Mar 1st	Apr 1st	Mar 1st	Apr 1st	Mar 1st	Apr 1st	Mar 1st	Apr 1st	Mar 1st
Pharmaceuticals, Biotechnology & Life Sciences	2.0%	2.9%	0.0%	0.0%	0.0%	0.0%	67.6%	68.8%	50.5%	48.9%
Consumer Services	-29.4%	-1.0%	0.0%	0.0%	0.0%	0.0%	31.5%	33.6%	44.2%	46.4%
Retailing	-8.9%	8.4%	0.0%	0.0%	0.0%	0.0%	22.5%	23.6%	45.9%	44.2%
Transportation	-20.9%	-7.8%	0.0%	0.0%	0.0%	0.0%	55.2%	55.1%	49.8%	47.3%
Consumer Durables & Apparel	-14.8%	5.6%	0.0%	0.0%	0.0%	0.0%	32.0%	30.5%	59.2%	59.7%
Semiconductors & Semiconductor Equipment	1.5%	23.4%	0.0%	0.0%	0.0%	0.0%	62.8%	61.9%	38.0%	36.7%
Technology Hardware & Equipment	2.0%	19.2%	0.0%	0.0%	0.0%	0.0%	67.9%	69.1%	41.8%	39.9%
Automobiles & Components	-27.2%	-2.9%	0.0%	0.0%	0.0%	0.0%	69.8%	70.7%	54.9%	49.1%
Telecommunication Services	-11.1%	0.6%	0.0%	0.0%	0.0%	0.0%	59.7%	62.4%	45.1%	44.2%
Energy	-49.3%	-26.6%	0.0%	0.0%	0.0%	0.0%	52.5%	52.8%	62.8%	64.2%
Software & Services	2.9%	19.3%	0.0%	11.3%	0.0%	12.1%	35.0%	34.8%	48.7%	47.2%
Materials	-24.6%	-7.7%	0.0%	0.0%	0.0%	0.0%	51.9%	51.7%	51.5%	50.9%
Health Care Equipment & Services	0.2%	4.7%	0.0%	0.0%	0.0%	0.0%	57.0%	58.1%	52.8%	51.7%
Capital Goods	-23.4%	-0.3%	0.0%	0.0%	0.0%	0.0%	46.3%	44.8%	50.0%	51.2%
Media & Entertainment	-10.7%	7.1%	0.0%	0.0%	0.0%	0.0%	30.6%	31.6%	35.8%	34.8%
Commercial & Professional Services	-9.0%	13.3%	0.0%	0.0%	0.0%	0.0%	28.7%	28.6%	55.4%	53.8%
Food & Staples Retailing	0.2%	3.0%	0.0%	0.0%	0.0%	0.0%	49.2%	47.6%	60.3%	60.0%
Household & Personal Products	-2.5%	1.7%	0.0%	0.0%	0.0%	0.0%	31.1%	32.7%	46.9%	45.1%
Food, Beverage & Tobacco	-11.1%	-1.0%	0.0%	0.0%	0.0%	0.0%	49.7%	49.0%	56.4%	51.9%
Utilities	-6.2%	6.2%	0.0%	4.2%	0.0%	19.5%	50.3%	51.0%	45.6%	44.8%
Insurance	-22.4%	-0.7%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	-20.6%	-1.1%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	-17.0%	4.4%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Banks	-34.0%	-8.5%	0.0%	0.0%	0.0%	0.0%	-	-	-	-

Sectors

- ▶ We use the MSCI World Industry Group Indices to calculate bubble size and bubble score of the corresponding sectors. To determine the value scores and growth scores of the sectors, we average over the corresponding values for each stock of a given sector, weighted by market cap.
- ▶ This month, we find 0 industry groups with a positive bubble score, as the market is in a crash mode due to the COVID-19 pandemic.. The bubble signals we identified in two industry groups last month also experienced significant corrections.



Portfolio Construction & Performance

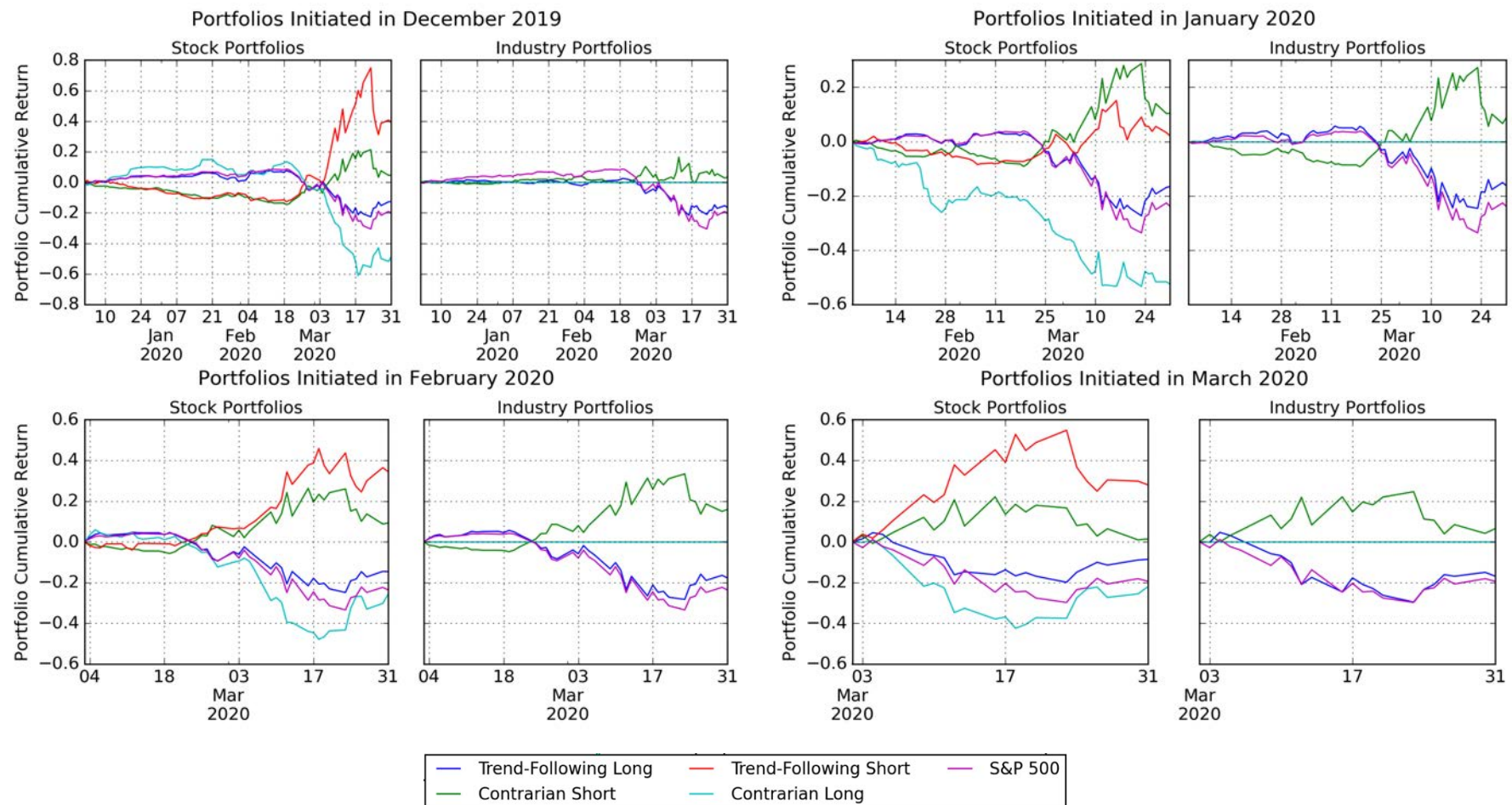
- ▶ Here we illustrate the methodology of the portfolio construction process based on the results of our previous analyses.
- ▶ For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all the stocks listed in the corresponding quadrant.
 1. **Trend-Following Long Stock Portfolio (TFLSP)** is made of the stocks that have a **positive** bubble signal as well as a **strong** value score. For instance, TFLSP November consists of all the stocks listed in quadrant 1, identified in slide 37 of November 2017 FCO Report.
 2. **Trend-Following Short Stock Portfolio (TFSSP)** is made of the stocks that have a **negative** bubble signal as well as a **weak** value score.
 3. **Contrarian Long Stock Portfolio (CLSP)** is made of the stocks that have a **negative** bubble signal as well as a **strong** value score.
 4. **Contrarian Short Stock Portfolio (CSSP)** is made of the stocks that have a **positive** bubble signal as well as a **weak** value score.

Portfolio Construction & Performance

- ▶ At the same time, we also classified 20 industries into 4 quadrants, and constructed 4 type of industry portfolios based on the 4 industry quadrants. Each portfolio consists of all the stocks in the industries listed in the corresponding quadrant. Following the same definitions as above, we have Trend-Following Long Industry Portfolio (TFLIP), Trend-Following Short Industry Portfolio (TFSIP), Contrarian Long Industry Portfolio (CLIP), and Contrarian Short Industry Portfolio (CSIP).
- ▶ In each month, we initiated 8 new portfolios based on the updated results. The performance of every 8 portfolios we initiated since November 2017 are presented in the next slide. All of the stocks in our portfolios are weighted by their market capitalizations and we don't consider transaction cost in the portfolio performance.

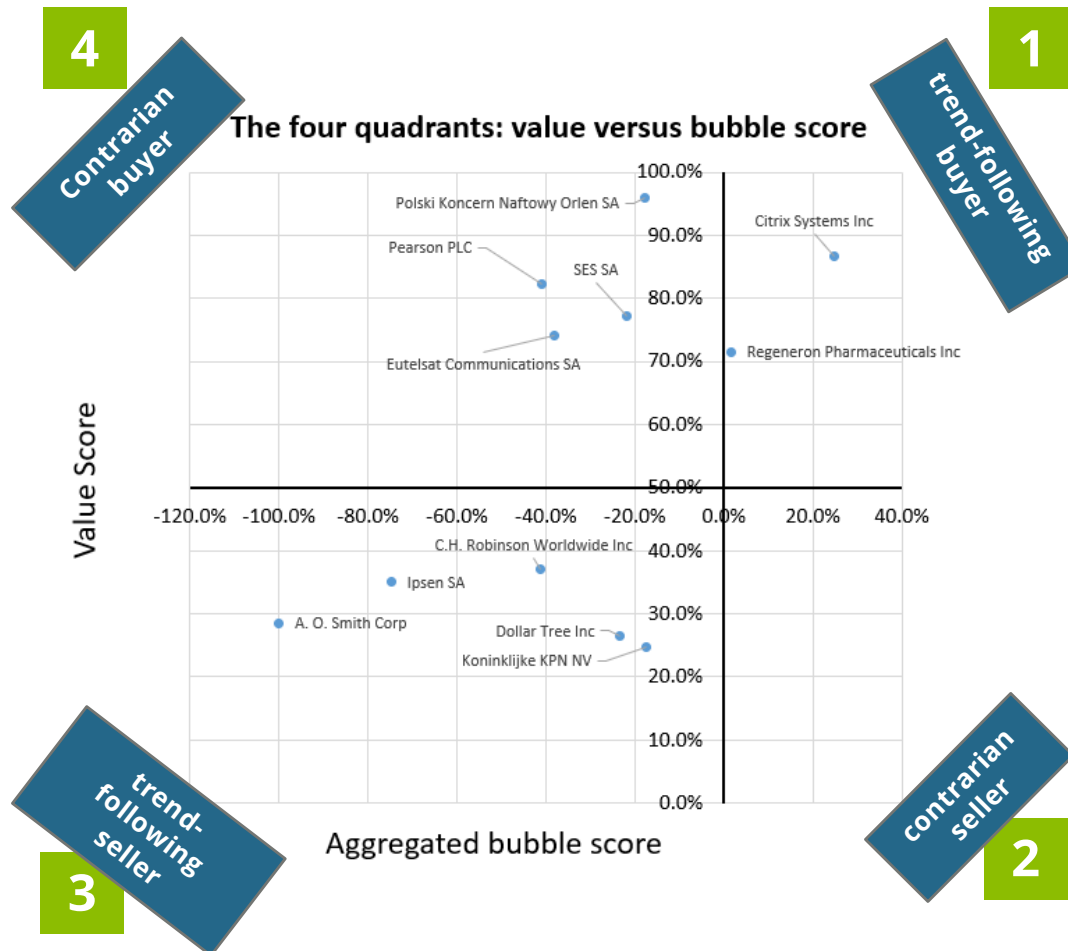
Portfolio Construction & Performance

- ▶ The market experienced a 30% drawdown in the past month due to the outbreak of COVID-19 in various countries, which impacted negatively our Long portfolios. Contrarian Portfolios are more delicate to use due to their sensitivity to timing the expected reversal and exhibit very volatile performances, indicating that most of bubbles in the market are still dominating and that fundamentals have not yet played out. We expect trend-following positions to perform in the months following the position set-up and then contrarian positions to over-perform over longer time scales over which the predicted corrections play out.



Single Stocks

We can divide the stocks into four quadrants¹⁾



- **Quadrant 1:** Stocks with a strong value score are cheap relative to their earnings potential. The strong positive bubble signal should be interpreted as a momentum indicator possibly the consequence of a repricing based on the fundamentals. As an investor, one could be a **trend-following buyer**. E.g. Citrix Systems Inc
- **Quadrant 2:** Stocks with a weak value score are expensive relative to their earnings potential. The strong positive bubble signal is an indication of sentiment and herding increasing the price until it is not linked to fundamentals anymore. As an investor, one could be a **contrarian seller**. No company is identified in this Quadrant 2 in this month.
- **Quadrant 3:** These stocks are expensive relative to their earnings potential. On top of that, there are clear negative bubble signals. Such stocks should be considered as falling knives. As an investor, one could be a **trend-following seller**. E.g. Ipsen SA
- **Quadrant 4:** These stocks are cheap relative to their financial performance. The strong negative bubble signal is an indication of sentiment and herding. These stocks can be considered as over-sold. As an investor, one could be a **contrarian buyer**. E.g. Pearson PLC

¹⁾ A strong positive bubble signal is identified if bubble score is positive, and a strong negative bubble signal is identified if bubble score is negative.

A strong value score is identified if value score is larger than 60%, and a weak value score is identified if value score is smaller than 40%.

Single Stocks

- ▶ For 768 stocks, we calculate the **bubble warning indicators** as well as two financial strength indicators, which indicate the **fundamental value** of the stock and the **growth capability** respectively.
- ▶ To analyze the **financial strength of individual stocks**, we have two indicators. Both scores give a value between zero and one, one being the best of the set and zero the worst, so the higher the score, the higher the financial strength.
 - A **value score** that is based on the ROIC (Return on Invested Capital) taking into account the EV (Enterprise Value) to normalize for high/low market valuations and/or high/low debt; Value scores are calculated by comparing ROIC level versus EV/IC in each industry.
 - A **growth score** that has characteristics similar to the PEG ratio, which is the Price to Earnings ratio normalized by the expected growth of the EPS (Earnings per Share).
- ▶ The stocks are the constituents of the Stoxx Europe 600, the S&P 500 and the Nasdaq 100 indices. From these, all doubles and stocks with incomplete data are removed. Because our financial strength indicators are specifically designed for corporates, all financial institutions are taken out of the set as well.

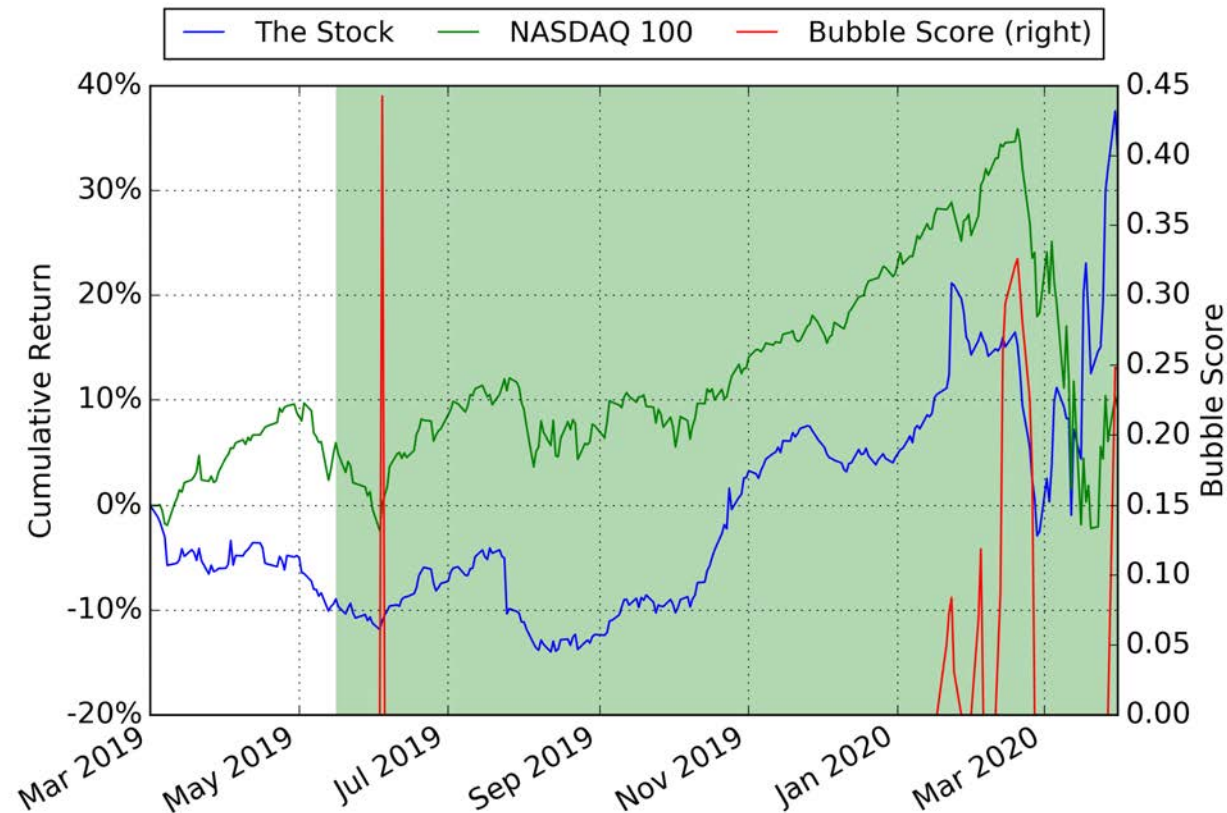
Single Stocks

Quadrant 1 stocks: strong positive bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Citrix Systems Inc	United States of America	Software & Services	39.4%	49.6%	May-19	24.7%	86.7%	56.6%
Regeneron Pharmaceuticals Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	19.6%	63.7%	Jul-19	1.6%	71.5%	25.9%

Single Stocks

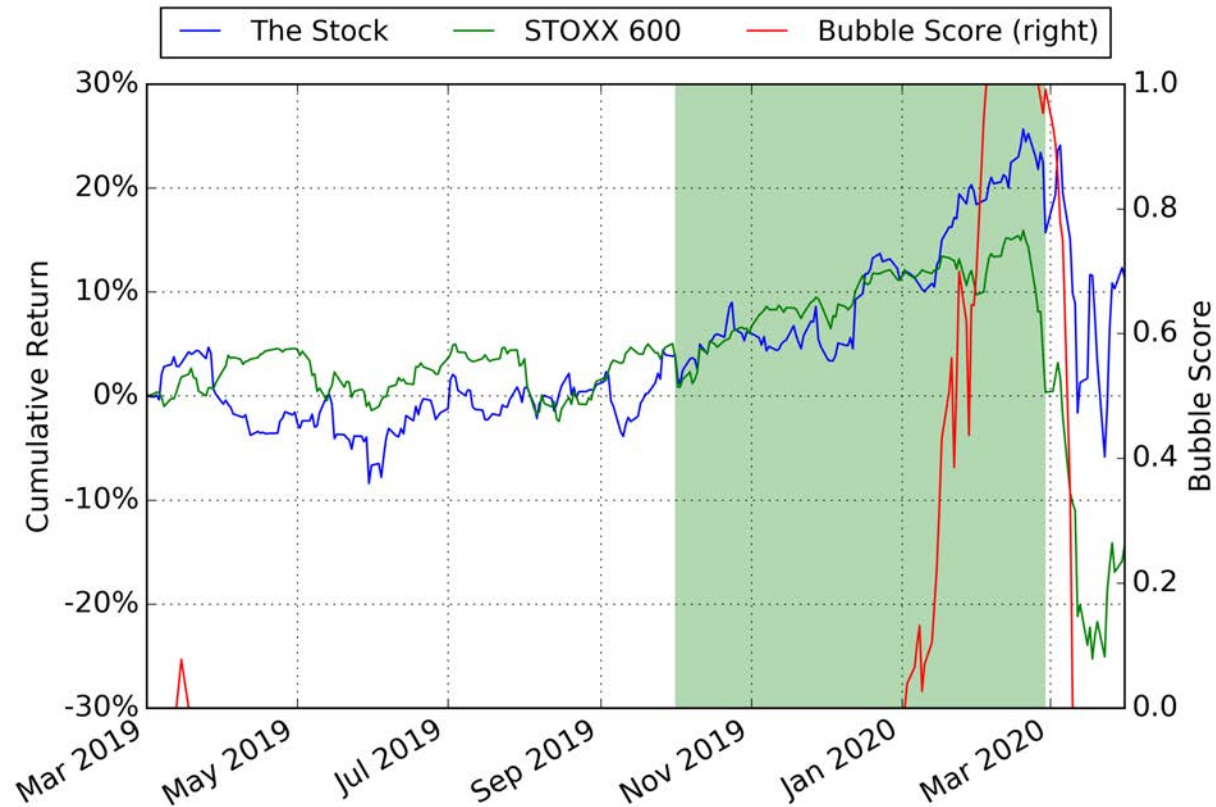
Quadrant 1 Stocks Current Month Example – Citrix Systems Inc.



- The above graph shows the one year cumulative return of the stock in blue (left hand scale), NASDAQ 100 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period delineates the time interval within which the strong positive bubble is identified. The Bubble Score of this one year bubble has reached 24.7% with a bubble size 49.6%.

Single Stocks

Quadrant 1 Stocks Last Month Example – National Grid PLC.



- The figure above plots the one year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which a strong positive bubble has been identified and reported last month. The bubble regime has finished, followed by a strong correction in the past month triggered by the global market. This change of regime is in agreement with our DS LPPLS indicator. However, we have seen strong rebound already in recent days, which is supported by the strong fundamentals.

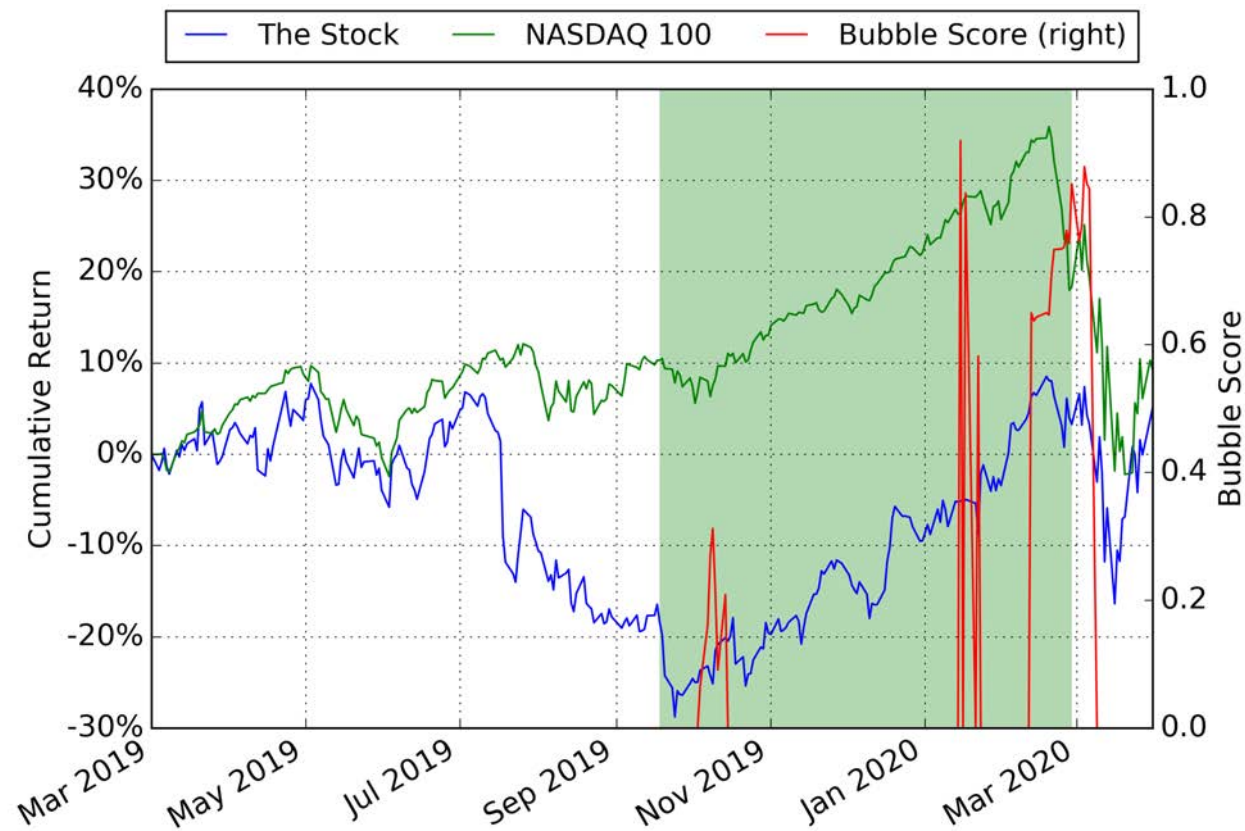
Single Stocks

Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

No stocks are identified in Quadrant 2 stocks this month.

Single Stocks

Quadrant 2 Stocks Last Month Example – Netflix Inc.



- ▶ The figure above plots the one year cumulative return of the stock (blue), NASDAQ 100 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which the strong positive bubble was identified and reported last month. The stock had a 25% drawdown in the past month, triggered by the market slump. However, it is followed by a strong V-shape rebound, as the number of users of Netflix is expected to grow in a time of global lockdown, strengthening the fundamentals of Netflix.

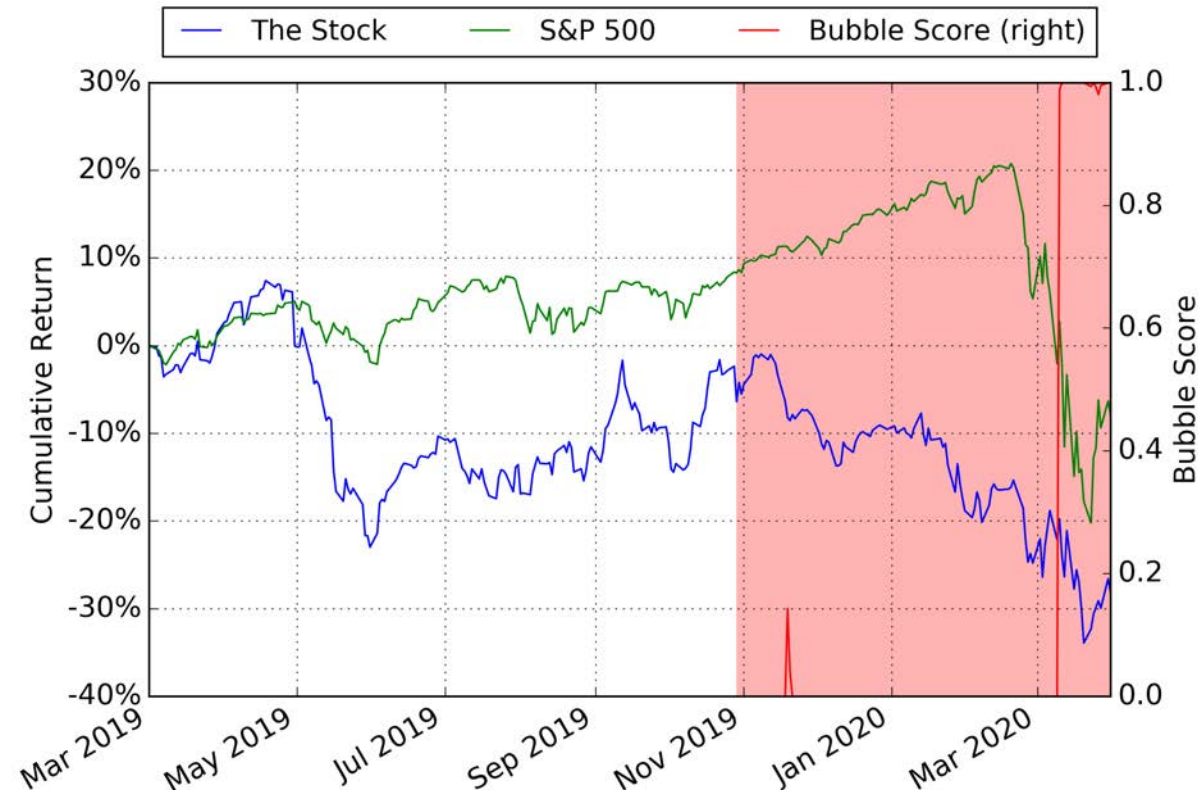
Single Stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Ipsen SA	France	Pharmaceuticals, Biotechnology & Life Sciences	-61.6%	-49.0%	Oct-19	-74.7%	35.0%	28.3%
Koninklijke KPN NV	Netherlands	Telecommunication Services	-24.4%	-21.4%	Sep-19	-17.4%	24.6%	92.8%
C.H. Robinson Worldwide Inc	United States of America	Transportation	-25.1%	-20.5%	Jul-19	-41.4%	37.1%	81.3%
Dollar Tree Inc	United States of America	Retailing	-29.0%	-29.0%	Apr-19	-23.5%	26.4%	61.4%
A. O. Smith Corp	United States of America	Capital Goods	-30.2%	-24.8%	Nov-19	-100.0%	28.4%	70.3%

Single Stocks

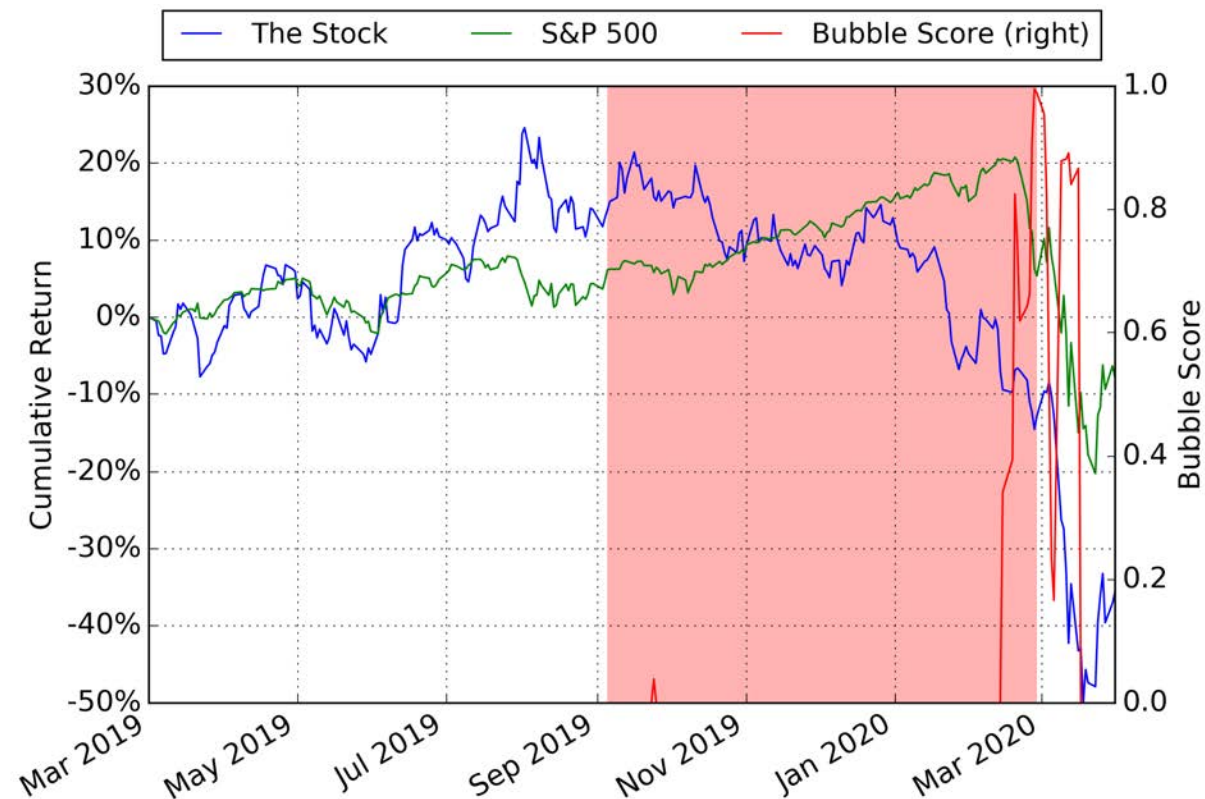
Quadrant 3 Stocks Current Month Example – A. O. Smith Corp.



- The above graph shows the one year cumulative return of the stock in blue (left hand scale), S&P 500 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The red shaded period delineates the time interval within which the negative bubble is identified. The Bubble Score of this five month bubble has reached 100% with a bubble size -24.8%.

Single Stocks

Quadrant 3 Stocks Last Month Example – CF Industries Holdings Inc.



- The figure above plots the one year cumulative return of the stock (blue), S&P 500 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period delineates the time interval within which the strong negative bubble was identified and reported last month. The stock followed the market's drawdown before exhibiting a small correction recently. The weak fundamental of this company under the weak global industrial environment provides limited space for it to further rebound.

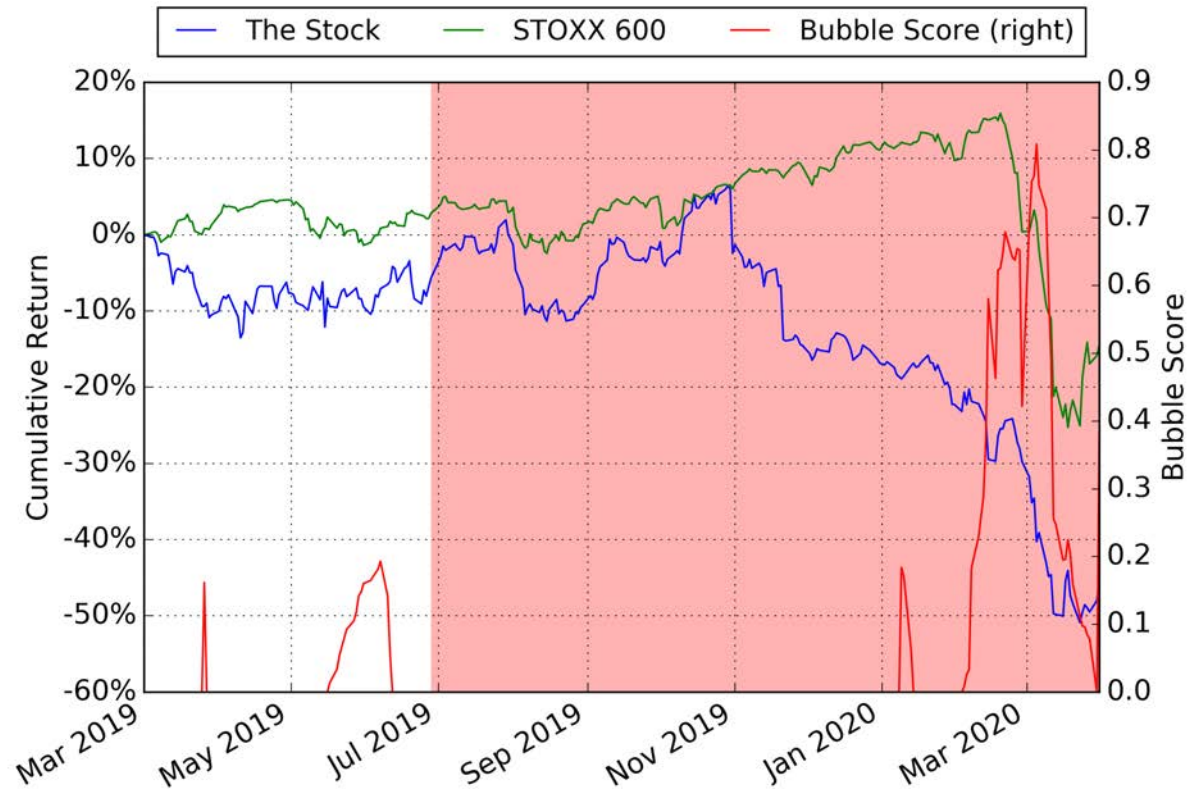
Single Stocks

Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Eutelsat Communications SA	France	Media & Entertainment	-36.8%	-43.3%	Jul-19	-38.1%	74.1%	23.1%
Pearson PLC	United Kingdom	Media & Entertainment	-32.8%	-25.3%	Sep-19	-41.0%	82.2%	9.0%
SES SA	Luxembourg	Media & Entertainment	-64.5%	-63.9%	Jul-19	-21.9%	77.1%	96.2%
Polski Koncern Naftowy Orlen SA	Poland	Energy	-45.4%	-42.5%	Sep-19	-17.7%	96.0%	98.6%

Single Stocks

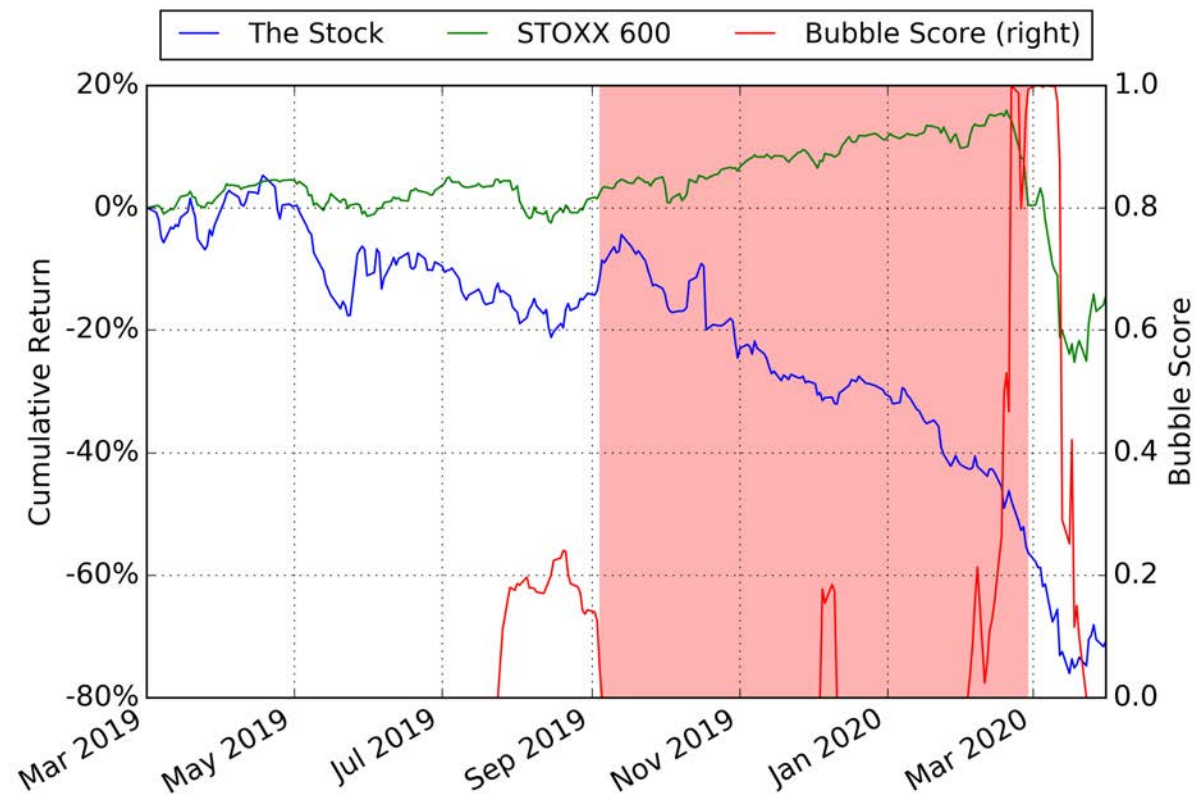
Quadrant 4 Stocks Current Month Example – Eutelsat Communications SA.



- The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The red shaded period delineates the time interval within which the strong negative bubble is identified. The Bubble Score of this nine month bubble has reached 38.1% with a bubble size -43.4%. We expect a rebound in the future, which is due to our diagnostic of a negative bubble signal with strong fundamentals, calling for a contrarian buyer position.

Single Stocks

Quadrant 4 Stocks Last Month Example – Renault SA.



- The figure above plots the one year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period delineates the time interval within which the strong negative bubble was identified and reported last month. The stock continued its drawdown in the past month. We expect this stock to rebound in the future due to our diagnostic of a negative bubble signal with strong fundamentals, calling for a contrarian buyer position.

More Information

- ▶ Visit the **Financial Crisis Observatory** for more information

<http://www.er.ethz.ch/financial-crisis-observatory.html>

- ▶ **Contacts ETH Zurich**

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- ▶ Contact **Systematic Investment Management AG** for practical implementation in investment portfolios

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