

The FCO Cockpit – Global Bubble Status Report

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Chair of Entrepreneurial Risk

April 1st, 2017

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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 834 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>)

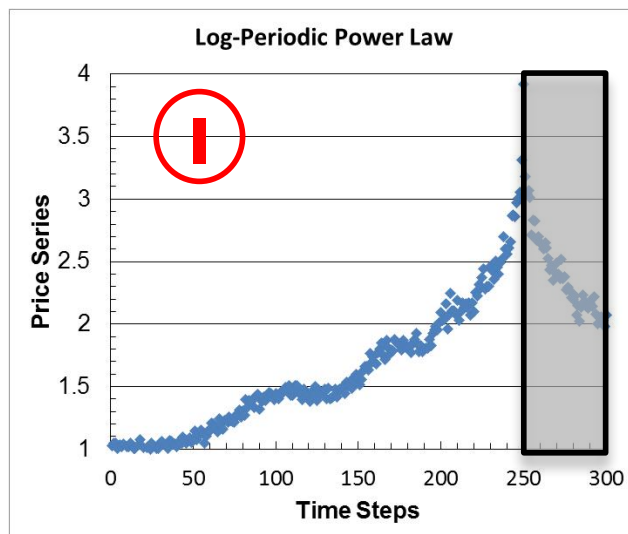
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How does it work?

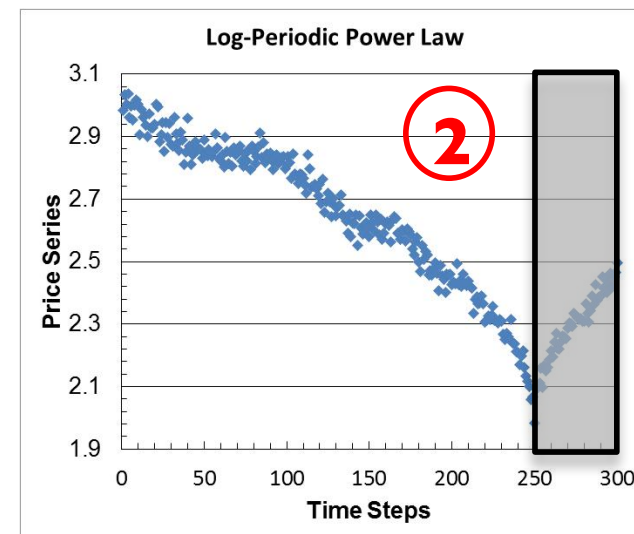
We use the Log-Periodic Power Law Singular (LPPLS) model to hunt for the distinct fingerprint of **Bubbles**:

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**

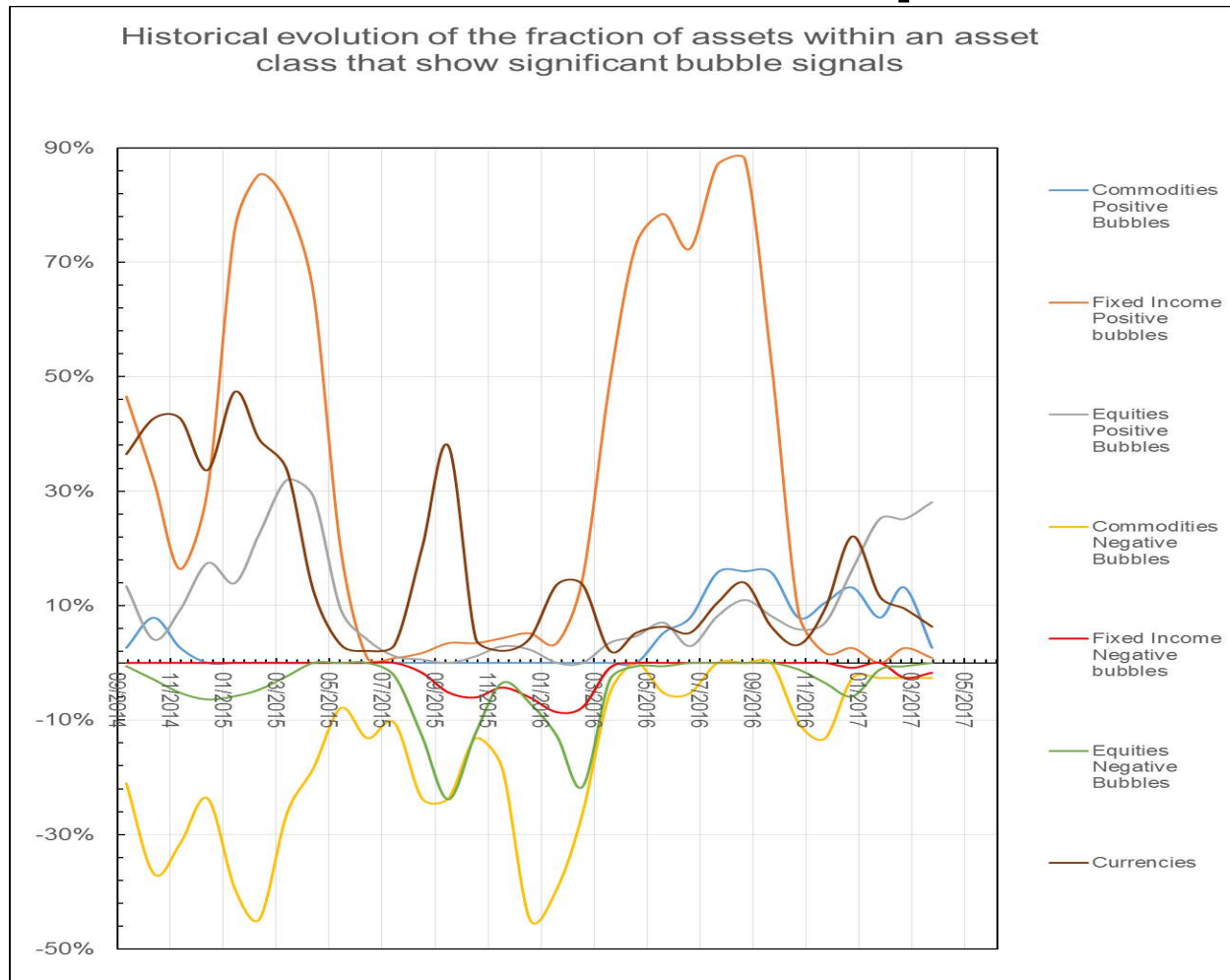


A **negative bubble** when
there is imitation in **selling**

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General Result

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The big picture

We see mixed bubble signals in just a few bond indices, confirming that the very strong momentum that has lifted the entire asset class faded away, and the fixed income sector ended showing a bubble-like behavior.

For the fourth month, one can observe the establishment of a trend in the growth of positive equity bubbles.

Mixed bubble signals are now seen in few commodities indices.

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 five months, 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;
- We see mixed bubble signals in two commodity indices. The index that is showing positive bubble signals is still a metal index, and the index that is showing negative bubble signals is still in the agriculture sector as last month;
- There is a significant increase in positive bubble signals in equities. The most interesting result was found in the Hungary stock market index that is showing signs of a positive bubble for the fifth consecutive month. It is worth mentioning that around 60% of the indices that are showing signs of bubbles are developed markets indices;
- In our analysis of single stocks, we find a stronger positive bubble in the sector *Semiconductors & Semiconductor Equipment*, which we reported in last months. At the same time, we can see a significant positive bubble in the sector *Health Care Equipment & Services* due to a strong recent rebounds. This may be in part attributed to the new US administration failing to replace yet Obamacare with the American Health Care Act (AHCA), which would lead to a large number of uninsured Americans.

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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Government bonds

Country Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
None			
Negative Bubbles			
iBoxx EUR France Index	-2.11%	15.7%	8.0%
iBoxx EUR Luxembourg Index	-0.9%	11.5%	28.2%

For the first month, we see only negative bubble signals in two government bond indices. It is interesting to see that both of them are in Europe;

The strongest signal is still found in the French government bonds. The figure on the next slide shows the continued downward pressure on the French government bonds with increased volatility, as investors are still focused on the upcoming French presidential election and the risk of a Marine Le Pen win.

Daily .IBBEU00BA

3/31/2016 - 4/17/2017 (GMT)

Line, .IBBEU00BA, Last Quote(Last)
3/29/2017, 227.63710, N/A, N/A

Source: Thomson Reuters

France Government Bond Index

Price
EUR

240

-239

-238

-237

-236

-235

-234

-233

-232

-231

-230

-229

-228

-227

-226

-225

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Corporate bonds

Sector Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
iBoxx EUR Financial Services Subordinated Index	10.52%	10.2%	18.7%
Negative Bubbles			
None			

Although the positive bubble signals across both government and corporate bonds faded away, the European financial subordinated index stands unique. 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 Dutch elections.

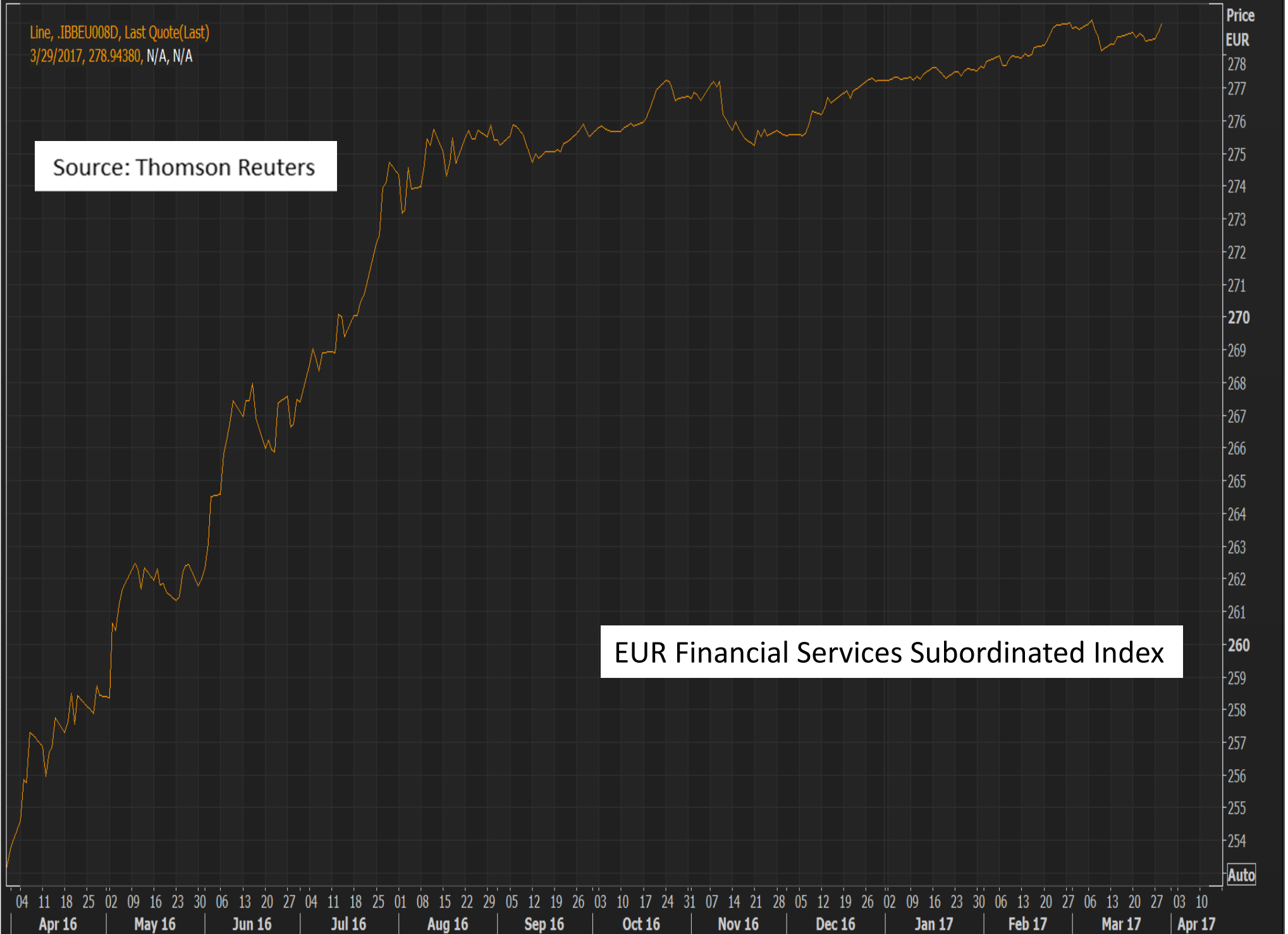
Daily .IBBEU008D

3/31/2016 - 4/17/2017 (GMT)

Line, .IBBEU008D, Last Quote(Last)
3/29/2017, 278.94380, 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	28.4%	 14.0%	 22.5%
Negative Bubbles			
Cocoa ER Index	-26.5%	 35.2%	 37.1%

We see mixed bubble signals in two commodity indices. The index that is showing positive bubble signals is still a metal index, and the index that is showing a negative bubble signals is still in the agriculture sector as last month;

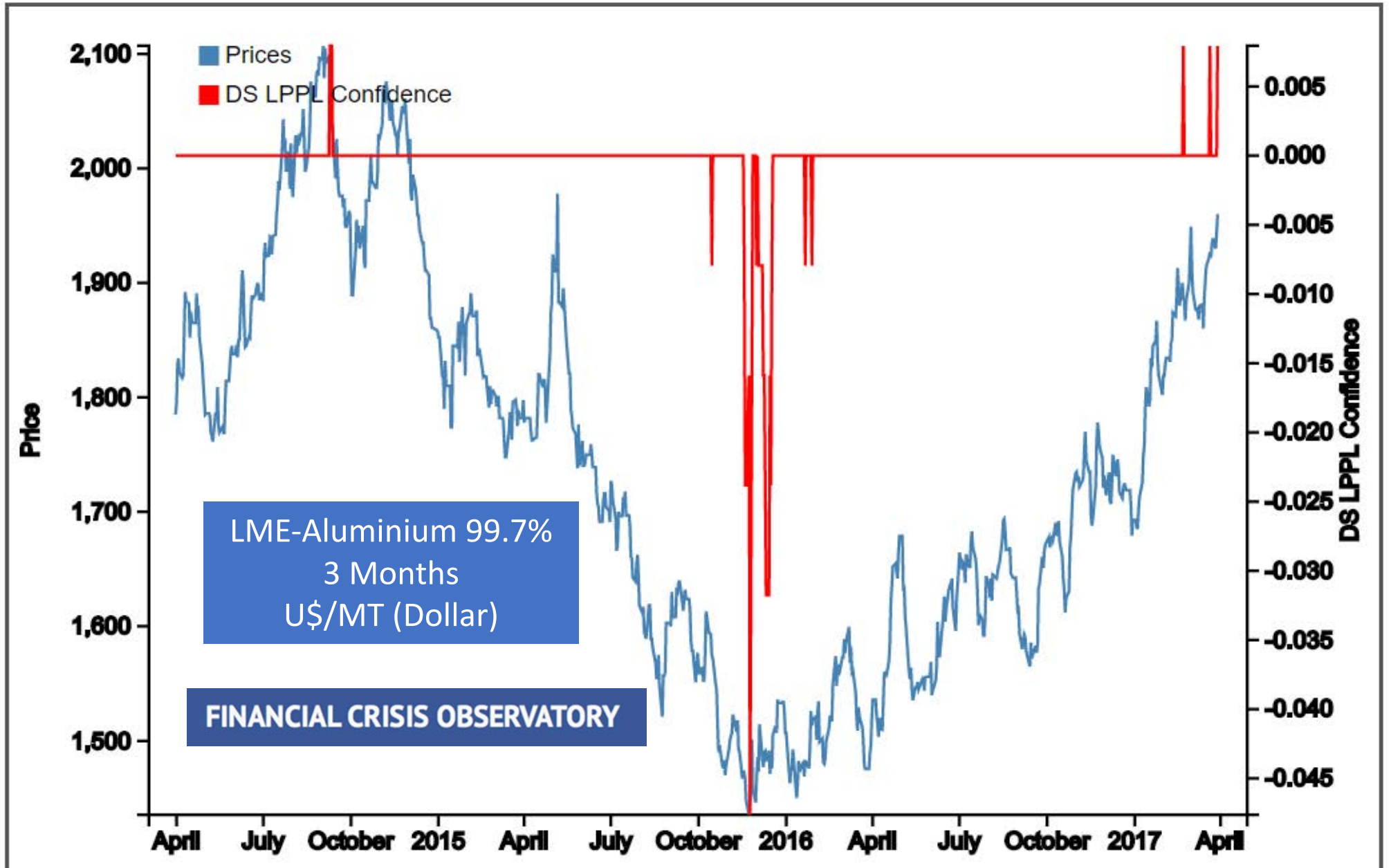
It is worth stressing that Cocoa is showing negative bubble signals for the fifth consecutive month. In addition, the positive bubble signals that were seen in the Zinc, Copper and Industrial Metal indices over the last month, disappeared. The Cocoa index recent rebound may signal the end of this bubble.

Date: 2017-03-29

Name: LME-Aluminium 99.7% 3 M

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



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

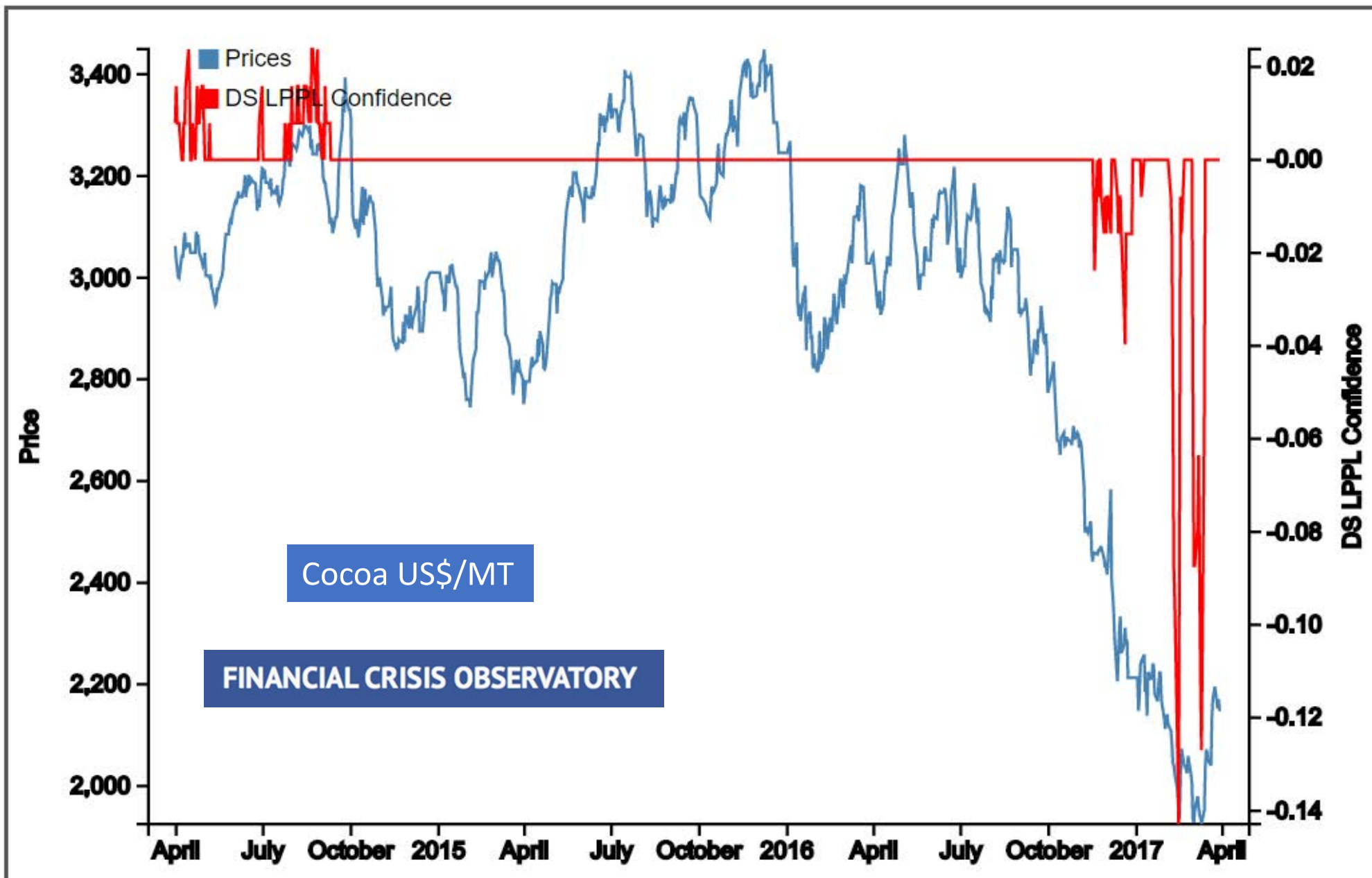


Date: 2017-03-29

Name: Cocoa-ICCO Daily Price U:













Indicator: DS LPPL Confidence

Bubble end flag - long time scale



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Currencies

FX	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Taiwan Dollar/Euro	11.6%	 19.2%	 11.3%
South African Rand/Euro	23.1%	 13.6%	 21.6%
Taiwan Dollar/Swiss Franc	9.9%	 10.0%	 33.7%
South African Rand/Swiss Franc	21.2%	 9.0%	 26.6%
Brazilian Real/Euro	19.6%	 6.3%	 6.0%
Australian Dollar/Euro	4.8%	 5.8%	 9.0%

There are signs of a positive bubble in the Taiwan Dollar and the South African Rand for the fourth and second consecutive month, respectively. Four of the six pairs that are showing bubble signals are crosses with the two emerging markets currencies. In addition, the Brazilian Real joined them in the list of emerging markets currencies that are showing positive bubble signals for the first month.

Finally, as we reported last month, the negative bubble signals that were shown in the Turkish Lira over the last four months and the positive bubble signals that were shown in the Russian Rouble over the last two months, disappeared. As illustrated in the slide below for the Russian Rouble showing the FCO LPPL confidence indicator, the timing of the peak of the positive bubble on the Russian Rouble was excellent and the appreciation of the Russian currency in Euro has started a reverse course.

Date: 2017-03-29

Name: BRAZILIAN REAL TO EUR

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼

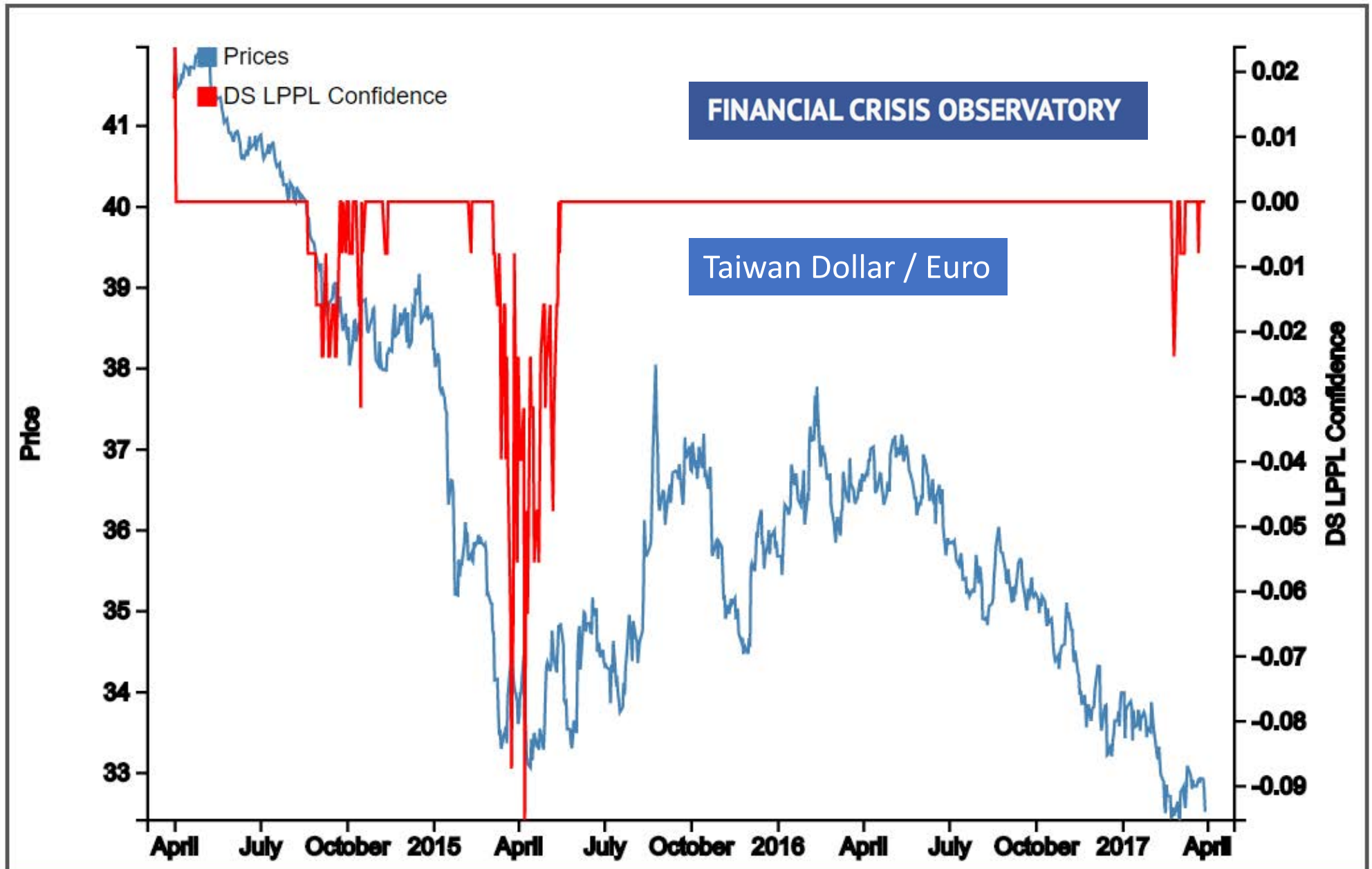


Date: 2017-03-29

Name: TAIWAN NEW \$ TO EURC

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



Date: 2017-03-29

Name: RUSSIAN ROUBLE TO EL

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



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Stocks country indices

Equities Countires Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence	Country
Warsaw SE WIG Poland Index	22.7%	41.0%	30.2%	Poland
OMX Tallinn_GI	16.0%	30.1%	8.6%	Estonia
NASDAQ Composite Index	21.2%	29.5%	38.7%	United States
CROBEX Index	20.1%	29.3%	19.2%	Croatia
Bucharest SE BET Index	18.5%	23.8%	26.5%	Hungary
Dow Jones Industrial Average Index	17.4%	17.8%	31.1%	United States
Deutsche Boerse DAX Index	23.3%	17.6%	7.9%	Germany
Kuwait Main Index	33.1%	17.1%	12.1%	Kuwait
Amsterdam Exchanges Index	16.3%	14.8%	43.8%	Netherlands
EURO STOXX INDEX	15.3%	13.3%	10.4%	EU
IBEX 35 Index	17.5%	12.2%	29.8%	Spain
FTSE Straits Times Index	13.0%	11.0%	18.9%	Singapore
Dow Jones Composite Index	14.4%	10.9%	20.0%	United States
PX Prague SE Index	10.1%	10.9%	29.8%	Czech Republic
OMX Stockholm 30 Index	17.0%	9.6%	13.0%	Sweden
CAC 40 Index	15.6%	9.6%	11.3%	France
Buenos Aires SE Merval Index	54.9%	9.2%	16.9%	Argentina
EURO STOXX 50 EUR Price Index	15.4%	9.0%	13.9%	EU
FTSE 100 Index	20.1%	8.8%	16.7%	United Kingdom
FTSE All Share Index	18.9%	8.4%	18.3%	United Kingdom
Taiwan SE Weighted Index	14.4%	7.2%	23.3%	Taiwan
STOXX Europe 50 EUR Price Index	12.3%	7.1%	12.7%	EU
IGPA Index	26.8%	5.7%	31.1%	Chile
FTSE Bursa Malaysia KLCI Index	2.1%	5.2%	10.5%	Malaysia
Negative Bubbles				
None				

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Stocks country indices

There is a tendency for the appearance of new positive bubble in equities. The most interesting result is found for the Hungary stock market index that is showing signs of positive bubbles for the fifth consecutive month. In addition, the strongest signals are found for the Poland stock market index. However, there are signs of exhaustion for both indices, see the following slides where the correction has started.

It is worth mentioning that around 60% of the indices that are showing signs of bubbles are still developed markets indices.

Finally, the positive bubble signals that were found in Morocco and Pakistan stock market indices over the last four months, Russian stock market index over the last three months, and Finland over the last two months, disappeared.

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

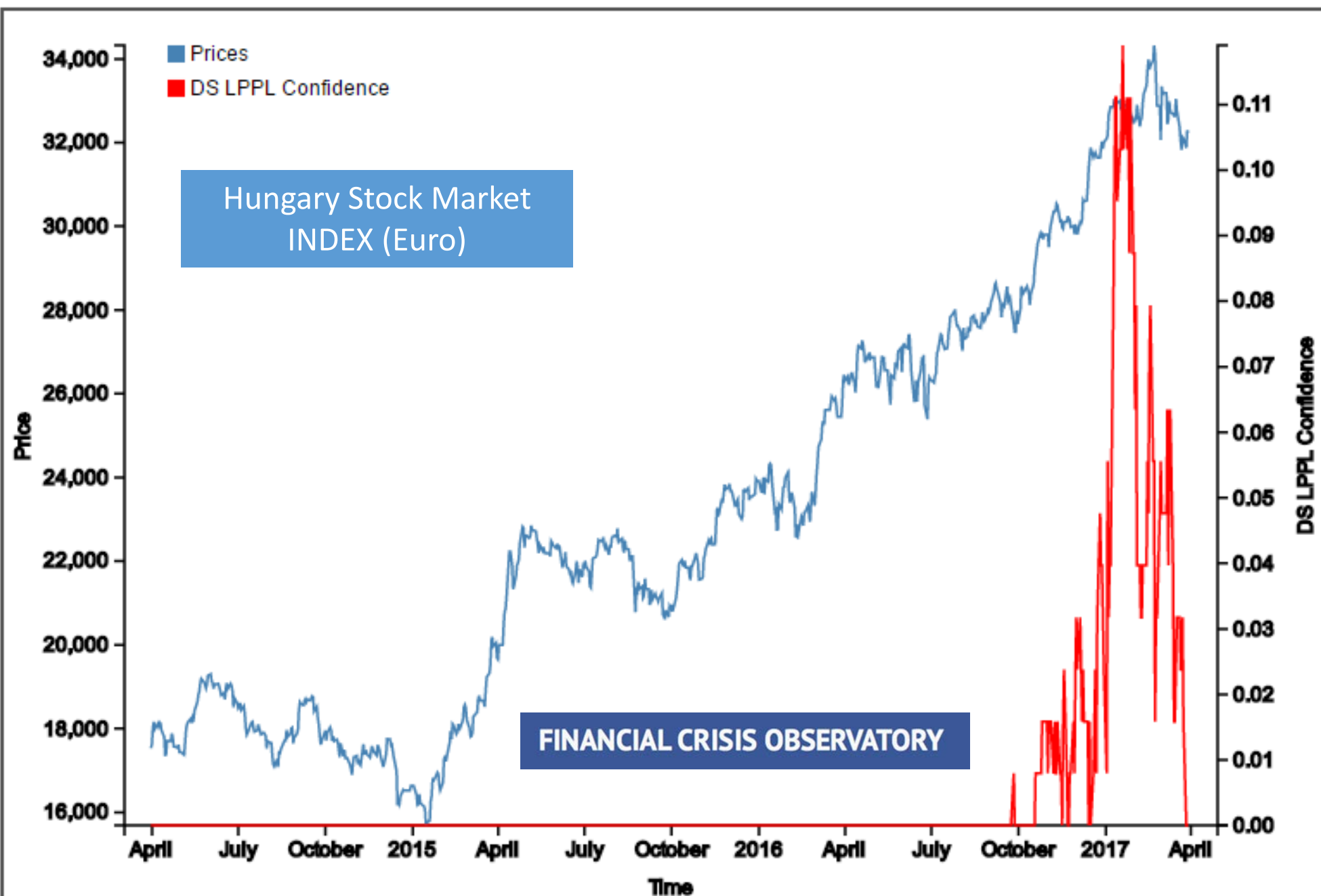


Date: 2017-03-29

Name: BUDAPEST (BUX)

Indicator: DS LPPL Confidence

Bubble end flag - long time scale



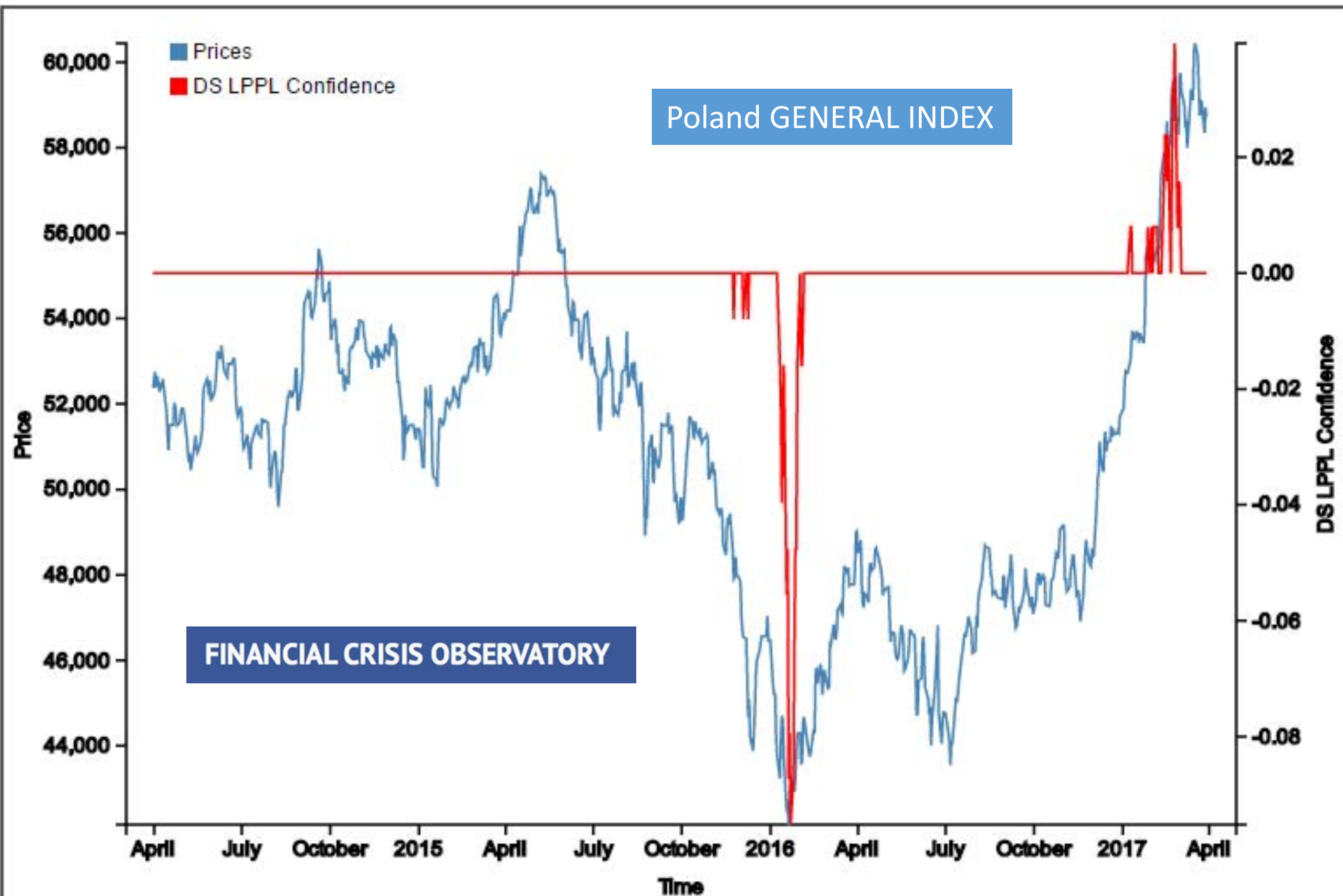
DS Bubble Inspectors Viewer - "Bubble end flag - long time scale"

Date: 2017-03-29

Name: WARSAW GENERAL INDEX

Indicator: DS LPPL Confidence

Bubble end flag - long time scale



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Single Stocks

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What is this?

For 834 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.

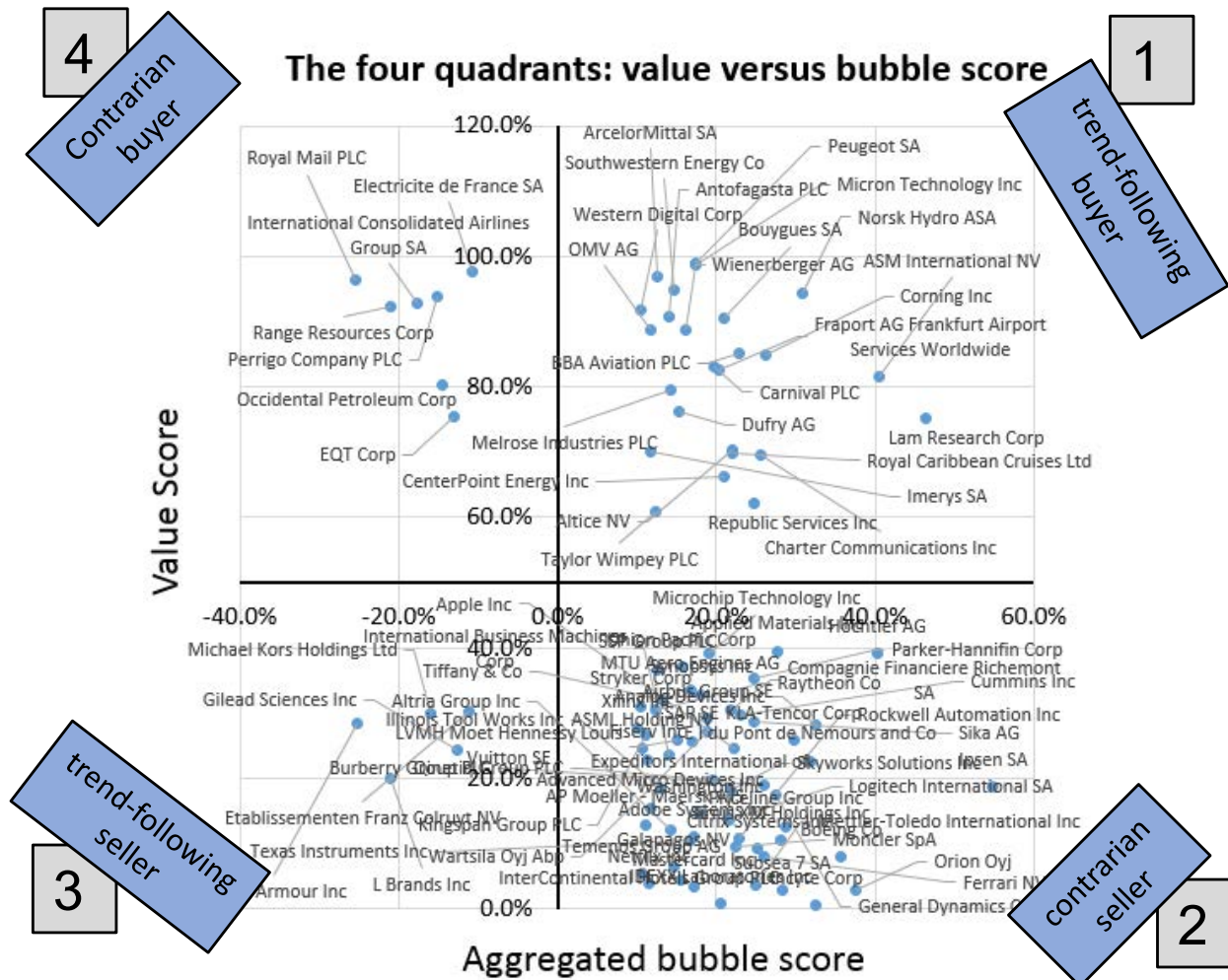
The stocks are the constituents of the Stoxx Europe 600, the S&P 500 and the Nasdaq 100 indices. From these, all doubles and stocks with incomplete data are removed. Because our financial strength indicators are specifically designed for corporates, all financial institutions are taken out of the set 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;
- A growth score 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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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. EQT Corp);
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. Orion Oyj)

*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%.

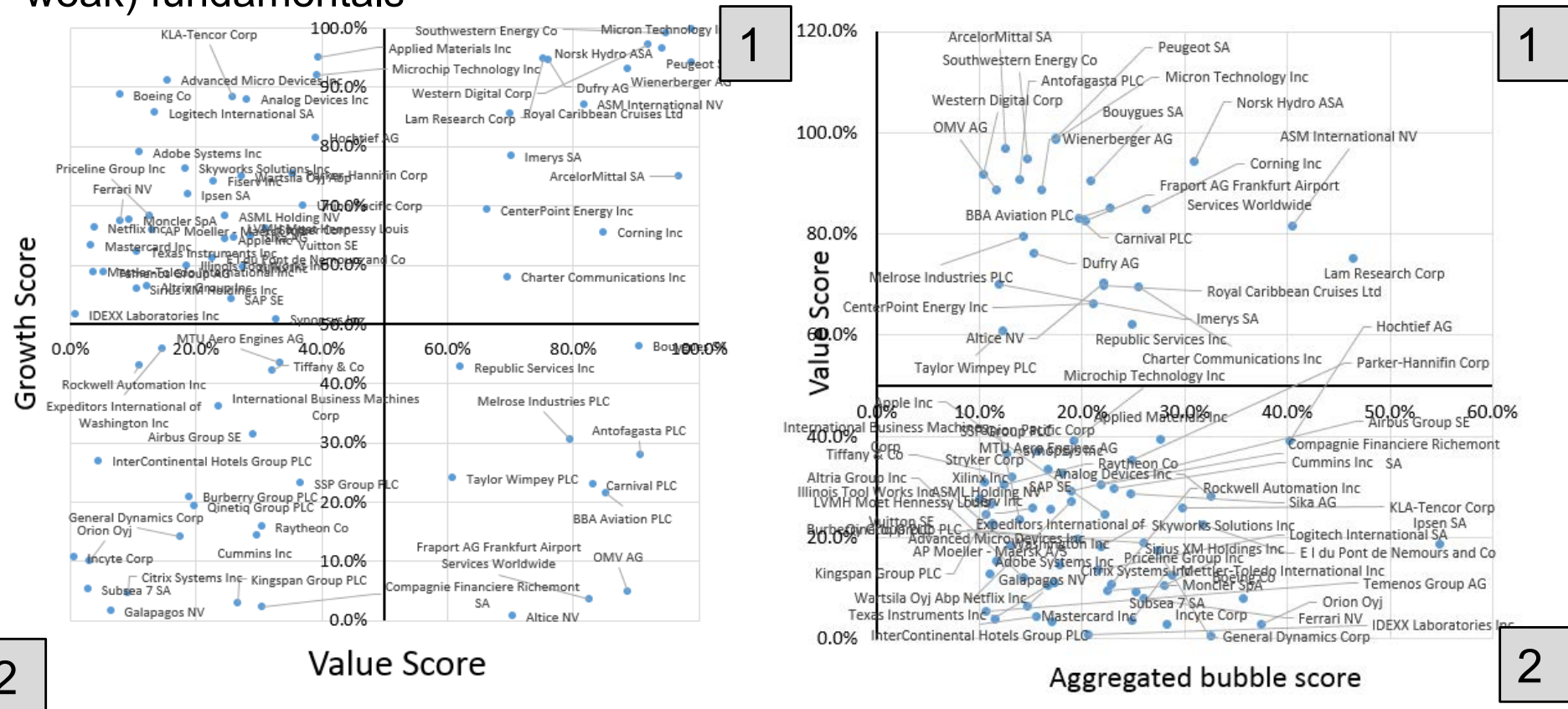
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Each quadrant has its own specs:

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.**

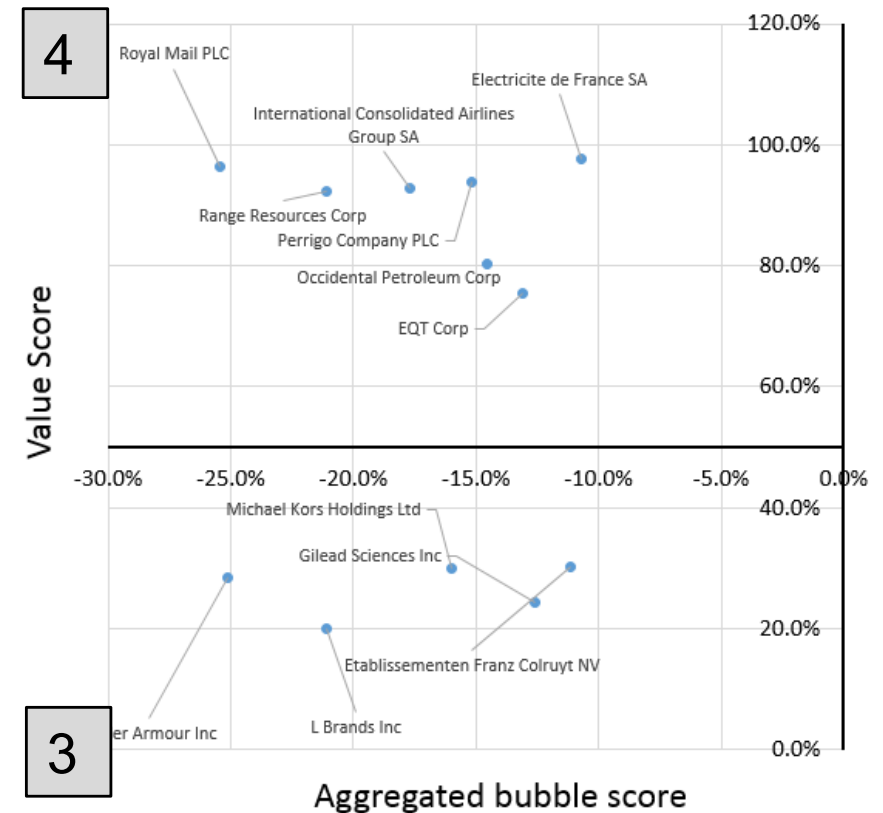
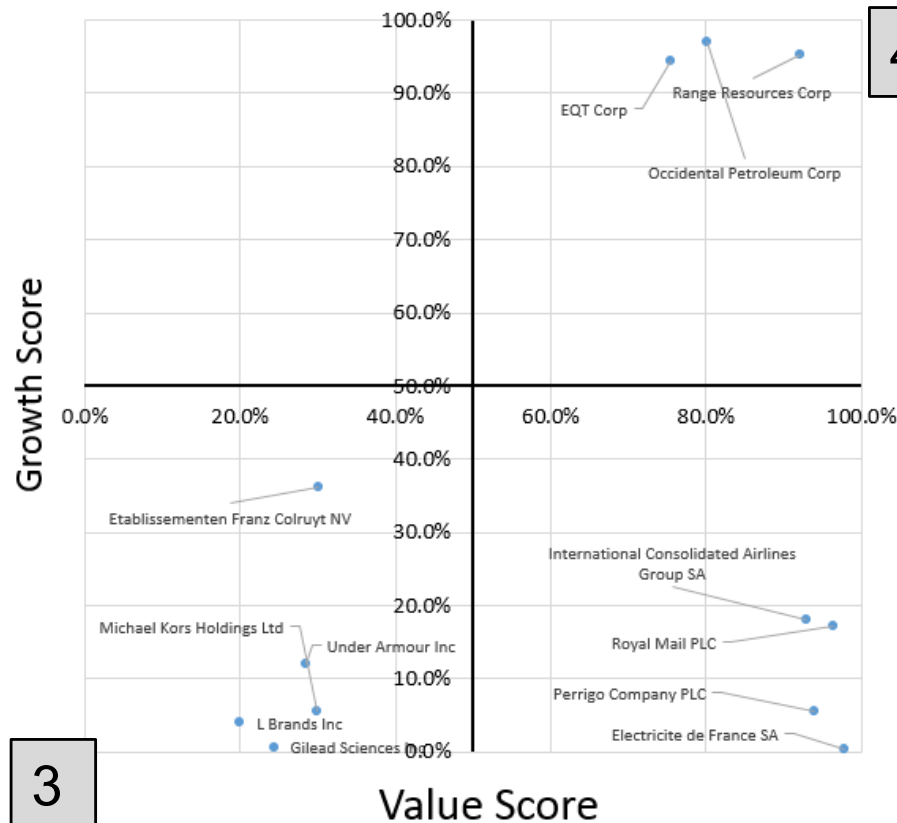
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Quadrant 1 and 2 stocks: strong positive bubble signals with strong (respectively weak) fundamentals



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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
Charter Communications Inc	United States of America	Consumer Discretionary	Media	46.2%	25.5%	69.5%	58.0%
Lam Research Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	55.4%	46.4%	75.3%	94.8%
Micron Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	176.0%	17.4%	98.8%	99.9%
Western Digital Corp	United States of America	Information Technology	Technology Hardware & Equipment	74.7%	10.4%	91.8%	97.1%
Antofagasta PLC	United Kingdom	Materials	Materials	77.8%	13.9%	90.6%	27.9%
BBA Aviation PLC	United Kingdom	Industrials	Transportation	51.9%	22.8%	85.1%	21.5%
Carnival PLC	United Kingdom	Consumer Discretionary	Consumer Services	22.0%	19.7%	83.1%	23.0%
Fraport AG Frankfurt Airport Services Worldwide	Germany	Industrials	Transportation	24.4%	20.4%	82.6%	3.6%
Bouygues SA	France	Industrials	Capital Goods	6.4%	20.9%	90.5%	46.4%
Imerys SA	France	Materials	Materials	29.8%	11.8%	70.1%	78.4%
Peugeot SA	France	Consumer Discretionary	Automobiles & Components	25.3%	17.5%	98.9%	94.1%
ASM International NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	33.7%	40.4%	81.7%	87.2%
Altice NV	Netherlands	Consumer Discretionary	Media	35.4%	22.1%	70.4%	0.8%
ArcelorMittal SA	Luxembourg	Materials	Materials	98.4%	12.5%	96.9%	75.1%
Melrose Industries PLC	United Kingdom	Industrials	Capital Goods	231.8%	14.3%	79.5%	30.6%
Norsk Hydro ASA	Norway	Materials	Materials	46.3%	30.8%	94.2%	96.6%
OMV AG	Austria	Energy	Energy	49.1%	11.6%	88.6%	4.9%
Wienerberger AG	Austria	Materials	Materials	17.8%	16.0%	88.7%	93.2%
Dufry AG	Switzerland	Consumer Discretionary	Retailing	29.0%	15.2%	76.1%	94.6%
Taylor Wimpey PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	1.5%	12.3%	60.9%	24.1%
CenterPoint Energy Inc	United States of America	Utilities	Utilities	31.8%	21.0%	66.3%	69.4%
Corning Inc	United States of America	Information Technology	Technology Hardware & Equipment	29.2%	26.2%	84.9%	65.6%
Royal Caribbean Cruises Ltd	United States of America	Consumer Discretionary	Consumer Services	19.4%	22.0%	69.9%	85.6%
Republic Services Inc	United States of America	Industrials	Commercial & Professional Services	31.8%	24.8%	62.1%	42.8%
Southwestern Energy Co	United States of America	Energy	Energy	1.2%	14.6%	94.8%	99.2%
Trelleborg AB	Sweden	Industrials	Capital Goods	19.5%	20.5%	72.8%	82.5%

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals,
example Micron Technology Inc.



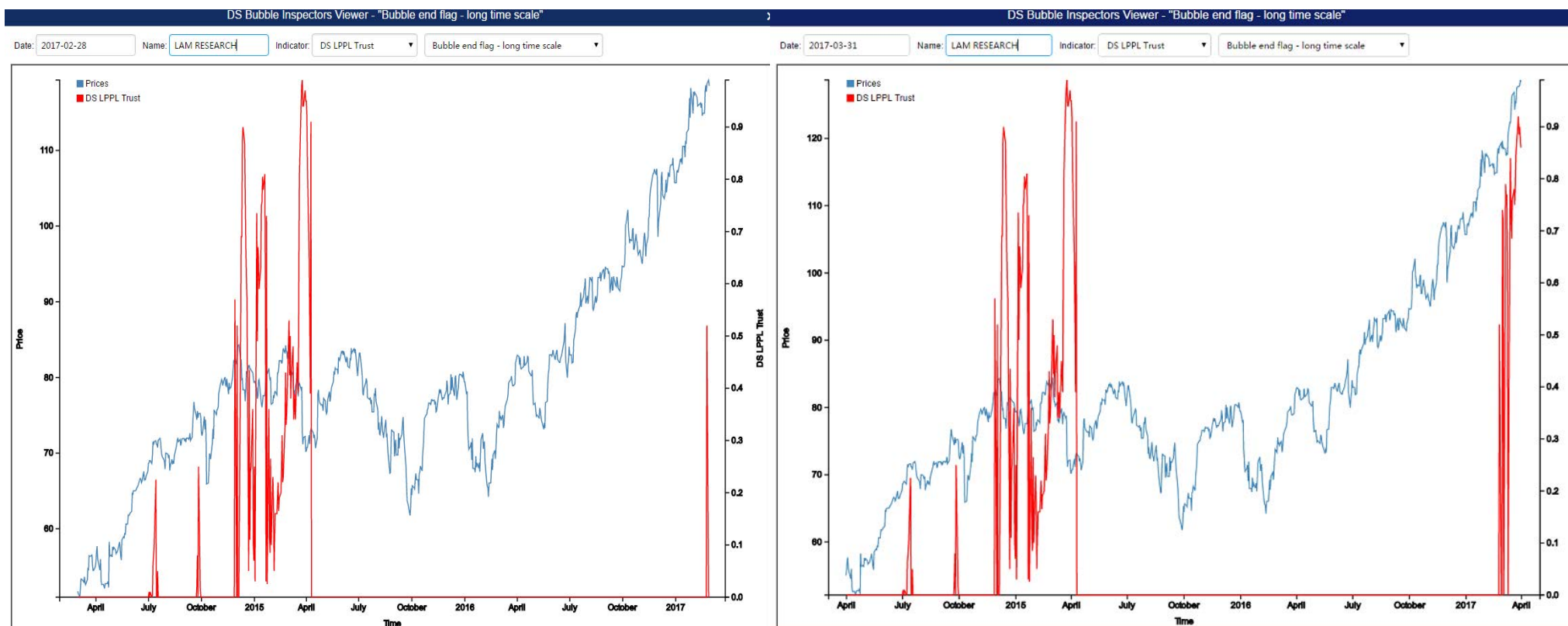
The left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning, indicating the convergence towards 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), it is almost 160%.

Last month example: strong positive bubble signals with strong fundamentals, Lam Research Corp.

Note that the stock has gone up again by 8 percent, which is in synchrony with the strong fundamentals, while our DS LPPL trust indicator quantifies a strong remaining positive sentiment. One should remain cautious as this stock is still identified with strong bubble signal this month.

Last month signal (1st Mar. 2017)

This month signal (1st Apr. 2017)



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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

The most remarkable finding of this month is the abnormally large number of stocks found in this Quadrant.

This suggests that the fundamentals are 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
Apple Inc	United States of America	Information Technology	Technology Hardware & Equipment	31.8%	22.2%	24.6%	64.4%
Adobe Systems Inc	United States of America	Information Technology	Software & Services	38.7%	17.3%	11.0%	79.0%
Analog Devices Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	38.5%	32.5%	28.2%	88.0%
Applied Materials Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	83.7%	27.6%	39.4%	95.1%
Advanced Micro Devices Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	410.5%	11.6%	15.5%	91.2%
Citrix Systems Inc	United States of America	Information Technology	Software & Services	33.3%	25.2%	9.2%	4.8%
Expeditors International of Washington Inc	United States of America	Industrials	Transportation	15.7%	17.9%	14.7%	45.8%
Fiserv Inc	United States of America	Information Technology	Software & Services	12.4%	11.3%	22.9%	74.2%
IDEXX Laboratories Inc	United States of America	Health Care	Health Care Equipment & Services	97.4%	20.5%	0.8%	51.7%
Incyte Corp	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	84.4%	32.6%	0.6%	10.8%
KLA-Tencor Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	30.6%	29.7%	25.9%	88.4%
Microchip Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	53.1%	19.2%	39.2%	92.1%
Netflix Inc	United States of America	Consumer Discretionary	Retailing	44.6%	11.5%	3.8%	66.3%
Priceline Group Inc	United States of America	Consumer Discretionary	Retailing	38.1%	28.7%	12.7%	68.3%
Sirius XM Holdings Inc	United States of America	Consumer Discretionary	Media	30.4%	28.0%	10.6%	56.0%
Synopsys Inc	United States of America	Information Technology	Software & Services	48.9%	18.1%	32.9%	51.0%
Skyworks Solutions Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	25.8%	21.8%	18.3%	76.4%
Texas Instruments Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	40.3%	16.7%	10.7%	62.2%
Xilinx Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	22.1%	10.0%	27.6%	59.7%
Galapagos NV	Belgium	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	120.5%	14.6%	6.5%	1.7%

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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
Burberry Group PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	26.3%	25.9%	18.9%	21.0%
Hochtief AG	Germany	Industrials	Capital Goods	44.1%	40.3%	39.1%	81.5%
MTU Aero Engines AG	Germany	Industrials	Capital Goods	44.7%	16.7%	33.5%	43.5%
SAP SE	Germany	Information Technology	Software & Services	29.4%	16.9%	25.7%	54.2%
AP Moeller - Maersk A/S	Denmark	Industrials	Transportation	34.7%	11.0%	12.9%	65.9%
Airbus Group SE	Netherlands	Industrials	Capital Goods	22.2%	18.9%	29.1%	31.4%
Ipsen SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	85.8%	54.9%	18.7%	71.9%
LVMH Moët Hennessy Louis Vuitton SE	France	Consumer Discretionary	Consumer Durables & Apparel	36.8%	15.1%	26.0%	64.7%
ASML Holding NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	39.3%	10.7%	24.7%	68.2%
Moncler SpA	Italy	Consumer Discretionary	Consumer Durables & Apparel	38.2%	22.4%	9.5%	67.6%
Ferrari NV	Italy	Consumer Discretionary	Automobiles & Components	91.1%	26.0%	8.0%	67.4%
InterContinental Hotels Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	35.6%	15.5%	4.6%	27.0%
Kingspan Group PLC	Ireland; Republic of	Industrials	Capital Goods	28.1%	11.2%	26.6%	3.0%
Orion Oyj	Finland	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	68.2%	37.4%	3.0%	10.1%
Wartsila Oyj Abp	Finland	Industrials	Capital Goods	26.1%	18.9%	27.2%	74.9%
Subsea 7 SA	United Kingdom	Energy	Energy	112.0%	28.3%	2.9%	5.4%
Qinetiq Group PLC	United Kingdom	Industrials	Capital Goods	22.4%	19.5%	19.7%	19.3%
Compagnie Financiere Richemont SA	Switzerland	Consumer Discretionary	Consumer Durables & Apparel	24.6%	21.8%	30.6%	2.3%
Logitech International SA	United States of America	Information Technology	Technology Hardware & Equipment	108.2%	21.5%	13.5%	85.7%
Sika AG	Switzerland	Materials	Materials	57.9%	24.7%	28.8%	64.9%

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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
Temenos Group AG	Switzerland	Information Technology	Software & Services	51.3%	10.6%	5.4%	58.8%
SSP Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	43.8%	12.6%	36.7%	23.3%
Boeing Co	United States of America	Industrials	Capital Goods	39.3%	35.7%	7.9%	88.7%
Cummins Inc	United States of America	Industrials	Capital Goods	37.5%	23.0%	29.6%	14.5%
E I du Pont de Nemours and Co	United States of America	Materials	Materials	26.9%	31.8%	22.7%	61.2%
General Dynamics Corp	United States of America	Industrials	Capital Goods	42.5%	27.4%	17.5%	14.1%
International Business Machines Corp	United States of America	Information Technology	Software & Services	15.0%	13.9%	23.6%	36.2%
Illinois Tool Works Inc	United States of America	Industrials	Capital Goods	29.3%	13.1%	18.6%	60.0%
Mastercard Inc	United States of America	Information Technology	Software & Services	19.0%	17.1%	3.4%	63.3%
Altria Group Inc	United States of America	Consumer Staples	Food, Beverage & Tobacco	14.0%	14.3%	12.2%	56.4%
Mettler-Toledo International Inc	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	38.9%	24.9%	3.7%	58.9%
Parker-Hannifin Corp	United States of America	Industrials	Capital Goods	44.3%	24.8%	35.4%	75.4%
Rockwell Automation Inc	United States of America	Industrials	Capital Goods	36.9%	22.8%	10.9%	43.2%
Raytheon Co	United States of America	Industrials	Capital Goods	24.4%	12.3%	30.5%	15.8%
Stryker Corp	United States of America	Health Care	Health Care Equipment & Services	22.7%	10.5%	31.1%	66.2%
Tiffany & Co	United States of America	Consumer Discretionary	Retailing	29.9%	13.1%	32.1%	42.2%
Union Pacific Corp	United States of America	Industrials	Transportation	33.1%	15.6%	37.1%	70.1%
Hexpol AB	Sweden	Materials	Materials	1.8%	10.6%	23.7%	43.9%
Intrum Justitia AB	Sweden	Industrials	Commercial & Professional Services	16.8%	16.4%	27.0%	44.7%
JM AB	Sweden	Consumer Discretionary	Consumer Durables & Apparel	34.3%	18.9%	31.2%	85.9%
Sandvik AB	Sweden	Industrials	Capital Goods	59.4%	23.9%	38.5%	77.8%

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals,
example Adobe Systems 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 24% 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, Boeing Co.

Note that the stock has started a correction recently, in synchrony with our DS LPPL trust indicator and weak fundamentals. At the same time, this stock is still identified with a strong positive bubble signal, suggesting to continue shorting or getting out of a long position on this stock.

Last month signal (1st Mar. 2017)

This month signal (1st Apr. 2017)



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

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
Gilead Sciences Inc	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-26.1%	-12.6%	24.3%	0.7%
Etablissements Franz Colruyt NV	Belgium	Consumer Staples	Food & Staples Retailing	-10.1%	-11.1%	30.2%	36.1%
Michael Kors Holdings Ltd	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	-33.1%	-16.0%	30.0%	5.6%
L Brands Inc	United States of America	Consumer Discretionary	Retailing	-46.4%	-21.1%	20.0%	4.1%
Under Armour Inc	United States of America	Consumer Discretionary	Consumer Durables & Apparel	-54.9%	-25.2%	28.5%	12.0%

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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals, example L Brands Inc.



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 of the negative bubble. The right graph shows the performance of the stock over the last year (orange) with respect to the S&P 500 benchmark (purple), it is roughly -60%.

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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

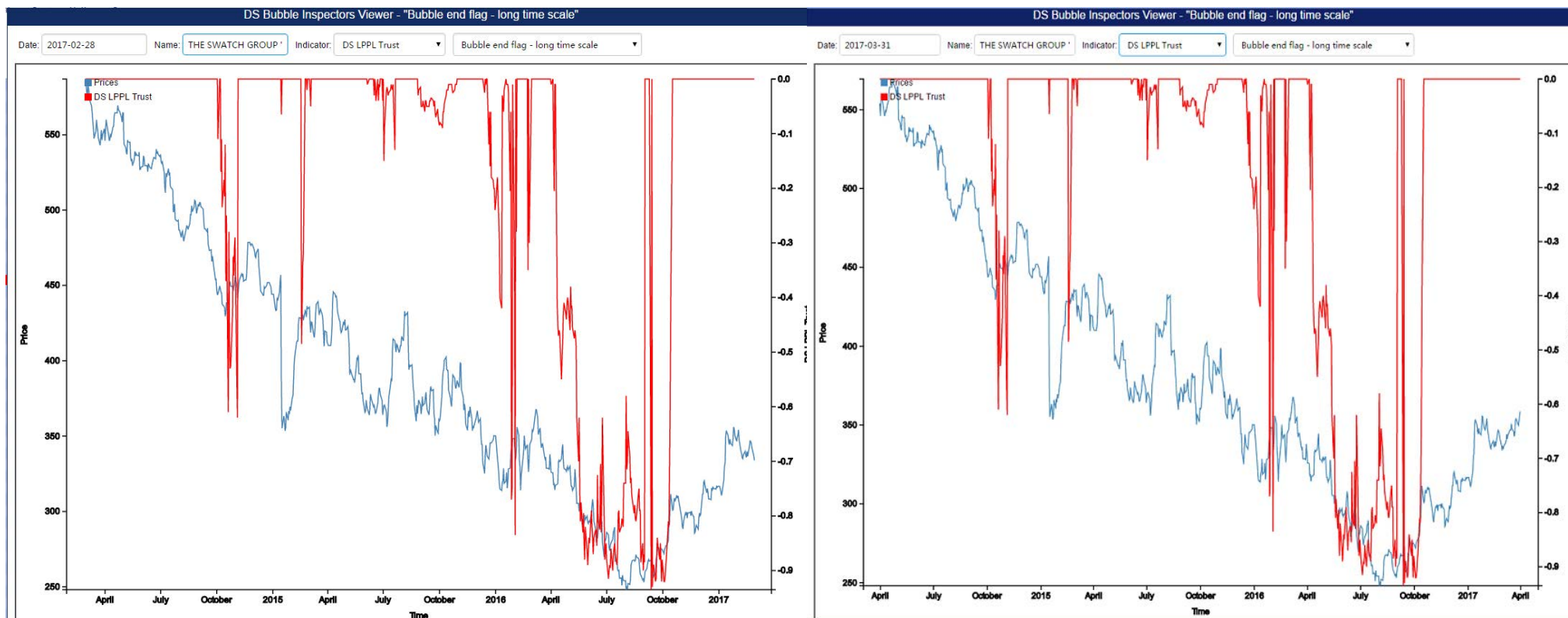
Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Electricite de France SA	France	Utilities	Utilities	-13.7%	-10.7%	97.7%	0.4%
International Consolidated Airlines Group SA	United Kingdom	Industrials	Transportation	-4.4%	-17.7%	92.9%	18.1%
Royal Mail PLC	United Kingdom	Industrials	Transportation	-11.6%	-25.5%	96.4%	17.1%
EQT Corp	United States of America	Energy	Energy	-9.2%	-13.1%	75.5%	94.4%
Occidental Petroleum Corp	United States of America	Energy	Energy	-7.4%	-14.5%	80.2%	96.9%
Perrigo Company PLC	Ireland; Republic of	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-48.1%	-15.2%	93.9%	5.5%
Range Resources Corp	United States of America	Energy	Energy	-10.1%	-21.1%	92.2%	95.3%

Last month example: strong negative bubble signals with strong fundamentals, Swatch Group SA.

Note that a rebound started again recently after a small drawdown, which is in synchrony with our DS LPPL trust indicator and the strong fundamentals. We expect this stock to appreciate in the future due to the strong fundamentals and existing under-valuation.

Last month signal (1st Mar. 2017)

This month signal (1st Apr. 2017)



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Sectors

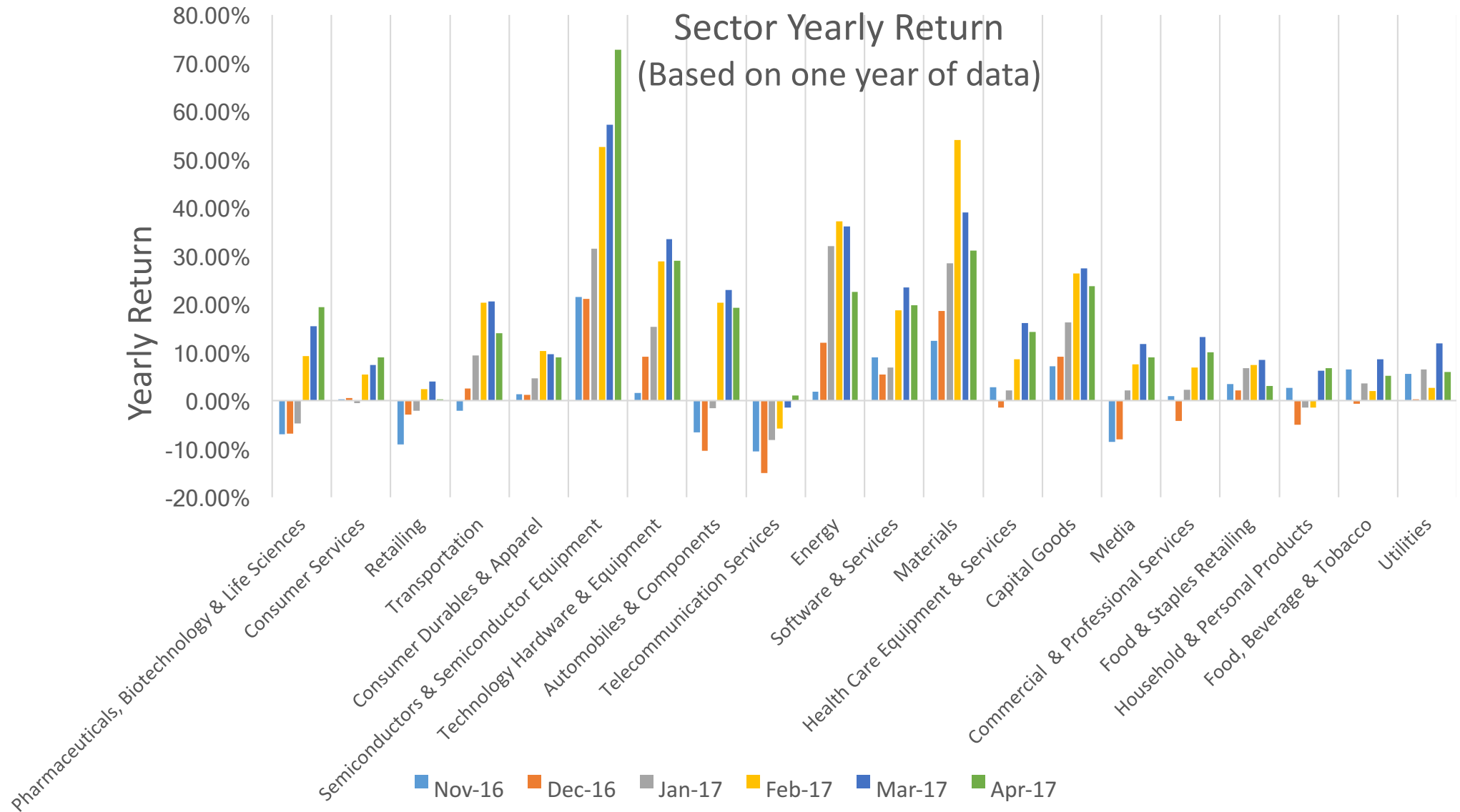
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GICS Industry Group Name	Yearly Return		Bubble Score		Value Score		Growth Score	
	Apr 1st	Mar 1st	Apr 1st	Mar 1st	Apr 1st	Mar 1st	Apr 1st	Mar 1st
Pharmaceuticals, Biotechnology & Life Sciences	19.3%	15.4%	3.9%	2.2%	38.1%	39.0%	49.7%	51.0%
Consumer Services	8.9%	7.4%	2.9%	3.0%	45.3%	43.0%	50.7%	50.9%
Retailing	0.3%	4.0%	1.1%	0.8%	39.7%	43.2%	45.3%	49.4%
Transportation	13.9%	20.6%	5.2%	5.4%	52.1%	54.9%	39.9%	45.1%
Consumer Durables & Apparel	9.0%	9.6%	2.3%	0.2%	48.0%	51.5%	55.5%	54.1%
Semiconductors & Semiconductor Equipment	72.8%	57.3%	16.3%	14.1%	40.3%	47.1%	73.2%	64.9%
Technology Hardware & Equipment	29.1%	33.6%	6.0%	5.7%	50.9%	53.7%	49.3%	52.4%
Automobiles & Components	19.3%	23.0%	5.8%	5.3%	66.3%	67.4%	59.9%	62.1%
Telecommunication Services	1.1%	-1.5%	0.7%	0.5%	65.7%	65.2%	32.5%	35.2%
Energy	22.5%	36.2%	0.4%	3.0%	75.1%	73.3%	69.8%	72.1%
Software & Services	19.8%	23.5%	4.5%	2.0%	32.9%	32.4%	49.0%	47.9%
Materials	31.2%	39.0%	3.9%	5.3%	58.4%	57.8%	56.7%	55.0%
Health Care Equipment & Services	14.2%	16.1%	2.5%	1.1%	41.9%	39.8%	54.3%	56.2%
Capital Goods	23.8%	27.4%	6.1%	6.1%	47.0%	45.9%	47.6%	47.1%
Media	9.0%	11.7%	3.4%	3.0%	54.2%	53.5%	44.3%	43.6%
Commercial & Professional Services	10.0%	13.2%	2.6%	1.2%	39.4%	37.1%	42.9%	40.5%
Food & Staples Retailing	3.0%	8.4%	-0.2%	0.9%	58.5%	55.3%	43.4%	39.7%
Household & Personal Products	6.7%	6.2%	0.9%	-0.1%	20.9%	19.7%	44.9%	45.4%
Food, Beverage & Tobacco	5.2%	8.6%	1.2%	0.8%	38.9%	36.3%	50.0%	48.6%
Utilities	6.0%	11.8%	1.3%	0.0%	77.2%	77.7%	37.1%	32.8%

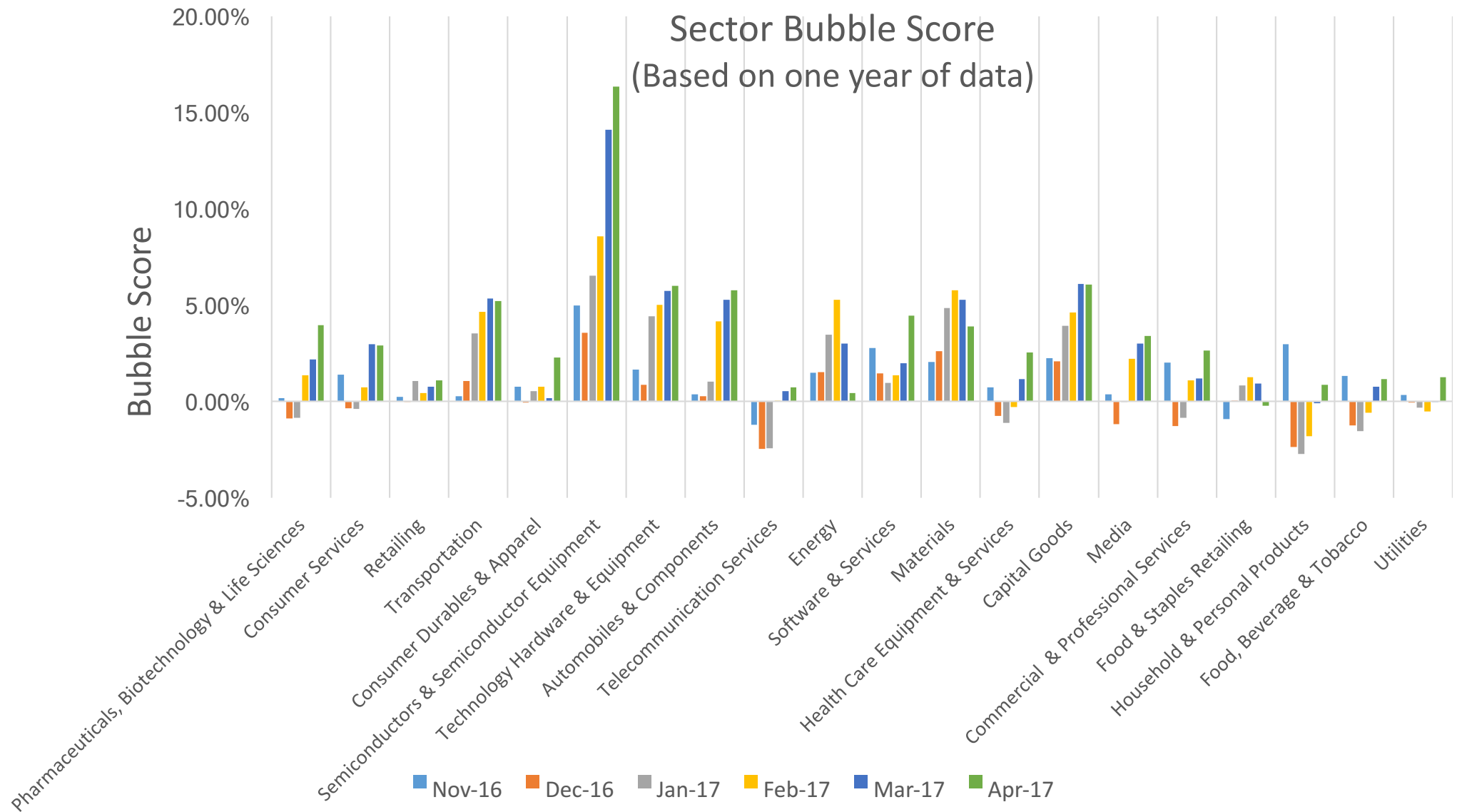
By aggregating the calculations that were done at the single stock level in the previous section, we can see the bubble, value and growth score at the sector level. The results in the previous report are also presented here for comparison.

- The sector *Semiconductors & Semiconductor Equipment* we reported last three months has a stronger bubble score, which demonstrates the strong momentums in this industry continues, with a higher probability of corrections.
- The sector *Health Care Equipment & Services* has made a strong comeback recently, with a significant positive bubble score. This may be in part attributed to the failure of the new US administration to secure enough votes to pass the bill for repealing and replacing Obamacare.

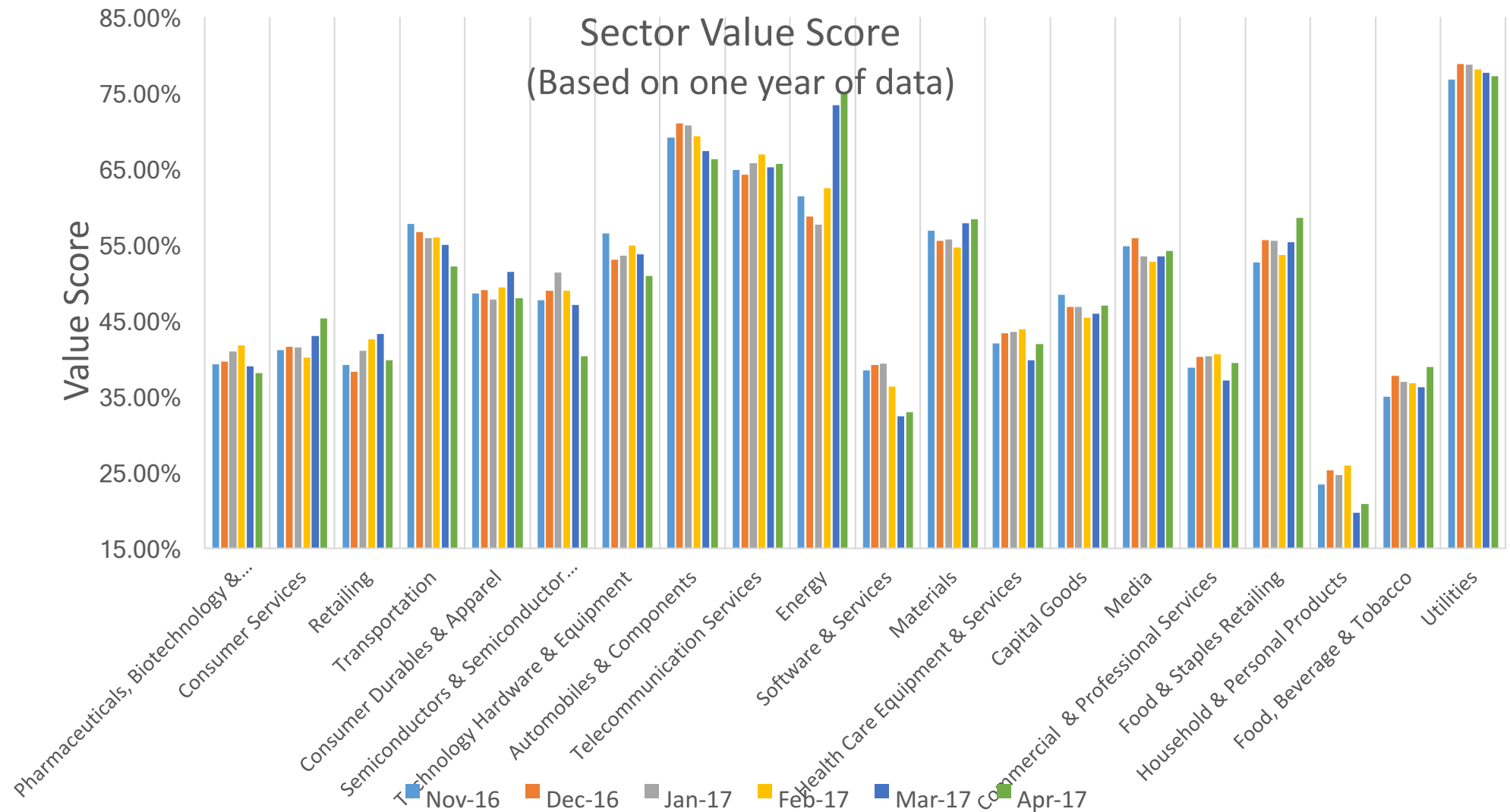
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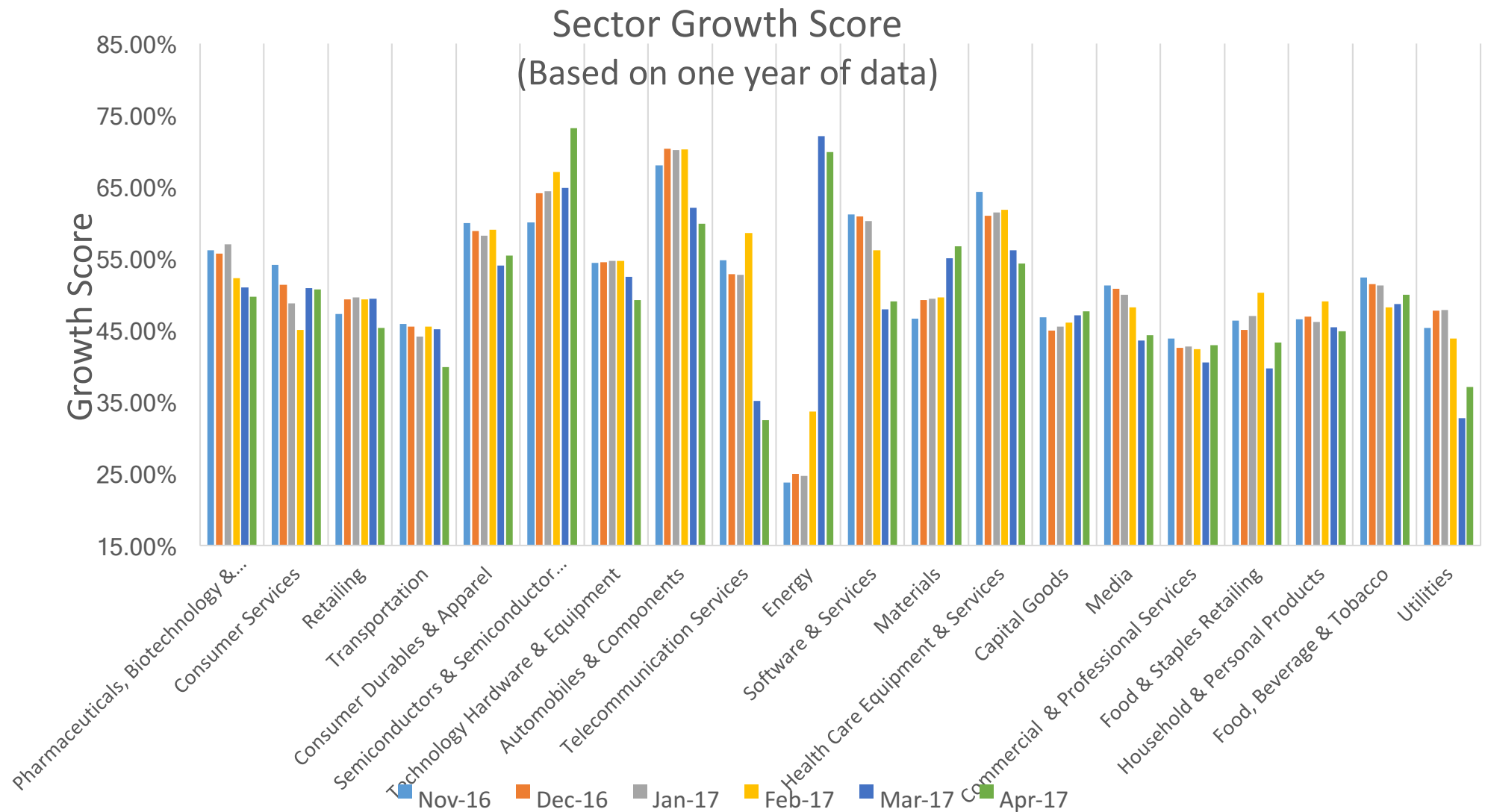
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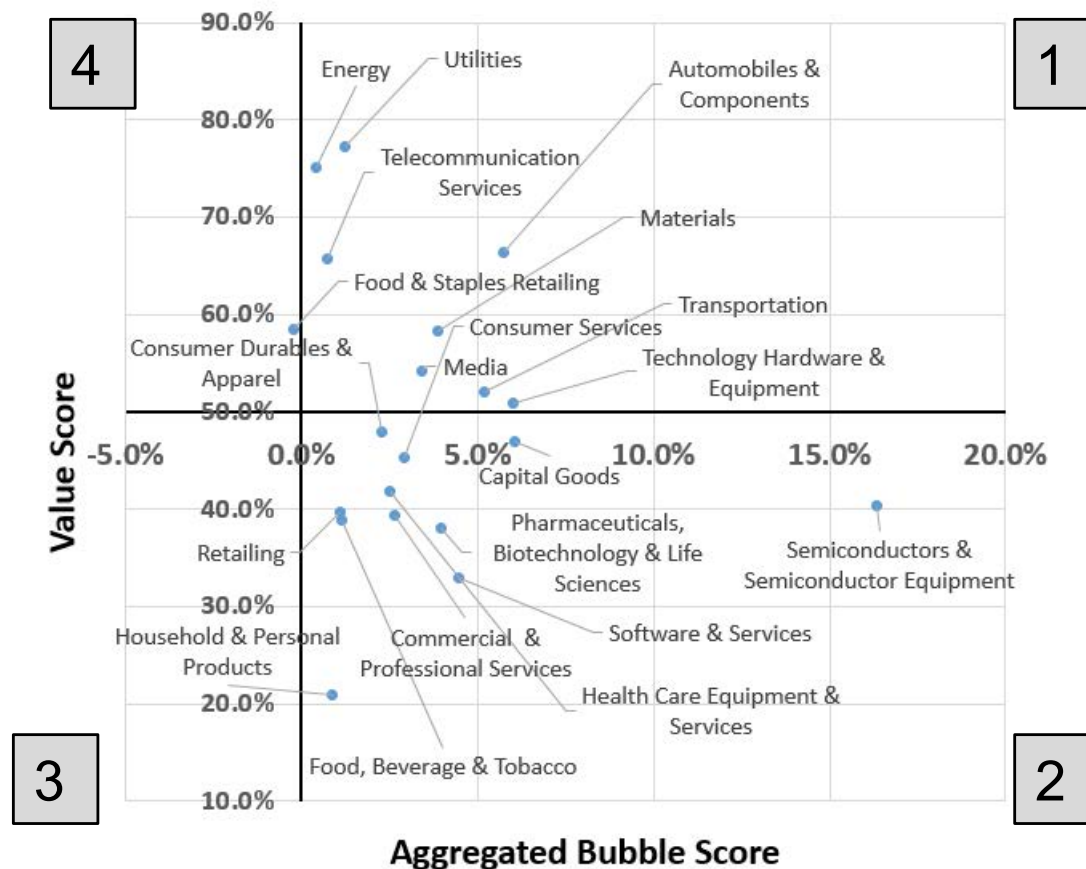
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The FCO Cockpit – Global Bubble Status April 1st, 2017



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

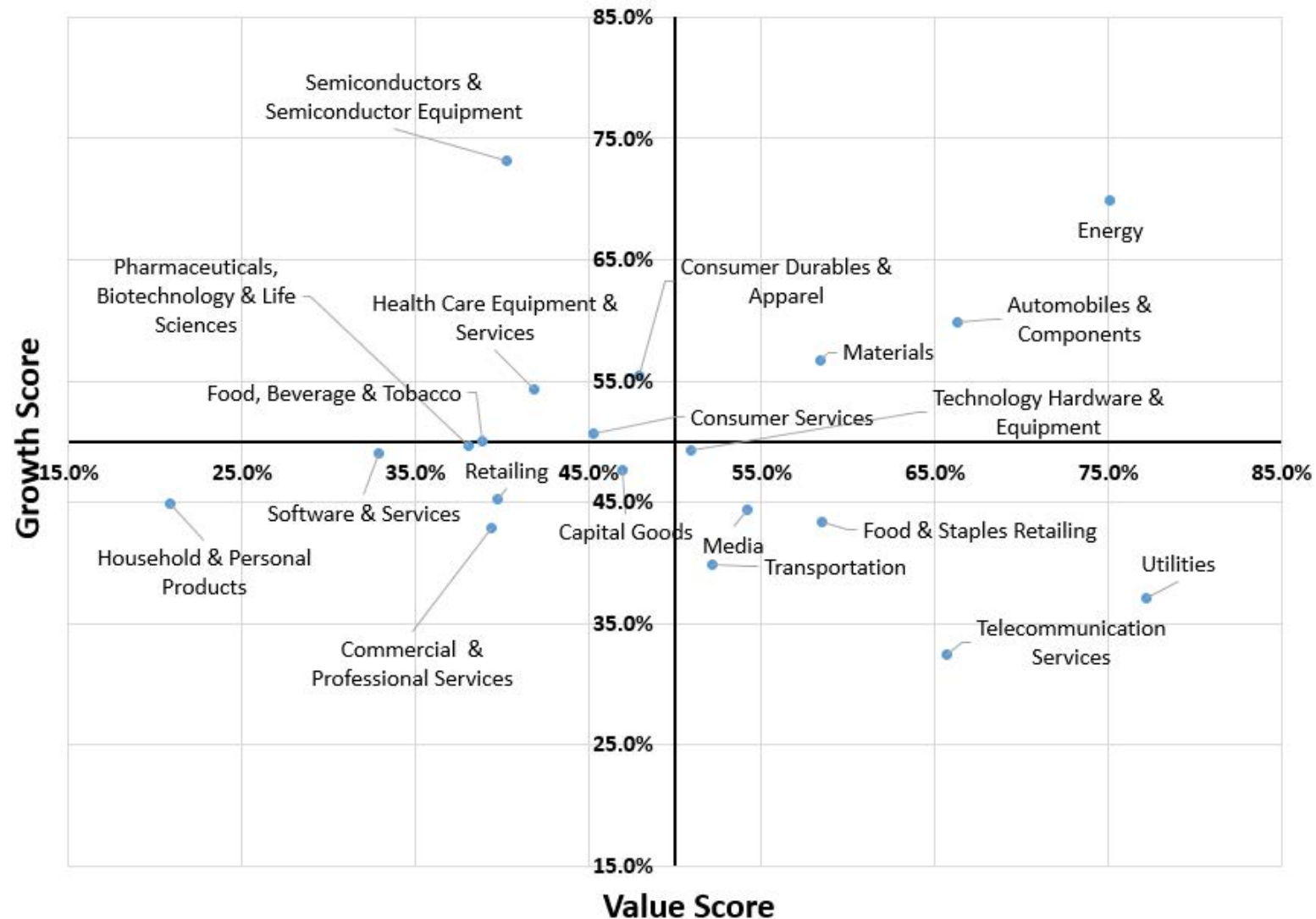


By plotting the value score versus the aggregated bubble score, we can also divide the sectors into four quadrants*:

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.

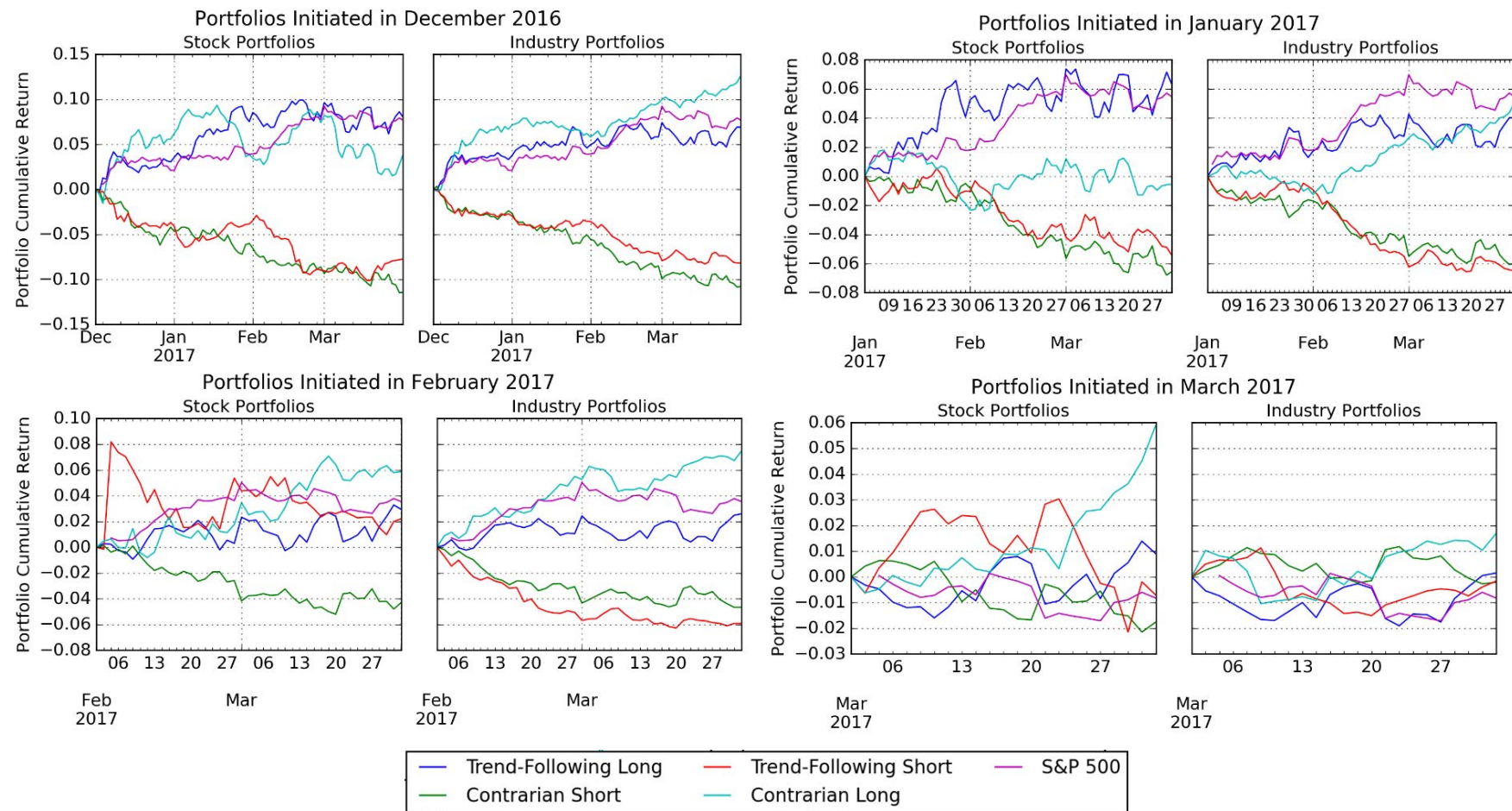
For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all the stocks listed in the corresponding quadrant.

- (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 December 2016, January, February and March 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>