

The FCO Cockpit – Global Bubble Status Report

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Chair of Entrepreneurial Risk

May 1st, 2017

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>)

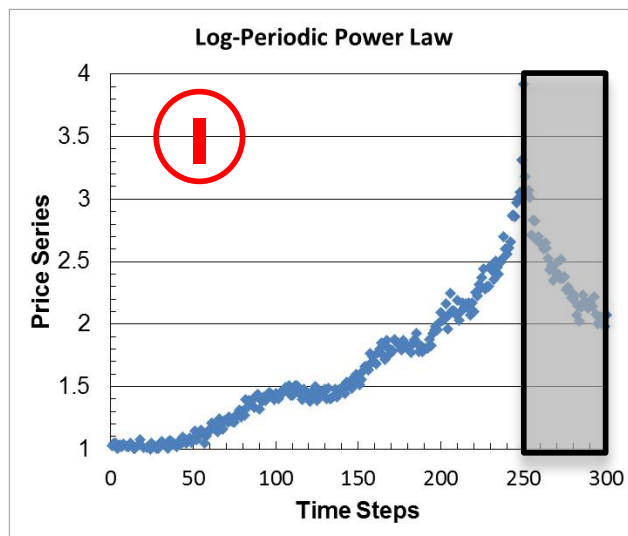
The FCO Cockpit – Global Bubble Status May 1st, 2017

How does it work?

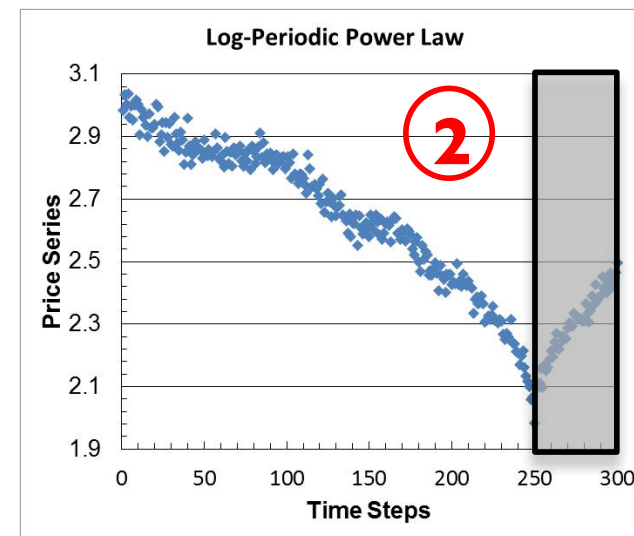
We use the Log-Periodic Power Law Singular (LPPLS) model to hunt for the distinct fingerprint of **Bubbles**:

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**

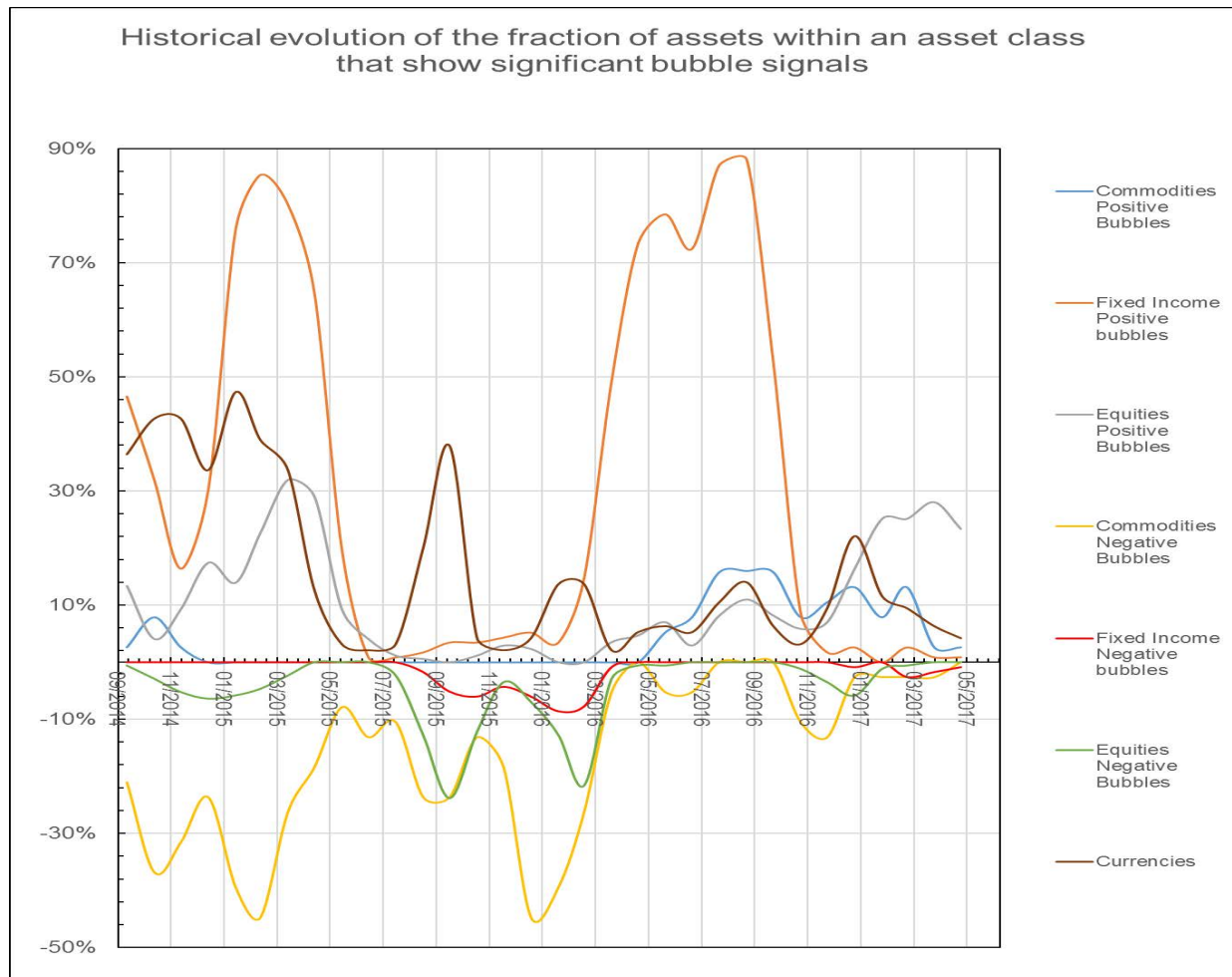


A **negative bubble** when
there is imitation in **selling**

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

General Result

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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.*

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

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.

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

Results per Asset Class

The FCO Cockpit – 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.

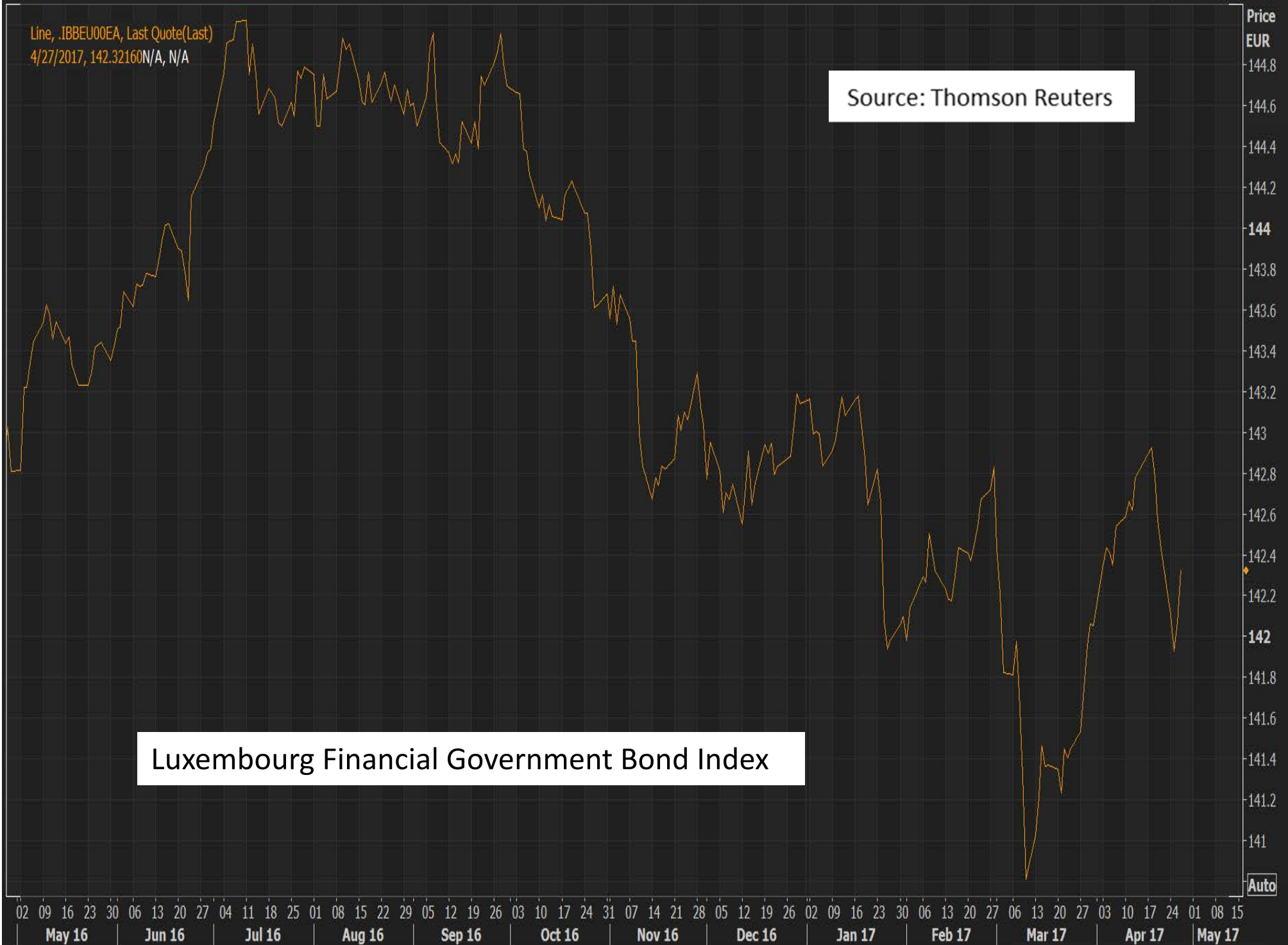
Daily .IBBEU00EA

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

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

Source: Thomson Reuters

Luxembourg Financial Government Bond Index



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

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

Price
EUR

Source: Thomson Reuters

EUR Financial Services Subordinated Index

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 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

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

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: 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: 2017-04-27

Name: Cocoa-ICCO Daily Price U:

Indicator: DS LPPL Confidence



Bubble end flag - long time scale



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

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.

Date: 2017-04-27

Name: INDIAN RUPEE TO EURO

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



Date: 2017-04-27

Name: TAIWAN NEW \$ TO EURC

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



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

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				

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

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;

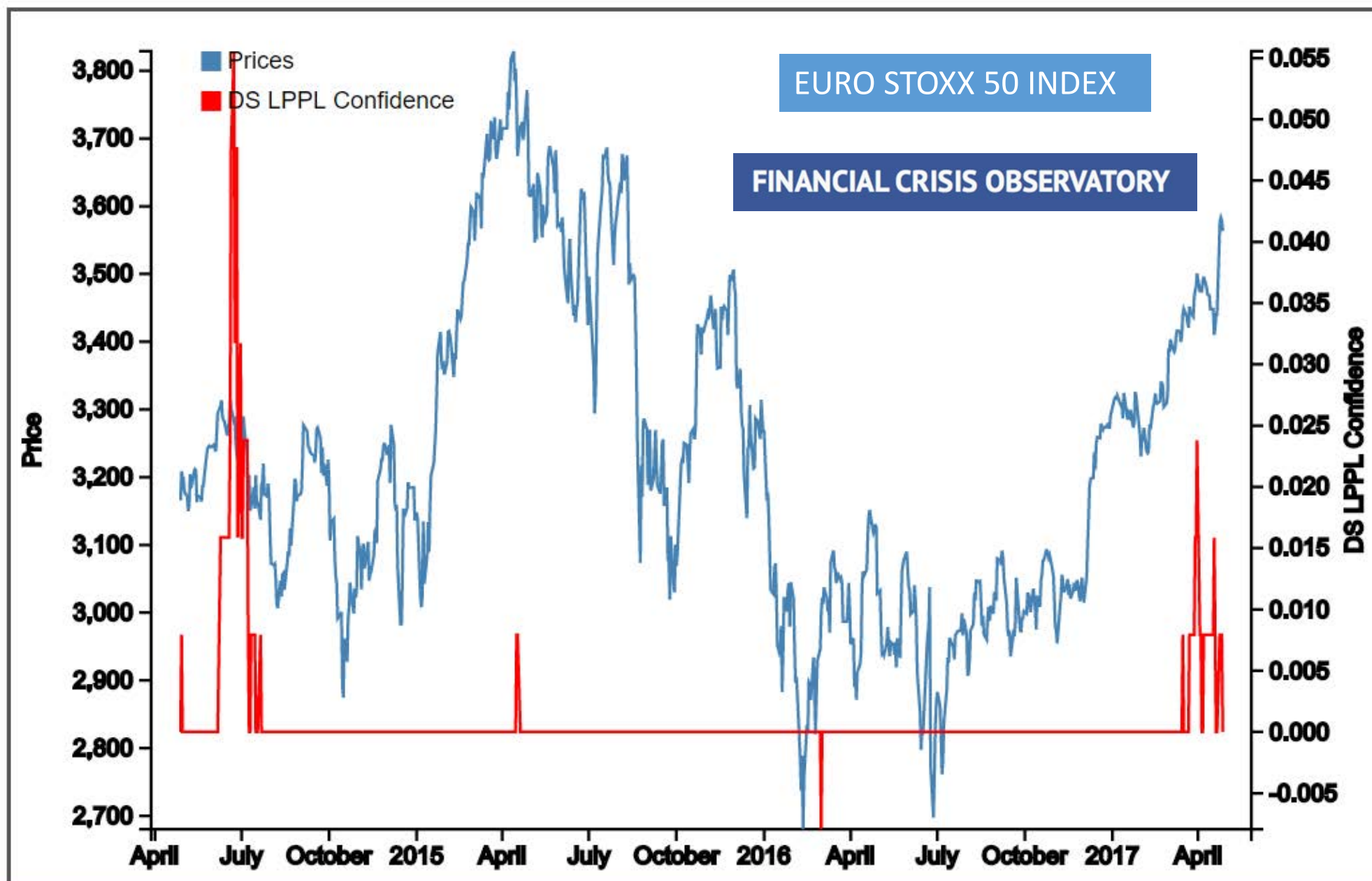
Finally, as we reported last month, the positive bubble signals that were shown in the Hungary and Poland stock market indices over the last five and three months respectively, disappeared.

Date: 2017-04-27

Name: EURO STOXX 50

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



Date: 2017-04-27

Name: NASDAQ COMPOSITE

Indicator: DS LPPL Confidence ▼

Bubble end flag - long time scale ▼



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

Single Stocks

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

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.

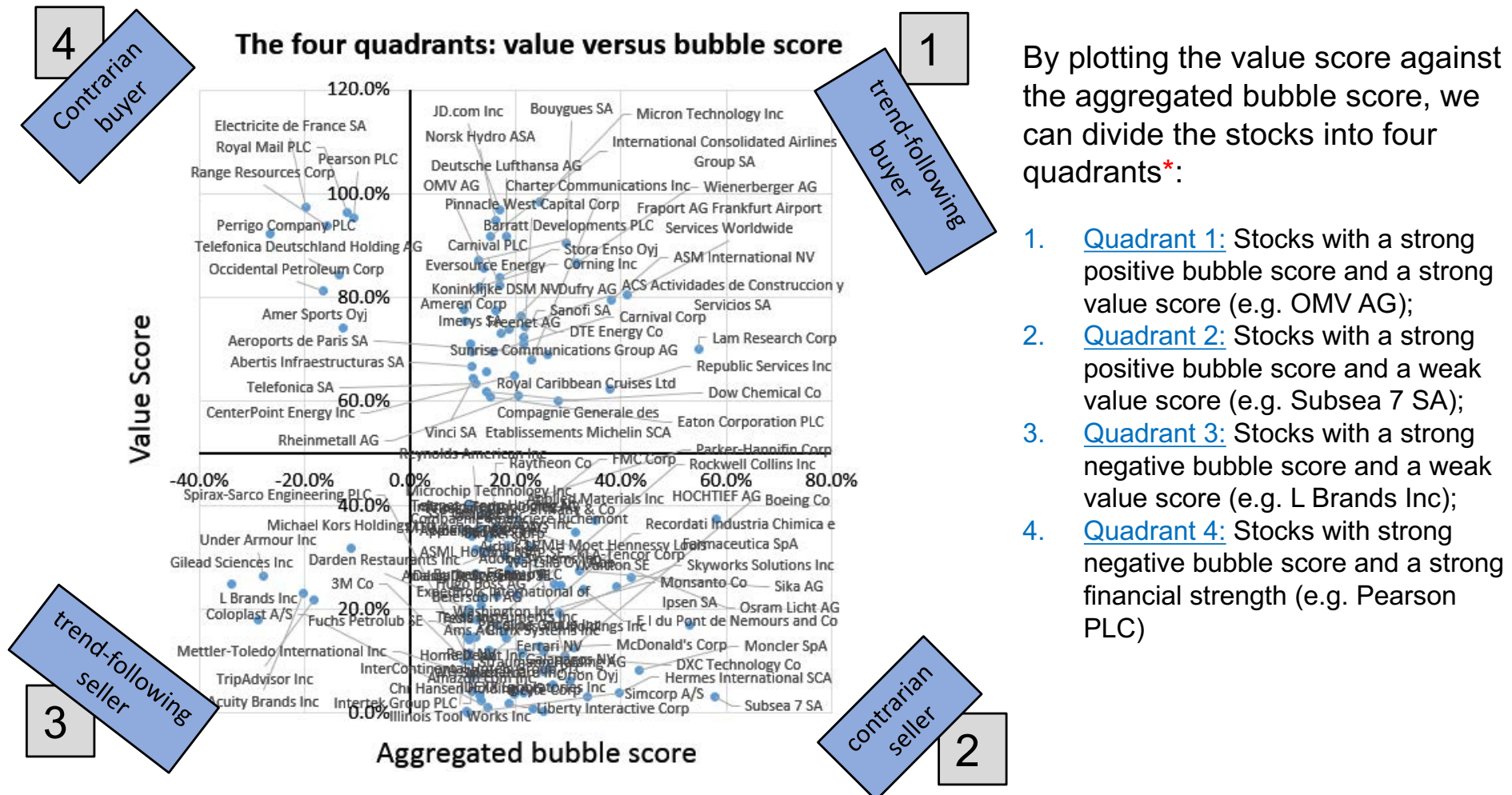
The stocks are the constituents of the Stoxx Europe 600, the S&P 500 and the Nasdaq 100 indices. From these, all doubles and stocks with incomplete data are removed. Because our financial strength indicators are specifically designed for corporates, all financial institutions are taken out of the set as well.

The two financial strength indicators are:

- A 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.

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



*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%.

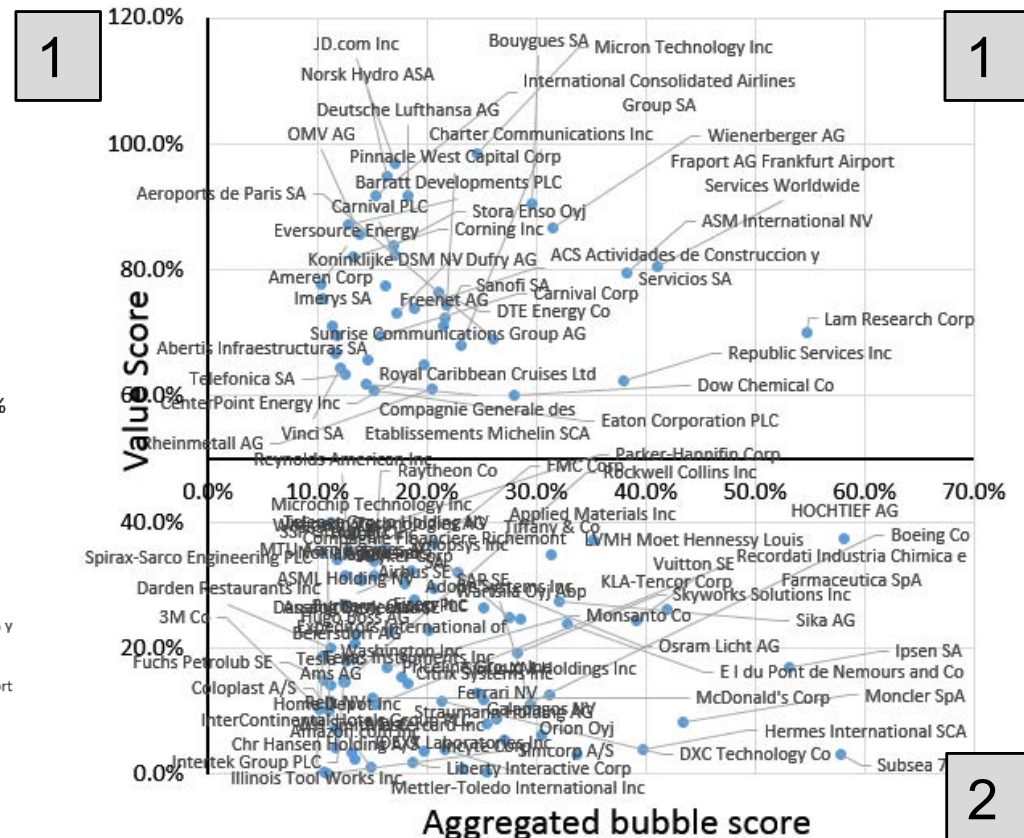
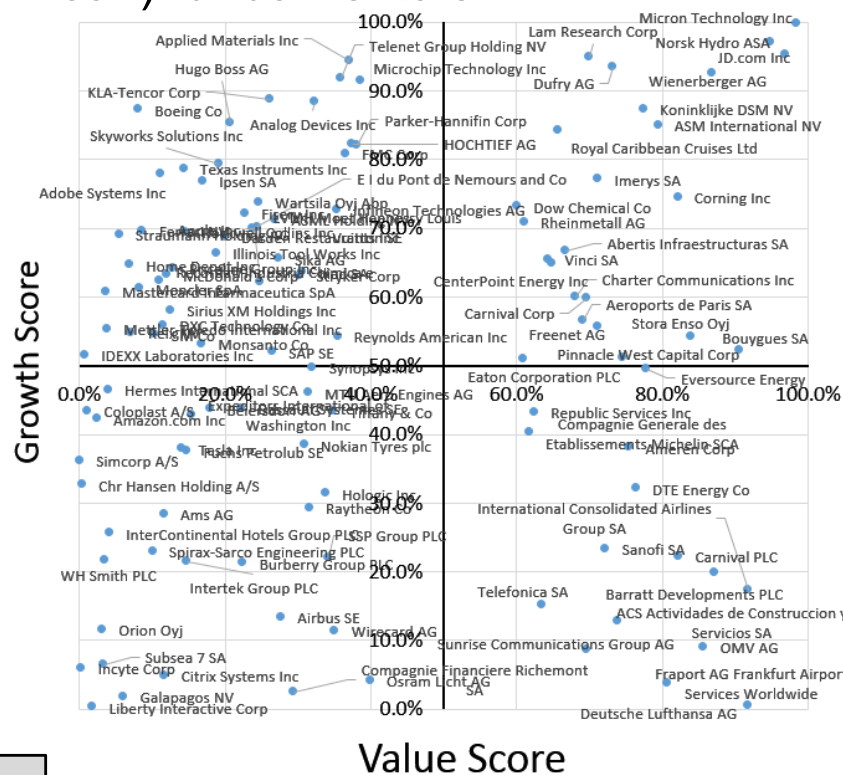
The FCO Cockpit – Global Bubble Status May 1st, 2017

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.**

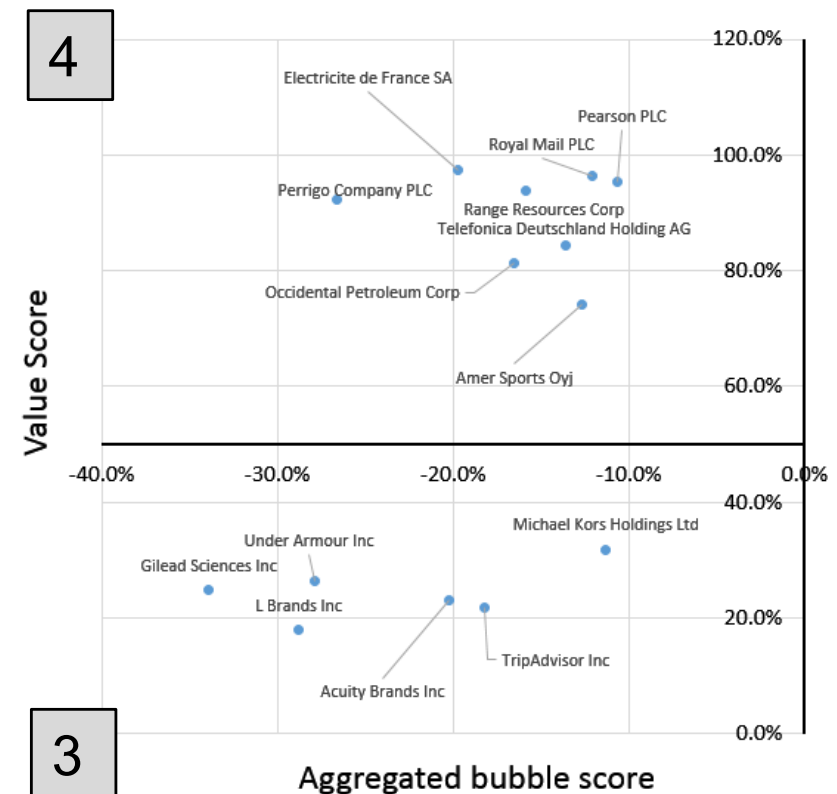
The FCO Cockpit – Global Bubble Status May 1st, 2017

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



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

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



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

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	48.8%	23.2%	68.0%	59.9%
JD.com Inc	China	Consumer Discretionary	Retailing	36.7%	17.1%	96.9%	95.3%
Lam Research Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	85.3%	54.7%	70.0%	94.9%
Micron Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	138.1%	24.6%	98.5%	99.8%
Barratt Developments PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	7.4%	12.9%	87.1%	19.8%
Carnival PLC	United Kingdom	Consumer Discretionary	Consumer Services	37.9%	17.0%	82.3%	22.3%
Freenet AG	Germany	Telecommunication Services	Telecommunication Services	7.3%	21.6%	71.1%	55.7%
Fraport AG Frankfurt Airport Services Worldwide	Germany	Industrials	Transportation	35.1%	41.1%	80.7%	3.8%
Deutsche Lufthansa AG	Germany	Industrials	Transportation	10.3%	18.3%	91.9%	0.5%
Rheinmetall AG	Germany	Industrials	Capital Goods	19.3%	20.5%	61.1%	70.9%
Abertis Infraestructuras SA	Spain	Industrials	Transportation	14.7%	11.6%	66.7%	66.7%
ACS Actividades de Construcción y Servicios SA	Spain	Industrials	Capital Goods	20.5%	18.9%	73.9%	12.7%
Telefonica SA	Spain	Telecommunication Services	Telecommunication Services	6.2%	12.5%	63.6%	15.1%
Aéroports de Paris SA	France	Industrials	Transportation	10.0%	26.1%	69.1%	56.5%
Vinci SA	France	Industrials	Capital Goods	18.3%	12.1%	64.4%	65.4%
Bouygues SA	France	Industrials	Capital Goods	30.9%	29.6%	90.6%	52.2%
Compagnie Generale des Etablissements Michelin SCA	France	Consumer Discretionary	Automobiles & Components	25.5%	14.4%	61.8%	40.2%
Imerys SA	France	Materials	Materials	23.7%	11.4%	71.2%	77.1%
Sanofi SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	13.7%	21.6%	72.3%	23.3%
ASM International NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	50.1%	38.2%	79.5%	85.0%
Koninklijke DSM NV	Netherlands	Materials	Materials	20.2%	16.2%	77.5%	87.4%

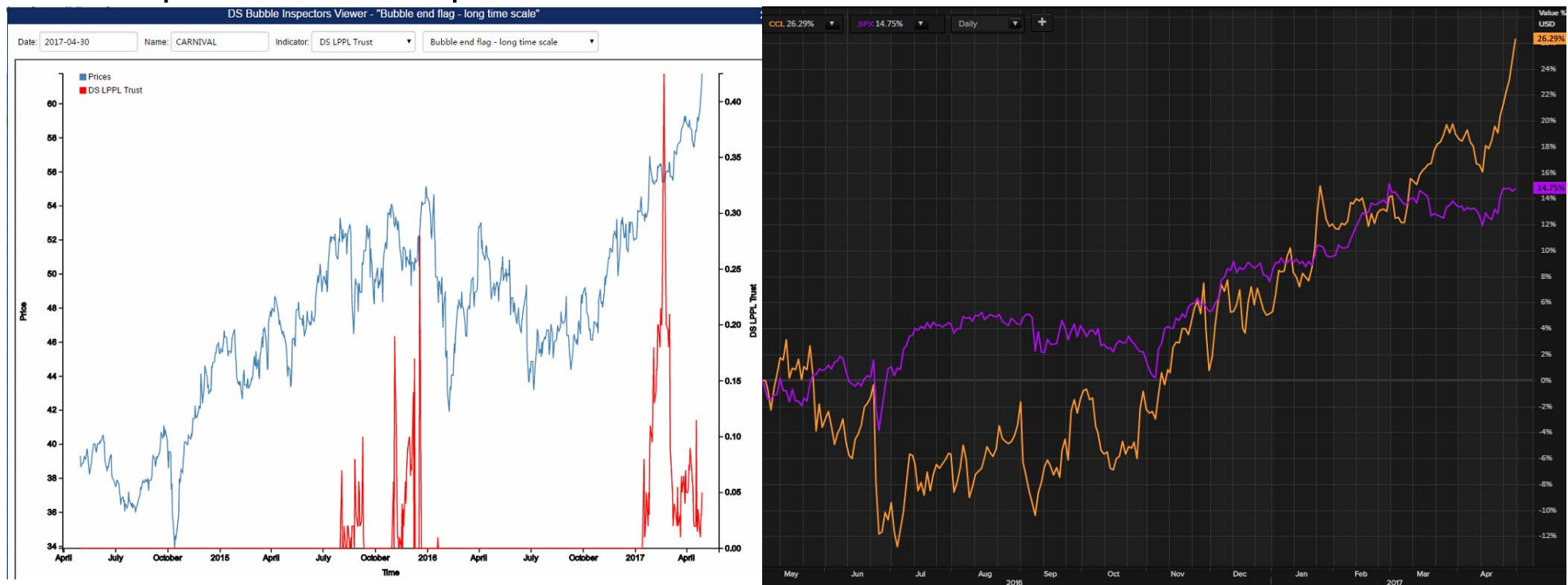
The FCO Cockpit – Global Bubble Status May 1st, 2017

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
International Consolidated Airlines Group SA	United Kingdom	Industrials	Transportation	1.6%	15.3%	91.7%	17.3%
Stora Enso Oyj	Finland	Materials	Materials	34.4%	17.0%	84.0%	54.1%
Norsk Hydro ASA	Norway	Materials	Materials	41.9%	16.3%	94.8%	97.1%
OMV AG	Austria	Energy	Energy	60.1%	13.9%	85.7%	9.1%
Wienerberger AG	Austria	Materials	Materials	26.3%	31.5%	86.8%	92.6%
Dufry AG	Switzerland	Consumer Discretionary	Retailing	27.2%	17.2%	73.2%	93.5%
Sunrise Communications Group AG	Switzerland	Telecommunication Services	Telecommunication Services	25.3%	11.8%	69.7%	8.6%
Ameren Corp	United States of America	Utilities	Utilities	14.7%	10.5%	75.5%	38.1%
Carnival Corp	United States of America	Consumer Discretionary	Consumer Services	26.8%	15.7%	69.6%	59.8%
CenterPoint Energy Inc	United States of America	Utilities	Utilities	33.6%	19.7%	64.9%	64.9%
Dow Chemical Co	United States of America	Materials	Materials	17.6%	28.0%	60.1%	73.1%
DTE Energy Co	United States of America	Utilities	Utilities	18.8%	21.0%	76.4%	32.1%
Eversource Energy	United States of America	Utilities	Utilities	6.0%	10.3%	77.8%	49.5%
Eaton Corporation PLC	Ireland; Republic of	Industrials	Capital Goods	19.7%	15.2%	61.0%	50.9%
Corning Inc	United States of America	Information Technology	Technology Hardware & Equipment	52.7%	13.2%	82.2%	74.5%
Pinnacle West Capital Corp	United States of America	Utilities	Utilities	18.9%	21.8%	74.5%	51.2%
Royal Caribbean Cruises Ltd	United States of America	Consumer Discretionary	Consumer Services	40.2%	14.6%	65.8%	84.2%
Republic Services Inc	United States of America	Industrials	Commercial & Professional Services	33.3%	37.9%	62.5%	43.2%
Trelleborg AB	Sweden	Industrials	Capital Goods	41.1%	29.5%	68.3%	81.8%

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

Quadrant 1 stocks: strong positive bubble signals with strong fundamentals, example Carnival Corp.

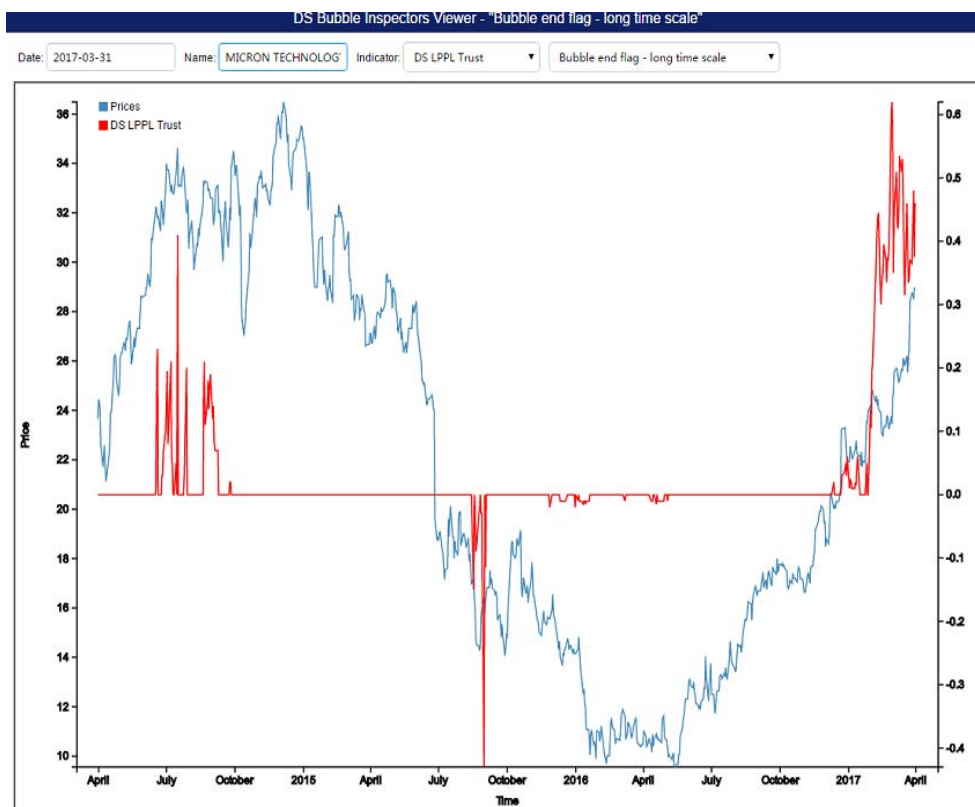


The left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning, indicating the convergence towards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

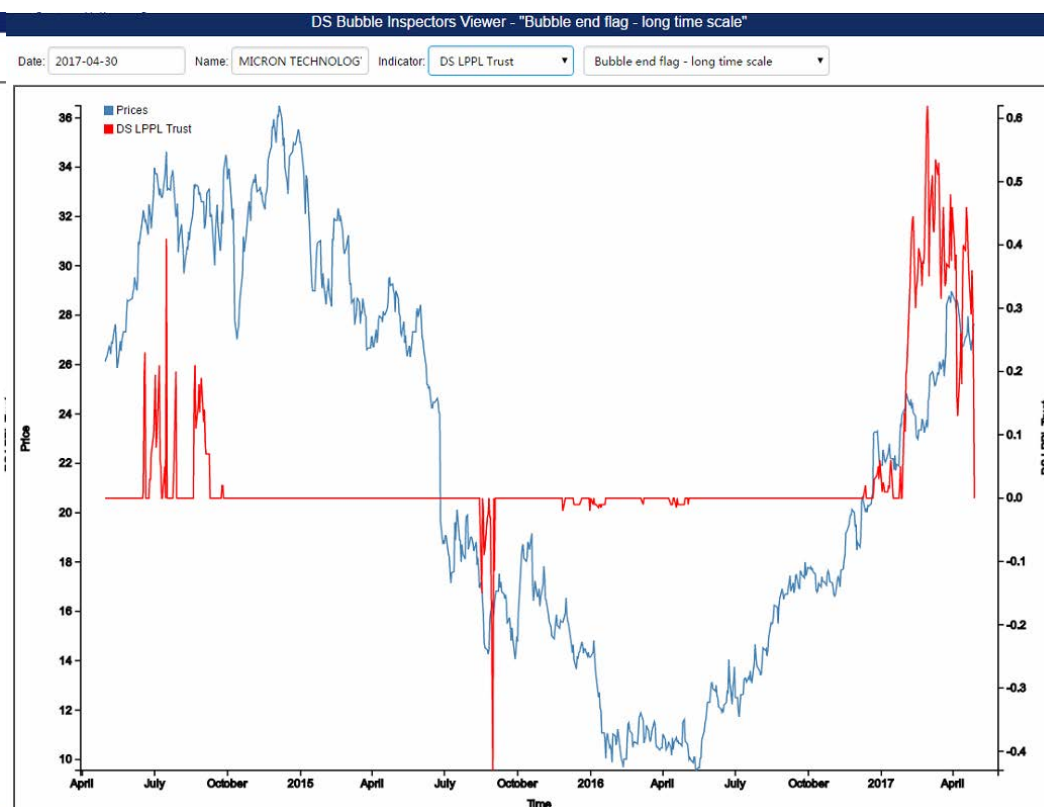
Last month example: strong positive bubble signals with strong fundamentals, Micron Technology Inc.

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)



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

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.

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

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	51.5%	27.5%	24.9%	62.1%
Adobe Systems Inc	United States of America	Information Technology	Software & Services	42.8%	29.4%	11.2%	77.9%
Analog Devices Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	31.7%	18.6%	32.3%	88.4%
Applied Materials Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	95.1%	35.1%	37.0%	94.3%
Amazon.com Inc	United States of America	Consumer Discretionary	Retailing	53.7%	13.4%	2.5%	42.2%
Citrix Systems Inc	United States of America	Information Technology	Software & Services	23.9%	25.2%	11.8%	4.8%
Expeditors International of Washington Inc	United States of America	Industrials	Transportation	12.5%	17.7%	15.4%	42.8%
Fiserv Inc	United States of America	Information Technology	Software & Services	21.2%	20.2%	22.8%	72.2%
Hologic Inc	United States of America	Health Care	Health Care Equipment & Services	33.1%	15.1%	33.8%	31.4%
IDEXX Laboratories Inc	United States of America	Health Care	Health Care Equipment & Services	107.6%	23.3%	0.8%	51.5%
Incyte Corp	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	71.8%	25.4%	0.4%	6.0%
KLA-Tencor Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	38.7%	41.9%	26.2%	88.8%
Liberty Interactive Corp	United States of America	Consumer Discretionary	Retailing	53.3%	18.7%	1.9%	0.2%
Microchip Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	52.7%	14.9%	38.7%	91.5%
Priceline Group Inc	United States of America	Consumer Discretionary	Retailing	40.2%	24.5%	12.9%	64.2%
Sirius XM Holdings Inc	United States of America	Consumer Discretionary	Media	26.3%	31.2%	12.6%	58.0%
Synopsys Inc	United States of America	Information Technology	Software & Services	52.7%	22.9%	32.1%	49.8%
Skyworks Solutions Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	39.0%	28.2%	19.2%	79.4%
Tesla Inc	United States of America	Consumer Discretionary	Automobiles & Components	26.8%	11.1%	14.2%	37.9%
Texas Instruments Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	34.9%	18.3%	14.4%	78.7%
Galapagos NV	Belgium	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	102.7%	30.4%	6.1%	1.8%
Telenet Group Holding NV	Belgium	Consumer Discretionary	Media	25.5%	16.2%	35.8%	91.9%
Burberry Group PLC	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	33.1%	16.6%	22.5%	21.2%
Beiersdorf AG	Germany	Consumer Staples	Household & Personal Products	14.4%	12.7%	18.0%	43.6%
Hugo Boss AG	Germany	Consumer Discretionary	Consumer Durables & Apparel	23.8%	13.4%	20.8%	85.3%
Fuchs Petrolub SE	Germany	Materials	Materials	21.1%	10.7%	14.9%	37.5%
HOCHTIEF AG	Germany	Industrials	Capital Goods	46.0%	58.2%	37.5%	82.3%
Infineon Technologies AG	Germany	Information Technology	Semiconductors & Semiconductor Equipment	46.7%	16.2%	35.4%	72.6%

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

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
MTU Aero Engines AG	Germany	Industrials	Capital Goods	56.8%	12.6%	31.5%	46.0%
Osram Licht AG	Germany	Industrials	Capital Goods	34.8%	11.2%	40.0%	4.1%
SAP SE	Germany	Information Technology	Software & Services	30.3%	25.1%	26.5%	52.0%
Wirecard AG	Germany	Information Technology	Software & Services	42.4%	10.5%	35.1%	11.4%
Chr Hansen Holding A/S	Denmark	Materials	Materials	13.2%	10.7%	0.5%	32.7%
Coloplast A/S	Denmark	Health Care	Health Care Equipment & Services	18.4%	14.8%	1.2%	43.4%
Simcorp A/S	Denmark	Information Technology	Software & Services	44.6%	10.9%	0.1%	36.2%
Airbus SE	Netherlands	Industrials	Capital Goods	33.1%	18.8%	27.7%	13.3%
Dassault Systemes SE	France	Information Technology	Software & Services	17.5%	13.6%	22.3%	43.8%
Iliad SA	France	Telecommunication Services	Telecommunication Services	16.7%	14.1%	30.7%	63.6%
Ipsen SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	102.1%	53.1%	17.0%	76.9%
LVMH Moët Hennessy Louis Vuitton SE	France	Consumer Discretionary	Consumer Durables & Apparel	51.6%	39.1%	24.4%	70.2%
Hermès International SCA	France	Consumer Discretionary	Consumer Durables & Apparel	38.7%	39.7%	4.0%	46.5%
ASML Holding NV	Netherlands	Information Technology	Semiconductors & Semiconductor Equipment	38.4%	12.6%	26.9%	71.2%
Relx NV	Netherlands	Industrials	Commercial & Professional Services	19.6%	11.6%	7.2%	54.8%
Moncler SpA	Italy	Consumer Discretionary	Consumer Durables & Apparel	61.2%	43.4%	8.3%	61.2%
Ferrari NV	Italy	Consumer Discretionary	Automobiles & Components	73.7%	26.4%	8.7%	69.6%
Recordati Industria Chimica e Farmaceutica SpA	Italy	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	53.8%	15.3%	11.1%	62.3%
InterContinental Hotels Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	46.5%	11.7%	4.2%	25.6%
Intertek Group PLC	United Kingdom	Industrials	Commercial & Professional Services	23.4%	12.3%	14.7%	21.5%
Nokian Tyres plc	Finland	Consumer Discretionary	Automobiles & Components	20.8%	14.1%	30.9%	38.4%
Orion Oyj	Finland	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	75.0%	33.7%	3.2%	11.6%
Wartsila Oyj Abp	Finland	Industrials	Capital Goods	48.2%	28.6%	24.6%	73.8%
Subsea 7 SA	United Kingdom	Energy	Energy	93.2%	57.8%	3.3%	6.5%
Ams AG	Austria	Information Technology	Semiconductors & Semiconductor Equipment	152.5%	11.2%	11.7%	28.4%
Compagnie Financière Richemont SA	Switzerland	Consumer Discretionary	Consumer Durables & Apparel	28.0%	20.7%	29.5%	2.5%
Sika AG	Switzerland	Materials	Materials	55.0%	32.2%	27.4%	65.6%
Straumann Holding AG	Switzerland	Health Care	Health Care Equipment & Services	57.7%	27.0%	5.5%	69.1%

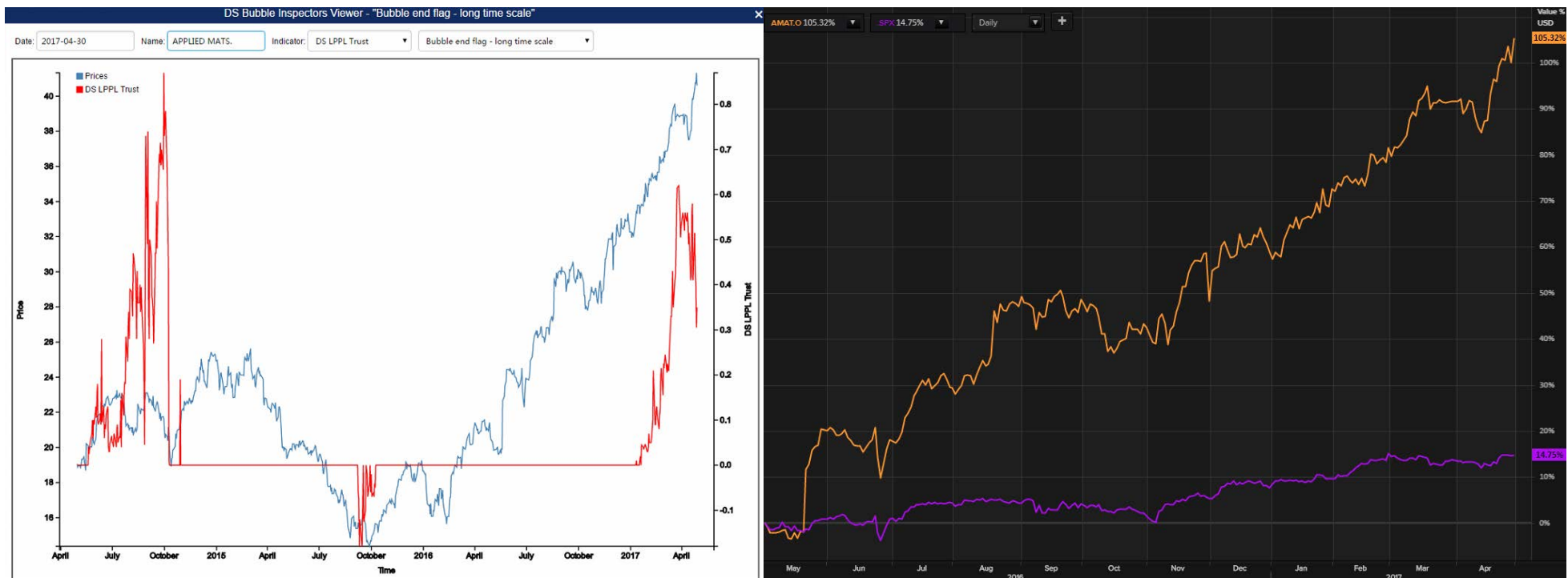
The FCO Cockpit – Global Bubble Status May 1st, 2017

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
WH Smith PLC	United Kingdom	Consumer Discretionary	Retailing	3.6%	13.1%	3.5%	21.7%
Spirax-Sarco Engineering PLC	United Kingdom	Industrials	Capital Goods	51.9%	11.1%	10.1%	23.0%
SSP Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	51.8%	11.8%	34.2%	22.1%
Boeing Co	United States of America	Industrials	Capital Goods	37.1%	25.4%	8.1%	87.3%
Rockwell Collins Inc	United States of America	Industrials	Capital Goods	16.0%	12.5%	14.6%	69.5%
E I du Pont de Nemours and Co	United States of America	Materials	Materials	20.1%	32.8%	23.8%	69.9%
Darden Restaurants Inc	United States of America	Consumer Discretionary	Consumer Services	34.9%	11.3%	20.0%	68.8%
DXC Technology Co	United States of America	Information Technology	Software & Services	126.1%	21.4%	11.6%	55.9%
FMC Corp	United States of America	Materials	Materials	68.3%	20.5%	36.6%	80.8%
Home Depot Inc	United States of America	Consumer Discretionary	Retailing	17.6%	11.8%	7.0%	64.6%
Illinois Tool Works Inc	United States of America	Industrials	Capital Goods	32.1%	10.5%	18.9%	66.4%
Mastercard Inc	United States of America	Information Technology	Software & Services	19.7%	19.8%	3.7%	60.7%
McDonald's Corp	United States of America	Consumer Discretionary	Consumer Services	9.4%	15.0%	12.0%	63.2%
3M Co	United States of America	Industrials	Capital Goods	17.3%	10.2%	10.4%	54.5%
Monsanto Co	United States of America	Materials	Materials	23.7%	16.4%	16.9%	53.2%
Mettler-Toledo International Inc	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	42.9%	21.6%	3.9%	55.3%
Parker-Hannifin Corp	United States of America	Industrials	Capital Goods	39.3%	13.4%	38.2%	82.1%
Reynolds American Inc	United States of America	Consumer Staples	Food, Beverage & Tobacco	30.8%	12.9%	35.5%	54.2%
Raytheon Co	United States of America	Industrials	Capital Goods	21.7%	15.2%	31.6%	29.2%
Stryker Corp	United States of America	Health Care	Health Care Equipment & Services	24.5%	17.9%	30.3%	63.1%
Tiffany & Co	United States of America	Consumer Discretionary	Retailing	27.2%	31.4%	34.9%	43.3%
Alfa Laval AB	Sweden	Industrials	Capital Goods	41.7%	13.3%	31.1%	3.2%
Hexpol AB	Sweden	Materials	Materials	11.9%	12.0%	21.9%	51.7%
Intrum Justitia AB	Sweden	Industrials	Commercial & Professional Services	22.8%	33.5%	25.0%	29.5%
JM AB	Sweden	Consumer Discretionary	Consumer Durables & Apparel	33.6%	36.1%	32.8%	92.2%
Sandvik AB	Sweden	Industrials	Capital Goods	64.4%	26.5%	39.3%	84.7%
Electrolux AB	Sweden	Consumer Discretionary	Consumer Durables & Apparel	13.1%	16.0%	36.1%	68.2%
Atlas Copco AB	Sweden	Industrials	Capital Goods	56.7%	38.6%	20.3%	89.4%

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

Quadrant 2 stocks: strong positive bubble signals with weak fundamentals,
example Applied Materials Inc.



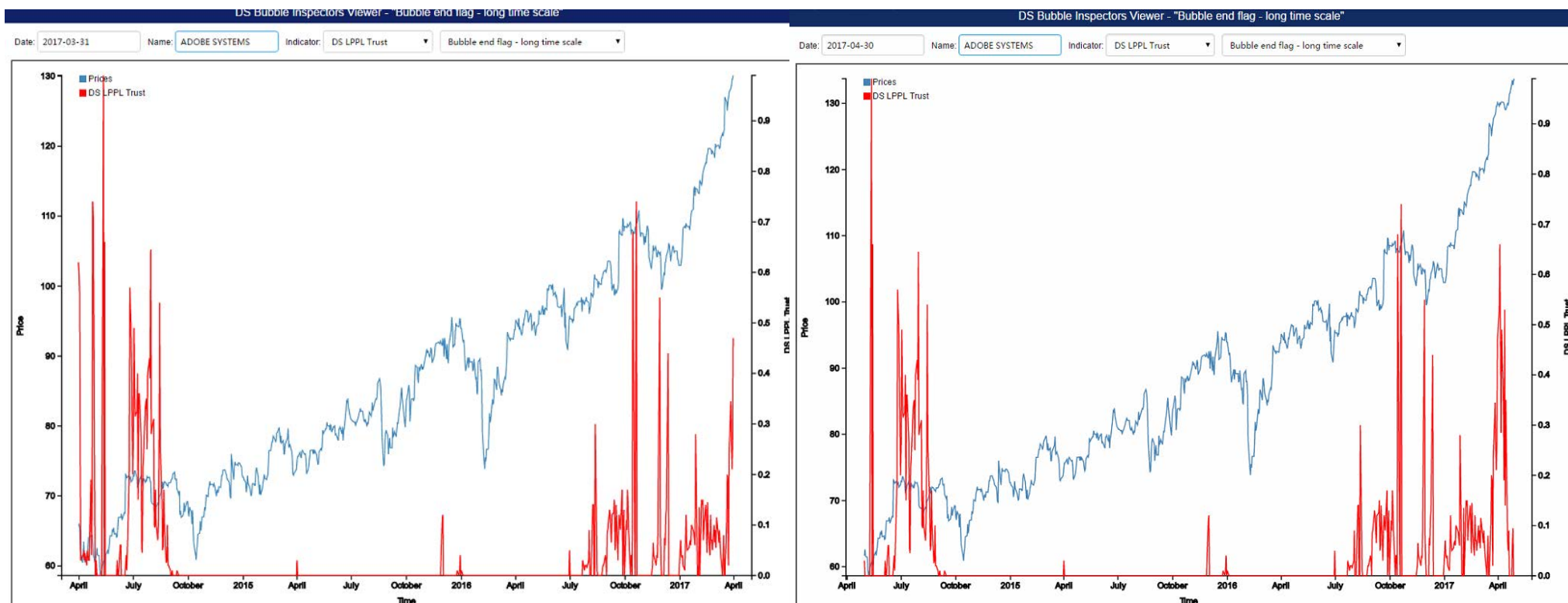
The left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning. The right graph shows the outperformance of the stock over the last year (orange) with respect to the S&P500 benchmark (purple), it is almost 90% 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)



The FCO Cockpit – Global Bubble Status May 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	-29.3%	-33.9%	24.8%	0.8%
TripAdvisor Inc	United States of America	Consumer Discretionary	Retailing	-29.2%	-18.2%	21.8%	8.1%
Acuity Brands Inc	United States of America	Industrials	Capital Goods	-28.5%	-20.2%	23.1%	34.4%
Michael Kors Holdings Ltd	United Kingdom	Consumer Discretionary	Consumer Durables & Apparel	-29.3%	-11.3%	31.8%	5.1%
L Brands Inc	United States of America	Consumer Discretionary	Retailing	-33.6%	-28.8%	17.9%	4.2%
Under Armour Inc	United States of America	Consumer Discretionary	Consumer Durables & Apparel	-51.9%	-27.9%	26.4%	12.5%
Fingerprint Cards AB	Sweden	Information Technology	Technology Hardware & Equipment	-64.1%	-42.3%	1.1%	0.6%

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

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals, example Gilead Sciences Inc.



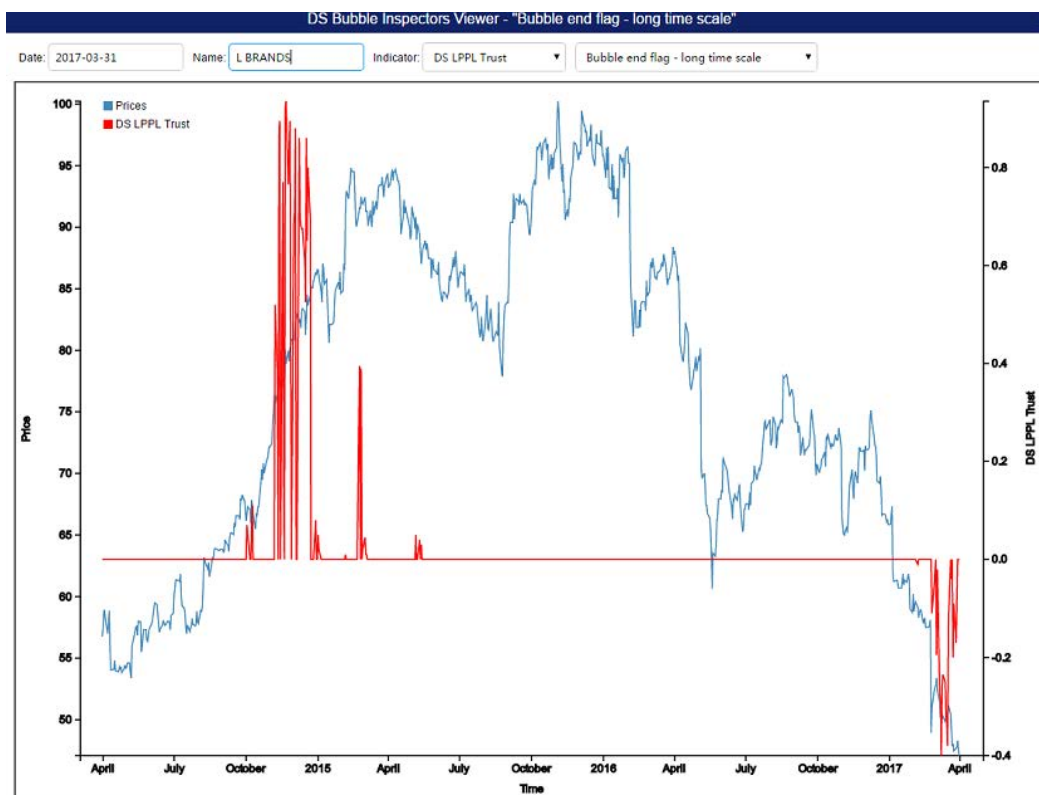
Left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning of the negative bubble. The right graph shows the performance of the stock over the last year (orange) with respect to the S&P 500 benchmark (purple), it is roughly -40%.

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)



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

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
Telefonica Deutschland Holding AG	Germany	Telecommunication Services	Telecommunication Services	-1.4%	-13.6%	84.4%	5.5%
Electricite de France SA	France	Utilities	Utilities	-33.2%	-19.7%	97.5%	0.4%
Amer Sports Oyj	Finland	Consumer Discretionary	Consumer Durables & Apparel	-24.0%	-12.7%	74.3%	46.9%
Pearson PLC	United Kingdom	Consumer Discretionary	Media	-21.5%	-10.6%	95.3%	16.0%
Royal Mail PLC	United Kingdom	Industrials	Transportation	-17.8%	-12.1%	96.5%	16.5%
Occidental Petroleum Corp	United States of America	Energy	Energy	-19.3%	-16.5%	81.3%	96.6%
Perrigo Company PLC	Ireland; Republic of	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-23.3%	-26.6%	92.3%	6.1%
Range Resources Corp	United States of America	Energy	Energy	-35.0%	-15.8%	93.8%	95.5%

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

Sectors

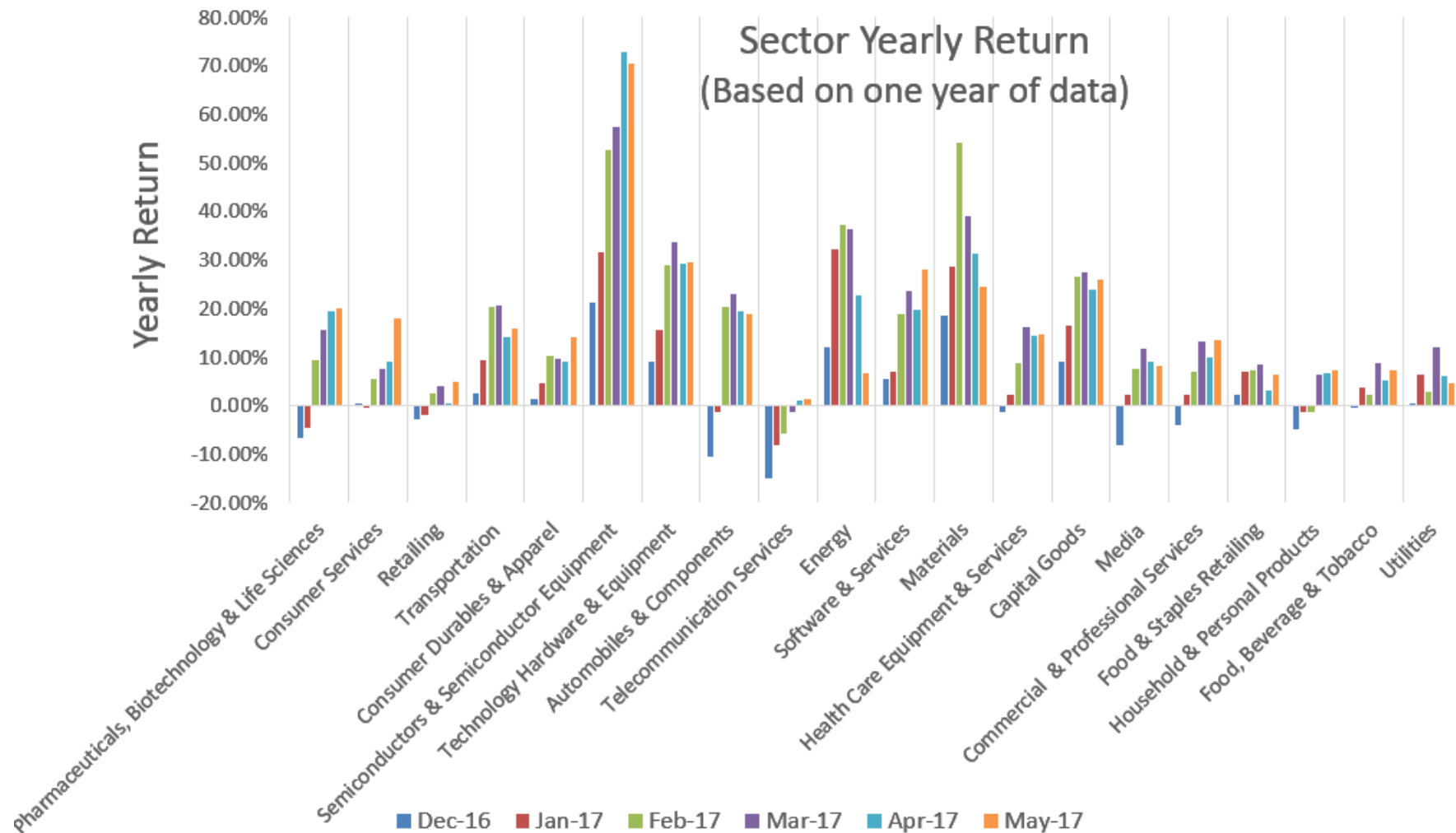
The FCO Cockpit – Global Bubble Status May 1st, 2017

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%	38.0%	38.1%	50.8%	49.7%
Consumer Services	17.9%	8.9%	4.1%	2.9%	44.2%	45.3%	50.7%	50.7%
Retailing	4.8%	0.3%	1.5%	1.1%	39.4%	39.7%	43.2%	45.3%
Transportation	15.6%	13.9%	6.5%	5.2%	52.0%	52.1%	40.3%	39.9%
Consumer Durables & Apparel	13.9%	9.0%	6.6%	2.3%	45.6%	48.0%	53.6%	55.5%
Semiconductors & Semiconductor Equipment	70.3%	72.8%	17.6%	16.3%	42.0%	40.3%	74.6%	73.2%
Technology Hardware & Equipment	29.3%	29.1%	2.5%	6.0%	50.6%	50.9%	45.6%	49.3%
Automobiles & Components	18.8%	19.3%	6.7%	5.8%	65.7%	66.3%	59.1%	59.9%
Telecommunication Services	1.4%	1.1%	1.5%	0.7%	68.0%	65.7%	38.4%	32.5%
Energy	6.7%	22.5%	0.4%	0.4%	74.9%	75.1%	66.4%	69.8%
Software & Services	27.9%	19.8%	6.3%	4.5%	33.6%	32.9%	49.1%	49.0%
Materials	24.5%	31.2%	5.0%	3.9%	57.8%	58.4%	56.3%	56.7%
Health Care Equipment & Services	14.7%	14.2%	4.9%	2.5%	41.9%	41.9%	52.6%	54.3%
Capital Goods	25.9%	23.8%	6.9%	6.1%	45.9%	47.0%	48.5%	47.6%
Media	8.1%	9.0%	3.0%	3.4%	55.8%	54.2%	47.7%	44.3%
Commercial & Professional Services	13.4%	10.0%	4.9%	2.6%	40.2%	39.4%	42.5%	42.9%
Food & Staples Retailing	6.4%	3.0%	1.0%	-0.2%	58.0%	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%	39.1%	38.9%	49.4%	50.0%
Utilities	4.6%	6.0%	3.9%	1.3%	78.0%	77.2%	39.3%	37.1%

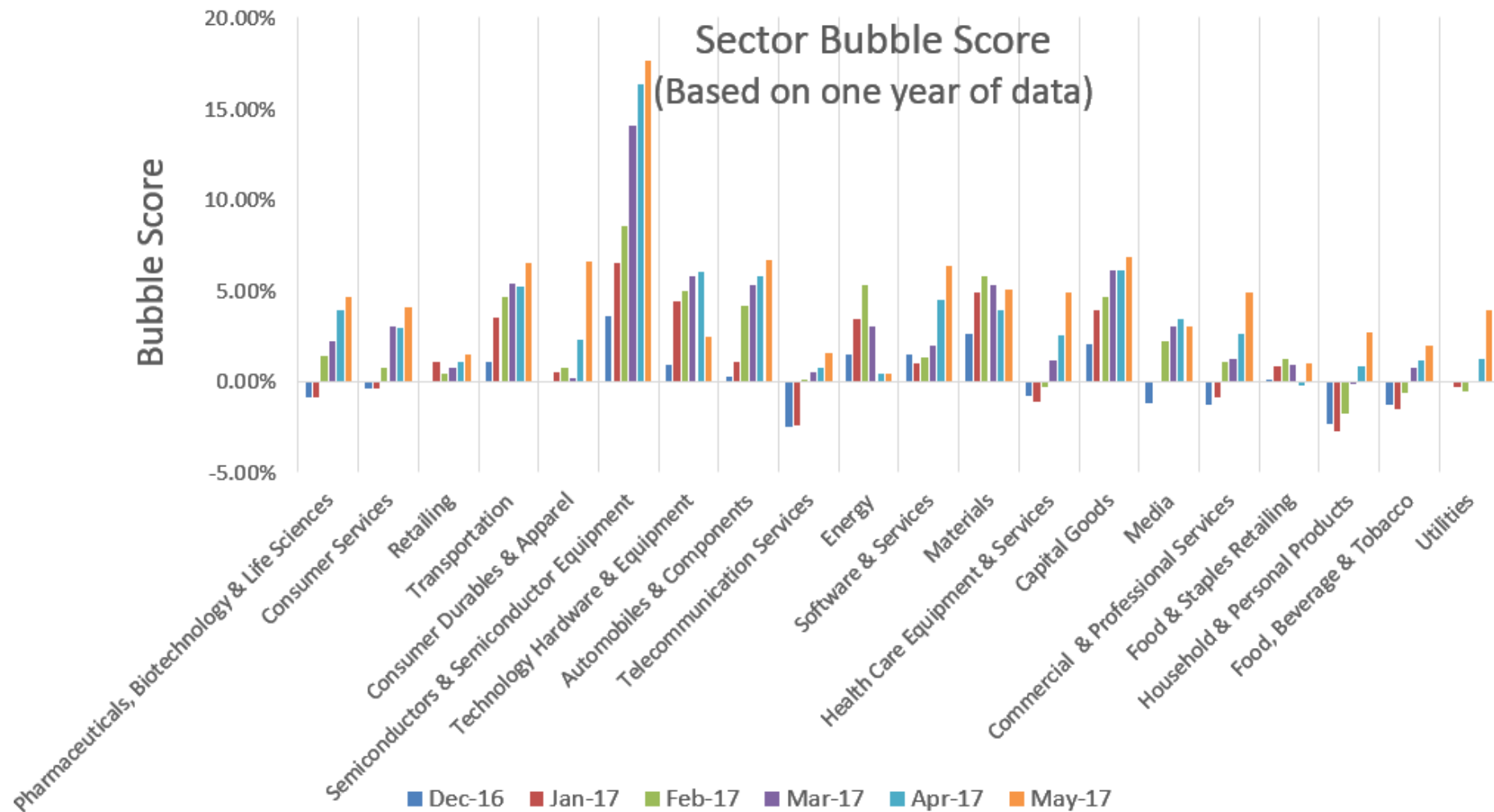
By aggregating the calculations that were done at the single stock level in the previous section, we can see the bubble, value and growth score at the sector level. The results in the previous report are also presented here for comparison.

- 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.

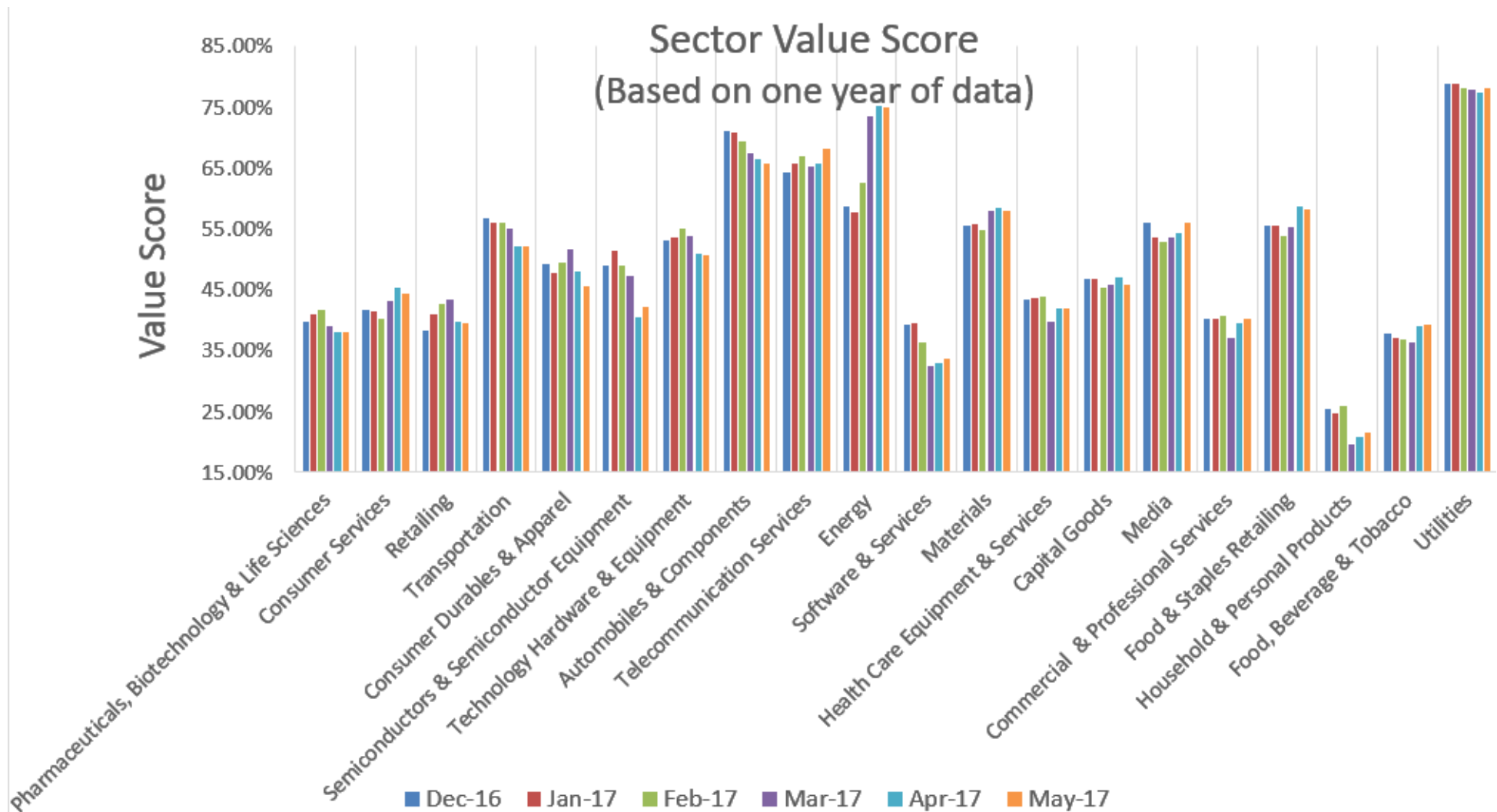
The FCO Cockpit – Global Bubble Status May 1st, 2017



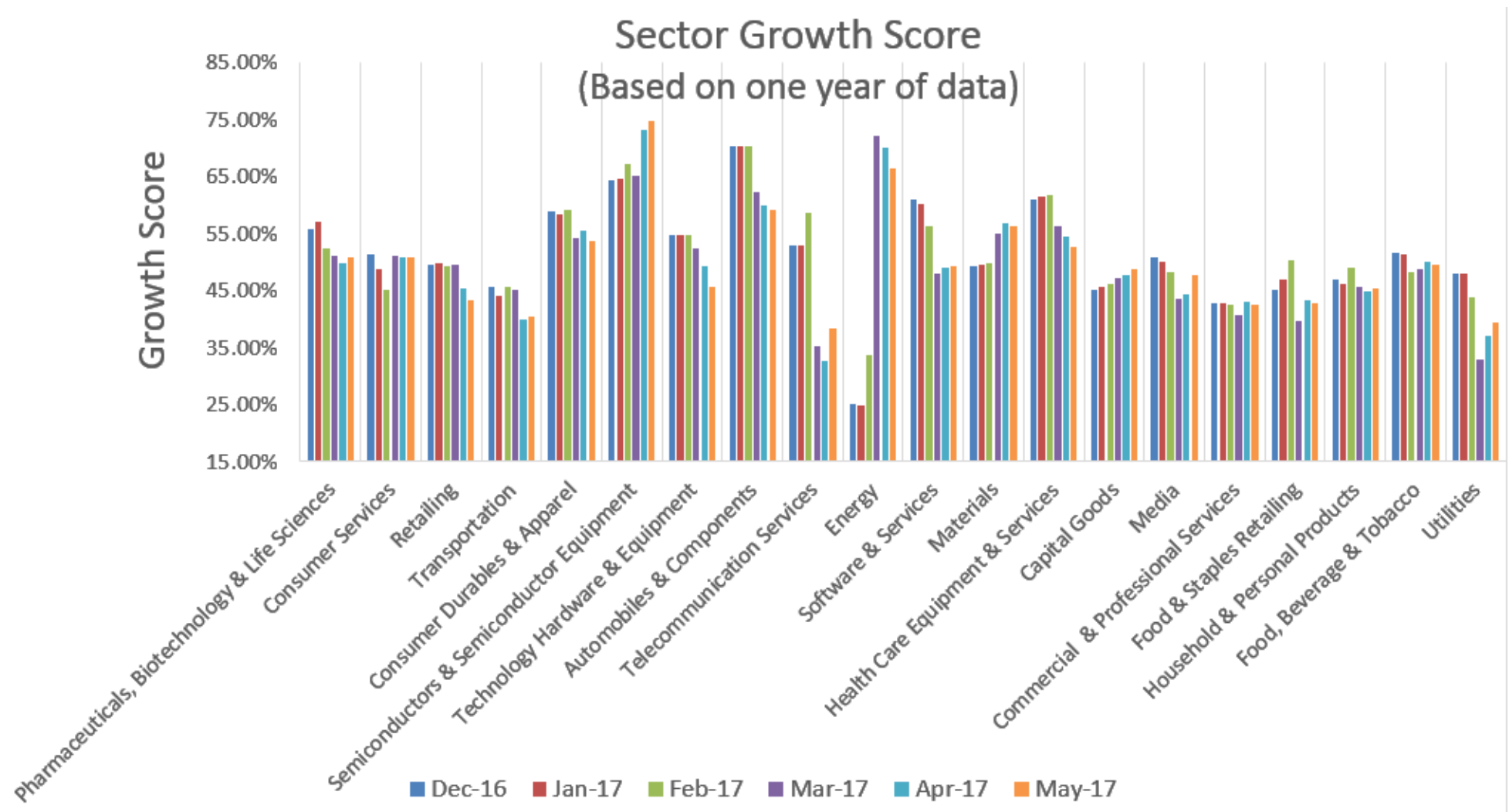
The FCO Cockpit – Global Bubble Status May 1st, 2017



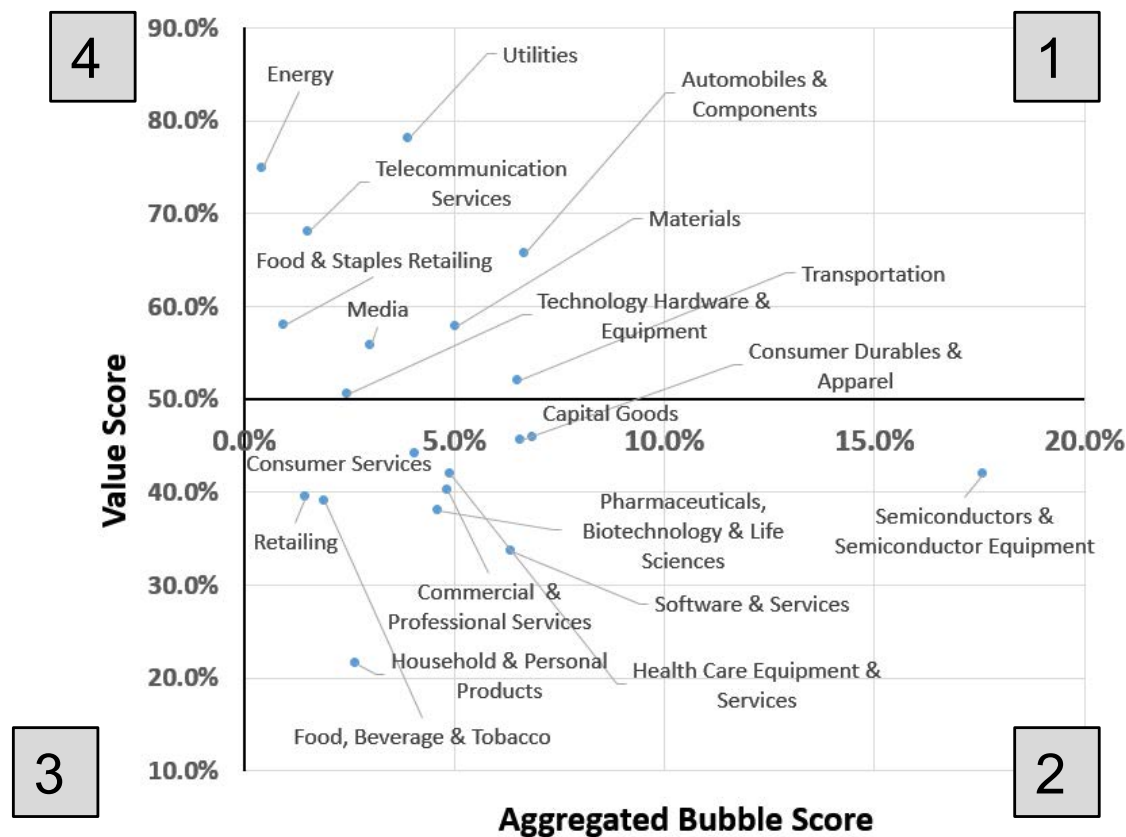
The FCO Cockpit – Global Bubble Status May 1st, 2017



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



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

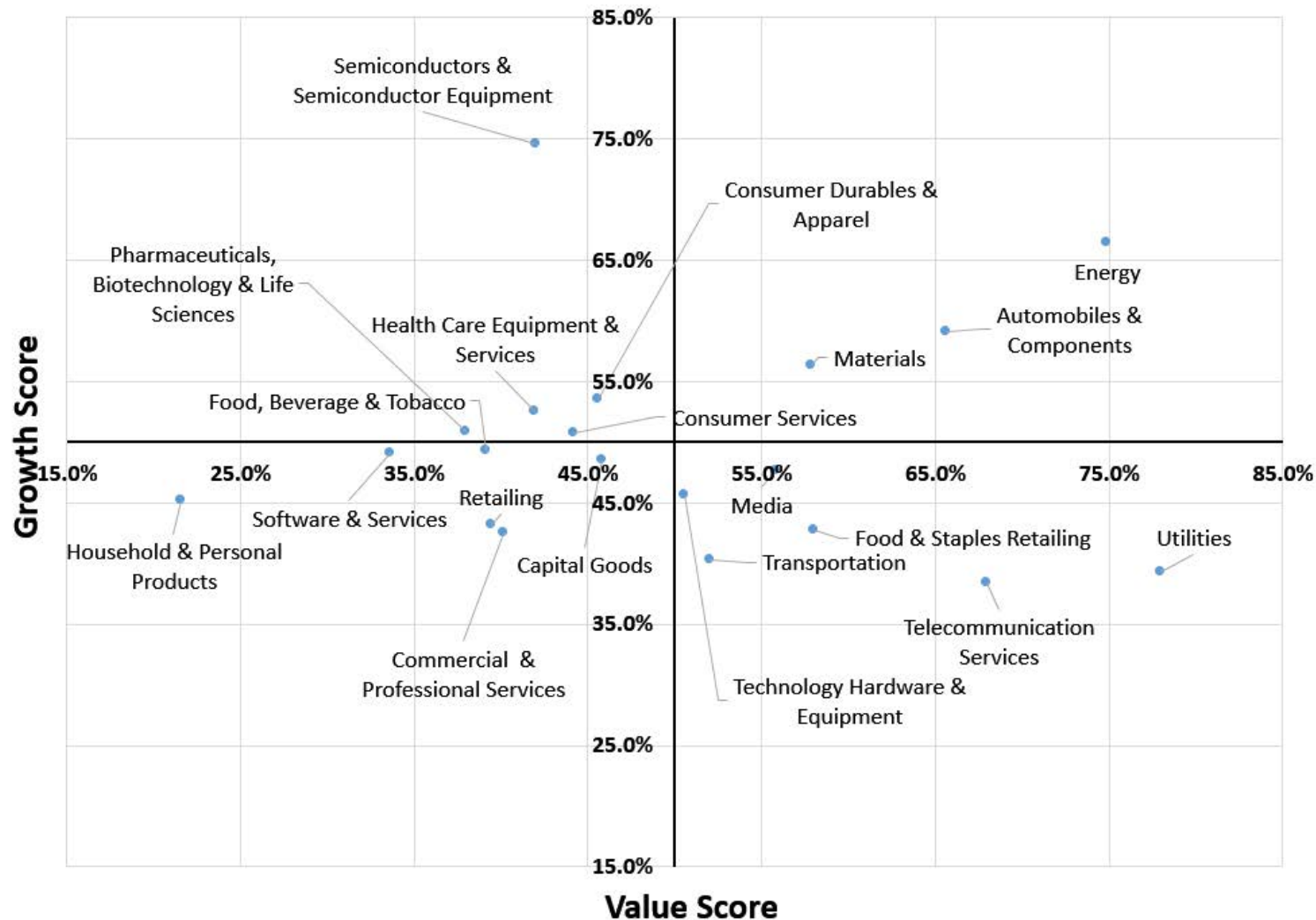


By plotting the value score versus the aggregated bubble score, we can also divide the sectors into four quadrants*:

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.

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



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

Portfolio Construction and Performance

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

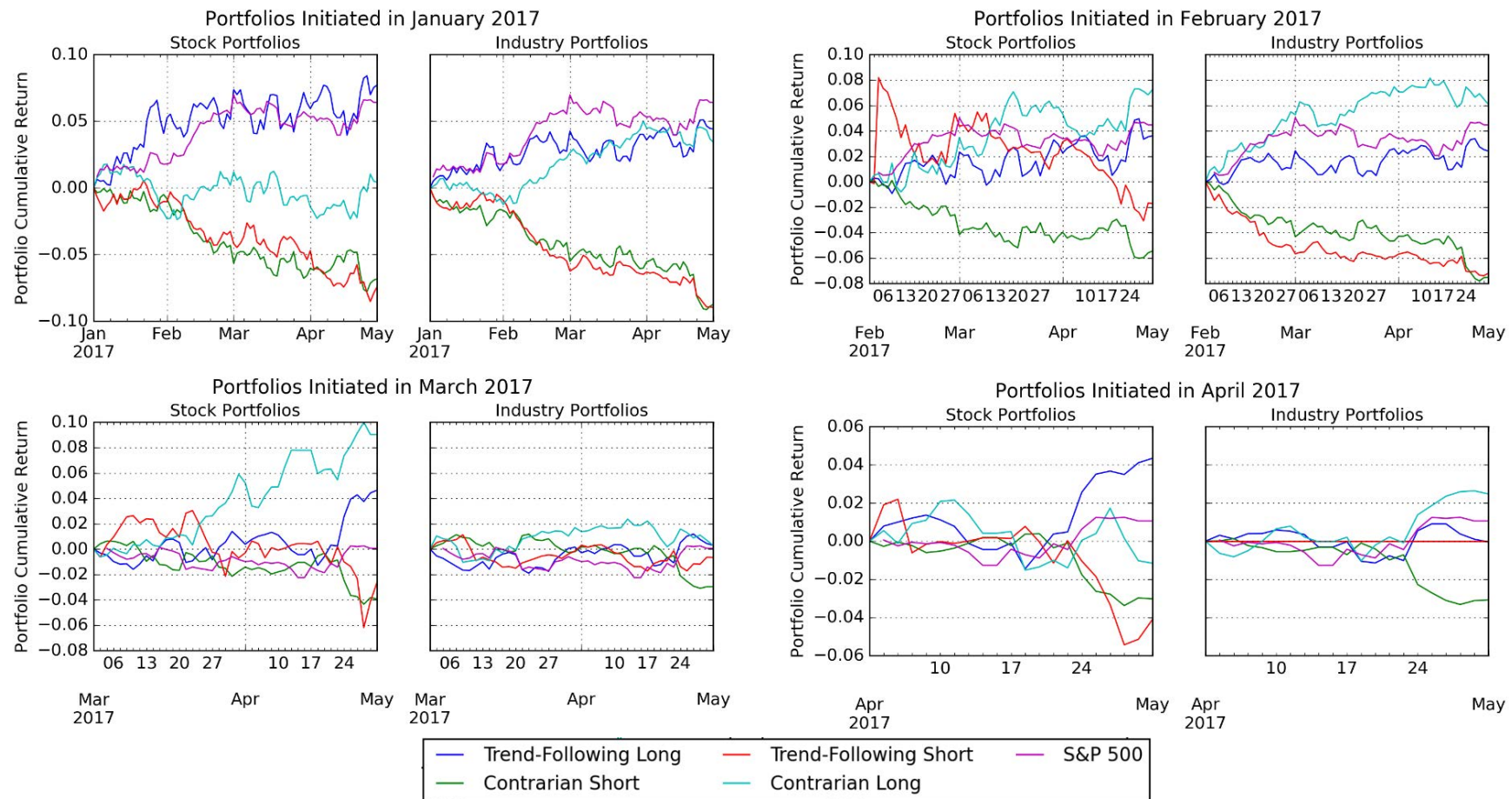
For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all the stocks listed in the corresponding quadrant.

- (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.

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



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.

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

For information, see

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