The FCO Cockpit
Global Bubble Status Report

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Contents

About

Methodology

General Results

Results per Asset Class

Single Stocks

Sectors

Final Remarks

About

The Financial Crisis Observatory (FCO) monthly report discusses the historical evolution of bubbles in and between different asset classes and geographies.

It 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.

In the first part of this report, we present the state of the world, based on the analysis of the systemic assets. In the second part, we zoom in on the bubble behavior of single stocks and discuss some specific cases.

For an intuitive explanation of the methodology and the specifics of the indicators that are used in this report, we refer to: D. Sornette and P. Cauwels, Financial bubbles: mechanisms and diagnostics. Review of Behavioral Economics 2 (3), 279- 305 (2015)
http://arxiv.org/abs/1404.2140 and http://ssrn.com/abstract=2423790

Methodology

We use the Log-Periodic Power Law Singularity (LPPLS) model to hunt for the distinct fingerprint of Bubbles:

1. Price rises faster than exponentially, therefore the logarithm of the price rises faster than linearly;

2. There are accelerating oscillations, with a distinct characteristic.

Starting Nov 2017, we have a major upgrading of our LPPLS bubble warning signals. The new method significantly increases the prediction power of the signal, and better normalizes the signal values. A bubble signal is identified if our new bubble indicator is larger than 0%. Bubble Size is the cumulative return since the starting point of the bubble we identified.
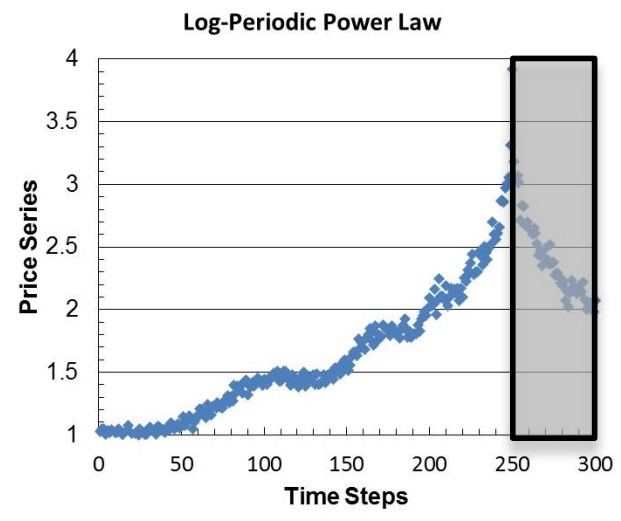
Positive bubble: imitation in **buying**
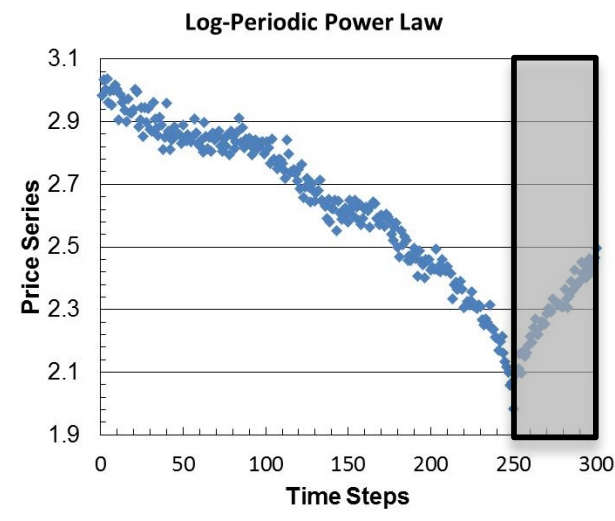
Negative bubble: imitation in **selling**

Announcement

Major Extension of Cryptocurrency Analysis:

From this report on, we will analyze not only the top five cryptocurrencies in terms of market capitalization, as listed on coinmarketcap.com, but the top 1000 cryptocurrencies and examine them for LPPLS bubble signals and past regime changes.

In order to work with sufficient data, we impose the constraint that only the cryptocurrencies of the top 1000 that exist for at least one year are analysed.

General Results – The Big Picture

Historical evolution of the fraction of assets within an asset class that show significant bubble signals
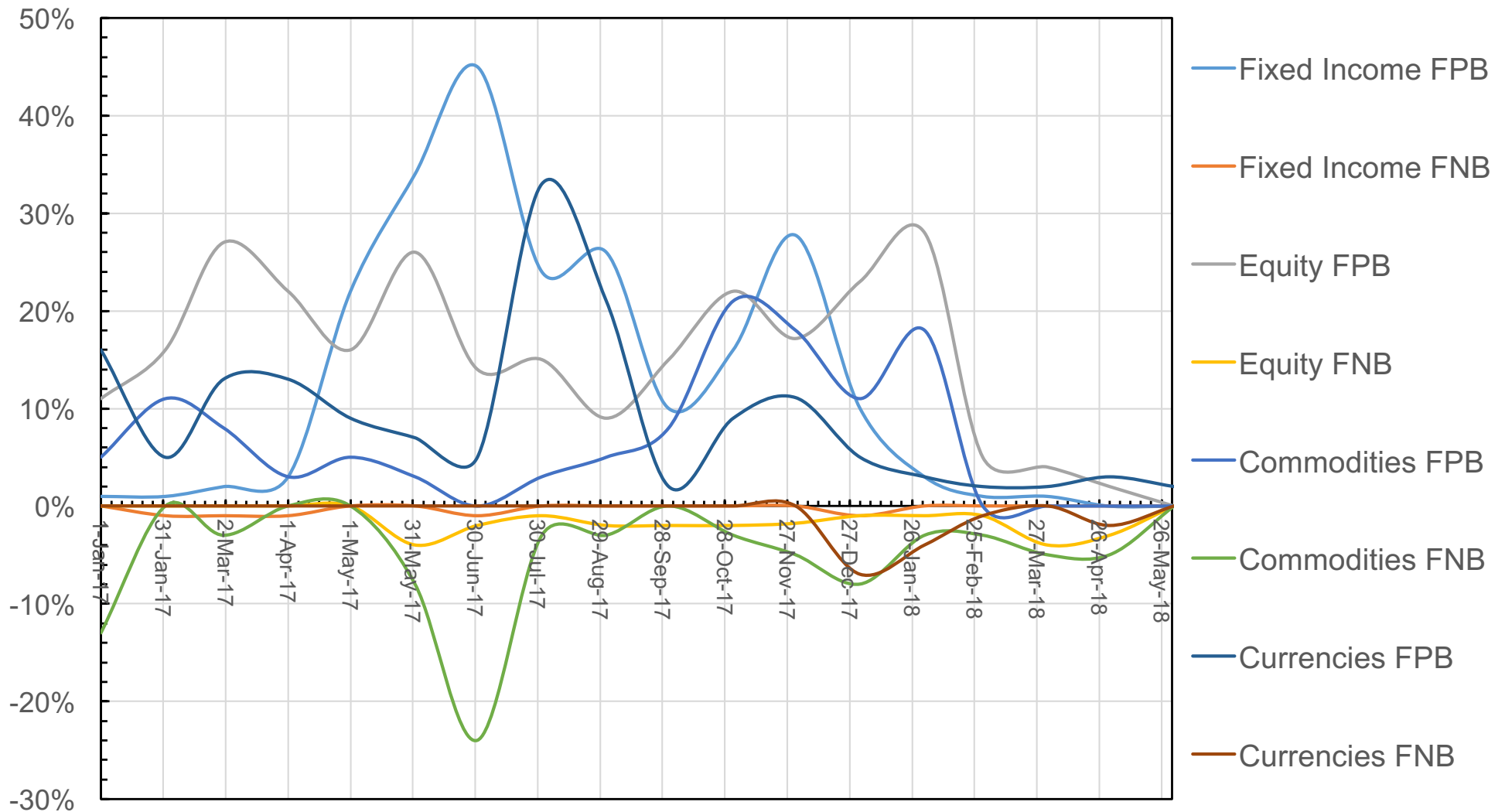
General Results – This Month's Overview

Category	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
Fixed Income	155	0	0
Government Bonds	55	0	0
Finance and Insurance	21	0	0
Corporate Bonds	79	0	0
Equity	168	0	0
Country Indices	72	0	0
Europe	36	0	0
United States	60	0	0
Commodities	38	0	0
Forex	107	2	0

Bubble Analysis Results

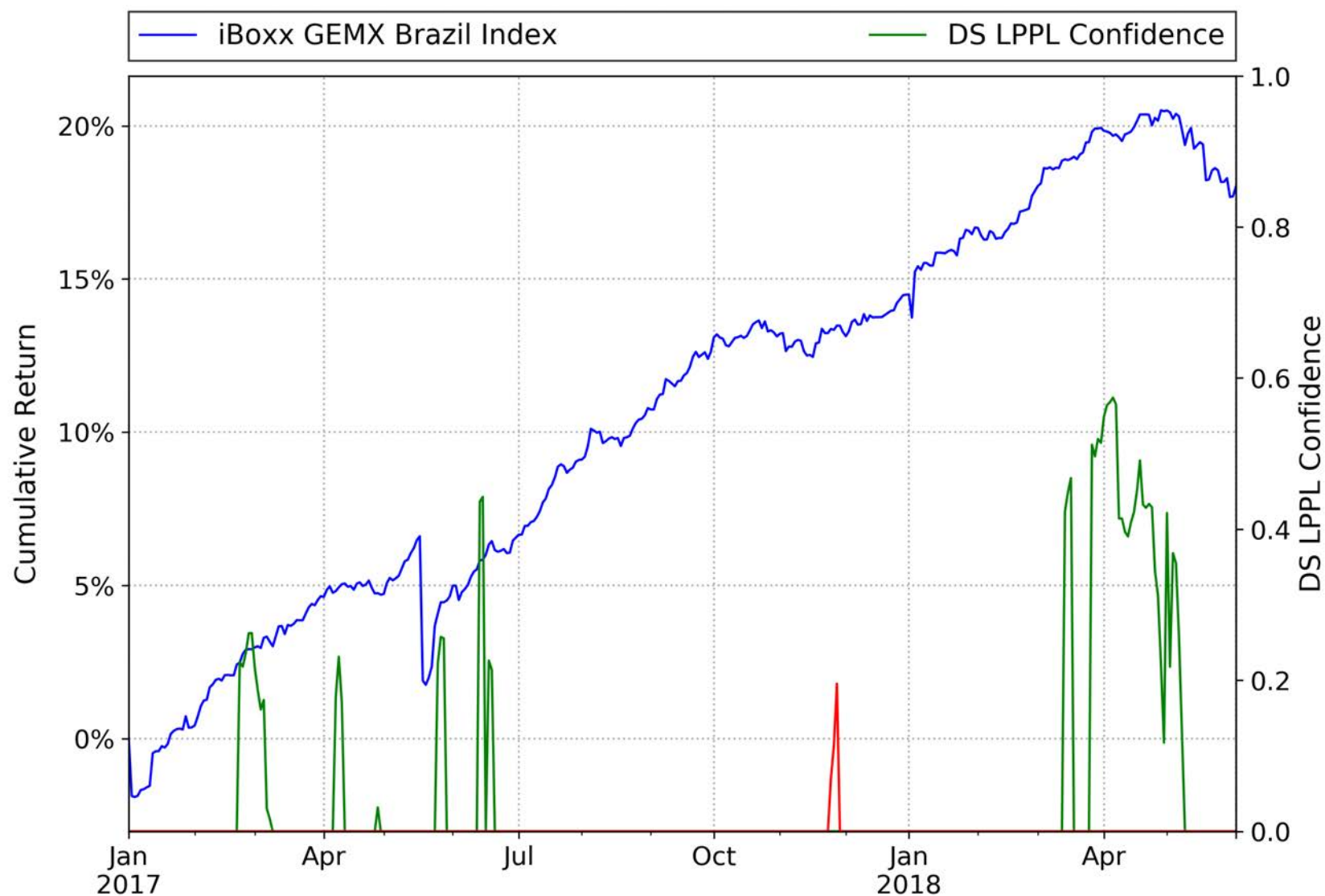| | Bubble Data | | | | | Cluster Analysis | | |
Name	Bubble Size $bs\,[\%]$	Duration $[days]$	DS LPPL Confidence $ci\,[\%]$	Geometric Average $\sqrt{bs \cdot ci}\,[\%]$		Critical Time Prediction μ_{t_c}	σ_{t_c} $[days]$	Scenario Probability $[\%]$
Positive Bubbles								
-	-	-	-		-	-	-	-
Negative Bubbles								

As visible from the overview plot and table of the two previous slides, this month, except in the currency sector, we find no LPPLS signals for any of the analyzed assets. This is a historical low of the bubble activity over all sectors.
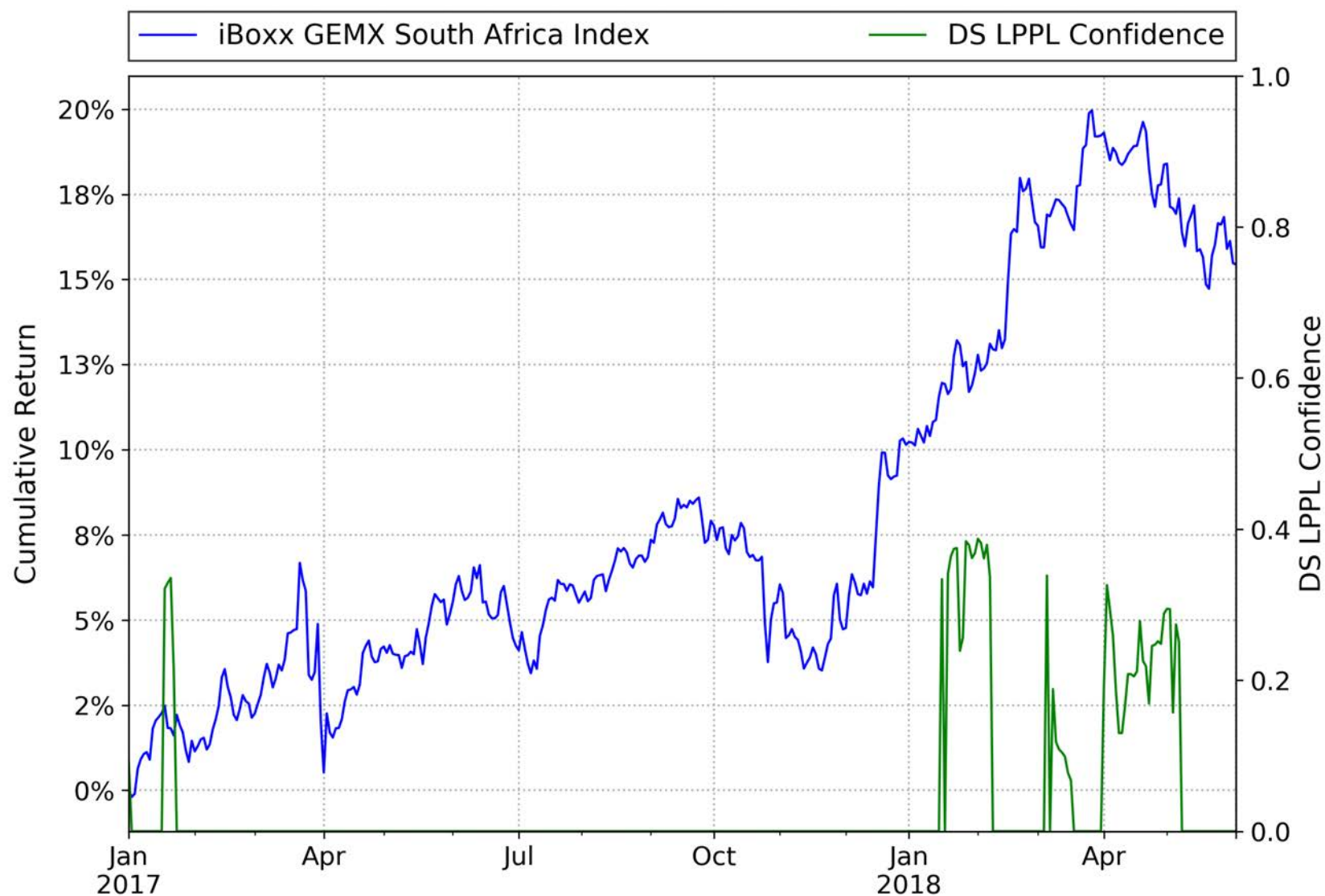
Although there are no current bubble signals to discuss, we present the time series of the DS LPPLS Confidence Indicator for some of the assets discussed in previous reports.

In the following slides, it can be seen that several different indices have undergone a recent change of regime, as indicated by the peaks of the DS LPPLS Confidence Indicator before and around the respective maxima of the indices. This shows not only the predictive power of the signals; it also explains the remarkably low bubble activity this month.

Especially noteworthy is the high accuracy at which the transition of bubble to crash has been identified for the Vietnam Index, which we had tracked for several months before.
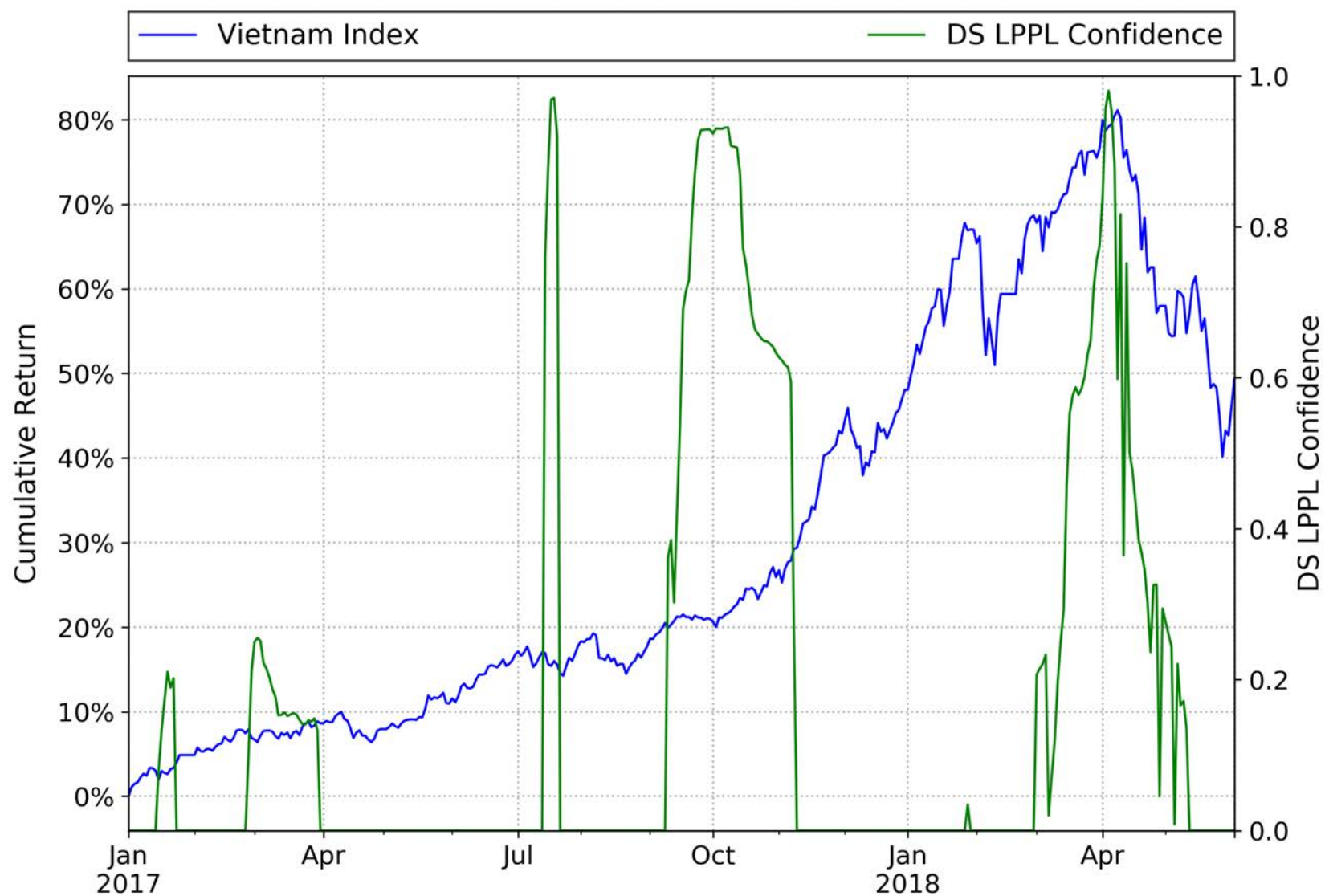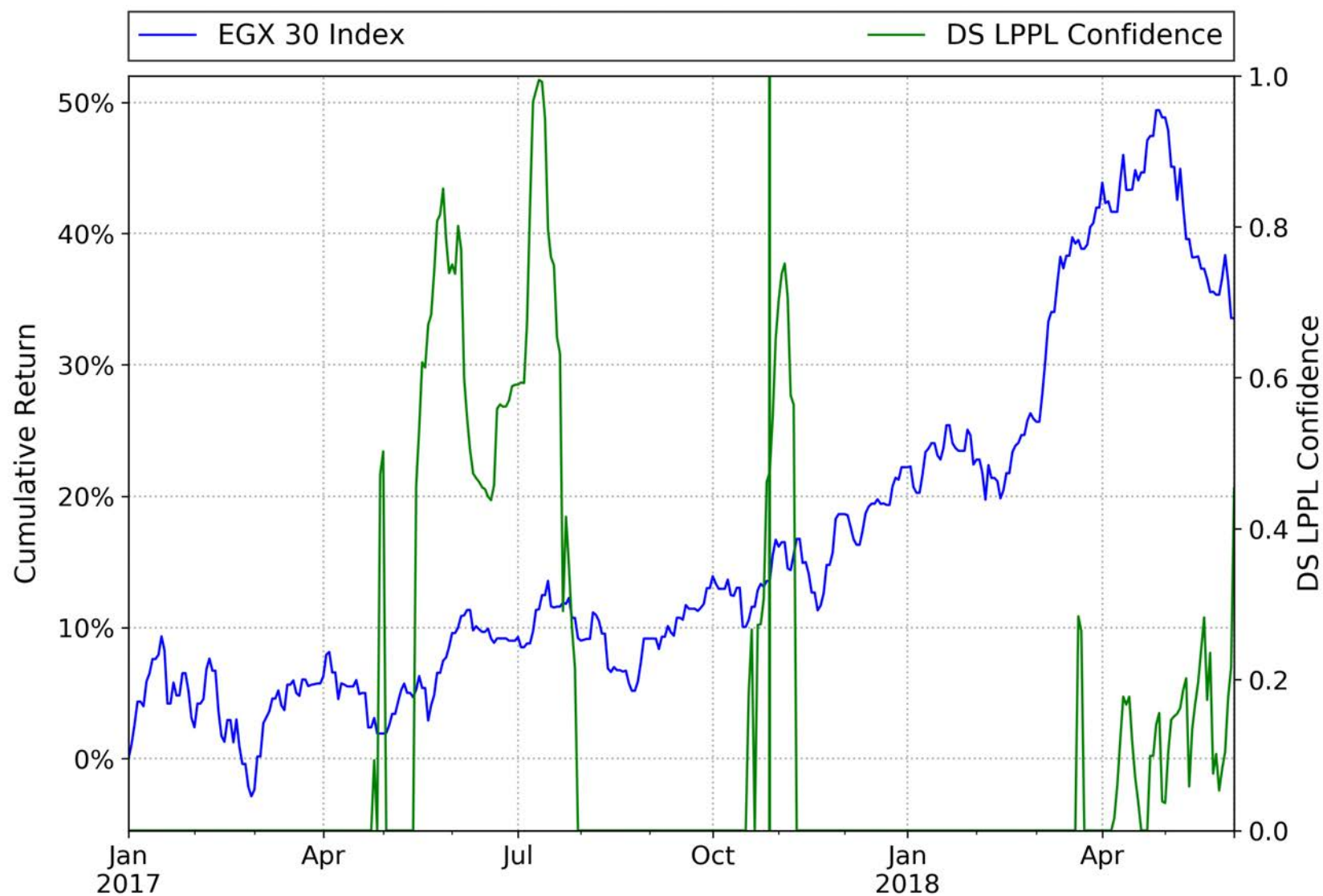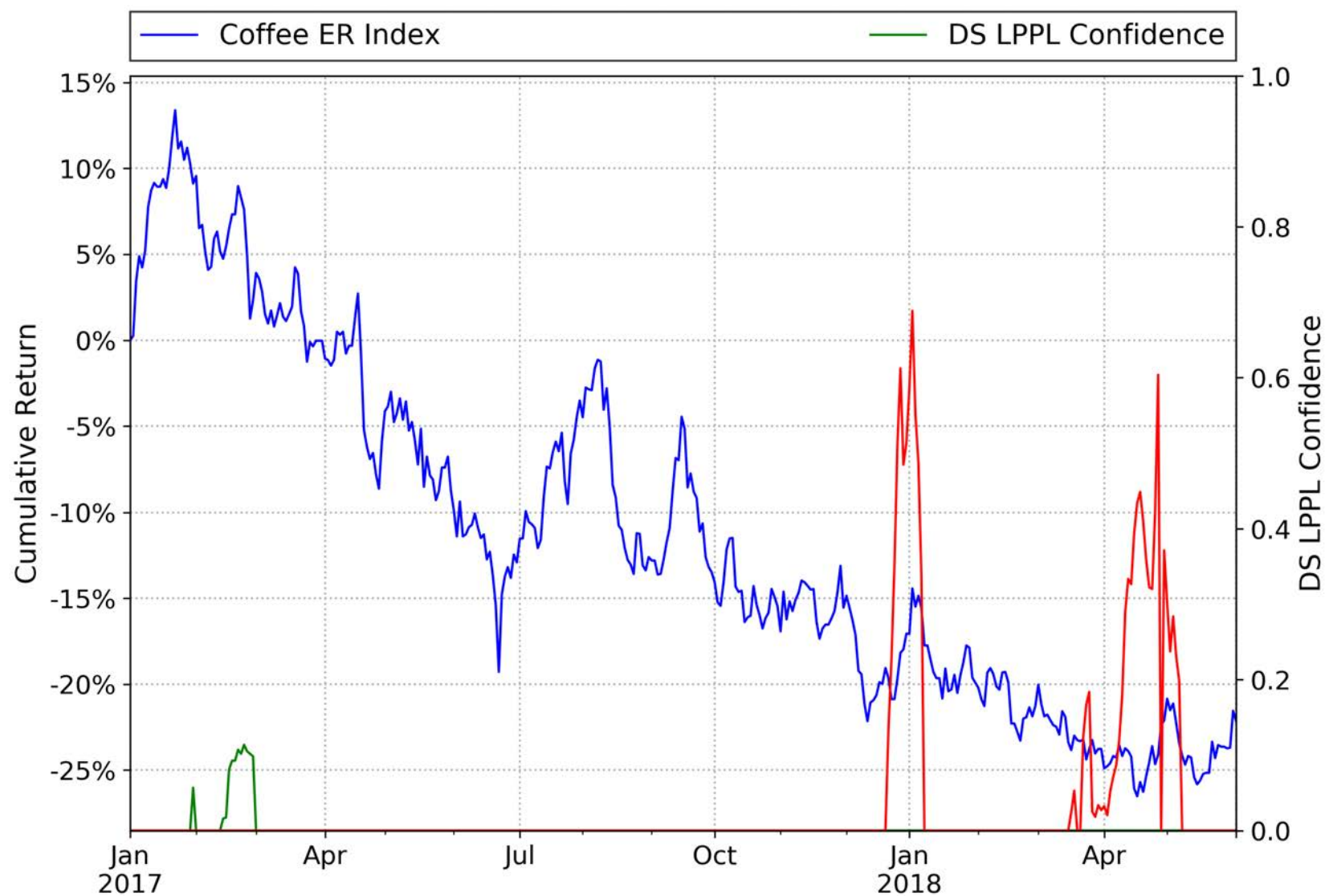
Currencies – PCA

First Principal Components of 9 Major Fiat Currencies

Legend:
- AUD PC1, Explained Variance: 34.48%
- CHF PC1, Explained Variance: 42.78%
- EUR PC1, Explained Variance: 26.02%
- GBP PC1, Explained Variance: 31.99%
- HKD PC1, Explained Variance: 26.28%
- INR PC1, Explained Variance: 28.38%
- JPY PC1, Explained Variance: 33.27%
- RUB PC1, Explained Variance: 39.06%
- USD PC1, Explained Variance: 58.08%
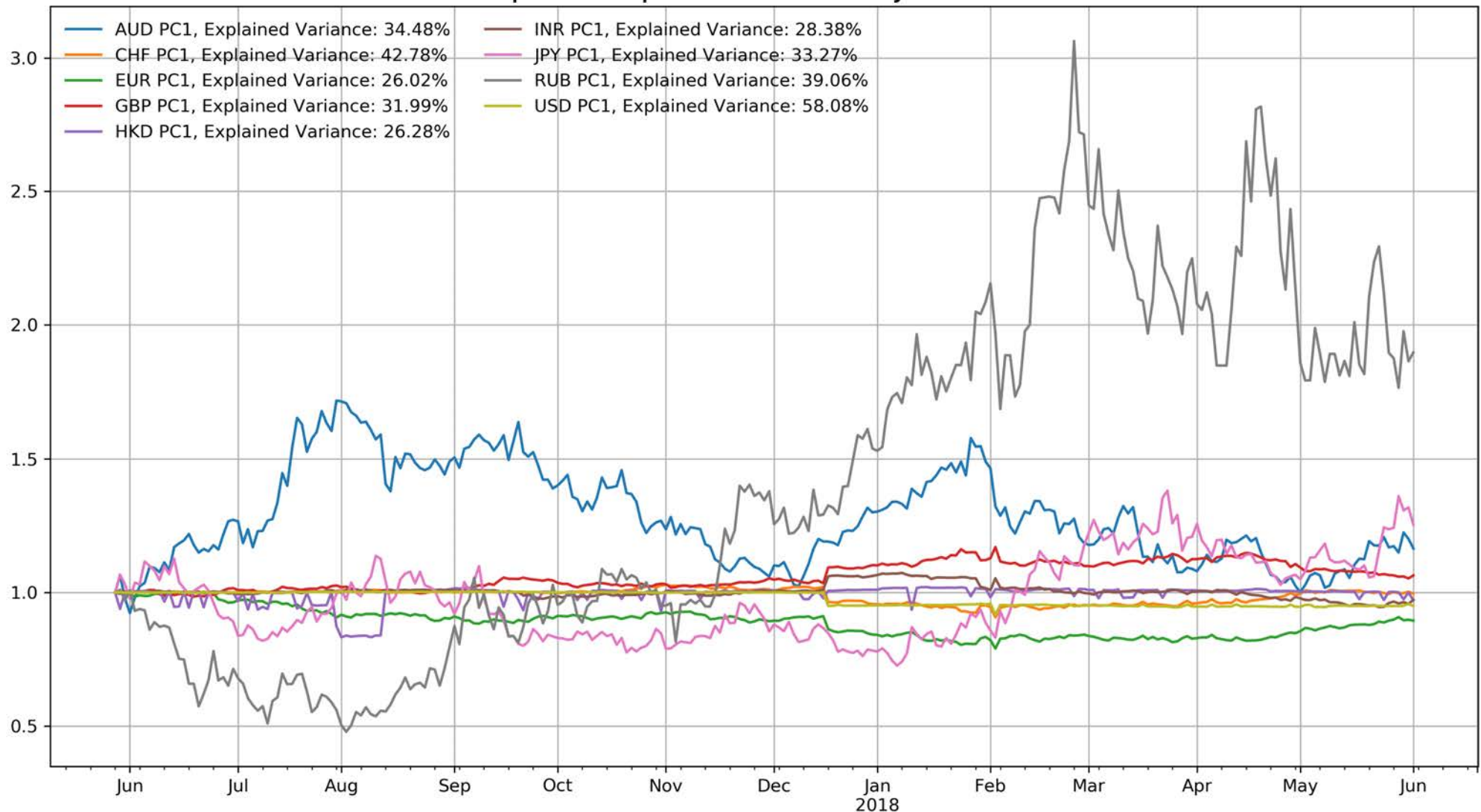
No LPPLS signatures are detected either in the Principal Component Analysis of fiat currencies this month.

Currencies – Cryptocurrencies

| | 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								
	-	-	-	-	-	-	-	-
Negative Bubbles								

The number of analyzed top 1000 cryptocurrencies whose data go back to at least one year this month amounted to 322, a fact that demonstrates impressively how intensely the number of cryptocurrencies in the market has grown over the past 365 days. We find neither bubble signals nor past regime change that satisfy our filtering conditions. Overall, the cryptocurrency market still seems to be in a calm state, leaving tech savvy, speculators and professional traders wondering what may trigger the next wave of price exuberance.

Single Stocks

For 809 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.

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.
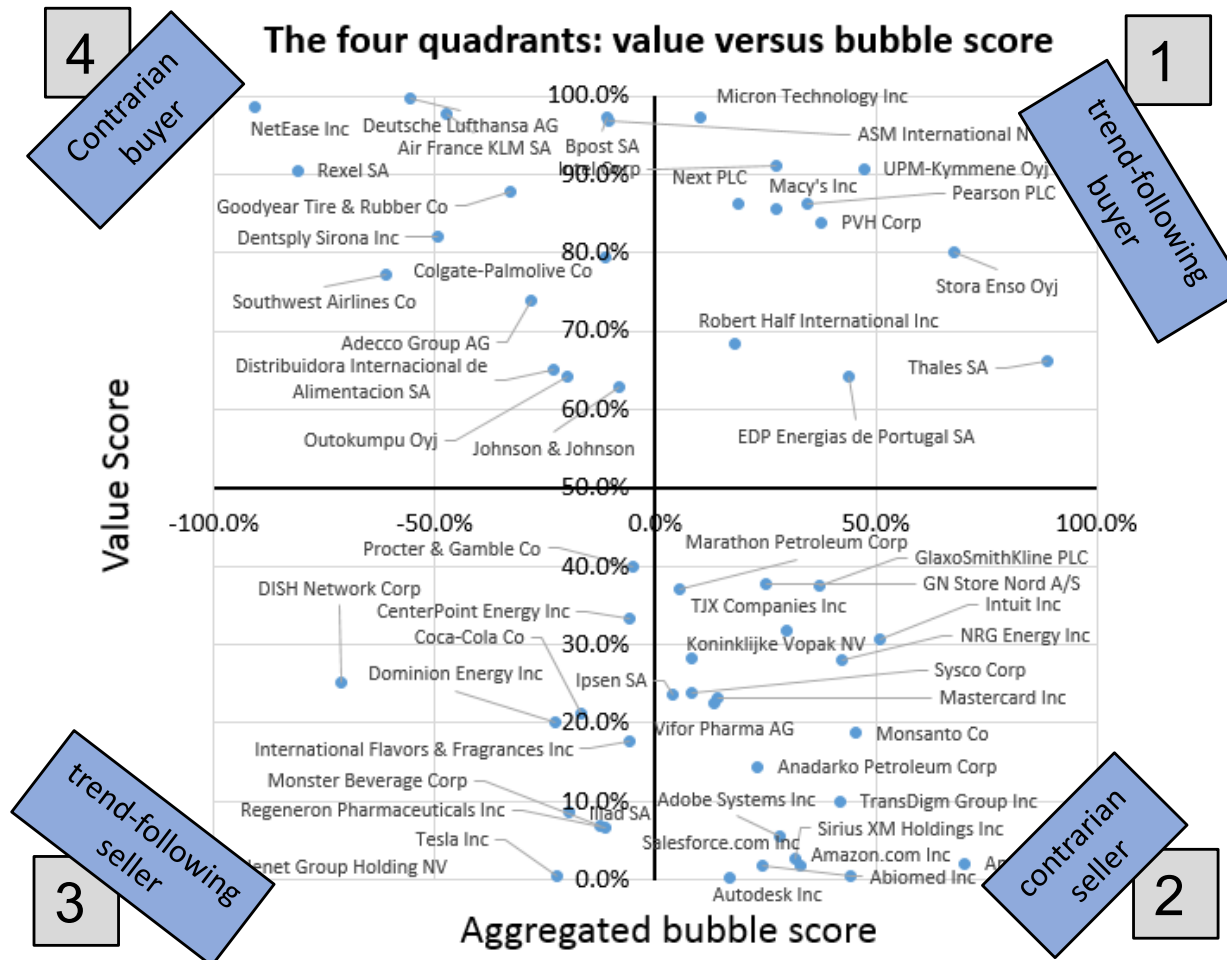
The two financial strength indicators are:

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).

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.

Single Stocks

The four quadrants: value versus bubble score

4 Contrarian buyer

1 trend-following buyer

3 trend-following seller

2 contrarian seller

By plotting the value score against the aggregated bubble score, we can divide the stocks into four quadrants*:

1. Quadrant 1: Stocks with a strong positive bubble score and a strong value score (e.g. Macy's Inc);
2. Quadrant 2: Stocks with a strong positive bubble score and a weak value score (e.g. Sysco Corp);
3. Quadrant 3: Stocks with a strong negative bubble score and a weak value score (e.g. Tesla Inc);
4. Quadrant 4: Stocks with strong negative bubble score and a strong financial strength (e.g. NetEase Inc)

*A strong positive bubble signal is identified if bubble score is larger than 10%, and a strong negative bubble signal is identified if bubble score is smaller than -10%.
 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%.
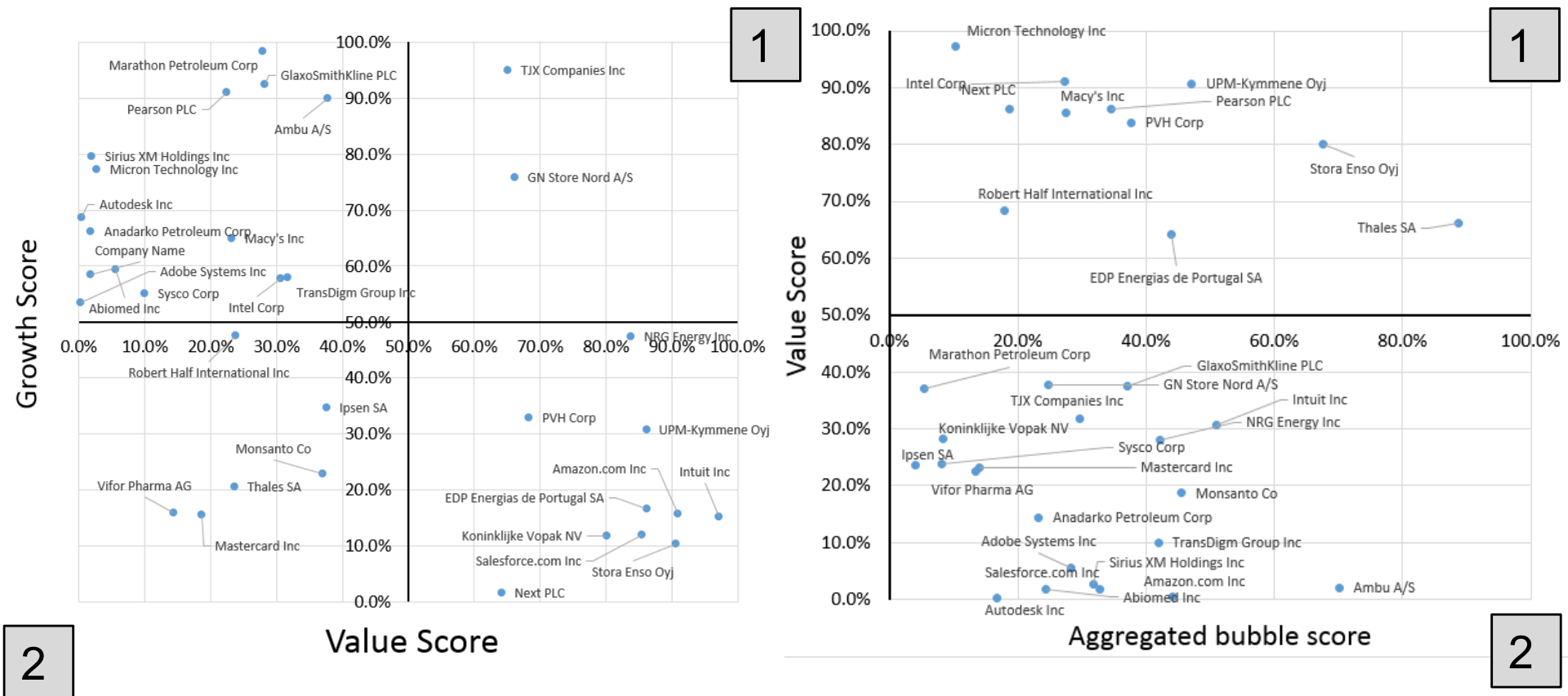
Single Stocks

Each quadrant has its own specs:

1.   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.

2.   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.

3.   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.

4.   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.
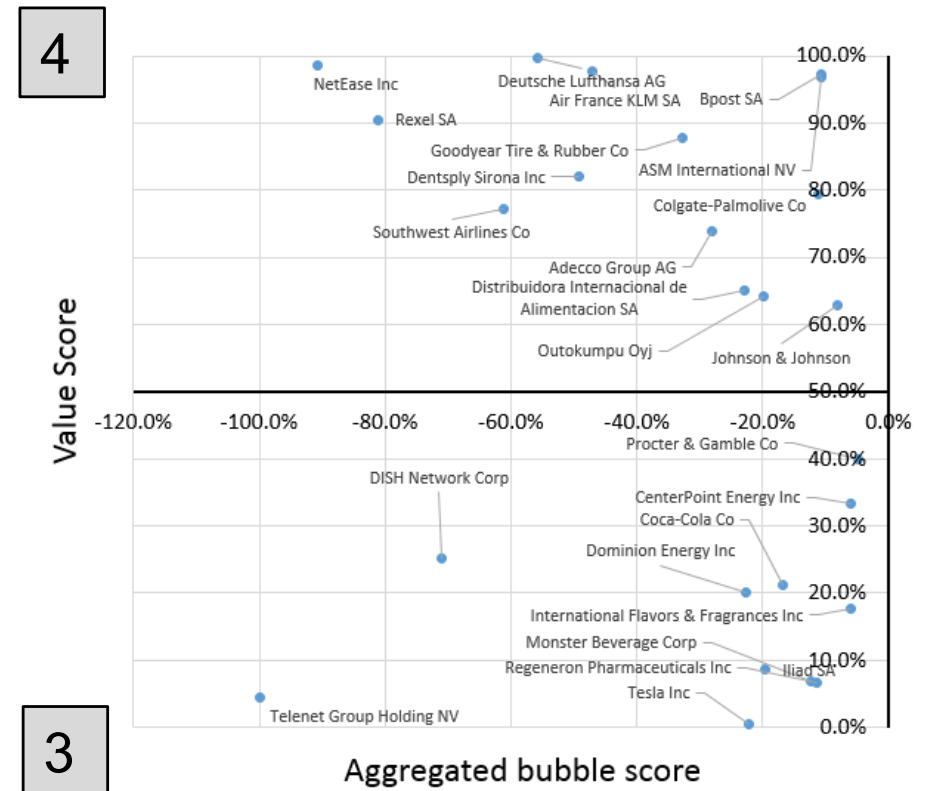
Single Stocks

Quadrant 1 and 2 stocks

Strong positive bubble signals with strong (respectively weak) fundamentals

Single Stocks

Quadrant 3 and 4 stocks

Strong negative bubble signals with weak (respectively strong) fundamentals

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
Intel Corp	United States of America	Semiconductors & Semiconductor Equipment	61.7%	28.6%	Oct-17	27.2%	91.0%	15.7%
Micron Technology Inc	United States of America	Semiconductors & Semiconductor Equipment	92.2%	96.5%	Jul-17	10.3%	97.2%	15.1%
Thales SA	France	Capital Goods	11.6%	20.7%	Dec-17	88.8%	66.1%	75.9%
Stora Enso Oyj	Finland	Materials	54.4%	33.2%	Dec-17	67.5%	80.1%	11.7%
UPM-Kymmene Oyj	Finland	Materials	26.1%	39.1%	Jul-17	47.1%	90.6%	10.3%
Next PLC	United Kingdom	Retailing	43.4%	29.5%	Nov-17	18.6%	86.3%	30.7%
EDP Energias de Portugal SA	Portugal	Utilities	10.2%	15.5%	Nov-17	43.9%	64.2%	1.5%
Pearson PLC	United Kingdom	Media	25.5%	21.3%	Dec-17	34.6%	86.2%	16.6%
Macy's Inc	United States of America	Retailing	56.4%	56.8%	Jul-17	27.6%	85.5%	12.0%
PVH Corp	United States of America	Consumer Durables & Apparel	50.4%	25.2%	Aug-17	37.7%	83.8%	47.3%
Robert Half International Inc	United States of America	Commercial & Professional Services	33.4%	20.3%	Dec-17	17.9%	68.4%	32.9%
Elekta AB (publ)	Sweden	Health Care Equipment & Services	29.4%	60.5%	Dec-17	14.7%	65.1%	94.9%
Swedish Match AB	Sweden	Food, Beverage & Tobacco	37.8%	47.1%	Sep-17	53.9%	97.9%	65.0%

Single Stocks - Quadrant 1 stocks

Quadrant 1 stocks: strong positive bubble signals with strong fundamentals
Example: Stora Enso Oyj.
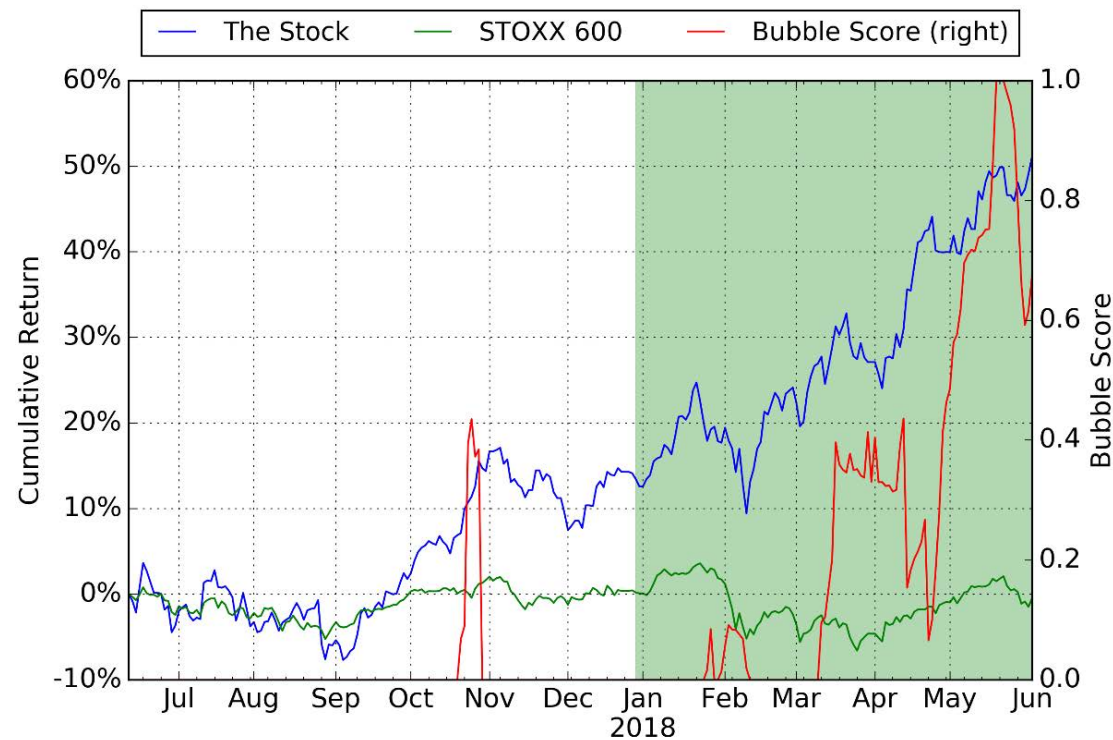
The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period is the strong positive bubble we identified. The Bubble Score of this five month bubble has reached 67.5% with a bubble size 33.2%.

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Last month example: strong positive bubble signals with strong fundamentals, Thales SA.

The figure below 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 is the strong positive bubble we identified and reported last month. Note that the stock went up again and started a correction recently, which is in agreement with the DS LPPLS indicator, and the strong fundamentals. This stock is still identified with a strong positive bubble signal this month, as should thus appreciate further.
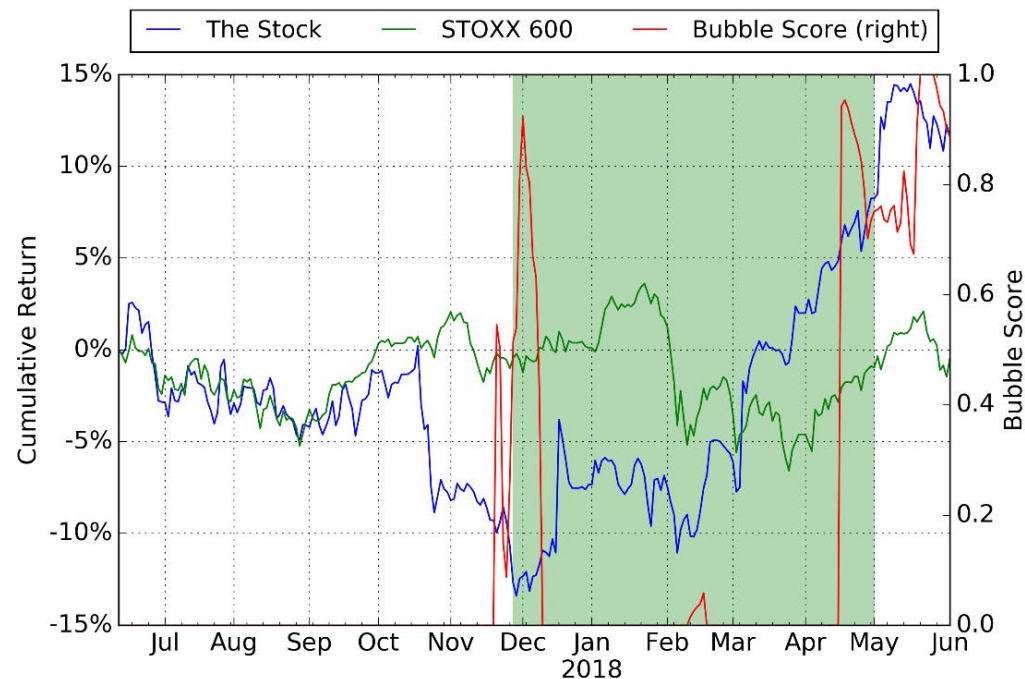
Single Stocks - Quadrant 2 stocks

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
Abiomed Inc	United States of America	Health Care Equipment & Services	174.5%	174.5%	Jun-17	24.4%	1.7%	58.5%
Adobe Systems Inc	United States of America	Software & Services	82.7%	46.0%	Oct-17	28.2%	5.6%	59.5%
Autodesk Inc	United States of America	Software & Services	26.5%	22.3%	Aug-17	16.8%	0.2%	53.5%
Amazon.com Inc	United States of America	Retailing	70.3%	47.8%	Oct-17	44.1%	0.4%	68.7%
Intuit Inc	United States of America	Software & Services	45.8%	34.9%	Oct-17	50.9%	30.7%	57.7%
Sirius XM Holdings Inc	United States of America	Media	36.5%	35.7%	Jan-18	31.8%	2.7%	77.3%
Ambu A/S	Denmark	Health Care Equipment & Services	114.5%	81.0%	Dec-17	70.1%	2.0%	79.6%
GN Store Nord A/S	Denmark	Health Care Equipment & Services	22.5%	23.0%	Nov-17	24.9%	37.8%	90.0%
Ipsen SA	France	Pharmaceuticals, Biotechnology & Life Sciences	16.9%	22.7%	Jul-17	4.1%	23.6%	20.5%
GlaxoSmithKline PLC	United Kingdom	Pharmaceuticals, Biotechnology & Life Sciences	-9.6%	19.0%	Nov-17	37.1%	37.6%	34.6%
Koninklijke Vopak NV	Netherlands	Energy	0.5%	22.0%	Nov-17	8.3%	28.2%	92.5%
Vifor Pharma AG	Switzerland	Pharmaceuticals, Biotechnology & Life Sciences	43.0%	46.1%	Sep-17	13.4%	22.5%	91.1%
Anadarko Petroleum Corp	United States of America	Energy	54.1%	53.5%	Jun-17	23.3%	14.5%	15.9%
Salesforce.com Inc	United States of America	Software & Services	51.3%	35.9%	Sep-17	32.8%	1.9%	66.1%
Mastercard Inc	United States of America	Software & Services	60.9%	60.9%	Jun-17	14.0%	23.2%	64.9%
Monsanto Co	United States of America	Materials	8.5%	10.0%	Dec-17	45.5%	18.7%	15.6%
Marathon Petroleum Corp	United States of America	Energy	54.6%	54.3%	Jul-17	5.5%	37.1%	22.9%
NRG Energy Inc	United States of America	Utilities	104.2%	41.6%	Sep-17	42.2%	27.9%	98.4%
Sysco Corp	United States of America	Food & Staples Retailing	17.8%	29.8%	Jul-17	8.2%	23.9%	47.6%
TransDigm Group Inc	United States of America	Capital Goods	24.7%	31.8%	Sep-17	41.9%	10.0%	55.1%
TJX Companies Inc	United States of America	Retailing	24.6%	35.2%	Jul-17	29.7%	31.8%	58.0%
Swedish Orphan Biovitrum AB (publ)	Sweden	Pharmaceuticals, Biotechnology & Life Sciences	31.8%	58.6%	Nov-17	26.5%	5.9%	80.5%

Quadrant 2 stocks: strong positive bubble signals with weak fundamentals
Example: Ambu A/S.
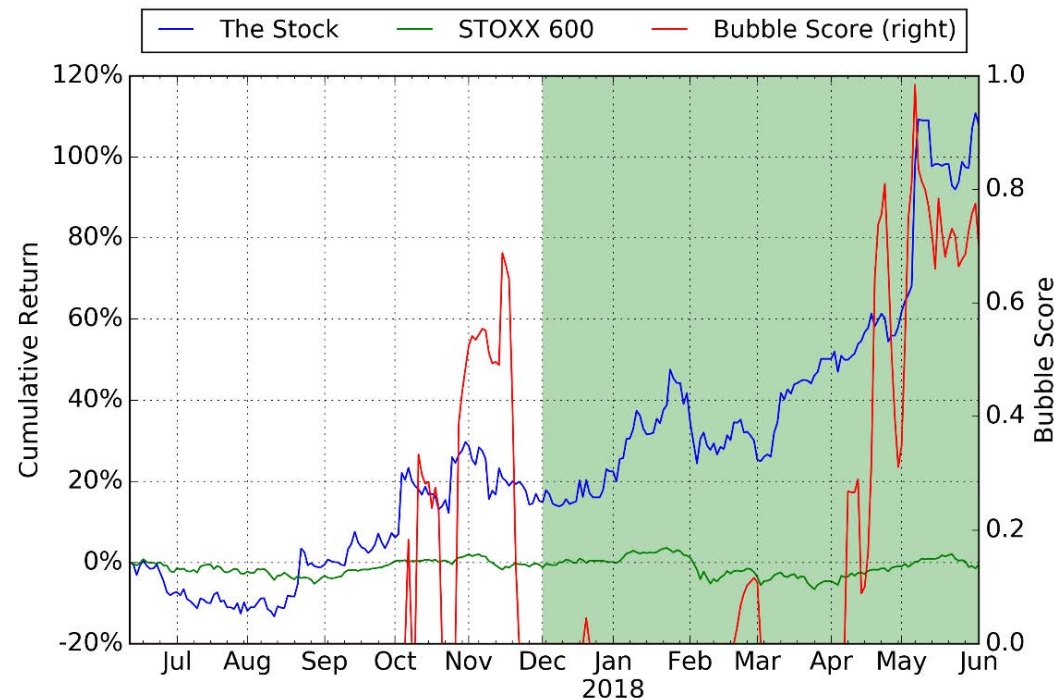
The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period is the strong positive bubble we identified. The Bubble Score of this six month bubble has reached 70.1% with a bubble size 81%. The strong positive bubble signals and weak fundamentals indicate a high probability of correction in the future.

Last month example: strong positive bubble signals with weak fundamentals, Moncler SpA.

The figure below 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 is the strong positive bubble we identified and reported in last month. Note that the stock price seems to have started a change of regime, with higher volatility. According to our classification, increased volatility and a possible significant correction could be expected.
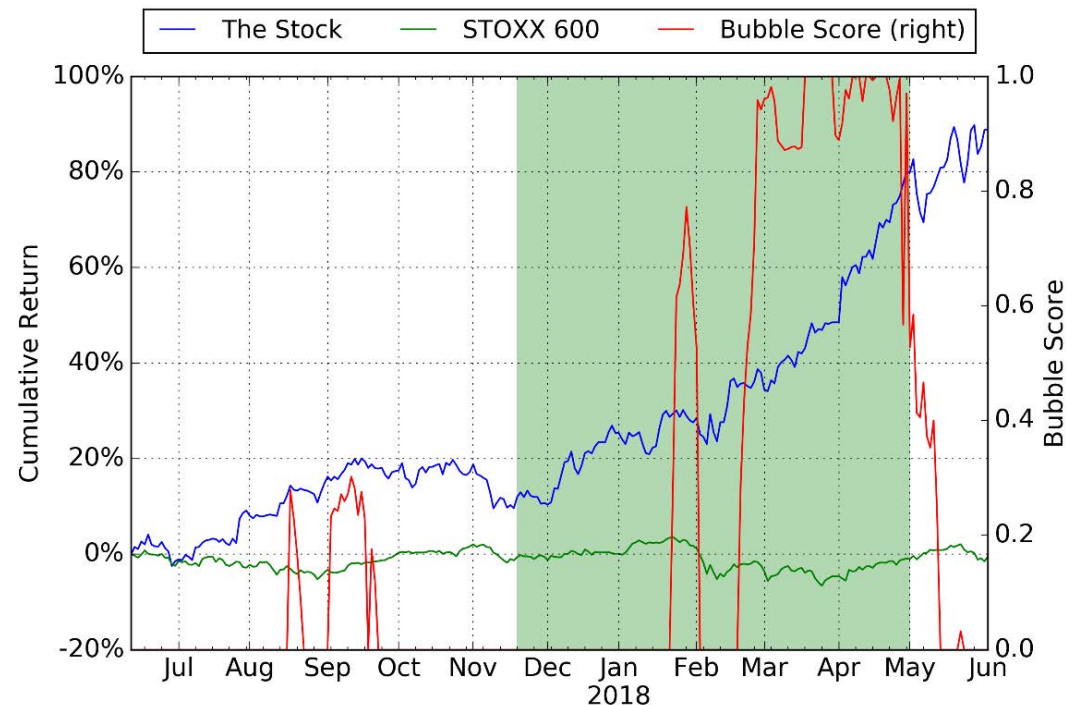
Single Stocks - Quadrant 3 stocks

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
DISH Network Corp	United States of America	Media	-55.5%	-42.2%	Nov-17	-71.1%	25.2%	20.3%
Monster Beverage Corp	United States of America	Food, Beverage & Tobacco	0.4%	-17.8%	Nov-17	-12.3%	6.9%	82.4%
Regeneron Pharmaceuticals Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	-34.6%	-31.1%	Sep-17	-11.4%	6.6%	50.2%
Tesla Inc	United States of America	Automobiles & Components	-22.3%	-10.4%	Oct-17	-22.2%	0.5%	87.5%
Telenet Group Holding NV	Belgium	Media	-25.8%	-29.4%	Jan-18	-100.0%	4.3%	89.7%
Iliad SA	France	Telecommunication Services	-33.8%	-27.7%	Nov-17	-19.5%	8.5%	95.8%
CenterPoint Energy Inc	United States of America	Utilities	-10.3%	-14.4%	Sep-17	-6.0%	33.4%	43.6%
Dominion Energy Inc	United States of America	Utilities	-21.0%	-21.2%	Oct-17	-22.6%	20.0%	79.9%
International Flavors & Fragrances Inc	United States of America	Materials	-8.2%	-15.4%	Oct-17	-6.1%	17.6%	55.4%
Coca-Cola Co	United States of America	Food, Beverage & Tobacco	-4.7%	-6.6%	Oct-17	-16.8%	21.3%	68.4%
Procter & Gamble Co	United States of America	Household & Personal Products	-17.8%	-20.3%	Oct-17	-5.0%	39.9%	37.7%

Single Stocks - Quadrant 3 stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals
Example: Telenet Group Holding NV.
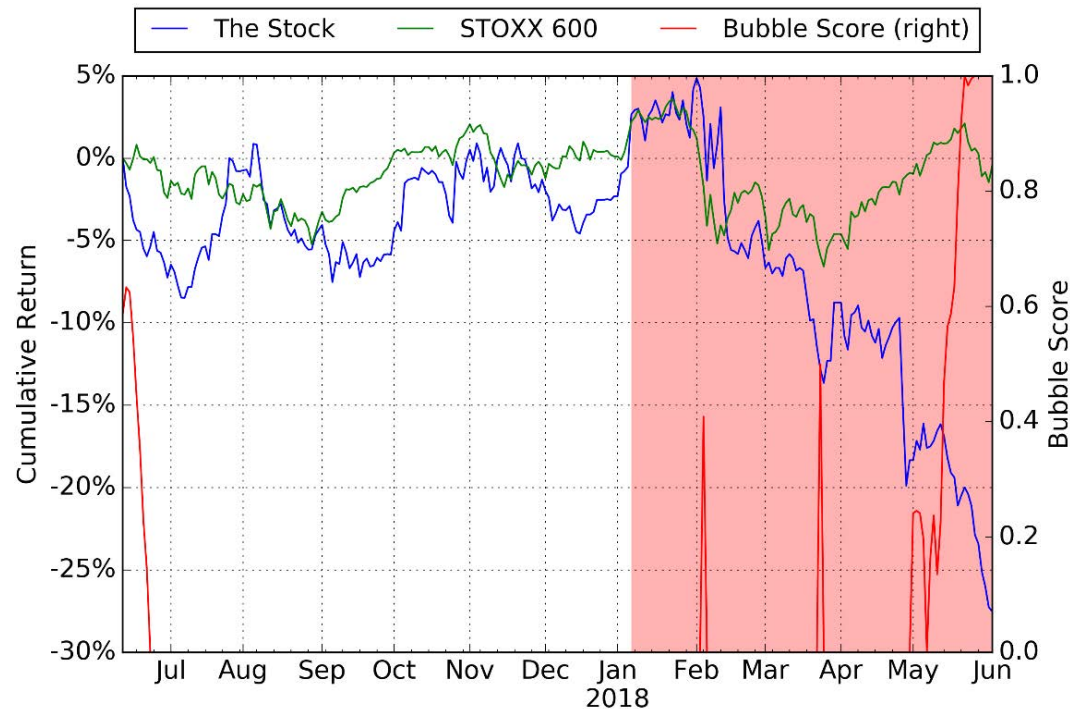
The above graph shows the one year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The red shaded period is the strong negative bubble we identified. The Bubble Score of this five month bubble has reached 100% with a bubble size -29.4%.

Single Stocks - Quadrant 3 stocks

Last month example: strong negative bubble signals with weak fundamentals, Acuity Brands Inc.

The figure below 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 is the strong negative bubble we identified and reported in last month. Note that the stock has started a rebound recently, which is in agreement with our DS LPPLS indicator. But given the weak fundamentals, we can expect an increased volatility in the coming months.
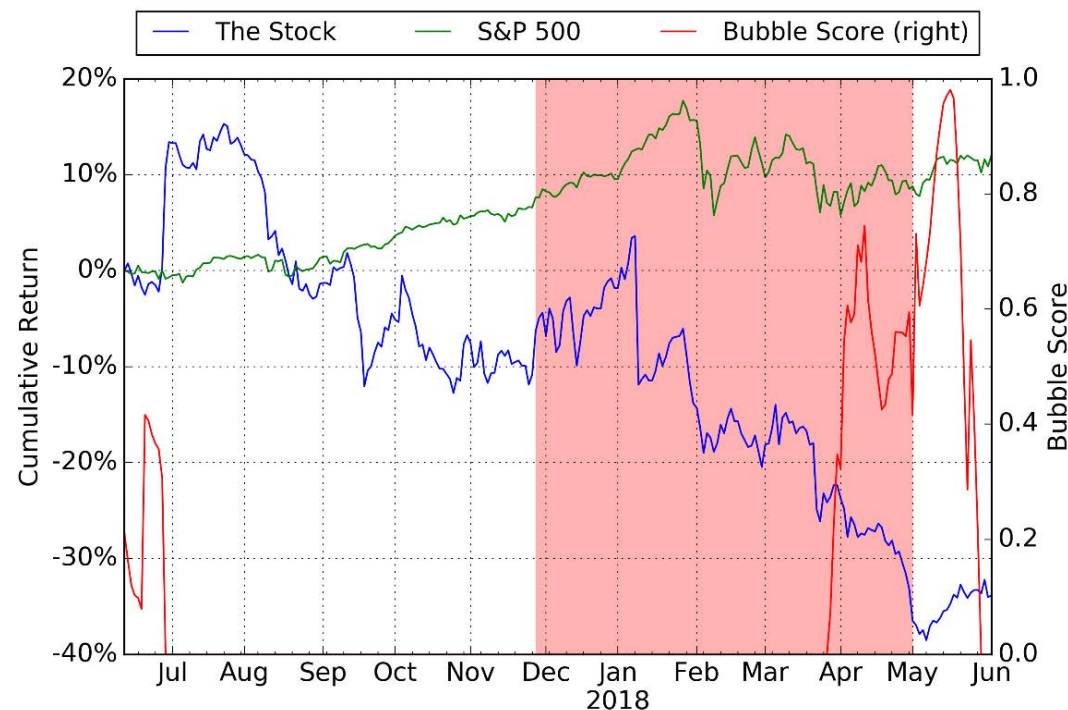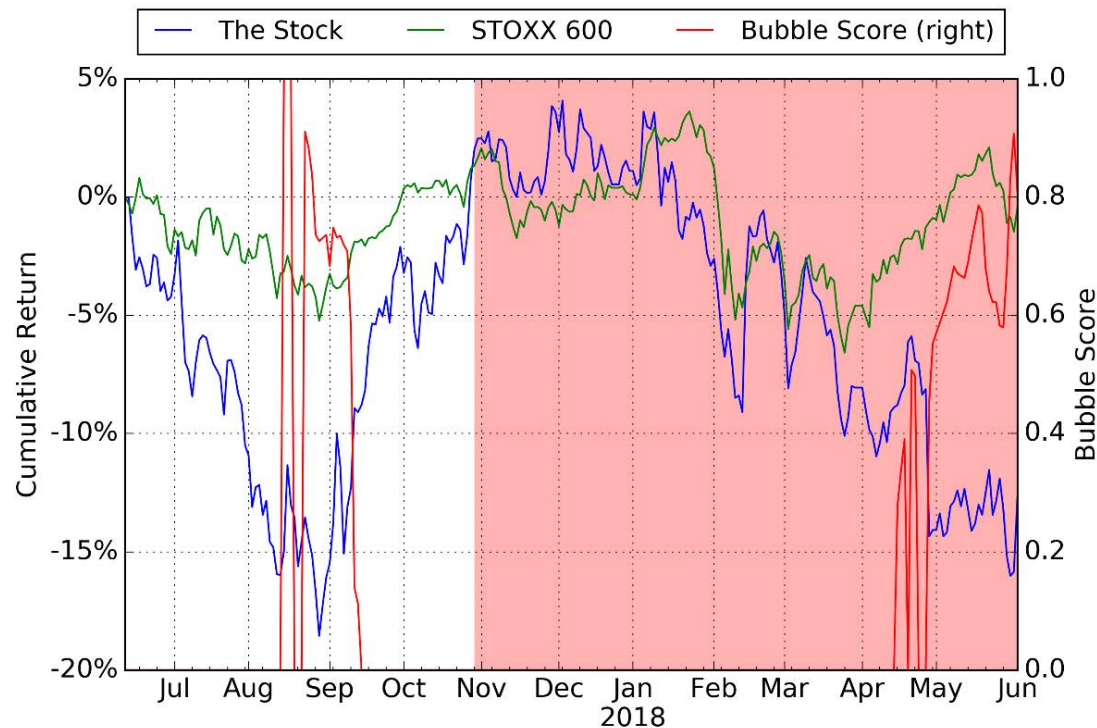
Single Stocks - Quadrant 4 stocks

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
Goodyear Tire & Rubber Co	United States of America	Automobiles & Components	-29.5%	-26.6%	Sep-17	-32.8%	87.8%	4.8%
NetEase Inc	China	Software & Services	-20.6%	-35.0%	Dec-17	-90.8%	98.6%	86.2%
Dentsply Sirona Inc	United States of America	Health Care Equipment & Services	-31.4%	-35.2%	Nov-17	-49.1%	82.0%	58.6%
Bpost SA	Belgium	Transportation	-28.7%	-40.3%	Nov-17	-10.8%	97.3%	79.2%
Deutsche Lufthansa AG	Germany	Transportation	26.1%	-13.7%	Oct-17	-55.7%	99.6%	0.7%
Distribuidora Internacional de Alimentacion SA	Spain	Food & Staples Retailing	-47.6%	-48.9%	Jul-17	-22.9%	65.0%	11.5%
Rexel SA	France	Capital Goods	-11.2%	-14.5%	Oct-17	-81.0%	90.4%	98.9%
Air France KLM SA	France	Transportation	-36.4%	-48.7%	Oct-17	-47.2%	97.7%	9.0%
ASM International NV	Netherlands	Semiconductors & Semiconductor Equipment	-0.4%	-15.2%	Nov-17	-10.8%	96.8%	10.6%
Outokumpu Oyj	Finland	Materials	-14.0%	-29.2%	Aug-17	-19.9%	64.3%	0.1%
Adecco Group AG	Switzerland	Commercial & Professional Services	-17.1%	-20.7%	Jan-18	-28.2%	73.8%	83.6%
Colgate-Palmolive Co	United States of America	Household & Personal Products	-17.9%	-14.6%	Sep-17	-11.3%	79.5%	69.0%
Johnson & Johnson	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	-8.9%	-13.9%	Oct-17	-8.2%	62.9%	63.9%
Southwest Airlines Co	United States of America	Transportation	-15.2%	-16.0%	Nov-17	-61.1%	77.1%	56.9%
Getinge AB	Sweden	Health Care Equipment & Services	-37.1%	-25.7%	Dec-17	-65.3%	80.6%	0.5%
Intrum Justitia AB	Sweden	Commercial & Professional Services	-28.7%	-22.9%	Sep-17	-27.8%	78.4%	0.9%

Single Stocks - Quadrant 4 stocks

Quadrant 4 stocks: strong negative bubble signals with strong fundamentals
Example: Rexel 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 is the strong negative bubble we identified. The Bubble Score of this seven month bubble has reached 81% with a bubble size -14.5%. 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: strong negative bubble signals with strong fundamentals, NetEase Inc.

The figure below plots the one year cumulative return of the stock (blue), NASDAQ 100 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period is the strong negative bubble we identified and reported in last month. While a 7% rebound occurred after our prediction last month, the stock resumed thereafter its descent over the second half of May 2018. We still identify it with strong negative bubble signals this month. We expect this stock to rebound in the future due to the strong fundamentals and following its neglect by investors in previous months.
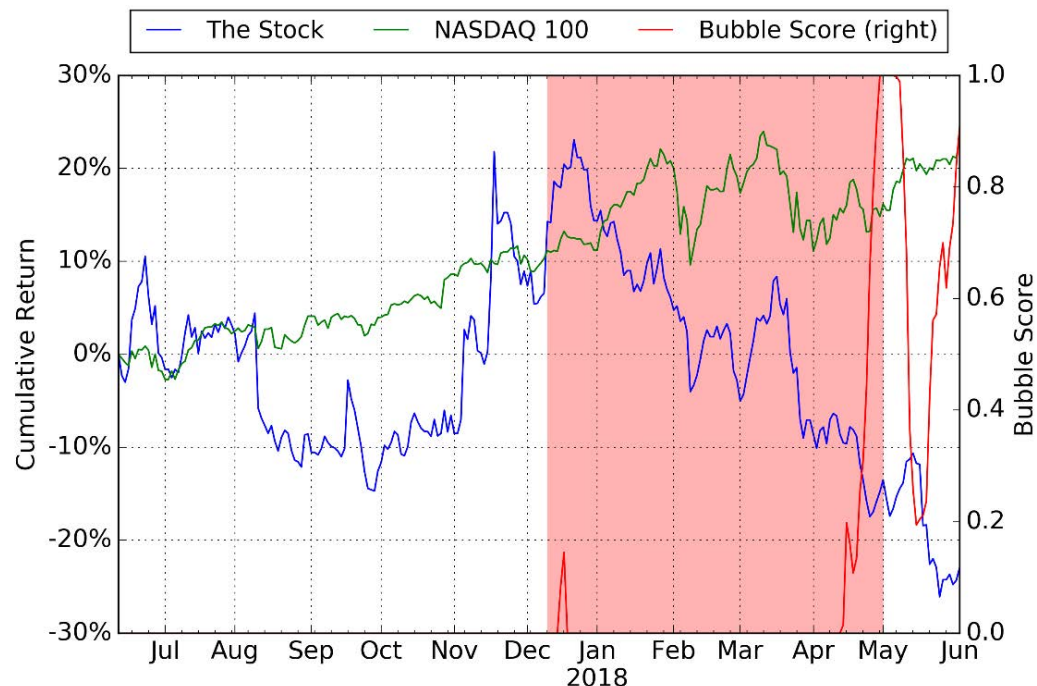
Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	Jun 1st	May 1st	Jun 1st	May 1st	Jun 1st	May 1st	Jun 1st	May 1st	Jun 1st	May 1st
Pharmaceuticals, Biotechnology & Life Sciences	-0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	64.0%	62.9%	56.9%	57.1%
Consumer Services	9.2%	13.2%	0.0%	0.0%	0.0%	0.0%	27.4%	28.8%	47.7%	49.0%
Retailing	34.8%	27.9%	0.0%	0.0%	0.0%	0.0%	17.9%	18.0%	57.6%	57.5%
Transportation	12.2%	14.0%	0.0%	0.0%	0.0%	0.0%	57.4%	56.8%	55.8%	56.1%
Consumer Durables & Apparel	18.1%	20.1%	0.0%	14.3%	0.0%	21.8%	38.1%	37.3%	54.1%	54.0%
Semiconductors & Semiconductor Equipment	36.0%	24.4%	0.0%	0.0%	0.0%	0.0%	64.8%	67.3%	31.0%	28.6%
Technology Hardware & Equipment	25.6%	12.2%	0.0%	0.0%	0.0%	0.0%	71.6%	71.7%	40.0%	39.2%
Automobiles & Components	12.9%	14.6%	0.0%	0.0%	0.0%	0.0%	77.4%	77.8%	50.9%	51.2%
Telecommunication Services	-8.7%	-2.2%	0.0%	0.0%	0.0%	0.0%	55.2%	53.9%	40.9%	38.3%
Energy	19.3%	12.7%	0.0%	0.0%	0.0%	0.0%	50.3%	50.0%	52.5%	52.8%
Software & Services	29.2%	22.6%	0.0%	0.0%	0.0%	0.0%	36.2%	36.7%	47.8%	47.5%
Materials	16.0%	14.6%	0.0%	0.0%	0.0%	0.0%	51.0%	50.7%	46.3%	46.5%
Health Care Equipment & Services	14.7%	16.9%	0.0%	0.0%	0.0%	0.0%	64.9%	62.6%	58.0%	59.6%
Capital Goods	7.5%	8.1%	0.0%	0.0%	0.0%	0.0%	45.7%	46.9%	53.7%	53.7%
Media	-10.1%	-7.9%	0.0%	0.0%	0.0%	0.0%	41.8%	41.9%	52.6%	53.6%
Commercial & Professional Services	7.4%	6.9%	0.0%	0.0%	0.0%	0.0%	28.7%	28.3%	49.4%	52.0%
Food & Staples Retailing	1.2%	3.5%	0.0%	0.0%	0.0%	0.0%	56.7%	57.7%	60.3%	60.0%
Household & Personal Products	-5.3%	-1.3%	0.0%	0.0%	0.0%	0.0%	35.2%	36.3%	49.8%	50.6%
Food, Beverage & Tobacco	-11.3%	-6.5%	-11.1%	0.0%	-27.3%	0.0%	42.5%	42.6%	58.7%	59.3%
Utilities	-5.4%	2.7%	0.0%	0.0%	0.0%	0.0%	52.5%	52.4%	43.2%	43.0%
Insurance	4.2%	12.2%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	-0.3%	3.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	12.6%	17.0%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Banks	5.6%	10.2%	0.0%	0.0%	0.0%	0.0%	-	-	-	-

Sectors

Since Dec 2017, we are using 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 only 1 industry group with a negative bubble score: Food, Beverage & Tobacco, as shown in the figure below.

Portfolio Construction & Performance
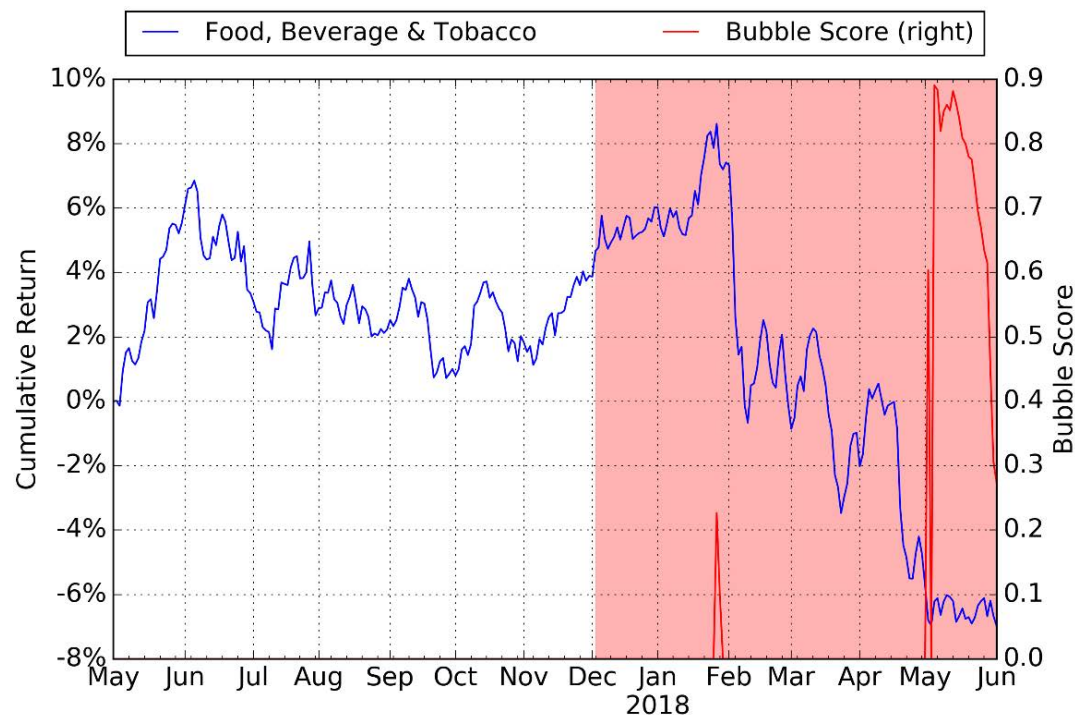
Here we illustrate the methodology of the portfolio construction process based on the results of our previous analyses.

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)and 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.

Since we started to use a new version of bubble signals and algorithm in November 2017, we only present the portfolios we initiated in November 2017 and later.

Portfolio Construction & Performance
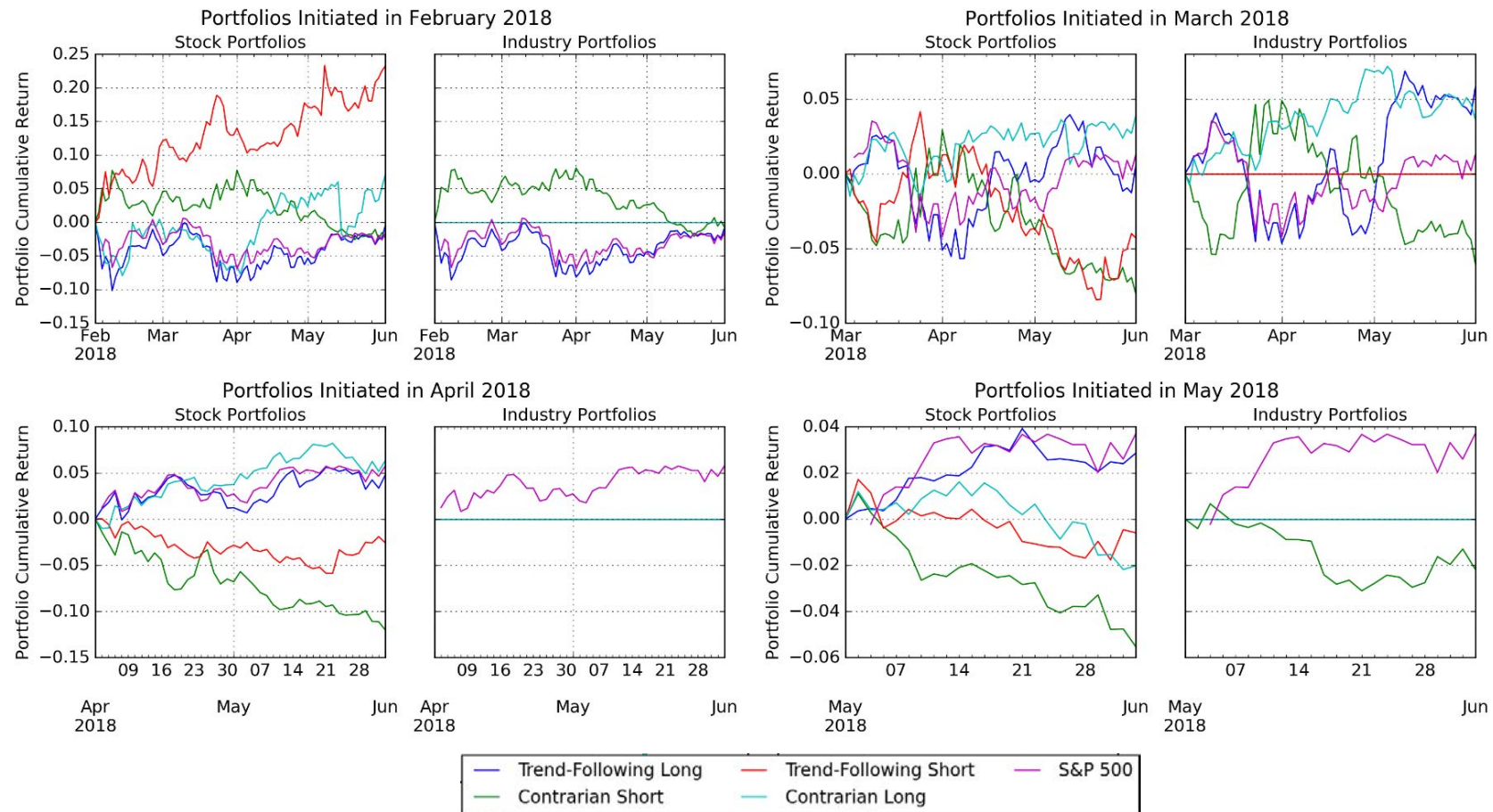
This month, we find that Portfolios initiated in February, March, April and May 2018 are highly volatile, due to the increased market volatilities after the major corrections in February. Contrarian Portfolios are more delicate to use due to their sensitivity to timing the expected reversal and exhibit 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 as the predicted corrections play out.

Visit the Financial Crisis Observatory for more information

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