



The FCO Cockpit Global Bubble Status Report November 2020



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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.

Market Outlook

In line with the three uncertainties we mentioned in the October 2020 FCO monthly report, the market had suffered from downward pressures until the end of the Oct. However, when it was realized that there will be a high chance of a democratic president with a split Congress (e.g. democratic wins the house while republican has the senate), the market just rebounded. Some investors are confused because they think Biden's tax plan is not good for corporate earnings and thus wonder why market still goes up. The answer is simple: if Congress is divided, Biden's tough tax bill will have little chance to pass in congress, so the above is relatively good news for Wall Street. In contrast, if the democrats were to control the US Congress, it would be easy for them to pass this tax bill, which would of course lead to a correction of the valuation of the market from the current level.

Hopefully, the recent unfolding electoral travails will end without blocking issues (e.g. voting challenged by Trump) and avoid on-going uncertainties. As for Biden Government, two things are worth mentioning:

- i) US-Sino relation: Even though that Biden's presidency may relieve some tension in the US-Sino relation, we have to bear in mind that the US and China's relationship has changed, fundamentally, as discussed in our August Monthly report. We may entertain the hope that there might be less chance that the conflict will aggravate further, but the frictions in technology (micro-chips and telecommunication related sectors), intellectual property, and the South-China Sea persist and are not going away.
- ii) Economic and fiscal policy: Will Biden nominate a new FED chairman? How different the future policies and guidance will be? When will the fiscal stimulus bill pass? How large the stimulus bill will be? Will the big tech firms be regulated? How tough the regulations will be? Those questions are the most important for investors to judge the market.

We now discuss by asset classes:

Fixed Income: Given the divided Congress, the fiscal policy might be less ambitious while there will also be a faster economic recovery. Also, Biden's tax bill, creating more sources of funding, might enhance the credit quality of municipal debt. On the other hand, inflation is likely to come back, pushing the interest rates higher, signaling the start of a secular bearish market for bonds.

US equity: Biden's tax bill will have a far more direct influence on equities than on corporate credit, in particular for the profitable tech giants. Besides, the regulations on the energy and tech sector will be on the agenda. Although the proposed corporate tax is still less than 35% (Biden's old tax bill in 2017), it still increased gradually from 21% to 28%. The overall tax increase will drag the valuation of the market in general. However, given the softer foreign policy and multilateralism, the international supply chain will be rebuilt and the trade war that hurts all parties (US, China and European Countries) is less likely to worsen. The geopolitical developments will more "boring", which a good thing for the economic recovery and financial markets, compared with the exciting/dramatic conflictual stances. There are also some sectors (Renewable energy, Infrastructure, and Healthcare Provider) that will benefit from Biden's policy guidance while some sectors (Information Technology, banks, Pharma, and Fossil-fueled energy) may suffer. Biden is likely to first focus on controlling the pandemic, then to turn to the domestic economic recovery, and then to international issues.

Currency and Commodity: It is interesting to notice that the Japanese Yen, one of the Safe Haven currency, has appreciated after the US presidential election. According to normal logic, settling down of the results of the US election should decrease uncertainty. But the drop of the US dollar has pushed Non-US currencies up, including the Euro. The second wave of COVID-19 has sunk the European economy again. In this context, a strong euro will inhibit further European's economic recovery. Besides, Biden's policy is expected to hammer the fossil-fuel industries (e.g. coal, oil, etc.) but benefit renewable energy (e.g. battery/storage materials) and we also anticipate that hard commodities (e.g. iron ore, copper, zinc, and aluminum) will benefit from 'blue waves' (fiscal stimulate bill) and super-low interest rate. As for Biden's opinion on cryptocurrency, it remains unknown.

ELECTION 2020

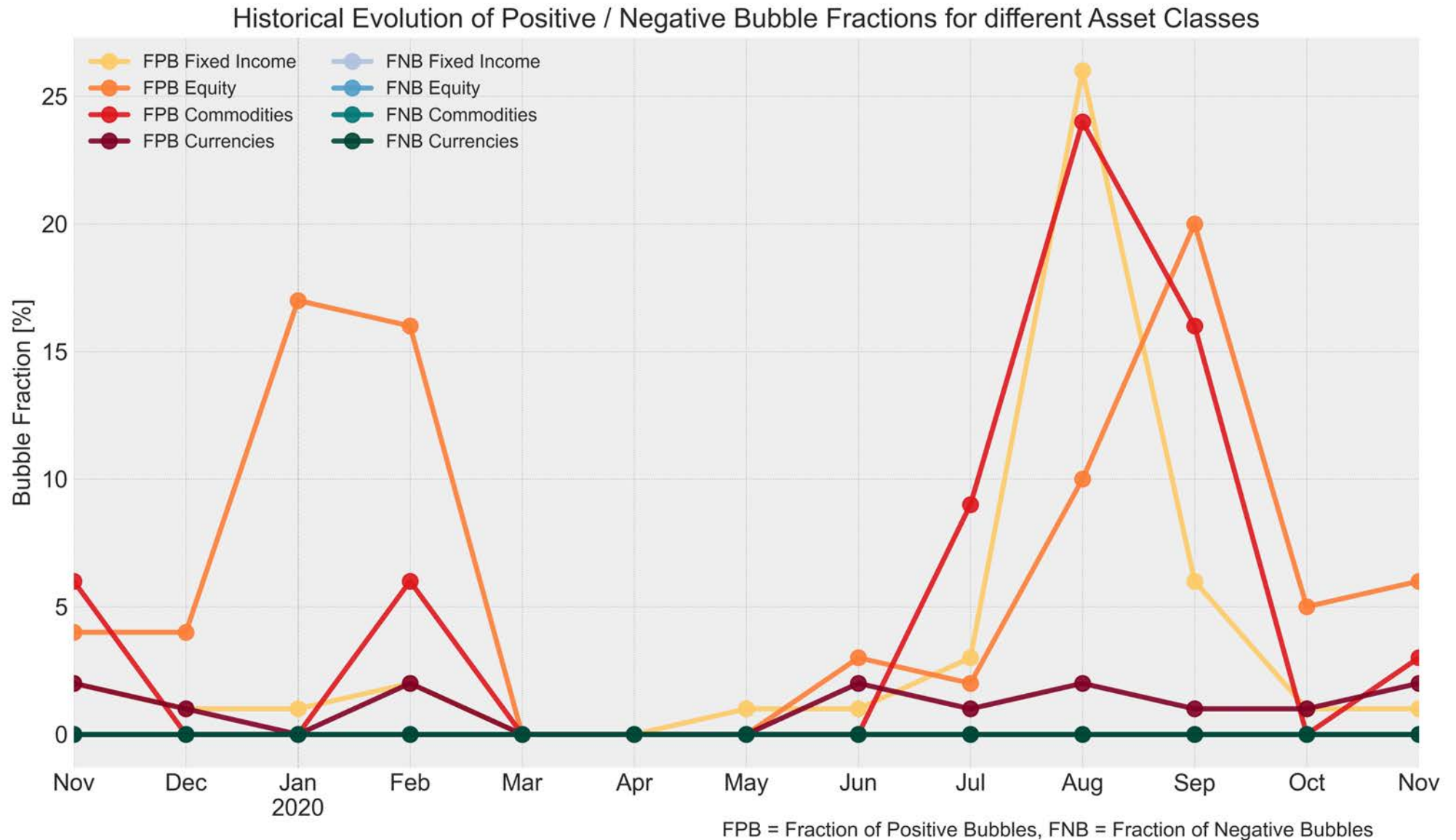
BIDEN'S TAX PLAN

Joe Biden (D)

- Raise corporate tax rate from 21% to 28%
- Restore top individual tax rate from 37% to 39.6%
- Subject wages above \$400k to Social Security payroll tax
- Tax capital gains as ordinary income & at death for very high earners

TOP TAX RATE HIKE

General Results – The Big Picture



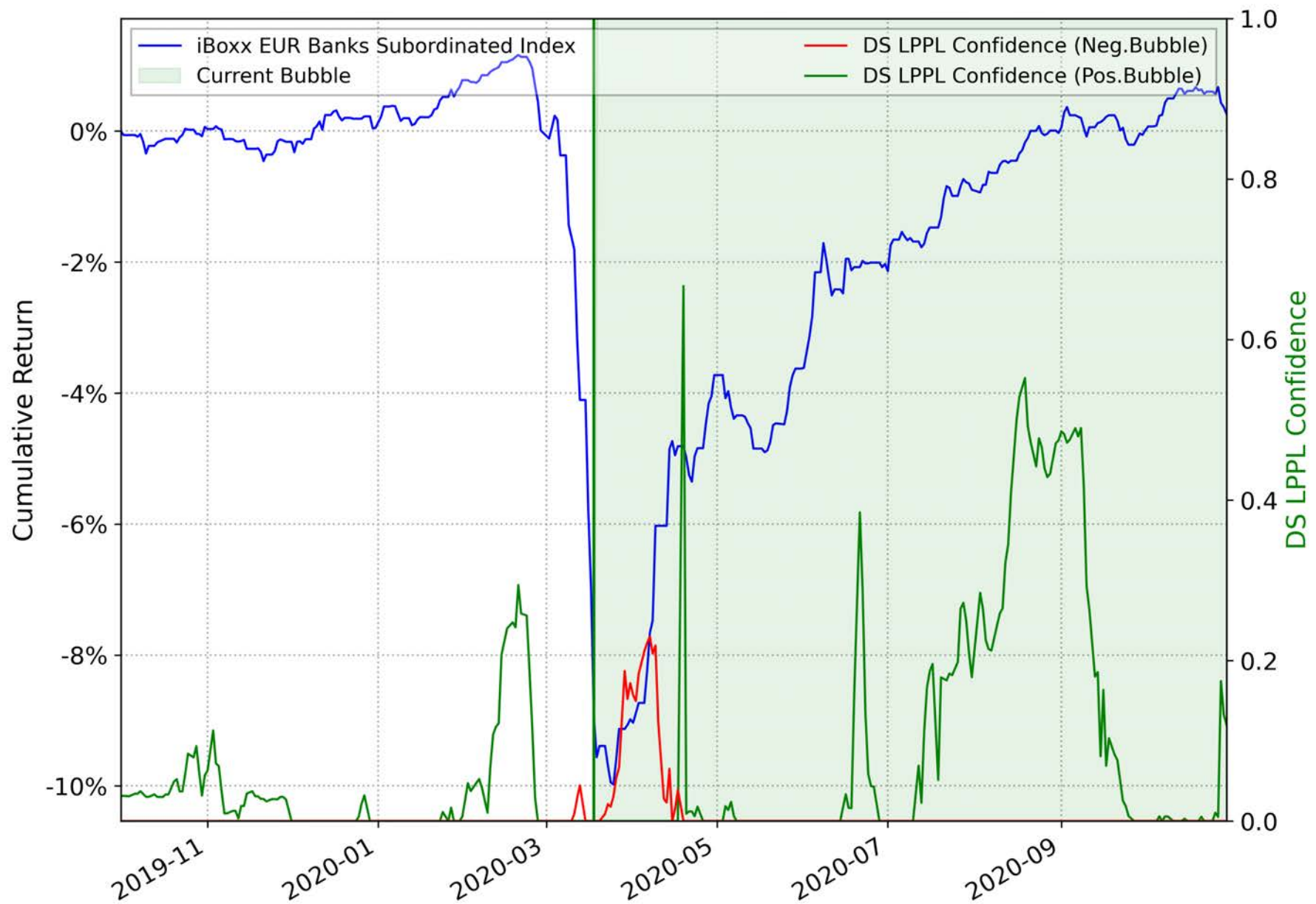
General Results – This Month’s Overview

Category	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
Fixed Income	155	1	0
Government Bonds	55	0	0
Finance and Insurance	21	5	0
Corporate Bonds	79	1	0
Equity	158	6	0
Country Indices	53	0	0
Europe	21	0	0
United States	84	11	0
Commodities	30	3	0
Forex	48	2	0

Fixed Income – Finance & Insurance

Bubble Data					Cluster Analysis			
	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	iBoxx EUR Banks Subordinated Index	10	226	12	11	2020-11-30	22	63

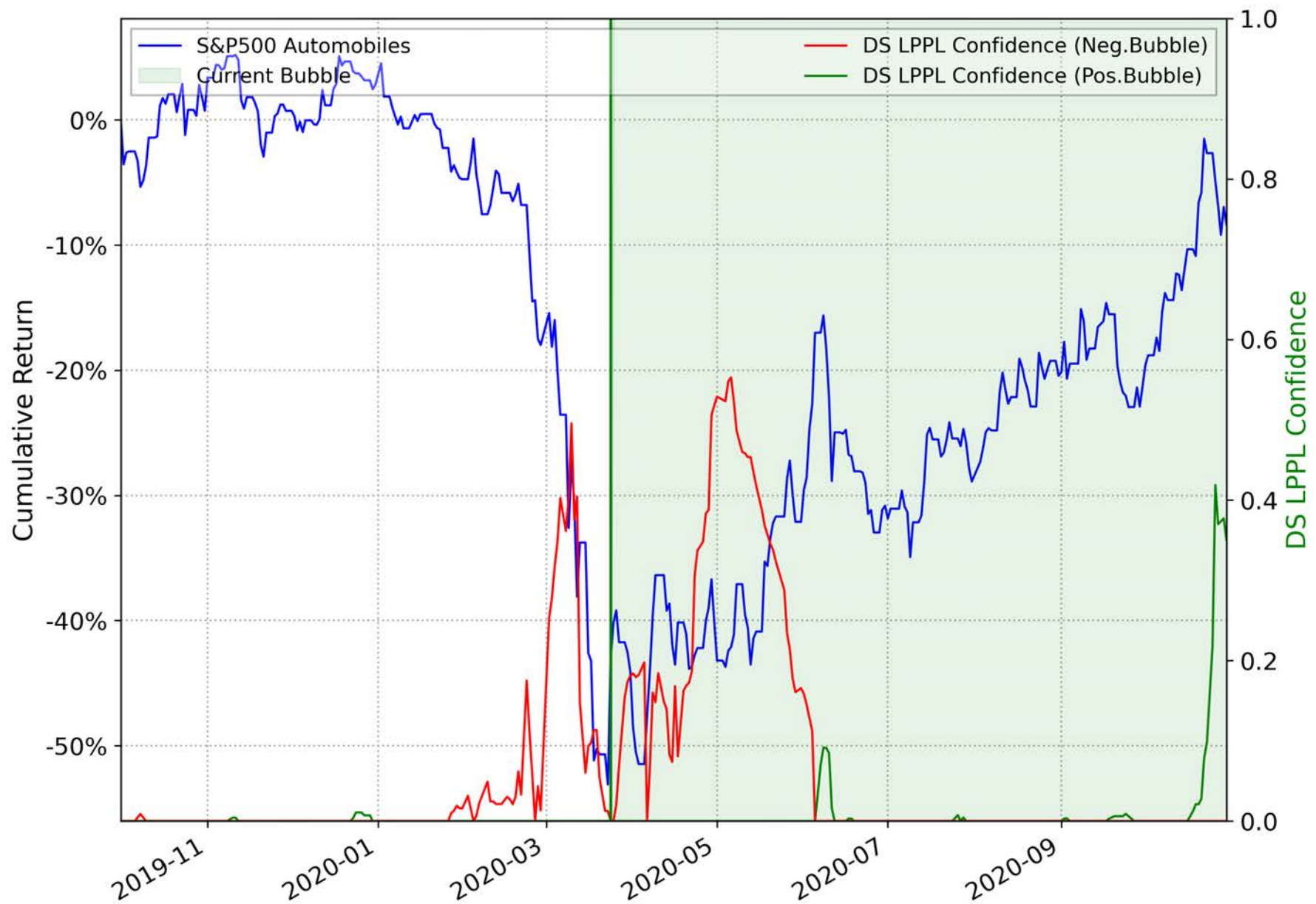
- ▶ At the beginning of November 2020, the fraction of positive bubbles in the fixed income asset class remains at 1%, as in October, associated with a single positive bubble signal, detected for the iBoxx EUR Banks Subordinated Index.
- ▶ The index belonging to the Finance & Insurance asset sub-class shows a bubble size of 10% with a duration of the bubble of 226 days.
- ▶ The value of the DS LPPLS Confidence Indicator is low, at 12%, meaning that only 12% of all timescales that were scanned for LPPLS momentum were identified to exhibit such bubble regime.
- ▶ Together with the bubble size, this yields a geometric average of 11%.
- ▶ The plot is provided on the next page.

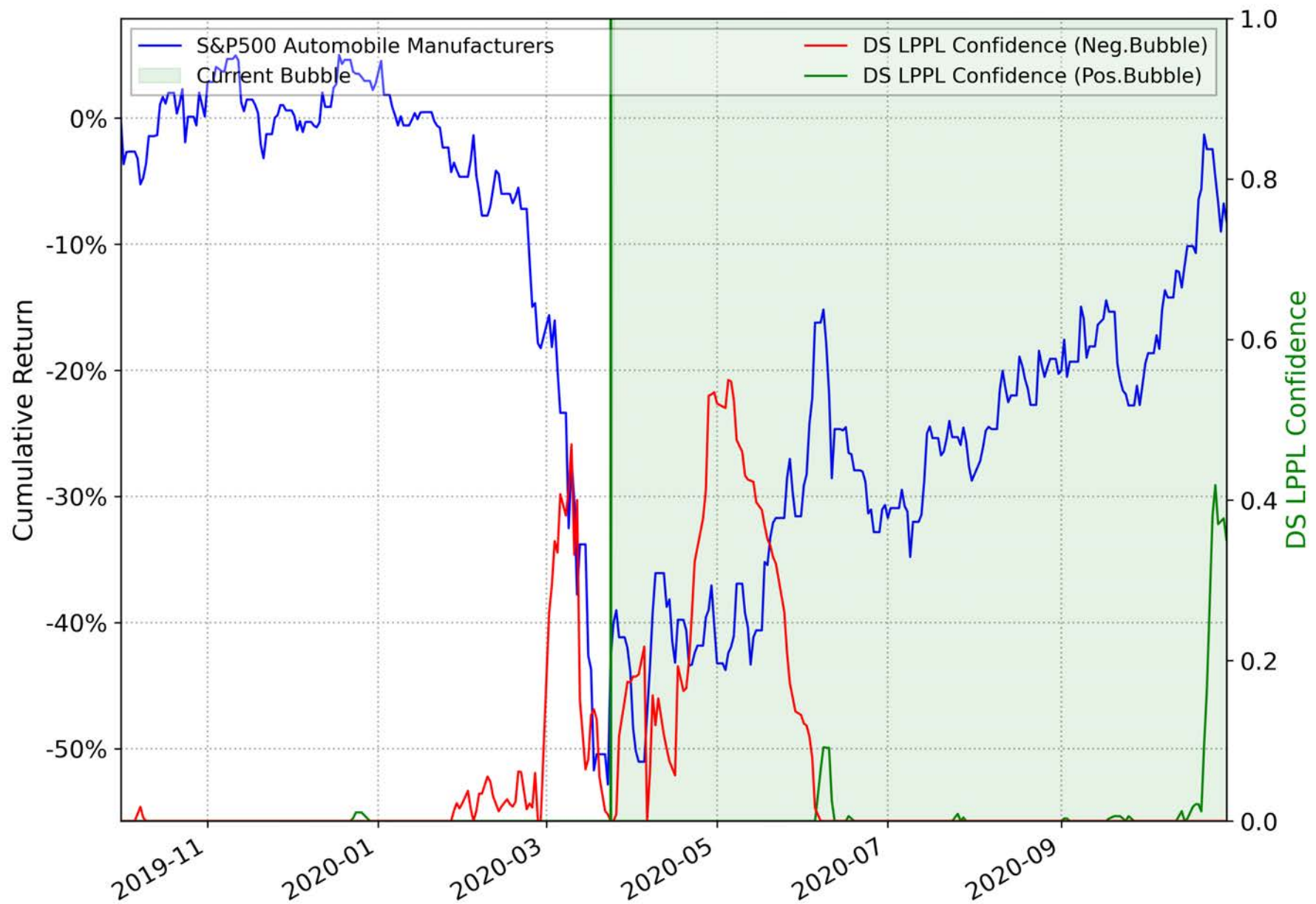


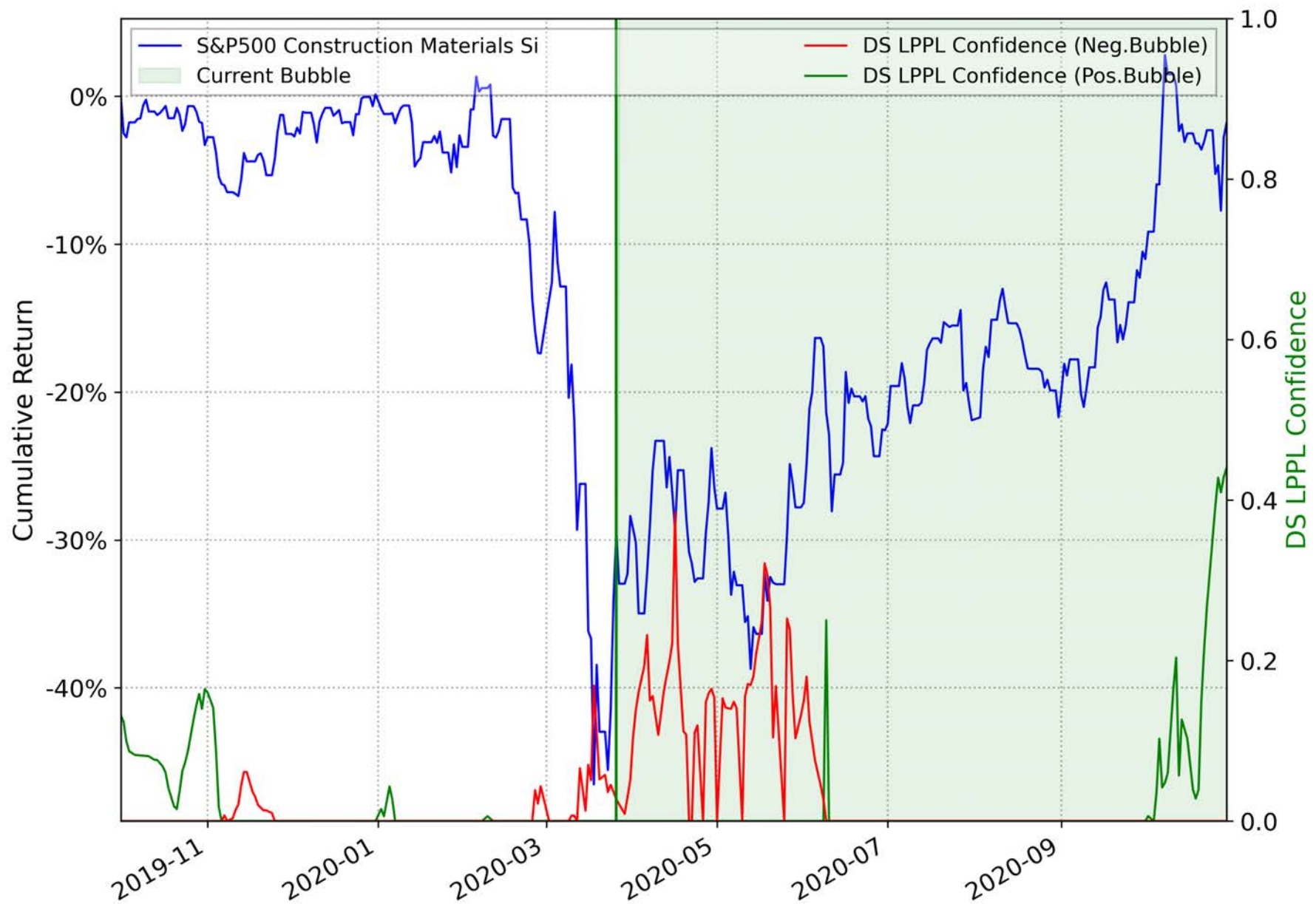
Equities – United States

Bubble Data					Cluster Analysis			
	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 Automobiles	61	220	35	46	2020-11-25	18	71
2	S&P500 Automobile Manufacturers	60	220	35	46	2020-11-24	18	73
3	S&P500 Construction Materials Si	39	218	44	42	2020-11-18	10	85
4	S&P500 Construction Materials	39	218	44	42	2020-11-18	10	85
5	S&P500 Metal & Glass Cont	42	218	20	29	2020-12-05	2	15

- ▶ Amongst equities, the computed fraction of positive bubbles increases only slightly from a prior value of 5% to 6% now.
- ▶ At the top of the list, two correlated S&P Automobile Industry sector indices are found. The computed signal is almost identical; a bubble duration of 220 days, a bubble size around 60%, as well as a low to medium value of the confidence indicator of 35%. Overall, this results in a geometric average of 46%. The mean critical time prediction is at the end of November with a probability equal to 71% for this scenario to occur.
- ▶ Besides the first two indices, the indicator plot for the third index is shown on the following pages. In all three indices, the trough succeeding the Corona crash in February 2020 was identified as a negative bubble, after which, obviously, the predicted rebound occurred.



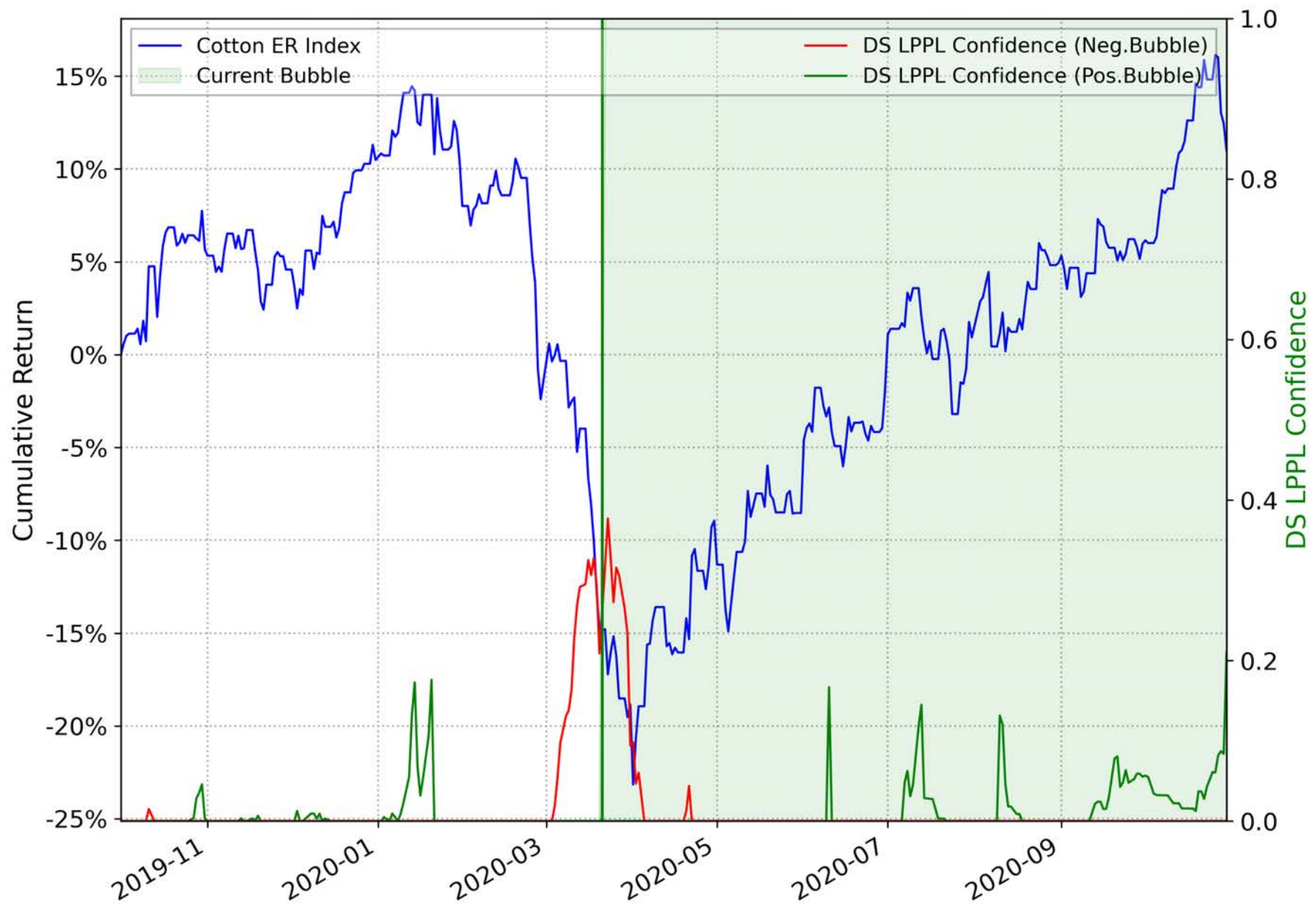




Commodities

Bubble Data					Cluster Analysis			
	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	Cotton ER Index	34	223	21	27	2020-11-09	10	90

- ▶ Only a single positive bubble signal is found for the commodities class. The overall fraction of positive bubbles thus remains low, at 3%, and there are no negative bubble signals.
- ▶ As visible on the following slide, the Cotton Excess Return Index has, as many other assets, strongly recovered after the trough of the (first) Corona crash and in advance to the US elections on November, 3rd 2020.
- ▶ Recently, a weak bubble signal has emerged for the Cotton Index, with 21% Confidence Indicator. The bubble size and duration, as for the previous assets, are computed based on an estimated start of the bubble around the trough in early to mid 2020.
- ▶ The mean critical time prediction is on Nov, 10th 2020, with a high scenario probability of 90%, indicating that the corresponding value of the critical time was predicted in a narrow range around the mean value by 90% of all calibrated LPPLS fits.
- ▶ Continuing this month, there are no relevant signals to show for the currency and the cryptocurrency sectors.



Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	Nov 1st	Oct 1st	Nov 1st	Oct 1st	Nov 1st	Oct 1st	Nov 1st	Oct 1st	Nov 1st	Oct 1st
Pharmaceuticals, Biotechnology & Life Sciences	4.5%	14.6%	0.0%	0.0%	0.0%	0.0%	66.2%	67.5%	49.2%	49.6%
Consumer Services	-10.8%	-8.4%	0.0%	0.0%	0.0%	0.0%	31.0%	33.2%	40.0%	46.1%
Retailing	35.3%	37.5%	0.0%	0.0%	0.0%	0.0%	21.6%	19.6%	49.5%	50.0%
Transportation	0.6%	9.9%	0.0%	0.0%	0.0%	0.0%	55.4%	54.4%	48.2%	47.9%
Consumer Durables & Apparel	6.1%	10.9%	0.0%	0.0%	0.0%	0.0%	33.0%	32.5%	62.3%	62.2%
Semiconductors & Semiconductor Equipment	26.5%	37.7%	0.0%	0.0%	0.0%	0.0%	60.8%	60.1%	38.8%	39.1%
Technology Hardware & Equipment	36.1%	49.5%	0.0%	0.0%	0.0%	0.0%	64.4%	61.4%	44.1%	43.9%
Automobiles & Components	14.0%	22.6%	0.0%	0.0%	0.0%	0.0%	73.8%	73.1%	55.6%	55.8%
Telecommunication Services	-11.3%	-9.3%	0.0%	0.0%	0.0%	0.0%	59.8%	61.6%	45.2%	45.5%
Energy	-49.0%	-45.5%	0.0%	0.0%	0.0%	0.0%	52.9%	53.6%	63.2%	63.1%
Software & Services	23.3%	36.1%	0.0%	0.0%	0.0%	0.0%	36.4%	34.2%	49.4%	50.8%
Materials	2.5%	9.5%	0.0%	0.0%	0.0%	0.0%	52.7%	51.9%	51.1%	51.0%
Health Care Equipment & Services	11.4%	17.2%	0.0%	0.0%	0.0%	0.0%	53.3%	53.1%	55.1%	55.3%
Capital Goods	-9.5%	-1.8%	0.0%	0.0%	0.0%	0.0%	48.1%	47.3%	48.1%	48.3%
Media & Entertainment	19.0%	19.4%	0.0%	0.0%	0.0%	0.0%	28.4%	30.0%	38.8%	37.7%
Commercial & Professional Services	4.3%	11.3%	0.0%	0.0%	0.0%	0.0%	28.7%	27.9%	54.5%	54.9%
Food & Staples Retailing	2.1%	5.9%	0.0%	0.0%	0.0%	0.0%	40.3%	43.6%	56.9%	57.0%
Household & Personal Products	7.9%	12.2%	0.0%	0.0%	0.0%	0.0%	31.7%	31.8%	43.8%	43.9%
Food, Beverage & Tobacco	-7.6%	-2.8%	0.0%	0.0%	0.0%	0.0%	48.7%	47.7%	54.5%	54.7%
Utilities	-0.3%	-1.9%	0.0%	0.0%	0.0%	0.0%	47.6%	47.7%	46.3%	45.7%
Insurance	-19.9%	-15.1%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	-15.5%	-12.9%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	-5.5%	3.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Banks	-30.6%	-28.5%	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.
- ▶ There is no bubble identified in the 24 MSCI World Industry Group Indices. Most bubbles disappeared in the past months with market entering a quiet month of October, waiting for the uncertainties from the 2020 US Election.

Portfolio Construction & Performance

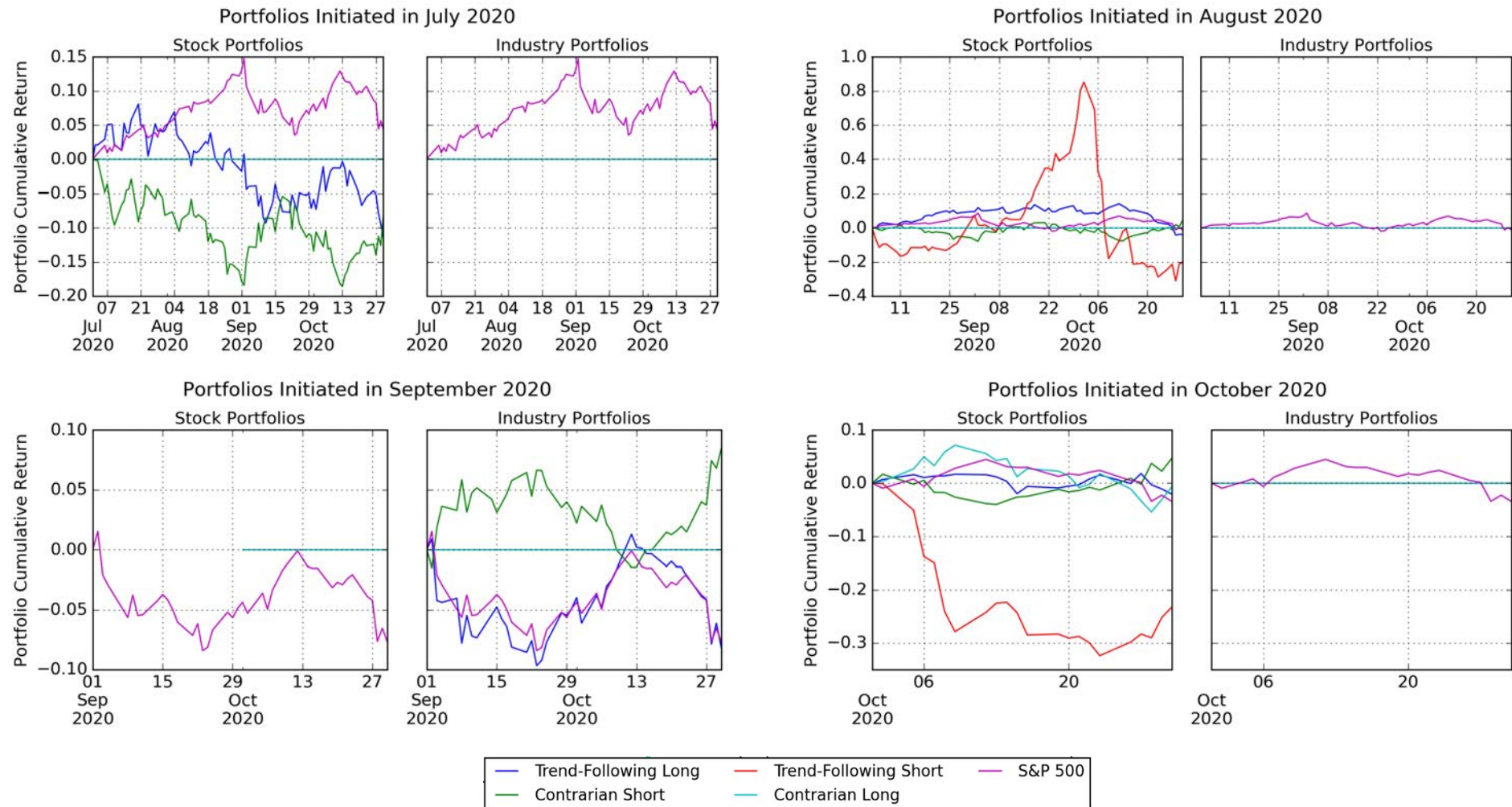
- ▶ Here we illustrate the methodology of the portfolio construction process based on the results of our previous analyses.
- ▶ For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all 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.

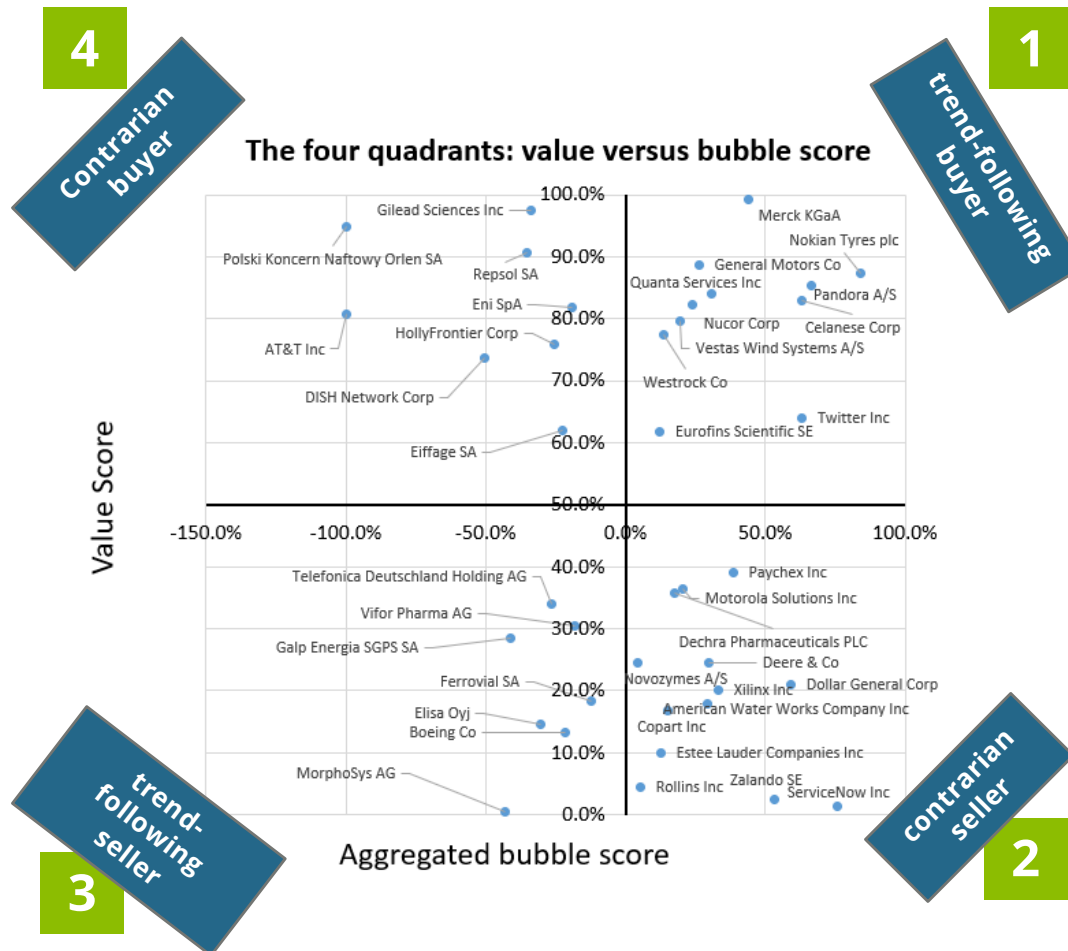
Portfolio Construction & Performance

- We observe large variations in some portfolios (e.g. Trend-Following Short) due to the limited number of stocks dominating the portfolio. 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 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. Twitter 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**. E.g. Deere & Co.
- **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. Boeing Co
- **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. AT&T Inc

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 818 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.

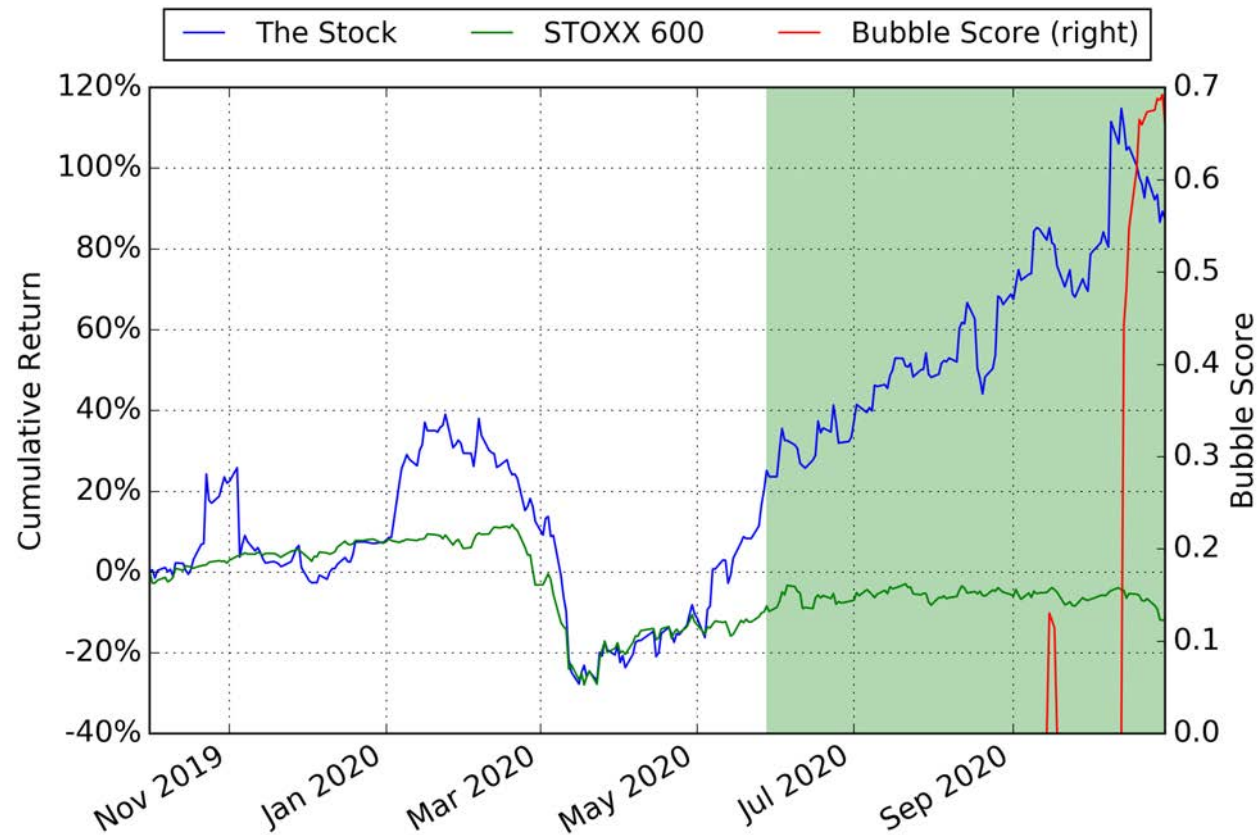
Single Stocks

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
Merck KGaA	Germany	Pharmaceuticals, Biotechnology & Life Sciences	16.1%	41.9%	Mar-20	43.9%	99.3%	73.2%
Vestas Wind Systems A/S	Denmark	Capital Goods	73.9%	121.4%	Mar-20	19.5%	79.6%	85.7%
Pandora A/S	Denmark	Consumer Durables & Apparel	78.2%	49.8%	May-20	66.2%	85.3%	19.6%
Nokian Tyres plc	Finland	Automobiles & Components	-3.7%	21.7%	May-20	84.3%	87.4%	83.9%
Eurofins Scientific SE	Luxembourg	Pharmaceuticals, Biotechnology & Life Sciences	51.5%	51.8%	Mar-20	12.3%	61.9%	15.2%
Celanese Corp	United States of America	Materials	-10.4%	71.6%	Mar-20	63.2%	83.0%	79.6%
General Motors Co	United States of America	Automobiles & Components	-10.8%	63.6%	Mar-20	26.3%	88.8%	9.0%
Nucor Corp	United States of America	Materials	-13.9%	42.4%	Mar-20	23.7%	82.2%	11.5%
Quanta Services Inc	United States of America	Capital Goods	45.7%	105.3%	Mar-20	30.6%	84.1%	30.2%
Twitter Inc	United States of America	Media & Entertainment	41.0%	71.4%	Mar-20	63.1%	63.9%	55.3%
Westrock Co	United States of America	Materials	-4.7%	35.9%	Jun-20	13.7%	77.4%	24.1%

Single Stocks

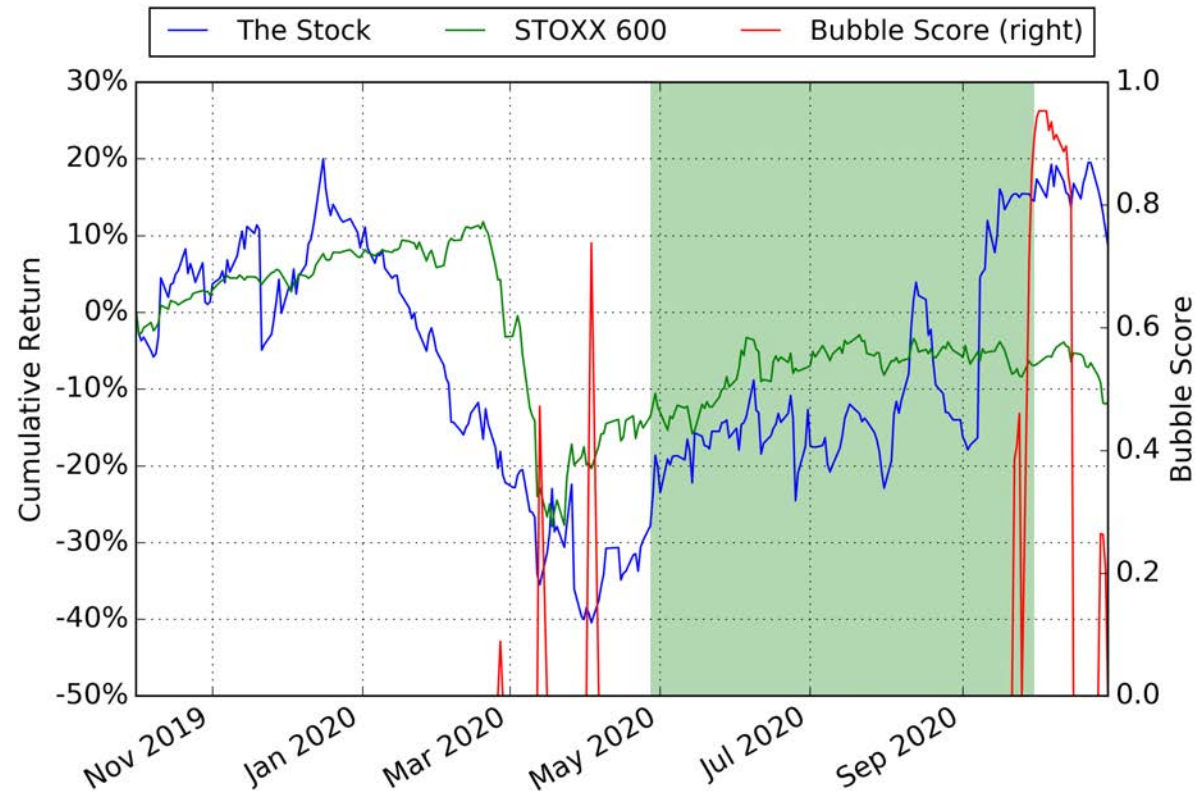
Quadrant 1 Stocks Current Month Example – Pandora A/S.



- 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 five-month bubble has reached 66.2% with a bubble size 49.8%.

Single Stocks

Quadrant 1 Stocks Last Month Example – Royal Mail 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 stock price has reached a plateau before a 10% correction in the past month, which is in agreement with our DS LPPLS Bubble signal provided last month. We expect this stock to continue growing in the long term due to the strong fundamentals.

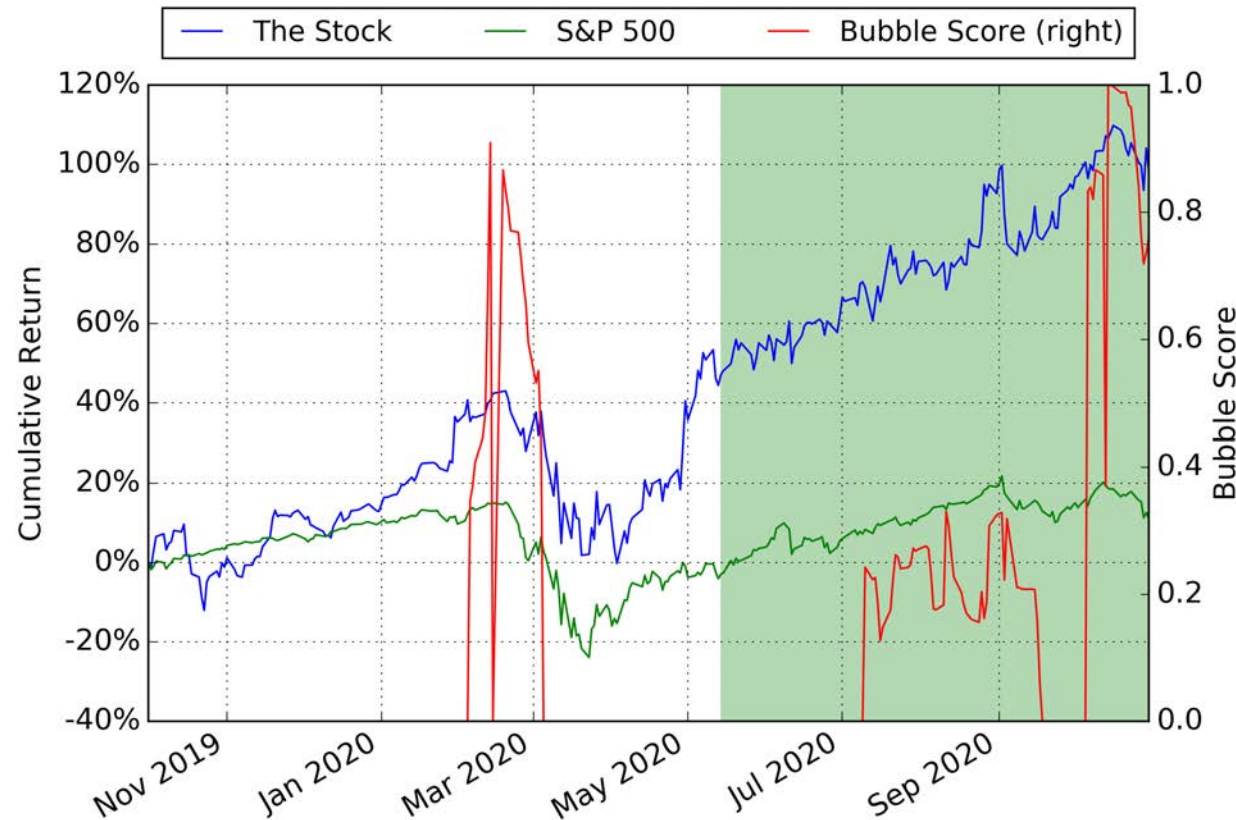
Single Stocks

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
Zalando SE	Germany	Retailing	115.5%	49.9%	May-20	53.4%	2.4%	40.2%
Novozymes A/S	Denmark	Materials	21.3%	21.3%	Nov-19	4.1%	24.4%	53.7%
Dechra Pharmaceuticals PLC	United Kingdom	Pharmaceuticals, Biotechnology & Life Sciences	33.0%	41.1%	Apr-20	17.4%	35.8%	51.5%
American Water Works Company Inc	United States of America	Utilities	30.2%	30.2%	Nov-19	29.3%	17.8%	68.9%
Copart Inc	United States of America	Commercial & Professional Services	33.0%	60.3%	Mar-20	15.0%	16.7%	25.1%
Deere & Co	United States of America	Capital Goods	25.6%	79.3%	Mar-20	29.8%	24.6%	70.2%
Dollar General Corp	United States of America	Retailing	32.9%	23.0%	Apr-20	59.1%	21.0%	61.0%
Estee Lauder Companies Inc	United States of America	Household & Personal Products	17.3%	13.5%	May-20	12.6%	10.0%	79.1%
Motorola Solutions Inc	United States of America	Technology Hardware & Equipment	-1.9%	16.8%	May-20	20.3%	36.3%	37.2%
Paychex Inc	United States of America	Software & Services	-0.7%	38.1%	Mar-20	38.5%	39.1%	71.1%
Rollins Inc	United States of America	Commercial & Professional Services	50.9%	46.5%	Apr-20	5.3%	4.5%	70.9%
ServiceNow Inc	United States of America	Software & Services	100.2%	30.0%	May-20	75.8%	1.3%	61.2%
Xilinx Inc	United States of America	Semiconductors & Semiconductor Equipment	24.6%	35.8%	Apr-20	33.2%	20.0%	43.8%

Single Stocks

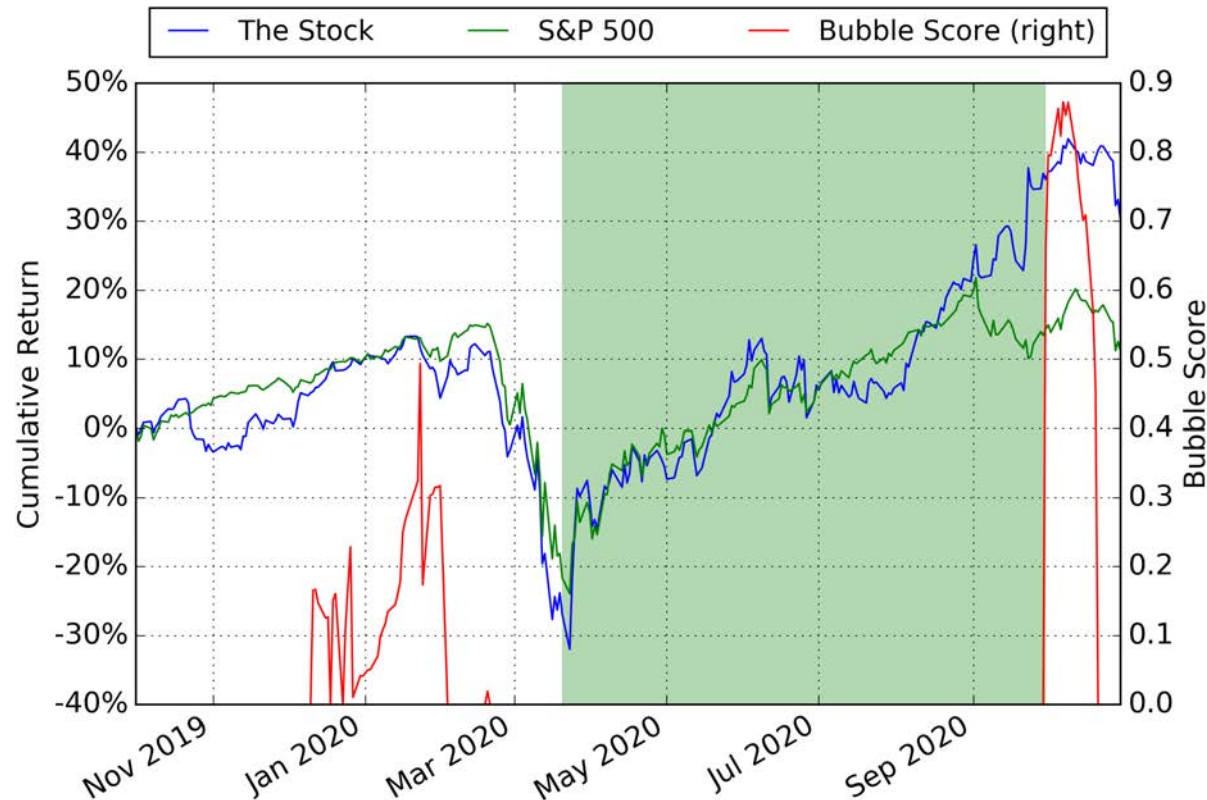
Quadrant 2 Stocks Current Month Example – ServiceNow Inc.



- 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 green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this six-month bubble has reached 75.8% with a bubble size 30%. 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 – Nike Inc.



The figure above plots the one-year cumulative return of the stock (blue), S&P 500 (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 shifted from a bubble regime into another market regime in the past month, and may still be faced with significant risk of correction due to the weak fundamentals.

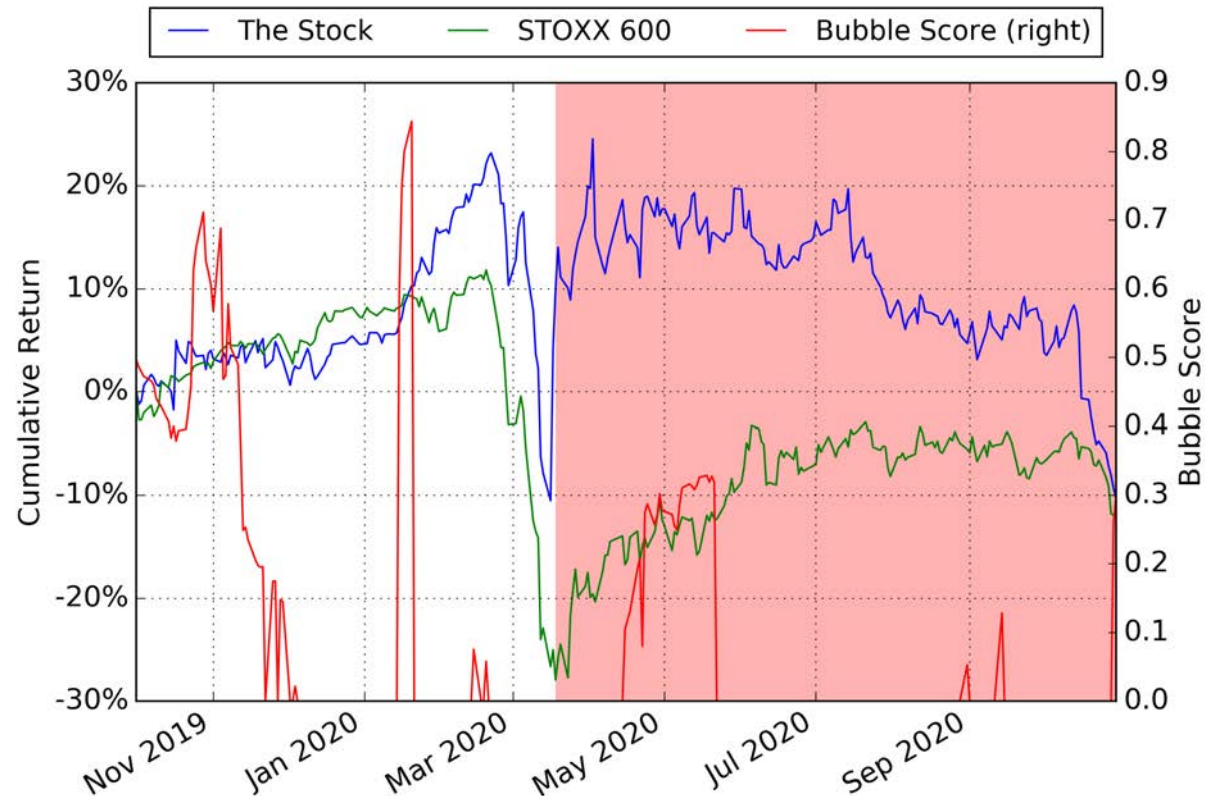
Single Stocks

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
Vifor Pharma AG	Switzerland	Pharmaceuticals, Biotechnology & Life Sciences	-34.2%	-22.7%	Apr-20	-18.2%	30.4%	96.8%
MorphoSys AG	Germany	Pharmaceuticals, Biotechnology & Life Sciences	-11.1%	-22.5%	May-20	-43.1%	0.5%	85.6%
Telefonica Deutschland Holding AG	Germany	Telecommunication Services	-23.3%	-17.5%	Jun-20	-26.3%	34.0%	98.4%
Ferrovial SA	Spain	Capital Goods	-28.3%	-23.0%	May-20	-12.5%	18.2%	10.1%
Elisa Oyj	Finland	Telecommunication Services	-13.1%	-21.3%	Mar-20	-30.2%	14.5%	35.6%
Galp Energia SGPS SA	Portugal	Energy	-53.3%	-27.7%	Mar-20	-41.2%	28.5%	91.3%
Boeing Co	United States of America	Capital Goods	-60.7%	-29.0%	Jun-20	-21.6%	13.2%	97.9%

Single Stocks

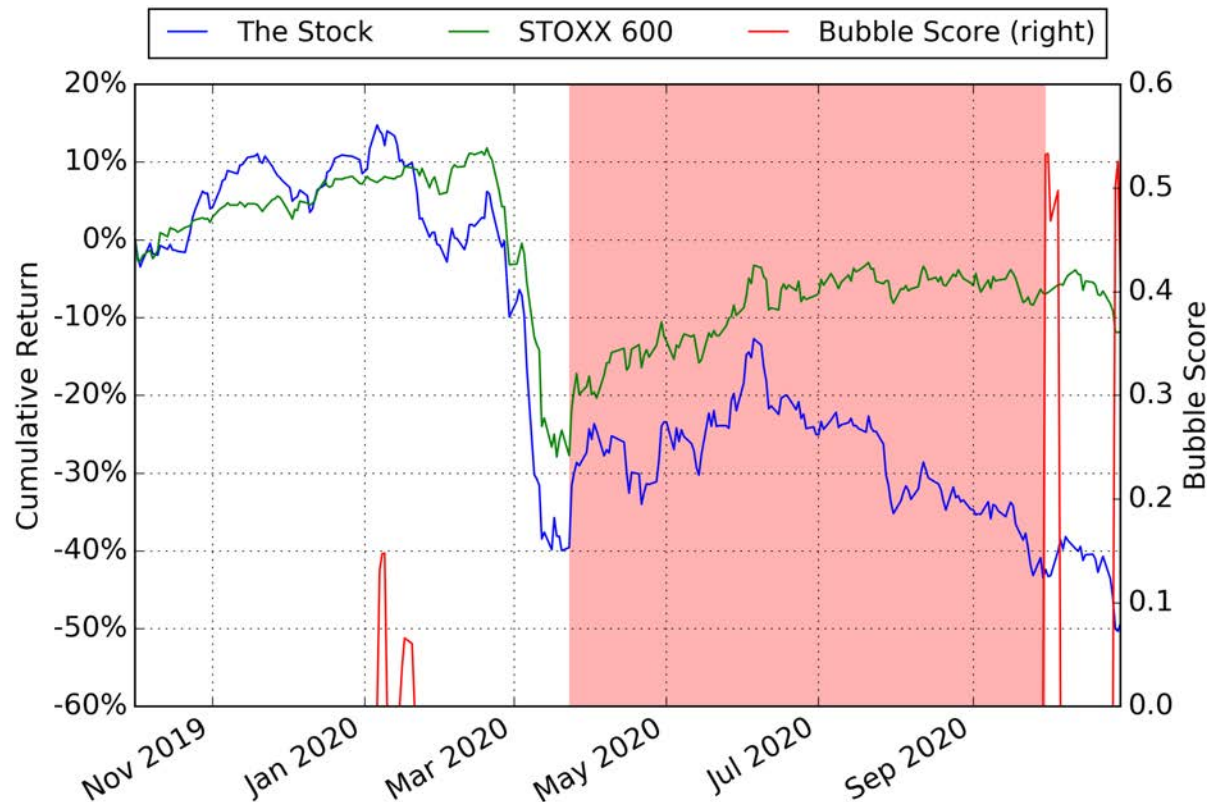
Quadrant 3 Stocks Current Month Example – Elisa Oyj.



- 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 negative bubble is identified. The Bubble Score of this eight-month bubble has reached 30.2% with a bubble size -21.3%.

Single Stocks

Quadrant 3 Stocks Last Month Example – Galp Energia SGPS 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 has continued to go down with another strong negative bubble signal this month, which is in agreement with our diagnostic of weak fundamentals.

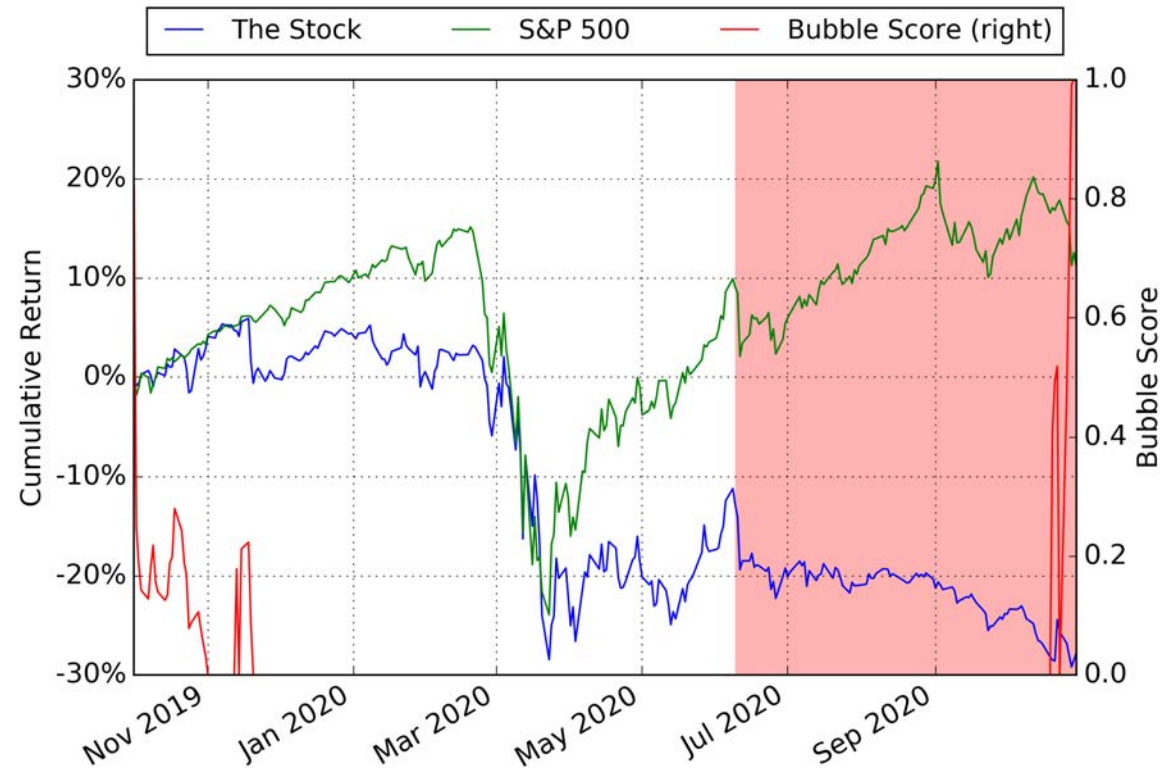
Single Stocks

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
Repsol SA	Spain	Energy	-62.2%	-33.4%	Mar-20	-35.3%	90.6%	95.6%
Eiffage SA	France	Capital Goods	-37.1%	-21.8%	May-20	-22.5%	62.0%	22.7%
Eni SpA	Italy	Energy	-57.5%	-57.5%	Nov-19	-19.3%	81.9%	96.5%
Polski Koncern Naftowy Orlen SA	Poland	Energy	-63.9%	-36.7%	Apr-20	-100.0%	94.9%	99.5%
AT&T Inc	United States of America	Telecommunication Services	-31.4%	-10.4%	Jun-20	-100.0%	80.7%	28.5%
DISH Network Corp	United States of America	Media & Entertainment	-28.9%	-24.9%	Jun-20	-50.4%	73.7%	38.5%
Gilead Sciences Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	-10.0%	-27.0%	Apr-20	-33.8%	97.4%	92.7%
HollyFrontier Corp	United States of America	Energy	-65.8%	-39.8%	Apr-20	-25.3%	75.8%	7.0%

Single Stocks

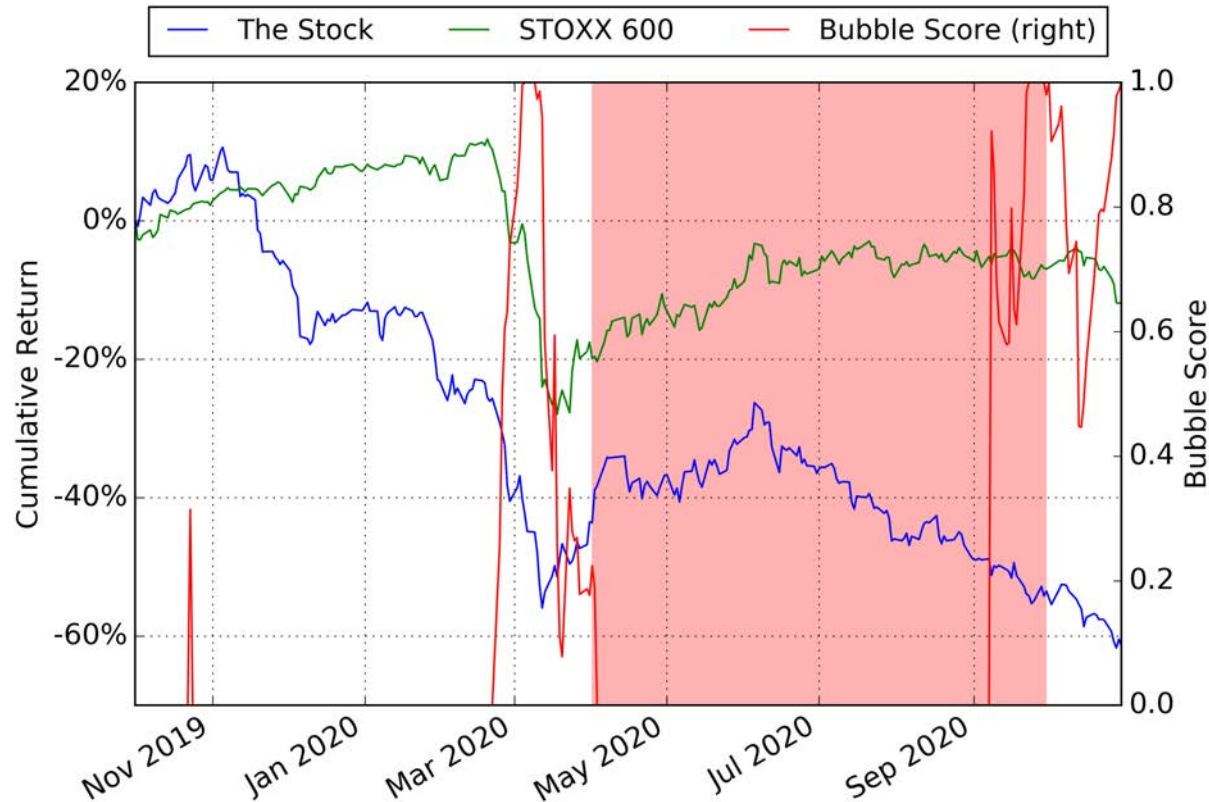
Quadrant 4 Stocks Current Month Example – AT&T Inc.



- 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 strong negative bubble is identified. The Bubble Score of this five-month bubble has reached 100% with a negative bubble size -10.4%. 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 – Polski Koncern Naftowy Orlen 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 has continued to dive following the same speed as in the past months, with a strong bubble signal again this month. 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.

More Information

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

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

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