



## The FCO Cockpit Global Bubble Status Report September 2021



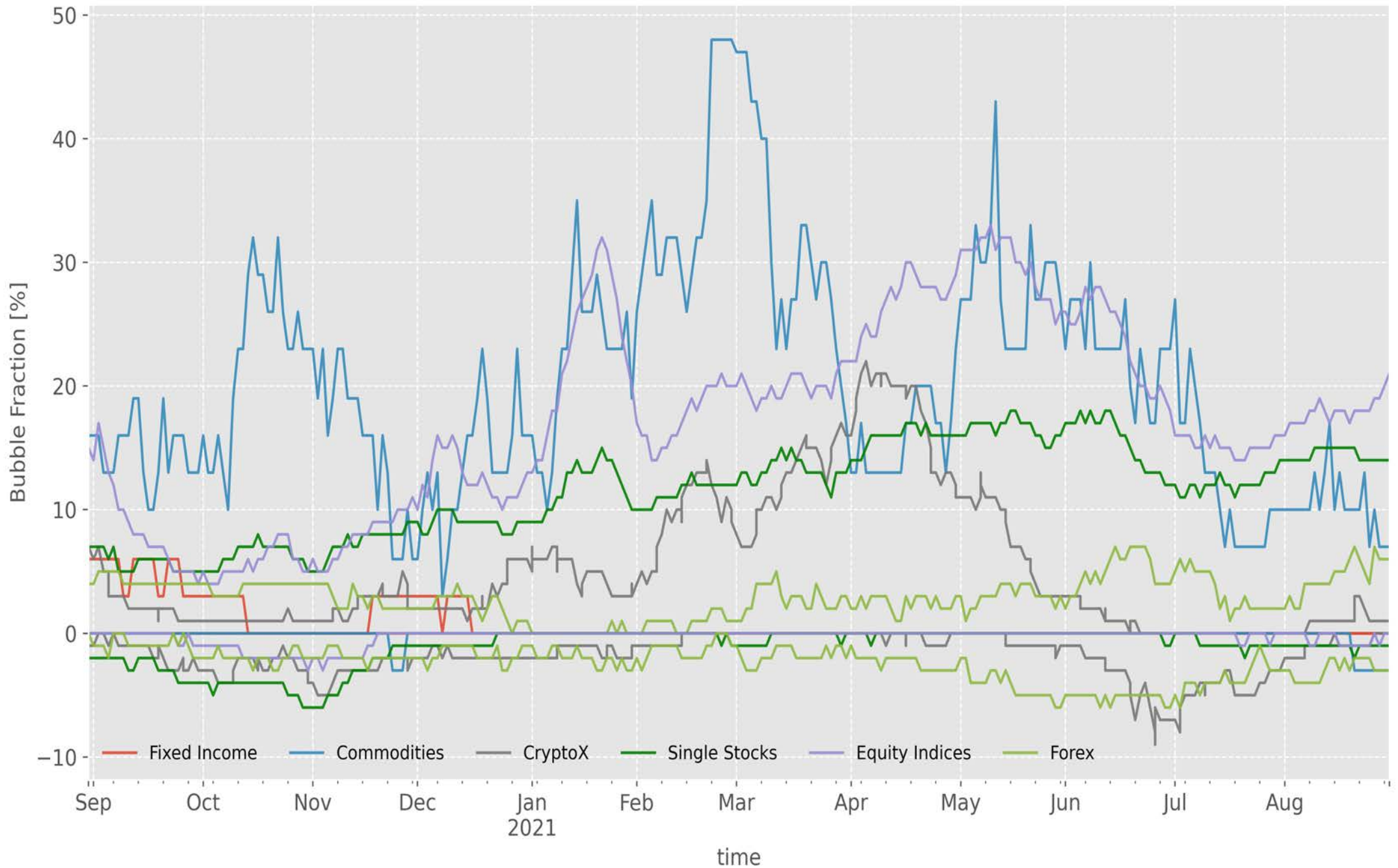
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# Purpose and Benefits

- ▶ The **Financial Crisis Observatory (FCO)** monthly report discusses the historical evolution of bubbles in and between different asset classes and geographies. The purpose of the FCO report is to ascertain which asset classes and sectors are **crowded** and to what degree they develop contagion risks.
- ▶ Today, the report is **used by 600+ institutions world-wide**, including universities, think tanks, sovereign wealth funds, hedge funds, family offices, private banks and pension funds.
- ▶ It delivers the big picture in terms of growing bubbles and instabilities in today's financial markets for **Chief Investment Officers, Senior Researchers, Fund Managers**, and **Independent Financial Advisors**, and all parties with **investment performance responsibility** or **managing financial risks**.
- ▶ The report is the result of an extensive analysis applied to the historical time series of about 450 systemic assets and about 850 single stocks. The systemic assets are bond, equity and commodity indices, as well as a selection of currency pairs. The single stocks are mainly US and European equities. The data is from Thomson Reuters.
- ▶ To new readers, we recommend proceeding to the appendix for more detailed information about the methodology and procedures applied in this report.

Fraction of Positive / Negative Bubble Signals for different Asset Classes



# General Results as of 2021-08-31

	Region	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
<b>Fixed Income</b>		33	0	0
<b>Commodities</b>		30	7	3
<b>Single Stocks</b>		1614	14	1
	Europe	942	13	1
	United States	659	15	1
<b>Equity Indices</b>		887	21	0
	Europe	57	25	0
	United States	377	21	0
	Global	383	21	0
<b>Forex</b>		100	6	3
<b>CryptoX</b>		486	1	0

- ▶ As of the end of August, the fixed income sector continues to show zero bubble signal as in all the previous months of this year.
- ▶ In the commodities sector, the positive bubble fraction for this month keeps its decreasing trend starting in May, dropping from its local peak at nearly 45% to the current level of only 7%; on the other hand, negative bubble signals show up for the first time this year, recording a fraction of 3%.
- ▶ The bubble fraction in the single stocks sector remains unchanged this month, while the equity indices sector exhibits a moderate increase in its positive bubble activity from 16% of the last month to 21% now.
- ▶ In the Forex sector, the positive and negative bubble signals have both reversed their trend of the past month, ending at 6% and 3%, respectively.
- ▶ Finally, in the CryptoX sector, bubble signals remain extremely low as before.



# FCO Market Outlook

## Inflation, Inflation, and Inflation!

Germany's annual consumer price inflation rose to a new record high in August since the German reunification, reading 3.9% year-on-year. The data shows that the rising price pressures are caused by the economic recovery (i.e., due to reopening) and supply bottlenecks in manufacturing (record container shipping rates globally and semiconductor shortage). The Euro zone's ten-year high inflation challenges the European Central Bank's initial view on price growth earlier this year. It is expected that the German inflation will approach 5% in the coming months. U.S. policymakers are also facing the same challenge as European countries. Interestingly, disasters in economics are like earthquakes, in the sense that one major earthquake might trigger other big earthquakes. A Public health disaster (i.e., COVID-19 Pandemic) could lead to fiscal, monetary, and potentially inflation disasters. In line with our August report, we see that the risk of stagflation (persistent high inflation combined with high unemployment and stagnant demand in a country's economy) is rising.

## China's financial reform

Chinese government's recent announced policy interventions (setting up Beijing Stock Exchange and introducing so-called "three red lines" for developers) indicate a potential change in future household wealth structure, i.e., from real asset class (real estate) to virtual asset class (stocks and bonds). Based on the functionality of the financial markets, this big move is to increase direct financing, bringing continuous and incremental cash flow into the financial market, which we reckon can be an effective solution to the chronic debt problems. However, the investor protection issue will be a vital process that CSRC must confront for well-functional, information efficient, and fair financial markets. (CSRC: China Securities Regulatory Commission).

**Fix income:** The delta variant and the extreme weather events have delayed the recoveries of the U.S. and E.U., giving dovish signals to the markets. High inflations of asset values make the task of monetary policies much more complex in many countries. A few central banks (Korea, Brazil, Russia, Chile, and Mexico) implement macro-prudential policy interventions by raising interest rates, while others still hesitate. According to the Taylor rule, the current U.S. interest rate should be around 5%, owing to the high inflation in the U.S. It is indeed a question for every central banker to consider whether the highly indebted vulnerable economies could bear the interest payment increases that would follow. However, the central bankers should also consider whether printing more money could eventually contribute to a much worse global financial crisis in the next few years, as the Russian Central bank mentioned.

**Global equities:** The U.S. full vaccination rate (2 doses) just passed 53% of the population. The vaccination rate is critical for the current valuation of the S&P500, particularly for the GAFAM. If the vaccination rate reaches 70%+, the U.S. government will fully reopen the economy, changing the tech giants' valuation logic. The tech giants are the largest beneficiaries of the COVID-19 period, as they gain lots of revenue and earnings growth due to the WFH (Work From Home) lifestyle. In line with our previous expectation, we still believe that monetary policy (i.e., tapering) will bifurcate in Q4 this year, however, based on the latest data (the slowdown of margin debt and the decrease of credit impulse), we smell that volatility is coming. Investors should be careful about a potential market correction in the coming weeks.

**Commodities:** After Germany and China, the U.S. is also suffering from extreme weather events (flood caused by the Category 4 Hurricane Ida) in Louisiana, New York, and New Jersey, leading to more than a \$70 billion loss estimated by AccuWeather. More than 80% of US oil production and 83% of gas production are offline due to flood damage, leading to 66% of gas stations in Baton Rouge and 65% in New Orleans lacking fuel. It seems that heavy rains might last few more weeks. Natural gas, which is widely used in electricity generation, heating and in industry, is in supply crunch for the E.U. and U.K. now. Households are worried about potential high energy bills for the coming winter due to insufficient storage of fuel this summer. This weather "Act of God" also pushes coal price to a record level (beyond our expectation last month), together with high temperatures in Asia (boost air conditioning demand) and environmental pressure to reduce coal production. In addition, in line with our August report, Iron Ore experienced a harsh correction, dropping 24% in a month. The Iron ore price plummet is partially due to the property market slowdown in China, indicated by the decline of the apartment transaction volumes and the overall sluggish real estate stock prices and bond prices. Besides, as mentioned last month, the prolonged dry weather and recent frost in Brazil push sugar price to a four-year high.

**Real estate:** According to the National Association of Realtors, the issue of housing affordability remains a major concern in the U.S., with current housing prices rising to record levels across the country, increasing 24 percent year-over-year to a high of US\$350,300 in June 2021.

Germany Inflation Rate  
(in percentage, YoY)



Source: TRADINGECONOMICS.COM

# Thoughts on the origins of High Profitability

The primary traditional purpose of a business is earning profit by providing goods and services desired by its customers. There are several mechanisms by which companies can maintain higher profitability.

1. **First mover advantage.** Being first entrants in an industry or providing a new product or service can often obtain higher gross profitability since the firms are the first to satisfy customers' needs without any competition. A good example is Apple's first-gen smartphone launched in 2007. The iPhone quickly standout among all phones with its touch screen and other advanced interactive features, and Apple keeps dominating the smartphone industry with higher profitability. Those who refused to follow (even Nokia, Blackberry, and others) became history.

2. **Technical advantages.** Companies that can maintain technological leadership in an industry can also obtain higher profitability. (Actually, if the first mover does not sustain a technical lead, the initial advantage becomes a disadvantage.) Google's continuous innovations let it replace Yahoo as the most-used search engine in the mid-to-early 90s and lead the market until today with a 92.47% search market share as of June 2021.

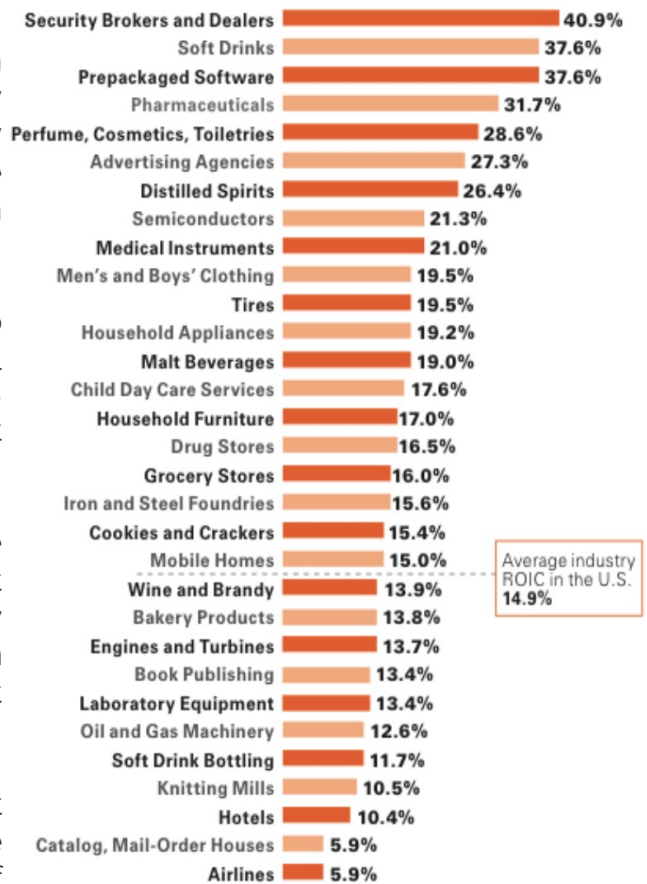
3. **Government special permission.** If a product or service is popular, others will follow, mimicking the secret formula of success. However, if the businesses have some special permission from government (e.g. government license, patent), they can still maintain a high profitability due to partial monopoly protection. For instance, PTO usually grants to new patents a 20 years patent protection period (from the date they filed patent application), and the FDA gives a few years of exclusivity. Both patent protection and production exclusivity guarantee high profit for the pharmaceutical companies.

4. **Branding advantages.** Speaking of branding, we have to mention Coca-Cola and LVMH's excellent marketing strategies. Both of them are producing very ordinary products in nature (neither exclusive products nor high technology products, and they have many competitors), but the "dark magic" of branding turns viewers to fans (even "crazy fans") and then to devoted consumers. The loyalty of the consumers, like religions, keeps the businesses prosperous, and many people even use it to represent social status.

5. **Big cyclicity or Urgent demand.** There are also some situations in which some businesses can suddenly become highly profitable. We here give two circumstances. One is the commodity-producing companies (typical cyclical industries). However, commodity companies tend to have volatile profitability due to high commodity prices and stock price elasticity. Iron ore prices, for example, can range from \$40 to \$220 per ton within five years, and some companies witnessed a tenfold stock price change accordingly. Another situation is when an urgent demand arises. One comparative example is that the prices of oxygen respirators soared globally (in some places, the respirator concentrator price increased tenfold in some particular time) amid great demand over Covid-19. This phenomenon is not rare, and such out-of-equilibrium supply-demand mismatches will always appear from time to time. They are still many other reasons for high profitability, but we have to stop here.

## Profitability of Selected U.S. Industries

Average ROIC, 1992–2006



Profitability of Selected U.S. Industries

Source: Michael Porter (2008)

# Fixed Income

No bubbles to report



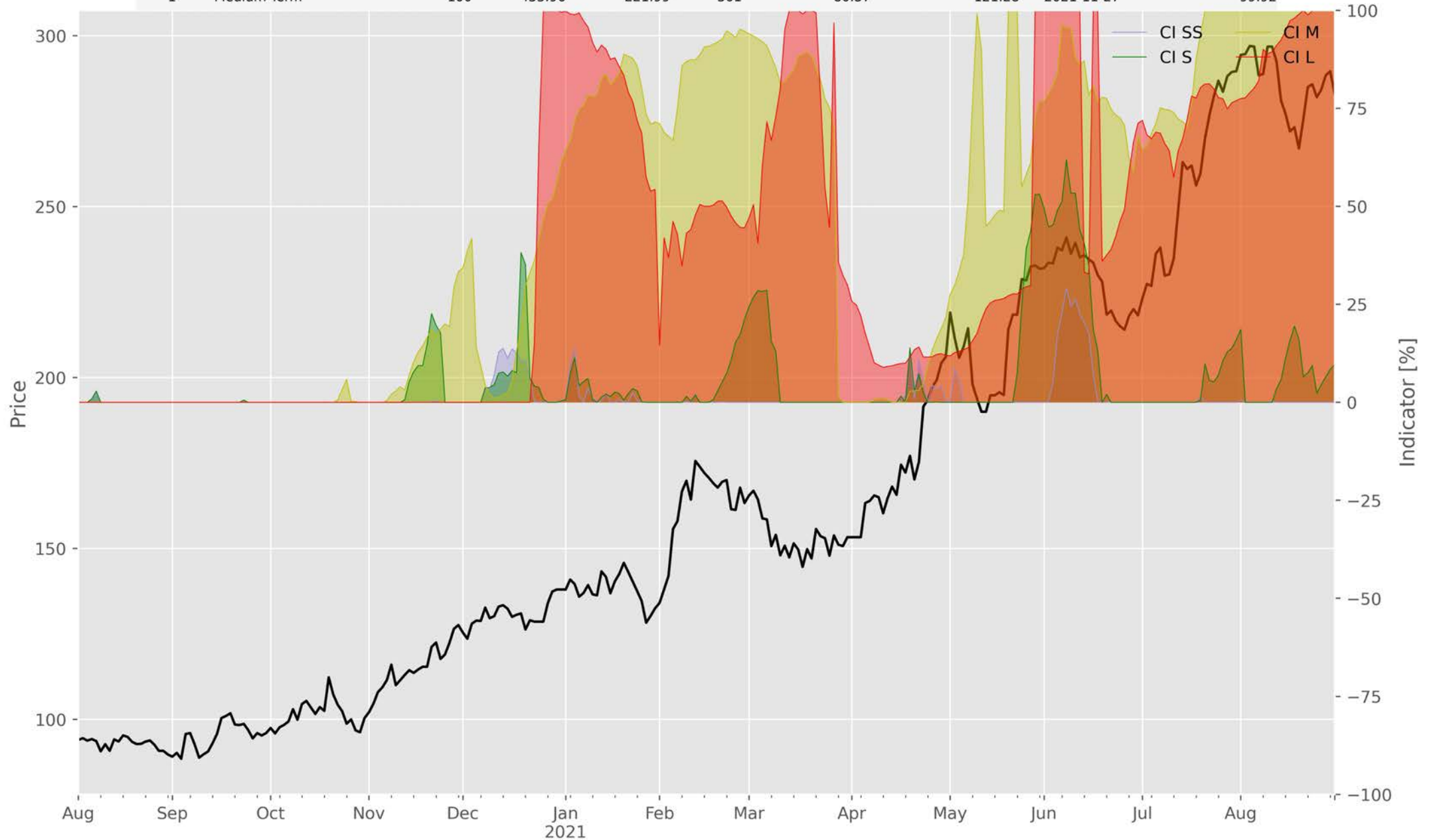
# Commodities

No bubbles to report

# Single Stocks

## Nordic Semiconductor

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
1	Medium Term	100	433.96	221.99	361	80.37	121.28	2021-11-27	99.92



# Bonheur

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
2	Super Short	57.8	49.31	259.18	79	95.75	112.78	2021-09-04	99.99



# Diasorin

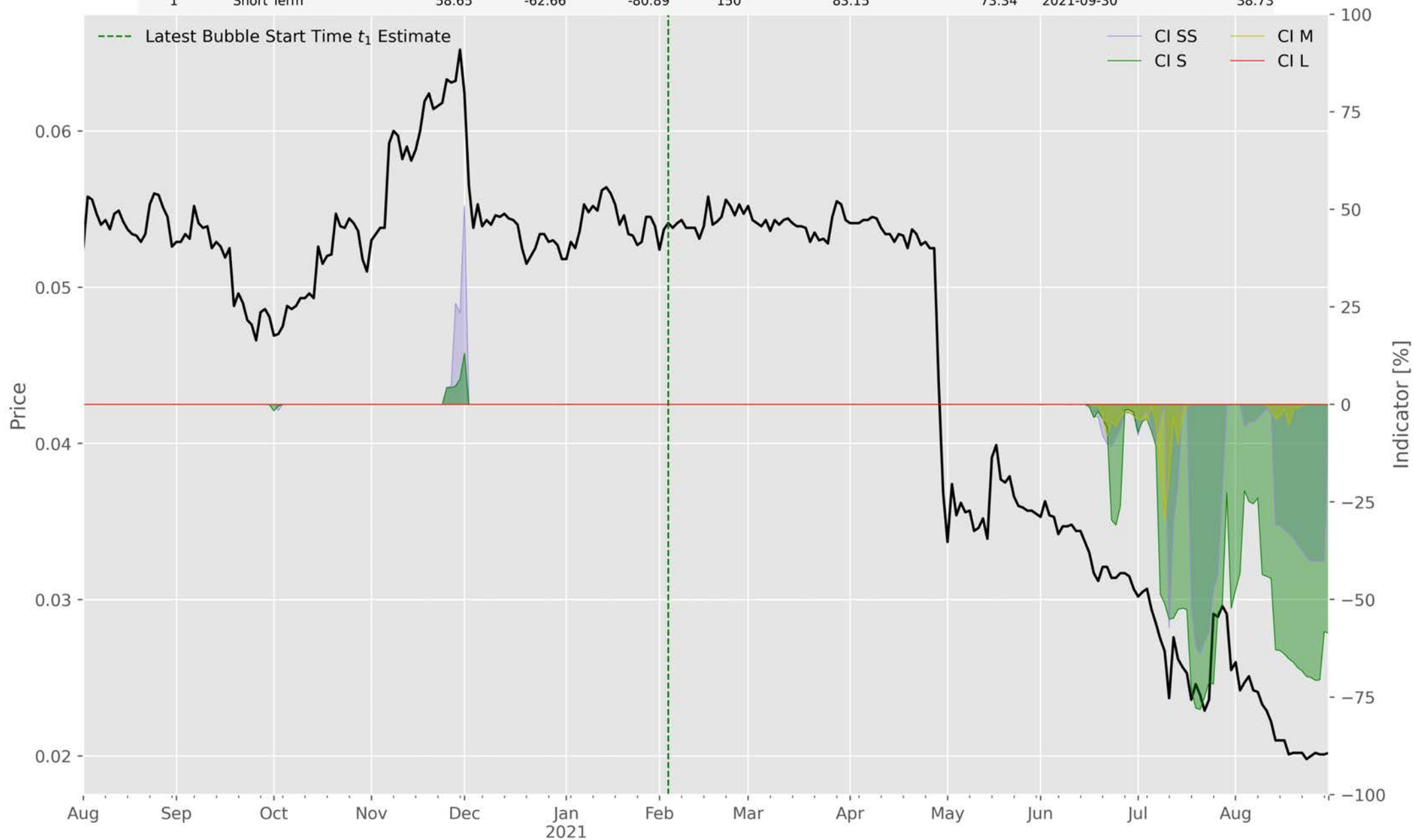
Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci, bg, bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
3	Super Short	66.17	37.79	147.85	89	83.68	93.55	2021-09-17	75.52





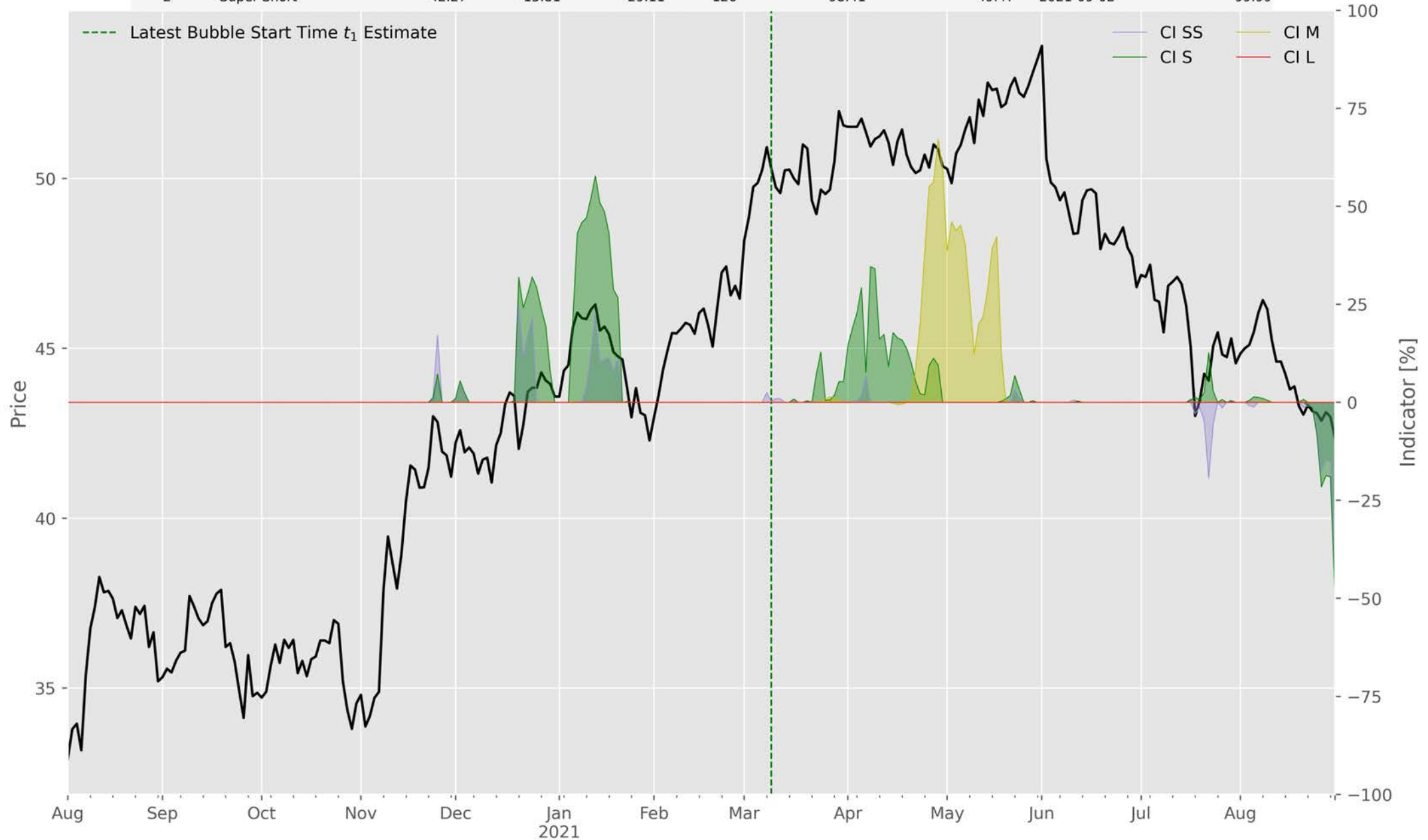
## Distribuidora Intnac.De Alimentacion

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci, bg, bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Short Term	58.65	-62.66	-80.89	150	83.15	73.34	2021-09-30	38.73



## Ageas (Ex-Fortis)

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	$(ci, bg, bp)$	$\hat{t}_c$	[%]
2	Super Short	42.27	-15.81	-29.11	126	98.41	49.47	2021-09-02	99.99



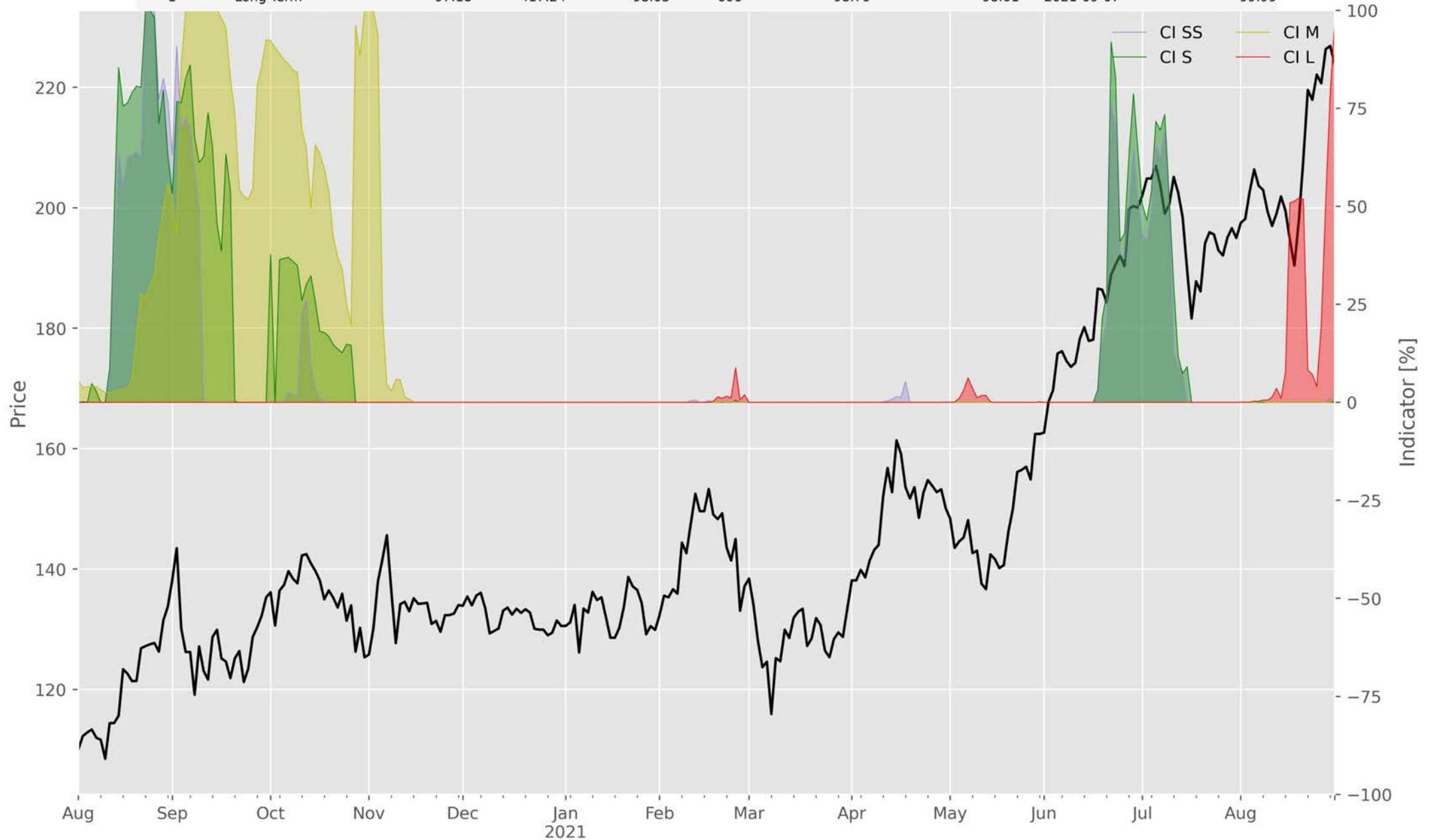
# Koninklijke Vopak

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
3	Short Term	30.61	-22.67	-22.67	252	69.36	36.38	2021-12-20	99.03



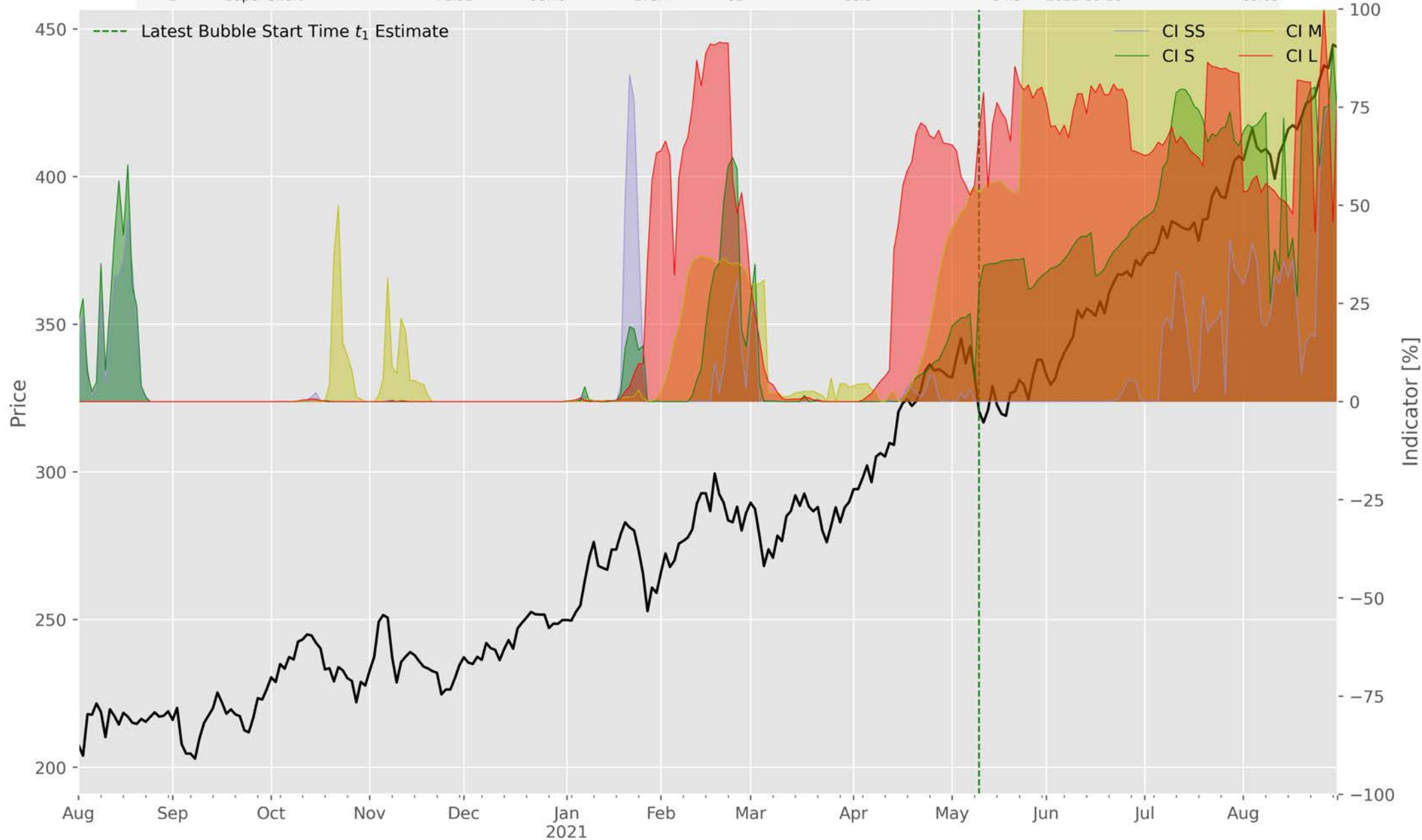
# Nvidia

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	$(ci, bg, bp)$	$\hat{t}_c$	[%]
1	Long Term	97.18	417.24	98.05	606	98.79	98.01	2021-09-07	99.99



# Chas.Rvr.Labs.Intl.

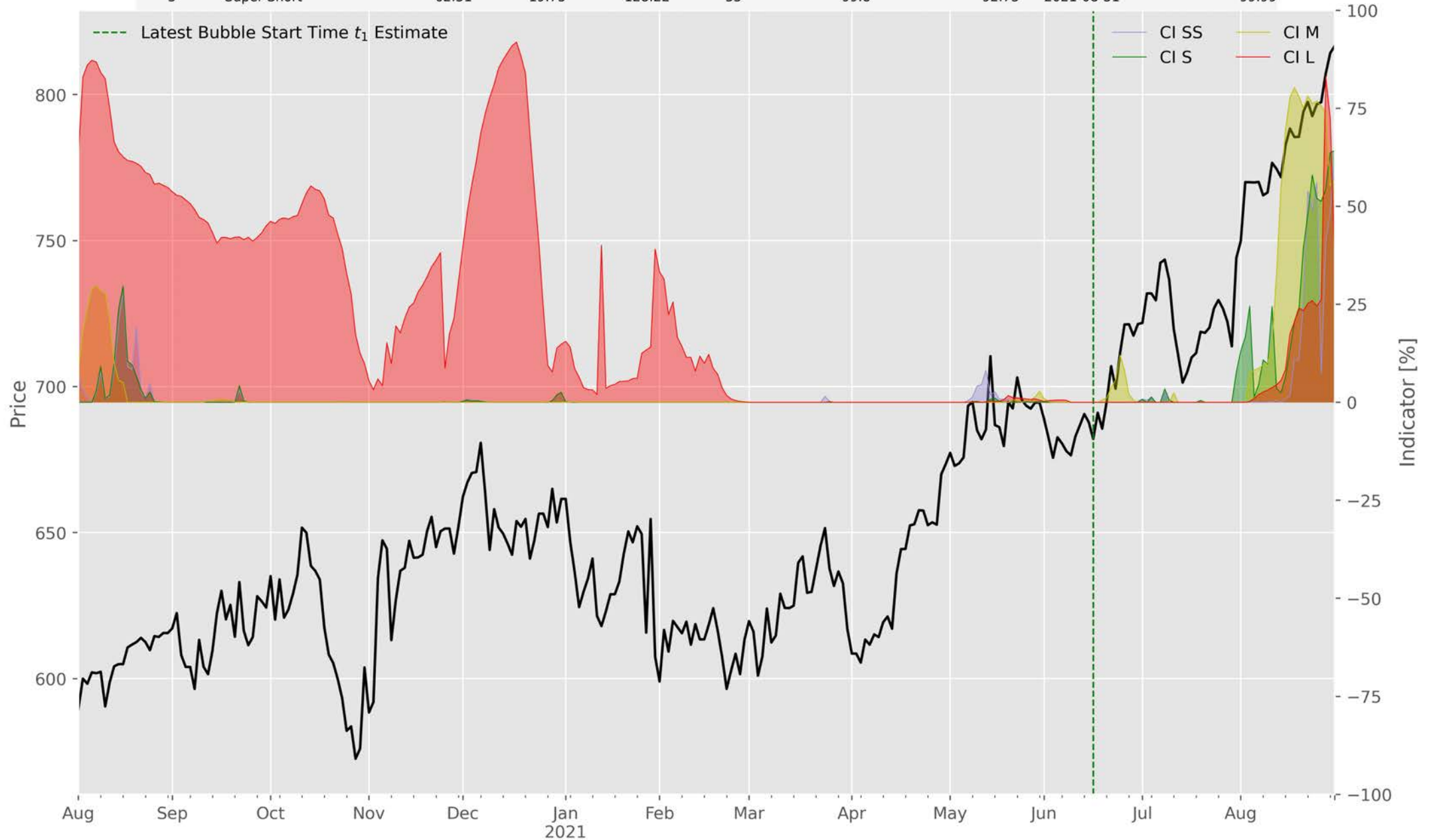
Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
2	Super Short	71.92	38.49	175.4	81	66.9	94.5	2021-10-10	69.05





## Charter Comms.CI.A

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
3	Super Short	62.31	19.73	128.22	55	99.8	92.73	2021-08-31	99.99



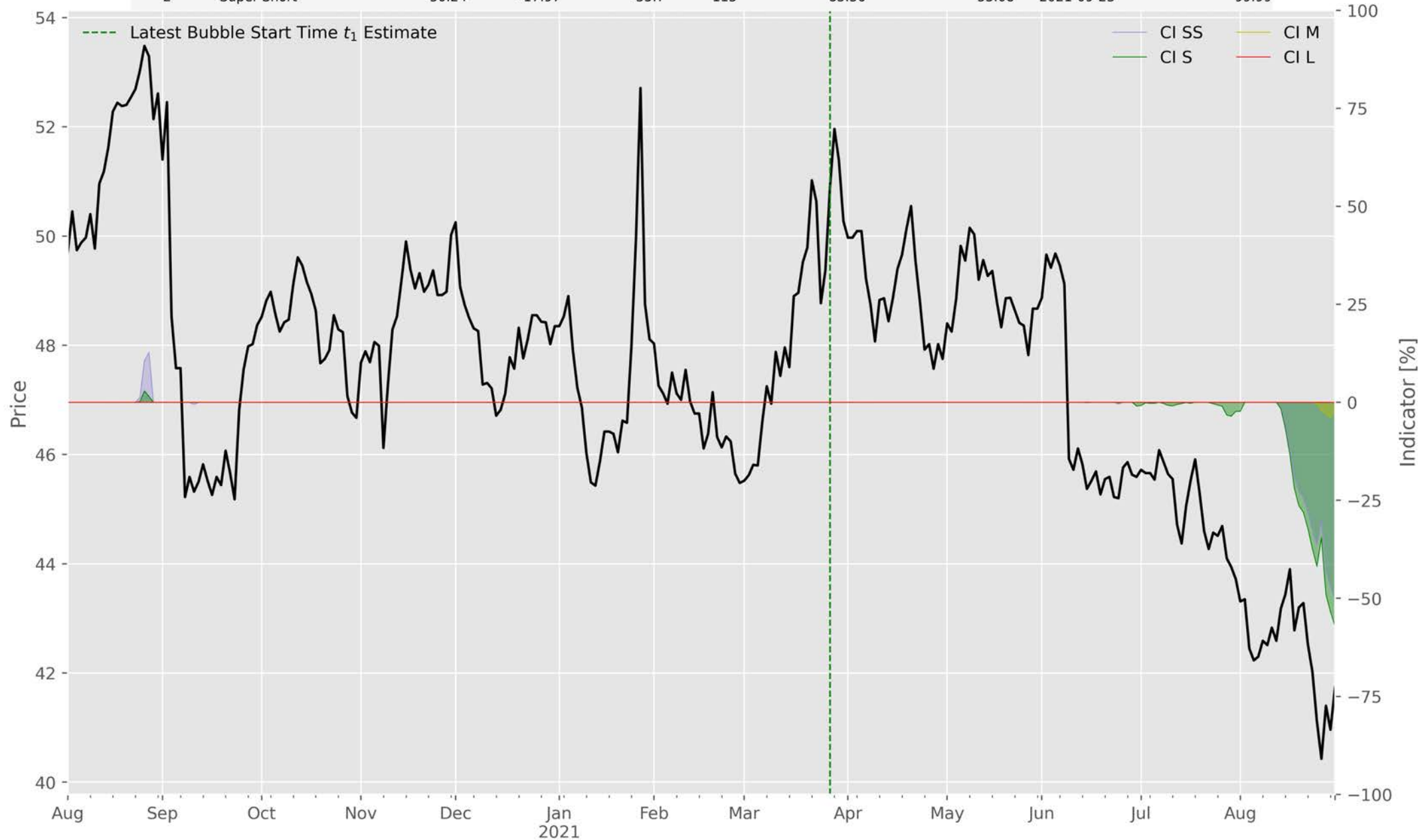
# Kraft Heinz

Rank	Strongest Signal	DS-LPPLS Confidence $ci$ [%]	Bubble Size $bs$ [%]	Bubble CAGR $bg$ [%]	Duration [days]	Bubble Progress $bp$ [%]	Geometric Average ( $ci, bg, bp$ )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Super Short	82.73	-16.54	-41.86	84	98.67	69.91	2021-09-01	99.98



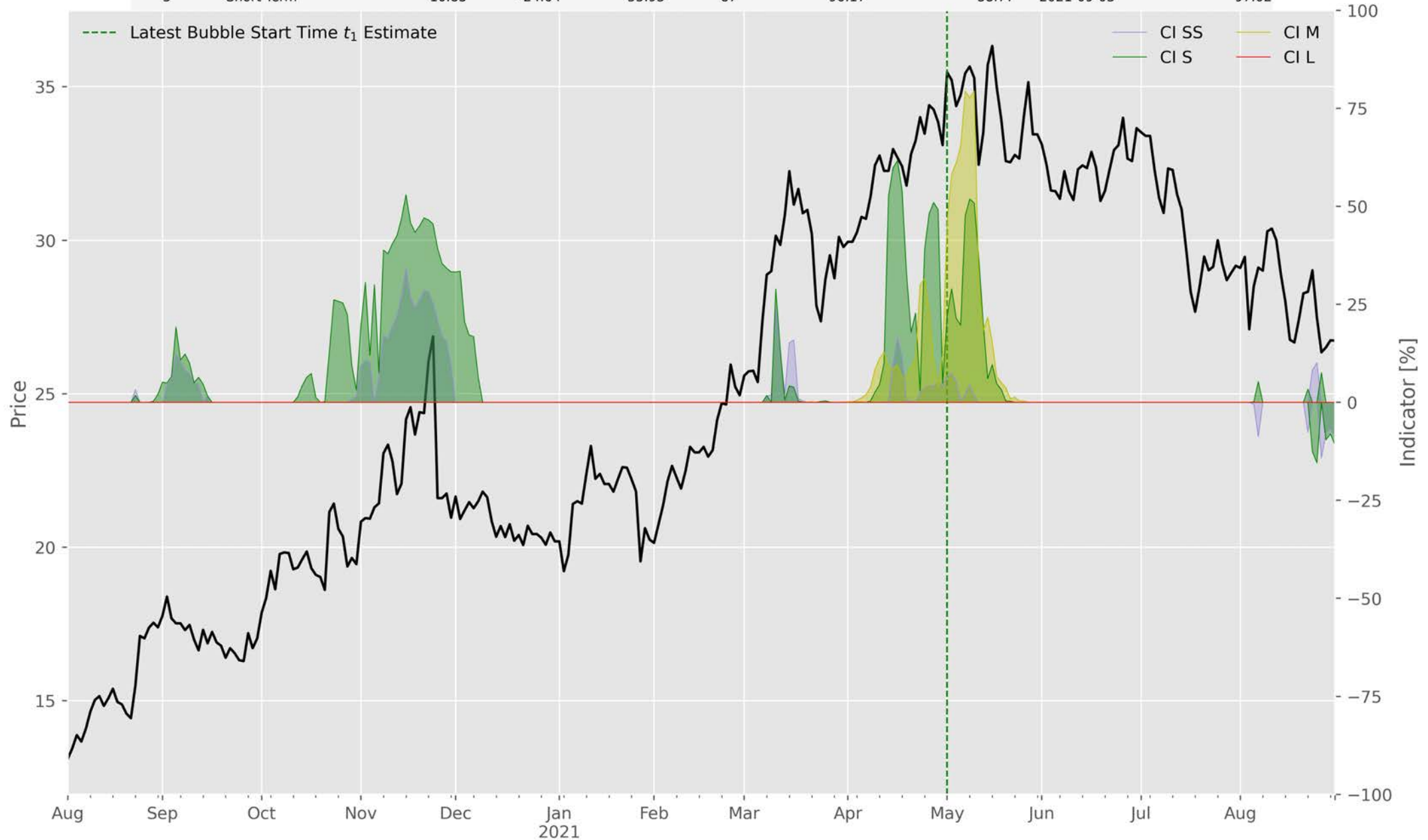
# Campbell Soup

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\tilde{t}_c$	[%]
2	Super Short	50.24	-17.97	-35.7	113	83.36	53.08	2021-09-23	99.99



## Gap

Rank	Strongest Signal	DS-LPPLS Confidence $ci$ [%]	Bubble Size $bs$ [%]	Bubble CAGR $bg$ [%]	Duration [days]	Bubble Progress $bp$ [%]	Geometric Average ( $ci, bg, bp$ )	Critical Time $\hat{t}_c$	Scenario Probability [%]
3	Short Term	10.83	-24.64	-55.93	87	96.17	38.77	2021-09-03	97.02

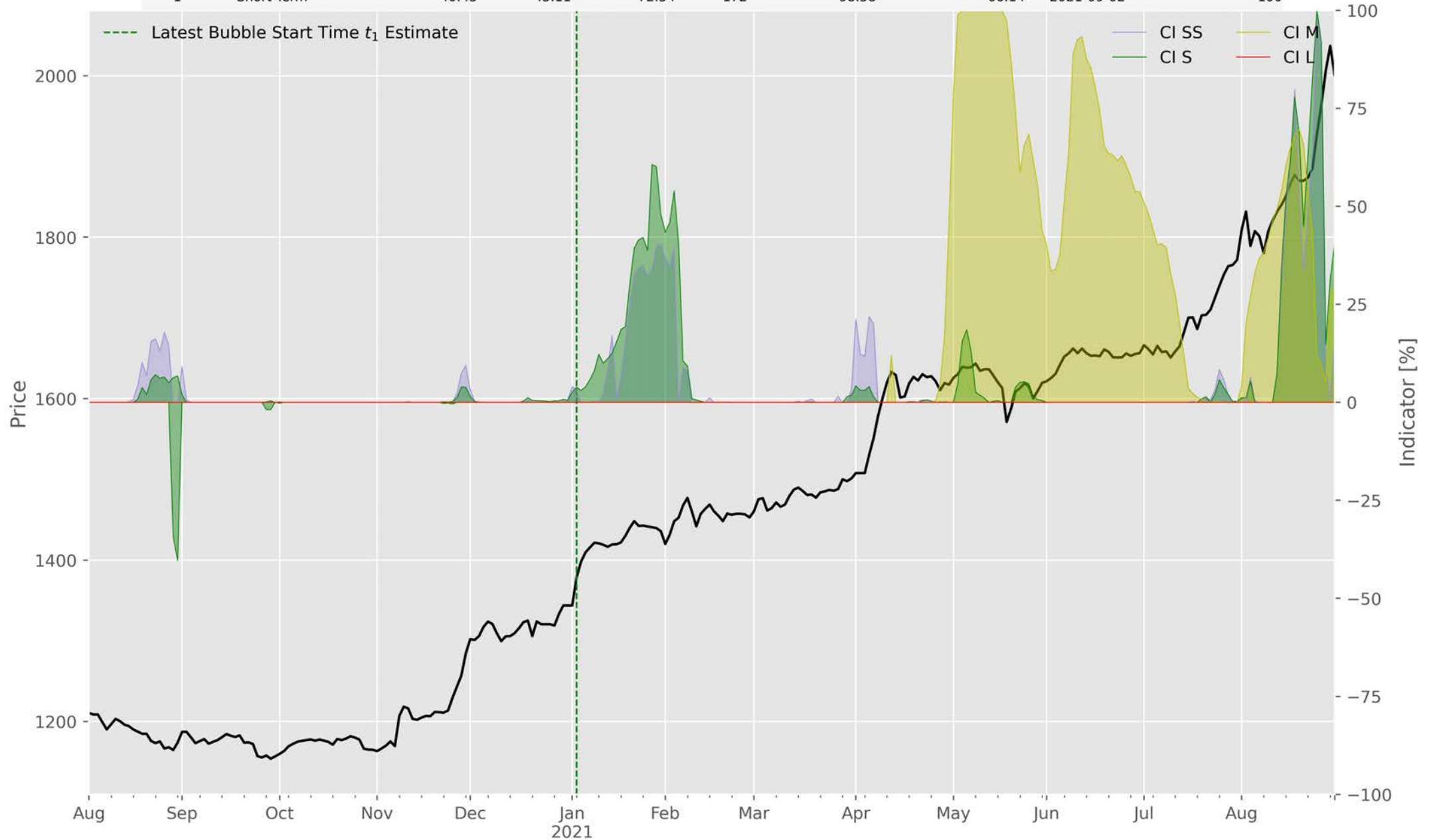


# Equity Indices



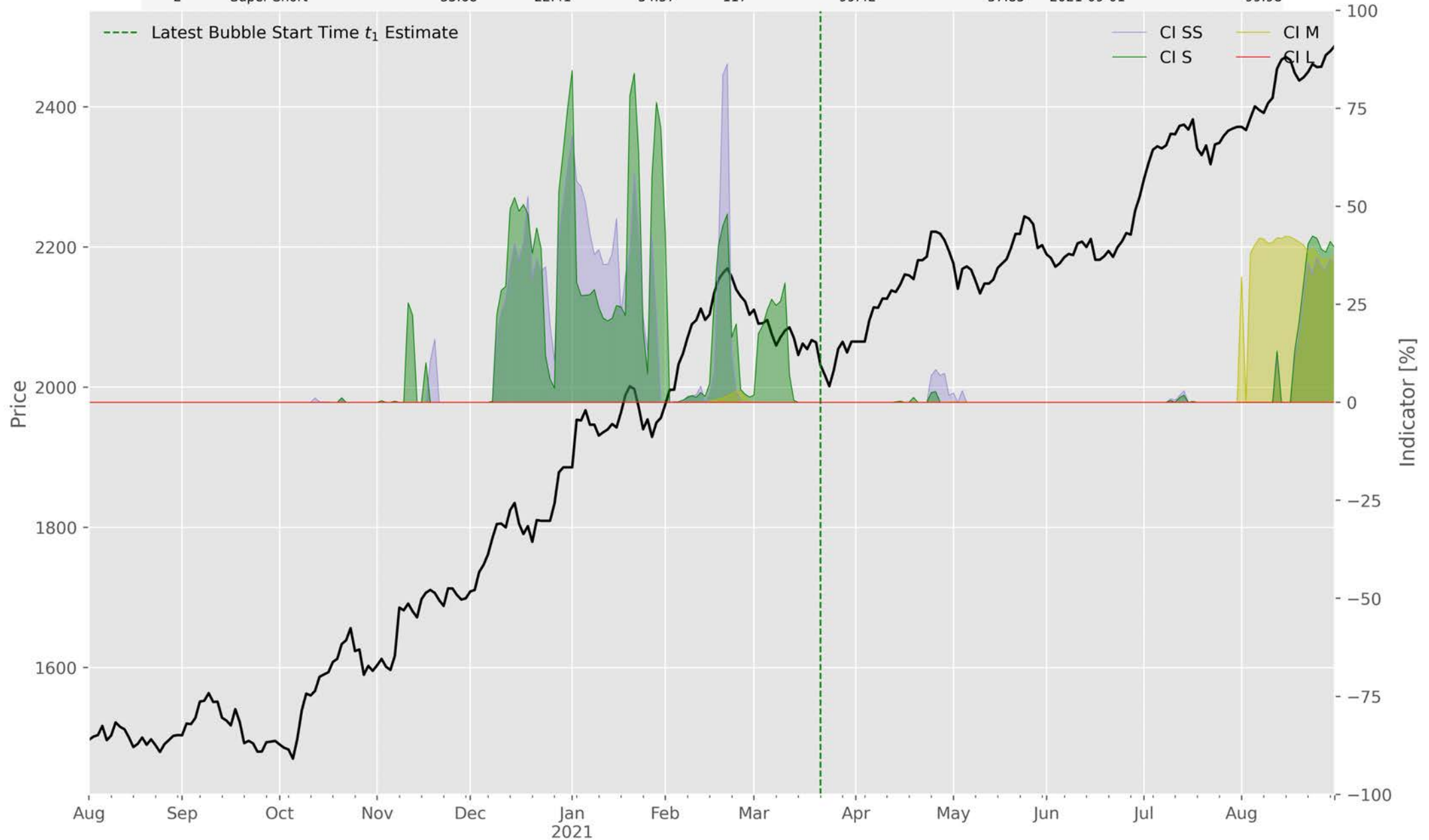
## Omx Tallinn (Omxt)

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Short Term	40.45	45.11	72.54	172	98.58	66.14	2021-09-02	100



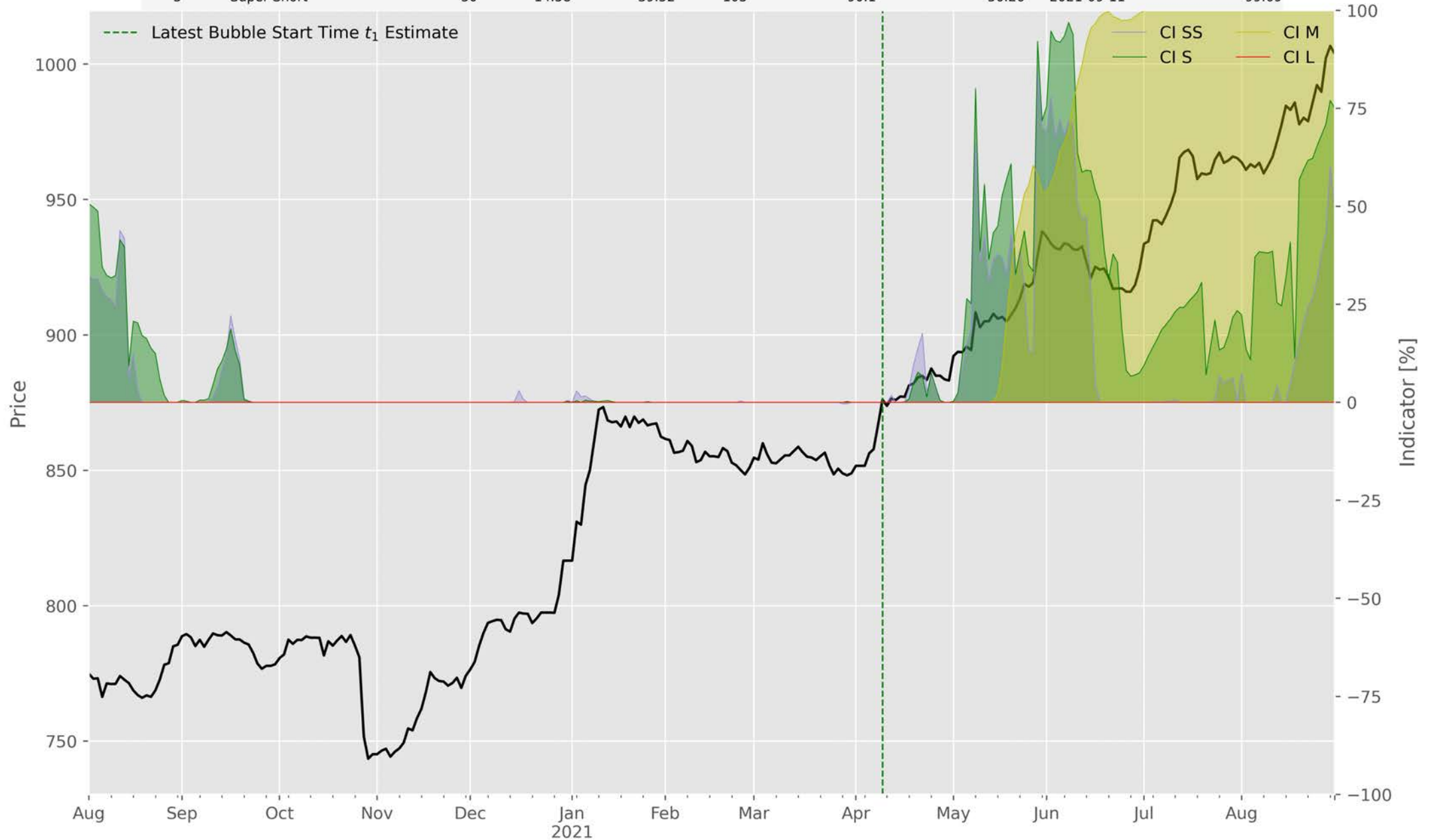
## Omx Iceland All Share

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
2	Super Short	35.68	22.41	54.57	117	99.42	57.85	2021-09-01	99.98



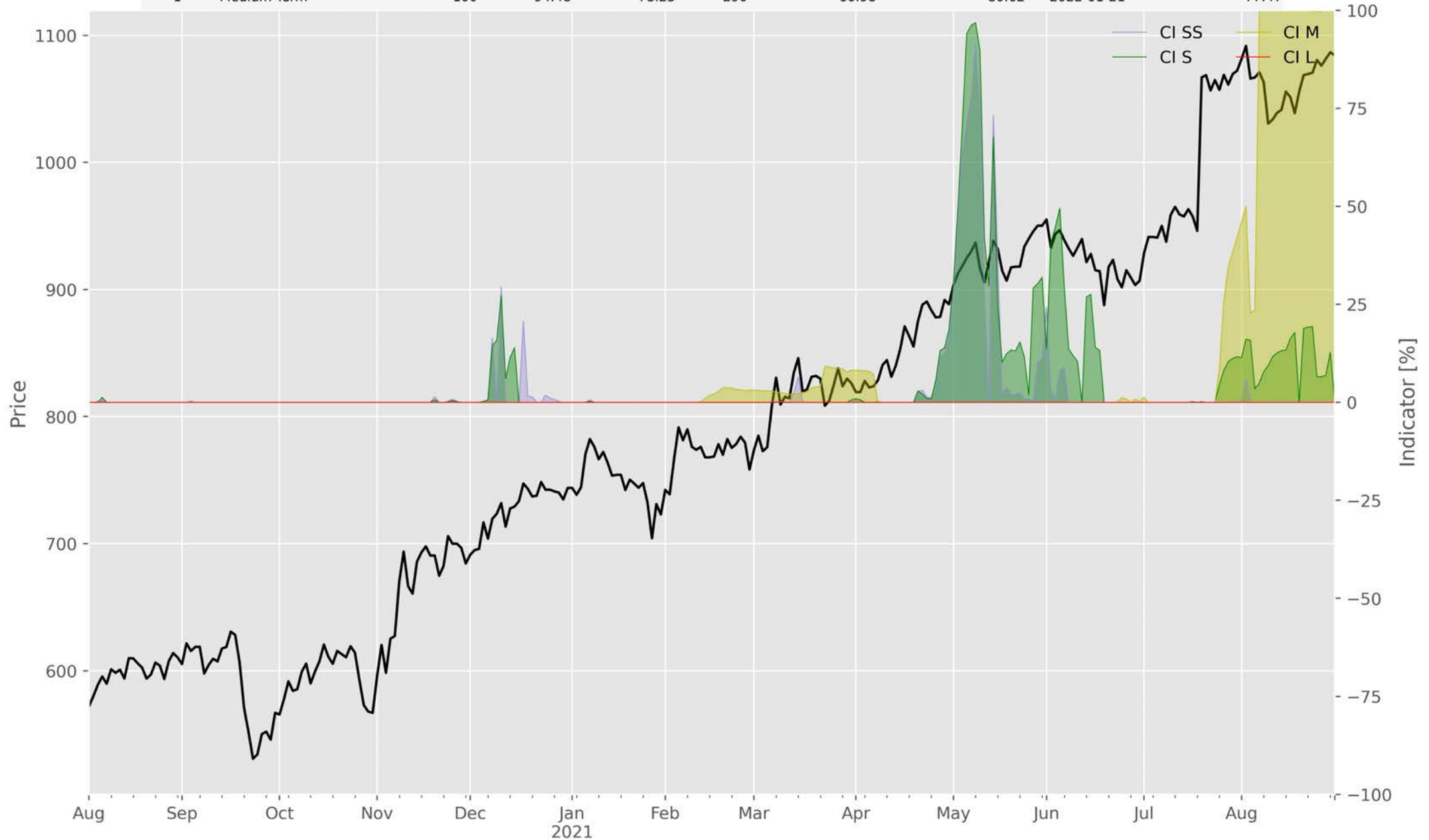
## Omx Vilnius (Omxv)

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	$(ci, bg, bp)$	$\hat{t}_c$	[%]
3	Super Short	50	14.58	39.52	103	90.1	56.26	2021-09-11	99.69



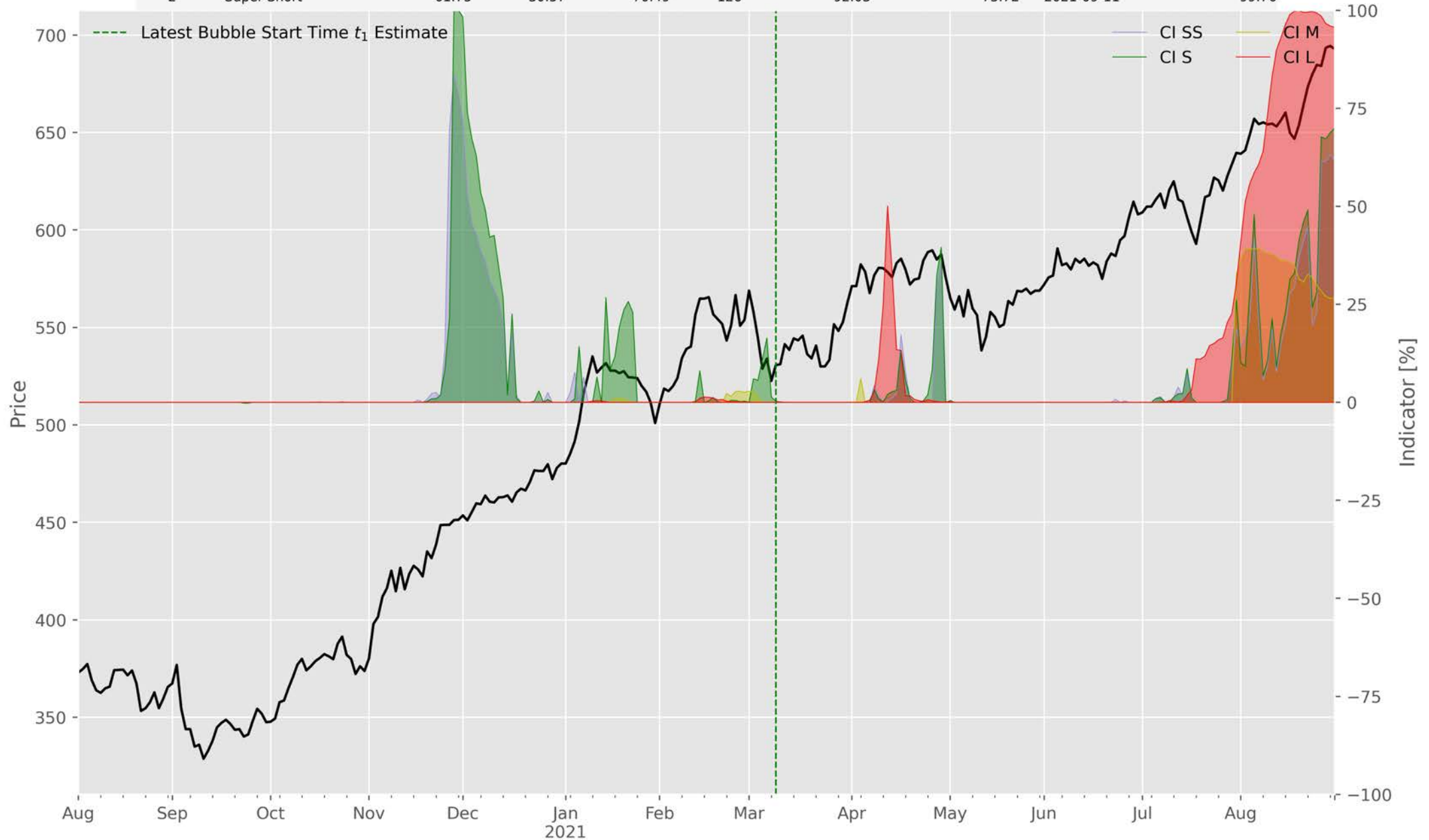
## S&P500 Health Care Facilities

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
1	Medium Term	100	94.48	78.25	290	66.98	80.62	2022-01-21	77.47



## S&P500 Elt Eq/Ins

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
2	Super Short	61.75	30.57	70.49	126	92.03	73.72	2021-09-11	99.76





## S&P500 Consumer Electronics

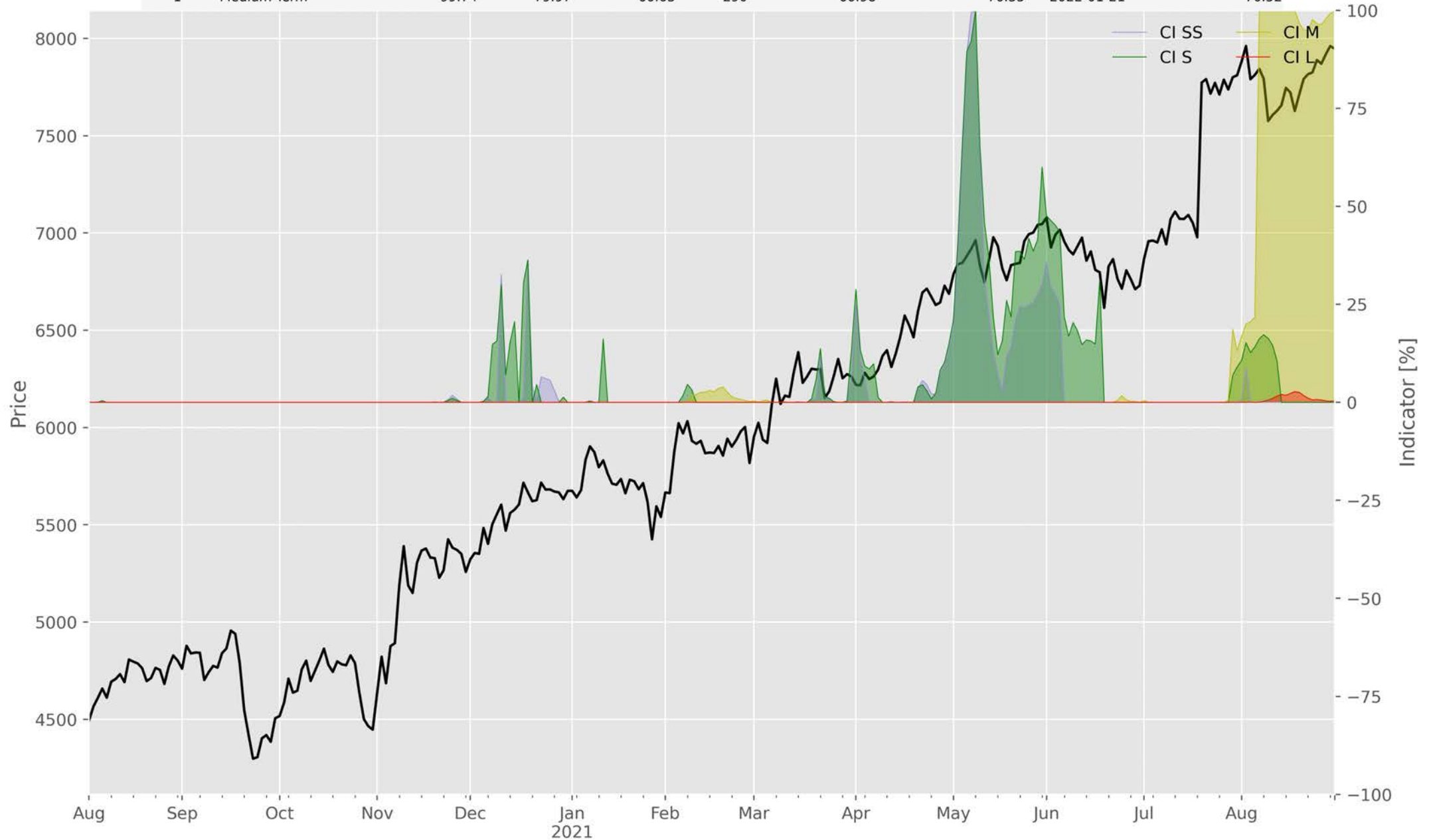
Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
3	Medium Term	78.5	101.35	70.38	331	66.69	71.69	2022-02-12	76.81





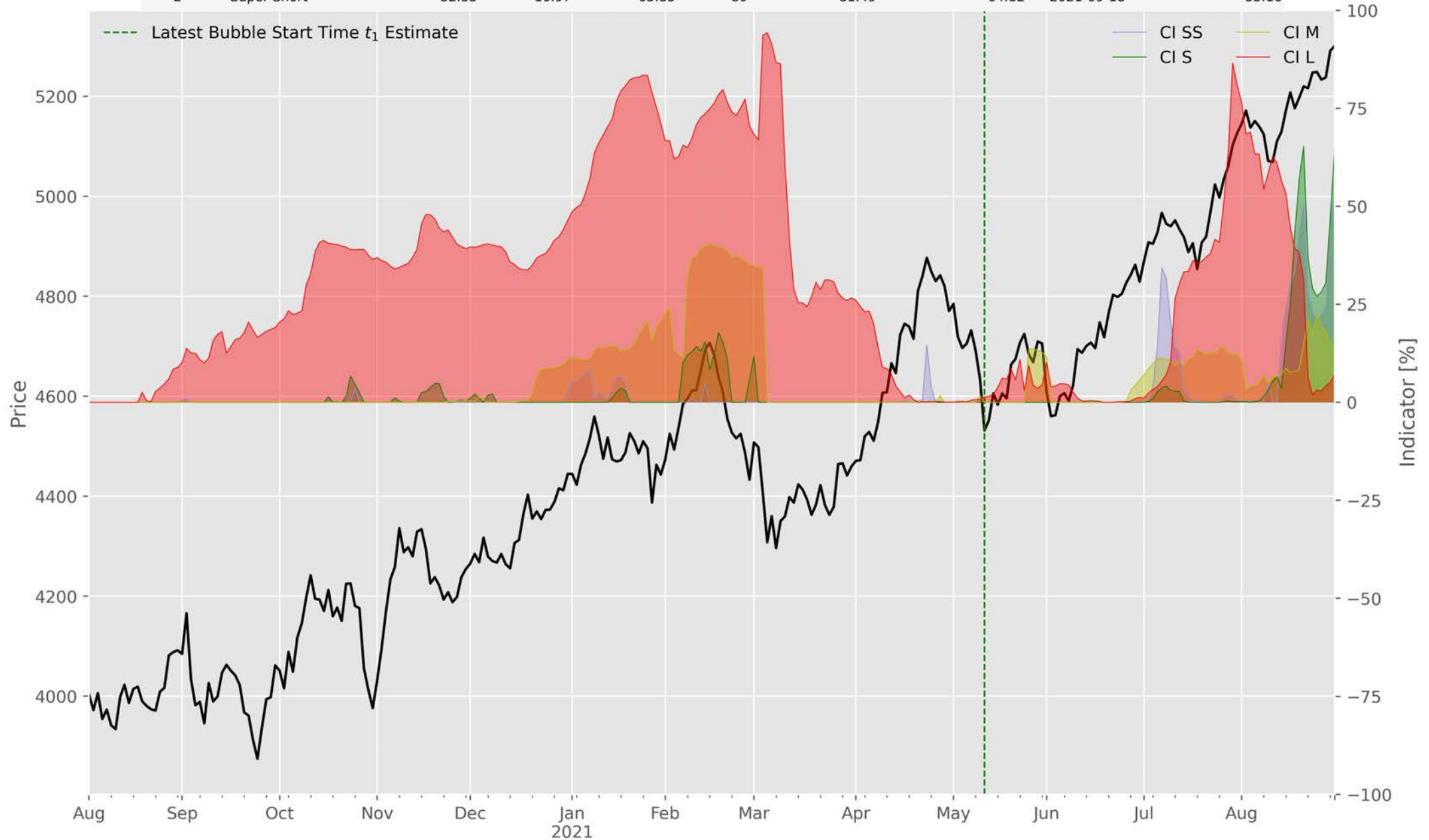
## S&P Global 1200 H/C Facilities

Rank	Strongest Signal	DS-LPPLS Confidence $ci$ [%]	Bubble Size $bs$ [%]	Bubble CAGR $bg$ [%]	Duration [days]	Bubble Progress $bp$ [%]	Geometric Average ( $ci, bg, bp$ )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Medium Term	99.74	79.97	66.63	290	66.98	76.35	2022-01-21	76.52



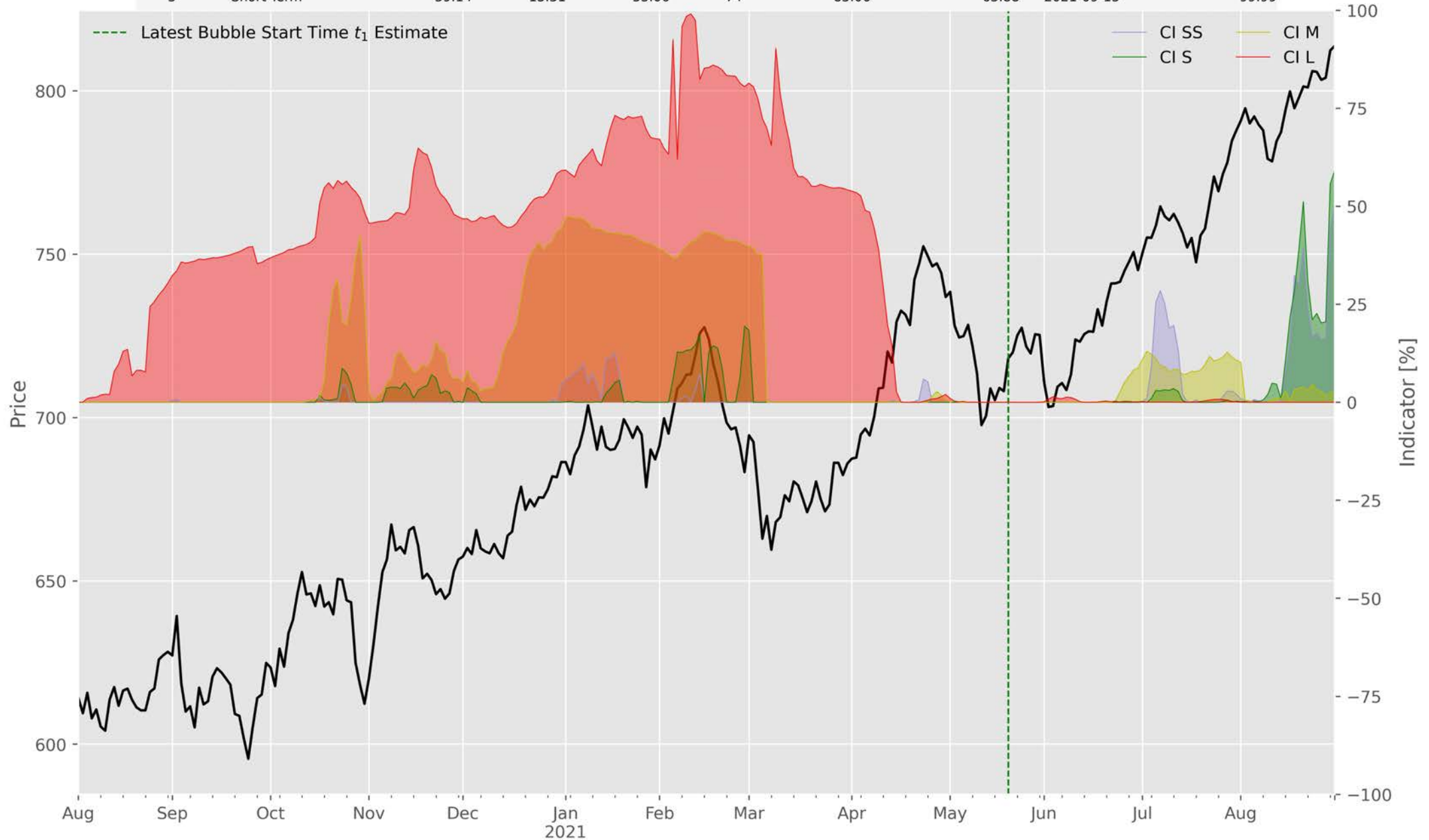
## S&P Global 1200 H/C Eq & Supp

Rank	Strongest Signal	DS-LPPLS Confidence $ci$ [%]	Bubble Size $bs$ [%]	Bubble CAGR $bg$ [%]	Duration [days]	Bubble Progress $bp$ [%]	Geometric Average ( $ci, bg, bp$ )	Critical Time $\hat{t}_c$	Scenario Probability [%]
2	Super Short	52.35	16.97	63.85	80	81.49	64.82	2021-09-18	53.16



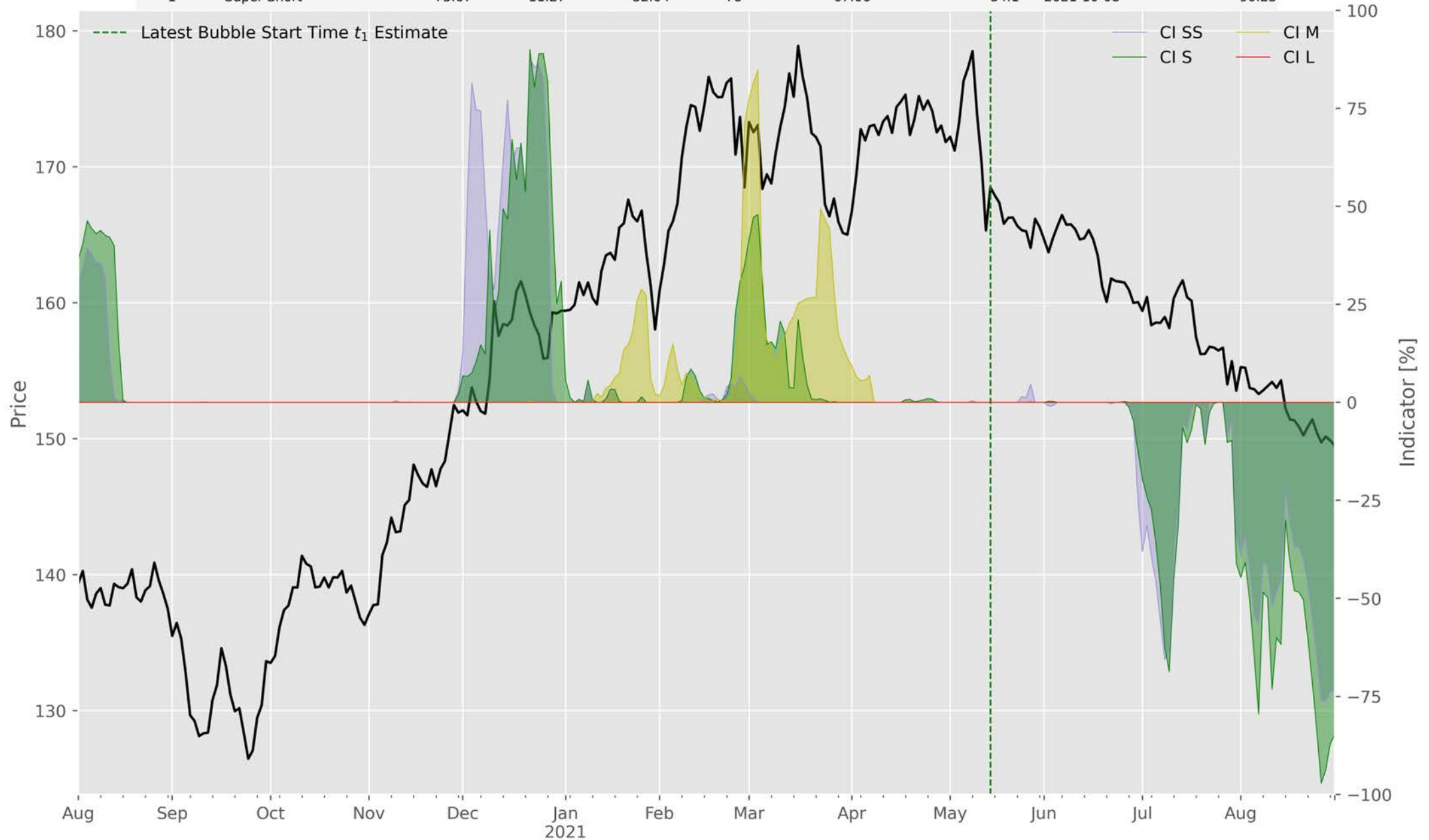
## Msci World H/C Eq & Supplies \$

Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\hat{t}_c$	[%]
3	Short Term	59.14	13.31	53.06	74	83.06	63.88	2021-09-15	99.99



## Msci World W/L T/Cm Svs \$

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Super Short	73.67	-11.27	-32.04	78	67.06	54.1	2021-10-08	90.25

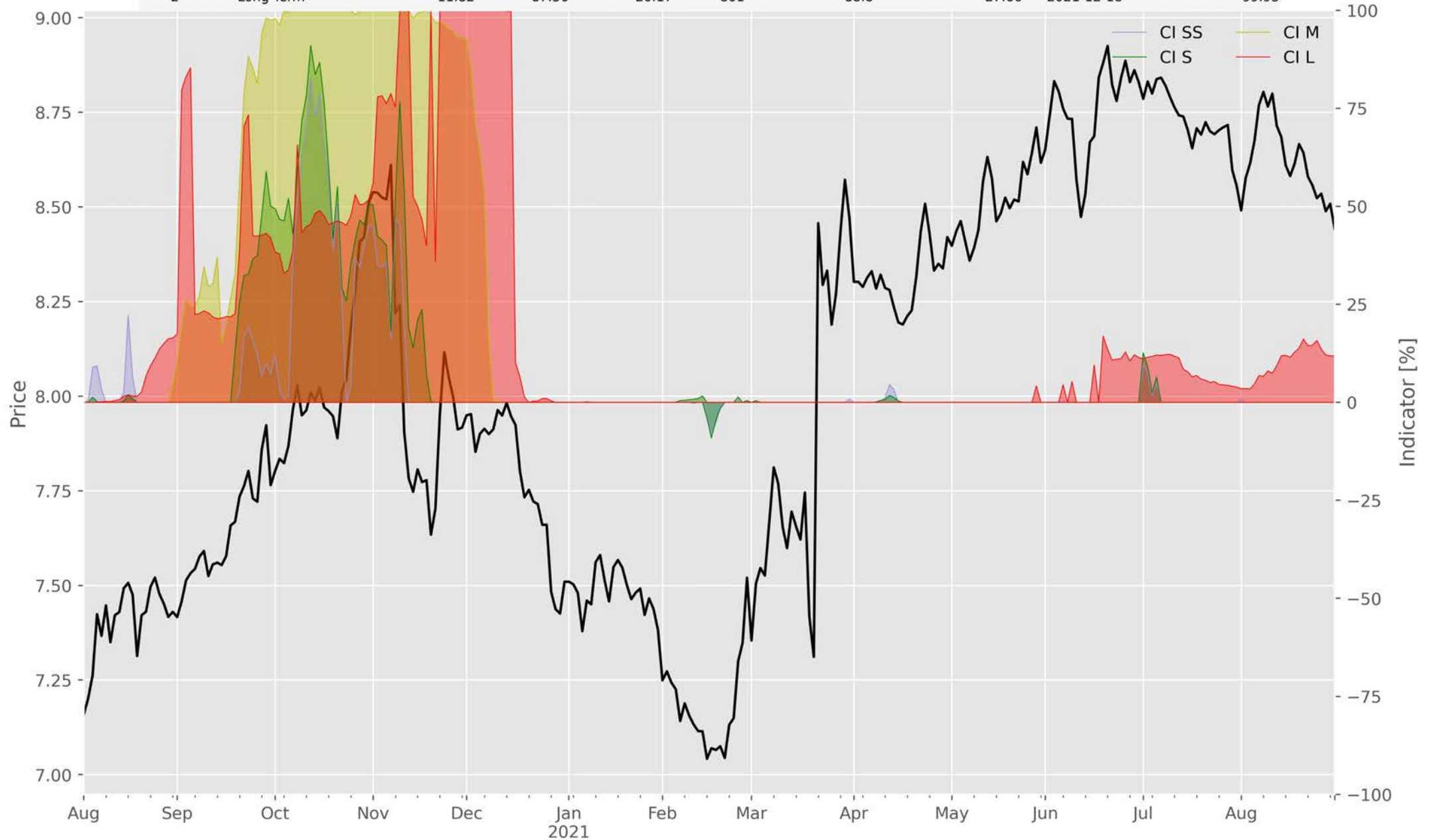


# Forex



## New Turkish Lira To Us \$ 1M Fwd

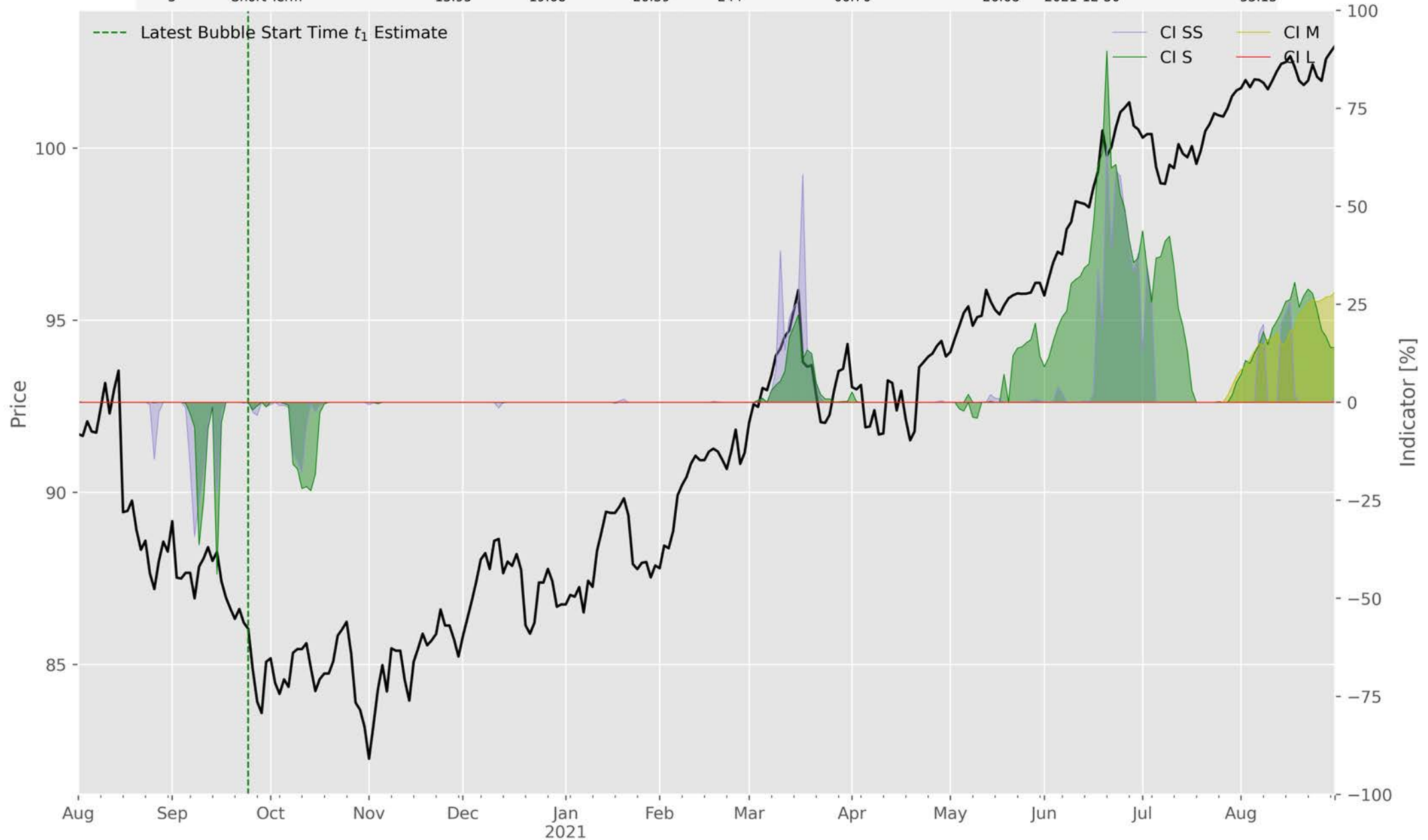
Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	$(ci, bg, bp)$	$\tilde{t}_c$	[%]
2	Long Term	11.82	87.36	20.17	861	88.8	27.66	2021-12-18	99.93





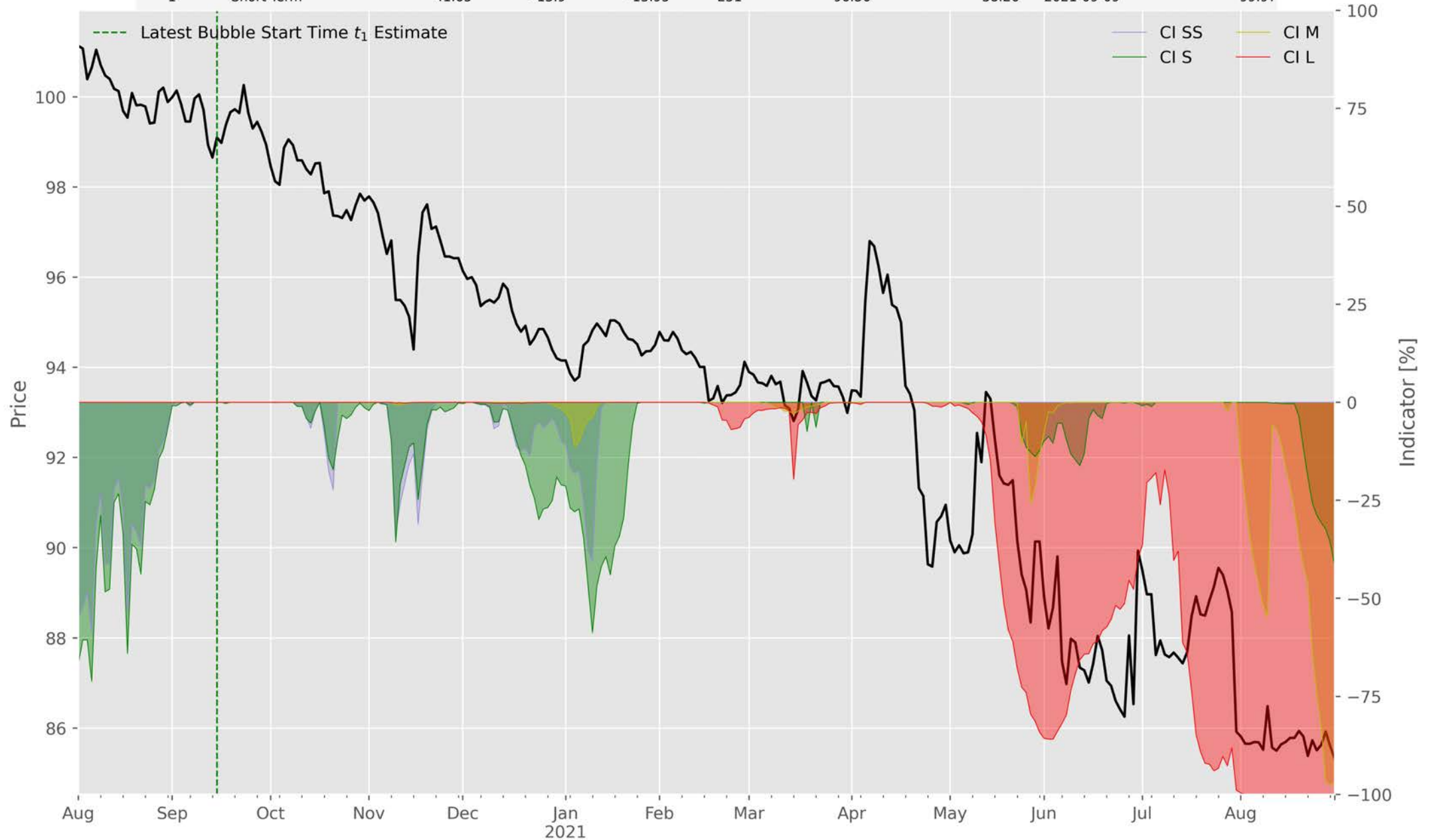
## Jpm Russia Reer Ppi (2010=100)

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
3	Short Term	13.95	19.68	20.39	244	66.76	26.68	2021-12-30	53.13



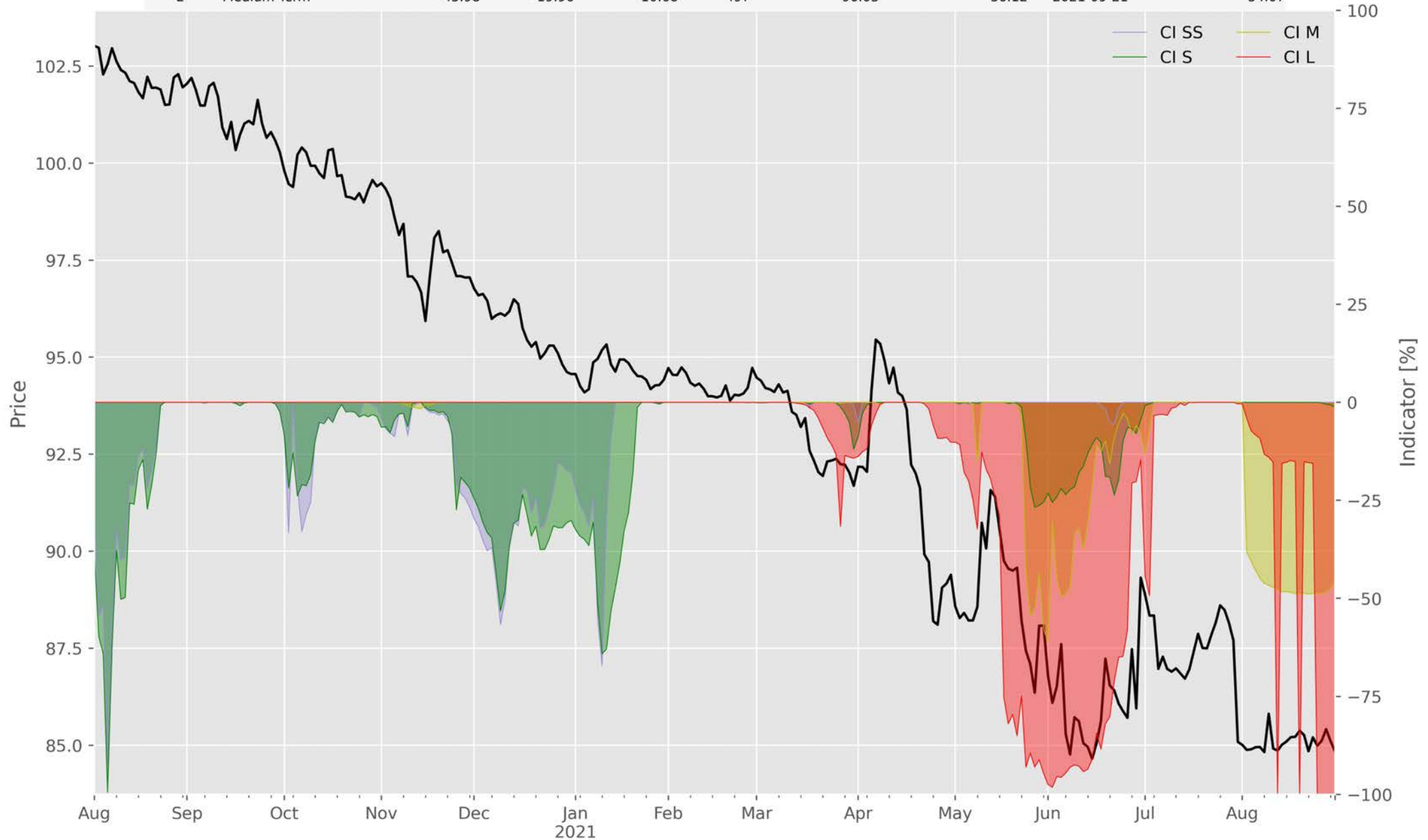
## Jpm Peru Reer Cpi (2010=100)

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Short Term	41.65	-13.9	-13.95	251	96.36	38.26	2021-09-09	99.97



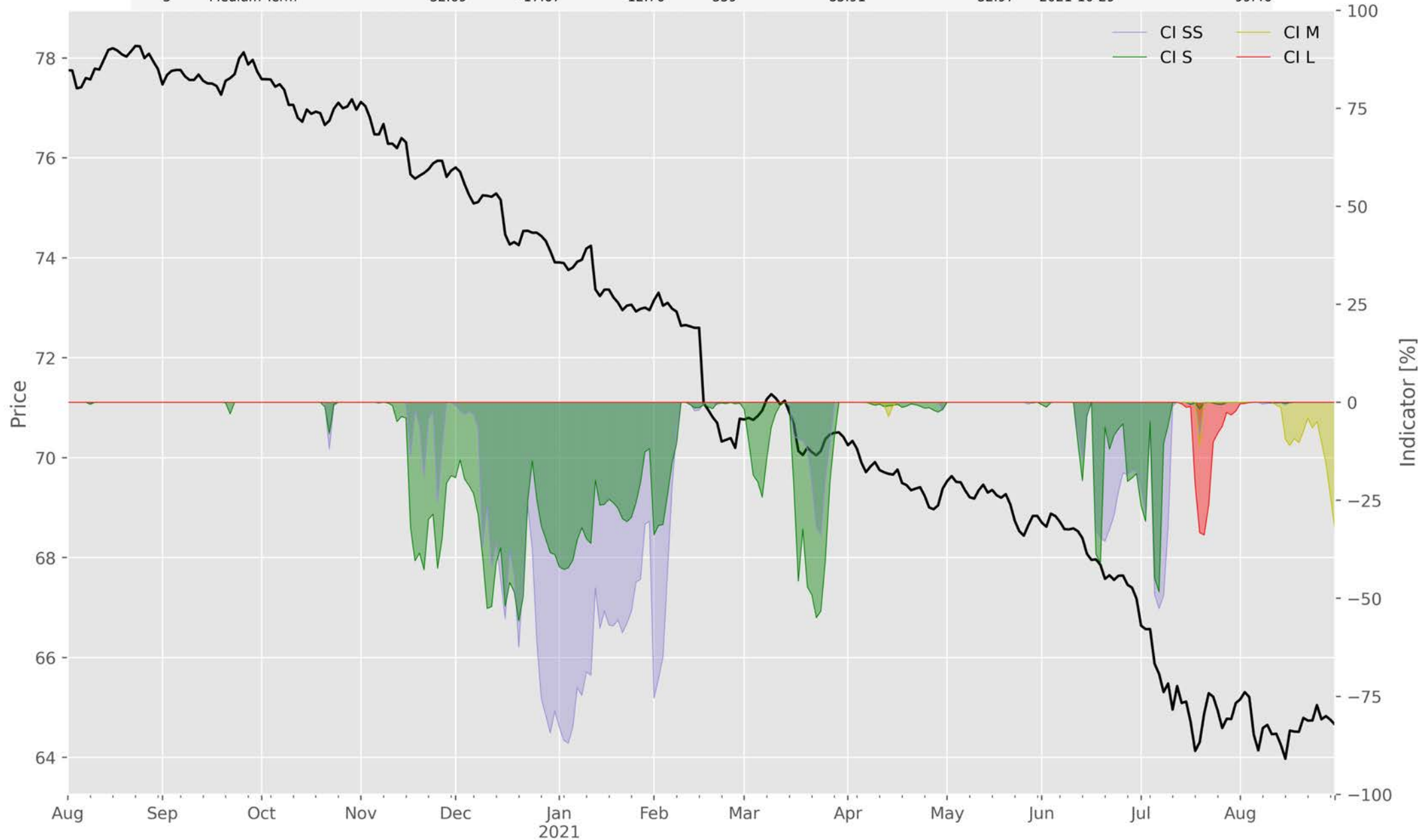
## Jpm Peru Reer Ppi (2010=100)

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
2	Medium Term	45.98	-19.96	-10.68	497	96.03	36.12	2021-09-21	54.07



## Jpm Philippines Reer Ppi (2010=100)

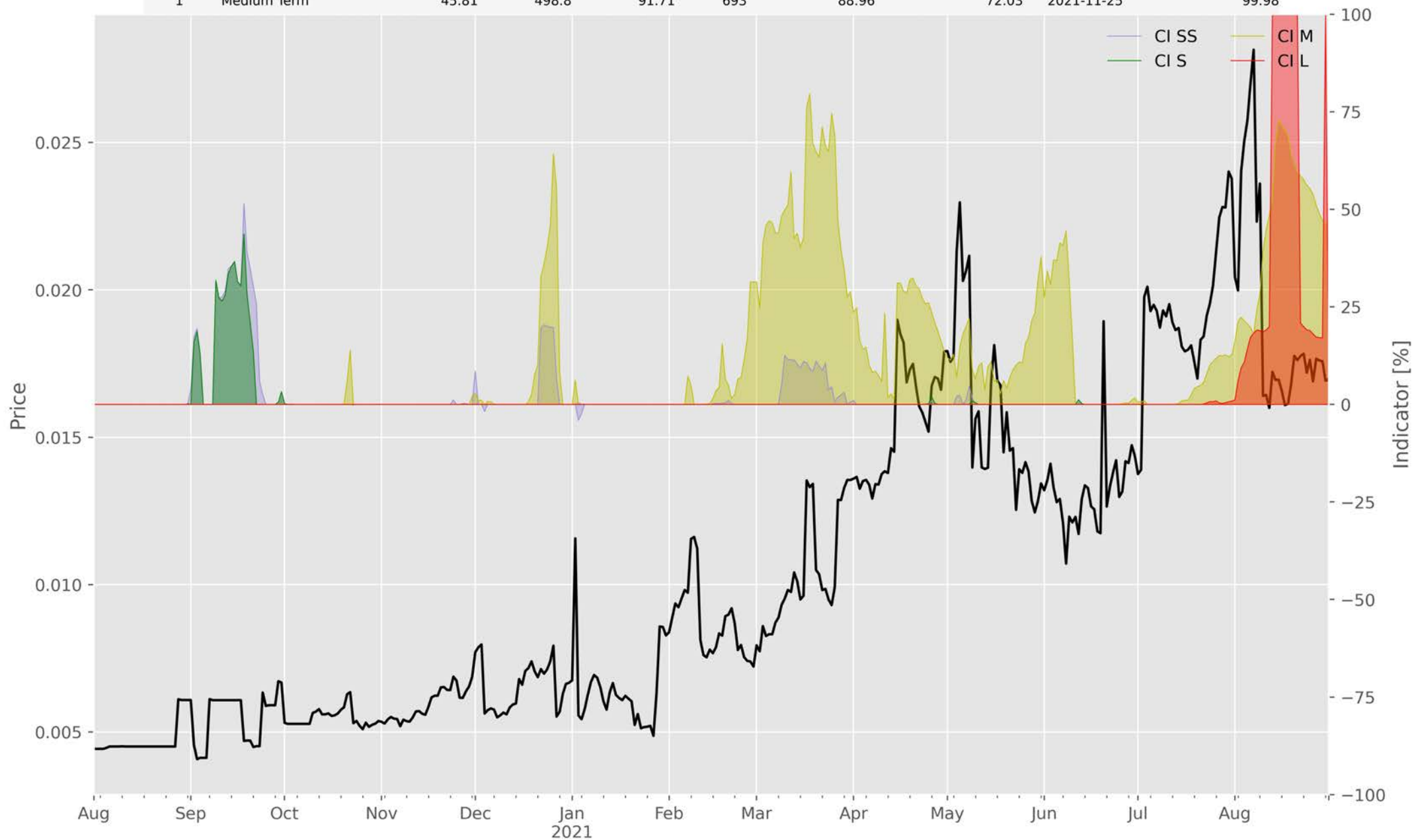
Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		$ci$ [%]	$bs$ [%]	$bg$ [%]	[days]	$bp$ [%]	( $ci, bg, bp$ )	$\tilde{t}_c$	[%]
3	Medium Term	32.69	-17.67	-12.76	359	85.91	32.97	2021-10-29	99.46



# CryptoX

## Kobocoin/USD

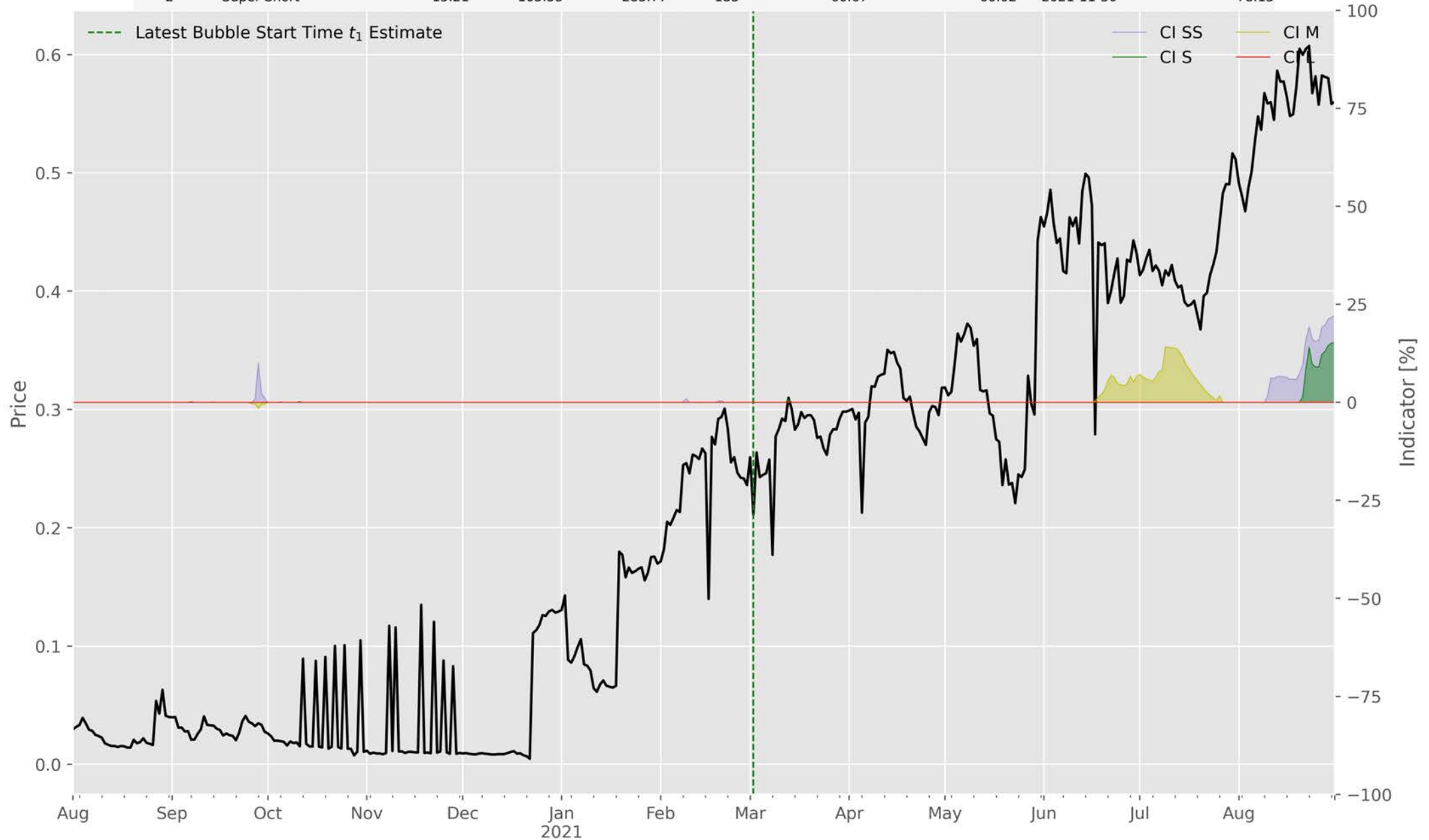
Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Medium Term	45.81	498.8	91.71	693	88.96	72.03	2021-11-25	99.98





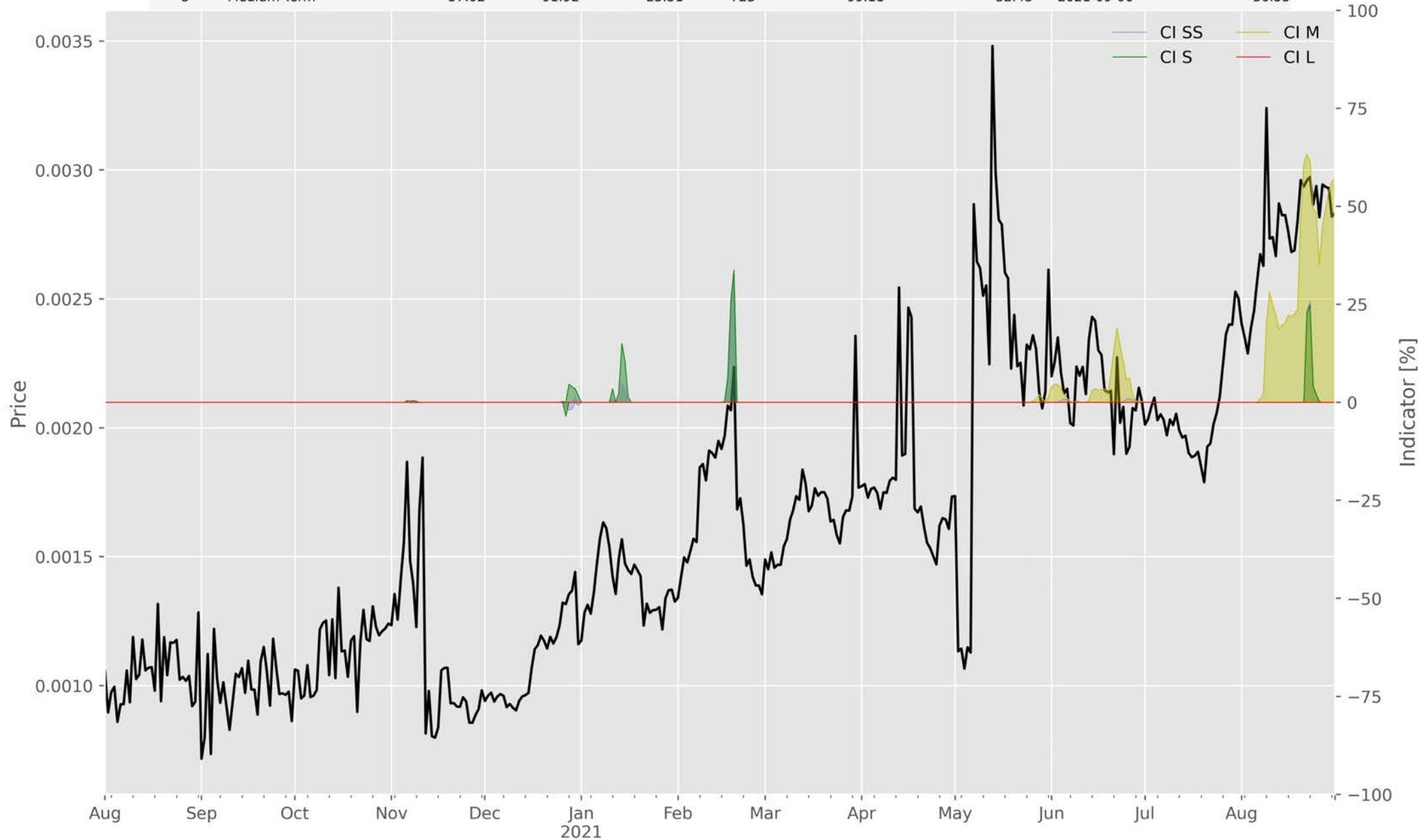
## TransferCoin/USD

Rank	Strongest Signal	DS-LPPLS Confidence $ci$ [%]	Bubble Size $bs$ [%]	Bubble CAGR $bg$ [%]	Duration [days]	Bubble Progress $bp$ [%]	Geometric Average ( $ci, bg, bp$ )	Critical Time $\hat{t}_c$	Scenario Probability [%]
2	Super Short	15.21	165.55	283.77	183	66.67	66.02	2021-11-30	78.13



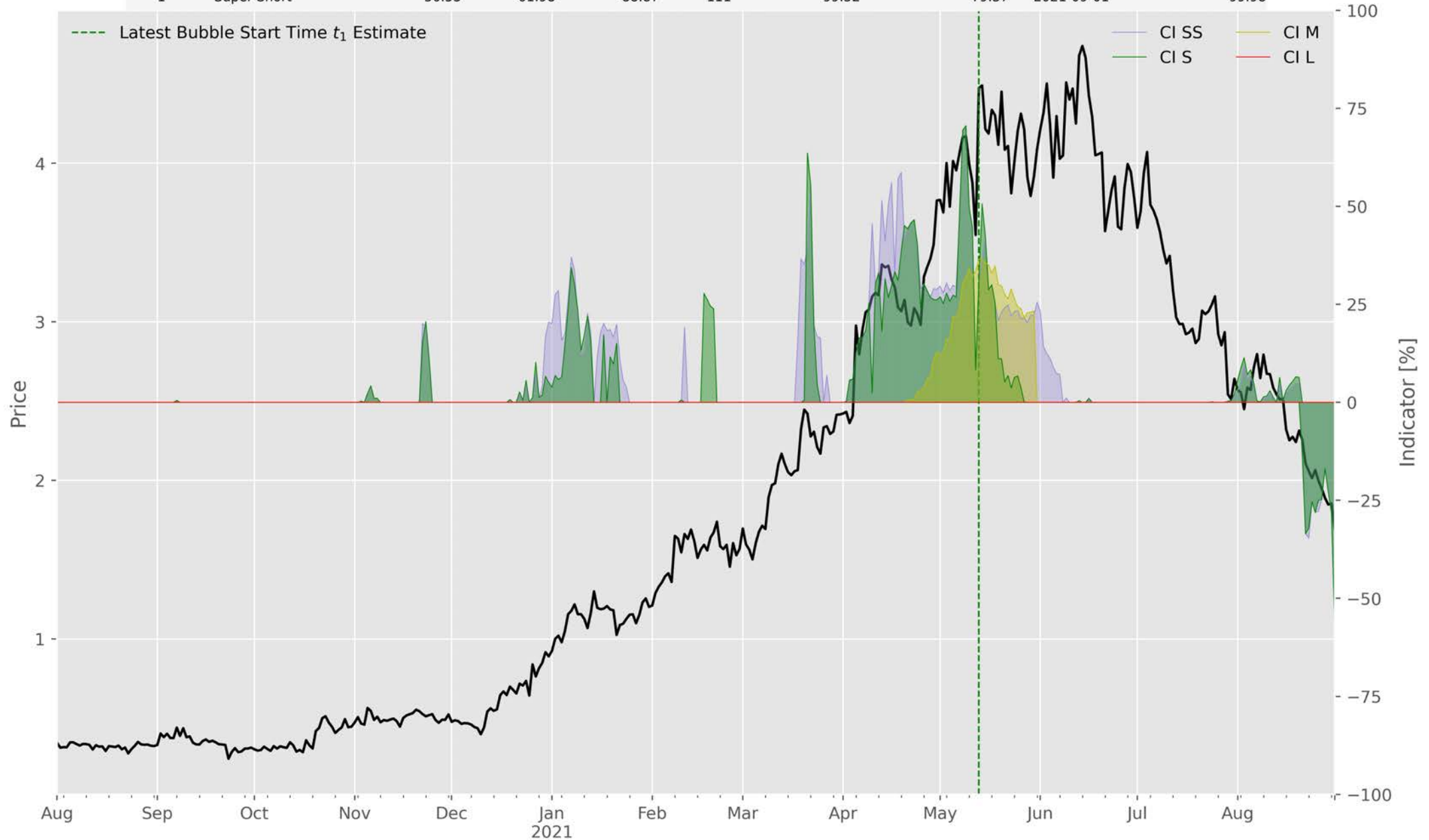
# ATBCoin/USD

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci, bg, bp</i> )	Critical Time $\tilde{t}_c$	Scenario Probability [%]
3	Medium Term	57.02	91.92	25.51	723	99.11	52.43	2021-09-06	56.55



## Hellenic Coin/USD

Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average ( <i>ci</i> , <i>bg</i> , <i>bp</i> )	Critical Time $\hat{t}_c$	Scenario Probability [%]
1	Super Short	56.53	-61.98	-88.87	111	99.52	79.37	2021-09-01	99.98



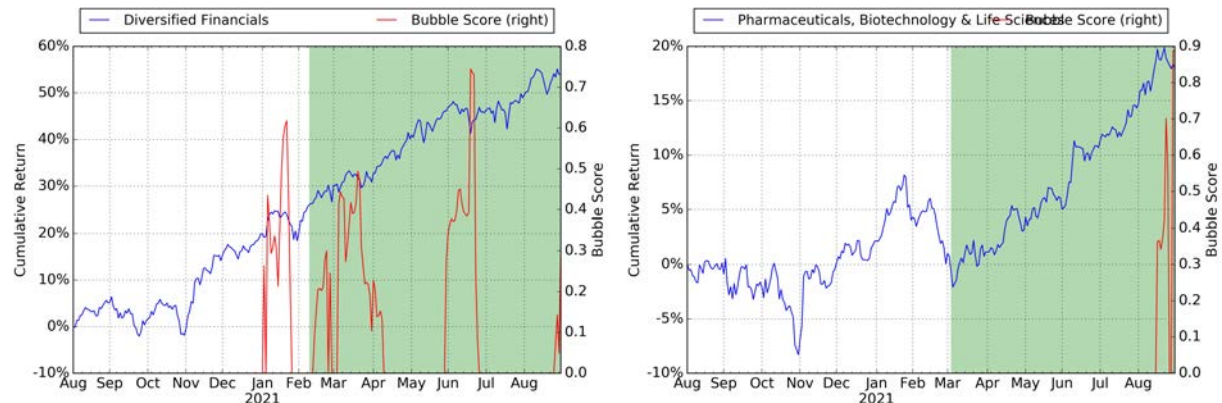
# Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	Sep 1st	Aug 1st	Sep 1st	Aug 1st	Sep 1st	Aug 1st	Sep 1st	Aug 1st	Sep 1st	Aug 1st
Pharmaceuticals, Biotechnology & Life Sciences	19.2%	14.7%	18.8%	0.0%	88.7%	0.0%	65.0%	65.2%	57.2%	57.4%
Consumer Services	23.6%	29.3%	0.0%	0.0%	0.0%	0.0%	23.1%	22.2%	58.6%	59.9%
Retailing	19.8%	15.7%	0.0%	13.4%	0.0%	34.1%	17.9%	18.1%	44.2%	43.8%
Transportation	18.8%	24.4%	0.0%	0.0%	0.0%	0.0%	43.5%	44.9%	54.6%	55.1%
Consumer Durables & Apparel	34.1%	44.2%	0.0%	12.5%	0.0%	97.7%	33.8%	35.6%	48.7%	49.1%
Semiconductors & Semiconductor Equipment	58.7%	53.7%	0.0%	0.0%	0.0%	0.0%	54.8%	57.8%	41.5%	40.5%
Technology Hardware & Equipment	36.0%	30.2%	0.0%	0.0%	0.0%	0.0%	47.8%	54.8%	51.5%	50.6%
Automobiles & Components	49.4%	64.2%	0.0%	0.0%	0.0%	0.0%	52.5%	57.0%	42.6%	40.1%
Telecommunication Services	6.3%	4.3%	0.0%	0.0%	0.0%	0.0%	60.7%	61.4%	43.2%	43.2%
Energy	38.0%	24.4%	0.0%	0.0%	0.0%	0.0%	50.6%	50.6%	69.5%	69.4%
Software & Services	33.7%	31.1%	31.3%	27.1%	15.6%	24.4%	35.0%	36.3%	51.3%	51.2%
Materials	23.9%	29.8%	0.0%	0.0%	0.0%	0.0%	49.1%	46.9%	51.5%	51.1%
Health Care Equipment & Services	30.5%	26.5%	15.8%	15.5%	70.5%	61.5%	47.8%	48.4%	52.7%	52.1%
Capital Goods	32.9%	32.0%	0.0%	0.0%	0.0%	0.0%	49.0%	49.1%	49.7%	49.8%
Media & Entertainment	52.3%	46.2%	21.7%	13.1%	32.1%	68.1%	28.5%	29.3%	32.5%	31.9%
Commercial & Professional Services	26.7%	24.4%	20.3%	17.2%	33.5%	22.6%	29.0%	28.3%	51.9%	52.3%
Food & Staples Retailing	21.8%	16.1%	18.9%	13.3%	24.1%	23.9%	38.7%	42.5%	64.5%	63.8%
Household & Personal Products	1.6%	3.3%	0.0%	0.0%	0.0%	0.0%	28.0%	27.2%	53.5%	57.3%
Food, Beverage & Tobacco	11.8%	12.8%	0.0%	0.0%	0.0%	0.0%	47.4%	47.1%	57.4%	57.4%
Utilities	12.8%	6.4%	0.0%	0.0%	0.0%	0.0%	45.5%	45.3%	53.7%	53.5%
Insurance	29.3%	23.5%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	26.9%	26.5%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	49.0%	43.6%	22.2%	0.0%	30.9%	0.0%	-	-	-	-
Banks	50.5%	43.6%	0.0%	0.0%	0.0%	0.0%	-	-	-	-

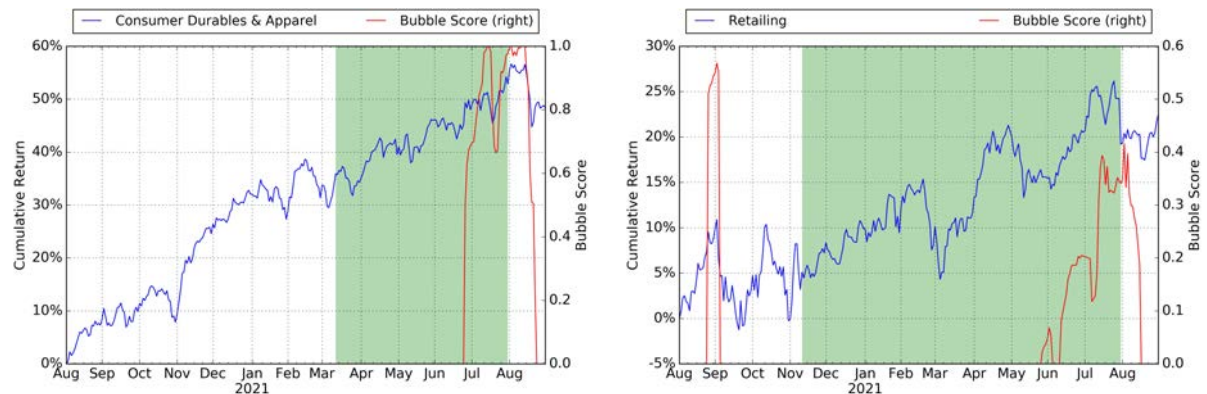
# Sectors

- ▶ We use the MSCI World Industry Group Indices to calculate bubble size and bubble score of the corresponding sectors. To determine the value scores and growth scores of the sectors, we average over the corresponding values for each stock of a given sector, weighted by market cap.
- ▶ There are seven positive bubbles identified in the 24 MSCI World Industry Group Indices (see below): *Pharmaceuticals, Biotechnology & Life Sciences, Software & Services, Health Care Equipment & Services, Media & Entertainment, Commercial & Professional Services, Food & Staples Retailing, Diversified Financials*, five of which were reported already from last month.

The two industry group with new bubble signals: Pharmaceuticals, Biotechnology & Life Sciences, and Diversified Financials



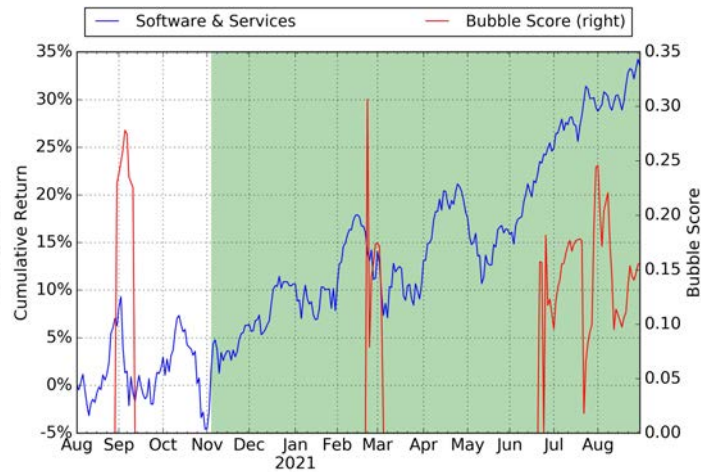
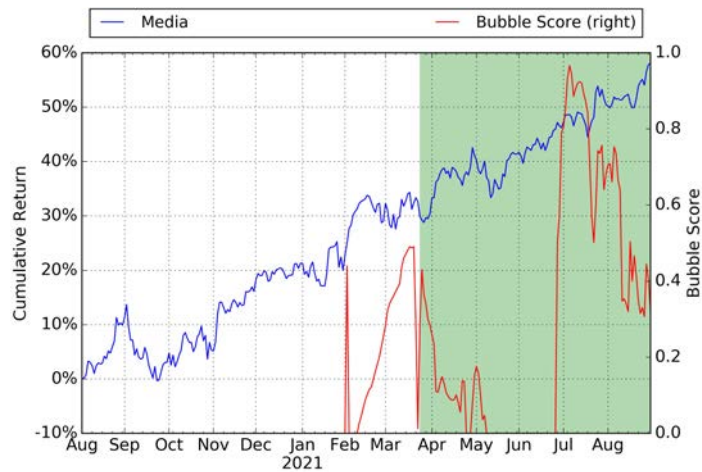
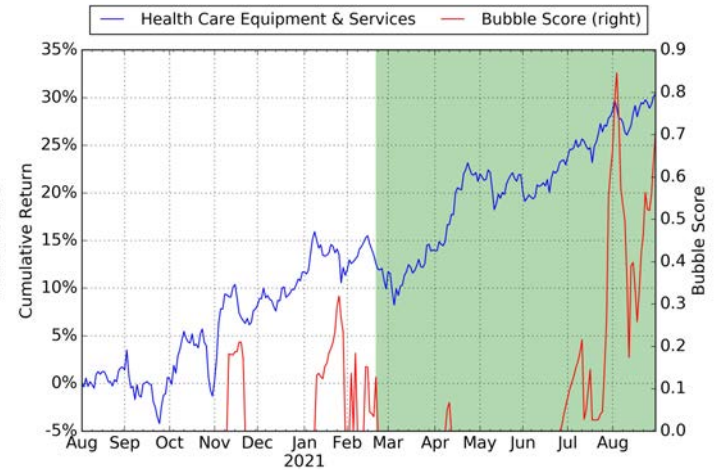
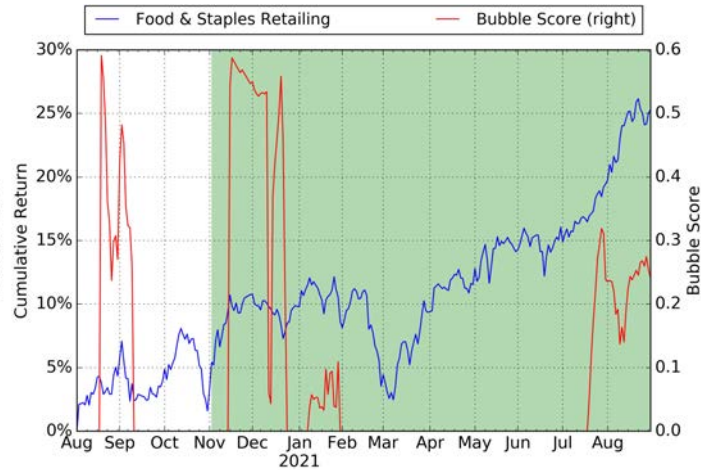
The two industry group with disappeared bubble signals: Consumer Durables & Apparel, and Retailing





# Sectors

- The five on-going bubbles: *Commercial & Professional Services, Food & Staples Retailing, Health Care Equipment & Services, Media & Entertainment, and Software & Services.*





# Portfolio Construction & Performance

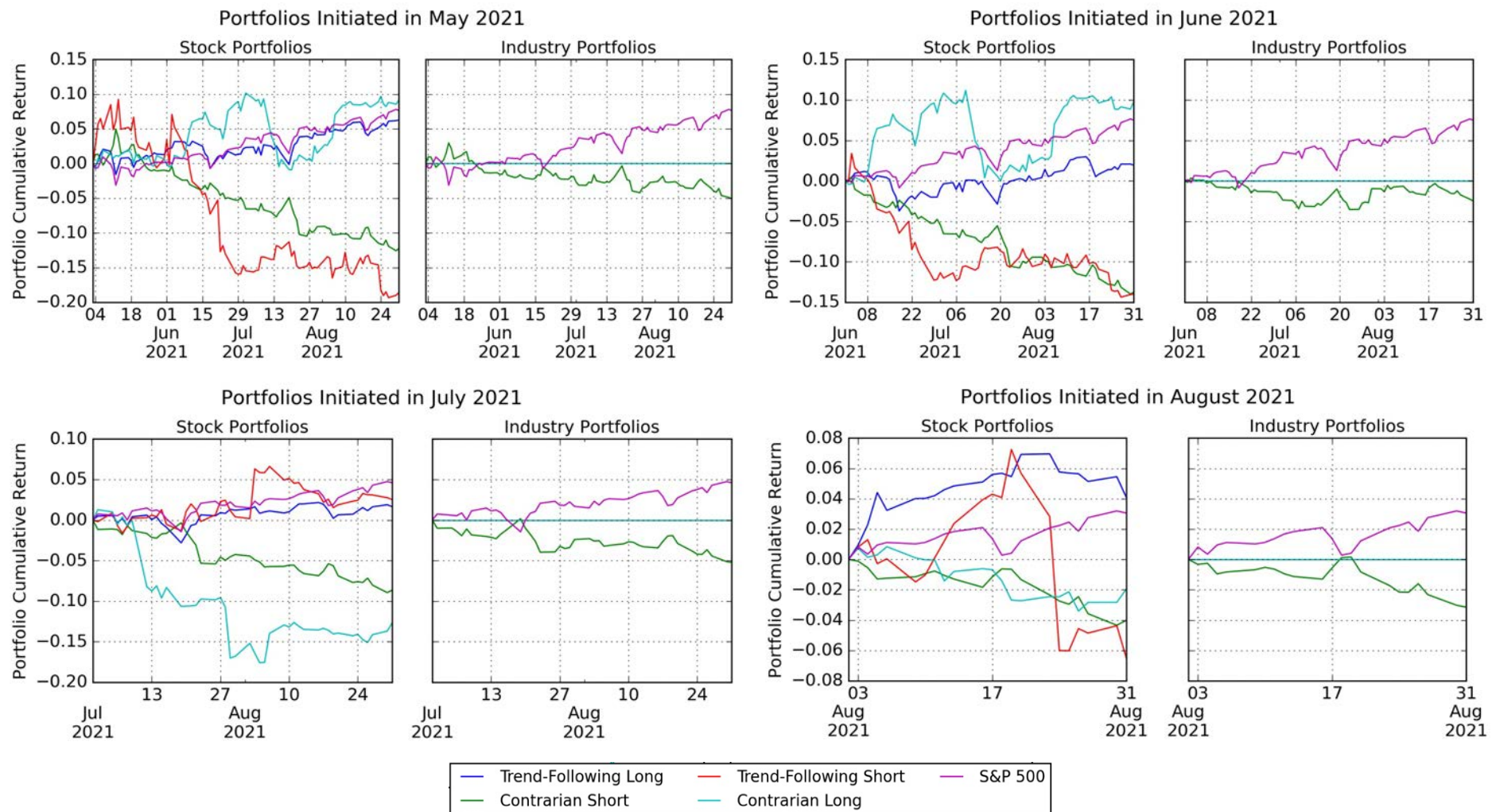
- ▶ Here we illustrate the methodology of the portfolio construction process based on the results of our previous analyses.
- ▶ For individual stocks that we identified in the 4 quadrants, we constructed 4 portfolios based on the 4 quadrants defined in the last report. Each portfolio consists of all the stocks listed in the corresponding quadrant.
  1. **Trend-Following Long Stock Portfolio (TFLSP)** is made of the stocks that have a **positive** bubble signal as well as a **strong** value score. For instance, TFLSP November consists of all the stocks listed in quadrant 1, identified in slide 37 of November 2017 FCO Report.
  2. **Trend-Following Short Stock Portfolio (TFSSP)** is made of the stocks that have a **negative** bubble signal as well as a **weak** value score.
  3. **Contrarian Long Stock Portfolio (CLSP)** is made of the stocks that have a **negative** bubble signal as well as a **strong** value score.
  4. **Contrarian Short Stock Portfolio (CSSP)** is made of the stocks that have a **positive** bubble signal as well as a **weak** value score.

# Portfolio Construction & Performance

- ▶ At the same time, we also classified 20 industries into 4 quadrants, and 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).
- ▶ In each month, we initiated 8 new portfolios based on the updated results. The performance of every 8 portfolios we initiated since November 2017 are presented in the next slide. All of the stocks in our portfolios are weighted by their market capitalizations and we don't consider transaction cost in the portfolio performance.

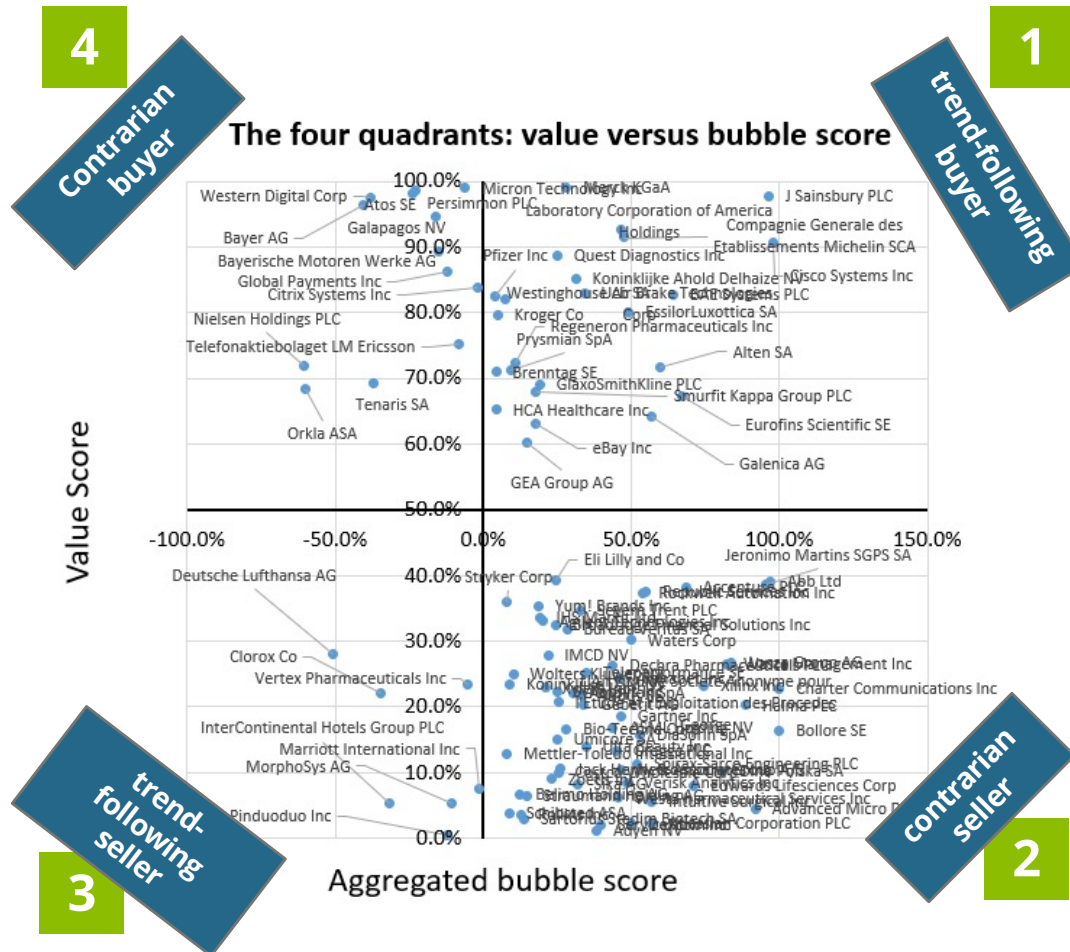
# Portfolio Construction & Performance

- ▶ The market continues to make new highs in the past month, reflecting the positive sentiment regarding the strong economic performance. Contrarian Portfolios are more delicate to use due to their sensitivity to timing the expected reversal and exhibit very volatile performances. 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 over which the predicted corrections play out.



# Single Stocks

We can divide the stocks into four quadrants<sup>1)</sup>



- **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**. E.g. eBay Inc.
- **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**. E.g. Bollore SE
- **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**. E.g. Clorox Co
- **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**. E.g. Atos SE.

<sup>1)</sup> A strong positive bubble signal is identified if bubble score is positive, and a strong negative bubble signal is identified if bubble score is negative.  
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%.

# Single Stocks

- ▶ For 823 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.
- ▶ To analyze the **financial strength of individual stocks**, we have two indicators. 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.
  - 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; Value scores are calculated by comparing ROIC level versus EV/IC in each industry.
  - A **growth score** that has characteristics similar to the PEG ratio, which is the Price to Earnings ratio normalized by the expected growth of the EPS (Earnings per Share).
- ▶ 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.



# Single Stocks

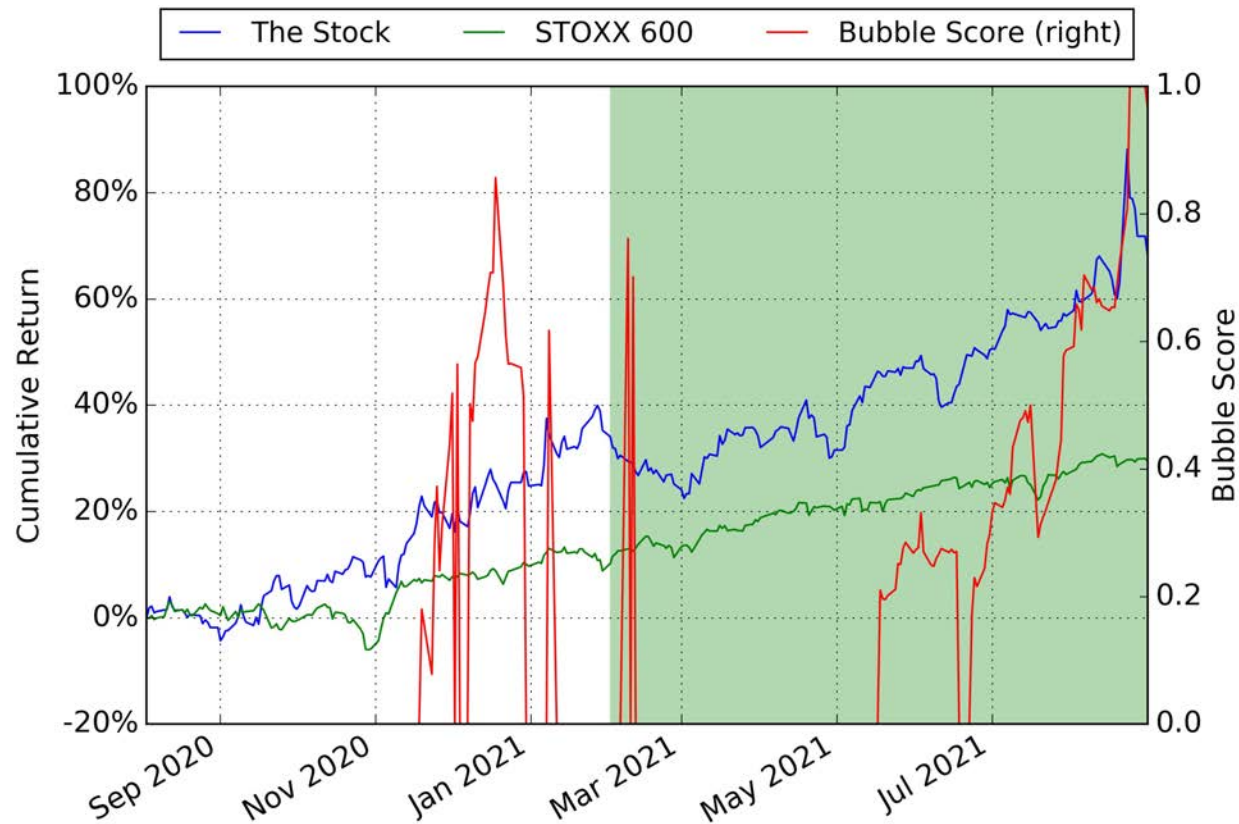
Quadrant 1 stocks: strong positive bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Westinghouse Air Brake Technologies Corp	United States of America	Capital Goods	31.3%	24.6%	Feb-21	7.5%	81.9%	79.5%
Laboratory Corporation of America Holdings	United States of America	Health Care Equipment & Services	72.6%	27.9%	Feb-21	46.5%	92.7%	7.8%
Regeneron Pharmaceuticals Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	17.9%	46.2%	Feb-21	10.6%	72.2%	26.7%
HCA Healthcare Inc	United States of America	Health Care Equipment & Services	89.1%	71.7%	Nov-20	4.4%	65.2%	26.2%
Cisco Systems Inc	United States of America	Technology Hardware & Equipment	47.1%	12.3%	Mar-21	97.9%	90.6%	46.5%
Pfizer Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	34.3%	34.3%	Sep-20	4.1%	82.4%	95.1%
eBay Inc	United States of America	Retailing	43.6%	46.7%	Sep-20	17.7%	63.2%	49.9%
Quest Diagnostics Inc	United States of America	Health Care Equipment & Services	42.8%	38.3%	Sep-20	25.0%	88.6%	30.3%
Kroger Co	United States of America	Food & Staples Retailing	30.8%	32.5%	Mar-21	4.9%	79.7%	39.8%
Prysmian SpA	Italy	Capital Goods	34.8%	17.0%	Feb-21	9.5%	71.3%	96.1%
Compagnie Generale des Etablissements Michelin SCA	France	Automobiles & Components	43.1%	29.2%	Nov-20	47.3%	91.6%	94.9%
Eurofins Scientific SE	Luxembourg	Pharmaceuticals, Biotechnology & Life Sciences	76.8%	60.1%	Feb-21	67.2%	67.3%	7.4%
GlaxoSmithKline PLC	United Kingdom	Pharmaceuticals, Biotechnology & Life Sciences	-4.6%	14.0%	Feb-21	19.1%	69.0%	33.6%
BAE Systems PLC	United Kingdom	Capital Goods	10.5%	13.1%	Dec-20	64.2%	82.8%	15.4%
Merck KGaA	Germany	Pharmaceuticals, Biotechnology & Life Sciences	67.0%	45.1%	Mar-21	28.1%	99.0%	73.4%
J Sainsbury PLC	United Kingdom	Food & Staples Retailing	64.2%	27.5%	Feb-21	96.5%	97.7%	91.1%
Koninklijke Ahold Delhaize NV	Netherlands	Food & Staples Retailing	11.7%	27.2%	Feb-21	31.3%	85.2%	23.6%
Smurfit Kappa Group PLC	Ireland; Republic of	Materials	56.0%	19.4%	Feb-21	17.7%	67.9%	82.4%
EssilorLuxottica SA	France	Consumer Durables & Apparel	48.9%	24.4%	Mar-21	49.2%	80.1%	60.4%
GEA Group AG	Germany	Capital Goods	23.3%	15.1%	Mar-21	14.7%	60.2%	84.0%
Ucb SA	Belgium	Pharmaceuticals, Biotechnology & Life Sciences	-1.8%	24.9%	Mar-21	34.1%	82.9%	8.0%
Galenica AG	Switzerland	Health Care Equipment & Services	10.9%	21.0%	Feb-21	56.7%	64.2%	5.1%
Brenntag SE	Germany	Capital Goods	57.5%	29.7%	Jan-21	4.3%	70.9%	79.7%
Alten SA	France	Software & Services	88.3%	44.0%	Mar-21	59.8%	71.7%	89.5%
Nokia Oyj	Finland	Technology Hardware & Equipment	42.1%	43.4%	Feb-21	8.4%	96.9%	7.1%
Grafton Group PLC	Ireland; Republic of	Capital Goods	92.6%	55.2%	Dec-20	35.6%	94.4%	11.5%
Uniper SE	Germany	Utilities	26.6%	13.2%	Jan-21	44.3%	88.9%	5.9%
Novo Nordisk A/S	Denmark	Pharmaceuticals, Biotechnology & Life Sciences	49.6%	43.4%	Jan-21	50.4%	95.6%	72.2%



# Single Stocks

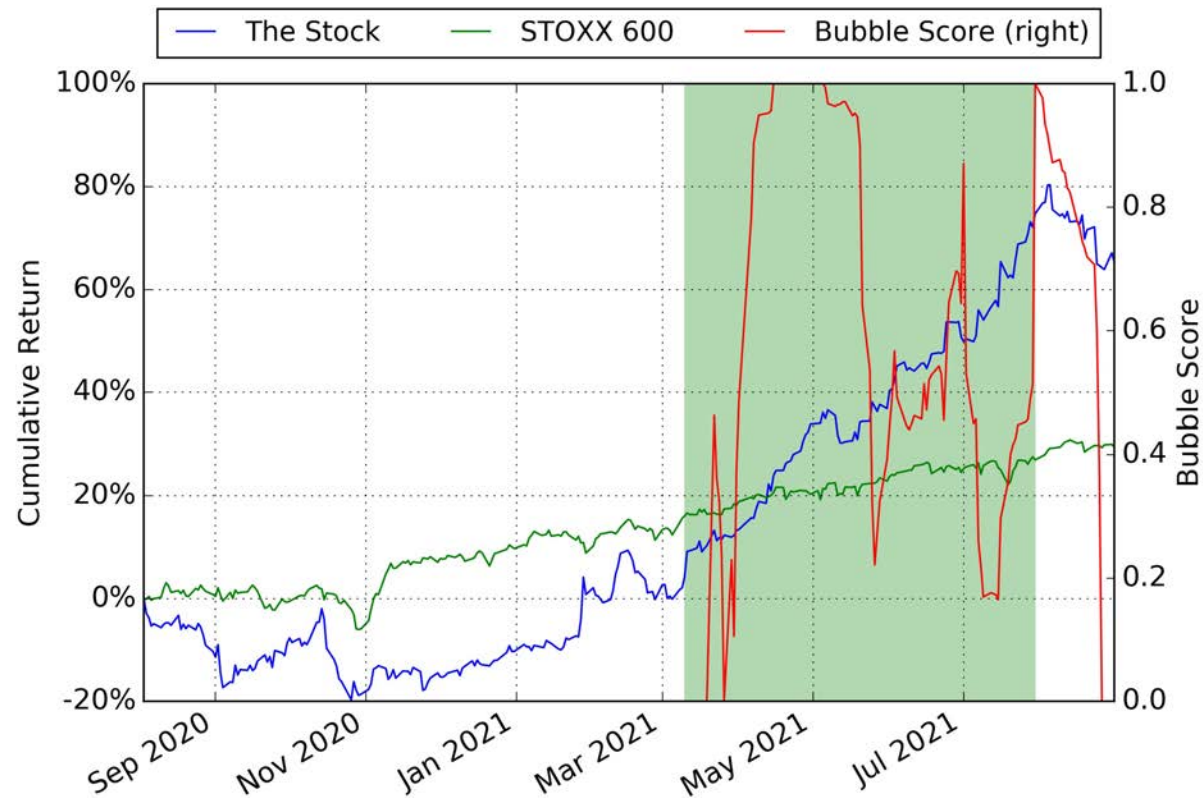
Quadrant 1 Stocks Current Month Example – J Sainsbury PLC.



- The above graph shows the one-year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this seven-month bubble has reached 96.5% with a bubble size 27.5%.

# Single Stocks

Quadrant 1 Stocks Last Month Example – Getinge AB.



- The figure above plots the one-year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which a strong positive bubble has been identified and reported last month. The stock price has switched to another market regime with a 10% drawdown in the past month, which is in agreement with our strong bubble signal identified last month but still surprising, given the strong fundamentals. One could have expected the correction to occur somewhat later. A rebound is thus a plausible scenario.

# Single Stocks

Quadrant 2 stocks: strong positive bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Waste Management Inc	United States of America	Commercial & Professional Services	37.8%	21.7%	Mar-21	82.2%	26.4%	59.9%
Costco Wholesale Corp	United States of America	Food & Staples Retailing	34.9%	25.1%	Jan-21	25.3%	10.0%	59.4%
Advanced Micro Devices Inc	United States of America	Semiconductors & Semiconductor Equipment	35.2%	40.9%	Apr-21	91.9%	4.4%	55.4%
Stryker Corp	United States of America	Health Care Equipment & Services	34.9%	20.2%	Nov-20	7.7%	36.0%	45.8%
Bio-Techne Corp	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	99.6%	33.5%	Mar-21	28.1%	16.5%	49.5%
Eli Lilly and Co	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	70.0%	83.1%	Nov-20	24.6%	39.4%	33.5%
Intuitive Surgical Inc	United States of America	Health Care Equipment & Services	46.4%	41.6%	Jan-21	56.9%	5.6%	57.4%
IHS Markit Ltd	United Kingdom	Commercial & Professional Services	54.6%	36.6%	Nov-20	19.0%	33.6%	52.4%
Charter Communications Inc	United States of America	Media & Entertainment	33.2%	29.8%	Mar-21	100.0%	22.7%	34.4%
ServiceNow Inc	United States of America	Software & Services	40.5%	40.5%	Sep-20	39.7%	2.0%	64.7%
Broadridge Financial Solutions Inc	United States of America	Software & Services	26.3%	18.1%	Nov-20	24.4%	32.5%	66.9%
Dexcom Inc	United States of America	Health Care Equipment & Services	31.8%	56.1%	Mar-21	50.2%	2.2%	51.9%
Gartner Inc	United States of America	Software & Services	135.2%	68.0%	Feb-21	46.5%	18.5%	22.7%
Xilinx Inc	United States of America	Semiconductors & Semiconductor Equipment	55.0%	27.3%	Mar-21	74.6%	23.2%	61.5%
Jack Henry & Associates Inc	United States of America	Software & Services	9.8%	18.5%	Mar-21	26.2%	10.5%	49.8%
Ulta Beauty Inc	United States of America	Retailing	64.5%	40.7%	Nov-20	34.6%	13.9%	21.5%
Republic Services Inc	United States of America	Commercial & Professional Services	30.4%	37.3%	Jan-21	54.9%	37.4%	38.6%
Alphabet Inc	United States of America	Media & Entertainment	87.0%	30.4%	Apr-21	46.0%	24.3%	23.0%
Agilent Technologies Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	79.2%	47.1%	Mar-21	20.0%	33.0%	57.2%
Rollins Inc	United States of America	Commercial & Professional Services	5.4%	19.9%	Mar-21	12.7%	3.6%	84.8%
Mettler-Toledo International Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	59.1%	46.6%	Mar-21	8.0%	12.9%	56.2%
Verisk Analytics Inc	United States of America	Commercial & Professional Services	10.3%	20.4%	Feb-21	48.5%	8.5%	74.2%
Waters Corp	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	100.7%	86.1%	Nov-20	49.9%	30.1%	31.7%
Edwards Lifesciences Corp	United States of America	Health Care Equipment & Services	38.1%	38.1%	Jan-21	71.2%	7.9%	75.4%
Zoetis Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	28.7%	33.6%	Jan-21	23.2%	9.0%	63.2%
West Pharmaceutical Services Inc	United States of America	Health Care Equipment & Services	65.7%	65.9%	Dec-20	45.5%	6.1%	55.0%
Yum! Brands Inc	United States of America	Consumer Services	40.3%	40.3%	Sep-20	18.7%	35.4%	80.7%
Rockwell Automation Inc	United States of America	Capital Goods	44.9%	23.8%	Apr-21	53.6%	37.3%	53.7%
Accenture PLC	Ireland; Republic of	Software & Services	40.9%	32.4%	Mar-21	68.6%	38.2%	77.3%
Xylem Inc	United States of America	Capital Goods	63.4%	63.4%	Sep-20	21.0%	22.8%	48.6%
Synopsys Inc	United States of America	Software & Services	61.8%	34.1%	Mar-21	24.8%	22.2%	71.1%
Atlassian Corporation PLC	United Kingdom	Software & Services	114.2%	74.4%	Mar-21	56.9%	2.3%	64.5%

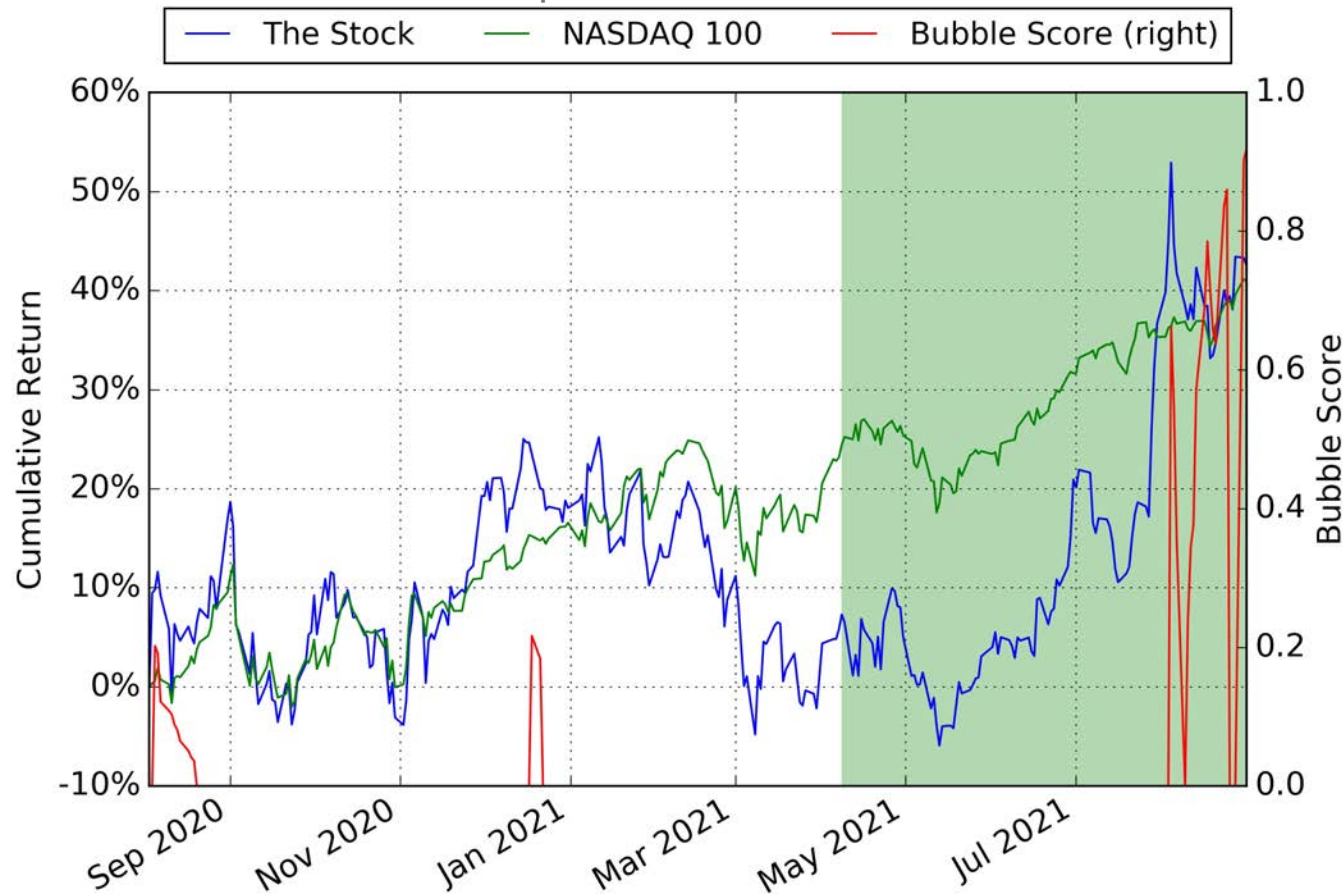
# Single Stocks

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

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
ASML Holding NV	Netherlands	Semiconductors & Semiconductor Equipment	131.8%	33.1%	Mar-21	43.8%	16.7%	50.2%
Amplifon SpA	Italy	Health Care Equipment & Services	54.4%	34.2%	Nov-20	30.2%	22.1%	20.6%
DiaSorin SpA	Italy	Health Care Equipment & Services	26.9%	33.9%	Mar-21	53.0%	15.7%	44.0%
Koninklijke DSM NV	Netherlands	Materials	32.3%	31.7%	Nov-20	9.0%	23.4%	85.3%
Bollore SE	France	Media & Entertainment	55.8%	23.5%	Feb-21	100.0%	16.4%	93.5%
Umicore SA	Belgium	Materials	41.0%	26.5%	Jan-21	24.9%	15.1%	77.8%
Wolters Kluwer NV	Netherlands	Commercial & Professional Services	36.0%	39.6%	Jan-21	10.1%	24.9%	40.7%
Severn Trent PLC	United Kingdom	Utilities	14.6%	20.5%	Dec-20	32.8%	34.7%	21.7%
Teleperformance SE	France	Commercial & Professional Services	42.9%	34.9%	Nov-20	34.9%	25.1%	93.4%
Adyen NV	Netherlands	Software & Services	103.5%	38.1%	Feb-21	38.3%	1.1%	67.1%
Bureau Veritas SA	France	Commercial & Professional Services	46.4%	24.1%	Feb-21	28.2%	31.7%	65.6%
L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes George	France	Materials	6.7%	14.8%	Oct-20	25.4%	20.7%	74.8%
Halma PLC	United Kingdom	Technology Hardware & Equipment	32.3%	26.4%	Feb-21	88.6%	20.2%	42.5%
Dino Polska SA	Poland	Food & Staples Retailing	46.3%	34.7%	Feb-21	80.9%	10.2%	72.6%
Belimo Holding AG	Switzerland	Capital Goods	36.4%	44.0%	Feb-21	12.1%	6.7%	23.9%
Geberit AG	Switzerland	Capital Goods	45.4%	39.2%	Feb-21	34.0%	20.3%	76.7%
Lonza Group AG	Switzerland	Pharmaceuticals, Biotechnology & Life Sciences	41.3%	46.6%	Mar-21	83.9%	26.7%	82.2%
Abb Ltd	Switzerland	Capital Goods	41.1%	20.0%	Mar-21	97.0%	39.0%	6.3%
Airbus SE	Netherlands	Capital Goods	66.7%	31.6%	Nov-20	32.9%	21.8%	9.9%
Sika AG	Switzerland	Materials	51.9%	30.2%	Mar-21	31.7%	8.1%	83.9%
Schibsted ASA	Norway	Media & Entertainment	25.4%	28.2%	Nov-20	8.9%	3.8%	86.6%
Sartorius Stedim Biotech SA	France	Pharmaceuticals, Biotechnology & Life Sciences	80.7%	50.3%	Mar-21	13.8%	3.0%	62.2%
Spirax-Sarco Engineering PLC	United Kingdom	Capital Goods	54.4%	43.3%	Mar-21	52.0%	11.4%	50.4%
Dechra Pharmaceuticals PLC	United Kingdom	Pharmaceuticals, Biotechnology & Life Sciences	57.5%	49.8%	Feb-21	43.8%	26.3%	61.0%
Greggs PLC	United Kingdom	Consumer Services	125.3%	80.4%	Nov-20	45.0%	13.3%	19.0%
Straumann Holding AG	Switzerland	Health Care Equipment & Services	99.8%	63.7%	Feb-21	14.6%	6.5%	63.5%
Netcompany Group A/S	Denmark	Software & Services	56.6%	53.4%	Nov-20	46.3%	10.4%	87.4%
IMCD NV	Netherlands	Capital Goods	83.0%	48.3%	Mar-21	21.8%	27.8%	30.1%
Jeronimo Martins SGPS SA	Portugal	Food & Staples Retailing	26.3%	24.5%	Apr-21	95.7%	38.6%	73.2%
Nibe Industrier AB	Sweden	Capital Goods	114.9%	62.4%	Apr-21	99.5%	20.8%	42.1%
Beijer Ref AB (publ)	Sweden	Capital Goods	80.0%	61.3%	Jan-21	18.0%	7.8%	72.1%
Nordic Semiconductor ASA	Norway	Semiconductors & Semiconductor Equipment	218.7%	81.8%	Feb-21	11.2%	14.7%	58.0%
Future PLC	United Kingdom	Media & Entertainment	117.8%	135.6%	Nov-20	41.4%	22.4%	25.2%

# Single Stocks

Quadrant 2 Stocks Current Month Example – Advanced Micro Devices Inc.

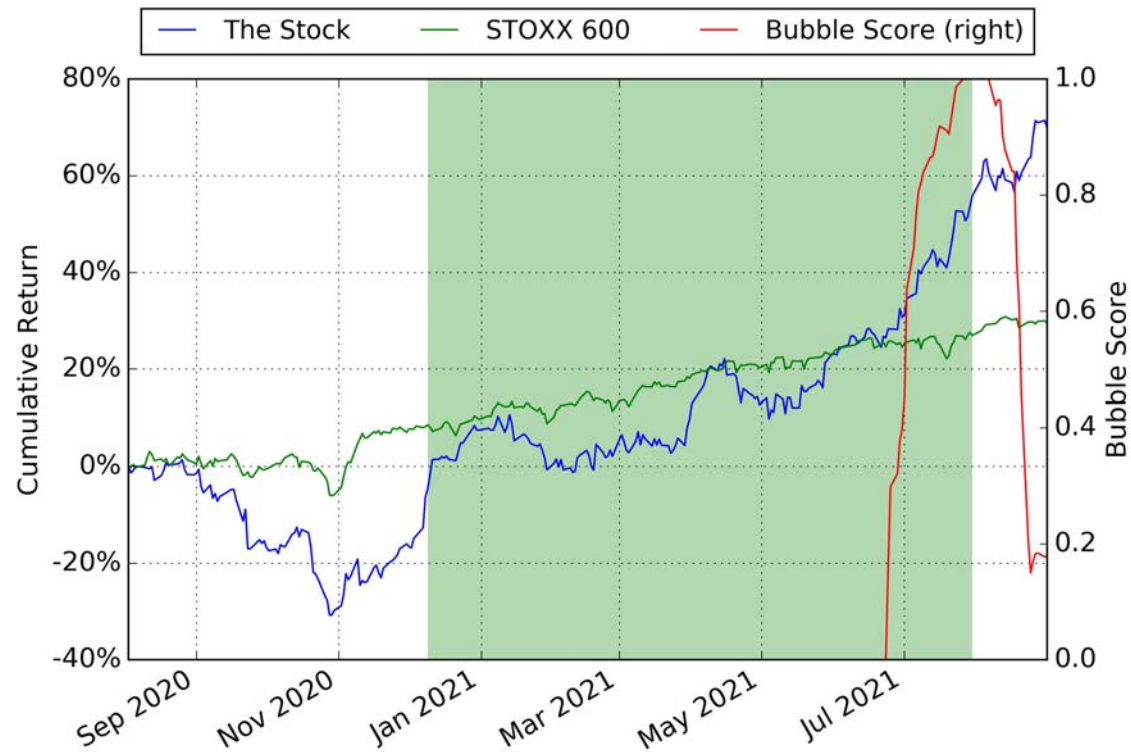


- The above graph shows the one-year cumulative return of the stock in blue (left hand scale), NASDAQ 100 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this five-month bubble has reached 91.9% with a bubble size 40.9%. The strong positive bubble signal and weak fundamentals may indicate a high probability of correction in the future.



# Single Stocks

Quadrant 2 Stocks Last Month Example – Beijer Ref AB (publ).



The figure above plots the one-year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red lines on the right y-axis). The green shaded period delineates the time interval within which a strong positive bubble has been identified and reported last month. The stock price continued its upward trend in the past month with its bubble score remaining positive at 18%. This means that the signal last month may be a false positive or a transition to a larger bubble. The risk of a significant correction of this stock is still prominent and one should remain cautious about it.

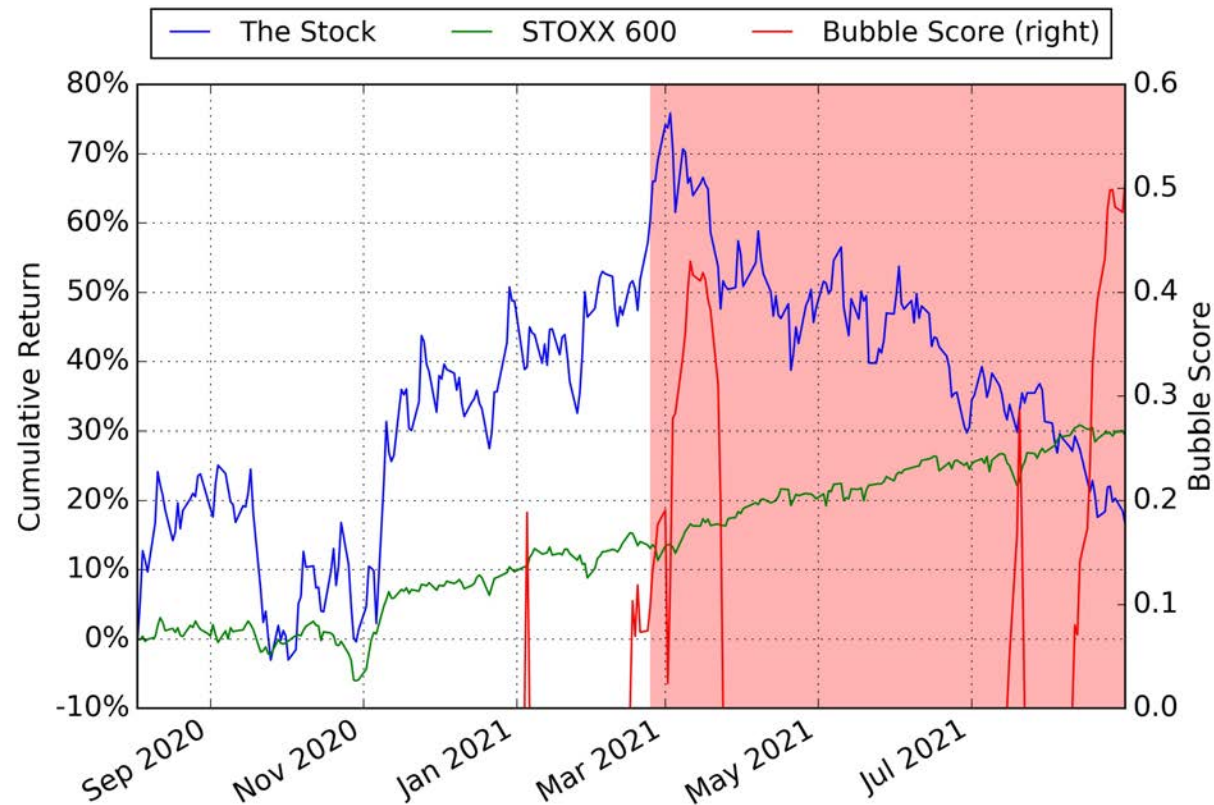
# Single Stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Vertex Pharmaceuticals Inc	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	-23.9%	-11.7%	Nov-20	-5.1%	23.3%	34.9%
Clorox Co	United States of America	Household & Personal Products	-23.6%	-13.8%	Nov-20	-34.5%	22.0%	76.1%
Marriott International Inc	United States of America	Consumer Services	32.5%	-10.0%	Feb-21	-1.5%	7.4%	21.2%
Pinduoduo Inc	China	Retailing	18.2%	-39.8%	Dec-20	-12.3%	0.4%	71.7%
InterContinental Hotels Group PLC	United Kingdom	Consumer Services	6.4%	-10.0%	Apr-21	-31.9%	5.3%	48.8%
MorphoSys AG	Germany	Pharmaceuticals, Biotechnology & Life Sciences	-53.0%	-49.9%	Oct-20	-10.8%	5.4%	1.0%
Deutsche Lufthansa AG	Germany	Transportation	-2.6%	-29.7%	Feb-21	-50.7%	28.0%	99.5%

# Single Stocks

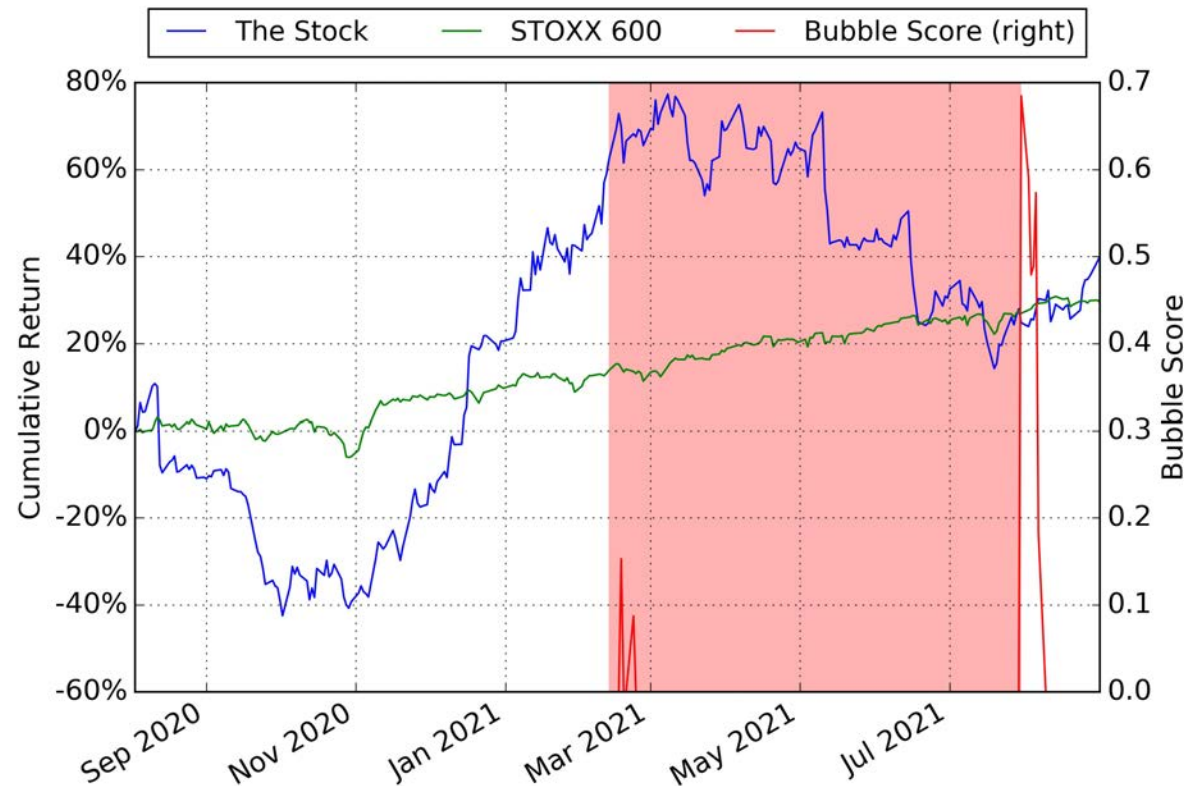
Quadrant 3 Stocks Current Month Example – Deutsche Lufthansa AG.



- The above graph shows the one-year cumulative return of the stock in blue (left hand scale), STOXX 600 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The red shaded period delineates the time interval within which the negative bubble is identified. The Bubble Score of this six-month bubble has reached 50.7% with a bubble size -29.7%.

# Single Stocks

Quadrant 3 Stocks Last Month Example – thyssenkrupp AG.



- The figure above plots the one-year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period delineates the time interval within which the strong negative bubble was identified and reported last month. The stock price has increased by 10% in the past month, which seems to mark the end of the five-month negative bubble we identified last month. One should remain cautious given the weak fundamentals of this stock.

# Single Stocks

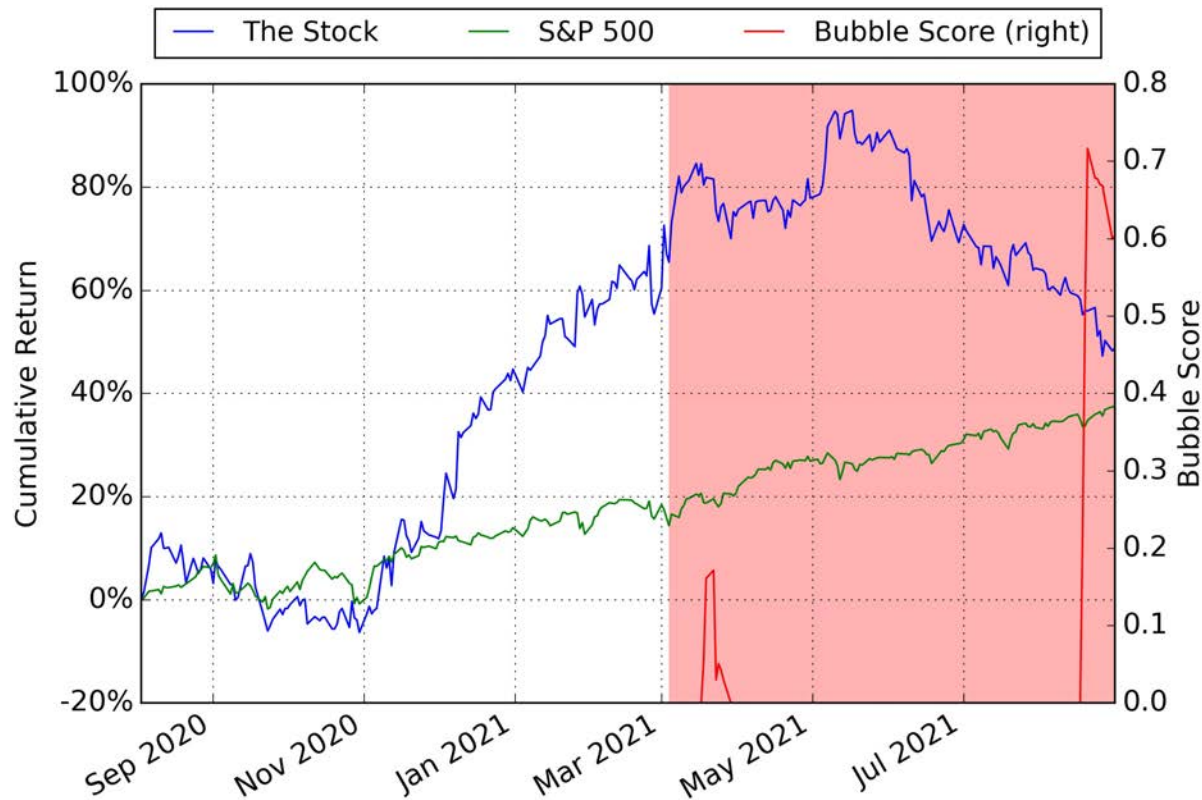
Quadrant 4 stocks: strong negative bubble signals with strong fundamentals

Company Name	Country of Headquarters	GICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Western Digital Corp	United States of America	Technology Hardware & Equipment	72.9%	-11.4%	Apr-21	-38.0%	97.4%	5.6%
Global Payments Inc	United States of America	Software & Services	-3.8%	-16.2%	Feb-21	-12.2%	86.2%	60.3%
Nielsen Holdings PLC	United States of America	Commercial & Professional Services	44.4%	-18.3%	Mar-21	-60.4%	71.9%	24.2%
Micron Technology Inc	United States of America	Semiconductors & Semiconductor Equipment	63.2%	-14.8%	Feb-21	-6.1%	98.9%	25.6%
Citrix Systems Inc	United States of America	Software & Services	-27.3%	-26.0%	Jan-21	-2.1%	83.9%	40.8%
Bayer AG	Germany	Pharmaceuticals, Biotechnology & Life Sciences	-15.2%	-13.1%	Feb-21	-40.6%	96.3%	21.9%
Persimmon PLC	United Kingdom	Consumer Durables & Apparel	19.0%	-7.3%	Apr-21	-23.9%	98.2%	29.8%
Orkla ASA	Norway	Food, Beverage & Tobacco	-15.7%	-10.4%	Apr-21	-60.0%	68.3%	17.6%
Galapagos NV	Belgium	Pharmaceuticals, Biotechnology & Life Sciences	-53.7%	-36.4%	Dec-20	-16.3%	94.6%	98.3%
Tenaris SA	Luxembourg	Energy	84.0%	-8.1%	Mar-21	-37.0%	69.3%	2.0%
Telefonaktiebolaget LM Ericsson	Sweden	Technology Hardware & Equipment	4.4%	-9.6%	Mar-21	-8.1%	75.1%	12.3%
Bayerische Motoren Werke AG	Germany	Automobiles & Components	26.1%	-9.5%	Mar-21	-15.1%	89.4%	84.6%
Atos SE	France	Software & Services	-38.0%	-32.8%	Jan-21	-23.0%	98.6%	93.2%
ITV PLC	United Kingdom	Media & Entertainment	85.0%	-4.7%	Mar-21	-5.2%	94.5%	3.0%



# Single Stocks

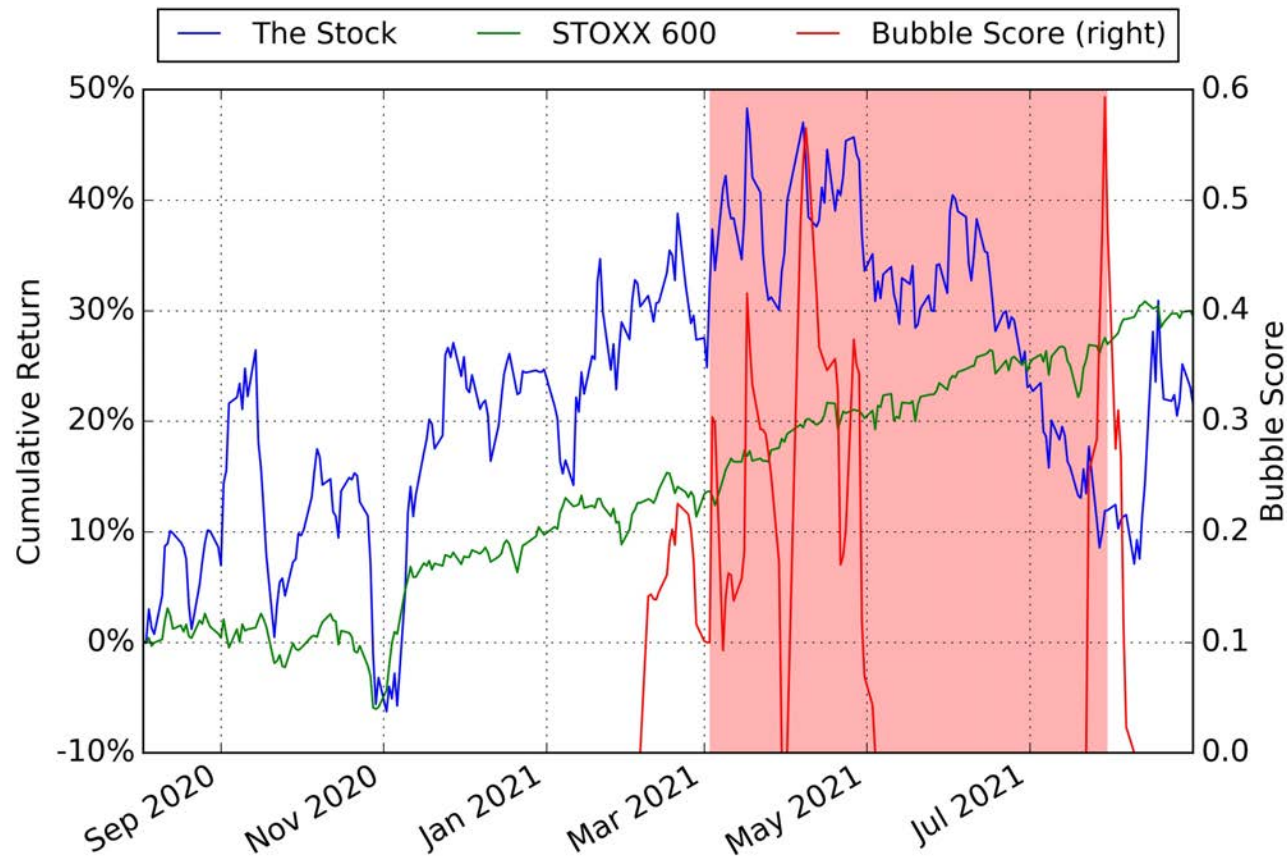
Quadrant 4 Stocks Current Month Example – Nielsen Holdings PLC.



- The above graph shows the one-year cumulative return of the stock in blue (left hand scale), S&P 500 in green (left hand scale) and the calculated DS LPPLS Bubble Score in red (right hand scale). The red shaded period delineates the time interval within which the strong negative bubble is identified. The Bubble Score of this six-month bubble has reached 60.4% with a negative bubble size -18.3%. We expect a rebound in the future when the negative bubble is mature, given our diagnostic of a negative bubble signal with strong fundamentals, calling for a contrarian buyer position.

# Single Stocks

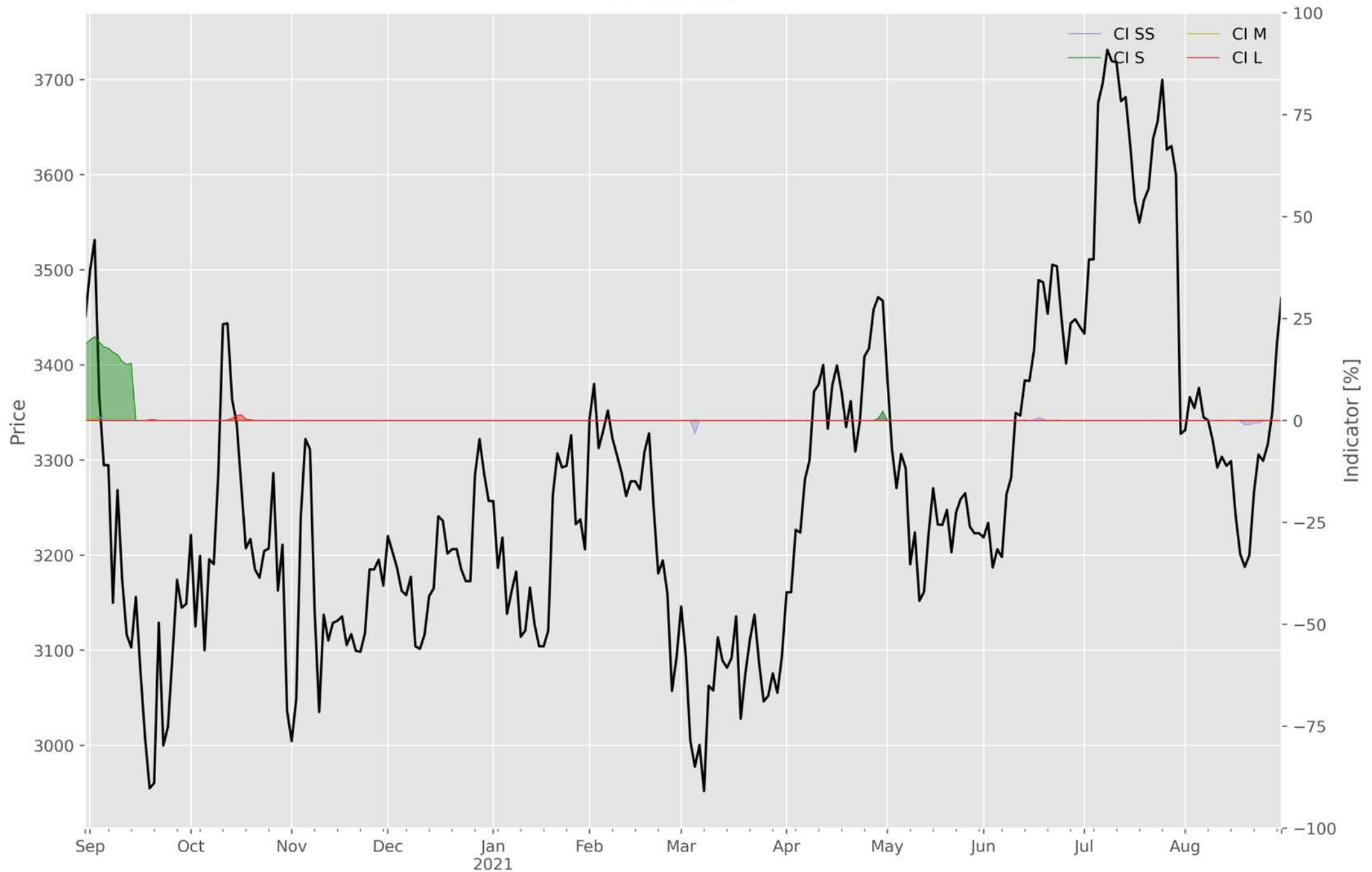
Quadrant 4 Stocks Last Month Example – Faurecia SE.



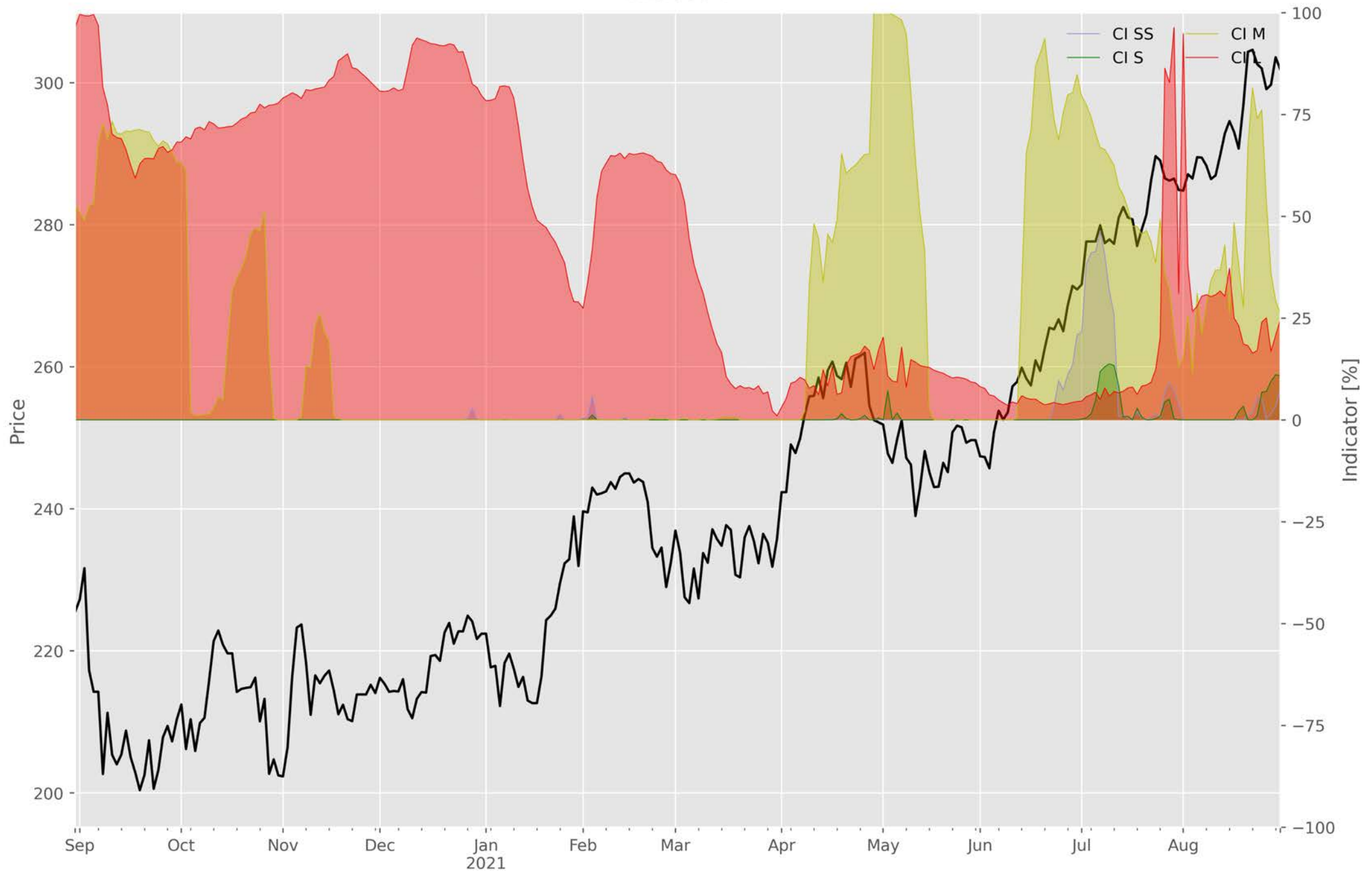
- The figure above plots the one-year cumulative return of the stock (blue), STOXX 600 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period delineates the time interval within which the strong negative bubble was identified and reported last month. The stock price had a rebound of 20% in the past month, which is nicely predicted by our DS LPPLS Bubble Signal reported last month.

# Appendix

## Amazon.Com

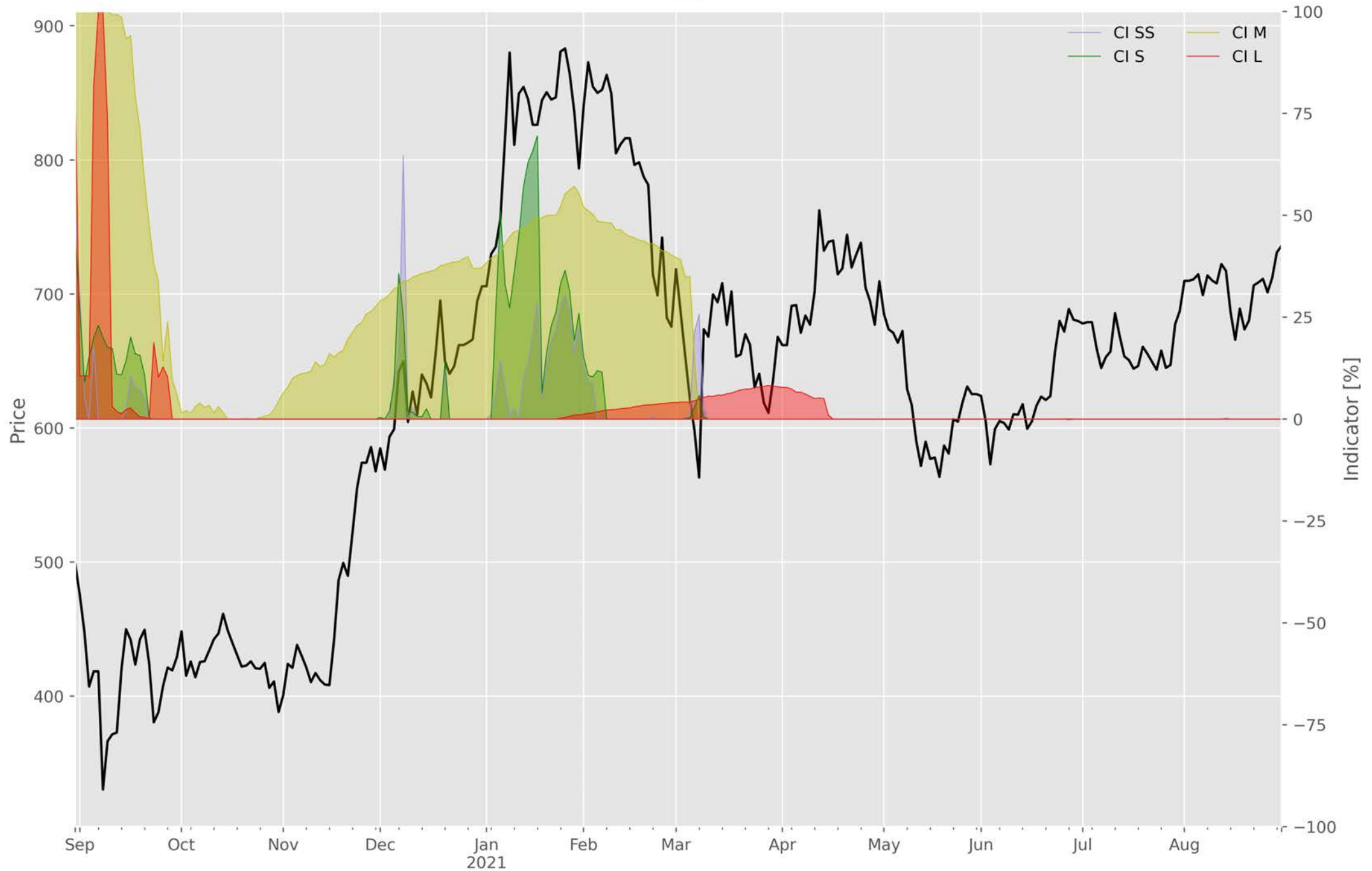


# Microsoft

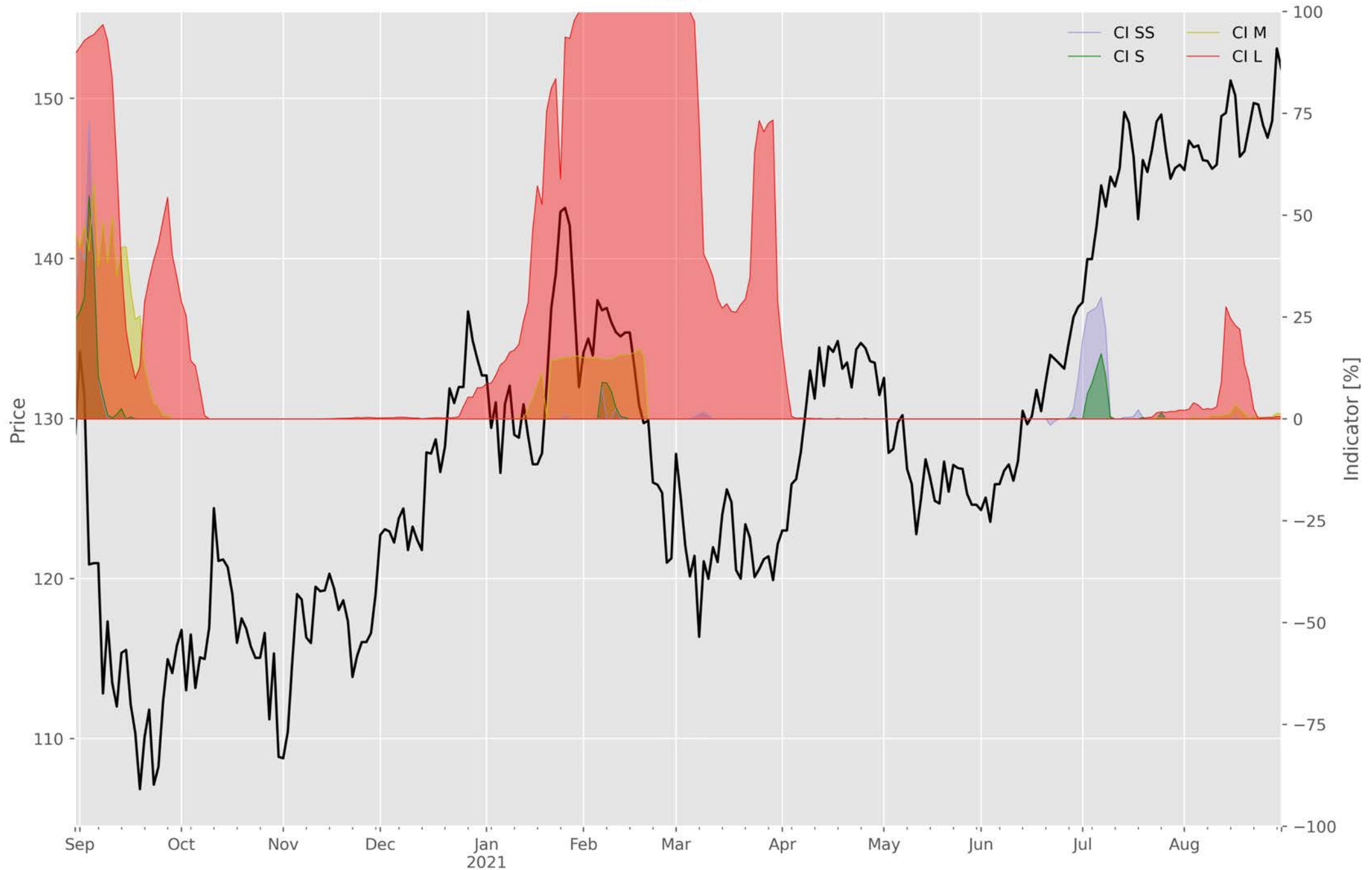




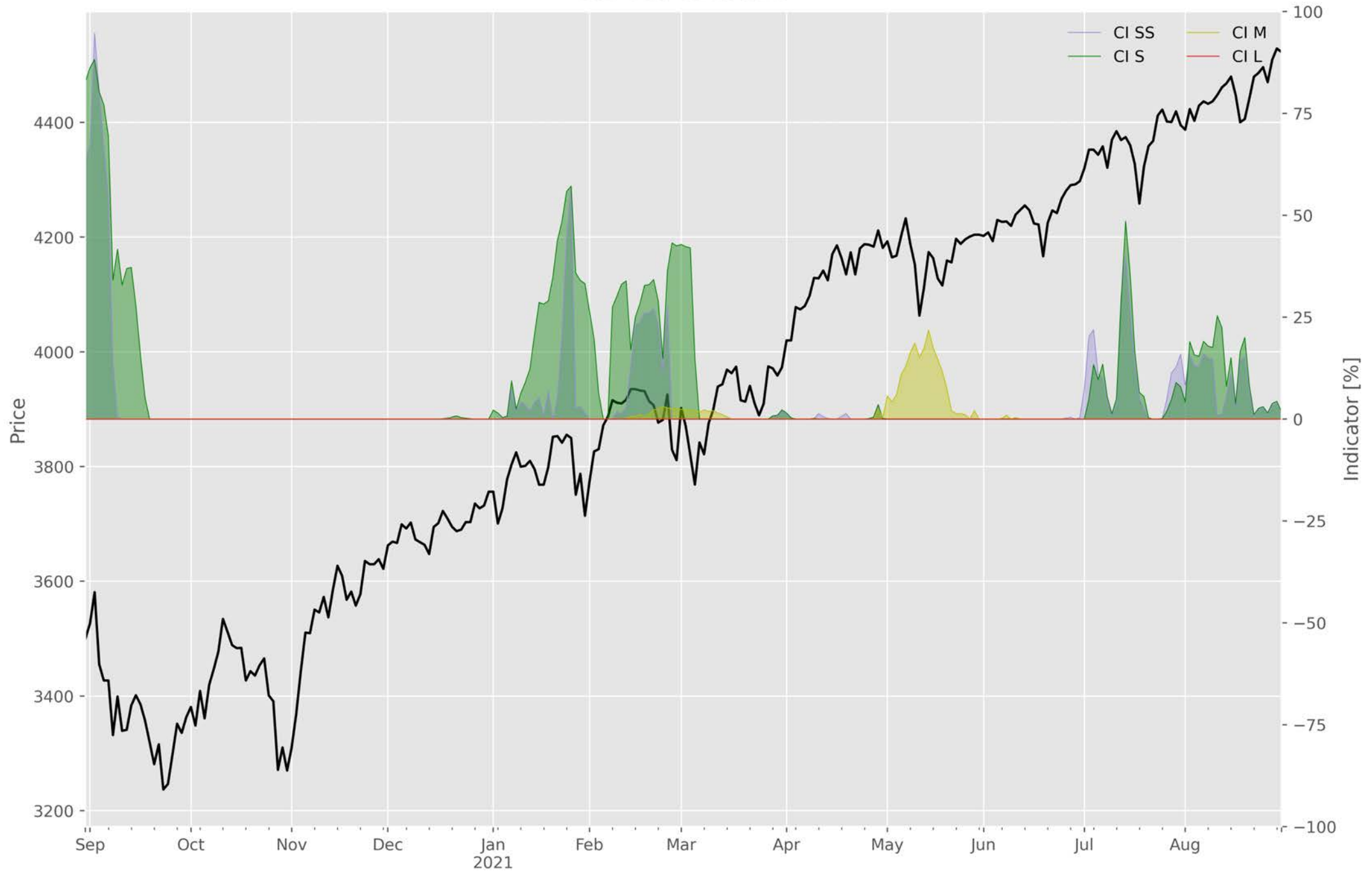
# Tesla



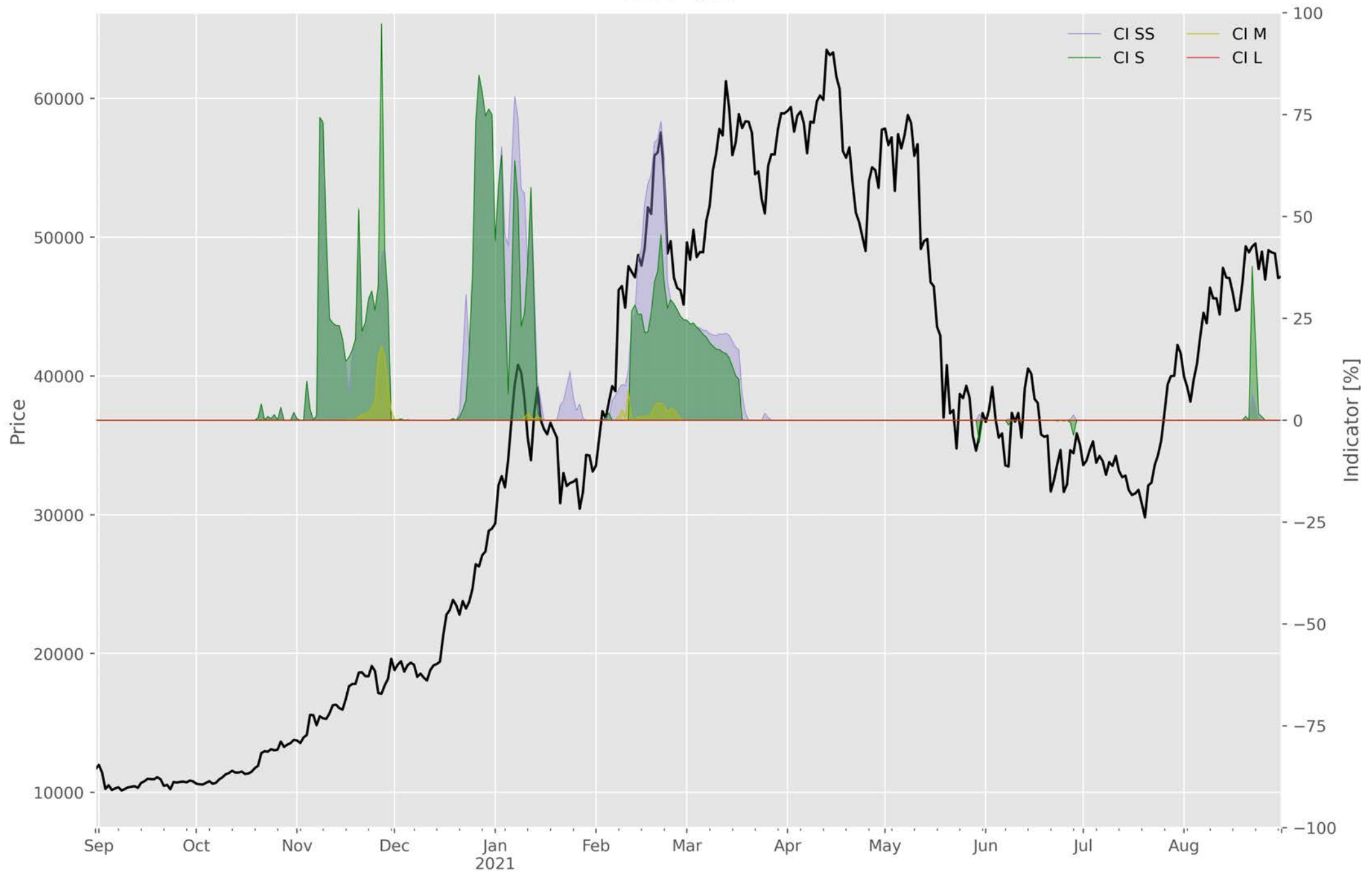
# Apple



## S&P 500 Composite



## Bitcoin/USD



# More Information

- ▶ Visit the **Financial Crisis Observatory** for more information

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

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