

The FCO Cockpit – Global Bubble Status Report

Peter Cauwels & Didier Sornette
Chair of Entrepreneurial Risk

April 1st, 2016

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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 768 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.

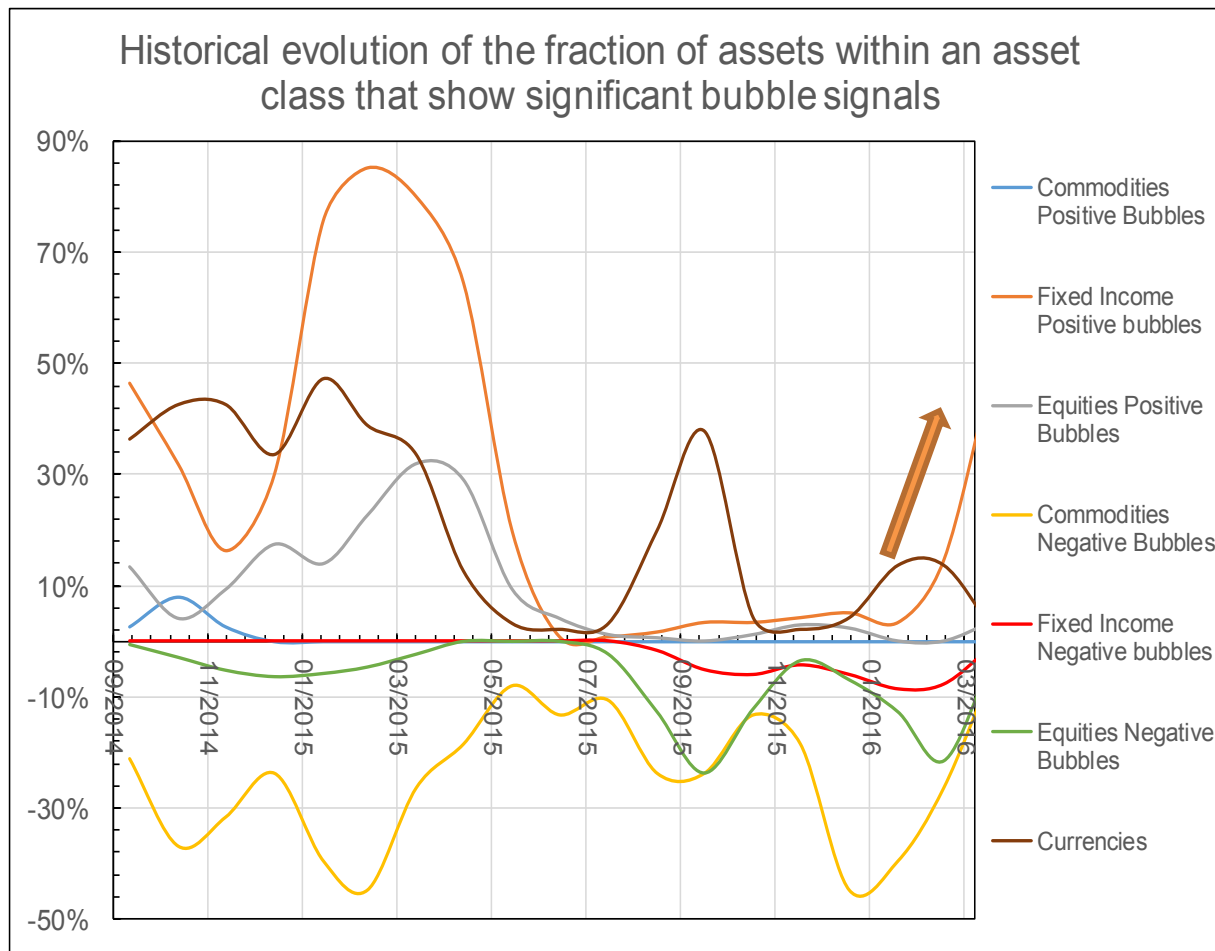
In the first part of this report, we present the state of the world, based on the analysis of the systemic assets. In the second part, we zoom in on the bubble behavior of single stocks and discuss some specific cases.

* 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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general result

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The big picture

Bonds prices across all sectors and regions are feeling a strong tail wind. A very strong momentum has lifted the entire asset class and, looking at the very significant increase in warning signals, is showing a bubble-like behavior.

A global shift is seen. The very strong negative bubble signals in commodities and in related stocks and currencies that was seen over the past half year have disappeared.

Market focus is now on bonds.

*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

- There is a strong rally in Japanese government bonds and in ¥ cross rates. The results in this report suggest that this process is not sustainable;
- Last month, we reported that the strong negative sentiment in commodities was turning and that the asset class was touching bottom. This is further confirmed in this report;
- There is no general trend in equities. The most interesting result was found in the Swiss Market Index, which is showing first signs of a negative bubble;
- Our analysis of single stocks shows a first increase in positive bubble signals especially in non-cyclical/defensive sectors like food. This is in line with the results on the fixed income indices as these stocks can be seen as bond proxies. Also in stocks, investors are searching for safety, there is a flight to quality.

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			
iBoxx Asia Taiwan	8.3%	60.9%	45.7%
iBoxx Asia Thailand	8.7%	41.8%	60.8%
iBoxx Sovereign Japan	6.6%	36.3%	68.5%
iBoxx Asia China	8.9%	30.5%	36.0%
iBoxx Asia Korea	4.7%	23.3%	36.9%
Negative Bubbles			
None			

- Of the 34 government bond indices that were analyzed, 23 show positive bubble signals, that is 68% of the set;
- The table above shows the indices with the five strongest signals, all are in Asia and Japan;
- The figure to the right shows the remarkable bubble in Japanese sovereign bonds. An explosive price trajectory can be seen in the first quarter of 2016. This faster-than-exponential price growth is why we see such strong bubble warning signals.



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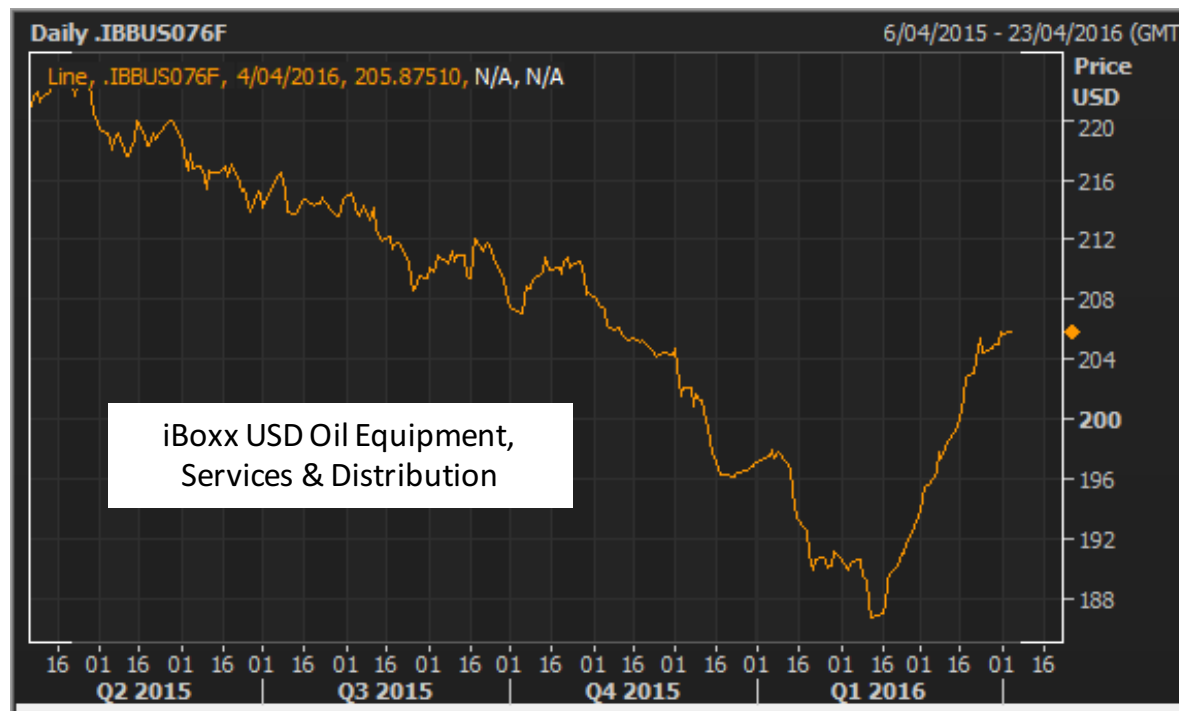
corporate bonds

Sector Indices	Yearly Return	DS LPPL Trust		DS LPPL Confidence	
Positive Bubbles					
iBoxx USD Pharmaceuticals & Biotechnology	2.7%	<div></div>	19.1%	<div></div>	43.0%
iBoxx USD Electronic & Electrical Equipment	3.3%	<div></div>	18.7%	<div></div>	36.5%
iBoxx USD Personal & Household Goods	4.0%	<div></div>	17.8%	<div></div>	45.9%
iBoxx USD Personal Goods	3.4%	<div></div>	16.8%	<div></div>	28.2%
iBoxx USD Tobacco	4.7%	<div></div>	16.5%	<div></div>	43.1%
iBoxx USD Personal & Household Goods	2.3%	<div></div>	5.7%	<div></div>	23.8%
iBoxx USD Consumer Goods	1.1%	<div></div>	5.7%	<div></div>	24.6%
Negative Bubbles					
iBoxx USD Oil Equipment, Services & Distribution	-6.8%	<div></div>	28.7%	<div></div>	6.4%

- The strong momentum is not only in government bonds. It can be seen across all sectors and regions: 35 of the 82 corporate bond indices that were analyzed, that is 43% of the set, give bubble warning signals;
- Only the oil equipment sector (see next slide) still shows negative bubble signals but even these bonds, that got hammered in the wake of the commodities crisis, have seen a very strong rebound.

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corporate bonds



Even the iBoxx USD Oil Equipment, Services & Distribution, the only bond index that still shows negative bubble signals, is rebounding firmly.

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commodities

Commodities	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Positive Bubbles			
<i>None</i>			
Negative Bubbles			
Robsta Coffee ER Index	-21%	 21%	 10%
Natural Gas ER Index	-48%	 15%	 12%

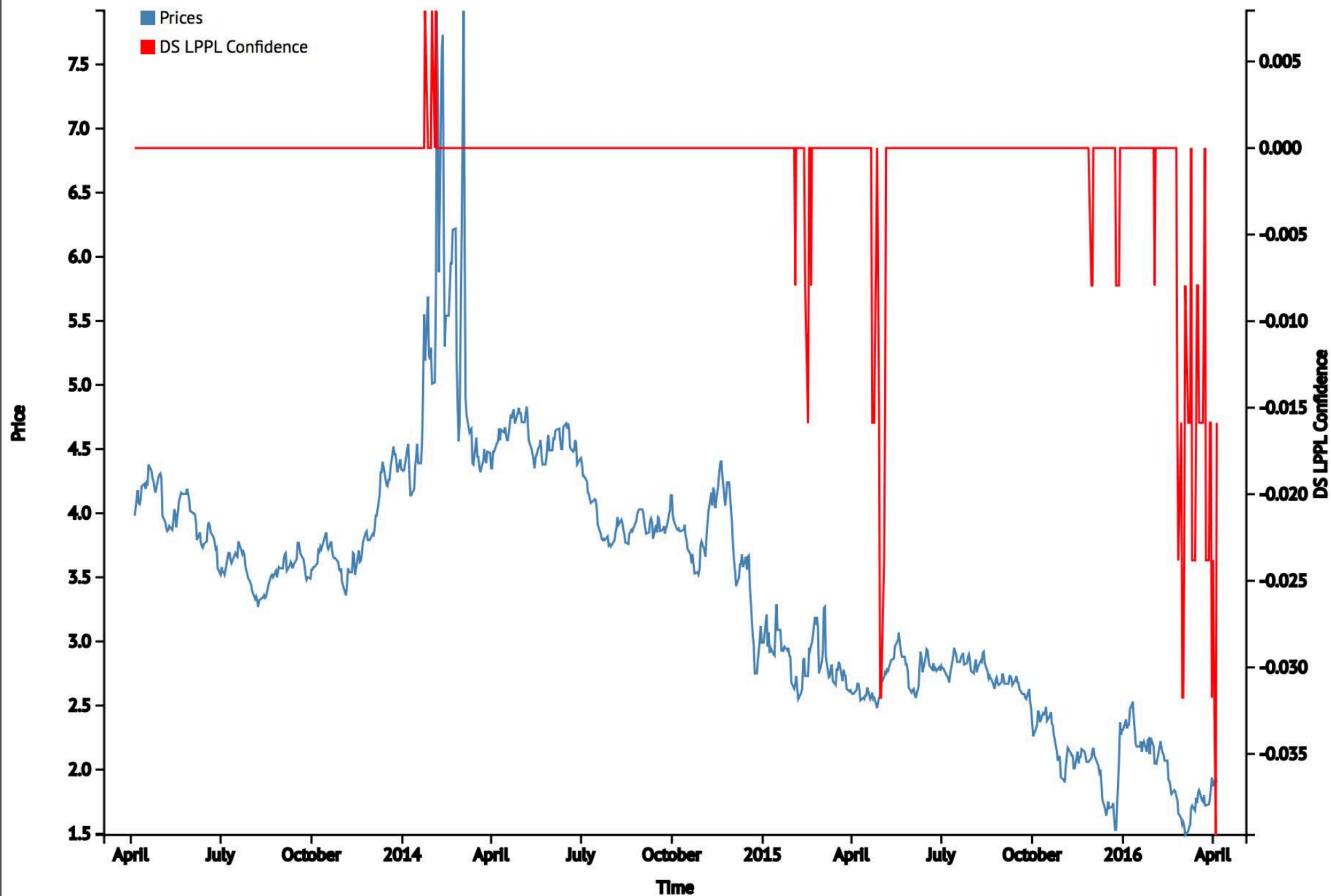
Last month, we reported that the strong negative momentum in commodities was turning and that the asset class was touching bottom. This is further confirmed in this report. Only two out of 38 indices show bubble signals.

Date: 2016-04-05

Name: Natural Gas, Henry Hu





Indicator: DS LPPL Confidence

Bubble end flag - long time scale



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currencies

FX	Yearly Return	DS LPPL Trust	DS LPPL Confidence
Japanese Yen/Swiss Franc	6%	 23%	 14%
Japanese Yen/US Dollar	6%	 7%	 20%

The strong bubble signals in Japanese government bonds are confirmed by the analysis on currencies. Only two currency pairs out of 95 show bubble signals, both are crosses with the Japanese Yen.

The analysis on currencies further confirms the results on commodities. In the previous reports we clearly saw bubble signals in the currencies of commodities exporting countries. These have all disappeared.

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Stocks country indices

Equities Country Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence	Country
Positive Bubbles				
SAX Index	32.6%	7.3%	30.8%	Slovakia
Negative Bubbles				
CSE All Share Index	-12.5%	33.6%	42.3%	Sri Lanka
Kuwait Main Index	-16.1%	9.3%	6.3%	Kuwait
Swiss Market Index	-14.3%	6.6%	6.3%	Switzerland
Equities Sector Indices	Yearly Return	DS LPPL Trust	DS LPPL Confidence	
Positive Bubbles				
S&P 500 Diversf TelecomServ	12.1%	9.5%	19.4%	
S&P 500 Leisure Equip&Products	34.8%	6.9%	12.2%	
S&P 500 Electric Utilities	11.7%	5.7%	27.0%	
S&P 500 Multi-Utilities	12.5%	5.7%	17.4%	
S&P 500 Tobacco	29.6%	5.1%	15.4%	
Negative Bubbles				
S&P 500 - Health Care Technology	-27.8%	5.3%	18.1%	
S&P 500 - Biotechnology	-13.3%	5.1%	14.3%	

There is no general trend in equities. The most interesting result is the Swiss Market Index that is showing first signs of a negative bubble.

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single stocks

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What is this?

For 768 stocks we calculate the bubble warning indicators as well as two newly-developed financial strength indicators.

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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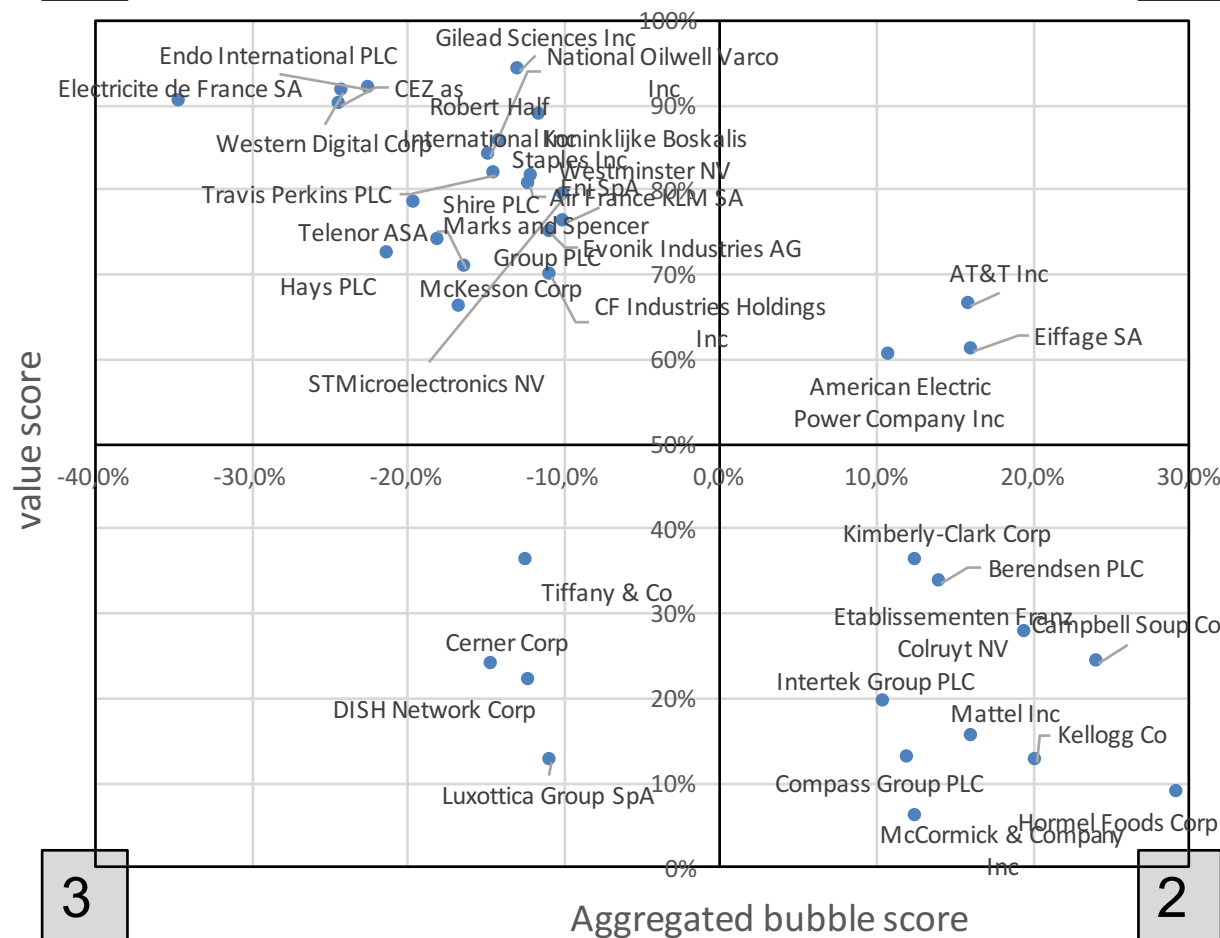
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The four quadrants: value versus bubble score

1

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. AT&T);
2. [Quadrant 2](#): Stocks with a strong positive bubble score and a weak value score (e.g. Hormel Foods Corp);
3. [Quadrant 3](#): Stocks with a strong negative bubble score and a weak value score (e.g. Luxottica Group);
4. [Quadrant 4](#): Stocks with strong negative bubble score and a strong financial strength (e.g. EDF)



3

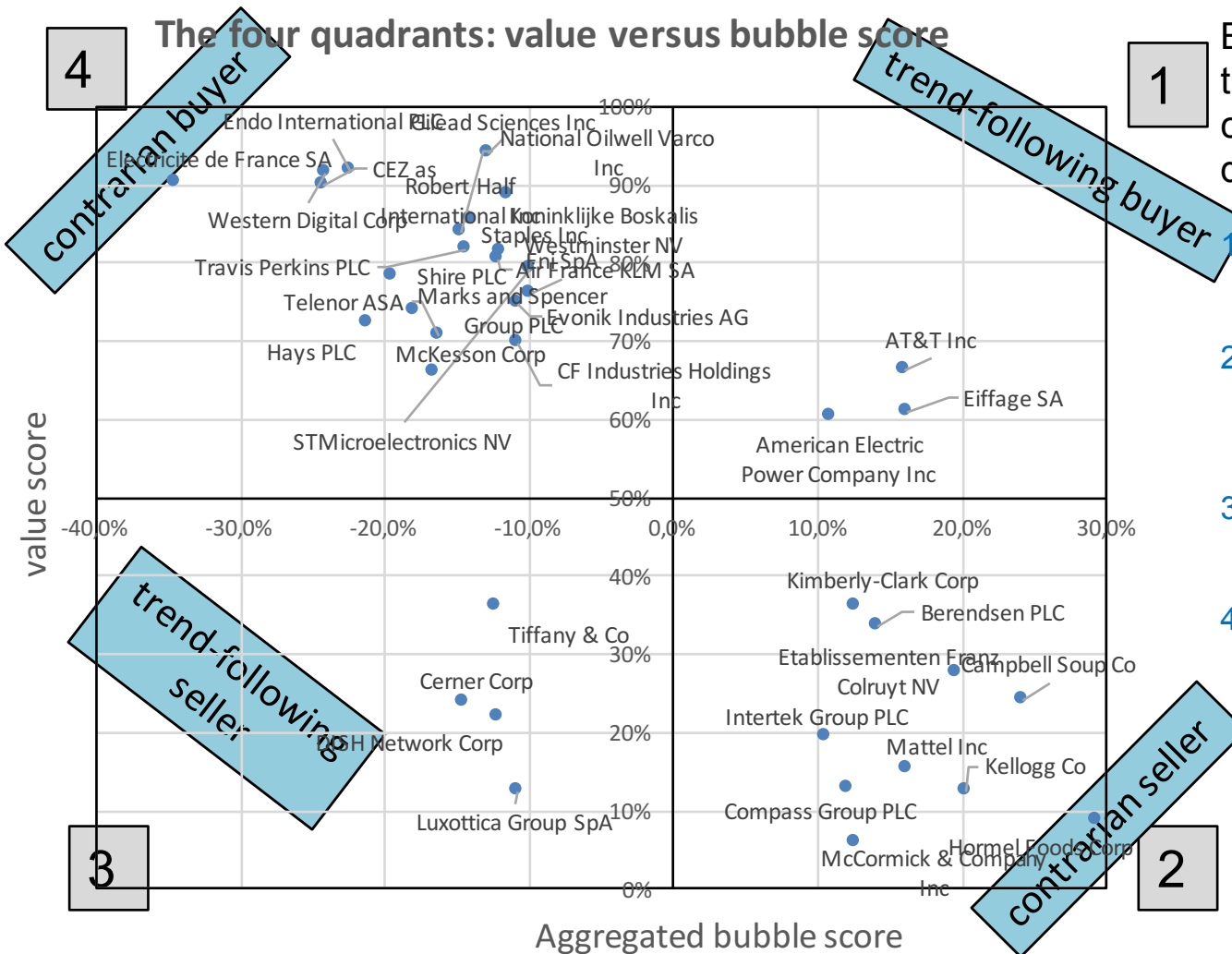
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Each quadrant has its own specs:

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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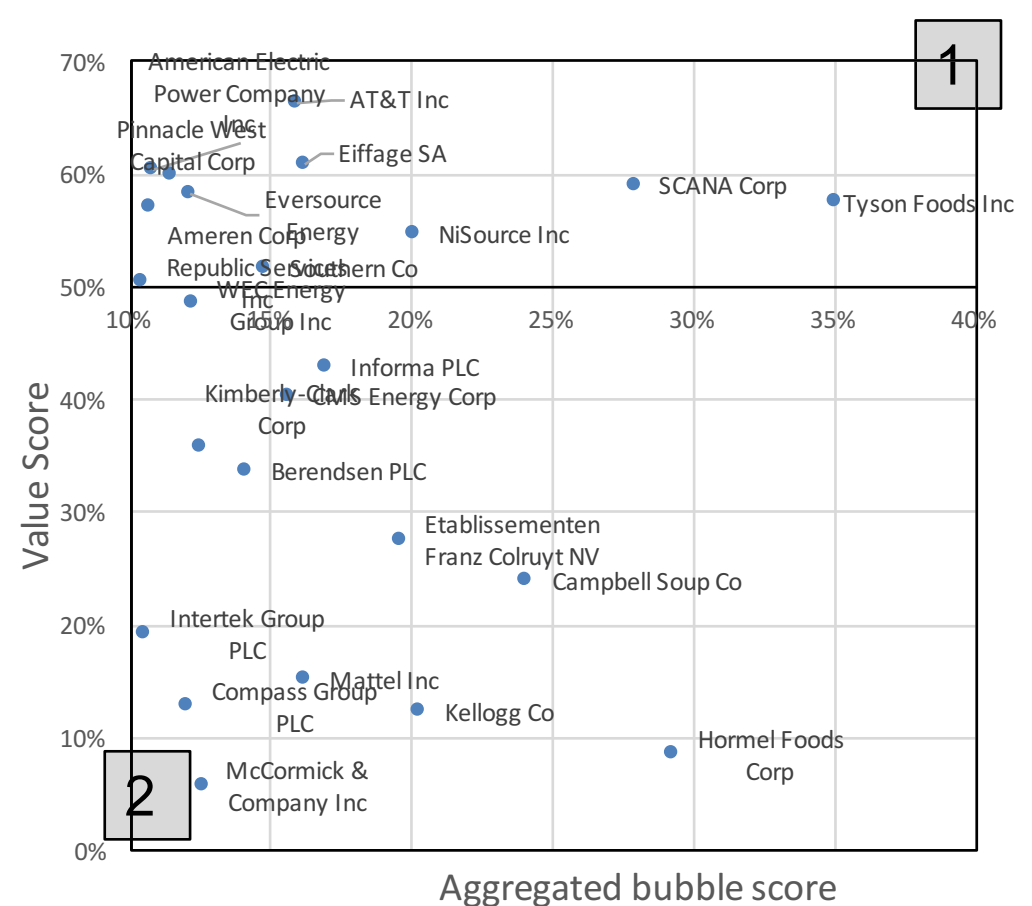
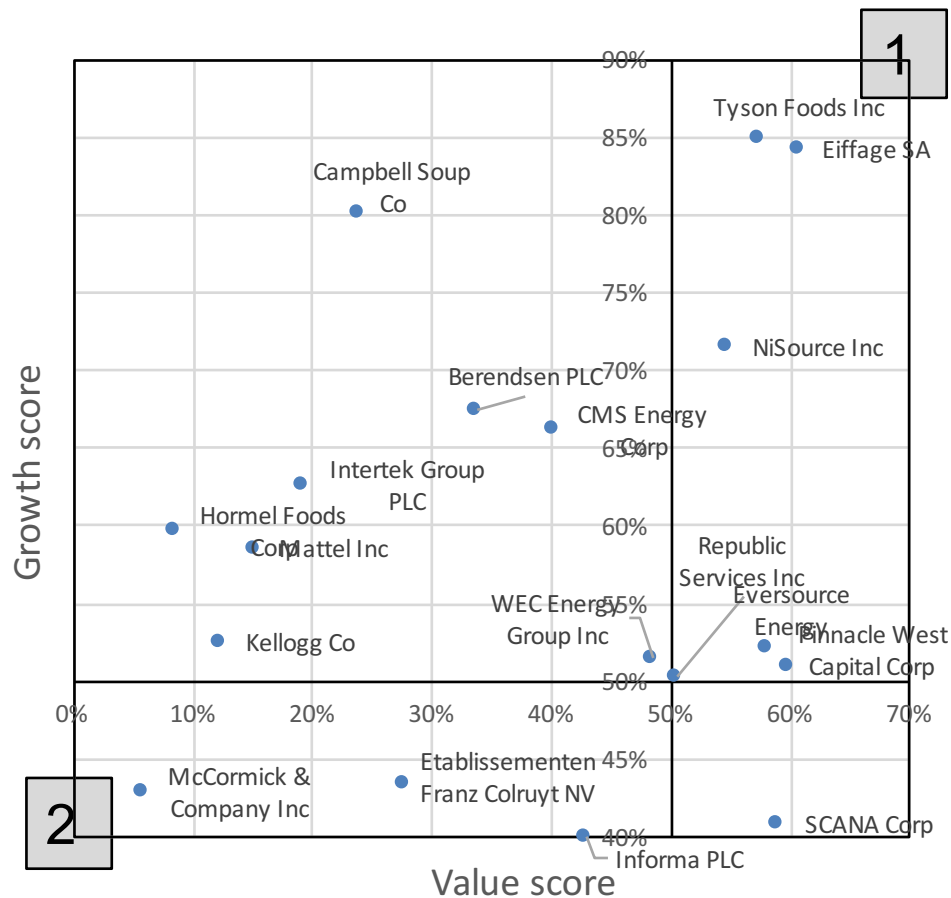


1 By plotting the value score against the aggregated bubble score, we can divide the stocks into four quadrants:

1. [Quadrant 1](#): Stocks with a strong positive bubble score and a strong value score (e.g. AT&T);
2. [Quadrant 2](#): Stocks with a strong positive bubble score and a weak value score (e.g. Hormel Foods Corp);
3. [Quadrant 3](#): Stocks with a strong negative bubble score and a weak value score (e.g. Luxottica Group);
4. [Quadrant 4](#): Stocks with strong negative bubble score and a strong financial strength (e.g. EDF)

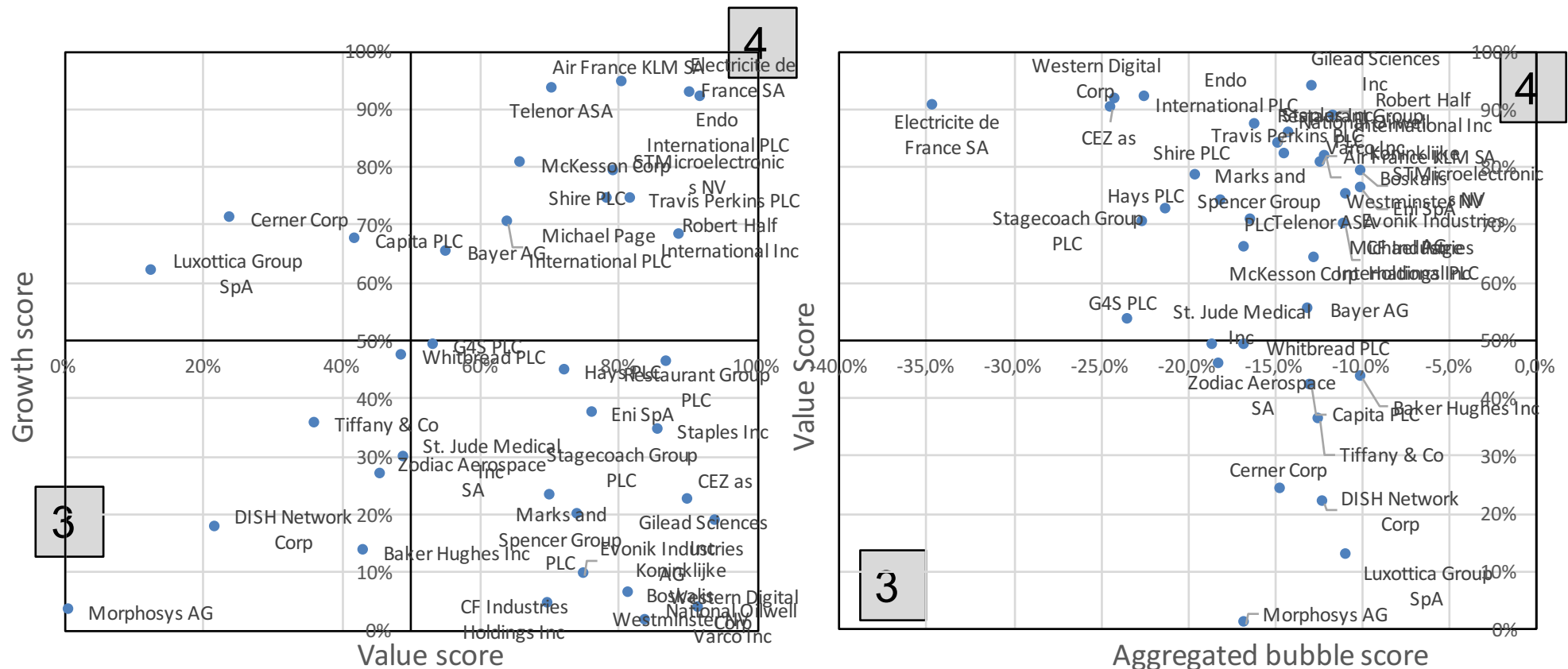
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Quadrant 1 and 2 stocks: positive bubble signals with strong respectively weak fundamentals



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



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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals

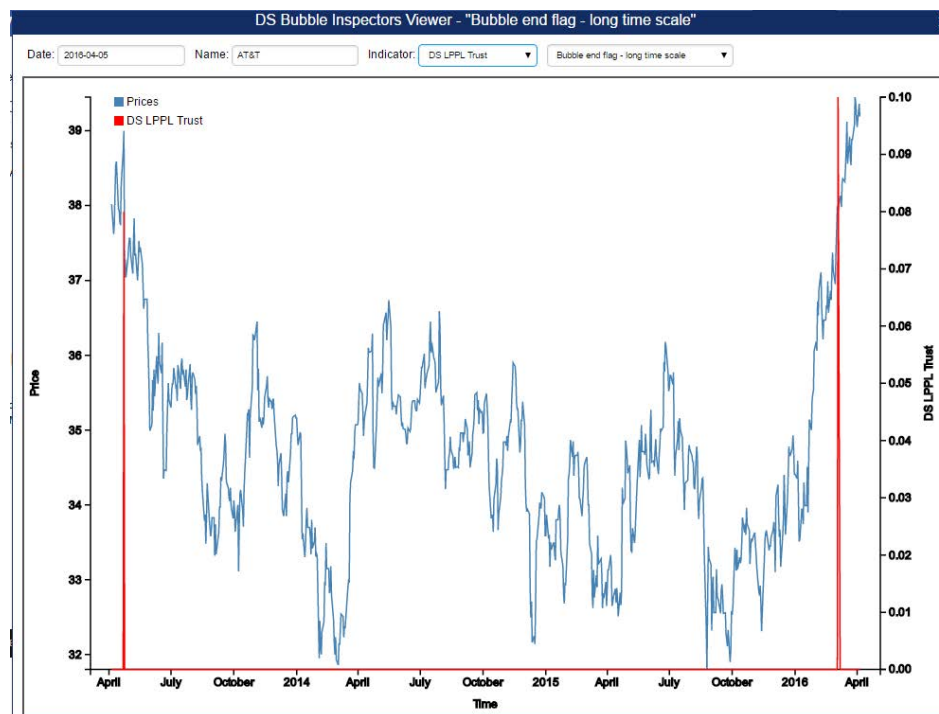
Quadrant 1	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Eiffage SA	France	Industrials	Capital Goods	20.8%	16.1%	61%	84%
AT&T Inc	United States of America	Telecommunication Services	Telecommunication Services	19.7%	15.9%	66%	37%
American Electric Power Company Inc	United States of America	Utilities	Utilities	17.1%	10.8%	60%	34%

Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

Quadrant 2	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Hormel Foods Corp	United States of America	Consumer Staples	Food, Beverage & Tobacco	53.9%	29.2%	9%	60%
Campbell Soup Co	United States of America	Consumer Staples	Food, Beverage & Tobacco	37.8%	24.1%	24%	80%
Kellogg Co	United States of America	Consumer Staples	Food, Beverage & Tobacco	16.1%	20.3%	12%	53%
Etablissements Franz Colruyt NV	Belgium	Consumer Staples	Food & Staples Retailing	26.0%	19.6%	28%	43%
Mattel Inc	United States of America	Consumer Discretionary	Consumer Durables & Apparel	45.5%	16.2%	15%	59%
Berendsen PLC	United Kingdom	Industrials	Commercial & Professional Services	7.2%	14.1%	34%	67%
McCormick & Company Inc	United States of America	Consumer Staples	Food, Beverage & Tobacco	30.8%	12.6%	6%	43%
Kimberly-Clark Corp	United States of America	Consumer Staples	Household & Personal Products	27.0%	12.5%	36%	39%
Compass Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	5.2%	12.0%	13%	29%
Intertek Group PLC	United Kingdom	Industrials	Commercial & Professional Services	26.3%	10.5%	19%	63%

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Quadrant 1 stocks: strong positive bubble signals with strong fundamentals, example AT&T.



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 20%.

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Quadrant 2 stocks: strong positive bubble signals with weak fundamentals, example Campbell Soup.



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 40%.

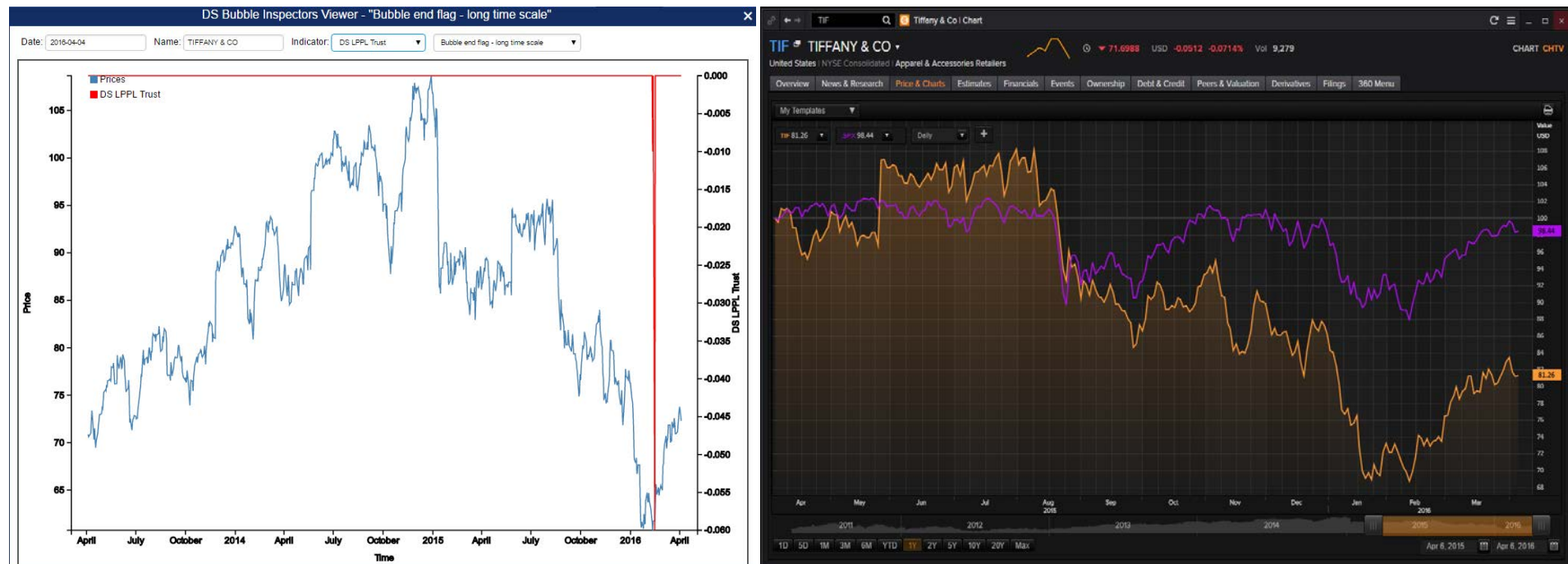
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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Quadrant 3	Country of Headquarters	GICS Sector Name	GICS Industry Group Name	Yearly Return	Bubble Score	Value Score	Growth Score
Morphosys AG	Germany	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-27.3%	-16.7%	1%	3%
Cerner Corp	United States of America	Health Care	Health Care Equipment & Services	-27.8%	-14.6%	24%	71%
Tiffany & Co	United States of America	Consumer Discretionary	Retailing	-15.7%	-12.4%	36%	36%
DISH Network Corp	United States of America	Consumer Discretionary	Media	-32.1%	-12.2%	22%	18%
Luxottica Group SpA	Italy	Consumer Discretionary	Consumer Durables & Apparel	-16.7%	-10.8%	12%	62%

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Quadrant 3 stocks: strong negative bubble signals with weak fundamentals, example Tiffany & Co.



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 performance of the stock over the last year (orange) with respect to the S&P500 benchmark (purple), it is almost -20%.

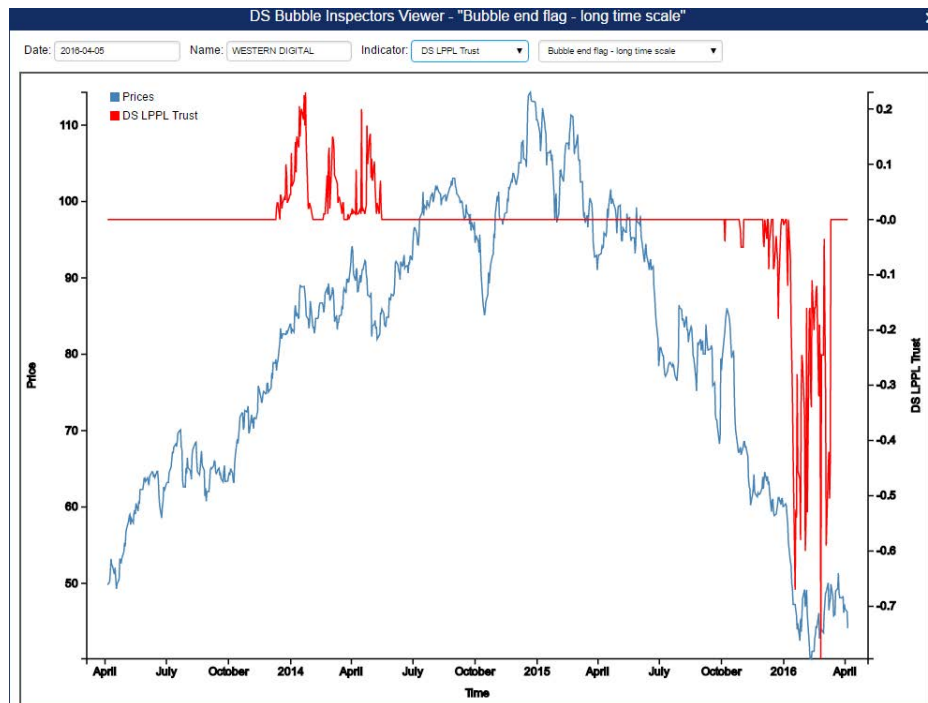
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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

Quadrant 4	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	-56.2%	-34.6%	90%	92%
CEZ as	Czech Republic	Utilities	Utilities	-34.2%	-24.3%	90%	22%
Western Digital Corp	United States of America	Information Technology	Technology Hardware & Equipment	-50.0%	-24.1%	91%	4%
Stagecoach Group PLC	United Kingdom	Industrials	Transportation	-27.8%	-22.5%	70%	23%
Endo International PLC	Ireland; Republic of	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-68.3%	-22.4%	92%	92%
Hays PLC	United Kingdom	Industrials	Commercial & Professional Services	-20.4%	-21.2%	72%	45%
Shire PLC	Ireland; Republic of	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-25.8%	-19.5%	78%	74%
Marks and Spencer Group PLC	United Kingdom	Consumer Discretionary	Retailing	-24.0%	-18.0%	74%	20%
McKesson Corp	United States of America	Health Care	Health Care Equipment & Services	-29.2%	-16.6%	66%	80%
Telenor ASA	Norway	Telecommunication Services	Telecommunication Services	-15.4%	-16.3%	71%	93%
Restaurant Group PLC	United Kingdom	Consumer Discretionary	Consumer Services	-41.4%	-16.1%	87%	46%
National Oilwell Varco Inc	United States of America	Energy	Energy	-37.7%	-14.8%	84%	1%
Travis Perkins PLC	United Kingdom	Industrials	Capital Goods	-7.1%	-14.3%	82%	74%
Staples Inc	United States of America	Consumer Discretionary	Retailing	-32.9%	-14.1%	86%	34%
Gilead Sciences Inc	United States of America	Health Care	Pharmaceuticals, Biotechnology & Life Sciences	-5.9%	-12.8%	94%	18%
Michael Page International PLC	United Kingdom	Industrials	Commercial & Professional Services	-16.0%	-12.7%	64%	70%
Air France KLM SA	France	Industrials	Transportation	-0.9%	-12.2%	81%	94%
Koninklijke Boskalis Westminster NV	Netherlands	Industrials	Capital Goods	-24.3%	-12.0%	82%	6%
Robert Half International Inc	United States of America	Industrials	Commercial & Professional Services	-22.7%	-11.5%	89%	68%
CF Industries Holdings Inc	United States of America	Materials	Materials	-43.7%	-10.9%	70%	4%
Evonik Industries AG	Germany	Materials	Materials	-22.4%	-10.8%	75%	9%
Eni SpA	Italy	Energy	Energy	-18.5%	-10.0%	76%	37%
STMicroelectronics NV	Switzerland	Information Technology	Semiconductors & Semiconductor Equipment	-43.9%	-10.0%	79%	79%

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Quadrant 4 stocks: strong negative bubble signals with strong fundamentals, example Western Digital.



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 performance of the stock over the last year (orange) with respect to the S&P500 benchmark (purple), it is -50%.

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sectors

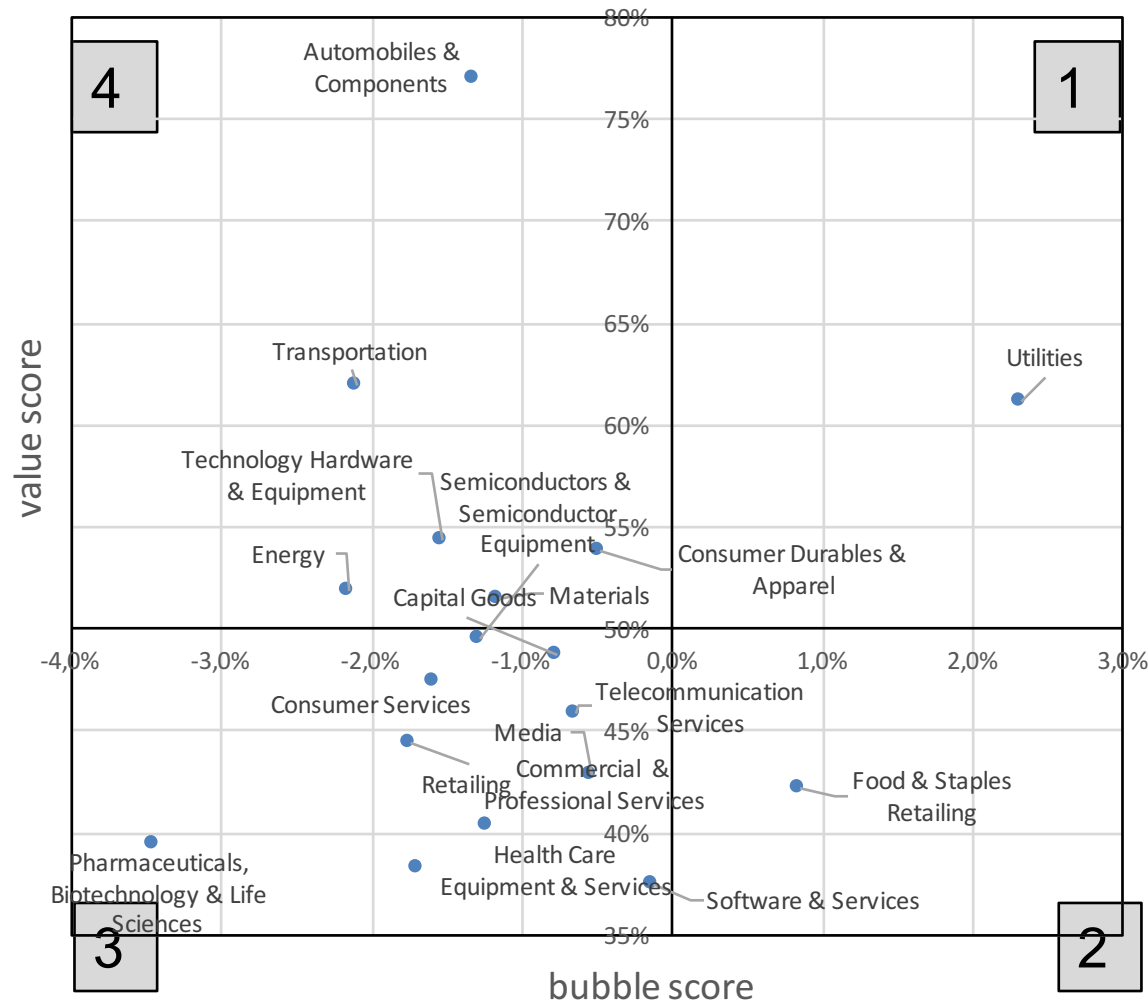
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	Average Yearly Return	Average Bubble Score	Average Value Score	Average Growth Score
Pharmaceuticals, Biotechnology & Life Sciences	-9.0%	-3.4%	39.4%	51.2%
Energy	-26.2%	-2.1%	51.8%	22.9%
Transportation	-4.6%	-2.1%	61.9%	45.6%
Retailing	-0.9%	-1.7%	44.4%	50.6%
Health Care Equipment & Services	-0.7%	-1.7%	38.2%	61.7%
Consumer Services	-4.7%	-1.6%	47.4%	54.0%
Technology Hardware & Equipment	-5.8%	-1.5%	54.4%	39.1%
Automobiles & Components	-14.4%	-1.3%	77.0%	58.9%
Semiconductors & Semiconductor Equipment	-2.0%	-1.3%	49.5%	43.7%
Commercial & Professional Services	1.6%	-1.2%	40.3%	53.3%
Materials	-8.6%	-1.1%	51.4%	43.3%
Capital Goods	-2.4%	-0.8%	48.8%	46.7%
Telecommunication Services	-3.9%	-0.6%	45.9%	48.1%
Media	-4.8%	-0.5%	42.8%	54.1%
Consumer Durables & Apparel	2.3%	-0.5%	53.8%	61.3%
Software & Services	10.0%	-0.1%	37.4%	56.1%
Food & Staples Retailing	-1.4%	0.9%	42.2%	45.9%
Household & Personal Products	8.6%	2.0%	19.5%	44.0%
Utilities	1.3%	2.3%	61.1%	39.1%
Food, Beverage & Tobacco	14.6%	3.9%	30.3%	47.6%

By aggregating the calculations that were done on a single stock level in the previous section, we can see the bubble, value and growth score on a sector level.

- Clearly, there is value in Automobiles & Components and in Transportation (mainly the airline sector), even though both sectors show an average negative bubble score;
- In line with bonds, food, beverage & tobacco seems to be overvalued with an average positive bubble score.

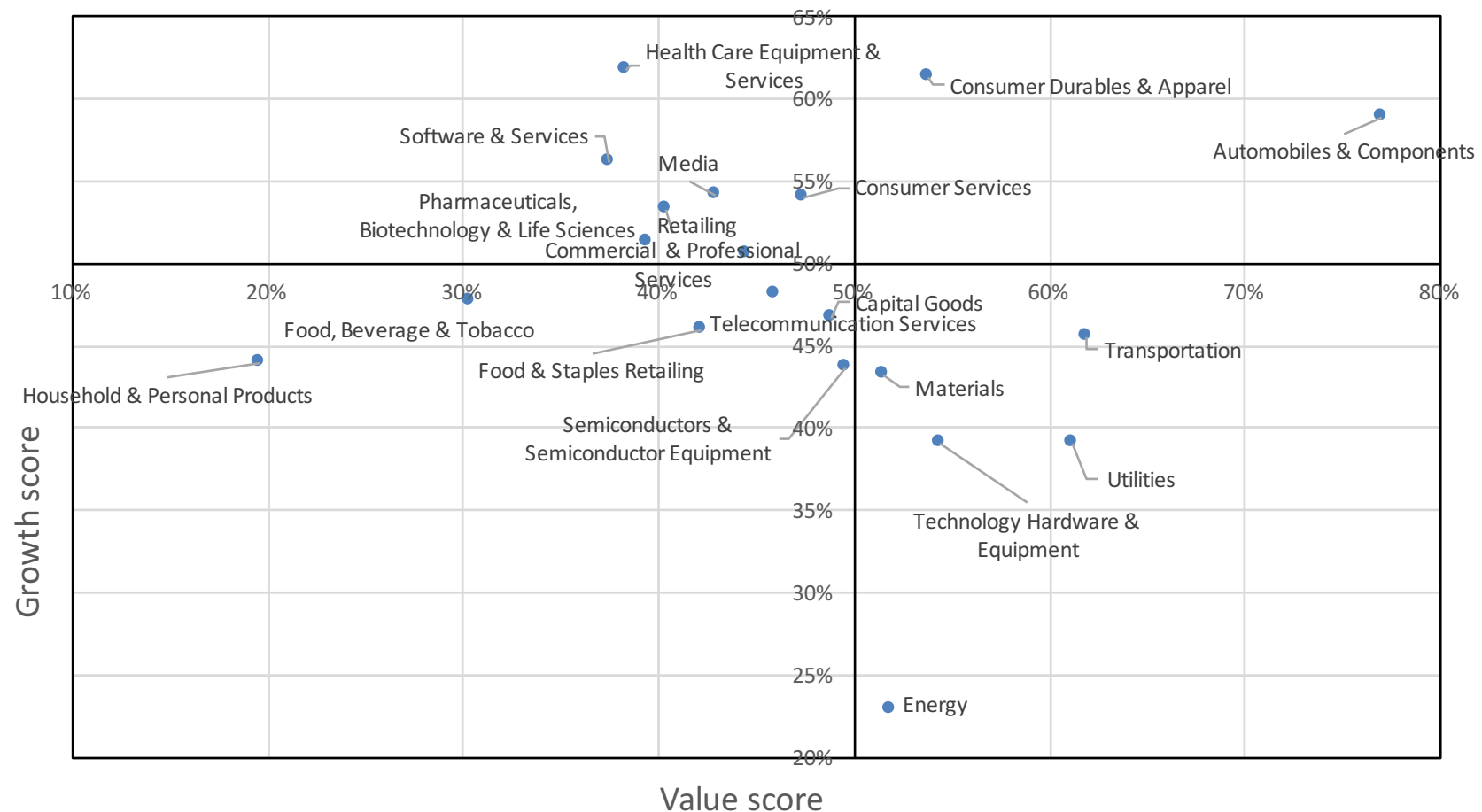
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By plotting the value score versus the aggregated bubble score, we can also divide the sectors into four quadrants:

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.

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

thank you