

The FCO Cockpit – Global Bubble Status Report

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Chair of Entrepreneurial Risk

November 1st, 2016

The FCO Cockpit – Global Bubble Status November 1st, 2016

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 855 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>)

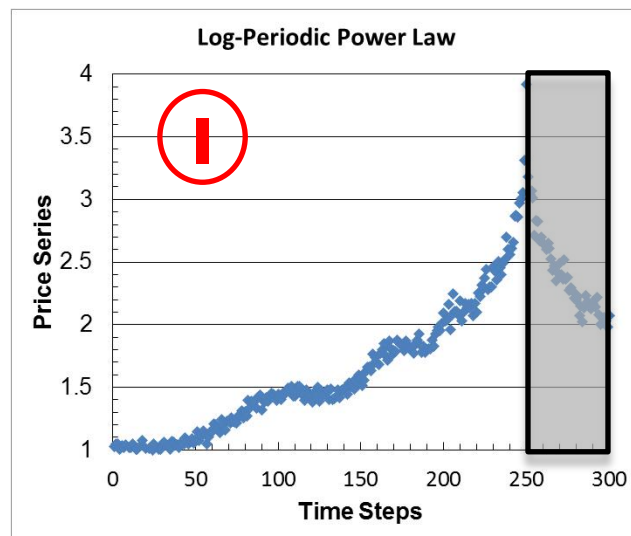
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How does it work?

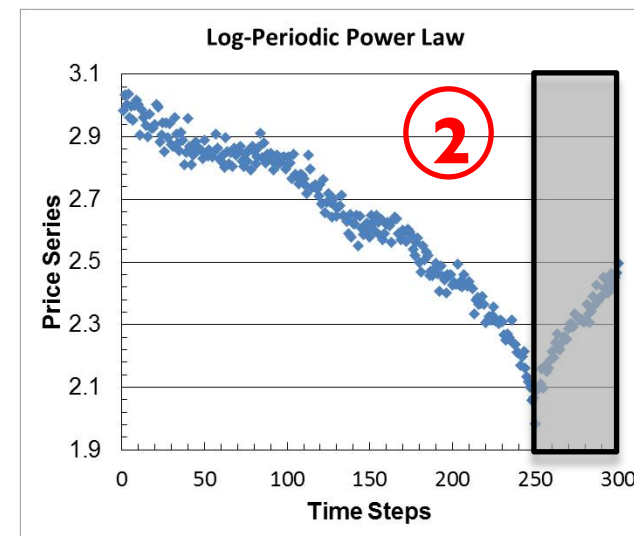
We use the Log-Periodic Power Law Singular (LPPLS) model to hunt for the distinct fingerprint of **Bubbles**:

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**

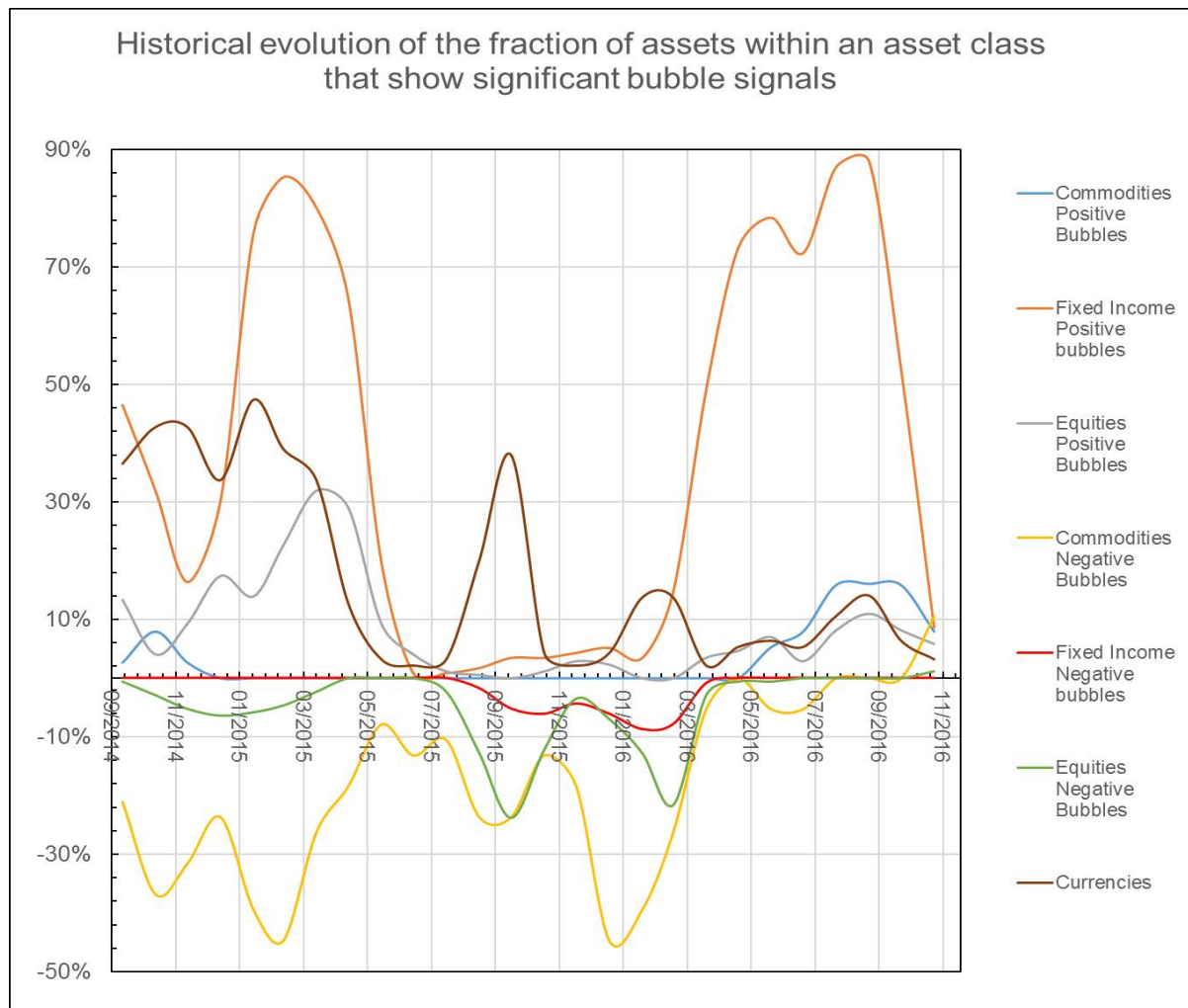


A **negative bubble** when
there is imitation in **selling**

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General Result

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The big picture

After nearly eight consecutive months, bonds prices across the majority of sectors and regions STOPPED feeling a strong tail wind. The very strong momentum that has lifted the entire asset class faded away, and the fixed income sector ended showing a bubble-like behavior.

There is no current general trend in commodities after nearly two years of strong negative bubble signals in the asset class and in its related stocks and currencies. 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

- Last month we reported that the strong rally in the Japanese government bonds and in the yen cross rates that was observed from April to August, cooled down and was not showing a bubble signal anymore. This is confirmed in this report;
- For the first month since July, we see negative bubble signals among commodities indices. Four out of the seven indices that are showing bubble signals this month are negative ones. It is interesting that all of these four indices are agriculture indices;
- There is no general trend in equities. The most interesting result was found in Croatia, Argentina, US Nasdaq Composite, Latvia, and Finland stock market indices, which are showing signs of a positive bubble for the first month. In addition, the Ukraine stock market index started to show signs of a negative bubble also for the first month;
- In our analysis of single stocks, the positive bubble signals we reported before in non-cyclical/defensive sectors continues to decrease this month, showing that recently initiated corrections are continuing. The sector *Telecommunication Services* is detected as a negative bubble score this month, with a strong value score, so we expect the drawdown in this industry will not continue much longer.

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

Positive Bubbles	Yearly Return	DS LPPL Trust	DS LPPL Confidence
iBoxx Asia India Government Index	13.2%	 60.0%	 47.0%
iBoxx Asia Malaysia Government Index	6.4%	 41.7%	 6.3%
iBoxx EUR Slovakia Index	3.4%	 33.8%	 9.0%
iBoxx EUR Spain Index	4.3%	 31.4%	 9.3%
iBoxx Asia China Government Index	6.4%	 11.9%	 24.6%
Negative Bubbles			
None			

As mentioned in the last report, the positive bubble signals in the government bonds are cooling down, this is confirmed in this report. Of the 34 government bond indices that were analyzed, only 5 are showing positive bubble signals, that is only 15% of the set, down from 71% last month. As shown in the table above, three of them are in Asia and two are in Europe.

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Government bonds

This is can be explained by the global bonds selloff that was triggered by the expectation of smaller future stimulus from central banks. The federal reserve is expected to tighten its monetary policy in December, stronger-than-expected UK GDP data effectively removes the chance that the Bank of England will cut the interest rates further in November. There is also the ambiguous stance of the European Central Bank on increasing asset purchases in December, and the desire of the Bank of Japan for a steeper Japanese yield curve.

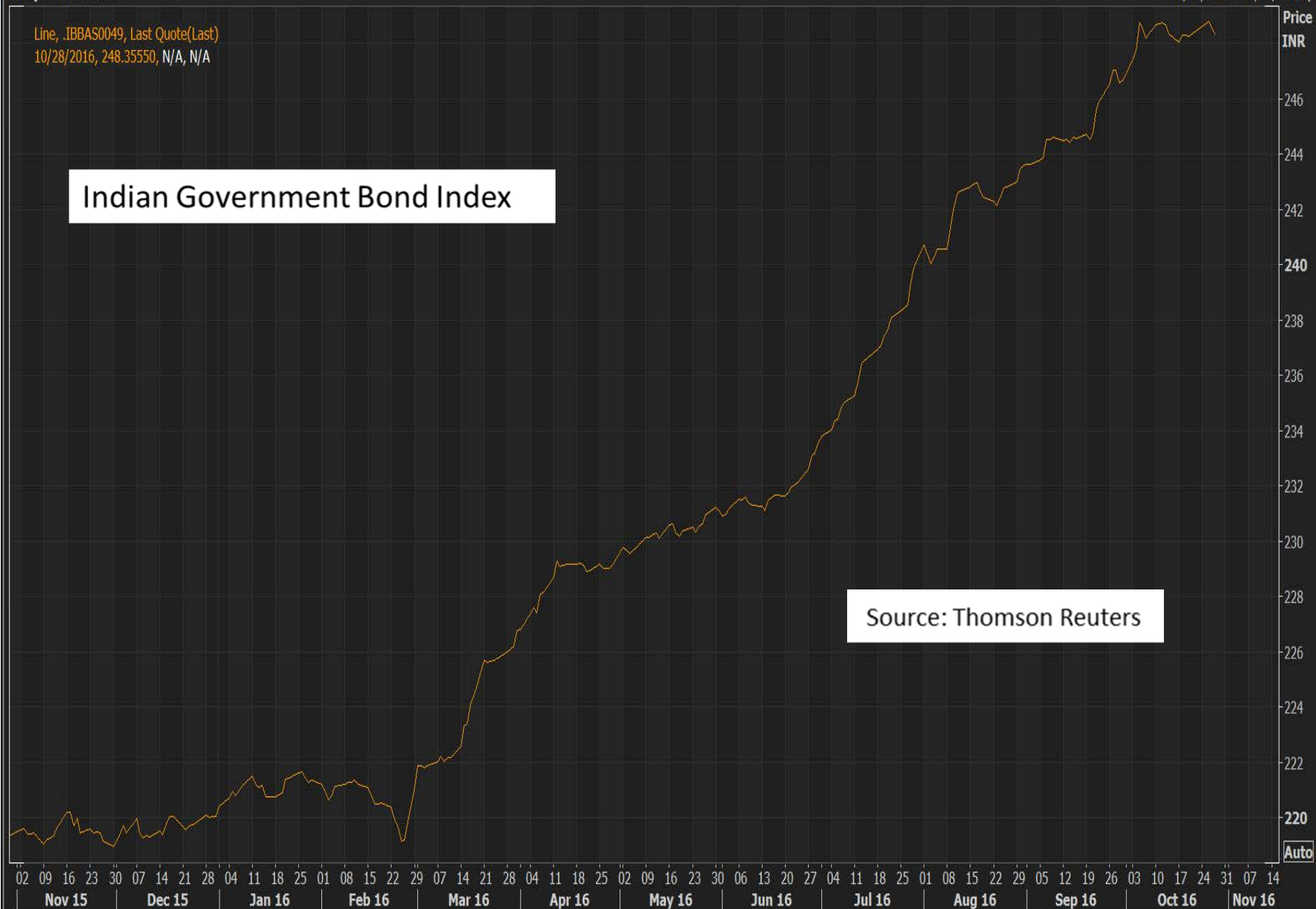
The figure on the next page shows the remarkable bubble in the Indian sovereign bonds. As mentioned in the last report, the fast growing price trajectory that was seen in the first two quarters of 2016 is still growing, but also with some sign of deceleration and increased volatility.

Daily .IBBAS0049

10/30/2015 - 11/16/2016 (GMT)

Line, .IBBAS0049, Last Quote(Last)
10/28/2016, 248.35550, N/A, N/A

Indian Government Bond Index



Source: Thomson Reuters

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Corporate bonds















Sector Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
iBoxx EUR Media Index	5.8%	37.1%	11.6%
iBoxx EUR Banks Index	3.3%	28.8%	17.4%
iBoxx EUR Banks Senior Index	3.0%	28.7%	11.7%
iBoxx EUR Banks Subordinated Index	4.2%	20.8%	19.5%
iBoxx EUR Insurance Index	5.9%	6.4%	8.8%
Negative Bubbles			
None			

The positive bubble signals are not only fading away across government bonds, but also across sector indices: only 5 of the 82 corporate bond indices that were analyzed are showing positive bubble signals, that is only 6% of the set compared to 45% last month.

The table above shows the indices with the five strongest signals, four of them are still in the financial services sector.

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Commodities

Commodities Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
Robusta Coffee ER Index	24.4%	 22.0%	 47.3%
Tin ER Index	36.2%	 14.5%	 22.1%
Lead ER Index	15.9%	 5.0%	 20.6%
Negative Bubbles			
Live Stock ER Index	-27.0%	 28.8%	 42.6%
Live Cattle ER Index	-25.1%	 13.5%	 42.3%
Lean Hogs ER Index	-29.8%	 13.0%	 39.4%
Feeder Cattle ER Index	-29.9%	 7.1%	 31.9%

For the first month since July, we see negative bubble signals among commodities indices. There are seven indices showing bubble signals this month, three of them are showing positive bubble signals and four are showing negative ones. It is interesting to see that all the indices that are showing negative bubble signals are agriculture indices. Two of the three that are showing positive bubble signals are metal indices.

In addition, the positive bubble signals that were shown in the zinc and silver indices over the last three months and in sugar, white sugar and softs indices over the last month disappeared.

The S&P Goldman Sachs Commodity Index (next page) shows that the remarkable rebound in commodities that started last February seems to converge to a plateau.

1D

3D

1W

1M

6M

1Y

3Y

5Y

Comparisons >

Source: Financial Times

S&P GSCI Index Spot



Date: 2016-10-31

Name: LME-Lead 3 Months U

Indicator: DS LPPL Confidence

Bubble end flag - short time scale



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Currencies

FX	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Iceland Krona/Euro	13.9%	55.0%	43.8%
Iceland Krona/Swiss Franc	13.8%	31.8%	28.3%
Swedish Krona/Euro	-5.2%	10.5%	37.3%

For the seventh consecutive month, there are strong positive bubble signals in the Iceland Krona. Two of the three pairs that are showing bubble signals are crosses with the Krona;

For the first month, there are signs of a negative bubble on the Swedish Krona/Euro. This is clearly attributed to the Swedish central bank surprising dovish monetary policy outlook that it will not raise rates until 2018;

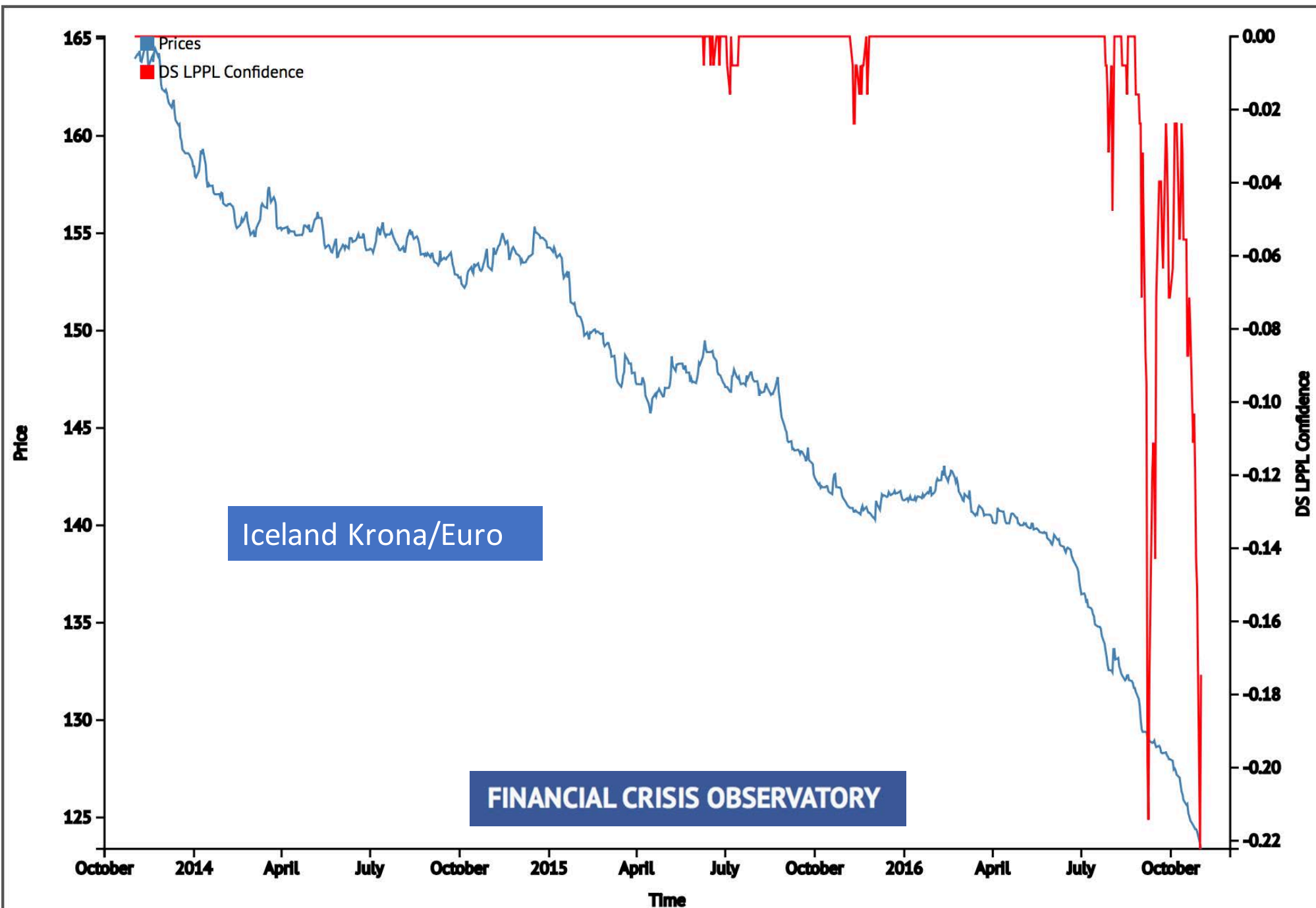
Finally, the positive bubble signals that were shown in the New Zealand Dollar over the last three months, and the USD/Taiwan Dollar and Swiss Franc /Korean Won exchange rates over the last month, disappeared.

Date: 2016-11-01

Name: ICELANDIC KRONA T

Indicator: DS LPPL Confidence

Bubble end flag - long time scale



Date: 2016-10-28

Name: SWEDISH KRONA TO EU

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
CROBEX Index	14.2%	41.6%	46.5%	Croatia
Buenos Aires SE Merval Index	46.5%	13.7%	8.2%	Argentina
NASDAQ Composite Index	2.4%	9.5%	9.3%	The United States
OMX Riga_GI	22.6%	8.1%	12.5%	Latvia
OMX Helsinki 25 Index	6.9%	5.6%	5.4%	Finland
Negative Bubbles				
PFTS Index	-7.6%	6.1%	13.1%	Ukraine
Equities Sector Indices				
Positive Bubbles				
Solactive Social Networks Index	24.6%	41.5%	18.5%	
S&P 500 Semicond&Semicond Equip(Ind)	20.2%	18.7%	12.6%	
S&P 500 Internet Software&Serv(Ind)	15.2%	11.7%	10.3%	
S&P 500 Internet&Catalog Retail(Ind)	23.1%	11.5%	25.1%	
Private Equity Total Return Index	7.4%	6.4%	21.7%	
Negative Bubbles				
S&P 500 Computers & Peripherals(Ind)	-0.3%	5.1%	14.6%	

There is no general trend in equities. The most interesting result was found in Croatia, Argentina, US Nasdaq Composite, Latvia, and Finland stock market indices, which are showing signs of a positive bubble for the first month. In addition, the Ukraine stock market index started to show signs of a negative bubble also for the first month;

Finally, the positive bubble signals that were shown in Lithuania and Vietnam stock market indices over the last four months, India and Philippine stock market indices over the last three months, and the Pakistan stock market index over the last month disappeared.

Date: 2016-10-31

Name: ARGENTINA Merval

Indicator: DS LPPL Confidence

Bubble end flag - long time scale



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Single Stocks

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What is this?

For 855 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.

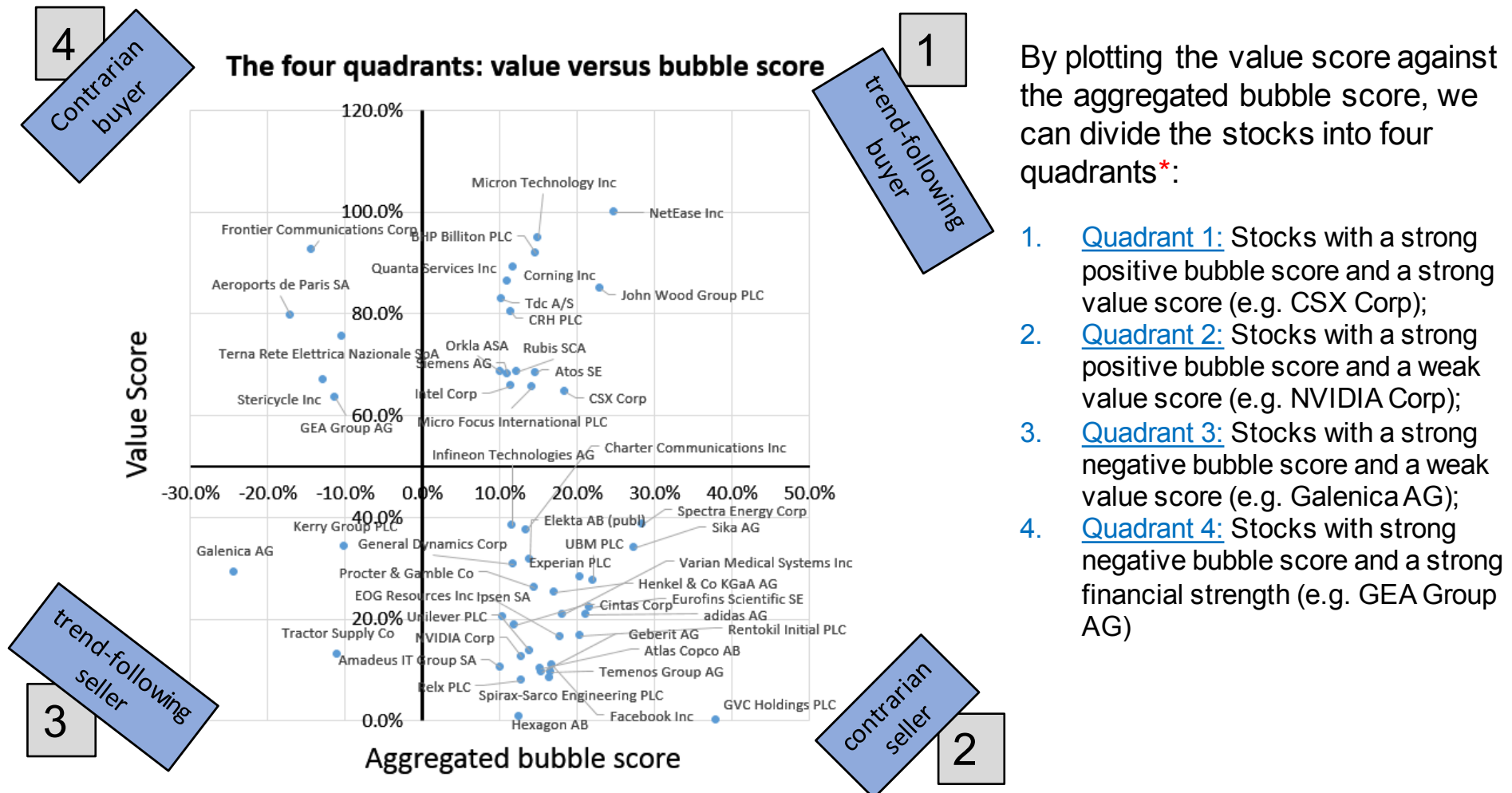
The stocks are the constituents of the Stoxx Europe 600, the S&P 500 and the Nasdaq 100 indices. From these, all doubles and stocks with incomplete data are removed. Because our financial strength indicators are specifically designed for corporates, all financial institutions are taken out of the set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

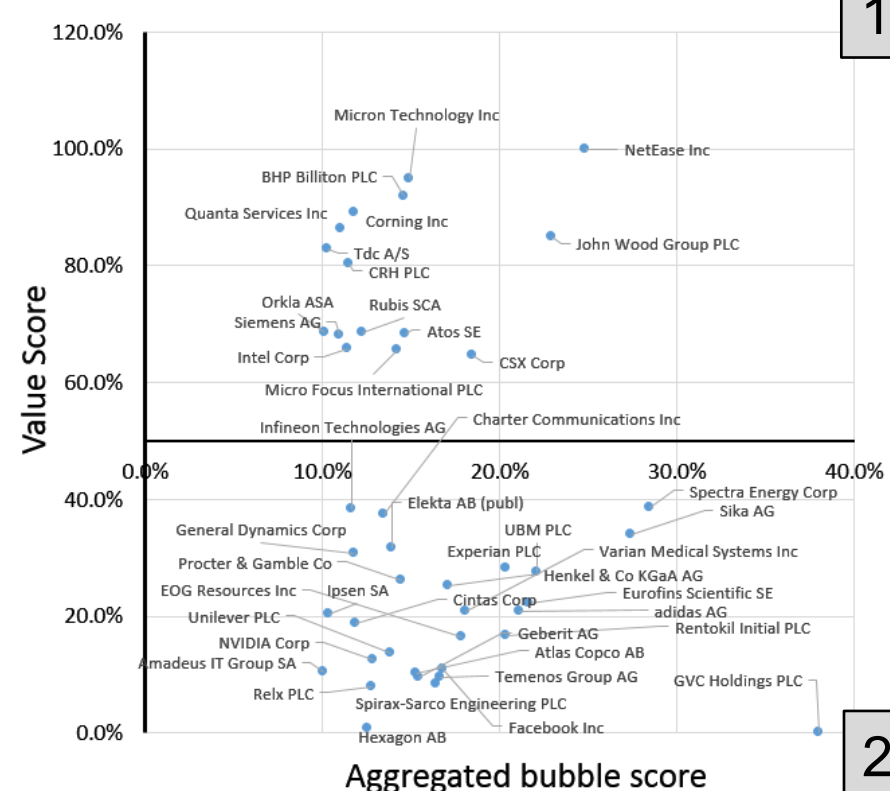
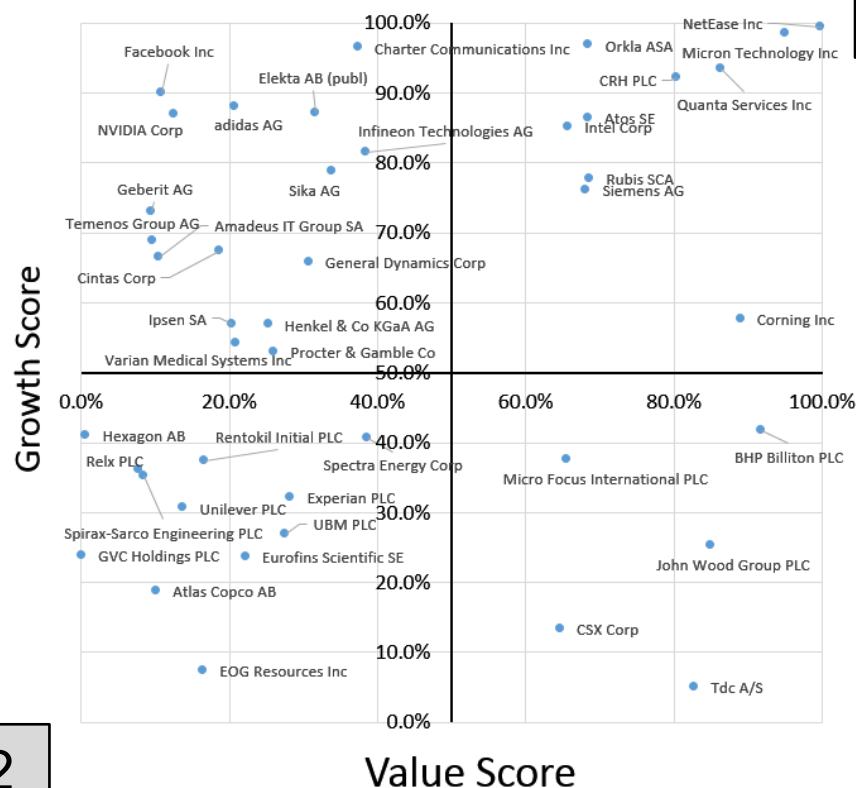
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Each quadrant has its own specs:

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.**

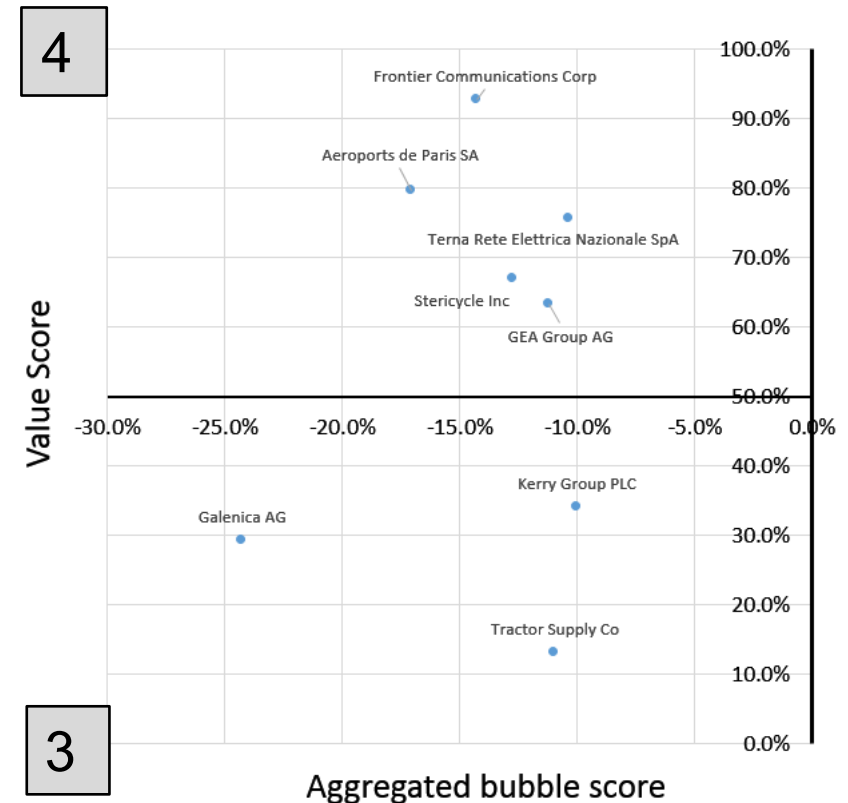
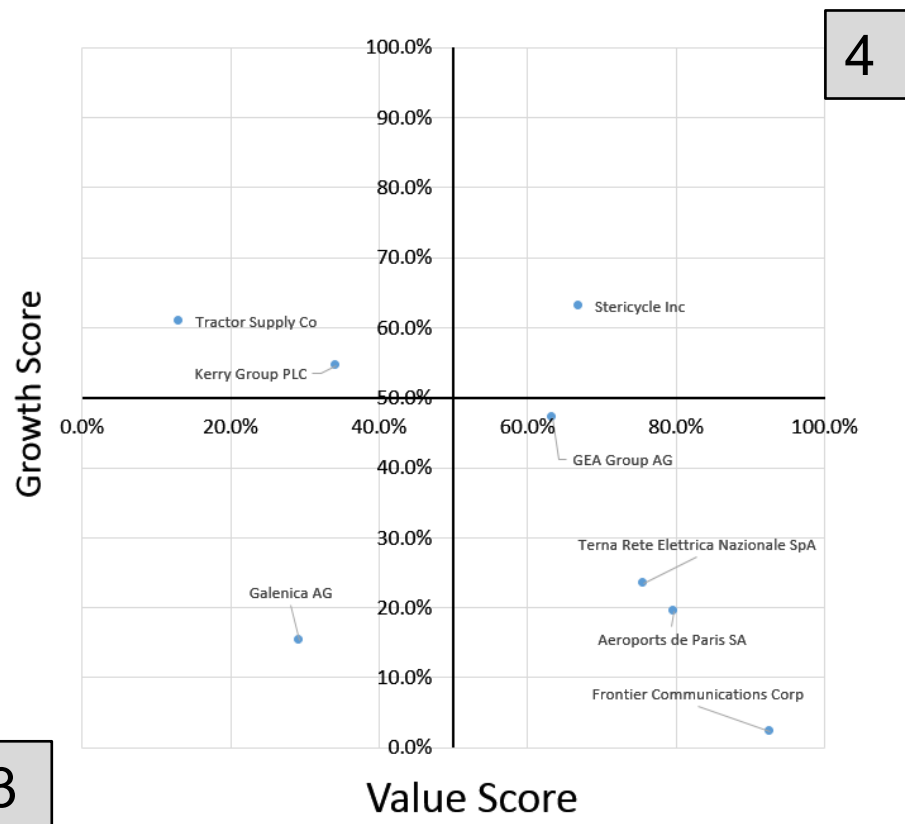
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Quadrant 1 and 2 stocks: strong positive bubble signals with strong (respectively weak) fundamentals



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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
CSX Corp	United States of America	Industrials	Transportation	11.2%	18.4%	64.7%	13.3%
Intel Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	2.2%	11.4%	65.7%	85.1%
Micron Technology Inc	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	0.4%	14.9%	95.0%	98.6%
NetEase Inc	China	Information Technology	Software & Services	78.0%	24.8%	99.9%	99.4%
BHP Billiton PLC	United Kingdom	Materials	Materials	20.3%	14.6%	91.8%	41.8%
CRH PLC	Ireland; Republic of	Materials	Materials	17.0%	11.5%	80.4%	92.2%
Siemens AG	Germany	Industrials	Capital Goods	12.0%	10.9%	68.2%	76.1%
Tdc A/S	Denmark	Telecommunication Services	Telecommunication Services	3.8%	10.3%	82.8%	5.0%
Atos SE	France	Information Technology	Software & Services	29.2%	14.7%	68.4%	86.4%
Rubis SCA	France	Utilities	Utilities	12.4%	12.3%	68.7%	77.8%
Micro Focus International PLC	United Kingdom	Information Technology	Software & Services	71.1%	14.2%	65.6%	37.7%
Orkla ASA	Norway	Consumer Staples	Food, Beverage & Tobacco	13.6%	10.1%	68.5%	96.8%
Coming Inc	United States of America	Information Technology	Technology Hardware & Equipment	20.7%	11.8%	89.0%	57.7%
Quanta Services Inc	United States of America	Industrials	Capital Goods	43.5%	11.0%	86.3%	93.5%
John Wood Group PLC	United Kingdom	Energy	Energy	30.1%	22.9%	85.0%	25.3%

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals, example John Wood Group PLC.

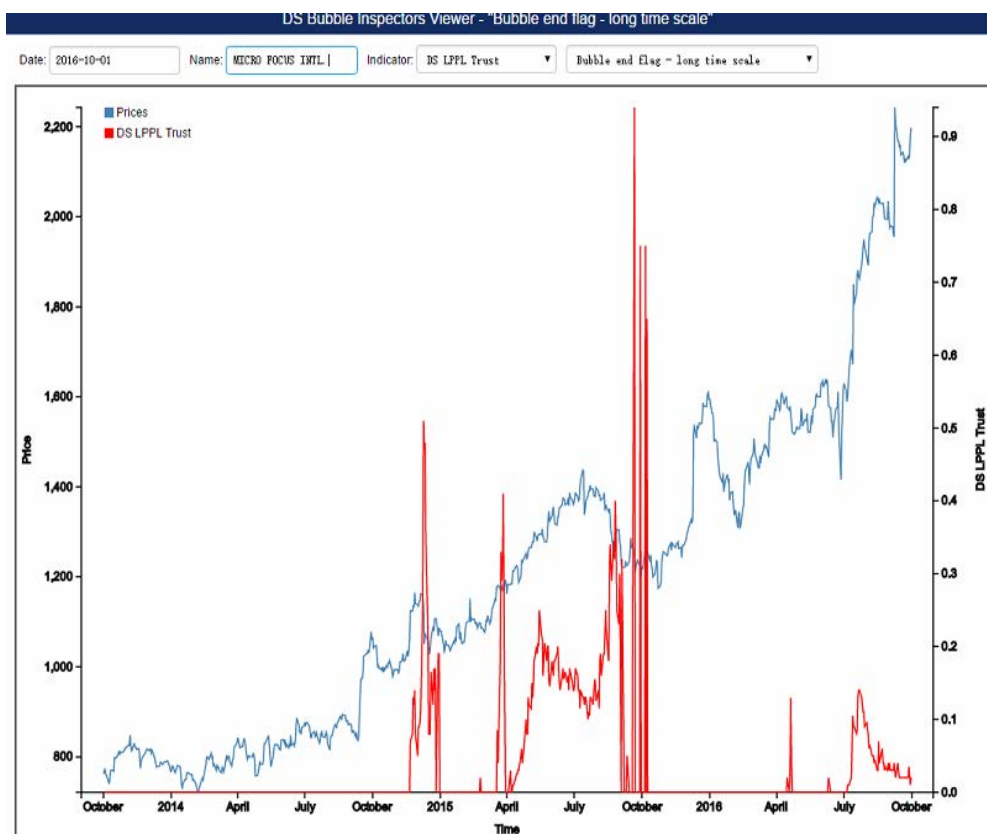


Left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning, indicating the end of a bubble-like regime. The right graph shows the outperformance of the stock over the last year (orange) with respect to the FTSE benchmark (purple), it is almost 22%.

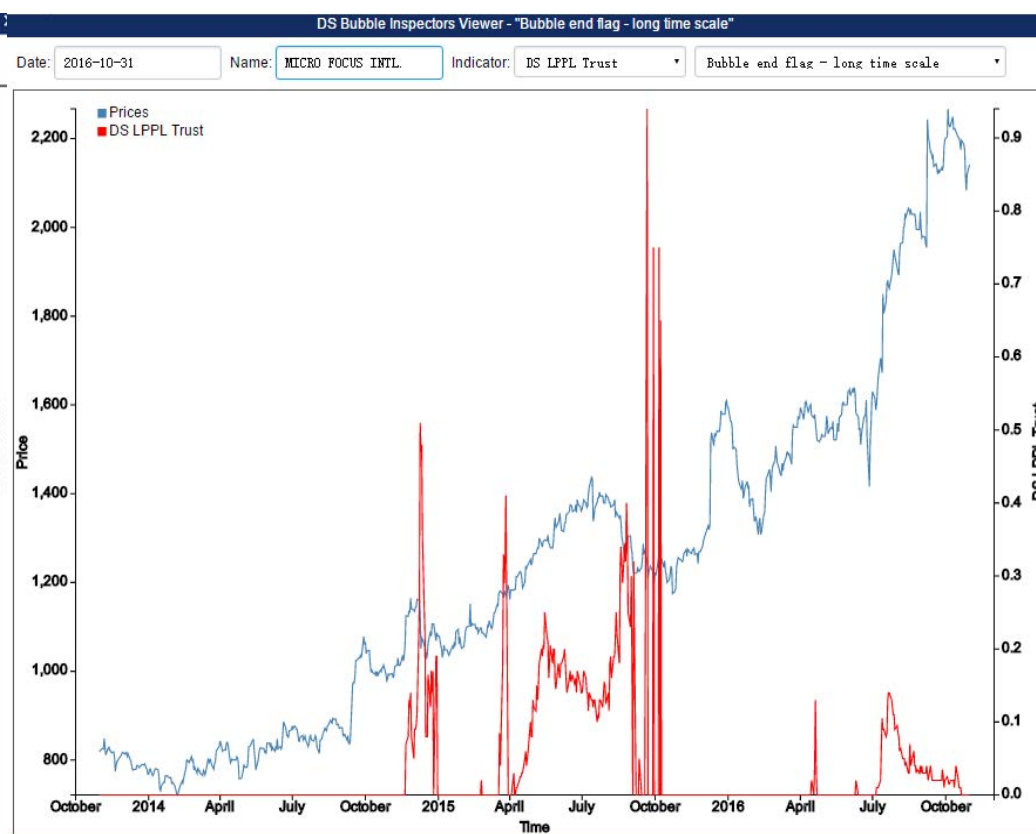
Last month example: strong positive bubble signals with strong fundamentals, Micro Focus International PLC.

Note that a small 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 Oct. 2016)



This month signal (1st Nov. 2016)



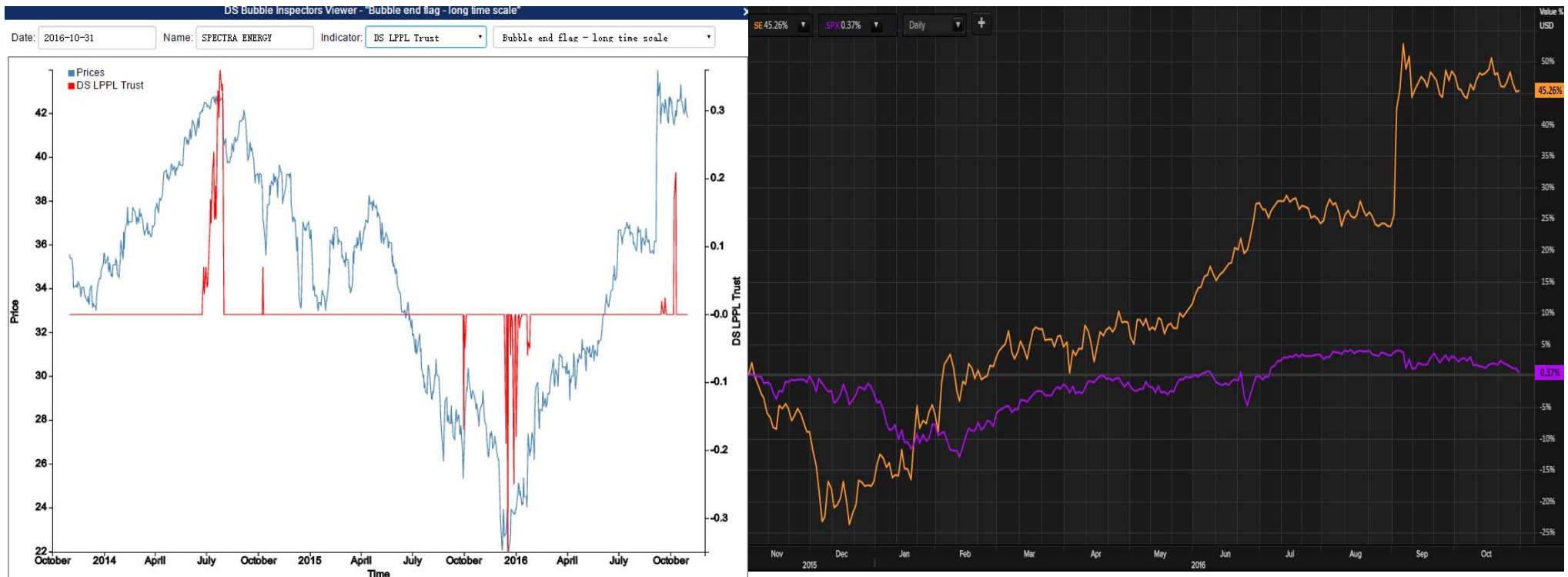
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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS SectorName	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Charter Communications Inc	United States of America	Consumer Discretionary	Media	20.6%	13.4%	37.4%	96.5%
Cintas Corp	United States of America	Industrials	Commercial & Professional Services	14.2%	11.8%	18.7%	67.5%
Facebook Inc	United States of America	Information Technology	Software & Services	26.8%	16.8%	10.9%	90.1%
NVIDIA Corp	United States of America	Information Technology	Semiconductors & Semiconductor Equipment	147.9%	12.8%	12.6%	87.0%
adidas AG	Germany	Consumer Discretionary	Consumer Durables & Apparel	84.9%	21.1%	20.8%	88.0%
Henkel & Co KGaA	Germany	Consumer Staples	Household & Personal Products	18.0%	17.1%	25.3%	56.8%
Infineon Technologies AG	Germany	Information Technology	Semiconductors & Semiconductor Equipment	42.9%	11.7%	38.5%	81.5%
Amadeus IT Group SA	Spain	Information Technology	Software & Services	10.2%	10.1%	10.5%	66.5%
Experian PLC	Ireland; Republic of	Industrials	Commercial & Professional Services	41.2%	20.3%	28.3%	32.2%
Eurofins Scientific SE	Luxembourg	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	23.9%	21.6%	22.2%	23.6%
Ipsen SA	France	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	7.9%	10.4%	20.5%	57.0%
GVC Holdings PLC	Isle of Man	Consumer Discretionary	Consumer Services	74.8%	38.0%	0.1%	23.9%
Relx PLC	United Kingdom	Industrials	Commercial & Professional Services	26.2%	12.8%	7.8%	36.1%
Rentokil Initial PLC	United Kingdom	Industrials	Commercial & Professional Services	47.2%	20.3%	16.7%	37.3%
Geberit AG	Switzerland	Industrials	Capital Goods	29.1%	15.4%	9.5%	73.1%
Sika AG	Switzerland	Materials	Materials	44.0%	27.4%	33.9%	78.8%
Temenos Group AG	Switzerland	Information Technology	Software & Services	36.9%	16.7%	9.6%	68.8%
Spirax-Sarco Engineering PLC	United Kingdom	Industrials	Capital Goods	43.9%	16.4%	8.4%	35.2%
EOG Resources Inc	United States of America	Energy	Energy	5.1%	17.9%	16.5%	7.4%
General Dynamics Corp	United States of America	Industrials	Capital Goods	1.4%	11.8%	30.8%	65.8%
Procter & Gamble Co	United States of America	Consumer Staples	Household & Personal Products	13.3%	14.4%	26.1%	53.0%
Spectra Energy Corp	United States of America	Energy	Energy	45.2%	28.4%	38.6%	40.6%
Varian Medical Systems Inc	United States of America	Health Care	Health Care Equipment & Services	15.4%	18.1%	20.9%	54.3%
UBM PLC	United Kingdom	Consumer Discretionary	Media	38.4%	22.1%	27.6%	26.9%
Unilever PLC	United Kingdom	Consumer Staples	Household & Personal Products	18.9%	13.8%	13.8%	30.6%
Hexagon AB	Sweden	Information Technology	Technology Hardware & Equipment	3.2%	12.6%	0.7%	41.1%
Elektro AB (publ)	Sweden	Health Care	Health Care Equipment & Services	18.4%	13.9%	31.6%	87.1%
Atlas Copco AB	Sweden	Industrials	Capital Goods	19.0%	15.3%	10.2%	18.8%

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals, example Spectra Energy Corp.

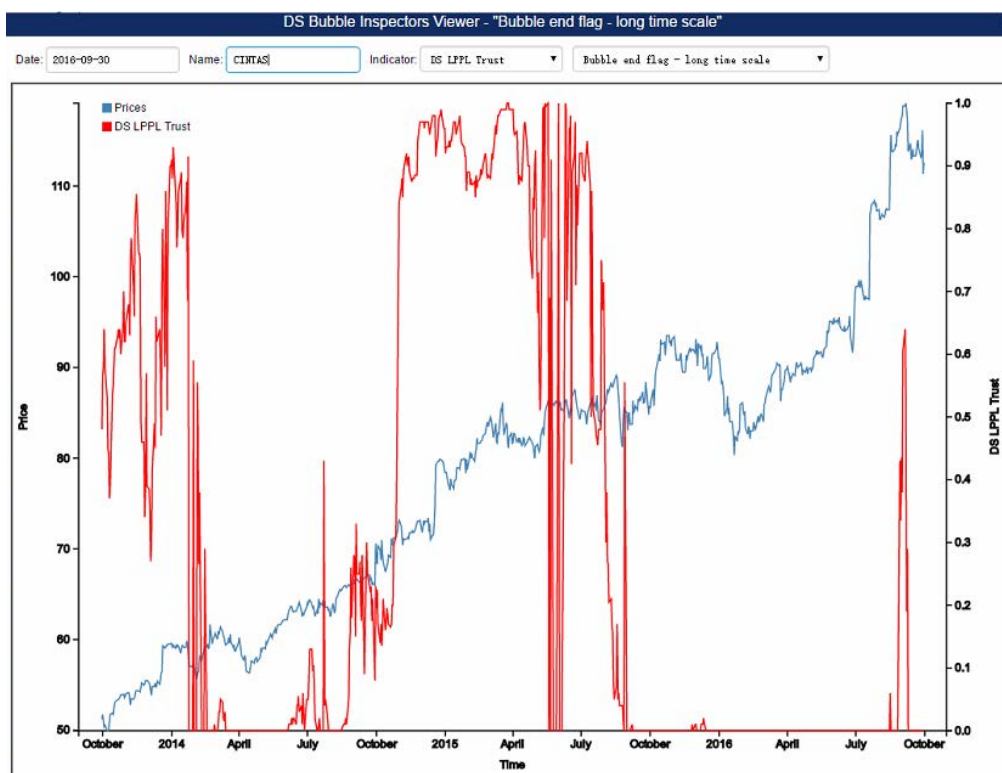


Left graph is a standard output from the Financial Crisis Observatory. It shows the historical price evolution of the stock in blue (left hand scale) and the calculated bubble warning index DS LPPL Trust in red (right hand scale). We can see a clearly spiking warning. The right graph shows the outperformance of the stock over the last year (orange) with respect to the S&P500 benchmark (purple), it is almost 45% up. The strong positive bubble signals and weak fundamentals indicate a high probability of correction.

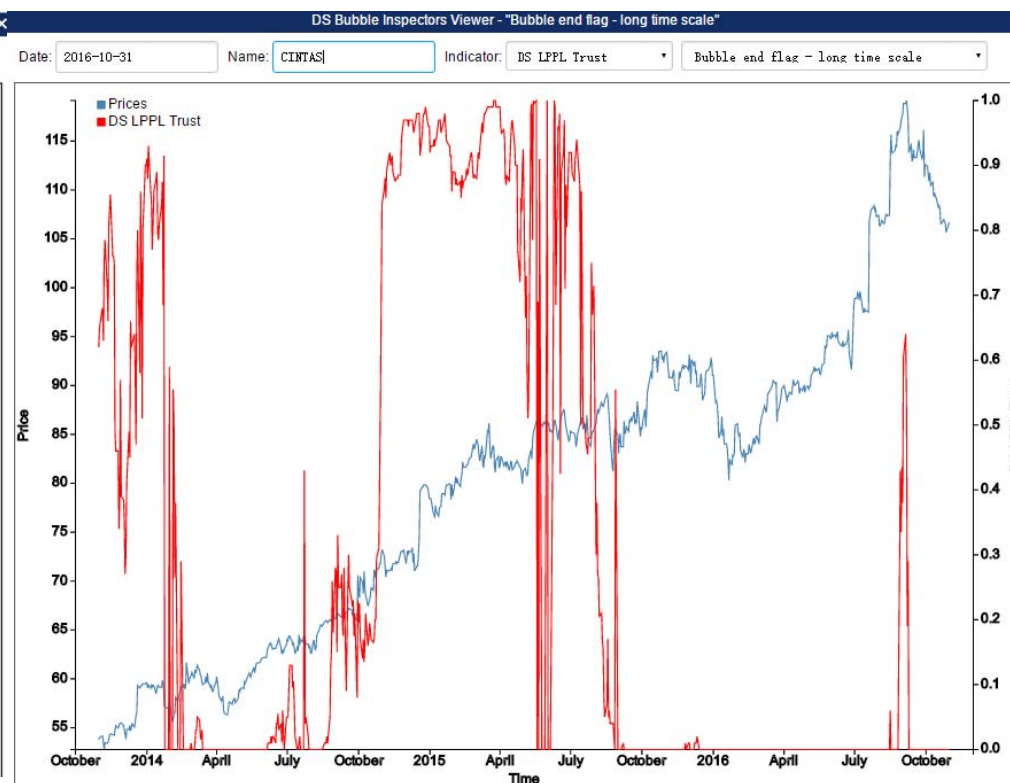
Last month example: strong positive bubble signals with weak fundamentals, Cintas Corp.

Note that the correction has started to occur, in synchrony with our DS LPPL trust indicator and weak fundamentals. This suggests continuing to short or get out of a long position on this stock.

Last month signal (1st Oct. 2016)



This month signal (1st Nov. 2016)



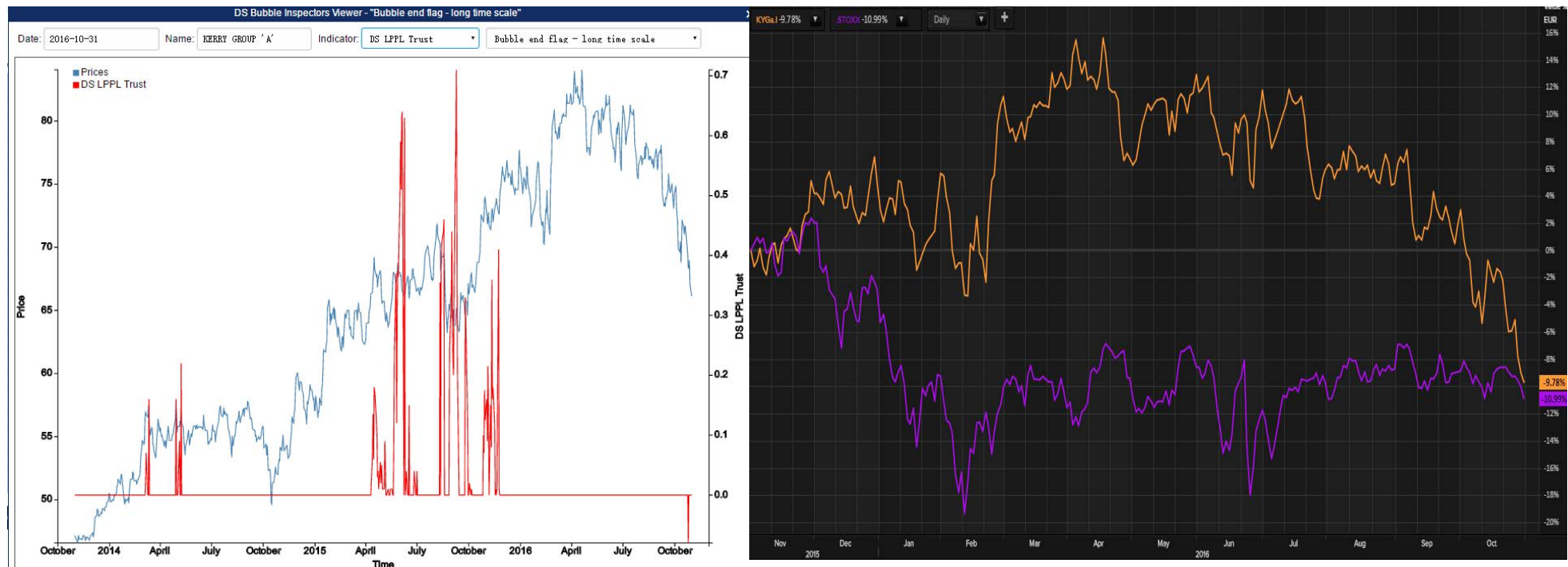
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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Tractor Supply Co	United States of America	Consumer Discretionary	Retailing	-32.0%	-11.0%	13.1%	60.9%
Kerry Group PLC	Ireland; Republic of	Consumer Staples	Food, Beverage & Tobacco	-9.0%	-10.0%	34.2%	54.6%
Galenica AG	Switzerland	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-33.0%	-24.3%	29.2%	15.3%

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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals, example Kerry Group PLC.



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 STOXX 600 benchmark (purple), it is roughly the same. Together with our diagnostic of a negative bubble signal with weak fundamentals, we expect a further drawdown.

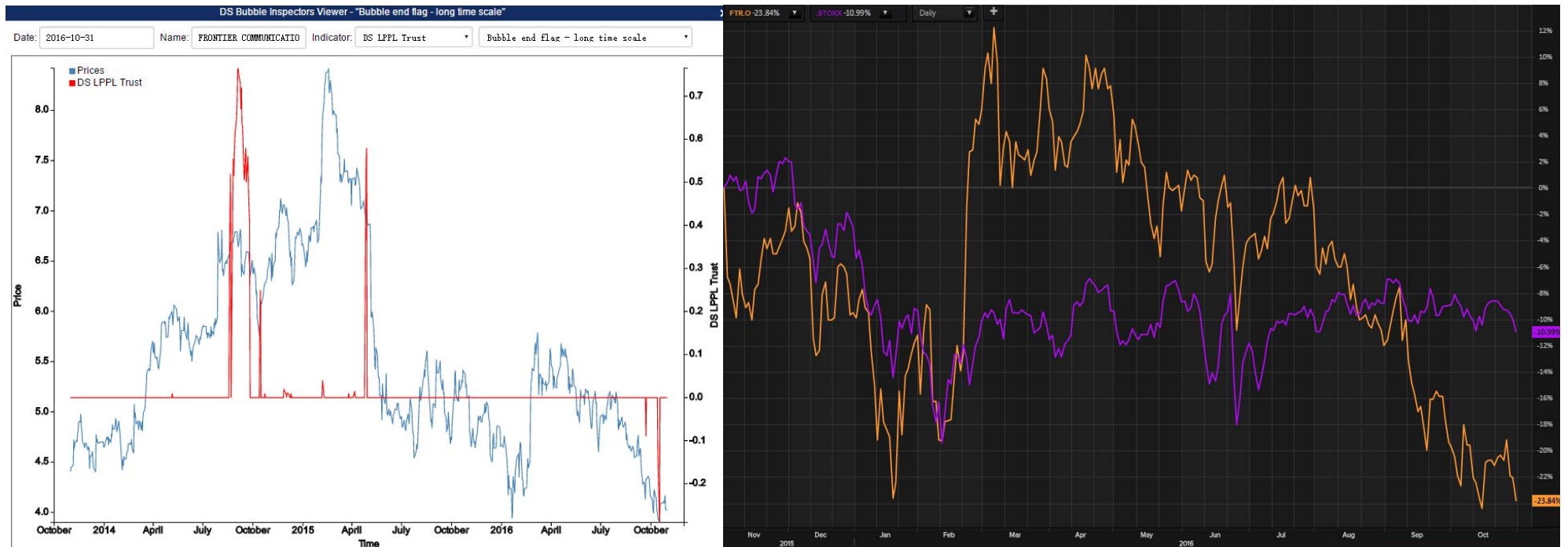
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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Frontier Communications Corp	United States of America	Telecommunication Services	Telecommunication Services	-22.1%	-14.3%	92.6%	2.3%
Stericycle Inc	United States of America	Industrials	Commercial & Professional Services	-35.6%	-12.8%	66.9%	63.2%
GEA Group AG	Germany	Industrials	Capital Goods	-3.7%	-11.2%	63.4%	47.1%
Aéroports de Paris SA	France	Industrials	Transportation	-18.9%	-17.1%	79.6%	19.5%
Terna Rete Elettrica Nazionale SpA	Italy	Utilities	Utilities	-4.7%	-10.4%	75.6%	23.5%

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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals, example Frontier Communications Corp.



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 STOXX 600 benchmark (purple), it is -13%. We expect a following rebound, which is due to our diagnostic of a negative bubble signal with strong fundamentals, calling for a contrarian buyer position.

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

Note that the correction has started to occur, in synchrony with our DS LPPL trust indicator, and in agreement with the strong fundamentals. We expect this stock to continue appreciating. This suggests a strong buy opportunity. .

Last month signal (1st Oct. 2016)



This month signal (1st Nov. 2016)



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Sectors

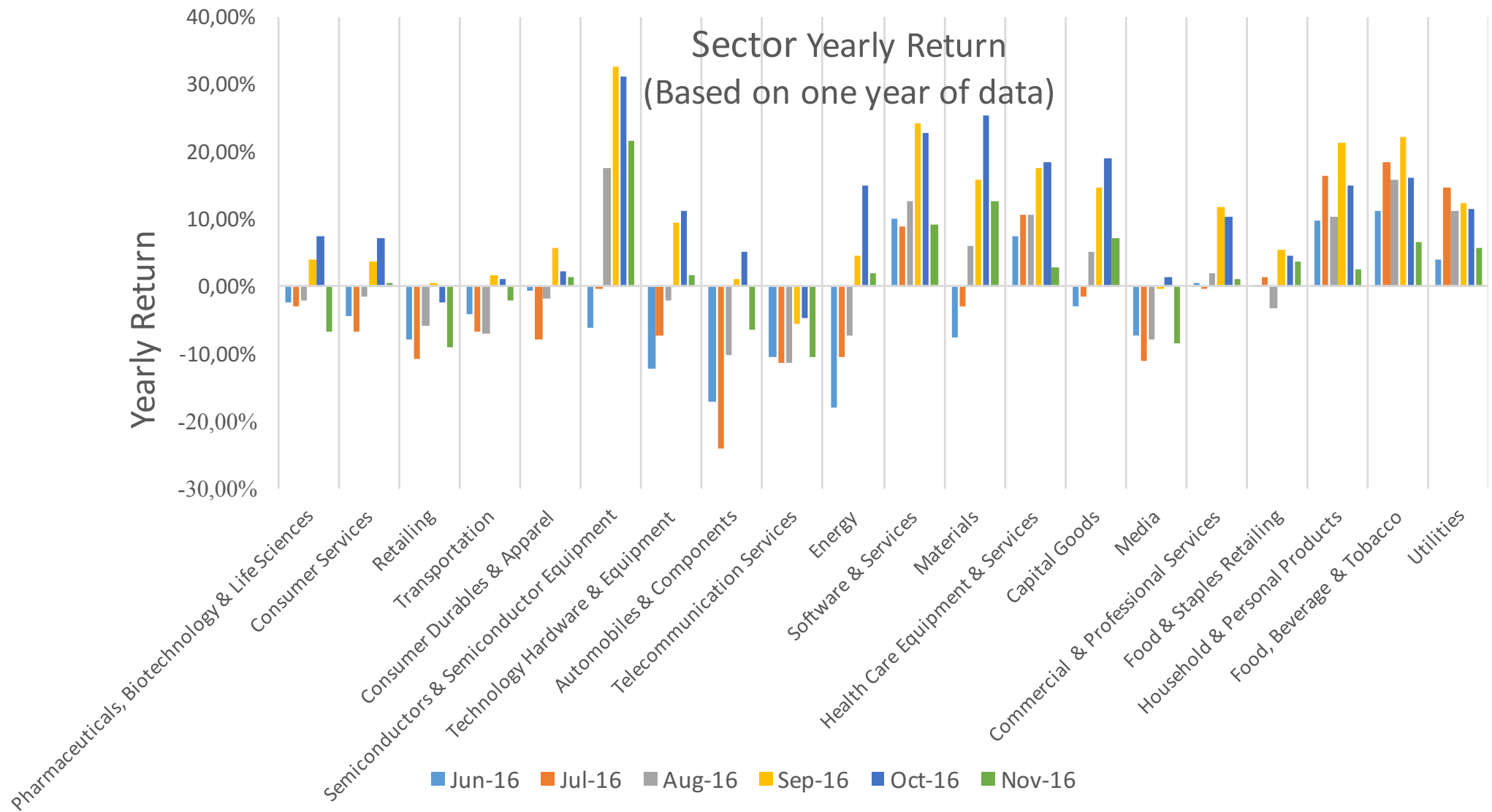
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GICS Industry Group Name	Yearly Return		Bubble Score		Value Score		Growth Score	
	Nov 1st	Oct 1st	Nov 1st	Oct 1st	Nov 1st	Oct 1st	Nov 1st	Oct 1st
Pharmaceuticals, Biotechnology & Life Sciences	-6.9%	7.5%	0.2%	1.7%	39.2%	37.0%	56.2%	54.6%
Consumer Services	0.3%	7.0%	1.4%	2.0%	41.1%	41.6%	54.1%	54.4%
Retailing	-9.1%	-2.4%	0.2%	0.1%	39.2%	40.1%	47.3%	47.9%
Transportation	-2.2%	1.1%	0.3%	0.5%	57.7%	59.3%	45.9%	49.2%
Consumer Durables & Apparel	1.3%	2.1%	0.8%	1.6%	48.5%	49.4%	59.9%	59.5%
Semiconductors & Semiconductor Equipment	21.5%	31.2%	5.0%	6.3%	47.6%	45.8%	60.0%	52.9%
Technology Hardware & Equipment	1.6%	11.2%	1.7%	3.8%	56.5%	51.5%	54.4%	45.8%
Automobiles & Components	-6.6%	5.0%	0.4%	0.1%	69.1%	69.2%	68.0%	69.0%
Telecommunication Services	-10.6%	-4.8%	-1.2%	-0.1%	64.9%	65.8%	54.8%	55.1%
Energy	1.9%	14.9%	1.5%	0.9%	61.4%	62.3%	23.7%	23.9%
Software & Services	9.0%	22.8%	2.8%	2.7%	38.4%	38.3%	61.2%	59.5%
Materials	12.4%	25.3%	2.0%	3.0%	56.9%	57.9%	46.7%	46.8%
Health Care Equipment & Services	2.7%	18.5%	0.7%	2.0%	42.0%	40.2%	64.4%	65.6%
Capital Goods	7.1%	18.8%	2.2%	2.8%	48.4%	48.6%	46.8%	48.0%
Media	-8.5%	1.2%	0.4%	0.5%	54.8%	54.8%	51.3%	54.6%
Commercial & Professional Services	0.9%	10.2%	2.0%	3.2%	38.8%	38.2%	43.8%	46.5%
Food & Staples Retailing	3.5%	4.5%	-0.9%	-0.8%	52.7%	55.6%	46.3%	46.0%
Household & Personal Products	2.6%	14.9%	3.0%	6.0%	23.5%	19.4%	46.5%	49.7%
Food, Beverage & Tobacco	6.4%	16.0%	1.3%	3.0%	35.0%	33.7%	52.3%	51.1%
Utilities	5.5%	11.3%	0.3%	0.7%	76.7%	77.2%	45.3%	44.8%

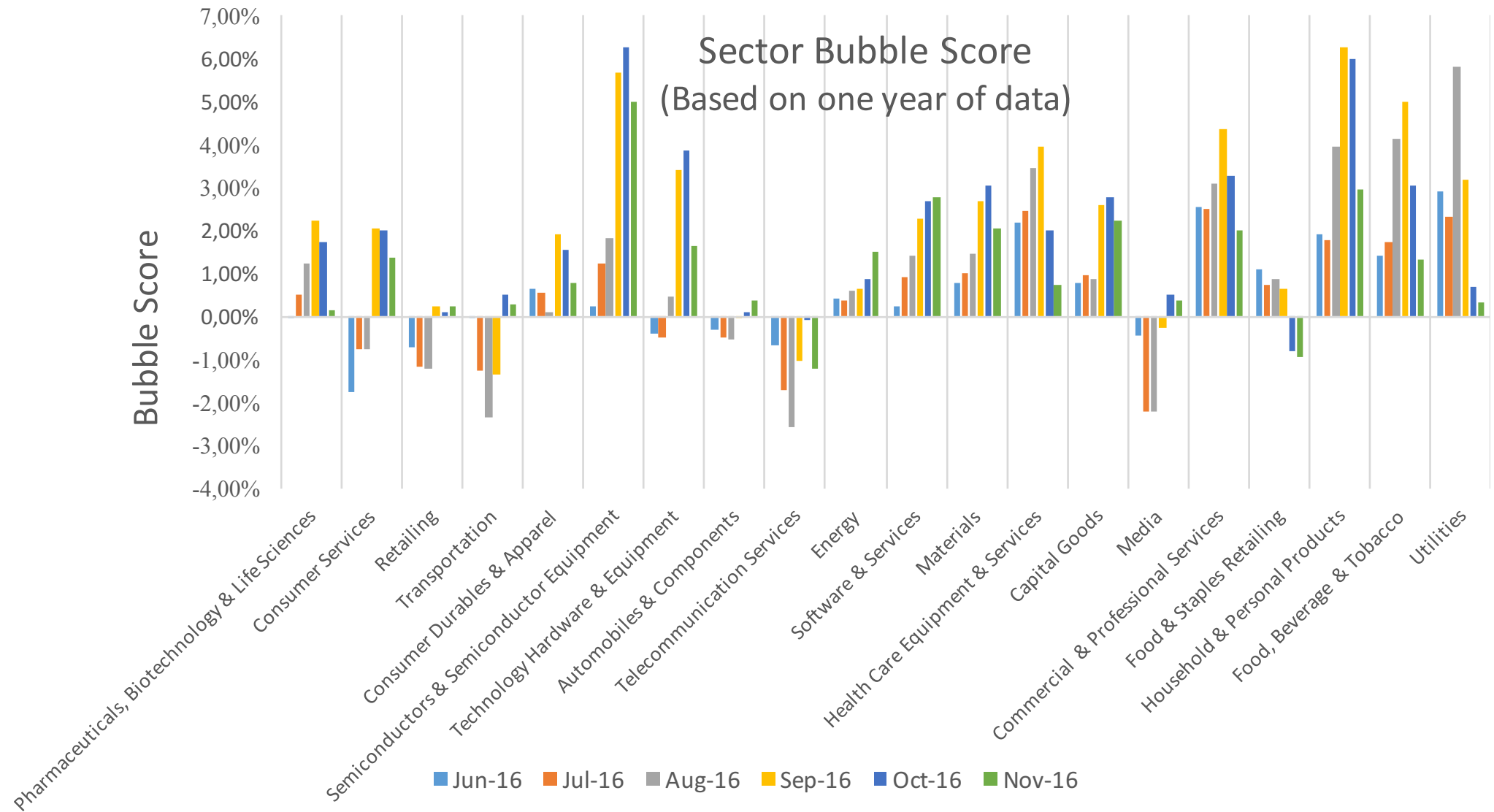
By aggregating the calculations that were done at the single stock level in the previous section, we can see the bubble, value and growth score at the sector level. The results in the previous report are also presented here for comparison.

- The sector *Telecommunication Services* is detected with a negative bubble score this month, with strong value score, so we expect the drawdown in this industry is not sustainable in the future.
- We see again an overall decrease of bubble scores in defensive sectors such as Commercial & Professional Services, Food & Staples Retailing, Household & Personal Products and Food, Beverage & Tobacco. It shows that these bubbles we reported in the past months continue their corrections.

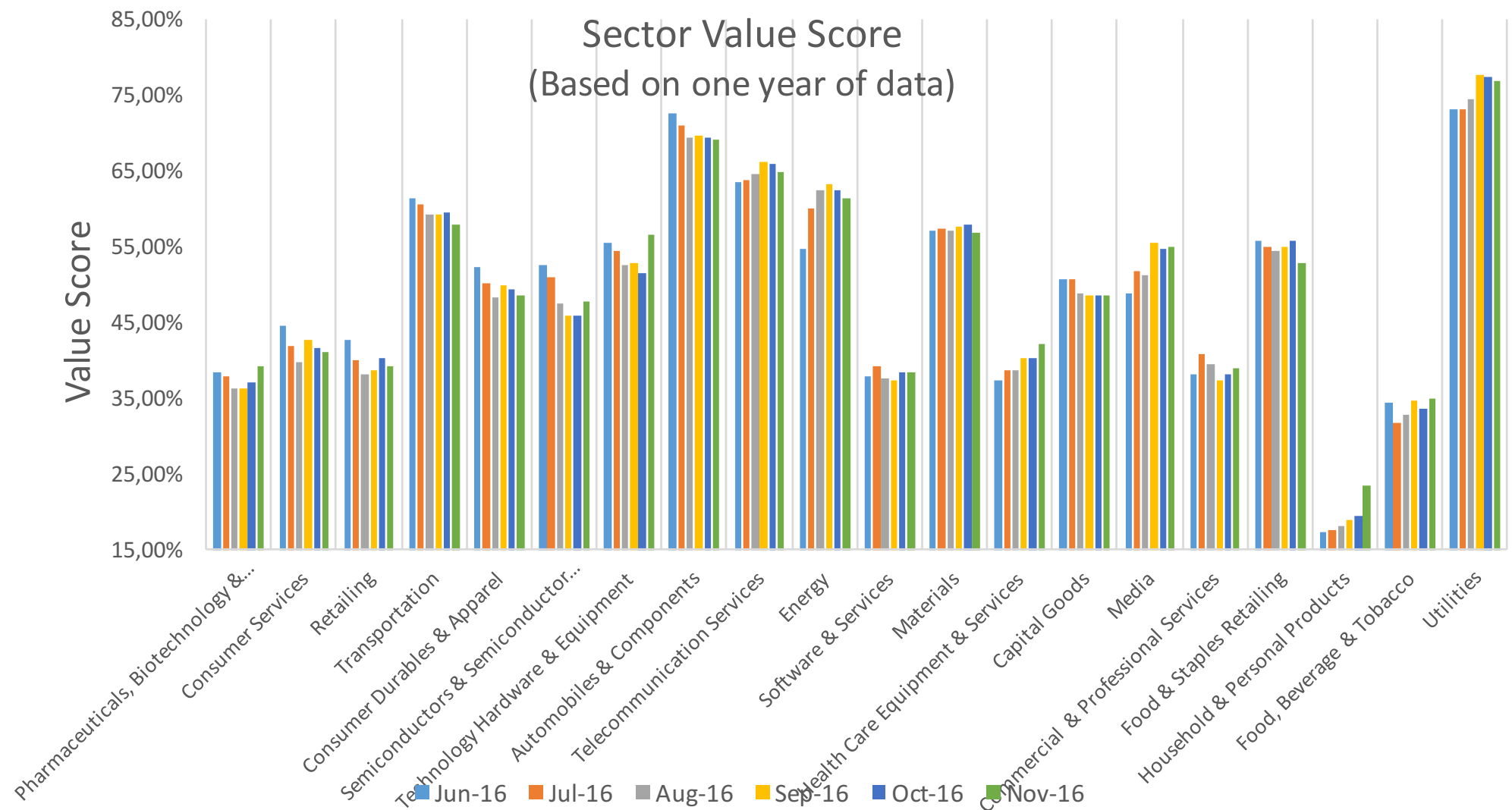
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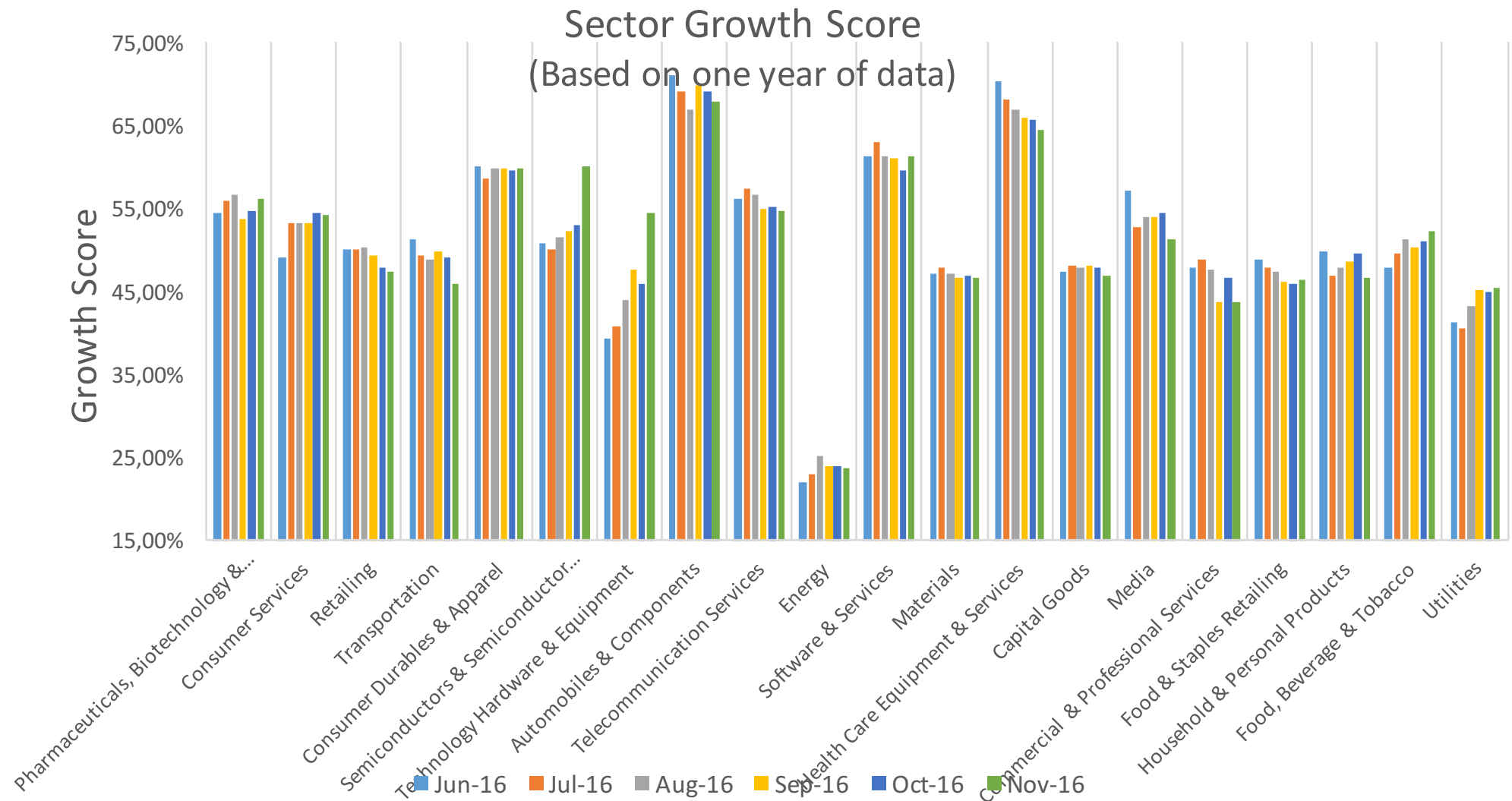
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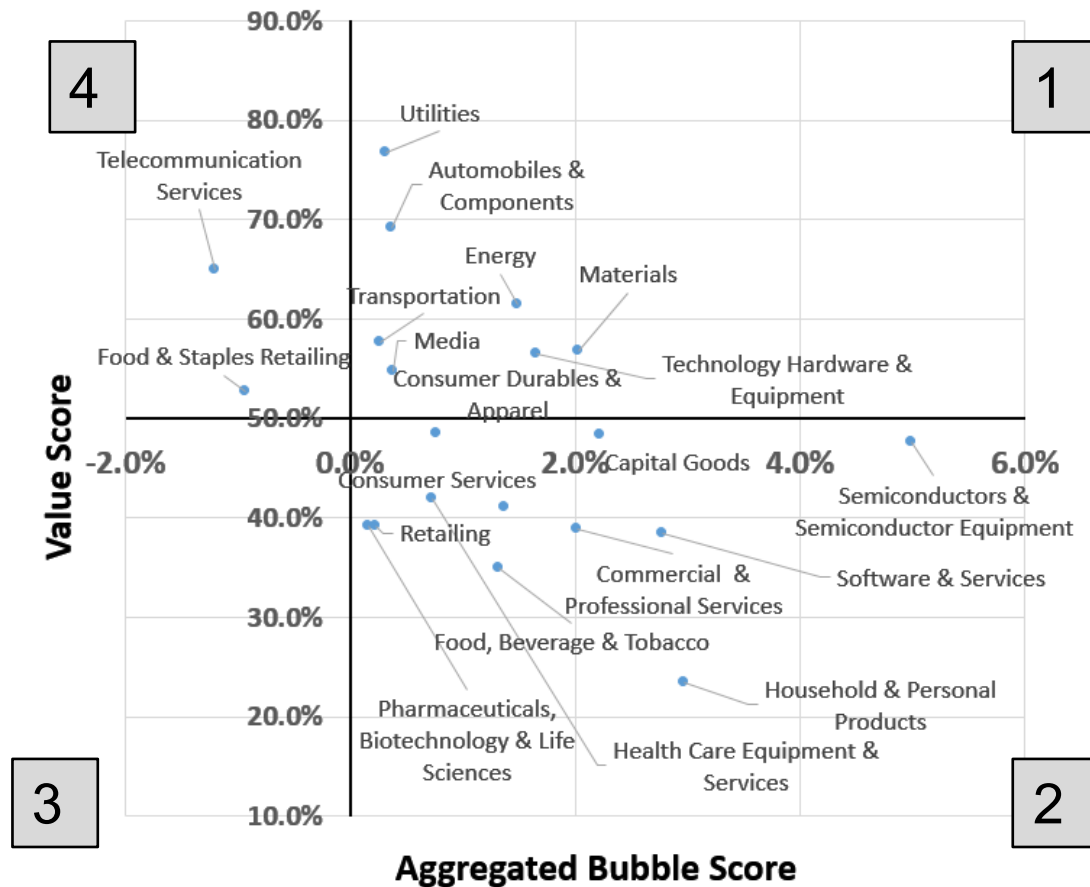
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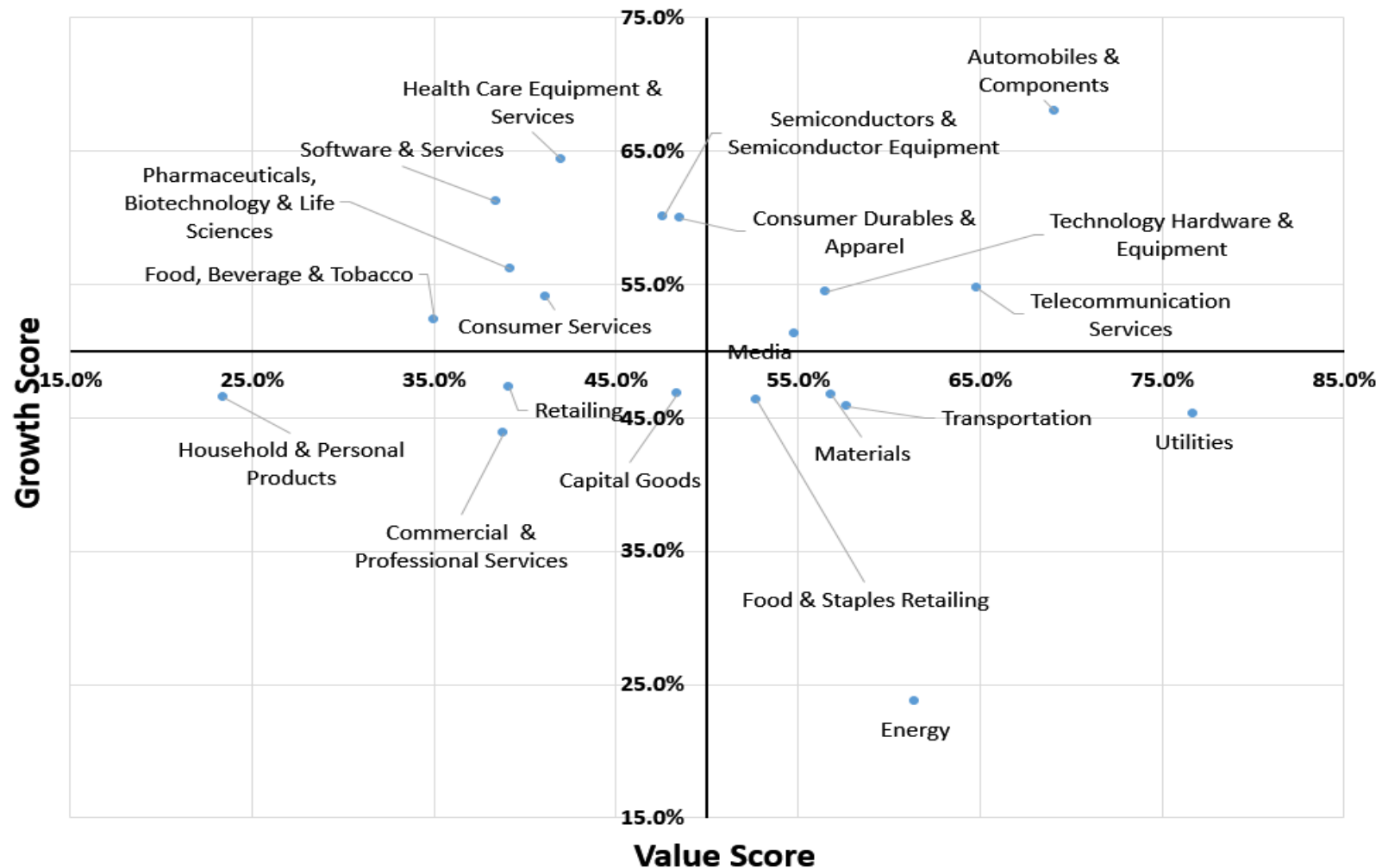


By plotting the value score versus the aggregated bubble score, we can also divide the sectors into four quadrants*:

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.

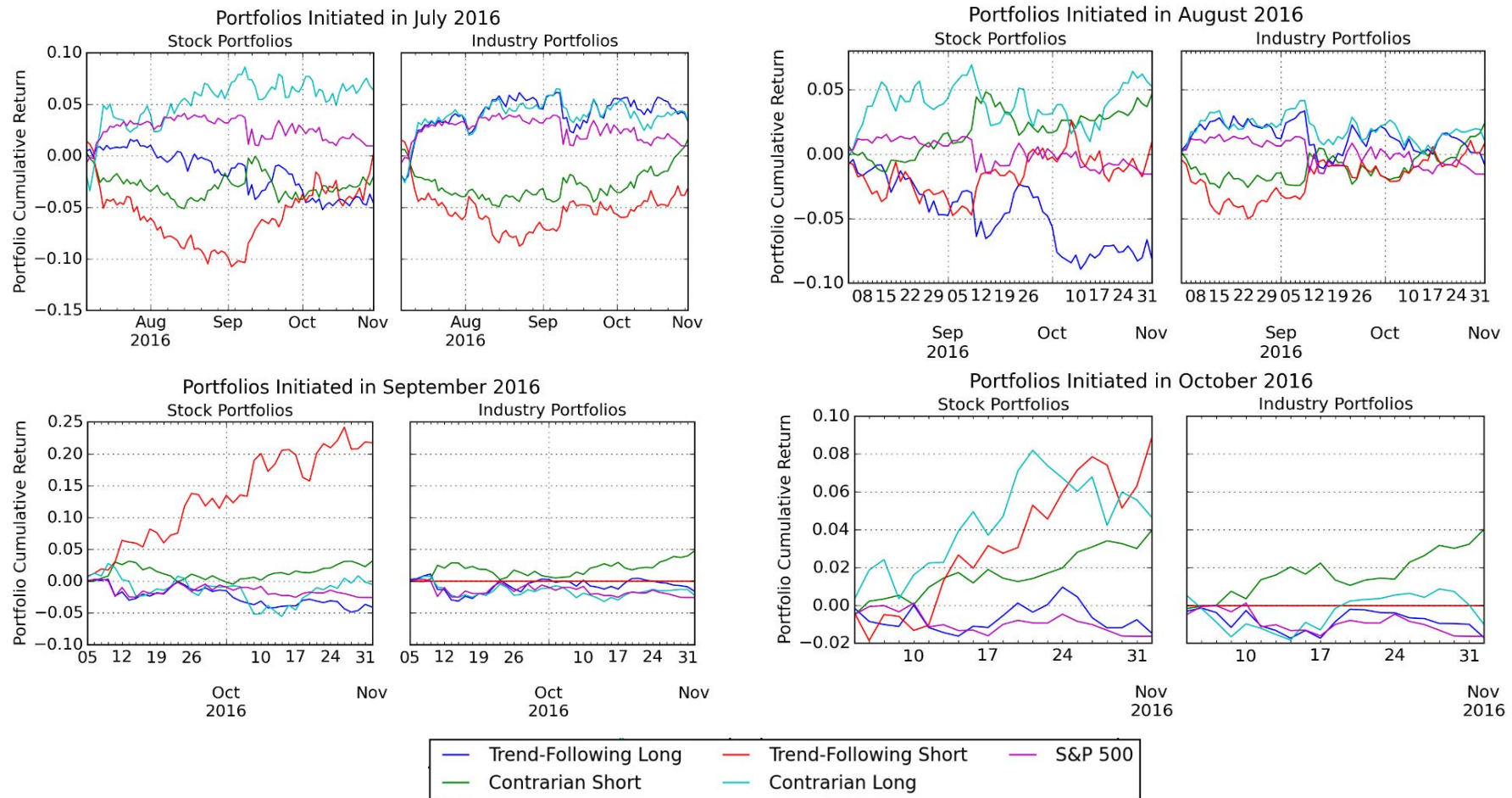
For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all the stocks listed in the corresponding quadrant.

- (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 Contrarian Long portfolios continue to play out and outperform the market in most portfolios initiated in July, August, September and October. The strong performance of Trend-Following Short Stock Portfolio September is due to the large decrease of the single stock ITV PLC we reported in Quadrant 3 in last month's report. 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.

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For information, see

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