The FCO Cockpit – Global Bubble Status Report

Ahmed Ahmed, Didier Sornette & Ke Wu
Chair of Entrepreneurial Risk

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The FCO Cockpit –
Global Bubble Status May 1st, 2017

What is this?

This 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 431 systemic assets and 848 single stocks. The systemic assets are bond, equity and commodity indices and 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)*
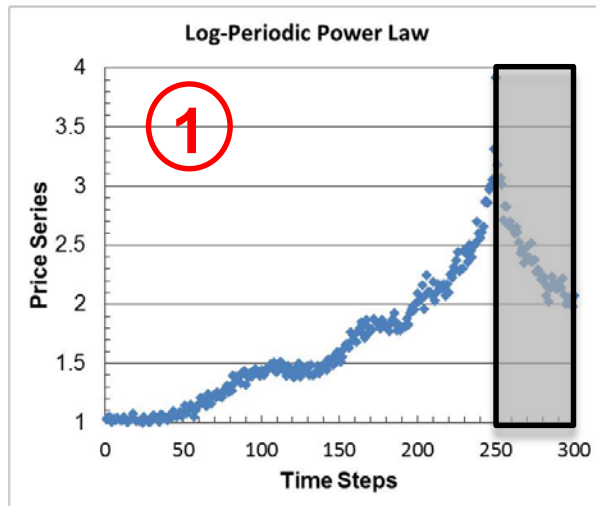
The FCO Cockpit –
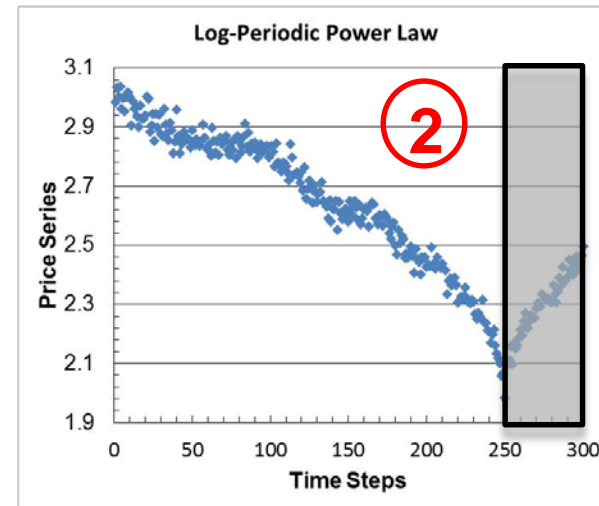# Global Bubble Status May 1st, 2017

How does it work?

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

1. **The price rises faster than exponentially, so the logarithm of the price rises faster than linearly;**
2. **There are accelerating oscillations, with a distinct characteristic.**

A bubble signal is identified if both of our bubble indicators, LPPL-Confidence and LPPL-Trust, are larger than 5%.

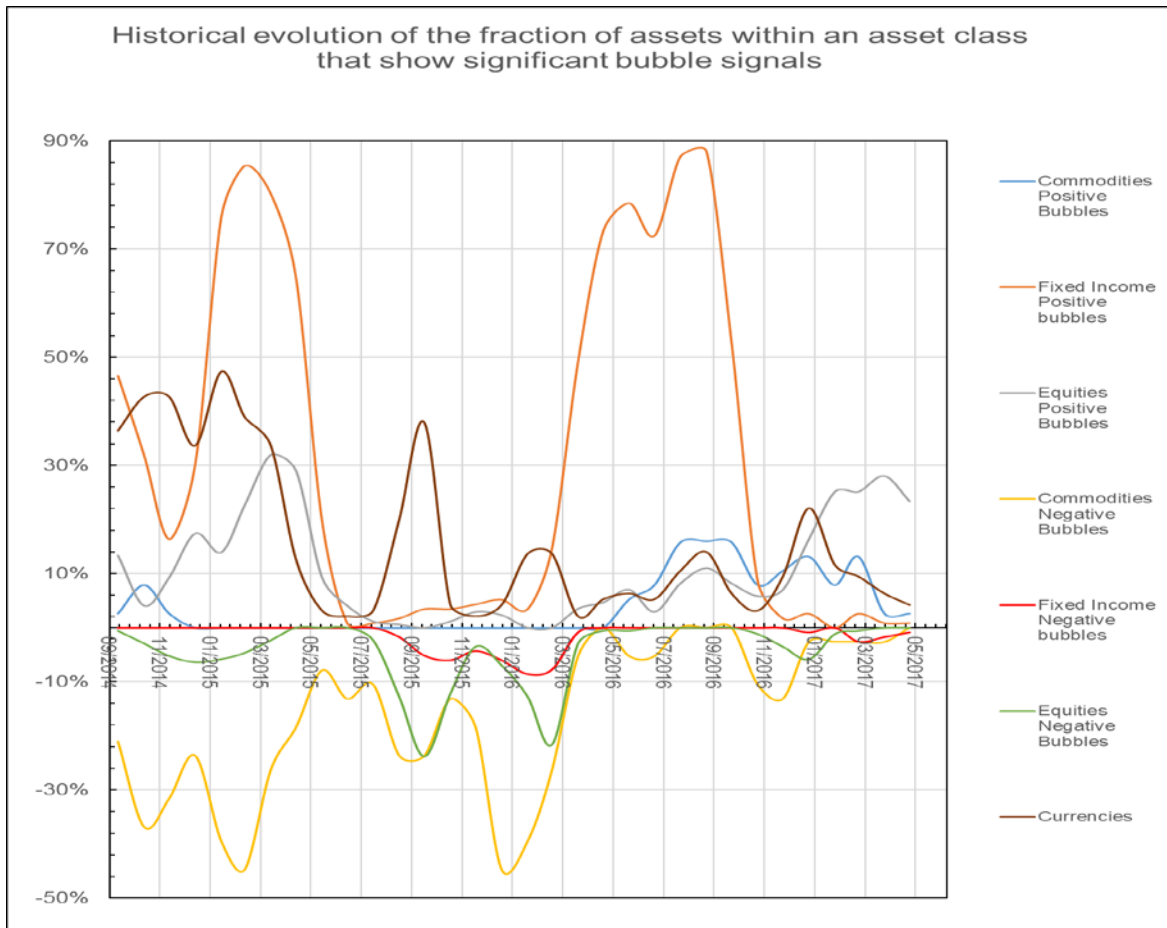A **positive bubble** when
there is imitation in **buying**

A **negative bubble** when
there is imitation in **selling**

General Result

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Historical evolution of the fraction of assets within an asset class that show significant bubble signals

Legend:
- Commodities Positive Bubbles
- Fixed Income Positive bubbles
- Equities Positive Bubbles
- Commodities Negative Bubbles
- Fixed Income Negative bubbles
- Equities Negative Bubbles
- Currencies

The big picture

Mixed bubble signals are now seen in only two bond indices.

The fraction of stocks diagnosed in a positive bubble state seems to stabilize between 20 and 25% over the last few months.

Bubble signals occur now only in one commodity index.

A positive bubble signal is an indication of herding when people start buying because prices go up.
A negative bubble signal is an indication of herding when people start selling because prices go down.

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Other interesting highlights from this report

- Over the last half year, we reported that the strong rally in the governments and corporate bonds cooled down and did not show a bubble signal anymore. This is confirmed in this report;

- Only one commodity index is showing bubble signals. The index showing positive bubble signals is still a metal index. There is no single index showing negative bubble signals this month;

- There is a slight decrease in positive bubble signals in equities compared with last month. The most interesting result is found for the Kuwait stock market index and the STOXX Europe 50 price index, which are showing signs of positive bubbles for the fourth consecutive month. Note that around 60% of the indices that are showing signs of bubbles are in Europe;

- In our analysis of single stocks, we find a stronger positive bubble in the sector *Semiconductors & Semiconductor Equipment*, which we reported in the reports of the previous months. At the same time, we find 17 out of 20 sectors have a stronger positive bubble score this month, indicating that an overall rebound is now developing in the market.

A positive bubble signal is an indication of herding when people start buying because prices go up.
A negative bubble signal is an indication of herding when people start selling because prices go down.

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Results per Asset Class

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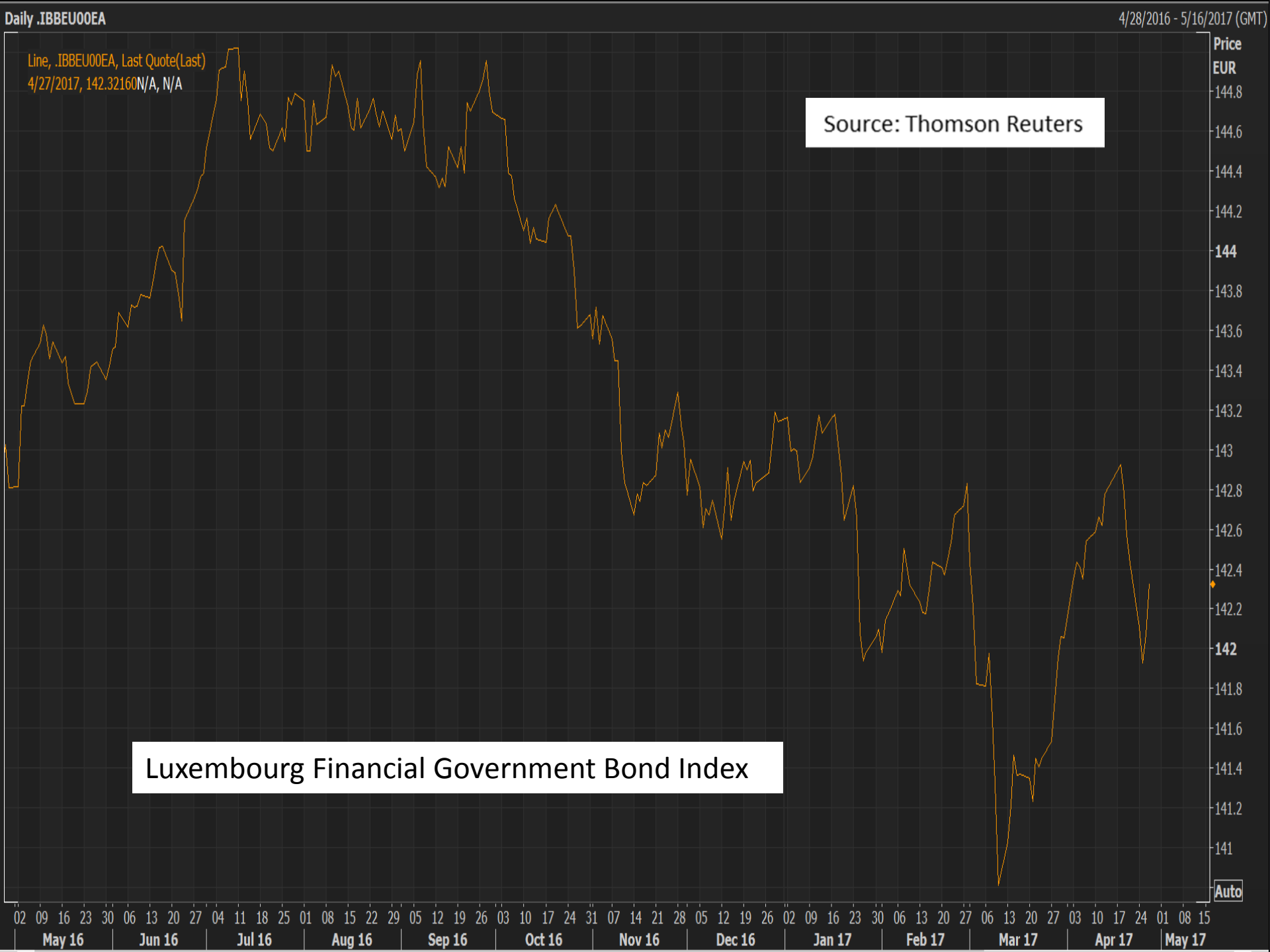# Global Bubble Status May 1st, 2017

Government bonds

Country Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
None			
Negative Bubbles			
iBoxx EUR Luxembourg Index	-0.4%	7.3%	19.0%

This month we see only negative bubble signals in the Luxembourg government bonds, which is showing such signals for the second consecutive month. The figure on the next slide shows the continued downward pressure on the Luxembourg government bonds with increased volatility;

It is worth mentioning that the positive bubble signals that were seen in the French government bonds over the last two months disappeared. Undoubtedly this is related to the results of the first round of the French elections.

Luxembourg Financial Government Bond Index

Daily .IBBEU00EA

Line, .IBBEU00EA, Last Quote(Last)
4/27/2017, 142.32160N/A, N/A

4/28/2016 - 5/16/2017 (GMT)

Source: Thomson Reuters

Price
EUR
144.8
144.6
144.4
144.2
144
143.8
143.6
143.4
143.2
143
142.8
142.6
142.4
142.2
142
141.8
141.6
141.4
141.2
141
Auto

02 09 16 23 30 06 13 20 27 04 11 18 25 01 08 15 22 29 05 12 19 26 03 10 17 24 31 07 14 21 28 05 12 19 26 02 09 16 23 30 06 13 20 27 03 10 17 24 01 08 15
May 16   Jun 16   Jul 16   Aug 16   Sep 16   Oct 16   Nov 16   Dec 16   Jan 17   Feb 17   Mar 17   Apr 17   May 17

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Corporate bonds

Sector Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
iBoxx EUR Financial Services Subordinated Index	8.81%	15.7%	26.5%
Negative Bubbles			
None			

Although the positive bubble signals across both government and corporate bonds faded away, the European financial subordinated index stands unique for the second consecutive month. The figure on the next slide shows the remarkable bubble in the index over the last year. This month, it found more support after the results of the first round of the French elections.

Daily .IBBEU008D — 4/28/2016 - 5/16/2017 (GMT)

Line, .IBBEU008D, Last Quote(Last)
4/27/2017, 280.71780, N/A, N/A

Source: Thomson Reuters

EUR Financial Services Subordinated Index

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Commodities

Commodities Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
Aluminum ER Index	15.8%	18.5%	13.4%
Negative Bubbles			
None			

We can only see positive bubble signals in the Aluminum index, which is showing such signals for the second consecutive month. On the other hand, there is no single index showing negative bubble signals this month. The negative bubble signals that were seen in the Cocoa index over the last five months, disappeared.

DS Bubble Inspectors Viewer - "Bubble end flag - long time scale"

Date: 2017-04-27   Name: Cocoa-ICCO Daily Price U: Indicator: DS LPPL Confidence

Bubble end flag - long time scale

Cocoa US$/MT

FINANCIAL CRISIS OBSERVATORY

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Currencies

FX	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Taiwan Dollar/Euro	11.9%	24.8%	12.5%
Taiwan Dollar/Swiss Franc	8.6%	19.5%	31.8%
US Dollar/Russian Rouble	-15.5%	11.8%	10.0%
Indian Rupee/Euro	8.2%	6.3%	19.2%

There are signs of a positive bubble in the Taiwan Dollar for the fifth consecutive month. Two of the four pairs that are showing bubble signals are crosses with the Taiwan Dollar. In addition, the Indian Rupee and Russian Rouble joined it in the list of emerging markets currencies that are showing positive bubble signals for the first month.

Finally, the positive bubble signals that were shown in the South African Rand over the last two months, and in the Brazilian Real and the Australian Dollar over the last month, disappeared.

DS Bubble Inspectors Viewer – "Bubble end flag - long time scale"

Date: 2017-04-27   Name: INDIAN RUPEE TO EURO   Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼

FINANCIAL CRISIS OBSERVATORY

Indian Rupee / Euro

Prices

DS LPPL Confidence

Price

DS LPPL Confidence

82
80
78
76
74
72
70
68

0.00
-0.02
-0.04
-0.06
-0.08
-0.10
-0.12
-0.14
-0.16

April   July   October   2015   April   July   October   2016   April   July   October   2017   April

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Stocks country indices

Equities Countires Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence	Country
NASDAQ Composite Index	19.5%	32.9%	18.8%	United States
Bucharest SE BET Index	25.7%	25.3%	20.7%	Romania
Amsterdam Exchanges Index	12.9%	23.5%	34.9%	Netherlands
EURO STOXX INDEX	10.7%	17.2%	20.3%	EU
PX Prague SE Index	6.5%	16.9%	18.0%	Czech Republic
Kuwait Main Index	27.4%	16.6%	5.0%	Kuwait
EURO STOXX 50 EUR Price Index	9.2%	16.5%	29.3%	EU
IBEX 35 Index	12.8%	16.2%	43.5%	Spain
FTSE All Share Index	12.1%	14.7%	6.9%	United Kingdom
FTSE 100 Index	11.5%	14.0%	10.4%	United Kingdom
IGPA Index	23.5%	13.4%	21.1%	Chile
Vietnam Index	23.7%	12.7%	8.1%	Vietnam
FTSE Straits Times Index	6.0%	12.4%	10.2%	United States
Taiwan SE Weighted Index	13.4%	10.9%	15.3%	Taiwan
Buenos Aires SE Merval Index	49.2%	9.6%	12.8%	Argentina
OMX Riga_GI	28.9%	9.0%	26.8%	Latvia
STOXX Europe 50 EUR Price Index	5.8%	8.7%	5.7%	EU
CAC 40 Index	10.4%	8.5%	17.6%	France
Korea SE Kospi Index	7.1%	6.7%	26.7%	Korea
FTSE Italia All-Share Index	7.2%	5.8%	9.3%	Italy
Negative Bubbles				
None				

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Stocks country indices

There is a tendency for the appearance of new positive bubbles in equities. The most interesting result is found for the Kuwait stock market index and STOXX Europe 50 price index that are showing signs of positive bubbles for the fourth consecutive month. In addition, the strongest signals are found for the U.S. Nasdaq composite index;

It is worth mentioning that around 60% of the indices that are showing signs of bubbles are in Europe. Undoubtedly the European shares got support over the last two months after both the Dutch and first round of the French elections;

Finally, as we reported last month, the positive bubble signals that were shown in the Hungary and Poland stock market indices over the last five and three months respectively, disappeared.
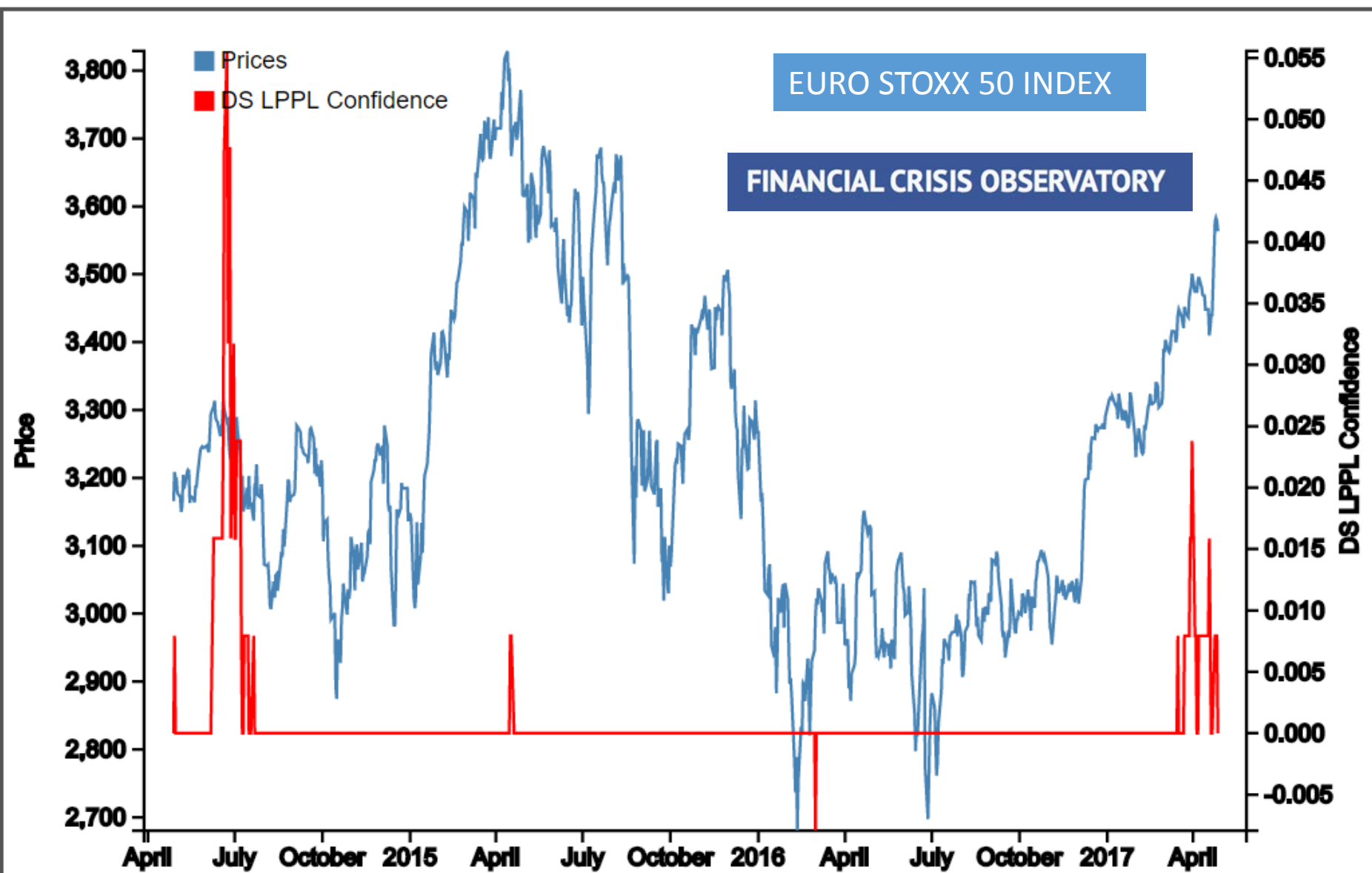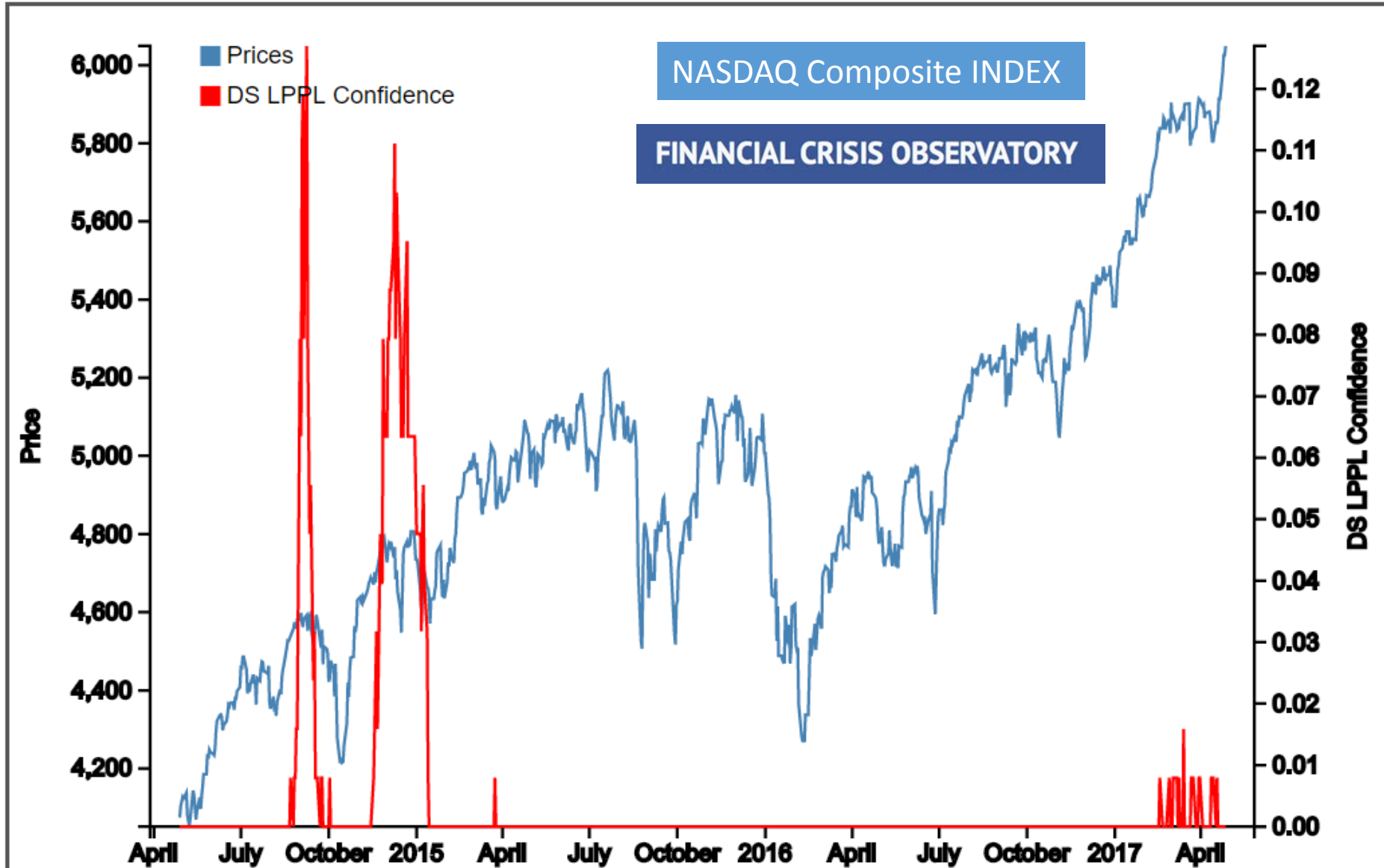
Single Stocks

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What is this?

For 848 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 <u>value score</u> 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;
- A <u>growth score</u> that has characteristics similar to the PEG ratio, which is the Price to Earnings ratio normalized for expected EPS-growth (Earnings per Share).
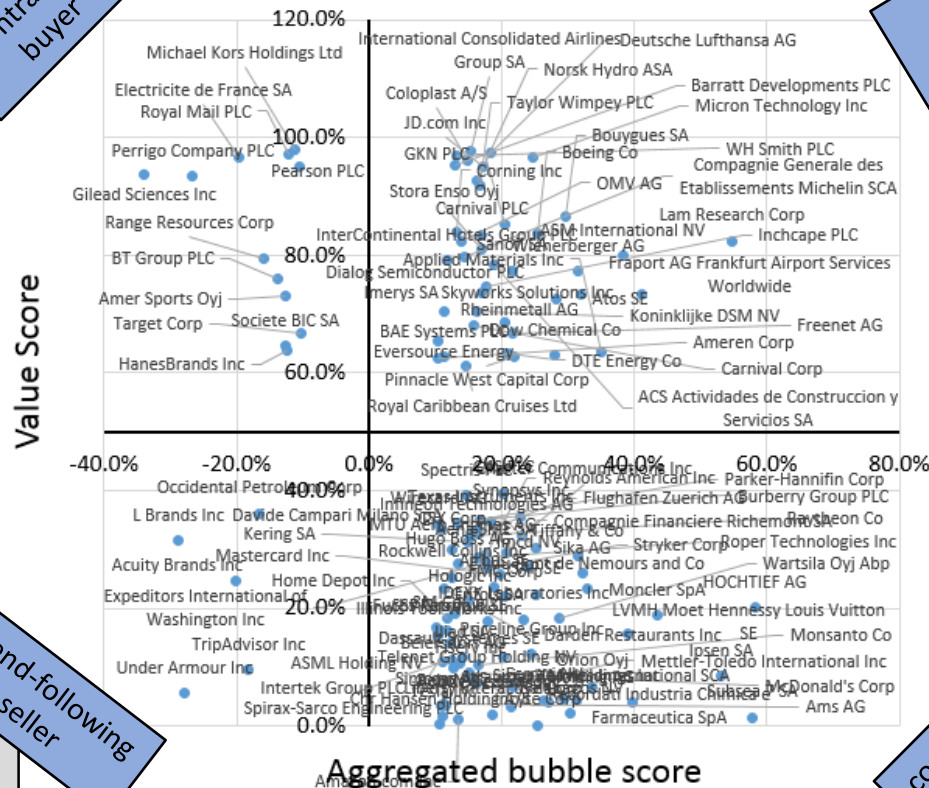
Both scores give a value between zero and one, one being the best of the set and zero the worst, so the higher the score, the higher the financial strength.

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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. OMV AG);
2. Quadrant 2: Stocks with a strong positive bubble score and a weak value score (e.g. Subsea 7 SA);
3. Quadrant 3: Stocks with a strong negative bubble score and a weak value score (e.g. L Brands Inc);
4. Quadrant 4: Stocks with strong negative bubble score and a strong financial strength (e.g. Pearson PLC)

*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%.
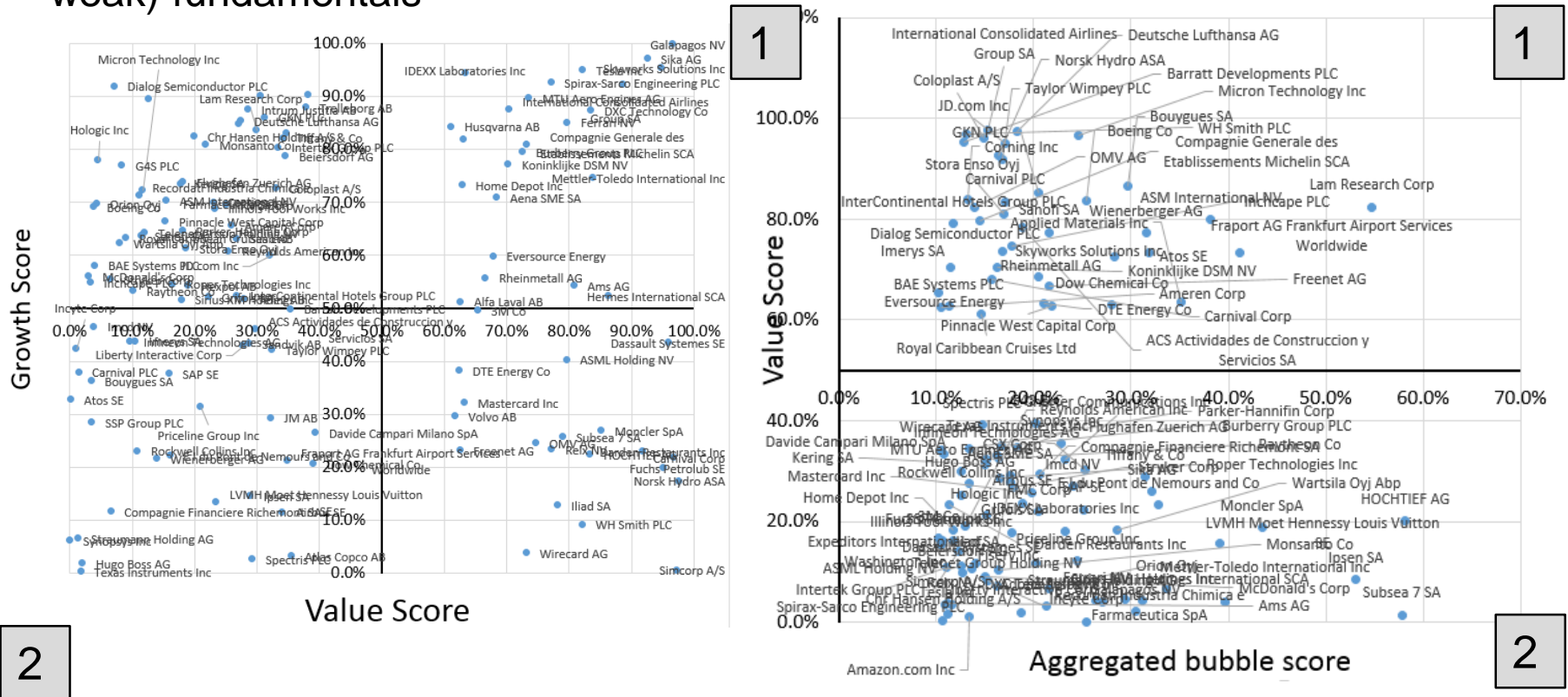
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Each quadrant has its own specs:

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.
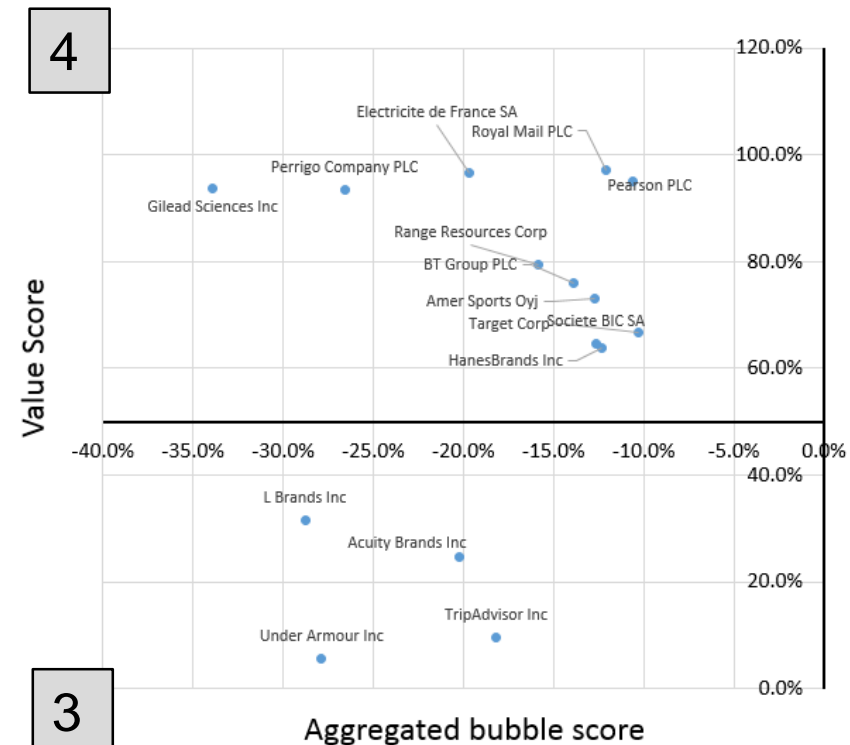
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Quadrant 1 and 2 stocks: strong positive bubble signals with strong (respectively weak) fundamentals

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Quadrant 3 and 4 stocks: strong negative bubble signals with weak respectively strong fundamentals

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals

| Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
JD.com Inc	China	Consumer Discretionary	Retailing	36.7%	17.1%	94.9%	95.3%
Lam Research Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	85.3%	54.7%	82.3%	94.9%
Micron Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	138.1%	24.6%	96.7%	99.8%
Skyworks Solutions Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	39.0%	28.2%	72.6%	79.4%
BAE Systems PLC	United Kingdom	Industrials	Capital Goods	29.5%	11.2%	62.6%	23.1%
Barratt Developments PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	7.4%	12.9%	95.3%	19.8%
Carnival PLC	United Kingdom	Consumer Discretionary	Consumer Services	37.9%	17.0%	83.5%	22.3%
Dialog Semiconductor PLC	United Kingdom	Information Technology	Semiconductors & Semiconductor Equipment	34.6%	16.8%	73.7%	89.6%
Freenet AG	Germany	Telecommunication Services	Telecommunication Services	7.3%	21.6%	66.7%	55.7%
Fraport AG Frankfurt Airport Services Worldwide	Germany	Industrials	Transportation	35.1%	41.1%	73.2%	3.8%
Deutsche Lufthansa AG	Germany	Industrials	Transportation	10.3%	18.3%	97.3%	0.5%
Rheinmetall AG	Germany	Industrials	Capital Goods	19.3%	20.5%	68.5%	70.9%
Coloplast A/S	Denmark	Health Care	Health Care Equipment & Services	18.4%	14.8%	96.0%	43.4%
ACS Actividades de Construccion y Servicios SA	Spain	Industrials	Capital Goods	20.5%	18.9%	78.3%	12.7%
Atos SE	France	Information Technology	Software & Services	53.1%	31.9%	73.3%	80.9%
Bouygues SA	France	Industrials	Capital Goods	30.9%	29.6%	86.4%	52.2%
Compagnie Generale des Etablissements Michelin SCA	France	Consumer Discretionary	Automobiles & Components	25.5%	14.4%	79.7%	40.2%
Imerys SA	France	Materials	Materials	23.7%	11.4%	70.4%	77.1%
Sanofi SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	13.7%	21.6%	77.4%	23.3%
GKN PLC	United Kingdom	Consumer Discretionary	Automobiles & Components	25.1%	20.5%	85.3%	26.8%
ASM International NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	50.1%	38.2%	79.8%	85.0%

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Koninklijke DSM NV	Netherlands	Materials	Materials	20.2%	16.2%	70.5%	87.4%
International Consolidated Airlines Group SA	United Kingdom	Industrials	Transportation	1.6%	15.3%	97.8%	17.3%
InterContinental Hotels Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	46.5%	11.7%	79.1%	25.6%
Inchcape PLC	United Kingdom	Consumer Discretionary	Retailing	24.0%	17.7%	74.8%	24.4%
Stora Enso Oyj	Finland	Materials	Materials	34.4%	17.0%	80.9%	54.1%
Norsk Hydro ASA	Norway	Materials	Materials	41.9%	16.3%	92.7%	97.1%
OMV AG	Austria	Energy	Energy	60.1%	13.9%	82.2%	9.1%
Wienerberger AG	Austria	Materials	Materials	26.3%	31.5%	77.2%	92.6%
WH Smith PLC	United Kingdom	Consumer Discretionary	Retailing	3.6%	13.1%	96.8%	21.7%
Taylor Wimpey PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	6.9%	16.8%	91.9%	22.9%
Ameren Corp	United States of America	Utilities	Utilities	14.7%	10.5%	62.5%	38.1%
Boeing Co	United States of America	Industrials	Capital Goods	37.1%	25.4%	83.6%	87.3%
Carnival Corp	United States of America	Consumer Discretionary	Consumer Services	26.8%	15.7%	67.9%	59.8%
Dow Chemical Co	United States of America	Materials	Materials	17.6%	28.0%	63.0%	73.1%
DTE Energy Co	United States of America	Utilities	Utilities	18.8%	21.0%	63.3%	32.1%
Eversource Energy	United States of America	Utilities	Utilities	6.0%	10.3%	65.4%	49.5%
Corning Inc	United States of America	Information Technology	Technology Hardware & Equipment	52.7%	13.2%	84.0%	74.5%
Pinnacle West Capital Corp	United States of America	Utilities	Utilities	18.9%	21.8%	62.7%	51.2%
Royal Caribbean Cruises Ltd	United States of America	Consumer Discretionary	Consumer Services	40.2%	14.6%	61.2%	84.2%
Intrum Justitia AB	Sweden	Industrials	Commercial & Professional Services	22.8%	33.5%	61.8%	29.5%
JM AB	Sweden	Consumer Discretionary	Consumer Durables & Apparel	33.6%	36.1%	88.7%	92.2%
Trelleborg AB	Sweden	Industrials	Capital Goods	41.1%	29.5%	63.2%	81.8%

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals, example Carnival Corp.
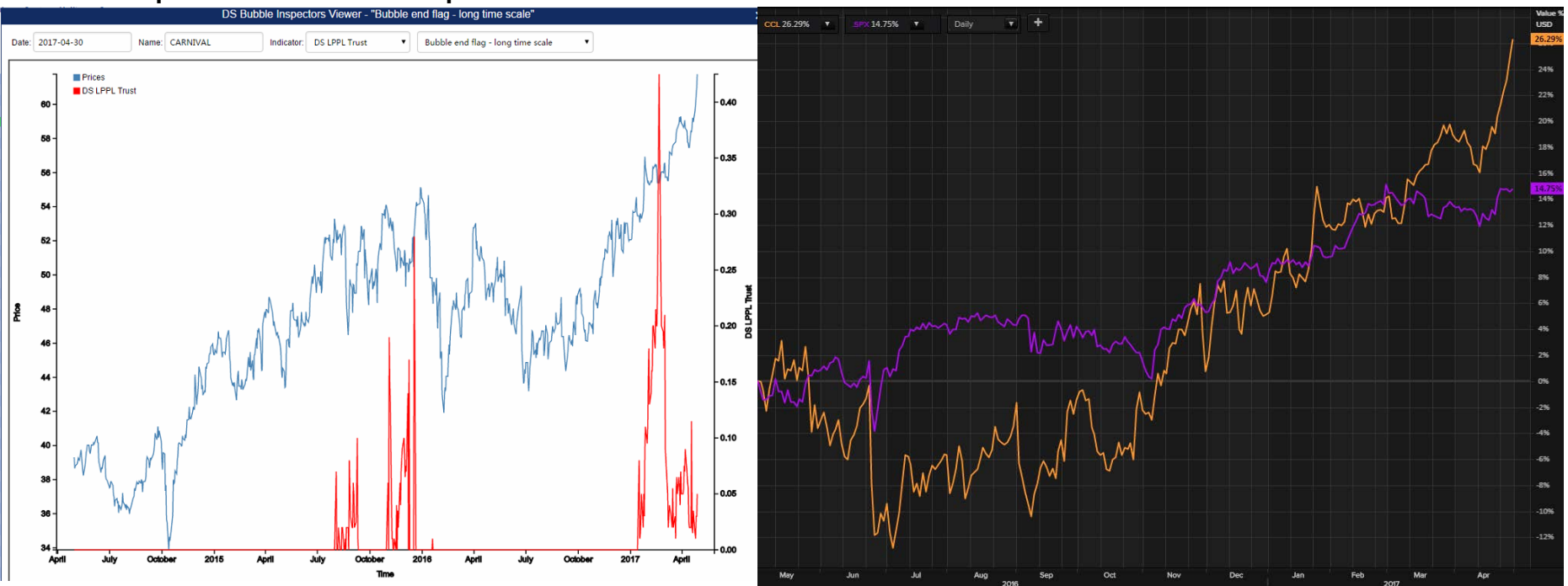
The left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning, indicating the convergence towards the end of a bubble-like regime. The right graph shows the outperformance of the stock over the last year (orange) with respect to the S&P 500 benchmark (purple), which is almost 12%.
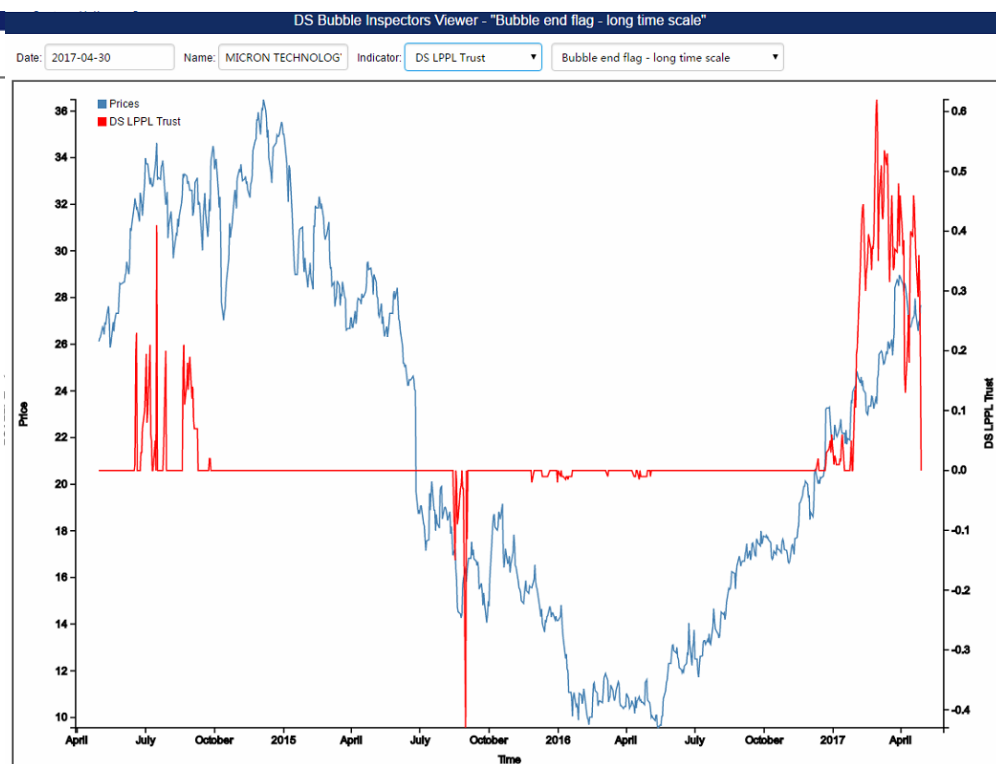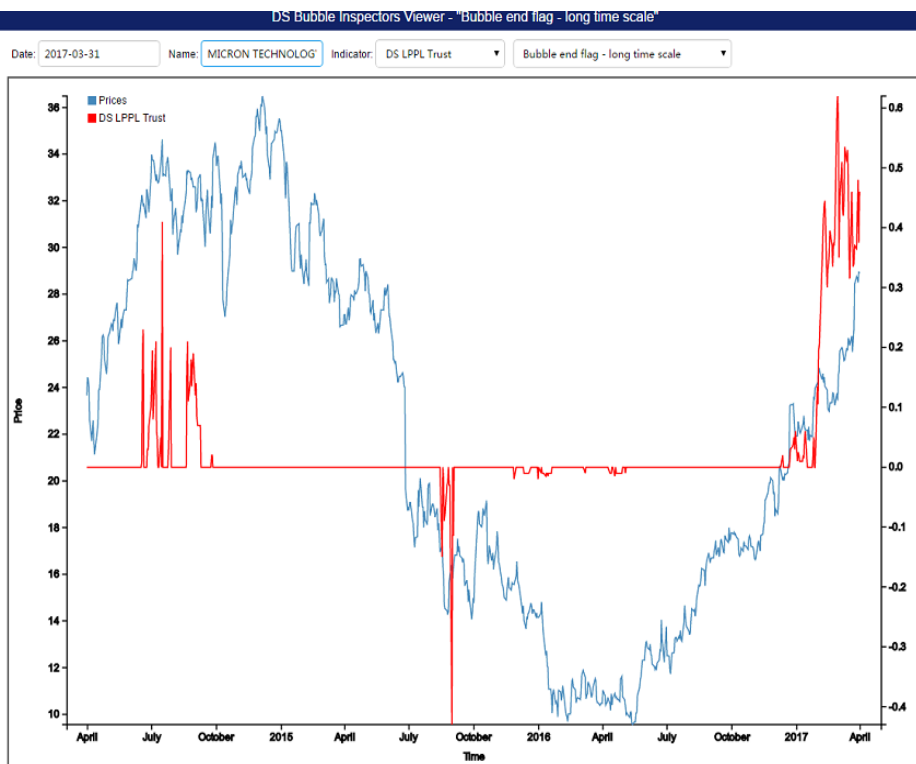
Last month example: strong positive bubble signals with strong fundamentals, Micron Technology Inc.

Note that a correction has occurred, in synchrony with our DS LPPL trust indicator, notwithstanding the strong fundamentals. This suggests a tactical buy as the stock is expected to rebound after further correcting.

Last month signal (1st Apr. 2017)

This month signal (1st May. 2017)

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

This month we gain observe an abnormally large number of stocks in this Quadrant.

This suggests that the fundamentals are still dominantly weak while there is a general positive investment sentiment, possibly in denial of the weakness of the existing recovery.

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Adobe Systems Inc	United States of America	Information Technology	Software & Services	42.8%	29.4%	4.6%	77.9%
Amazon.com Inc	United States of America	Consumer Discretionary	Retailing	53.7%	13.4%	1.1%	42.2%
Charter Communications Inc	United States of America	Consumer Discretionary	Media	48.8%	23.2%	32.2%	59.9%
CSX Corp	United States of America	Industrials	Transportation	85.8%	25.2%	30.1%	83.5%
Expeditors International of Washington Inc	United States of America	Industrials	Transportation	12.5%	17.7%	27.8%	42.8%
Fiserv Inc	United States of America	Information Technology	Software & Services	21.2%	20.2%	11.8%	72.2%
Hologic Inc	United States of America	Health Care	Health Care Equipment & Services	33.1%	15.1%	21.1%	31.4%
IDEXX Laboratories Inc	United States of America	Health Care	Health Care Equipment & Services	107.6%	23.3%	18.0%	51.5%
Incyte Corp	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	71.8%	25.4%	0.1%	6.0%
Liberty Interactive Corp	United States of America	Consumer Discretionary	Retailing	53.3%	18.7%	1.9%	0.2%
Priceline Group Inc	United States of America	Consumer Discretionary	Retailing	40.2%	24.5%	12.1%	64.2%
Sirius XM Holdings Inc	United States of America	Consumer Discretionary	Media	26.3%	31.2%	4.1%	58.0%
Synopsys Inc	United States of America	Information Technology	Software & Services	52.7%	22.9%	35.5%	49.8%
Tesla Inc	United States of America	Consumer Discretionary	Automobiles & Components	26.8%	11.1%	1.5%	37.9%
Texas Instruments Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	34.9%	18.3%	34.7%	78.7%
Galapagos NV	Belgium	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	102.7%	30.4%	2.1%	1.8%
Telenet Group Holding NV	Belgium	Consumer Discretionary	Media	25.5%	16.2%	7.2%	91.9%
Burberry Group PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	33.1%	16.6%	35.0%	21.2%
Beiersdorf AG	Germany	Consumer Staples	Household & Personal Products	14.4%	12.7%	9.8%	43.6%
Hugo Boss AG	Germany	Consumer Discretionary	Consumer Durables & Apparel	23.8%	13.4%	27.5%	85.3%
Fuchs Petrolub SE	Germany	Materials	Materials	21.1%	10.7%	16.0%	37.5%
HOCHTIEF AG	Germany	Industrials	Capital Goods	46.0%	58.2%	20.0%	82.3%
Infineon Technologies AG	Germany	Information Technology	Semiconductors & Semiconductor Equipment	46.7%	16.2%	33.1%	72.6%
MTU Aero Engines AG	Germany	Industrials	Capital Goods	56.8%	12.6%	29.8%	46.0%
SAP SE	Germany	Information Technology	Software & Services	30.3%	25.1%	22.3%	52.0%
Wirecard AG	Germany	Information Technology	Software & Services	42.4%	10.5%	34.2%	11.4%
Chr Hansen Holding A/S	Denmark	Materials	Materials	13.2%	10.7%	0.2%	32.7%

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals (cont'd)

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Simcorp A/S	Denmark	Information Technology	Software & Services	44.6%	10.9%	3.5%	36.2%
Aena SME SA	Spain	Industrials	Transportation	29.3%	17.6%	29.0%	14.5%
Grifols SA	Spain	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	26.9%	17.8%	17.8%	73.5%
Airbus SE	Netherlands	Industrials	Capital Goods	33.1%	18.8%	23.6%	13.3%
Dassault Systemes SE	France	Information Technology	Software & Services	17.5%	13.6%	10.6%	43.8%
Iliad SA	France	Telecommunication Services	Telecommunication Services	16.7%	14.1%	11.6%	63.6%
Ipsen SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	102.1%	53.1%	8.5%	76.9%
Kering SA	France	Consumer Discretionary	Consumer Durables & Apparel	88.7%	15.0%	31.4%	86.0%
LVMH Moet Hennessy Louis Vuitton SE	France	Consumer Discretionary	Consumer Durables & Apparel	51.6%	39.1%	15.6%	70.2%
Hermes International SCA	France	Consumer Discretionary	Consumer Durables & Apparel	38.7%	39.7%	4.0%	46.5%
G4S PLC	United Kingdom	Industrials	Commercial & Professional Services	60.0%	20.3%	39.5%	26.4%
ASML Holding NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	38.4%	12.6%	11.2%	71.2%
Imcd NV	Netherlands	Industrials	Capital Goods	40.1%	24.0%	26.9%	52.4%
Relx NV	Netherlands	Industrials	Commercial & Professional Services	19.6%	11.6%	3.4%	54.8%
Davide Campari Milano SpA	Italy	Consumer Staples	Food, Beverage & Tobacco	26.9%	10.8%	33.5%	80.3%
Moncler SpA	Italy	Consumer Discretionary	Consumer Durables & Apparel	61.2%	43.4%	18.8%	61.2%
Ferrari NV	Italy	Consumer Discretionary	Automobiles & Components	73.7%	26.4%	4.4%	69.6%
Recordati Industria Chimica e Farmaceutica SpA	Italy	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	53.8%	15.3%	8.1%	62.3%
Intertek Group PLC	United Kingdom	Industrials	Commercial & Professional Services	23.4%	12.3%	14.0%	21.5%
Orion Oyj	Finland	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	75.0%	33.7%	6.7%	11.6%
Wartsila Oyj Abp	Finland	Industrials	Capital Goods	48.2%	28.6%	18.3%	73.8%
Subsea 7 SA	United Kingdom	Energy	Energy	93.2%	57.8%	1.4%	6.5%
Ams AG	Austria	Information Technology	Semiconductors & Semiconductor Equipment	152.5%	11.2%	3.7%	28.4%
Compagnie Financiere Richemont SA	Switzerland	Consumer Discretionary	Consumer Durables & Apparel	28.0%	20.7%	29.4%	2.5%
Flughafen Zuerich AG	Switzerland	Industrials	Transportation	23.7%	16.4%	32.5%	42.1%
Sika AG	Switzerland	Materials	Materials	55.0%	32.2%	25.9%	65.6%
Straumann Holding AG	Switzerland	Health Care	Health Care Equipment & Services	57.7%	27.0%	3.9%	69.1%
Spirax-Sarco Engineering PLC	United Kingdom	Industrials	Capital Goods	51.9%	11.1%	11.0%	23.0%

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals (cont'd)

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
SSP Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	51.8%	11.8%	16.2%	22.1%
Spectris PLC	United Kingdom	Information Technology	Technology Hardware & Equipment	46.1%	14.7%	39.2%	20.5%
Rockwell Collins Inc	United States of America	Industrials	Capital Goods	16.0%	12.5%	25.2%	69.5%
E I du Pont de Nemours and Co	United States of America	Materials	Materials	20.1%	32.8%	23.2%	69.9%
Darden Restaurants Inc	United States of America	Consumer Discretionary	Consumer Services	34.9%	11.3%	23.3%	68.8%
DXC Technology Co	United States of America	Information Technology	Software & Services	126.1%	21.4%	3.2%	55.9%
FMC Corp	United States of America	Materials	Materials	68.3%	20.5%	21.9%	80.8%
Home Depot Inc	United States of America	Consumer Discretionary	Retailing	17.6%	11.8%	18.2%	64.6%
Illinois Tool Works Inc	United States of America	Industrials	Capital Goods	32.1%	10.5%	15.4%	66.4%
Mastercard Inc	United States of America	Information Technology	Software & Services	19.7%	19.8%	25.6%	60.7%
McDonald's Corp	United States of America	Consumer Discretionary	Consumer Services	9.4%	15.0%	9.1%	63.2%
3M Co	United States of America	Industrials	Capital Goods	17.3%	10.2%	16.6%	54.5%
Monsanto Co	United States of America	Materials	Materials	23.7%	16.4%	10.3%	53.2%
Mettler-Toledo International Inc	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	42.9%	21.6%	6.6%	55.3%
Parker-Hannifin Corp	United States of America	Industrials	Capital Goods	39.3%	13.4%	34.3%	82.1%
Reynolds American Inc	United States of America	Consumer Staples	Food, Beverage & Tobacco	30.8%	12.9%	19.0%	54.2%
Roper Technologies Inc	United States of America	Industrials	Capital Goods	23.7%	16.5%	28.7%	87.5%
Raytheon Co	United States of America	Industrials	Capital Goods	21.7%	15.2%	32.3%	29.2%
Stryker Corp	United States of America	Health Care	Health Care Equipment & Services	24.5%	17.9%	26.8%	63.1%
Tiffany & Co	United States of America	Consumer Discretionary	Retailing	27.2%	31.4%	28.8%	43.3%
Alfa Laval AB	Sweden	Industrials	Capital Goods	41.7%	13.3%	35.6%	3.2%
Hexpol AB	Sweden	Materials	Materials	11.9%	12.0%	28.1%	51.7%
Husqvarna AB	Sweden	Consumer Discretionary	Consumer Durables & Apparel	36.2%	10.1%	38.0%	87.9%
Saab AB	Sweden	Industrials	Capital Goods	59.1%	21.8%	30.7%	90.0%
Sandvik AB	Sweden	Industrials	Capital Goods	64.4%	26.5%	27.2%	84.7%
Atlas Copco AB	Sweden	Industrials	Capital Goods	56.7%	38.6%	12.7%	89.4%
Tele2 AB	Sweden	Telecommunication Services	Telecommunication Services	20.1%	14.4%	34.8%	82.9%
Volvo AB	Sweden	Industrials	Capital Goods	48.8%	45.1%	38.2%	90.2%

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals, example Texas Instruments Inc.


The left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning. The right graph shows the outperformance of the stock over the last year (orange) with respect to the S&P500 benchmark (purple), it is almost 11% up. 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, Adobe Systems Inc.

Note that the stock price went up again, which is in contradiction with our DS LPPL trust indicator and weak fundamentals. This stock is still identified with strong positive bubble signals and weak fundamentals this month, suggesting there is significant downward risks for this stock.

Last month signal (1st Apr. 2017)   This month signal (1st May. 2017)
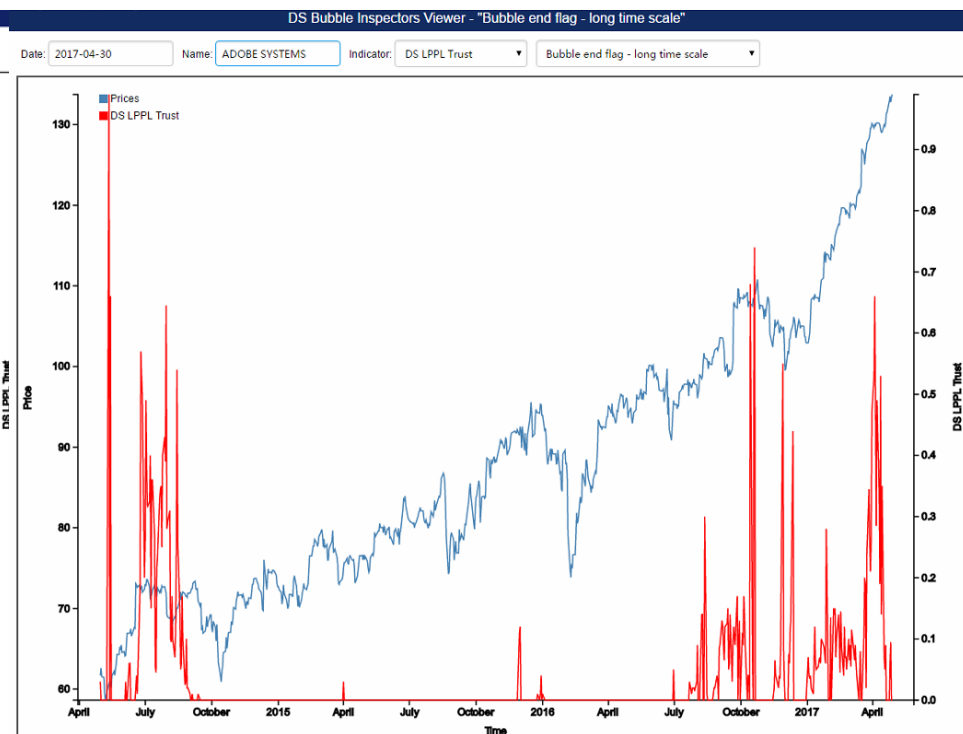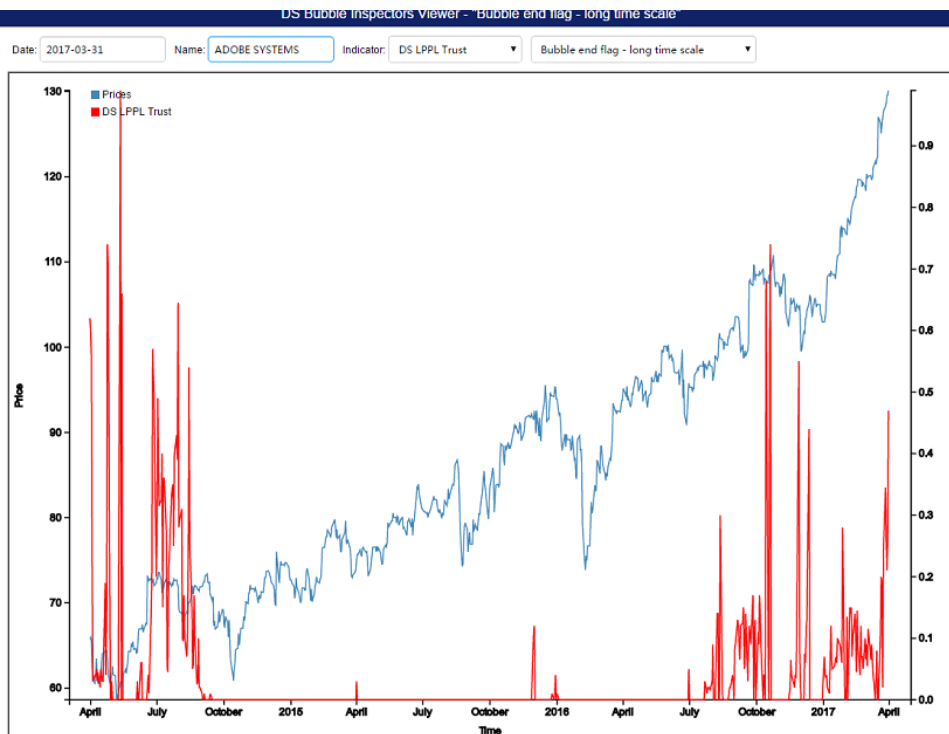
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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
TripAdvisor Inc	United States of America	Consumer Discretionary	Retailing	-29.2%	-18.2%	9.6%	8.1%
Acuity Brands Inc	United States of America	Industrials	Capital Goods	-28.5%	-20.2%	24.6%	34.4%
L Brands Inc	United States of America	Consumer Discretionary	Retailing	-33.6%	-28.8%	31.5%	4.2%
Under Armour Inc	United States of America	Consumer Discretionary	Consumer Durables & Apparel	-51.9%	-27.9%	5.5%	12.5%

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

Note that the correction has started to occur, in synchrony with our DS LPPL trust indicator, but in contradiction with the weak fundamentals. This is an example illustrating the power of market psychology over fundamentals. However, one should remain cautious as there is still downward risk for this stock.

Last month signal (1st Apr. 2017)   This month signal (1st May. 2017)
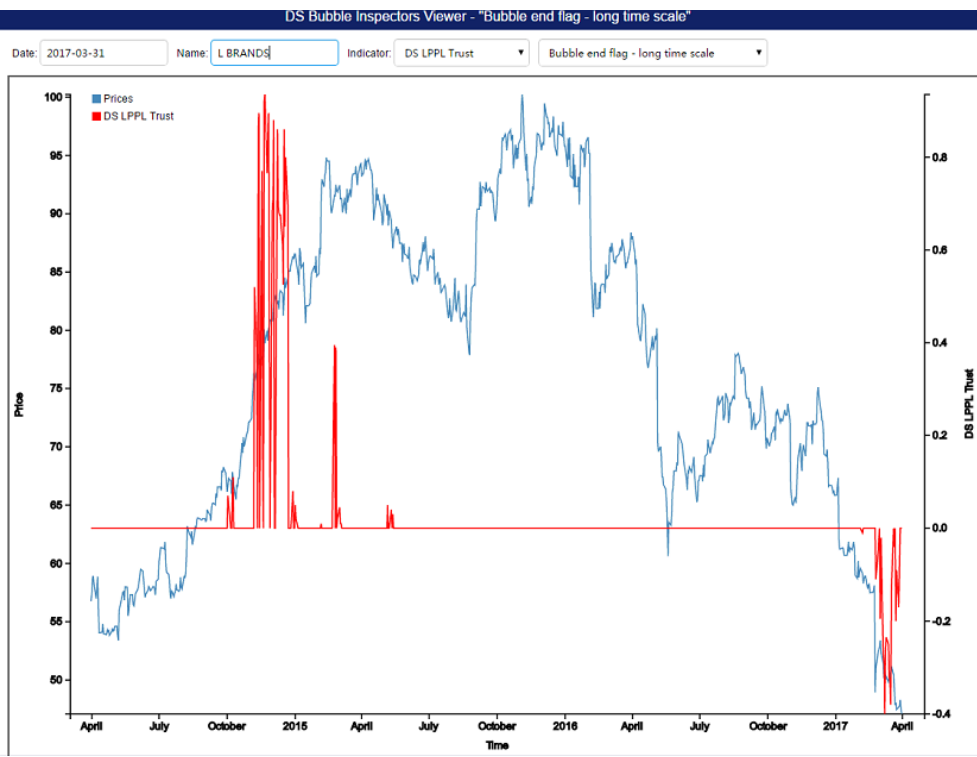
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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

| Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
BT Group PLC	United Kingdom	Telecommunication Services	Telecommunication Services	-29.8%	-13.9%	76.1%	15.8%
Societe BIC SA	France	Industrials	Commercial & Professional Services	-16.8%	-12.7%	64.5%	34.0%
Electricite de France SA	France	Utilities	Utilities	-33.2%	-19.7%	96.5%	0.4%
Amer Sports Oyj	Finland	Consumer Discretionary	Consumer Durables & Apparel	-24.0%	-12.7%	73.1%	46.9%
Pearson PLC	United Kingdom	Consumer Discretionary	Media	-21.5%	-10.6%	95.0%	16.0%
Royal Mail PLC	United Kingdom	Industrials	Transportation	-17.8%	-12.1%	97.2%	16.5%
HanesBrands Inc	United States of America	Consumer Discretionary	Consumer Durables & Apparel	-26.1%	-12.4%	63.8%	68.4%
Perrigo Company PLC	Ireland; Republic of	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-23.3%	-26.6%	93.4%	6.1%
Range Resources Corp	United States of America	Energy	Energy	-35.0%	-15.8%	79.4%	95.5%
Target Corp	United States of America	Consumer Discretionary	Retailing	-31.3%	-10.3%	66.6%	2.8%
Fingerprint Cards AB	Sweden	Information Technology	Technology Hardware & Equipment	-64.1%	-42.3%	99.2%	0.6%

Sectors

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| GICS Industry Group Name	Yearly Return		Bubble Score		Value Score		Growth Score	
	May 1st	Apr 1st	May 1st	Apr 1st	May 1st	Apr 1st	May 1st	Apr 1st
Pharmaceuticals, Biotechnology & Life Sciences	19.8%	19.3%	4.6%	3.9%	40.0%	38.1%	50.8%	49.7%
Consumer Services	17.9%	8.9%	4.1%	2.9%	44.4%	45.3%	50.7%	50.7%
Retailing	4.8%	0.3%	1.5%	1.1%	43.0%	39.7%	43.2%	45.3%
Transportation	15.6%	13.9%	6.5%	5.2%	56.3%	52.1%	40.3%	39.9%
Consumer Durables & Apparel	13.9%	9.0%	6.6%	2.3%	53.0%	48.0%	53.6%	55.5%
Semiconductors & Semiconductor Equipment	70.3%	72.8%	17.6%	16.3%	45.0%	40.3%	74.6%	73.2%
Technology Hardware & Equipment	29.3%	29.1%	2.5%	6.0%	54.0%	50.9%	45.6%	49.3%
Automobiles & Components	18.8%	19.3%	6.7%	5.8%	68.0%	66.3%	59.1%	59.9%
Telecommunication Services	1.4%	1.1%	1.5%	0.7%	62.0%	65.7%	38.4%	32.5%
Energy	6.7%	22.5%	0.4%	0.4%	70.0%	75.1%	66.4%	69.8%
Software & Services	27.9%	19.8%	6.3%	4.5%	35.0%	32.9%	49.1%	49.0%
Materials	24.5%	31.2%	5.0%	3.9%	55.3%	58.4%	56.3%	56.7%
Health Care Equipment & Services	14.7%	14.2%	4.9%	2.5%	41.0%	41.9%	52.6%	54.3%
Capital Goods	25.9%	23.8%	6.9%	6.1%	44.0%	47.0%	48.5%	47.6%
Media	8.1%	9.0%	3.0%	3.4%	53.7%	54.2%	47.7%	44.3%
Commercial & Professional Services	13.4%	10.0%	4.9%	2.6%	40.5%	39.4%	42.5%	42.9%
Food & Staples Retailing	6.4%	3.0%	1.0%	-0.2%	57.5%	58.5%	42.7%	43.4%
Household & Personal Products	7.1%	6.7%	2.7%	0.9%	21.6%	20.9%	45.2%	44.9%
Food, Beverage & Tobacco	7.3%	5.2%	1.9%	1.2%	38.1%	38.9%	49.4%	50.0%
Utilities	4.6%	6.0%	3.9%	1.3%	73.0%	77.2%	39.3%	37.1%

By aggregating the calculations that were done at the single stock level in the previous section, we can see the bubble, value and growth score at the sector level. The results in the previous report are also presented here for comparison.

- The sector *Semiconductors & Semiconductor Equipment* we reported in last four months has a stronger bubble score, which demonstrates that the strong momentums in this industry continues, with a higher probability of corrections.
- Moreover, we find that 17 out of 20 sectors have a stronger bubble score this month, and all of the sectors are performing positive bubble signals, indicating a overall rebound is happening in the market recently.
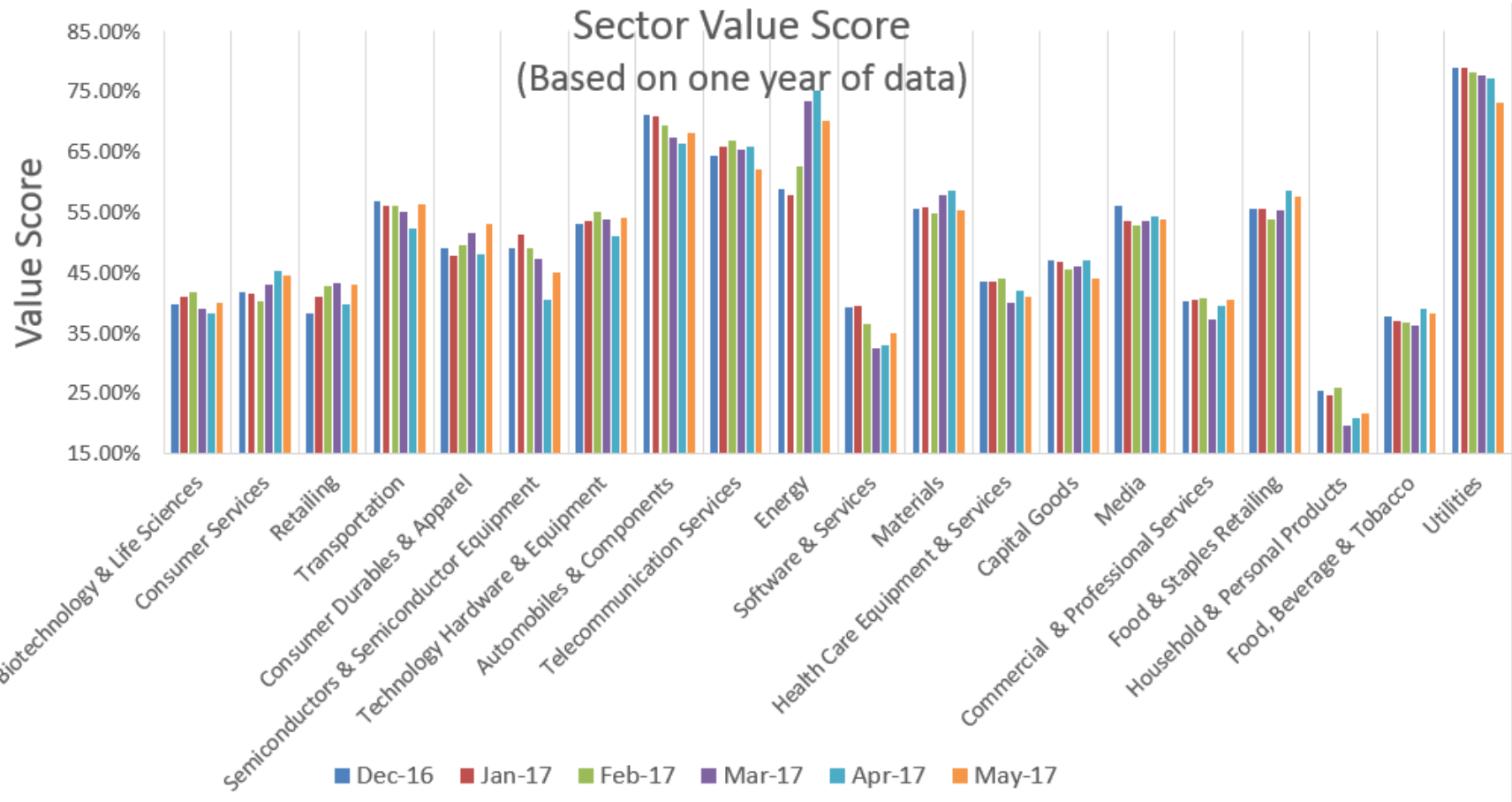
The FCO Cockpit –
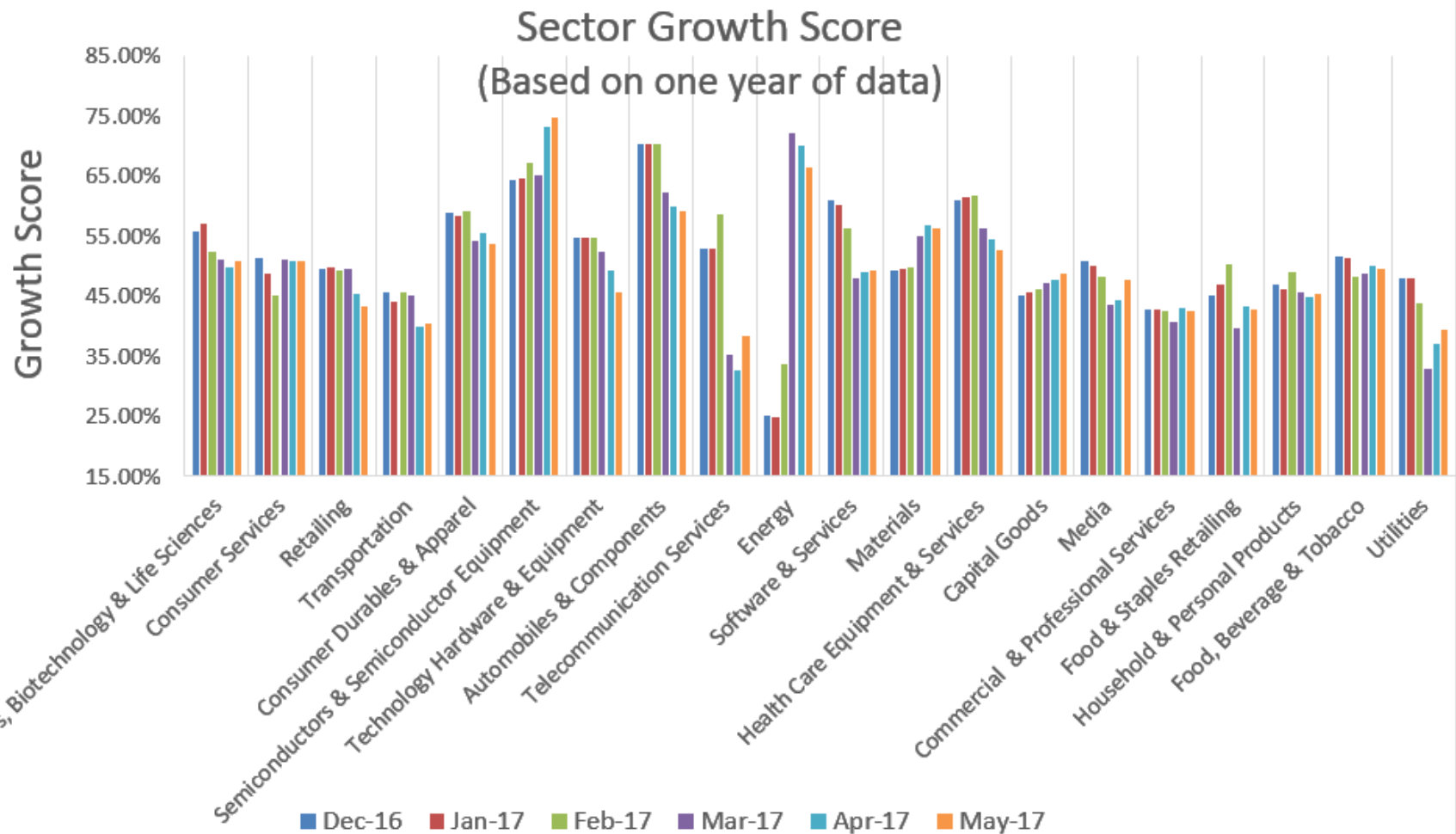# Global Bubble Status May 1st, 2017
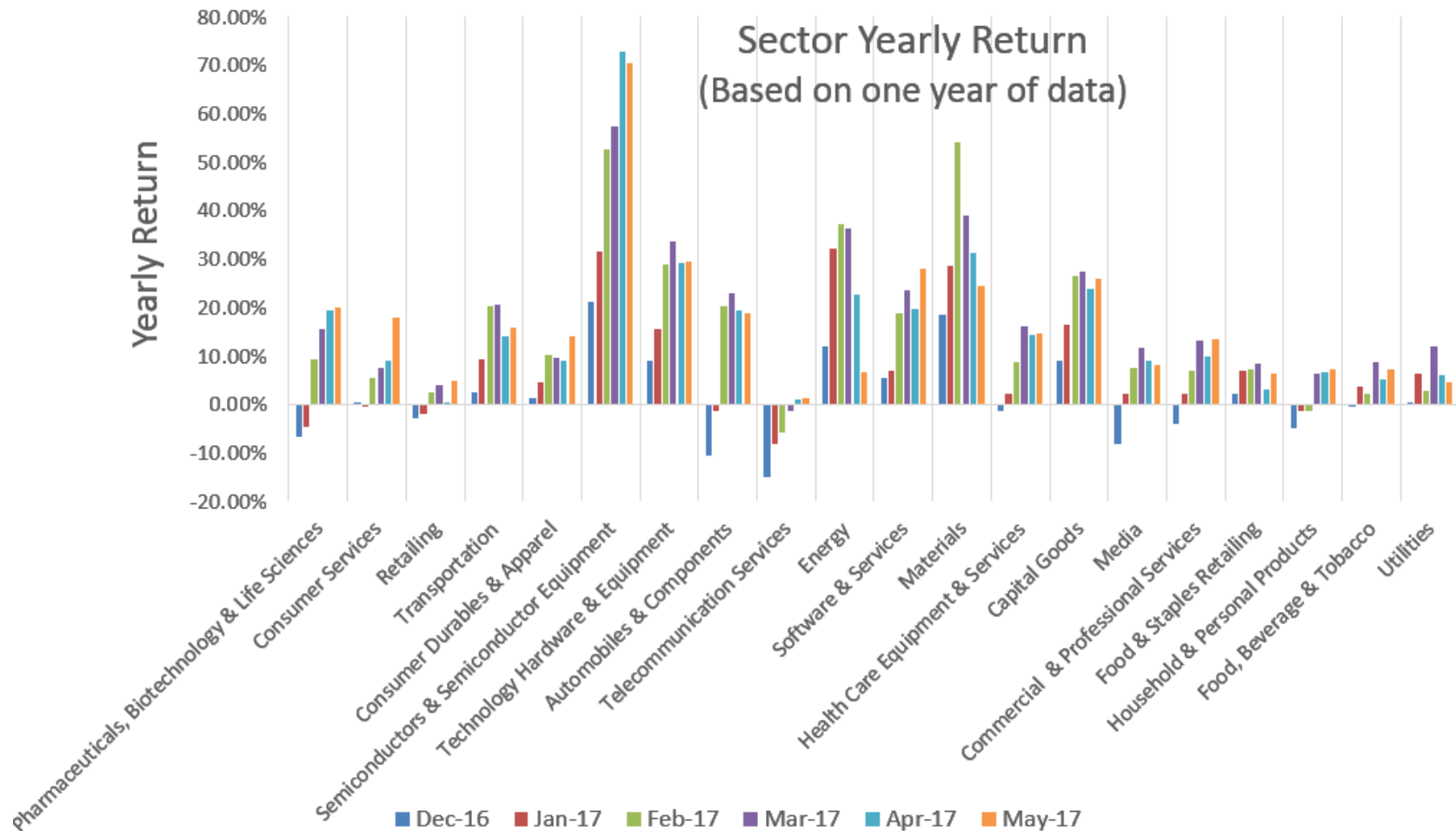
The FCO Cockpit –
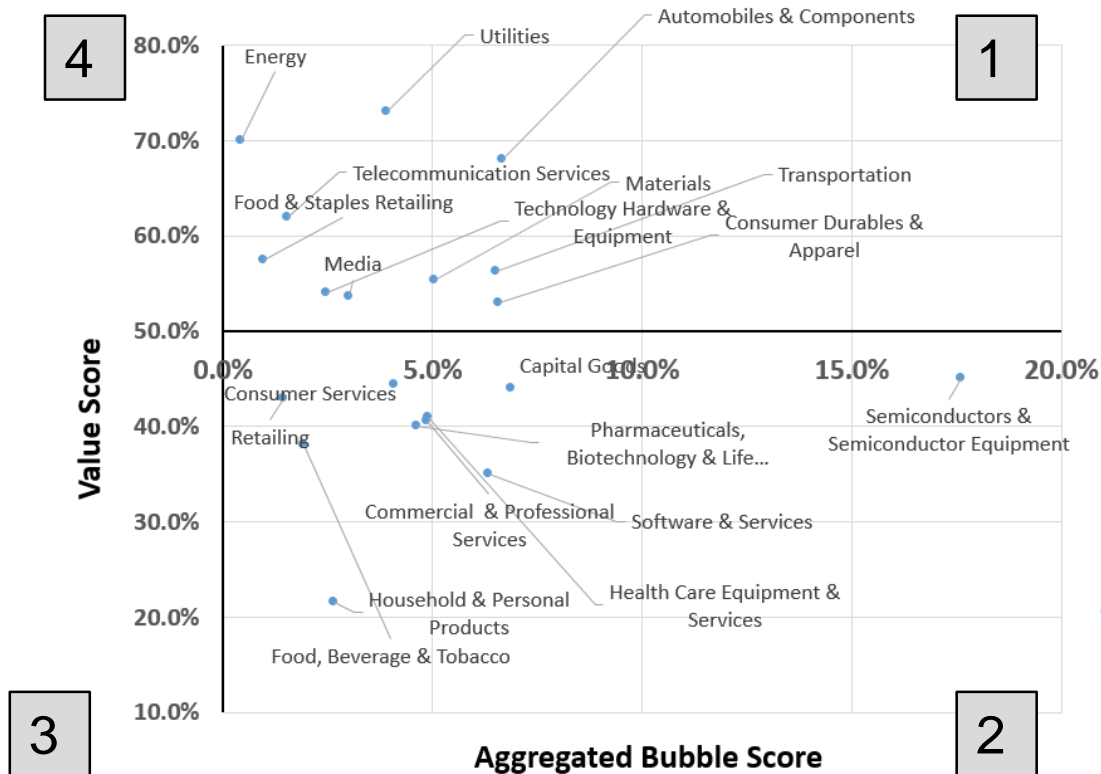# Global Bubble Status May 1st, 2017
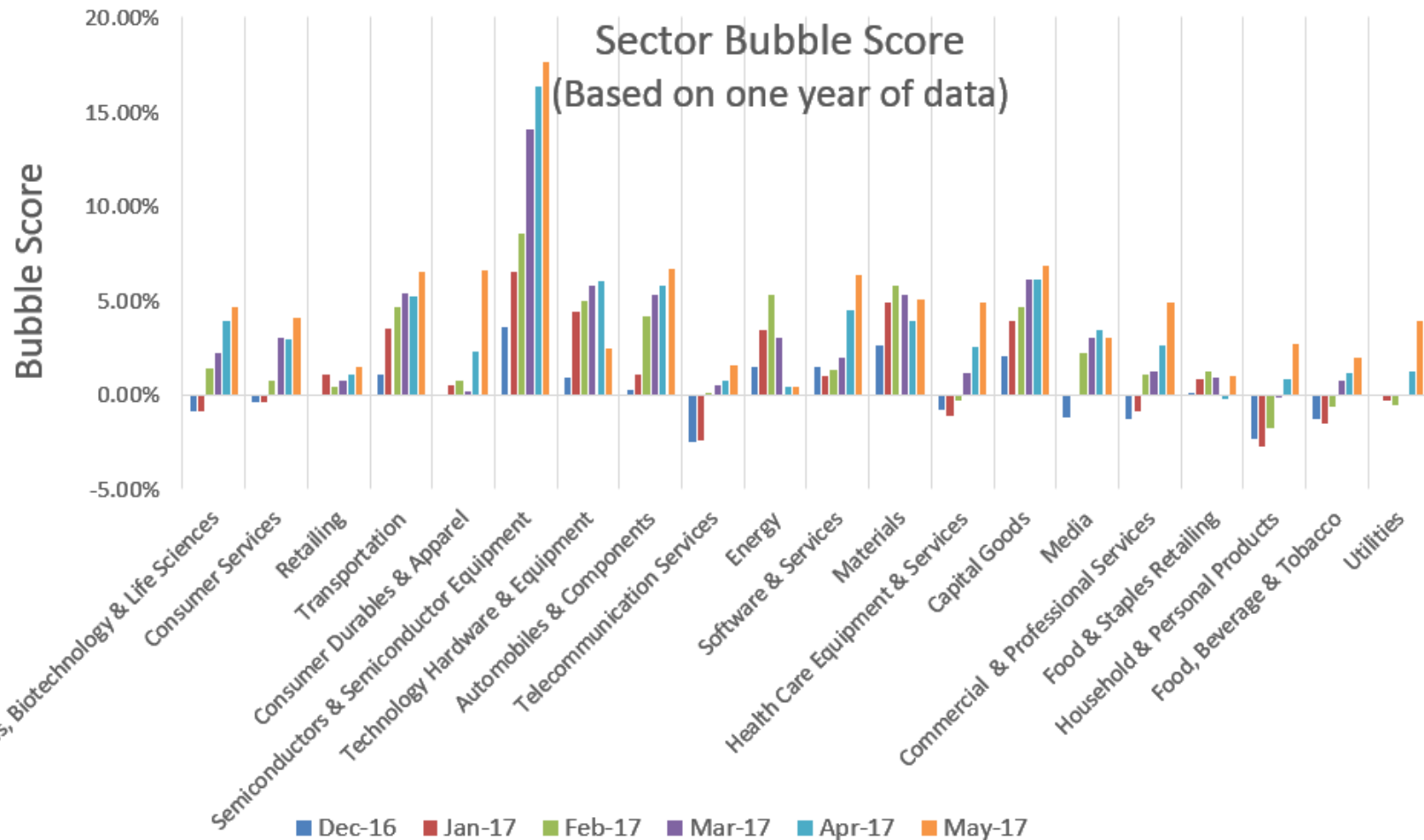
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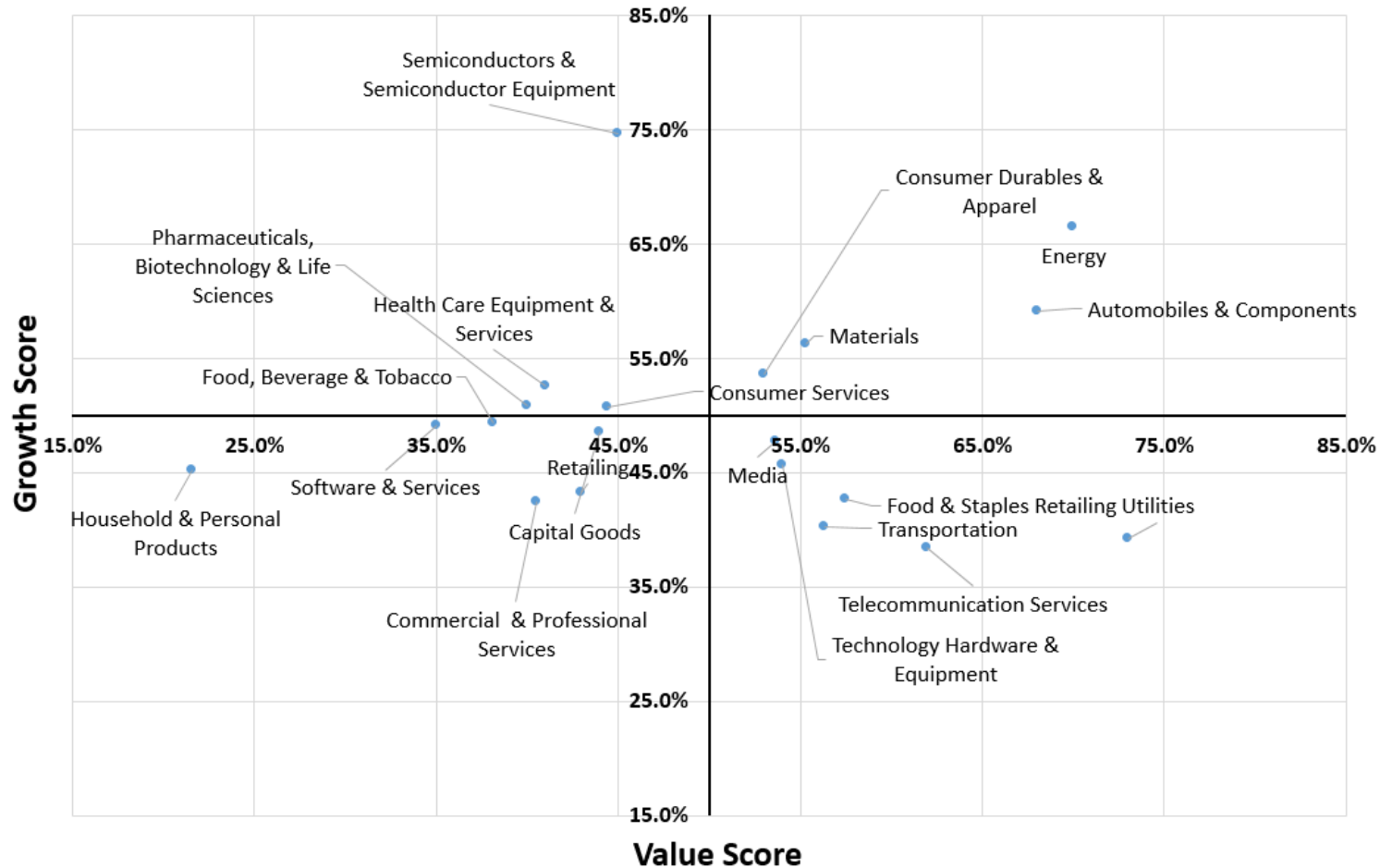
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By plotting the value score versus the aggregated bubble score, we can also divide the sectors into four quadrants*:

1. Quadrant 1: Sectors with an average positive bubble score and a strong value score;
2. Quadrant 2: Sectors with an average positive bubble score and a weak value score;
3. Quadrant 3: Sectors with an average negative bubble score and a weak value score;
4. Quadrant 4: Sectors with an average negative bubble score and a strong value score.

*For sectors, a strong value score is identified if value score is larger than 50%, and a weak value score is identified if else.

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Portfolio Construction and 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 strong bubble signal as well as a strong value score. For instance, TFLSP June consists of all the stocks listed in quadrant 1, identified in slide 25 of June FCO Report.

(2) Trend-Following Short Stock Portfolio (TFSSP) is made of the stocks that have a strong bubble signal as well as a weak value score.

(3) Contrarian Long Stock Portfolio (CLSP) is made of the stocks that have a weak bubble signal as well as a strong value score.

(4) and Contrarian Short Stock Portfolio (CSSP) is made of the stocks that have a weak bubble signal as well as a weak value score.

At the same time, we also classified 20 industries into 4 quadrants. We also 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). For example, Trend-Following Long Industry Portfolio June consists of all the stocks in the industries listed in quadrant 1, identified in slide 39 of the June 2016 FCO Report.

In each month, we initiated 8 new portfolios based on the updated results. The performance of every 8 portfolios we initiated in each month since April 2016 are presented in the next slide. All of the stocks in our portfolios have the same weights and we don't consider transaction cost in the portfolio performance.

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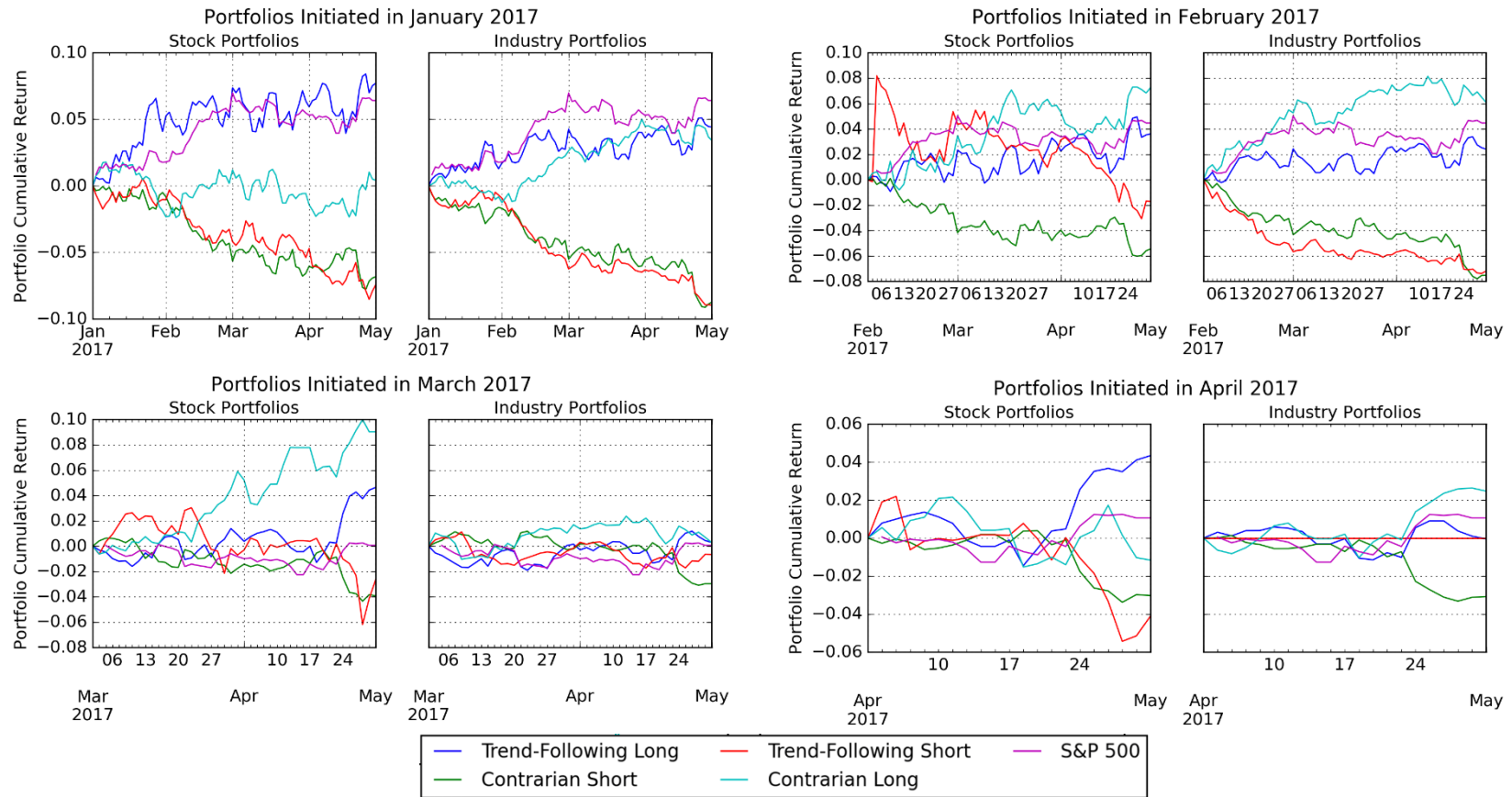
This month, we find that Long portfolios still play out and outperform the market in most portfolios initiated in January, February, March and April 2017. This is mainly due to the booming market in recent months. Contrarian Portfolios are more delicate to use due to their sensitivity to timing the expected 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.

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For information, see

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