The FCO Cockpit
Global Bubble Status Report
July 2020

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

Contents

ETH FCO and SIMAG Join Forces

The Financial Crisis Observatory (FCO) is...	Systematic Investment Management AG (SIMAG) 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	▪ 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
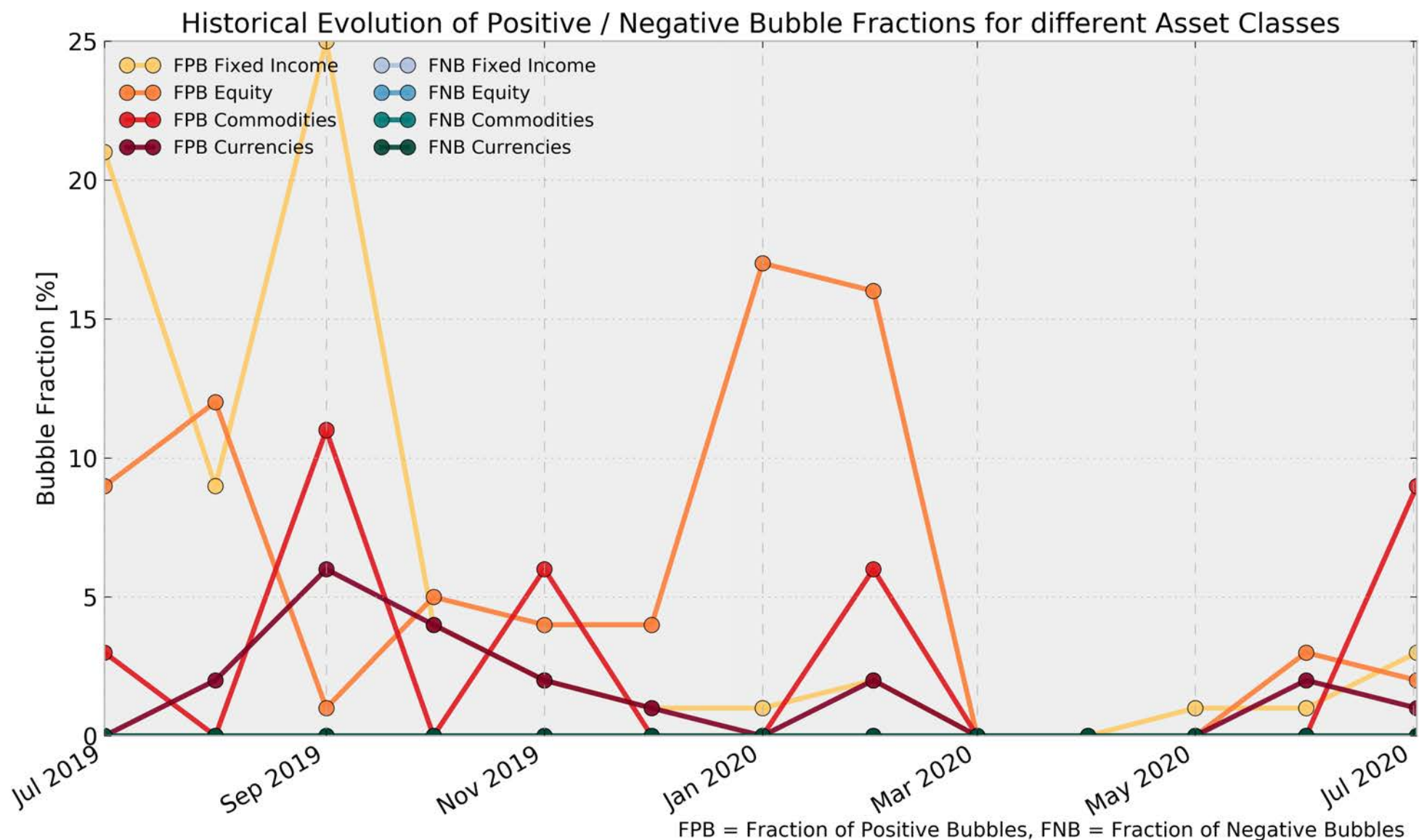
Purpose and Benefits

▶ 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 – Key Take Aways

▸ Following the recent price recovery from low levels after the Corona crash, we diagnose a rising number of positive bubble signals at the beginning of July.

▸ The strongest positive bubble activity is observed amongst commodities, where the fraction of bubble signals increased from 0% to 9% from last month.

▸ No negative bubble signals are detected.

▸ The market "boy" and the Fed "mother"

▸ India is in bubble

General Results – The Big Picture

Historical Evolution of Positive / Negative Bubble Fractions for different Asset Classes

FPB = Fraction of Positive Bubbles, FNB = Fraction of Negative Bubbles

General Results – This Month's Overview

Category	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
Fixed Income	155	3	0
Government Bonds	55	4	0
Finance and Insurance	21	0	0
Corporate Bonds	79	3	0
Equity	251	2	0
Country Indices	58	3	0
Europe	35	0	0
United States	158	3	0
Commodities	33	9	0
Forex	95	1	0

FCO Market Outlook

When we look at the market, we will always find an interesting relationship between the Fed's Balance sheet and the US market index. This relationship is quite like "a protective mother" and "her spoiled boy". i.e. when the boy is thirty or ill, the mother will always milk the boy or take good care of him. You will have understood that the Fed is the "mother" and the US market index is the "boy".

Every investor needs to have a market view to generate a proper investment strategy. So we have to review what happened since last year: In September 2019 when the repo rate spiked, the "mother" felt that the "boy" was about to be thirty, so the Fed kept injecting liquidity to calm down the repo market, hammering the federal funds rate. "When the river rises, the floating boat also rises". Due to the convenience of assured liquidity and an optimistic mood, the US market index soared to the historical high by early 2020. However, when everyone was enjoying the party, the COVID-19 broke out.

Even though the Chinese government had rung the alarming bell in January 2020, the COVID-19 was still considered as the "elephant in the room" by the West. When APPLE issued its earning downgrade report due to supply-chain disruptions, people started to panic, realizing suddenly that many businesses will be heavily impacted and lots of people will lose their jobs. The coronavirus even catalyzed geopolitical tension and thus the oil price got "double hit" (demand dropped but supply soared), recording the first negative oil price in the future market in recorded human history… "The winter was here" and the final market outcome was another crash that will be written in textbooks.

At the market darkest time in late March, the Federal Reserve Board, in its self-assigned role of Lender of Last Resort, opened its Magic Money Machine, lending trillions of dollar in the bond market within a few months with the goal to rebuild market confidence. This catalyzed a market rebound. Some investors (especially some retail investors), suffering from the FMOM (Fear of Missing Out) and TINA (There is No Alternative), went back to the market benefiting from the historical rebound, while others, particular some rule-based institutional investors, are still waiting for the real economy to recover.

The graph above shows that the recent SP500's trajectory is following the trend of the Fed's balance sheet. So determining where will the market go becomes straightforward:
1. Will the Fed keep increasing its balance sheet? 2. How long will the pandemic last? 3. Will winter come again?
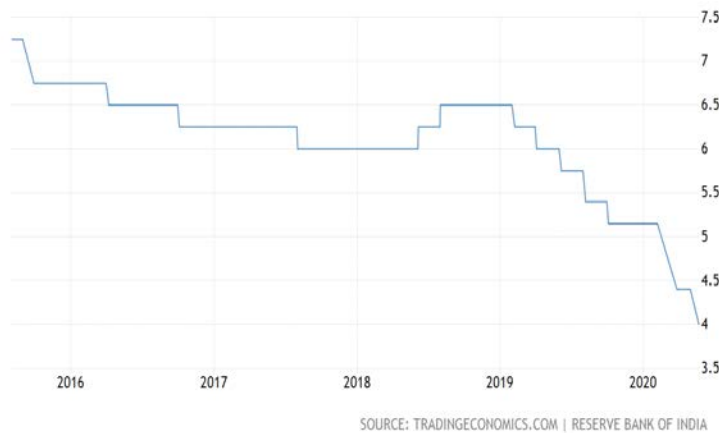Our answers are:
1. The Fed will expand its balance sheet further as long as the market needs it. The "mother" has to take care of the "boy" especially when he suffering from a serious illness. In extreme conditions, the negative interest rate policy is possible because the Taylor-rule implies that under the current GDP and CPI, the federal funds rate should be negative already.
2. How long will the pandemic last depends on whether the coronavirus might alleviate itself , how non-pharmaceutical measures will be implemented, whether herd immunity will progressively come and more tentatively whether vaccination will come and be efficient. It is the medical experts who shall answer these questions. If the pandemics continues, the outlook will be negative.
3. Theoretically, the Fed has unlimited ammunition, so the high valuation can be supported to some extent. But will the real economy recover? If the real economy is okay with the help of monetary/fiscal policies as well as proper medical guidance, the market will be fine. But if the "boy drawn in the water for too long" or "the boy does something stupid", the market may face anther down-turn and that is something money can not solve.
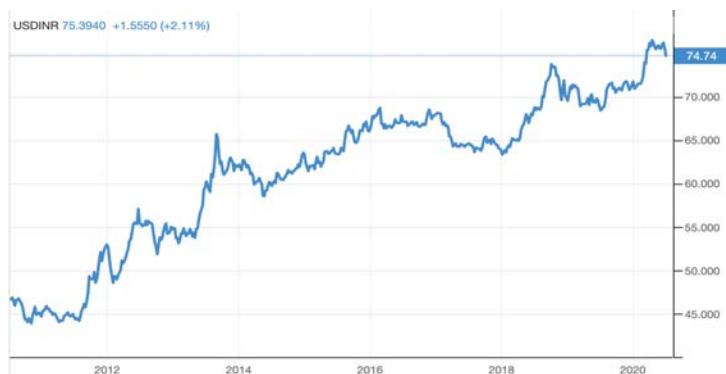
Indian Central Bank Balance Sheet

SOURCE: TRADINGECONOMICS.COM | RESERVE BANK OF INDIA

Indian Central Bank Interest Rate

SOURCE: TRADINGECONOMICS.COM | RESERVE BANK OF INDIA

USDINR (10-year)

We noticed a potential LPPLS pattern in NIFTY (the Indian stock market index) and the macro-level positive feedback loop is clear:

1. The Indian central bank is injecting big liquidity into the market.

2. The Indian interest rate has dropped very fast in the past few months.

3. The Indian currency is at a weak level recently, compared with USD.

Both the liquidity from the central bank and the deposits outflow from the commercial banks might contribute to the NIFTY's increase.
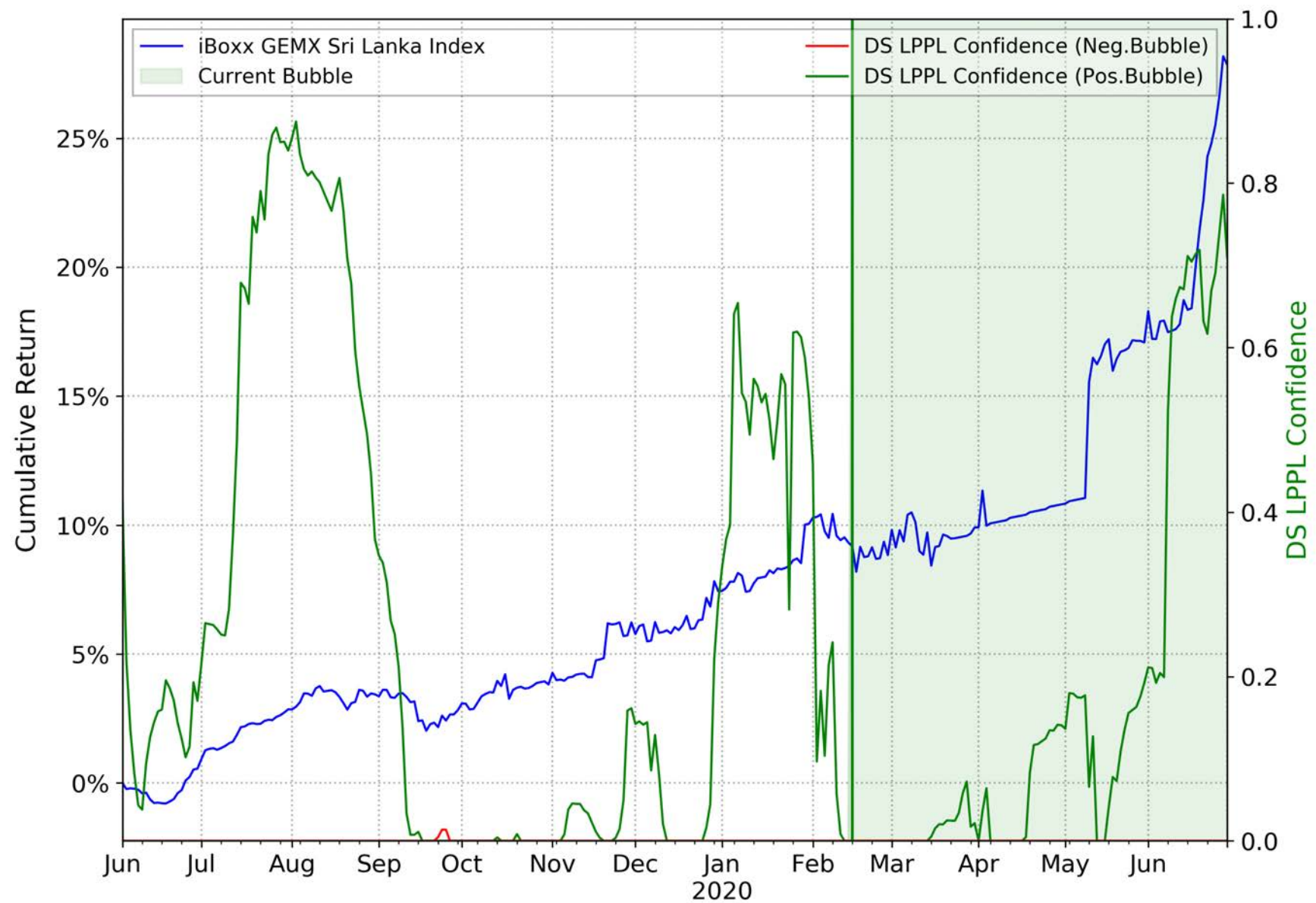
LPPLS analysis performed with last data point On July 2, 2020

Fixed Income – Government Bonds

	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	Bubble Data Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	Cluster Analysis σ_{t_c} [$days$]	Scenario Probability [%]
Positive Bubbles								
1	iBoxx GEMX Sri Lanka Index	17	135	71	35	2020-07-14	1	26
2	iBoxx GEMX Nigeria Index	36	354	10	19	2020-07-01	3	61

▸ At the start of July, we report positive bubbles of size 17% and 36% for the Sri Lanka and Nigeria iBoxx GEMX Government Bond indices.

▸ For the Sri Lanka index, the Confidence Indicator is quite high, at 71%, while it is much lower for the Nigeria Index, at 10%.

▸ As usual, the time series plots of the price and the DS LPPLS Confidence Indicator are provided on the following slides for both indices.

Fixed Income – Corporate Bonds

	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	σ_{t_c} [$days$]	Scenario Probability [%]
					Bubble Data		**Cluster Analysis**	
Positive Bubbles								
1	iBoxx USD Chemicals Index	15	102	51	27	2020-06-29		52
2	iBoxx USD Real Estate Index	10	101	15	12	2020-07-27	11	62

▸ Additionally to government bond indices, we report two new bubble signals detected for corporate bond indices.

▸ Again, the value of the DS LPPLS Confidence Indicator for the top signal is quite high, at 51%.

▸ Looking at the indicator plots on the following slides, for both indices, we see a strong collapse of the price during the Corona crash, but also a quick and strong recovery afterwards.

▸ Note also the strong price surges before the crash, where the confidence indicator also increased to higher values.
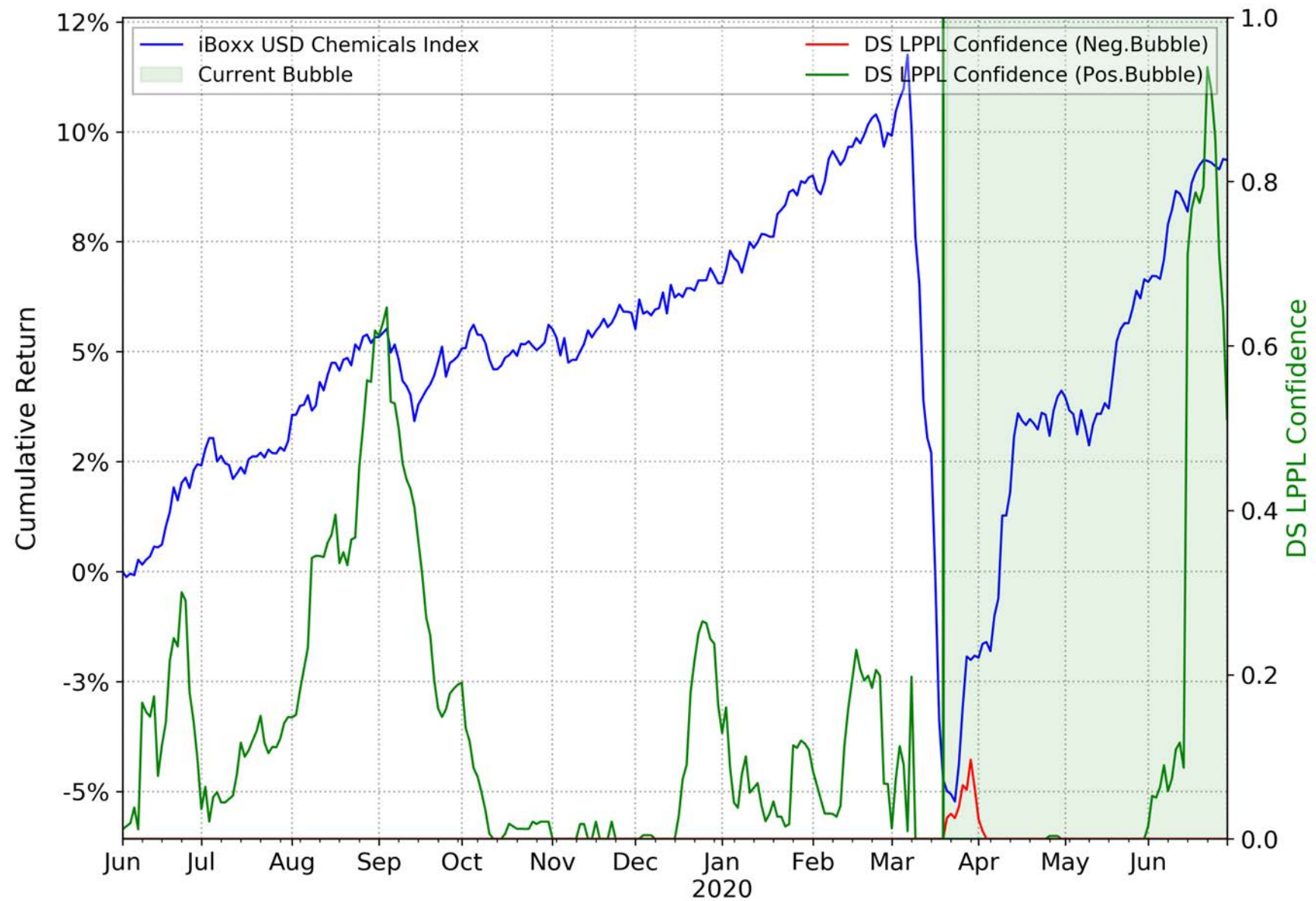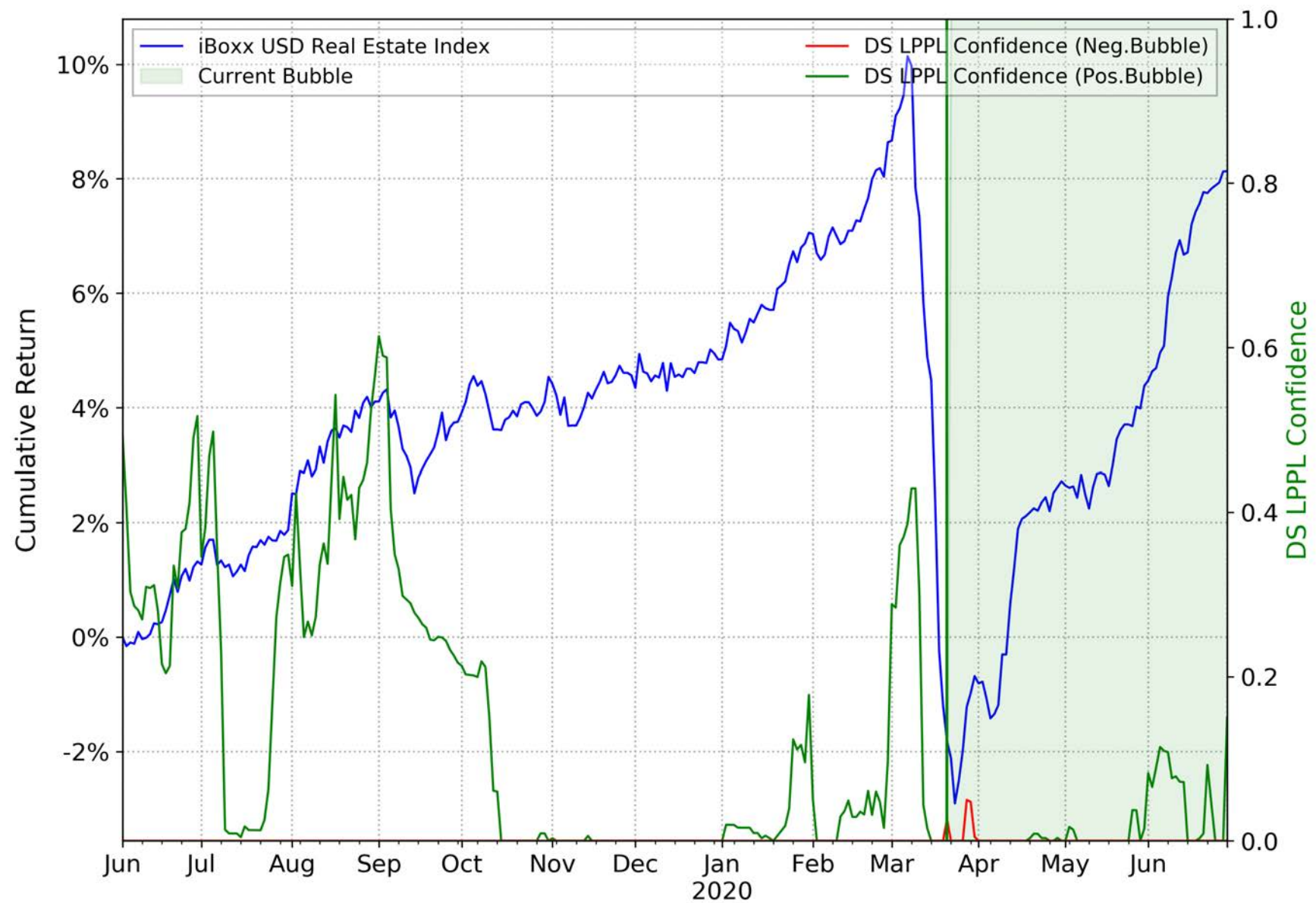
Equities – Country Indices

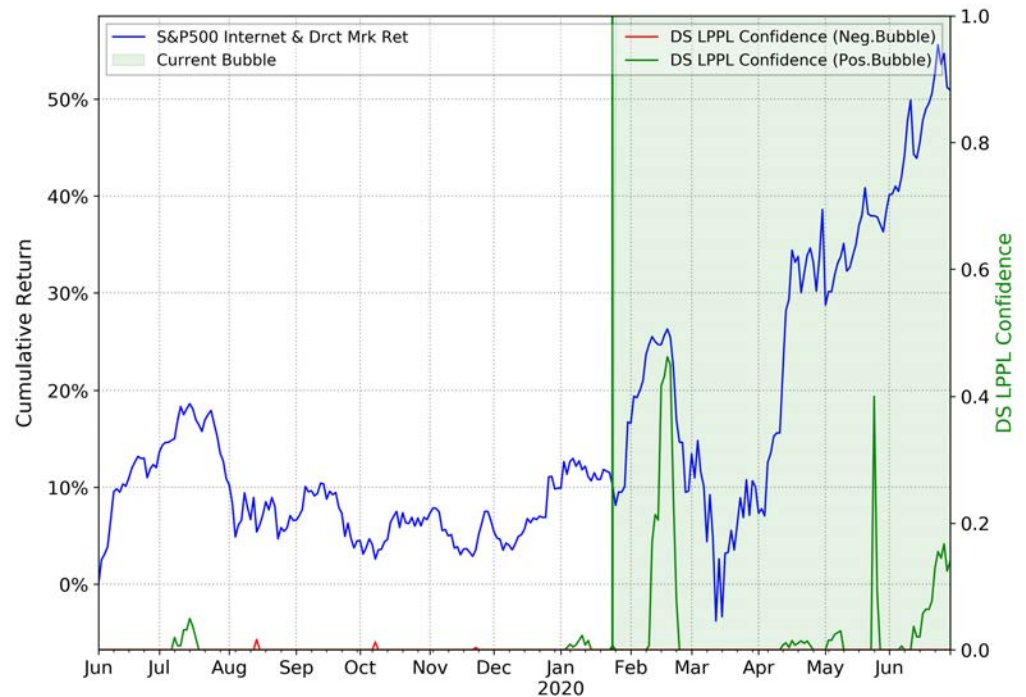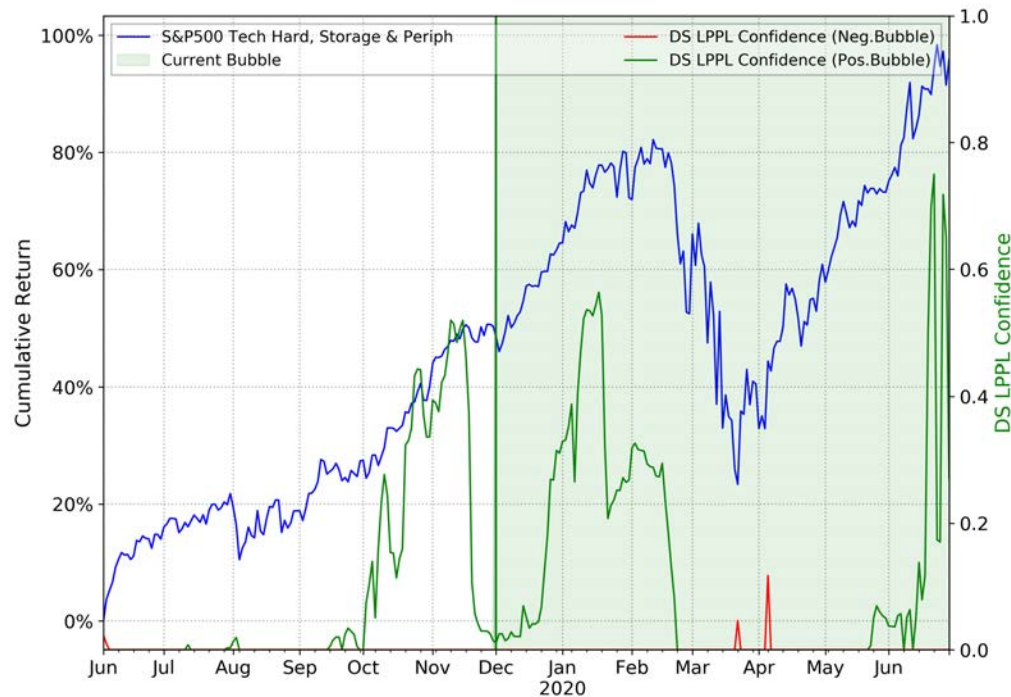|	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	**Bubble Data** Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	**Cluster Analysis** σ_{t_c} [$days$]	Scenario Probability [%]
Positive Bubbles								
1	BIST 100 Index	32	107	79	50	2020-07-02	1	54
2	FTSE Italia All-Share Index	30	107	12	19	2020-08-22	14	67

▸ Next, we report bubble signals for the equity index asset class. Firstly, we show two signals for country indices, the Turkish BIST 100, as well as the Italian FTSE.

▸ As we see on the following pages, the corona crisis has had a strong impact on the two indices.

▸ For both indices, we see a recovery of the price after the crash, but, seen relative to the peak before the crash, it is stronger for the BIST Index.

▸ The estimated bubble characteristics are quite similar, however with a much stronger signal for the Turkish index, as expressed by the value of the confidence indicator of 79%.

▸ Note that for both time series, we determined a negative bubble state during the trough, predictive of the rebound afterwards.
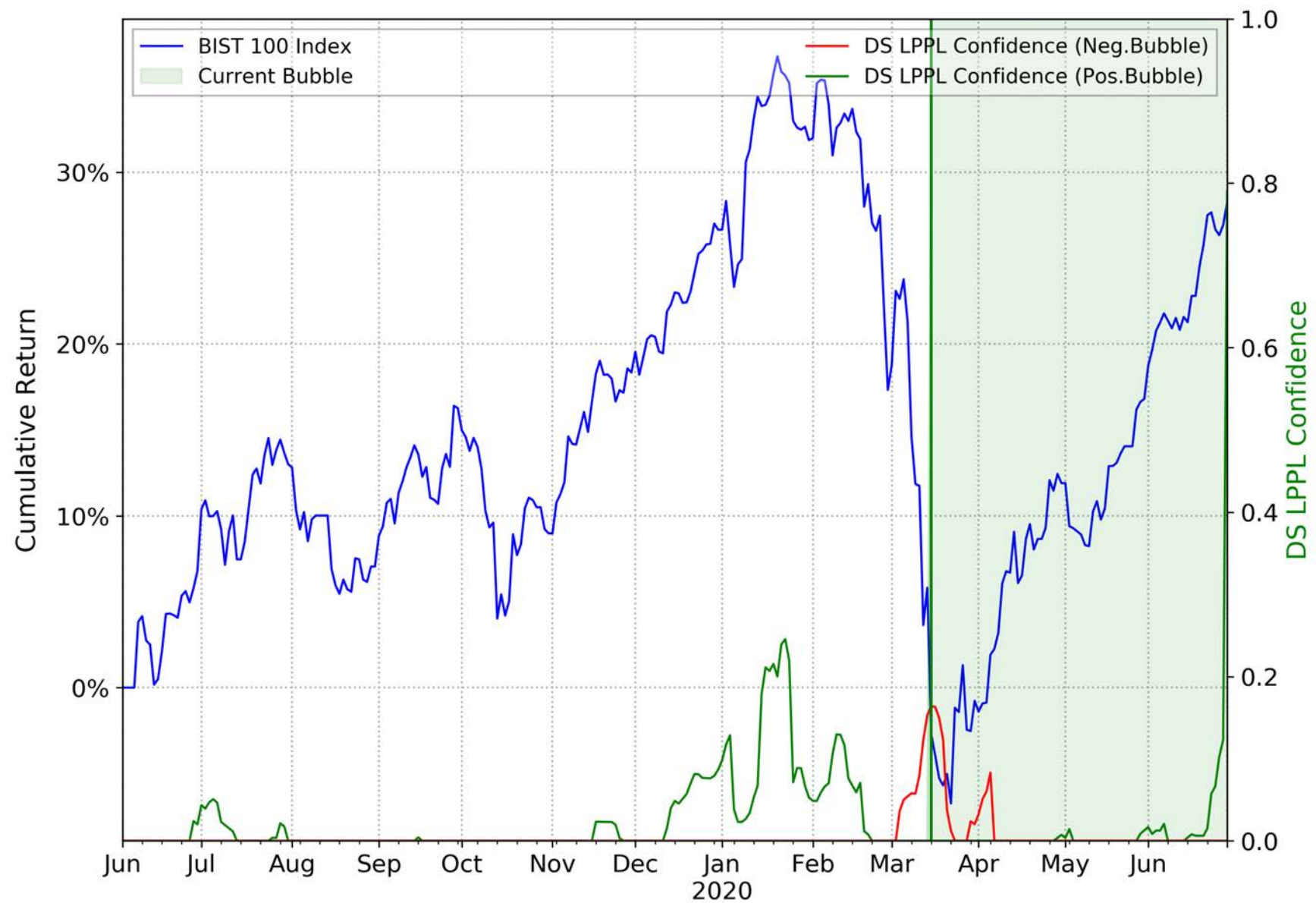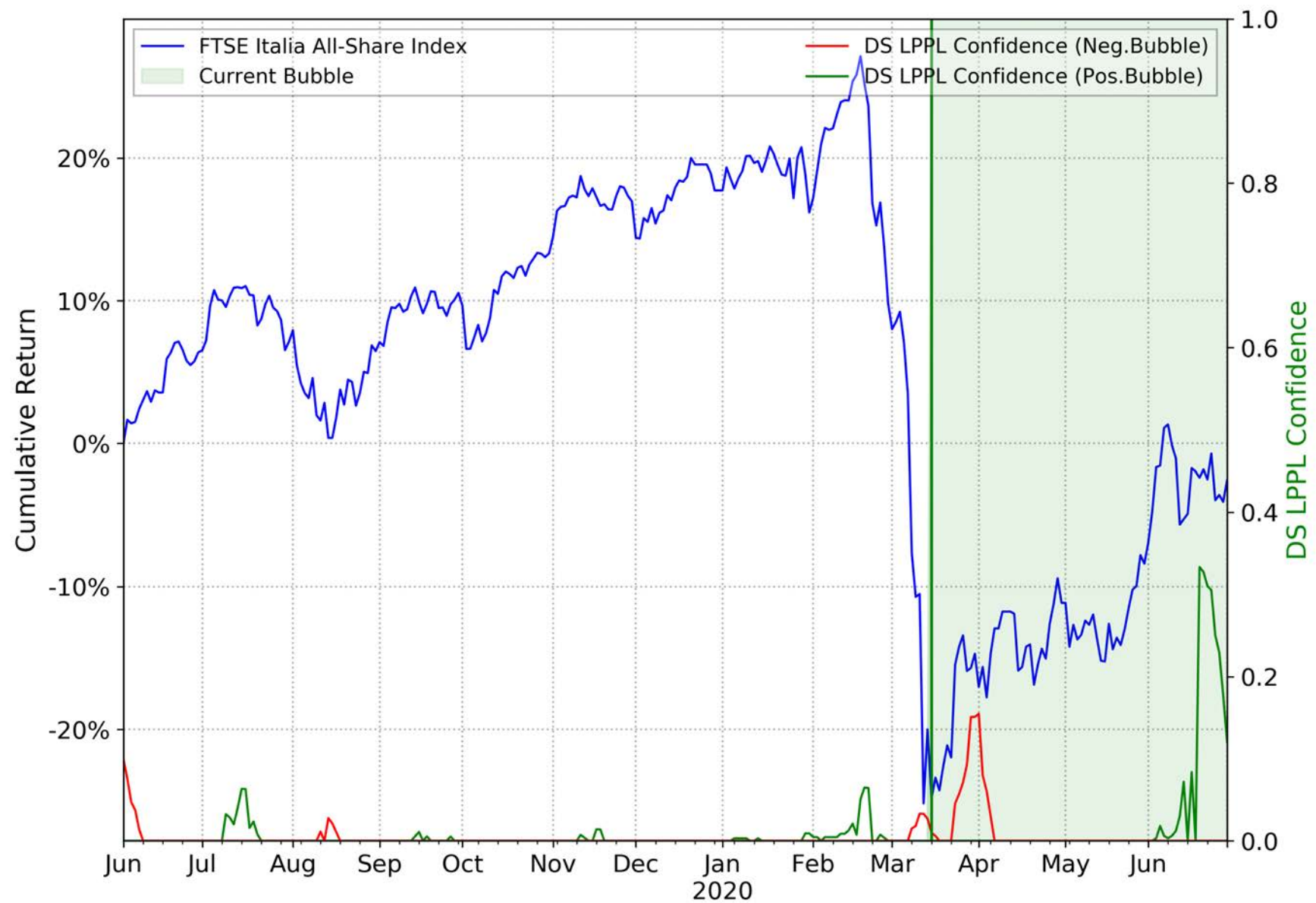
Equities – United States Indices

	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	σ_{t_c} [$days$]	Scenario Probability [%]
Positive Bubbles								
1	S&P500 Tech Hard, Storage & Periph	32	212	27	30	2020-12-08	19	49
2	S&P500 Internet & Drct Mrk Ret	37	157	14	23	2020-06-29	1	55

Commodities

	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	σ_{t_c} [$days$]	Scenario Probability [%]
Positive Bubbles								
1	Copper ER Index	29	100	79	47	2020-06-29		79
2	HG Copper ER Index	27	100	75	45	2020-06-29		82
3	Indtr Mtls ER Index	16	100	13	14	2020-07-10	8	66

▸ For the first time since February 2020, we report a non-zero fraction of positive bubbles of 9% for the commodities sector.

▸ At the top of our list, we report two indices that track the copper price. As they are highly correlated, and thus the estimated bubble characteristics are almost identical, we only show the plot for the first one on the next page.

▸ Furthermore, we report a signal for the general industrial metals index. As a response to the Corona shutdown, the demand for metals used in industrial production has first sharply decreased, but recently recovered.

▸ Especially for the industrial metals index, the sharp decrease during the corona crash is also accompanied by an increase of the negative bubble indicator during that period.

Cryptocurrencies

|	Name	Bubble Size bs [%]	Duration [$days$]	DS LPPL Confidence ci [%]	Bubble Data Geometric Average $\sqrt{bs \cdot ci}$ [%]	Critical Time Prediction μ_{t_c}	Cluster Analysis σ_{t_c} [$days$]	Scenario Probability [%]
Positive Bubbles								
1	VET/USD	279	109	18	70	2020-08-14	5	60
2	BAT/USD	95	108	18	41	2020-08-23	8	39
3	ONT/USD	92	109	16	39	2020-07-18	10	81

▸ In the cryptocurrency sector, we report three positive bubble signals.

▸ The corresponding cryptocurrencies are *VeChain*, *Basic Attention Token* as well as *Ontology*.

▸ Typical for cryptocurrencies, the bubble sizes are quite high, ranging from 92-279%. The determined bubble durations are very similar, at about 3-4 months. The confidence indicator is however below 20% for all signals.

▸ We show the corresponding indicator plots for these coins, as well as for *Bitcoin* and *Enjin Coin* (which was the previous top signal in the previous report). Bitcoin is not yet diagnosed in a bubble state.
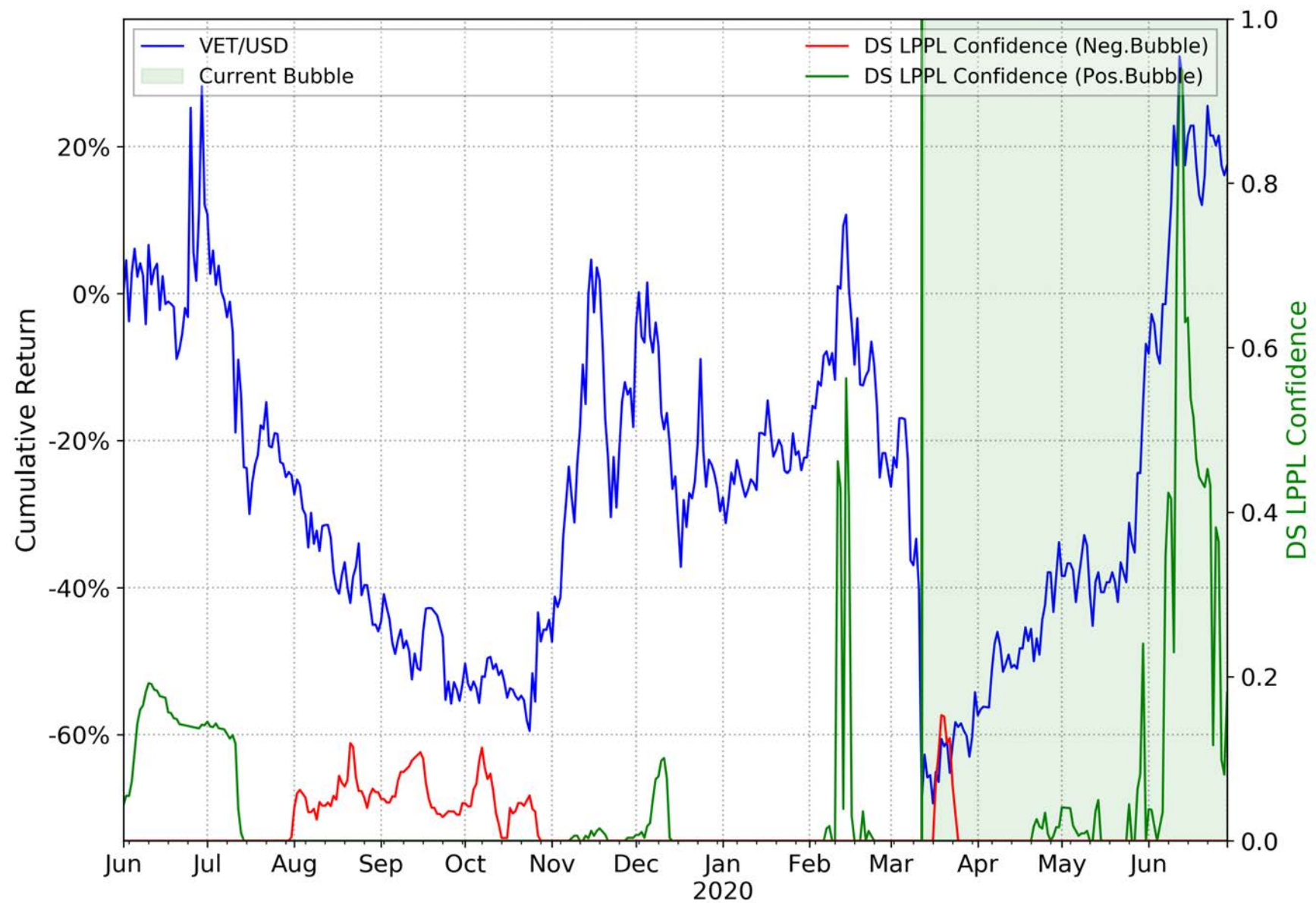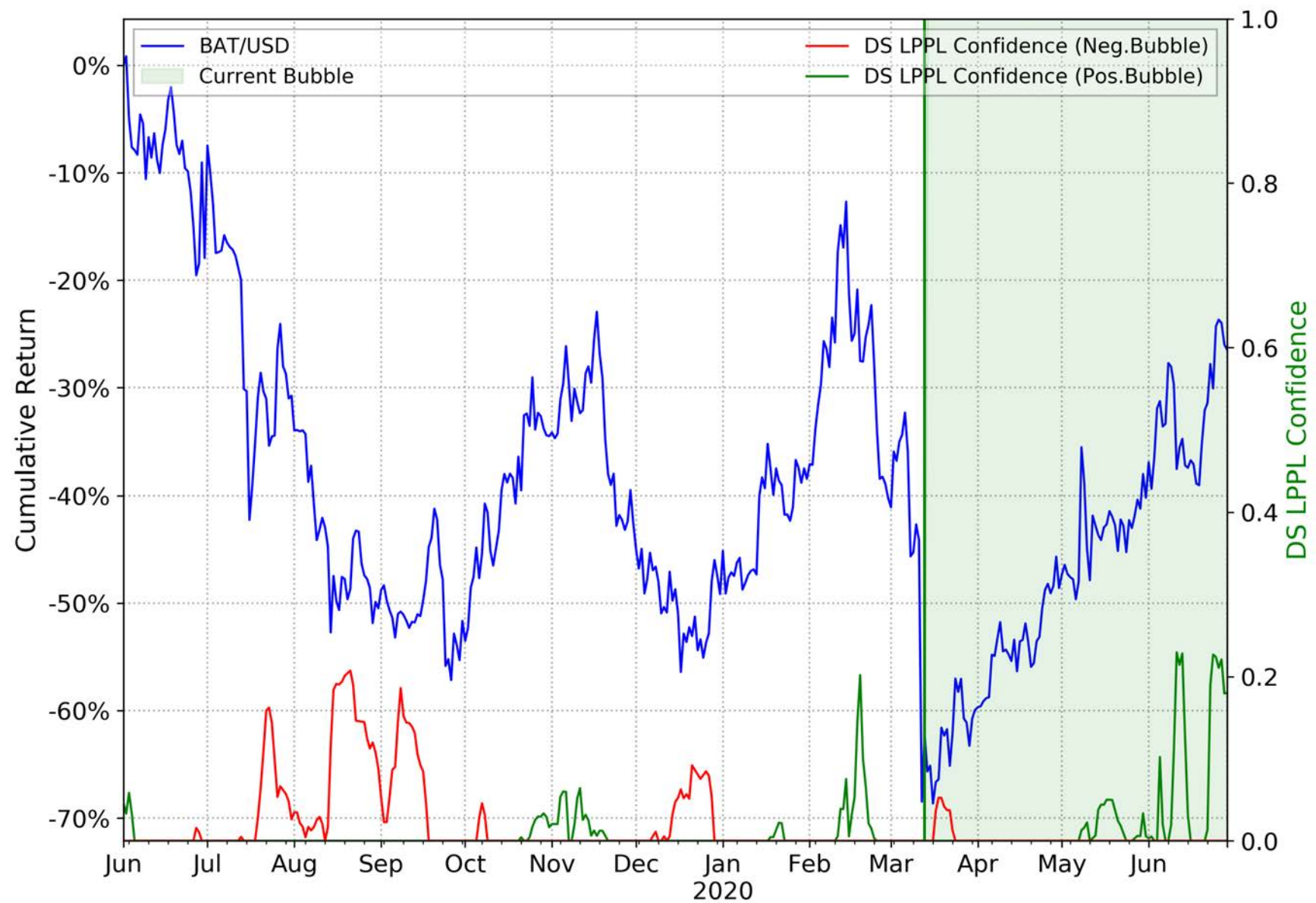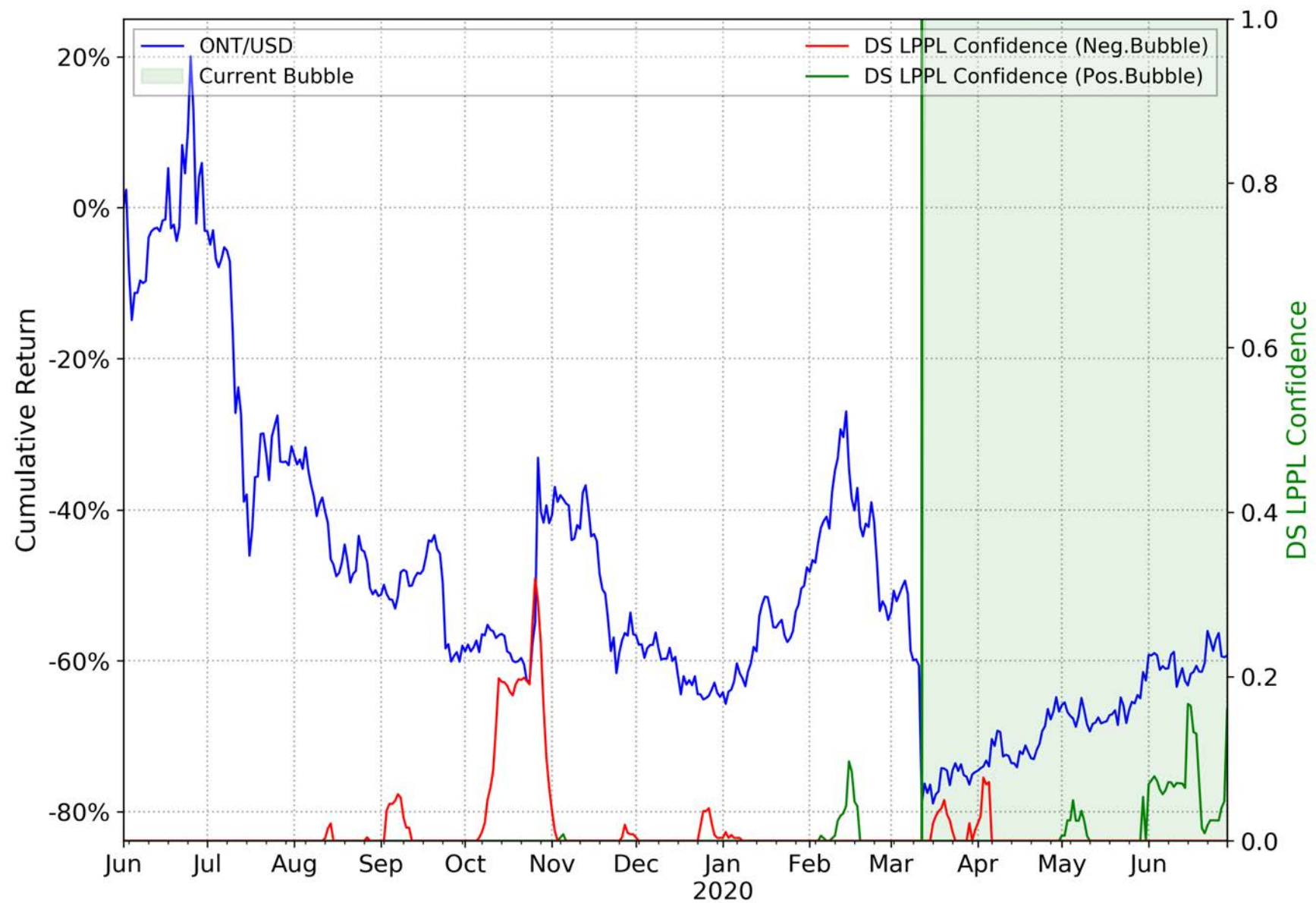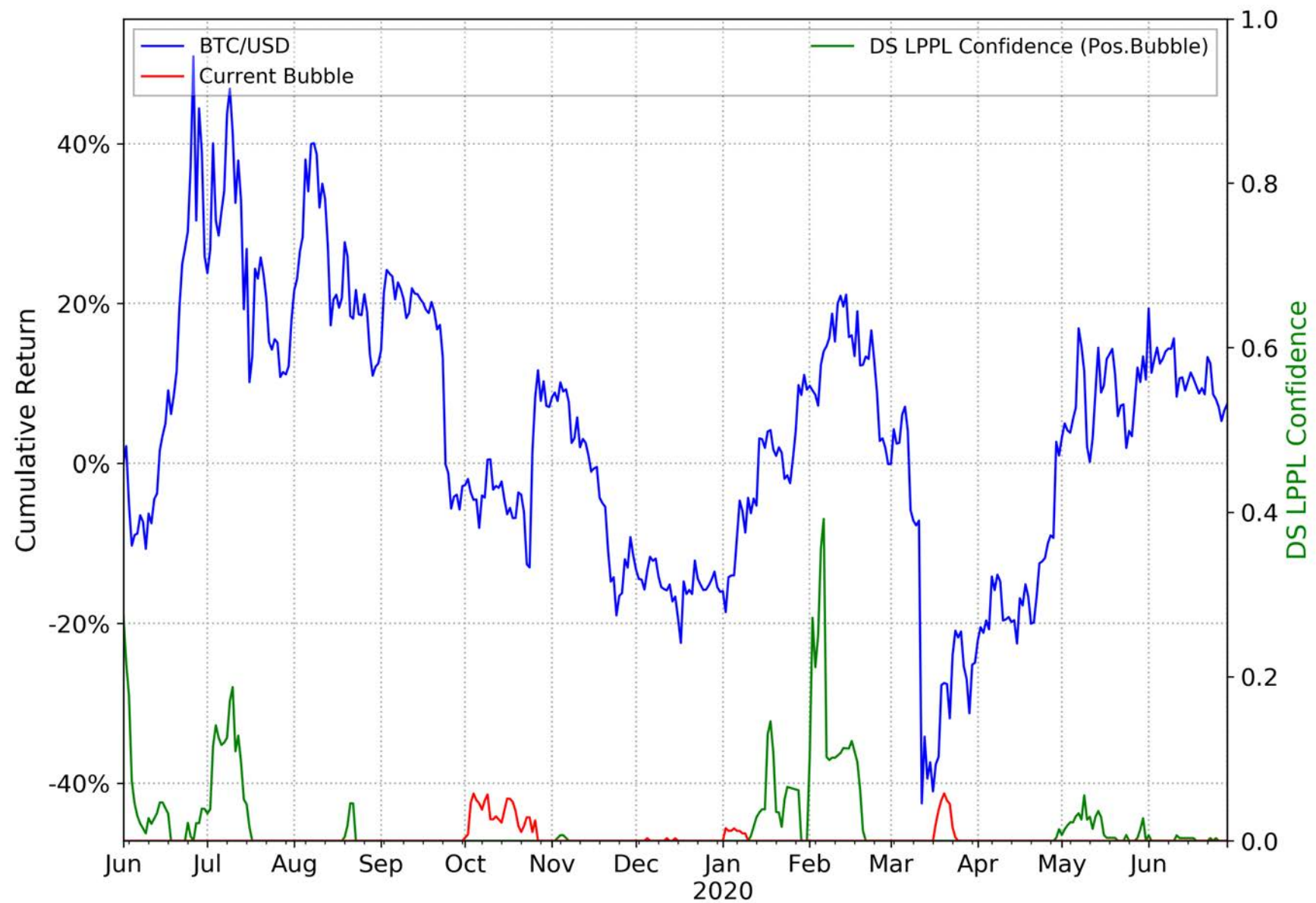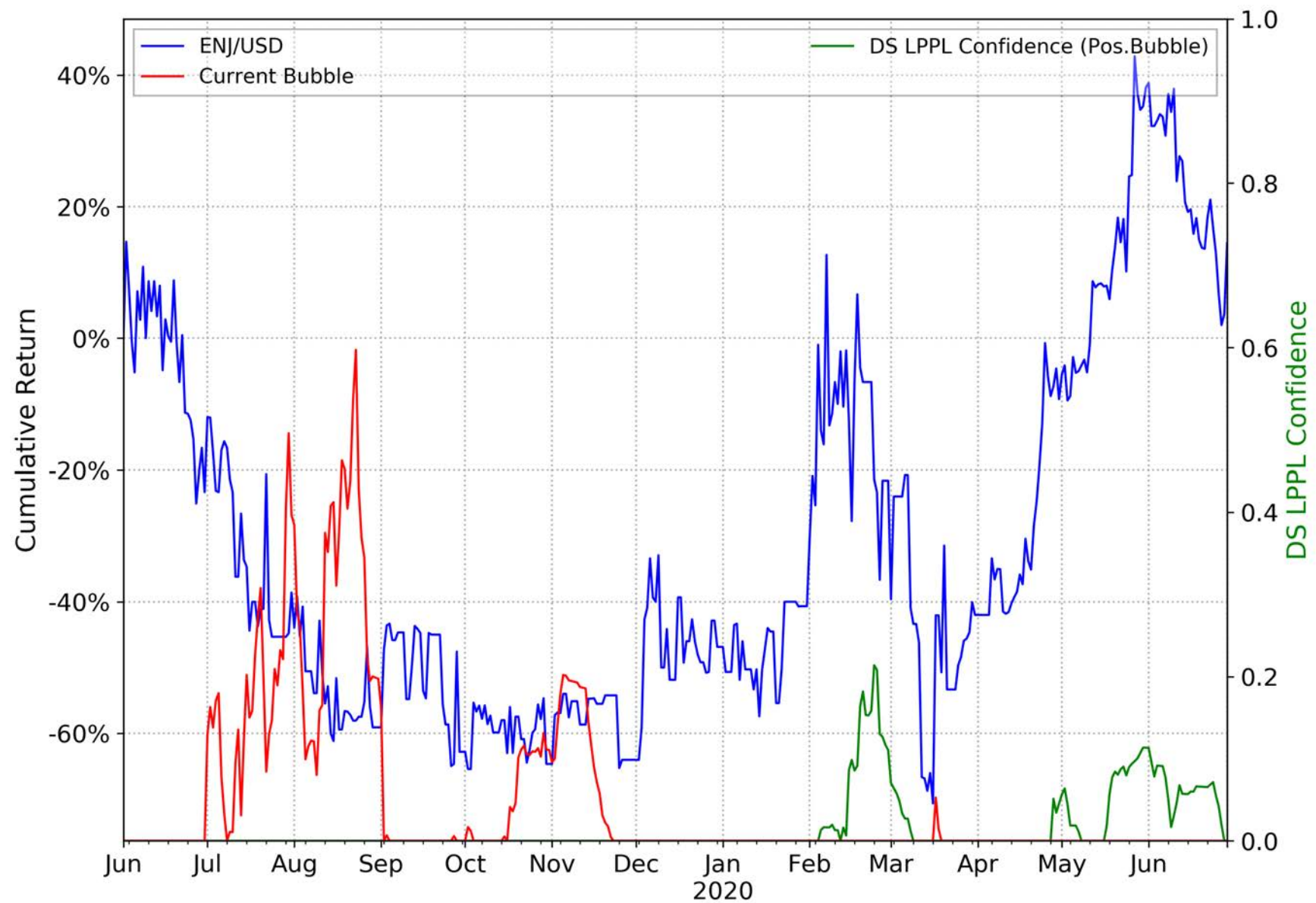
Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	Jul 1st	Jun 1st	Jul 1st	Jun 1st	Jul 1st	Jun 1st	Jul 1st	Jun 1st	Jul 1st	Jun 1st
Pharmaceuticals, Biotechnology & Life Sciences	16.3%	16.4%	0.0%	0.0%	0.0%	0.0%	69.7%	69.7%	50.5%	50.2%
Consumer Services	-22.6%	-14.3%	0.0%	0.0%	0.0%	0.0%	32.4%	31.5%	43.7%	44.6%
Retailing	18.2%	19.2%	0.0%	0.0%	0.0%	0.0%	21.5%	22.3%	48.6%	47.3%
Transportation	-9.2%	-5.1%	0.0%	0.0%	0.0%	0.0%	54.8%	54.4%	49.7%	48.0%
Consumer Durables & Apparel	-2.2%	2.8%	0.0%	0.0%	0.0%	0.0%	29.4%	29.9%	63.5%	60.0%
Semiconductors & Semiconductor Equipment	34.1%	42.5%	0.0%	0.0%	0.0%	0.0%	62.9%	62.0%	39.5%	38.1%
Technology Hardware & Equipment	34.6%	31.6%	0.0%	0.0%	0.0%	0.0%	67.9%	68.1%	43.9%	41.8%
Automobiles & Components	-1.3%	-0.6%	0.0%	0.0%	0.0%	0.0%	71.6%	70.8%	54.0%	53.3%
Telecommunication Services	-6.0%	-3.4%	0.0%	0.0%	0.0%	0.0%	63.1%	62.1%	46.3%	46.6%
Energy	-39.0%	-32.3%	0.0%	0.0%	0.0%	0.0%	53.0%	50.5%	63.4%	63.3%
Software & Services	20.8%	22.2%	0.0%	0.0%	0.0%	0.0%	30.8%	31.6%	50.0%	48.9%
Materials	-3.7%	-1.8%	0.0%	0.0%	0.0%	0.0%	50.1%	51.4%	52.4%	52.0%
Health Care Equipment & Services	7.0%	14.9%	0.0%	0.0%	0.0%	0.0%	54.2%	55.5%	55.7%	55.8%
Capital Goods	-10.7%	-8.0%	0.0%	0.0%	0.0%	0.0%	47.7%	46.4%	48.8%	49.2%
Media & Entertainment	6.4%	13.5%	0.0%	0.0%	0.0%	0.0%	29.6%	30.9%	37.4%	36.8%
Commercial & Professional Services	1.1%	4.0%	0.0%	0.0%	0.0%	0.0%	25.9%	26.1%	56.5%	56.6%
Food & Staples Retailing	1.9%	7.4%	0.0%	0.0%	0.0%	0.0%	46.1%	47.1%	57.9%	57.6%
Household & Personal Products	1.1%	0.9%	0.0%	0.0%	0.0%	0.0%	29.9%	30.1%	45.4%	45.7%
Food, Beverage & Tobacco	-7.5%	-4.3%	0.0%	0.0%	0.0%	0.0%	47.8%	47.7%	55.1%	55.0%
Utilities	-4.4%	0.6%	0.0%	0.0%	0.0%	0.0%	48.8%	49.3%	45.7%	43.3%
Insurance	-19.5%	-16.9%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	-13.7%	-11.8%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	-4.9%	1.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Banks	-26.9%	-22.7%	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 volatile after-crash mode due to the COVID-19 pandemic. Note that the bubbles reported in this report usually have a bubble duration of 3-12 months. Therefore the recent rebound of the market after the bottom in March would not be identified as bubbles yet.

# 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 entered into a volatile stage in the past month due to the resurgences of cases in several countries (in particular the US) and the uncertain future scenario for the COVID-19 outbreak and thus the economic outlook. Contrarian Portfolios are more delicate to use due to their sensitivity to timing the expected reversal and exhibit very volatile performances. 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.
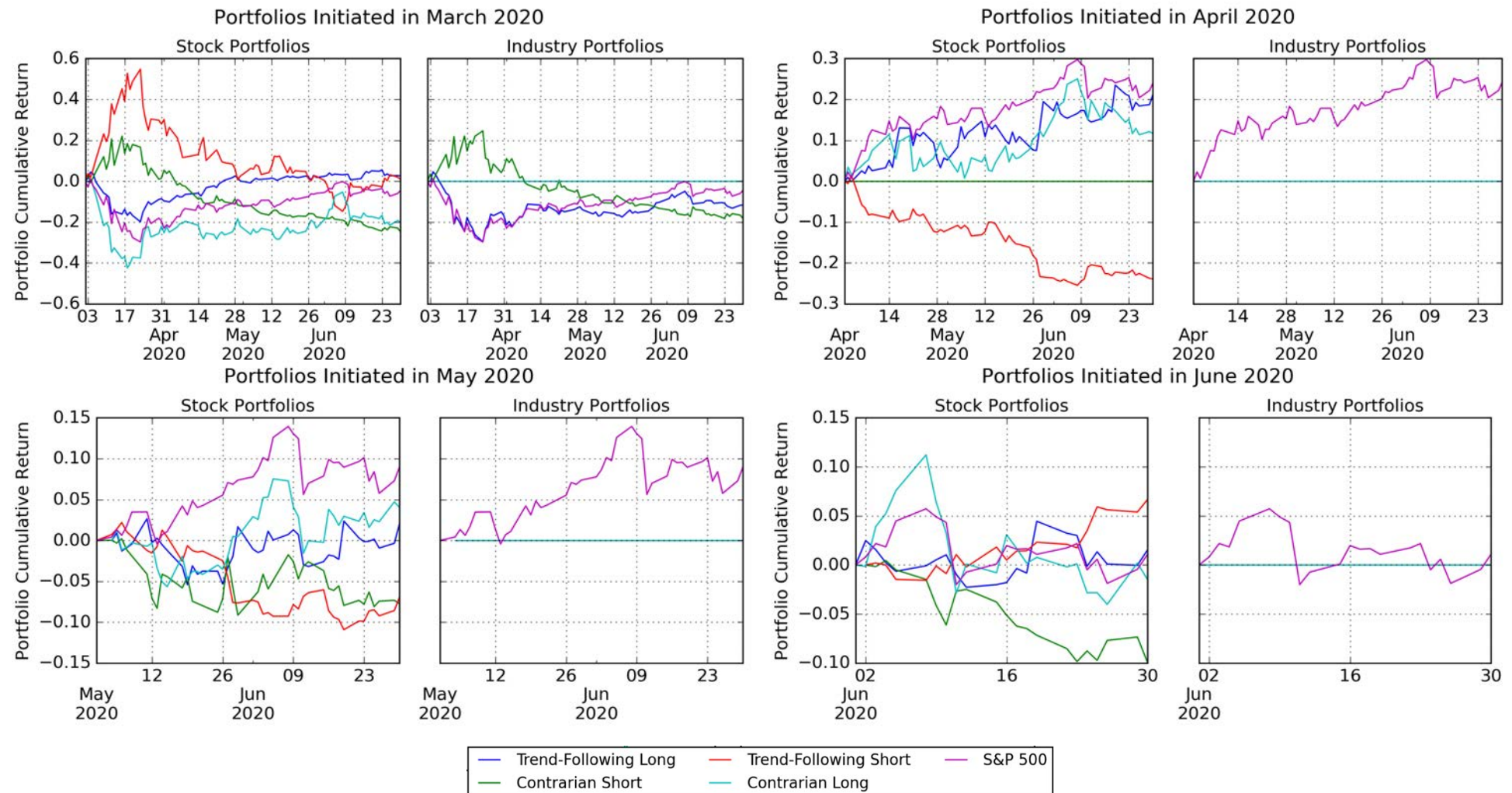
Single Stocks

We can divide the stocks into four quadrants[1]

The four quadrants: value versus bubble score
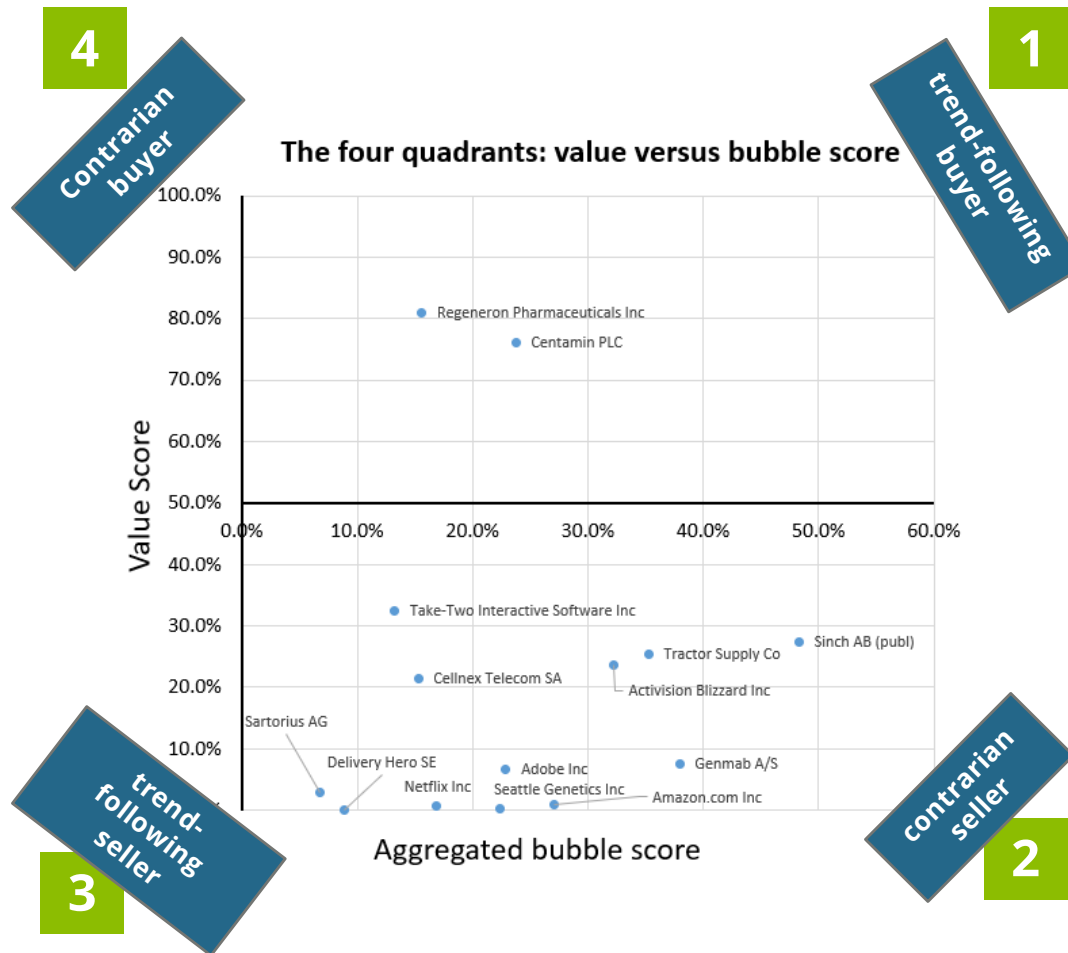
- ▶ **Quadrant 1**: Stocks with a strong value score are cheap relative to their earnings potential. The strong positive bubble signal should be interpreted as a momentum indicator possibly the consequence of a repricing based on the fundamentals. As an investor, one could be a **trend-following buyer**. E.g. Centamin PLC

- ▶ **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**. E.g. Adobe Inc

- ▶ **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**. No company is in this quadrant this month.

- ▶ **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**. No company is in this quadrant this month.

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
Centamin PLC	Jersey	Materials	60.5%	41.1%	Sep-19	23.7%	76.1%	46.4%
Regeneron Pharmaceuticals Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	106.9%	109.3%	Oct-19	15.6%	81.0%	28.0%

Single Stocks

Quadrant 1 Stocks Current Month Example – Centamin PLC.
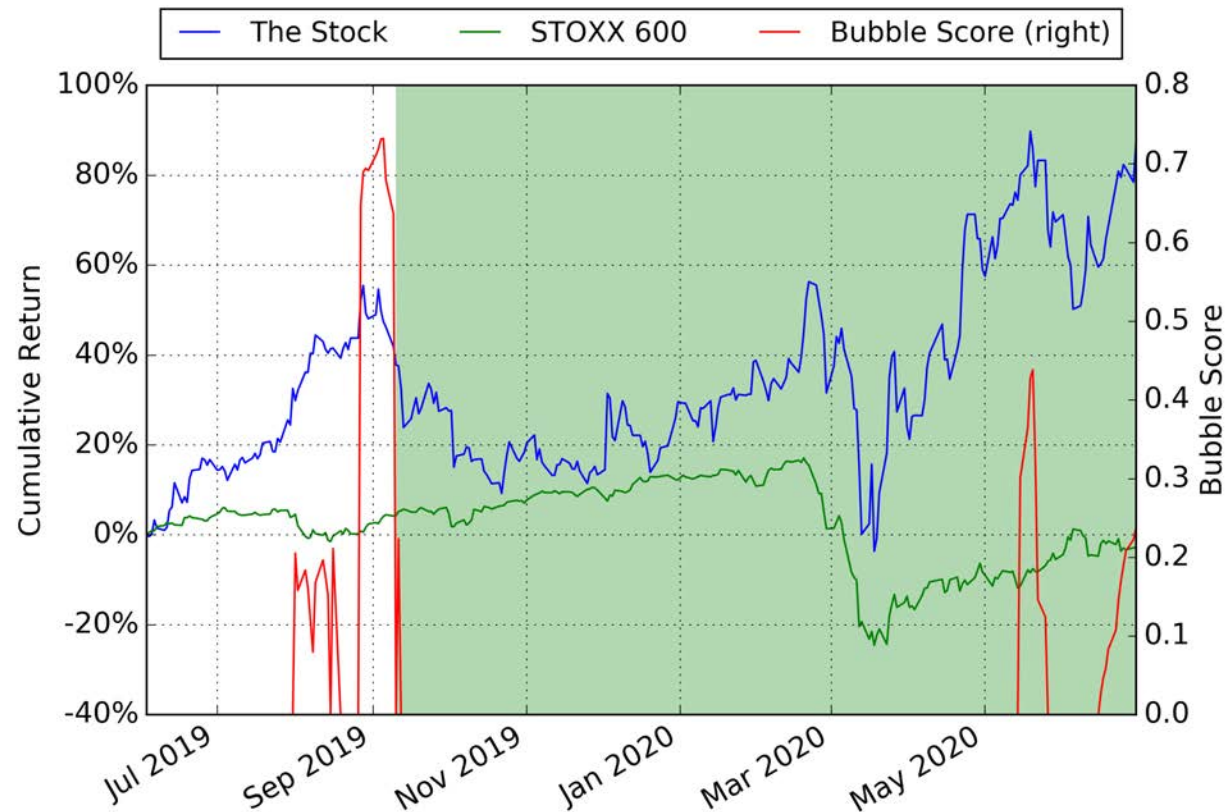
▸ The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this ten month bubble has reached 23.7% with a bubble size 41.1%. This bubble is at an early stage and may or may not continue to develop.

Single Stocks

Quadrant 1 Stocks Last Month Example – Evolution Gaming Group AB (publ).
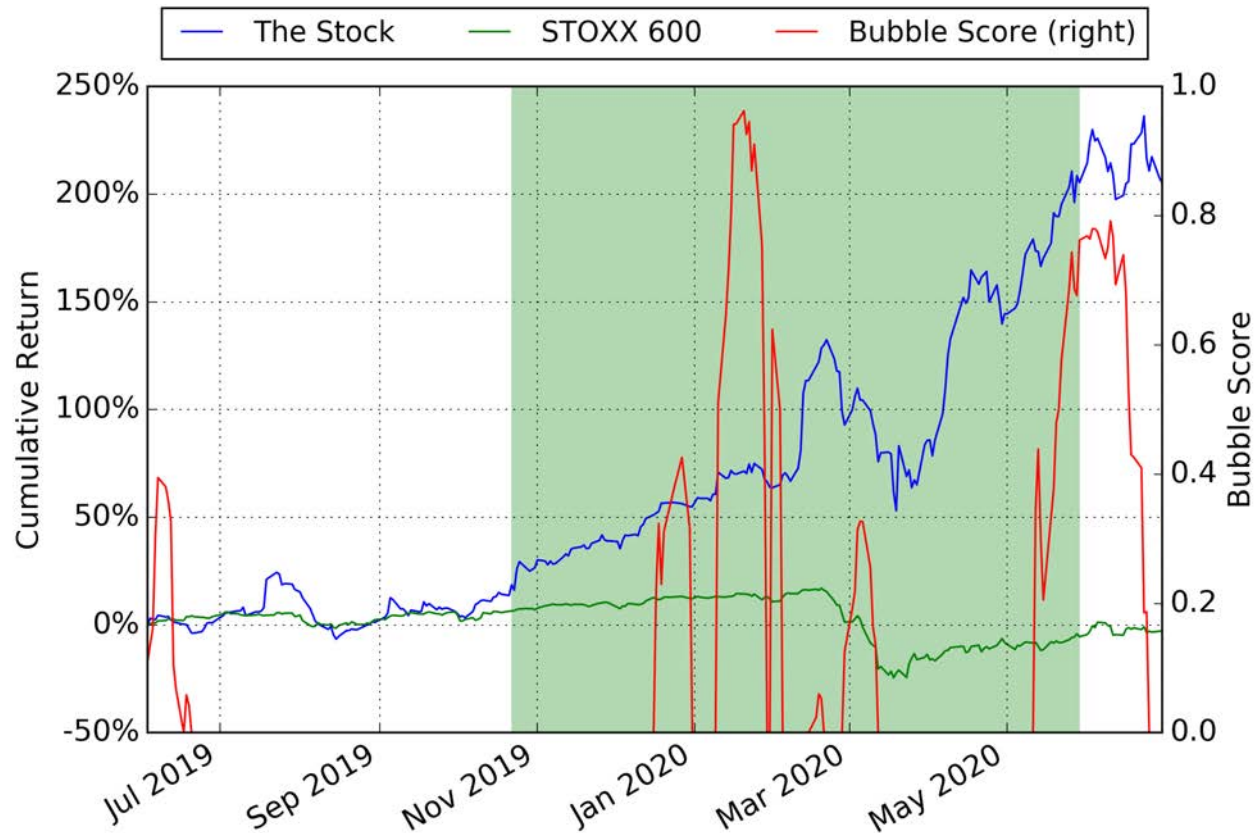
▸ The figure above plots the one year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which a strong positive bubble has been identified and reported last month. The stock lost its momentum in the past month and may have switched to the next market regime, which is in agreement with our DS LPPLS indicator. The strong fundamentals suggest that the new regime not be a correction but rather a plateau followed by a new appreciation.

Single Stocks

Quadrant 2 stocks: strong positive 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
Sartorius AG	Germany	Health Care Equipment & Services	62.5%	53.7%	Jul-19	6.8%	2.9%	47.9%
Delivery Hero SE	Germany	Retailing	130.2%	47.1%	Dec-19	8.9%	0.1%	95.9%
Genmab A/S	Denmark	Pharmaceuticals, Biotechnology & Life Sciences	85.9%	59.5%	Sep-19	37.9%	7.6%	46.5%
Cellnex Telecom SA	Spain	Telecommunication Services	72.7%	38.7%	Oct-19	15.3%	21.4%	75.6%
Sinch AB (publ)	Sweden	Software & Services	472.6%	313.8%	Nov-19	48.3%	27.4%	39.5%
Activision Blizzard Inc	United States of America	Media & Entertainment	62.0%	44.5%	Nov-19	32.2%	23.5%	54.3%
Adobe Inc	United States of America	Software & Services	41.8%	43.8%	Dec-19	22.9%	6.6%	82.1%
Amazon.com Inc	United States of America	Retailing	36.8%	57.7%	Dec-19	27.1%	1.0%	45.7%
Netflix Inc	United States of America	Media & Entertainment	19.4%	56.1%	Oct-19	16.8%	0.6%	34.5%
Seattle Genetics Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	156.5%	68.4%	Oct-19	22.4%	0.2%	33.1%
Take-Two Interactive Software Inc	United States of America	Media & Entertainment	19.1%	19.4%	Nov-19	13.2%	32.5%	11.6%
Tractor Supply Co	United States of America	Retailing	20.6%	46.1%	Jan-20	35.2%	25.3%	70.5%

Single Stocks

Quadrant 2 Stocks Current Month Example – Sinch AB (publ).
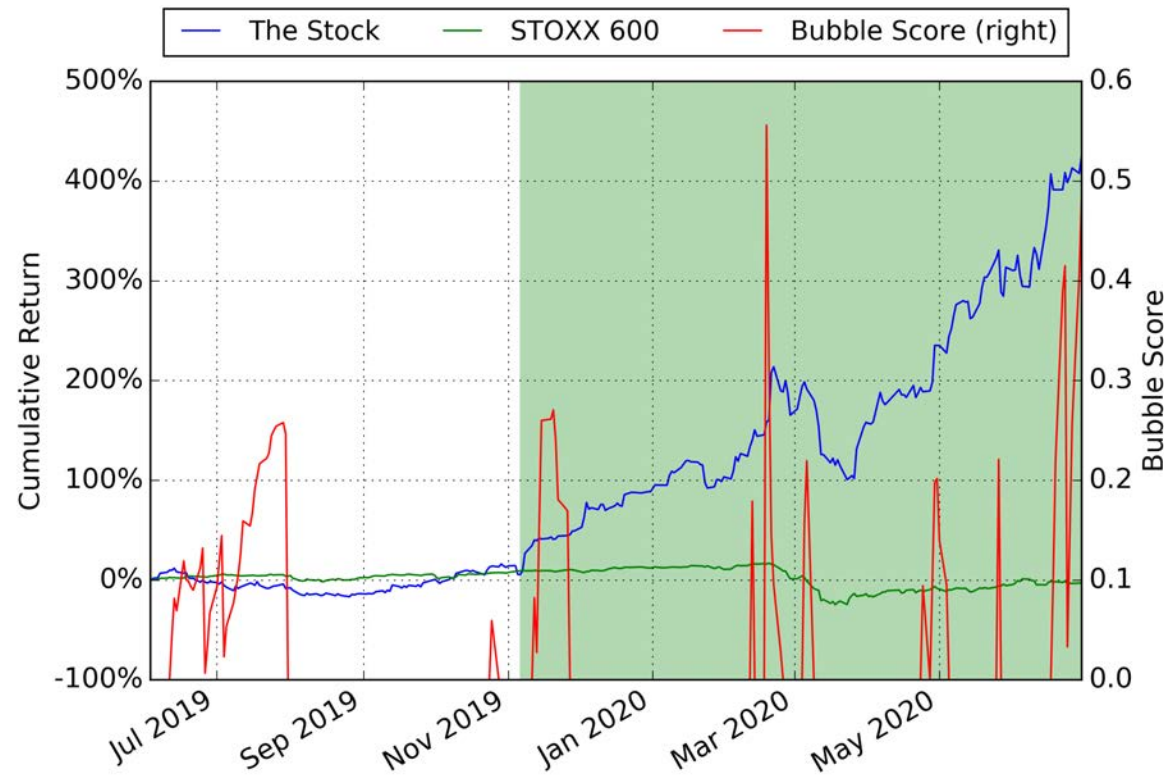
▸ The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this eight month bubble has reached 48.3% with a bubble size 313.8%. The strong positive bubble signal and weak fundamentals indicate a high probability of correction in the future.

Single Stocks

Quadrant 2 Stocks Last Month Example – JD.com Inc.
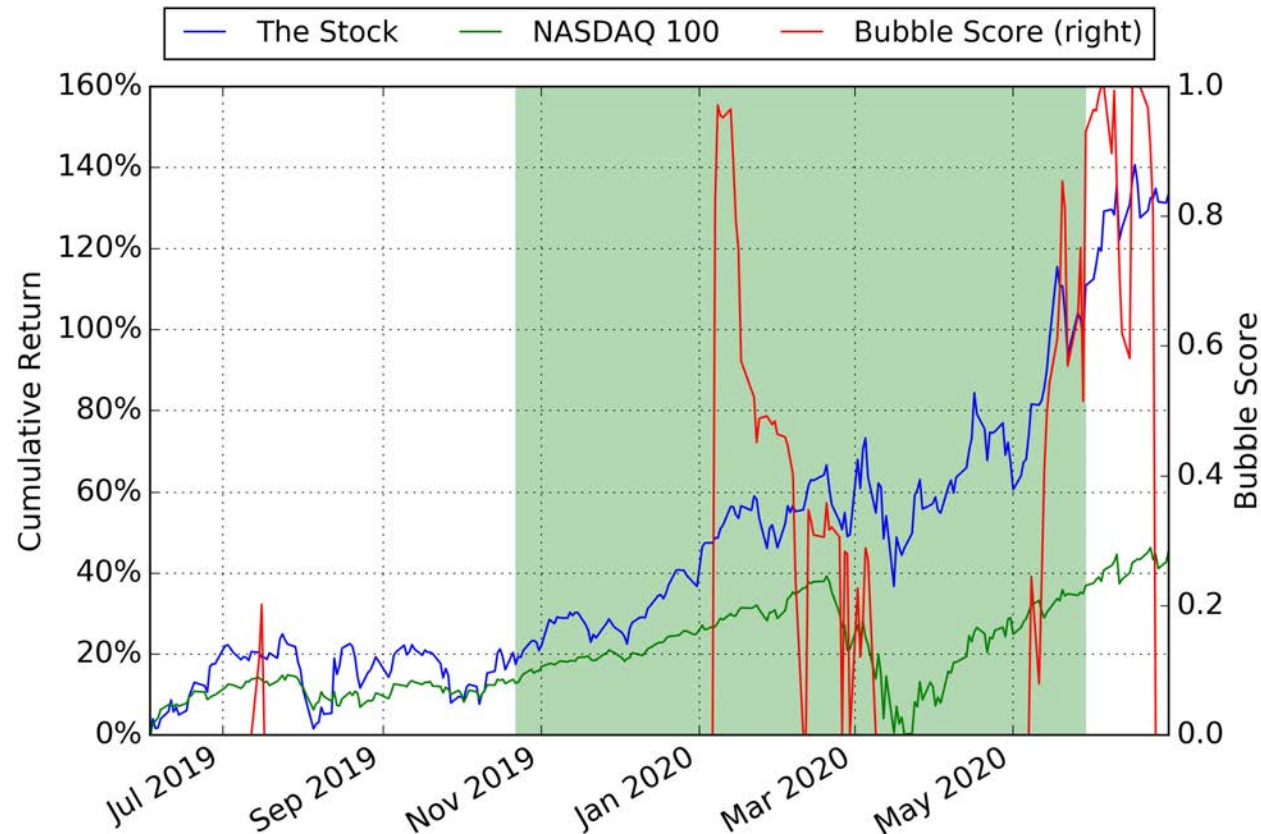
The figure above plots the one year cumulative return of the stock (blue), NASDAQ 100 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which a strong positive bubble has been identified and reported last month. The stock has reached a new high in the past month, with a slower appreciation speed. We expect the stock to further depreciate due to the weak fundamentals and the burst of the bubble.
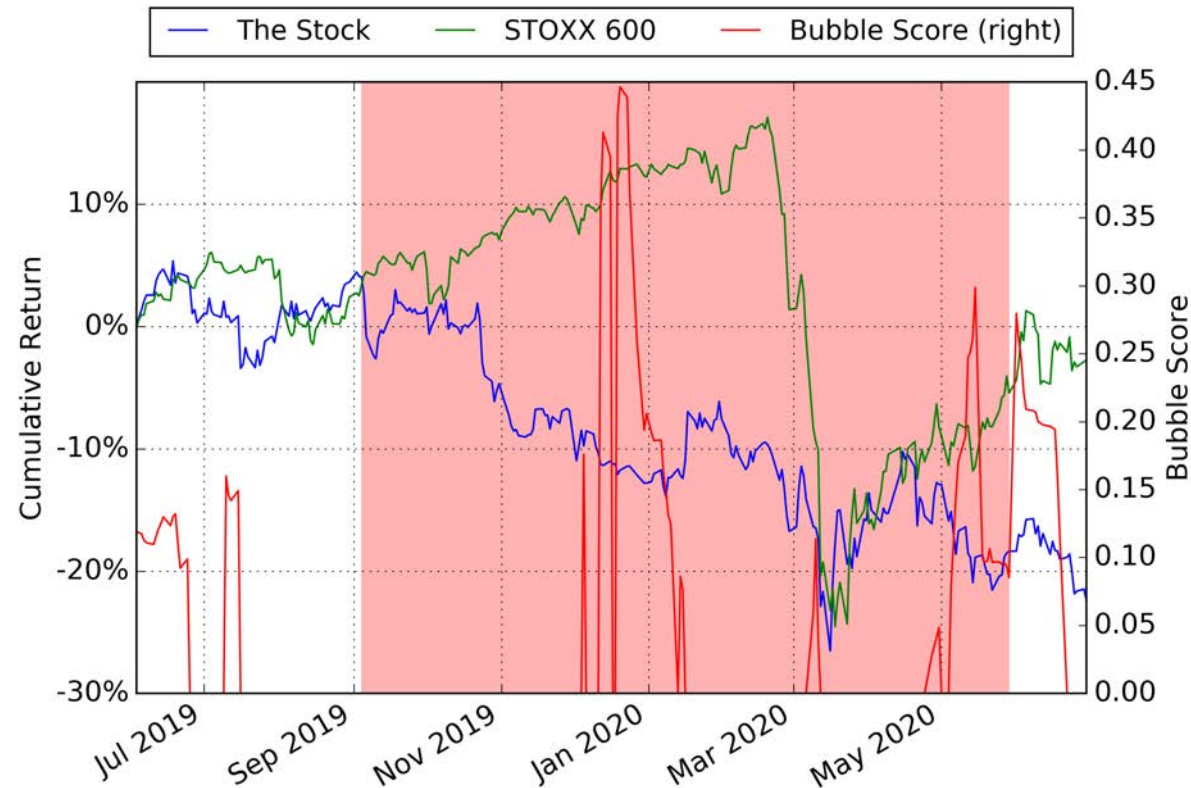
Single Stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

There is no stock in the Quadrant 3 this month.

Single Stocks

Quadrant 3 Stocks Last Month Example – Telenor ASA.

▸ 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 price continued to drop with decreasing bubble signals. This negative bubble may continue to develop given the early stage of the bubble and the weak fundamental of this company.
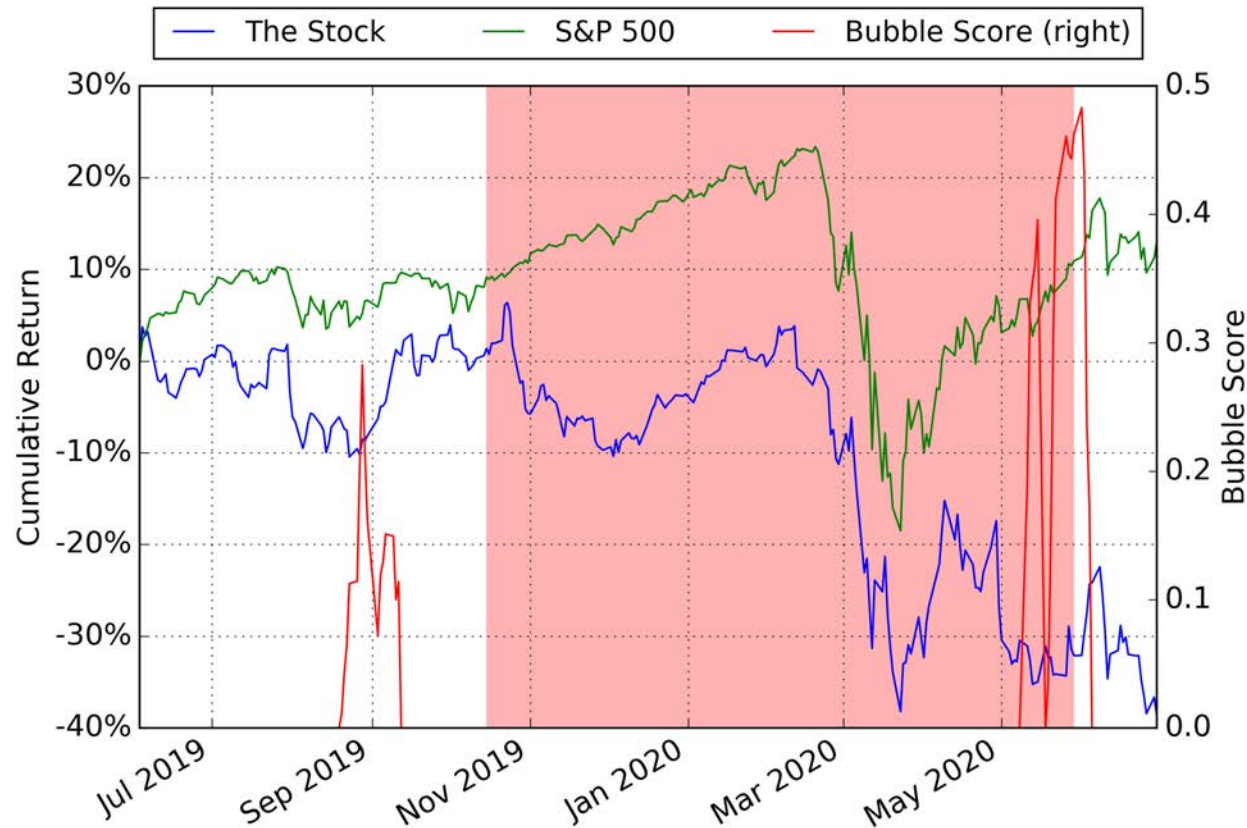
Single Stocks

Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

There is no stock in the Quadrant 4 this month.

Single Stocks

Quadrant 4 Stocks Last Month Example – Molson Coors Beverage Co.

▶ 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 rebound at the beginning of June, but continued to go down afterwards and touched the low point in March. 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

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