



The FCO Cockpit Global Bubble Status Report May 2022



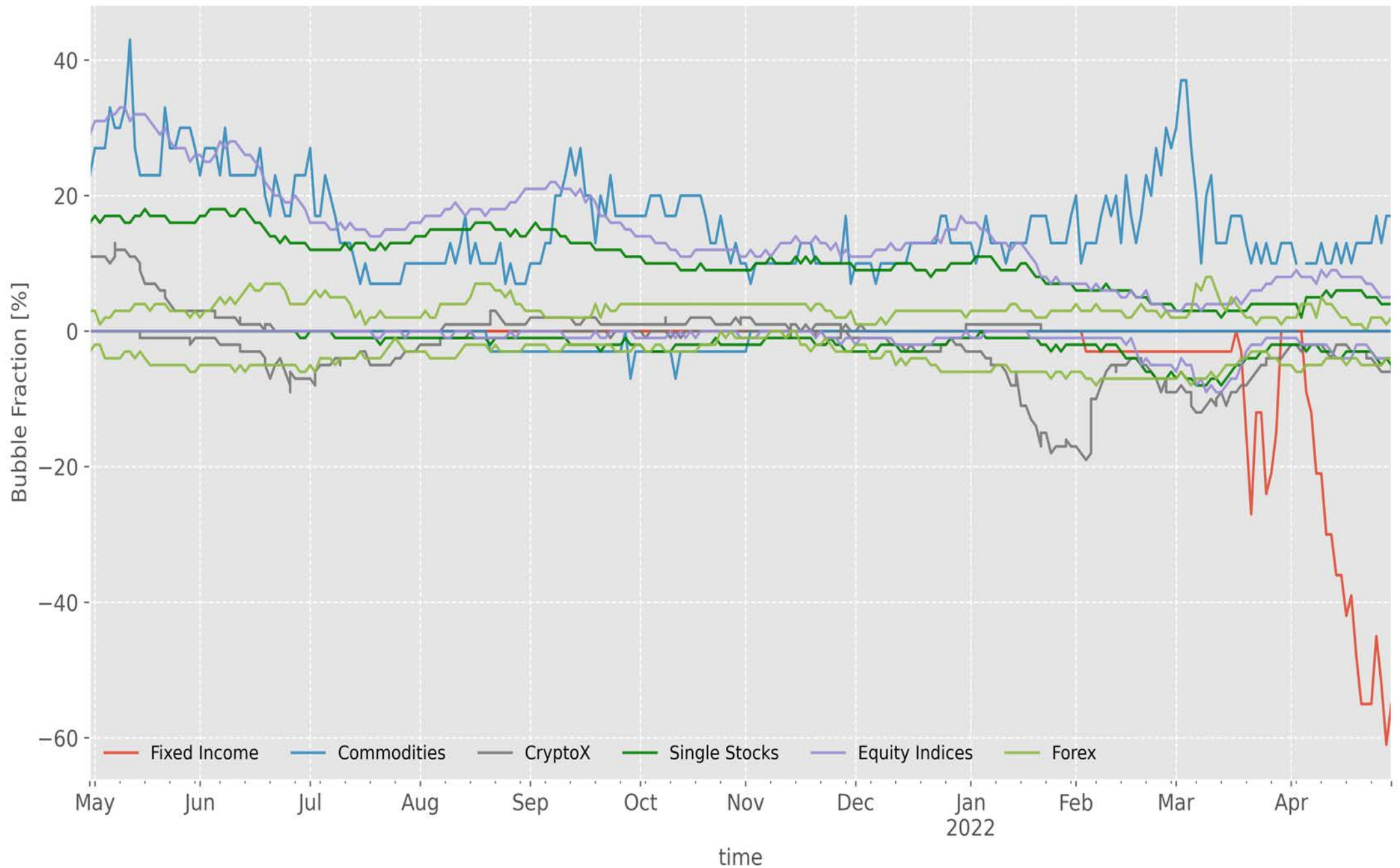
Contents

1. Introduction
2. Results per Asset Class
3. Appendix
4. Contact

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.
- ▶ The appendix shows bubbles indicators of other major assets of possible interest.

Fraction of Positive / Negative Bubble Signals for different Asset Classes



General Results as of 2022-04-30

	Region	Analyzed Assets	Fraction of Pos. Bubbles [%]	Fraction of Neg. Bubbles [%]
Fixed Income		33	0	55
Commodities		30	17	0
Single Stocks		1639	4	5
	Europe	958	3	6
	United States	669	6	4
Equity Indices		853	5	4
	Europe	52	2	4
	United States	376	7	2
	Global	383	3	6
Forex		132	2	4
CryptoX		456	0	6

- ▶ In the fixed income sector, the negative bubble fraction has soared to 55% by the end of April.
- ▶ In the commodities sector, a slight increase is observed from 13% to 17% in the positive bubble signal, while the negative bubble activity remains zero.
- ▶ In both the single stocks and equity indices sectors, the negative bubble fraction has gone up by 3 percent, but still remains quite low along with the positive bubble signal.
- ▶ In the Forex sector, the negative bubble fraction has declined slightly by 4 percent to 4% with its positive counterpart unchanged at 2%.
- ▶ In the CryptoX sector, no positive bubble activity is observed as in previous months, yet a small rise from 3% to 6% is seen in the negative bubble signal.

FCO Market Outlook

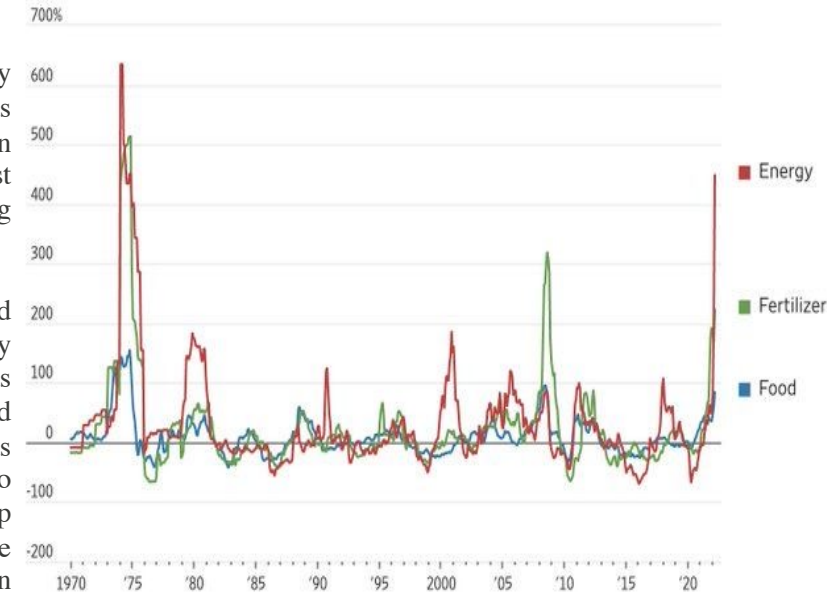
FAAMNG

The U.S. equity market has fallen from grace in line with our long-time view. The U.S. technology sector is heavily impacted by surging inflation, quantitative tapering (QT), and pre-pandemic lifestyle. The Nasdaq index has dropped 22% from 1st January to 30 April. The stock price of Facebook plummeted by around 40% YTD; Amazon has fallen by 27%, Apple by 13%, Netflix by 68%, Microsoft by 17%, and Google by 21%. They together have lost around 1.5 trillion in their market cap so far this year. The global supply chain problems are becoming growing concerns for Apple, and some other tech giants are also facing pessimistic earning growth expectations.

Early crisis precursors for Emerging Market

In line with our April FCO report, some developing countries like Sri Lanka, Peru, Egypt, Tunisia, Pakistan, and others have already shown some vulnerabilities and potential crisis precursors due to the food crisis and energy crisis. There are more than 30 developing countries that suffer from similar problems. Sri Lanka, for example, has declared default on \$35.5 billion of its foreign debt. It is seeking IMF for urgent economic support. The food and energy prices have soared because Sri Lanka is highly dependent on their import, and its foreign reserve has shrunk by more than 70%. In addition, the shortage of fertilizer impacts Peru's agriculture sector. If there is no efficient and fast way to solve the problems within a few months, the agriculture production in Peru might drop 40% next year. The Ukraine-Russia war is ongoing, the high inflation will soar further, and the Federal Reserve will have to raise interest rates to fight it. Thus, some parts of the world will endure the same fate as the Latin America Debt Crisis back in the 1980s.

Change in selected commodity prices over 23 months



Note: 23-month change facilitates comparison of the April 2020 trough, through March 2022.

Source: World Bank

Fix income: Rising inflation has pushed up the yields of U.S. Treasury notes. The Fed is aggressively increasing its interest rate to fight inflation, even if it might cause an economic recession. Fed seems to have no choice but to raise its interest rate for the rest of the year. What the Fed can control is the pace of increase: whether it would be a once-off jump like in 1981 or a series of consecutive small increases every month. It is likely that the Fed will choose the second path because the first path will directly lead to a new global financial crisis, given the current debt level in major countries. The U.S. 10-year Treasury yield had surpassed China's 10-year treasury for the first time since 2009. The negative yield gap may signal a potential short-term Yuan depreciation.

U.S. Equity: S&P500 dropped 8.8% in April, and many analysts are also downgrading the earnings growth expectation of tech giants. Netflix is a classic example to illustrate the logic behind the story. First, Netflix had increased its monthly subscription price in the U.S. and Canada since streaming media has been one of the biggest winners of the work-from-home lifestyle. Second, Amazon, Apple, Disney, and others have gradually entered the streaming media market. As a result, intense competition led to costs surging, and Netflix had to increase its monthly fee further to maintain its profitability. On 14 January 2022, the company lowered its Q1 guidance for new subscribers, leading to a more than 20% stock drop in one day. Meanwhile, many western countries have gradually eased the pandemic lockdown in the past few months, which has shifted people's consumption behavior. The combination of the monthly fee rise, the increasing competition, as well as the change in consumption behavior led to Netflix report the first loss in the number of subscribers in a decade (net loss of 200,000 in the first quarter of 2022), and the stock price crashed by 35% in one day. We think possible that many other tech companies will exhibit a similar pattern.

Emerging Markets: The COVID-19 outbreaks in Shanghai and many major metropolitan cities in China have hit the economy hard. The lockdown in Shanghai also impacts the global supply chain since Shanghai port is the largest international seaport globally in terms of container throughputs. We expect the Chinese government to push out large-scale fiscal and monetary stimulus to support its economy. However, such stimulation might weaken its currency against the U.S. dollar, leading to potential capital outflows from China. India has had an energy crisis recently due to the surging coal and oil prices. Furthermore, the global financial cycle, dominated by the U.S., impacts the international capital flows in emerging countries, and the risk premia will increase in emerging market stock markets.

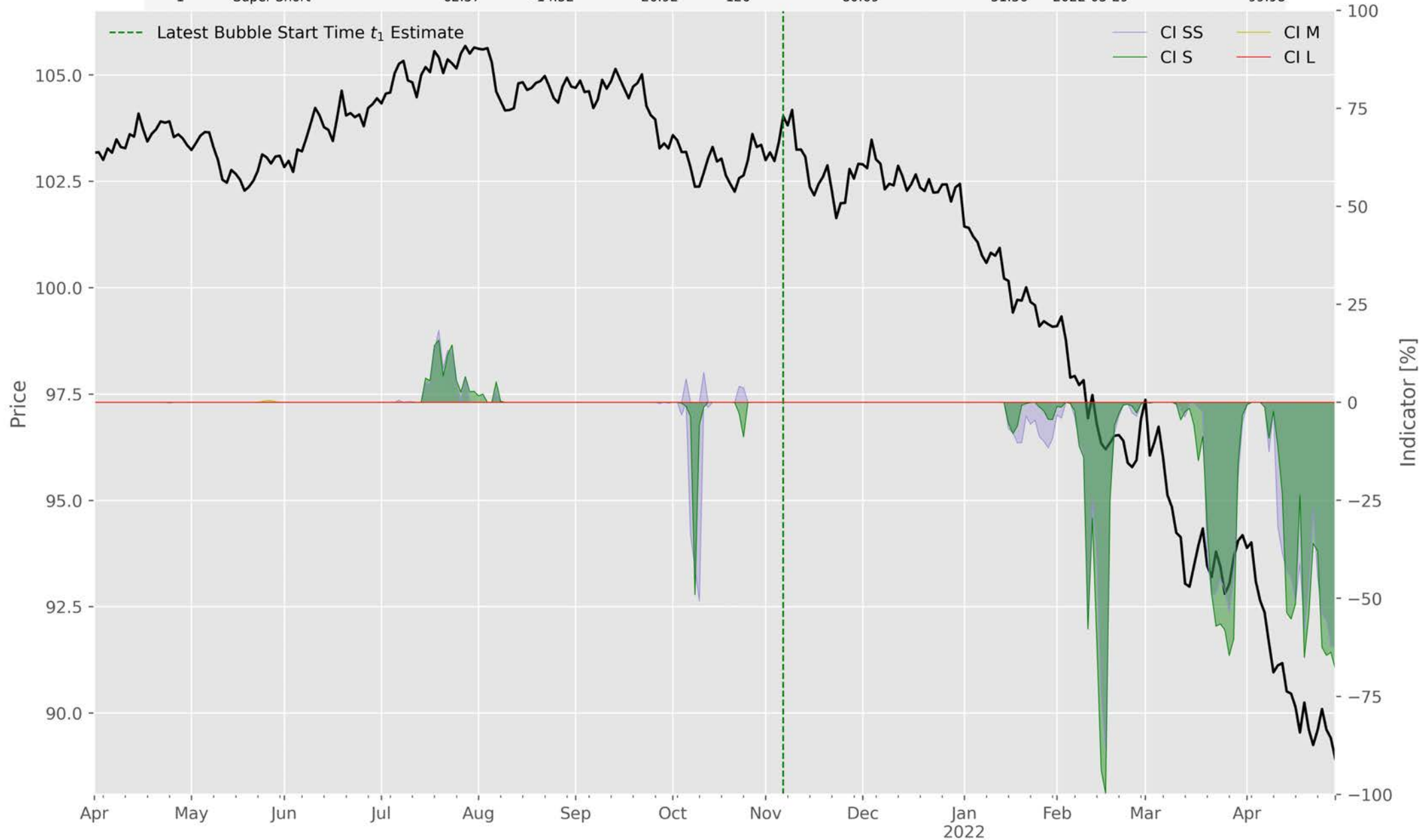
Commodities and currencies: The prices of energy and agriculture commodities are still facing upward pressure. The E.U. has shown its intention to join the U.S. in imposing a ban on Russian crude oil imports. Russia, in return, has halted the gas supplies to Bulgaria and Poland since they refused to pay in rubbles for their oil imports. If the boycott of Russia's oil and gas escalates, the E.U. energy crisis might lead to further geopolitical antagonism. No one will win in this conflict but the arms dealers. China's potential large-scale stimulus might increase the demand for industrial metals, which now supports the prices of iron ore and copper. Besides, the Japanese Yen dropped significantly against the U.S. dollar since the Central Bank of Japan has kept its dovish monetary policies. We expect such currency depreciation will happen in many Asian countries.

Fixed Income

No bubbles to report

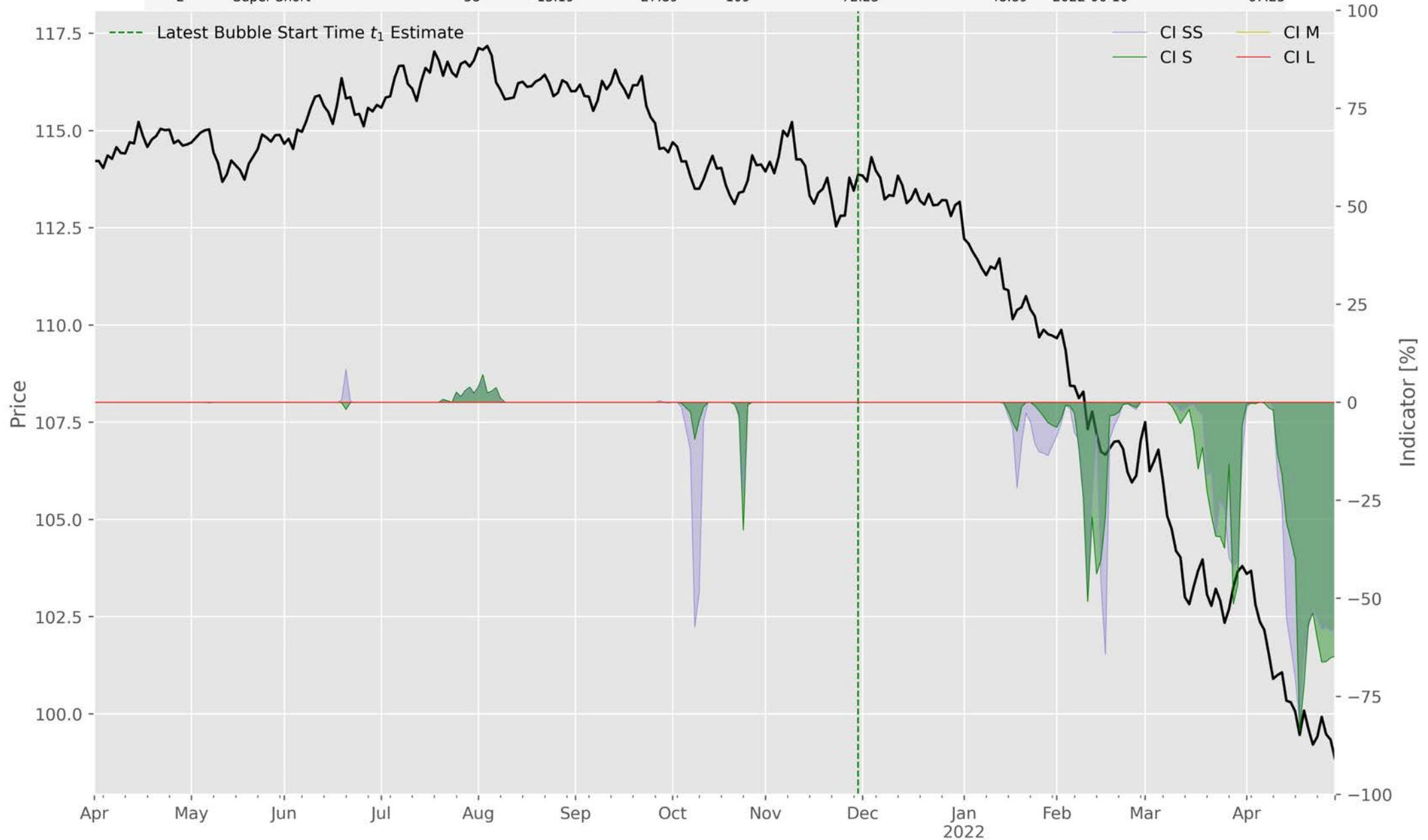
Iboxx \$ Industrials

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	62.37	-14.52	-26.92	126	80.69	51.36	2022-05-29	99.98



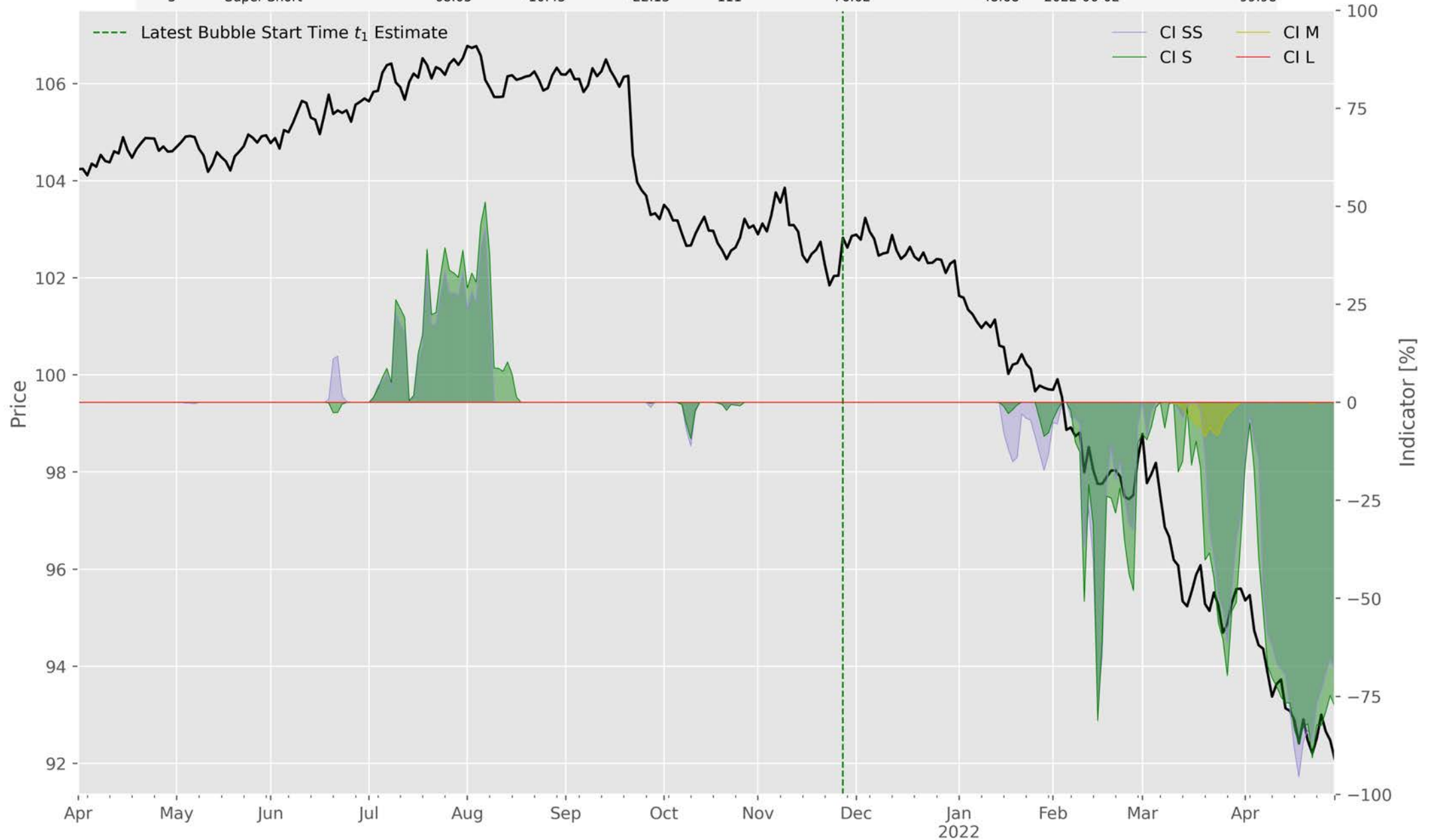
Iboxx \$ Insurance

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	58	-13.19	-27.89	109	72.23	48.89	2022-06-10	67.25



Iboxx \$ Financials Aa

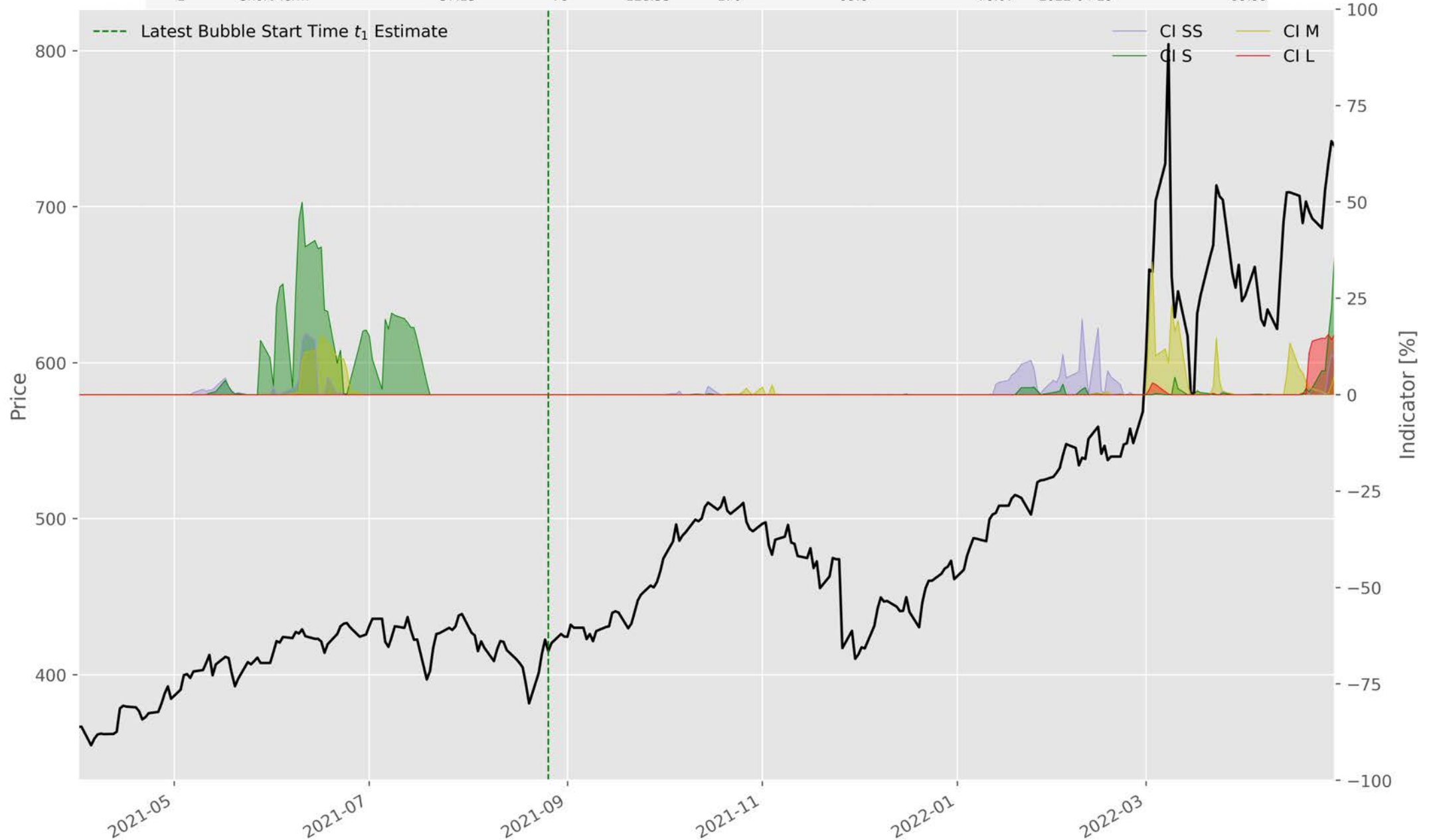
Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average (<i>ci, bg, bp</i>)	Critical Time \hat{t}_c	Scenario Probability [%]
3	Super Short	68.05	-10.43	-22.13	111	76.62	48.68	2022-06-02	99.98



Commodities

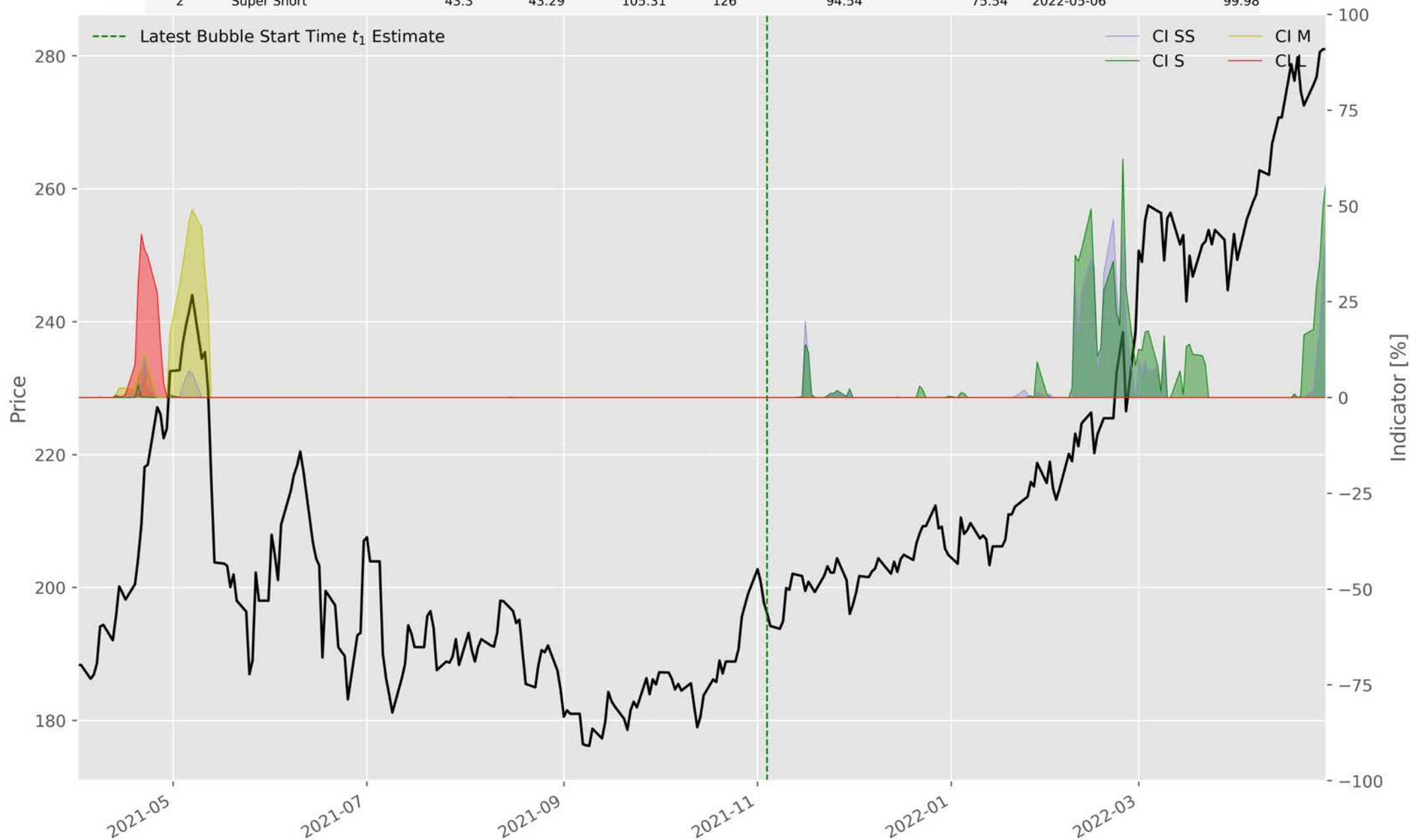
Mlxx Heating Oil Spot Index

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	Short Term	37.15	78	128.33	176	99.8	78.07	2022-04-29	99.99



Mlcx Corn Spot Index

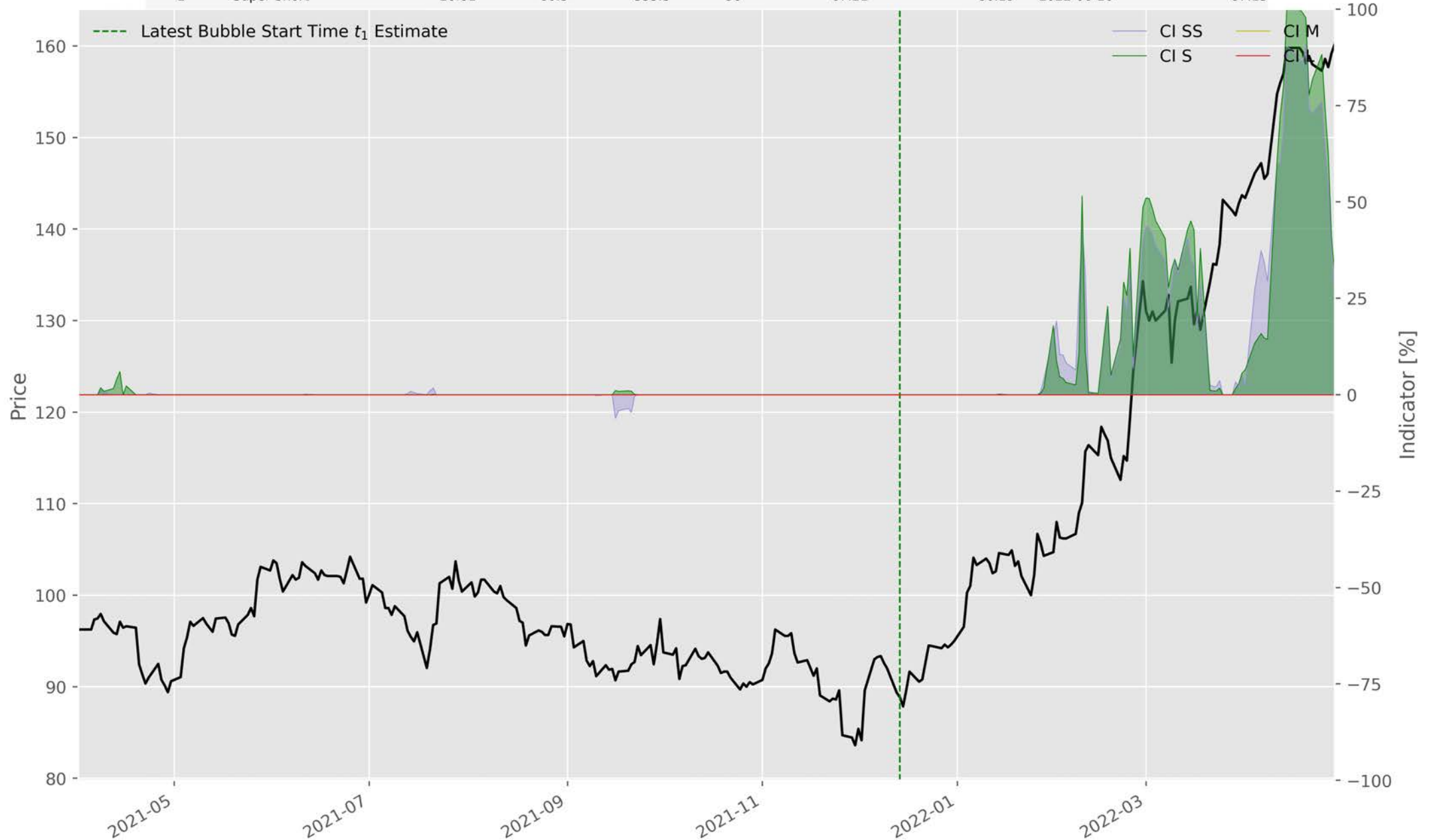
Rank	Strongest Signal	DS-LPPLS Confidence	Bubble Size	Bubble CAGR	Duration	Bubble Progress	Geometric Average	Critical Time	Scenario Probability
		ci [%]	bs [%]	bg [%]	[days]	bp [%]	(ci, bg, bp)	\hat{t}_c	[%]
2	Super Short	43.3	43.29	105.31	126	94.54	75.54	2022-05-06	99.98



Single Stocks

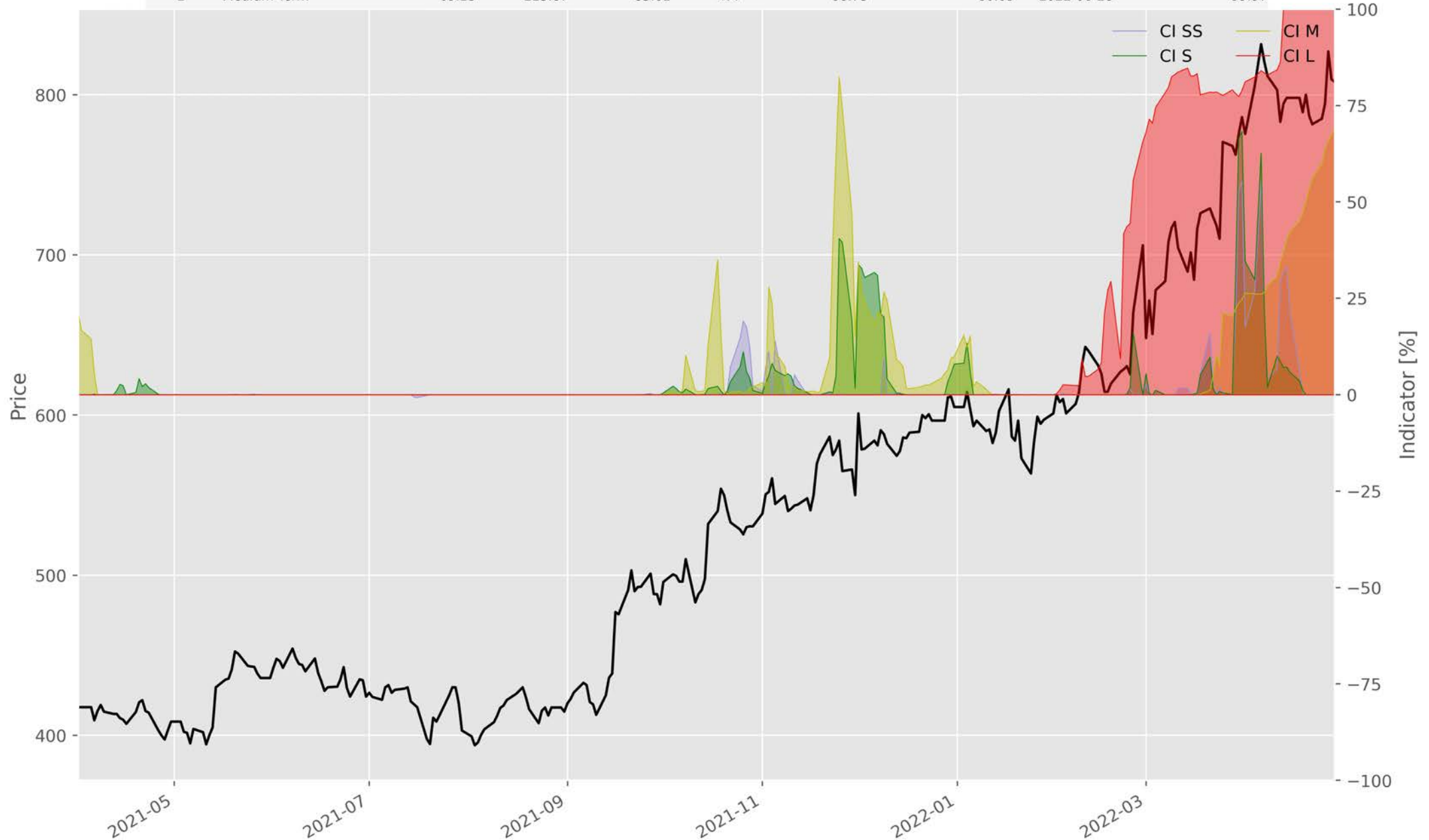
Dassault Aviation

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	26.81	80.3	355.3	98	67.21	86.19	2022-06-16	87.15



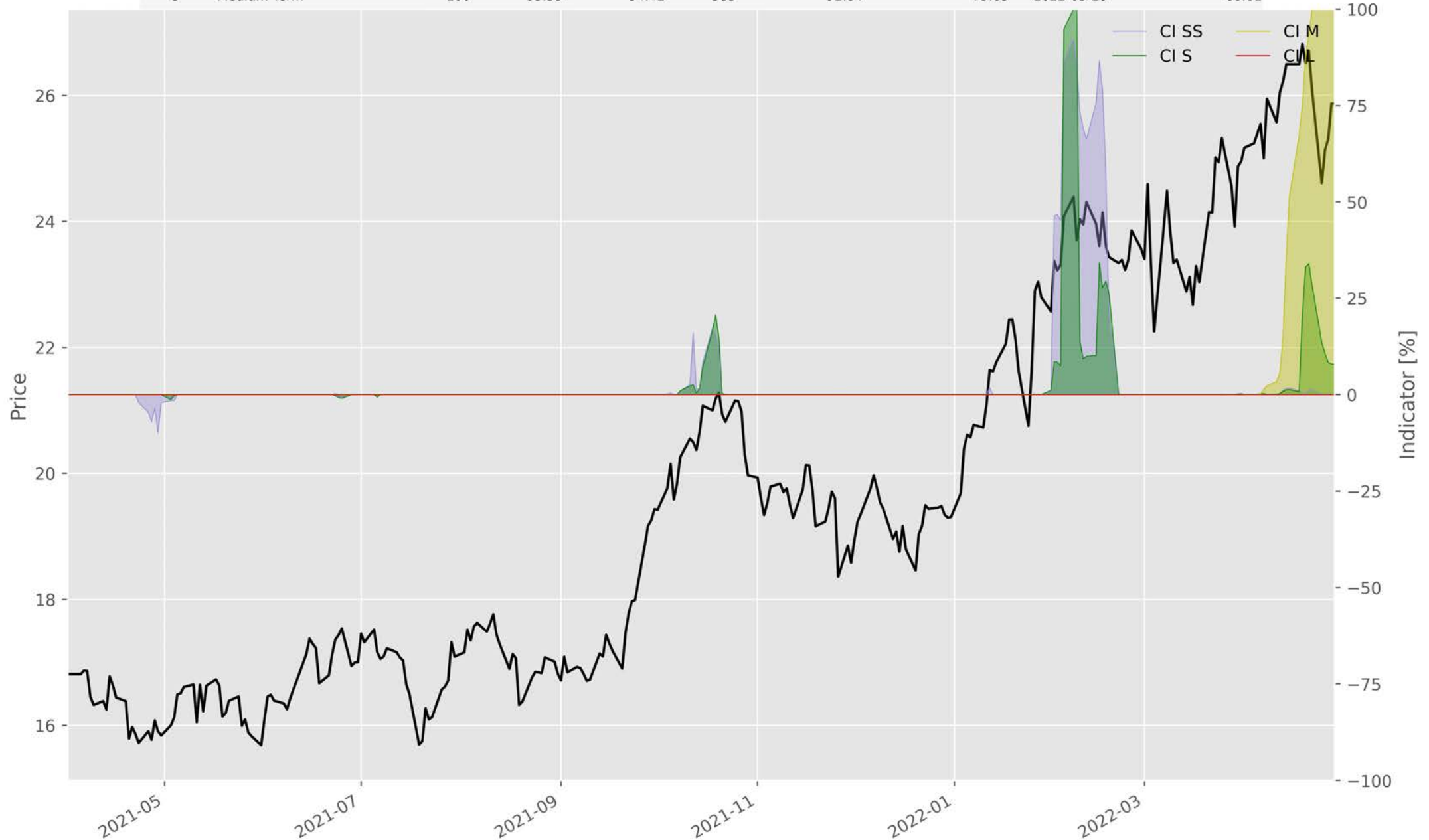
Drax Group

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	Medium Term	69.25	215.87	83.61	477	88.75	80.09	2022-06-28	99.97



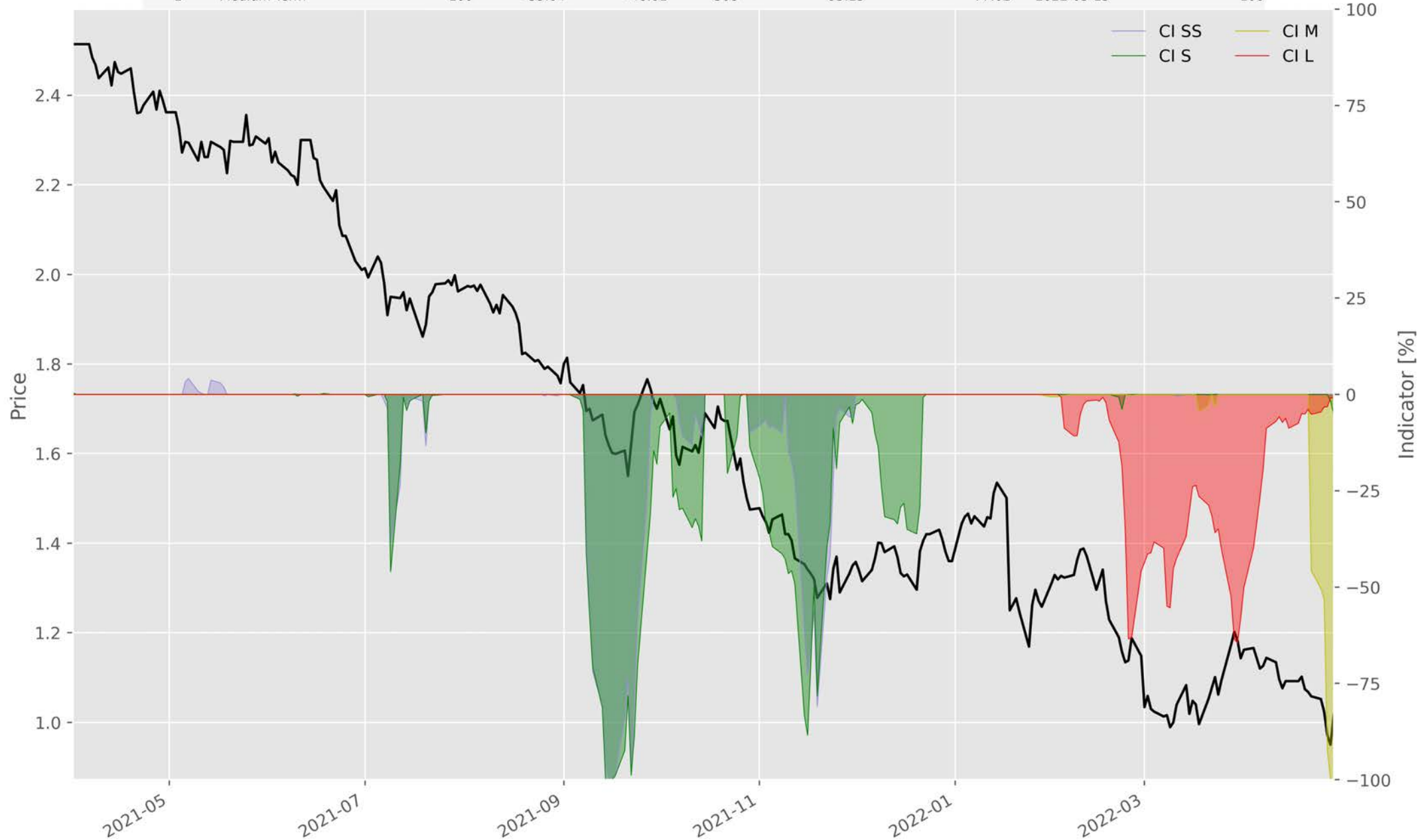
Shell

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	100	93.55	54.42	383	92.84	79.65	2022-05-29	88.61



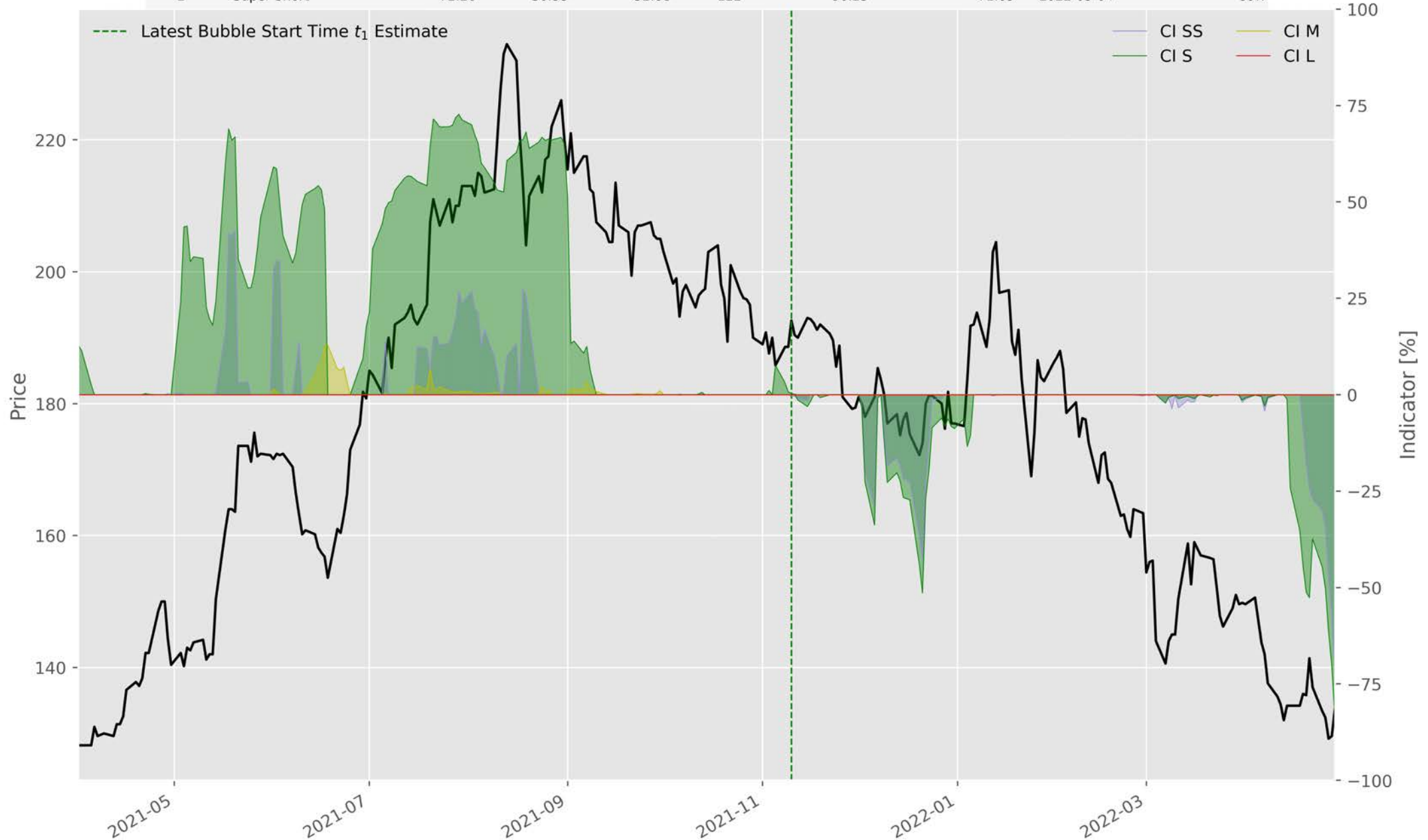
Gam Holding

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	-55.04	-48.01	308	95.15	77.02	2022-05-15	100



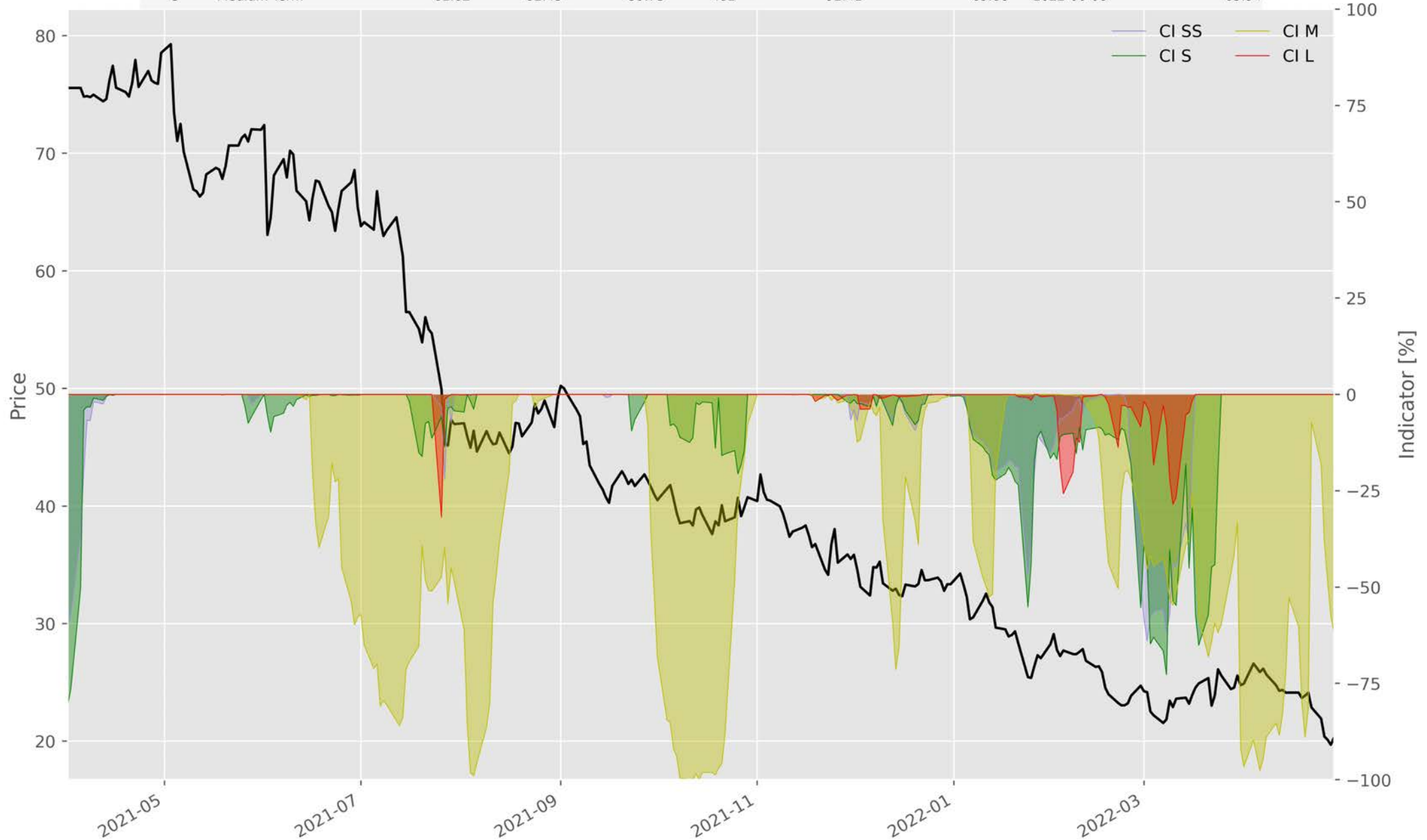
Rieter Holding 'R'

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	72.26	-30.53	-52.88	122	96.25	71.65	2022-05-04	99.7



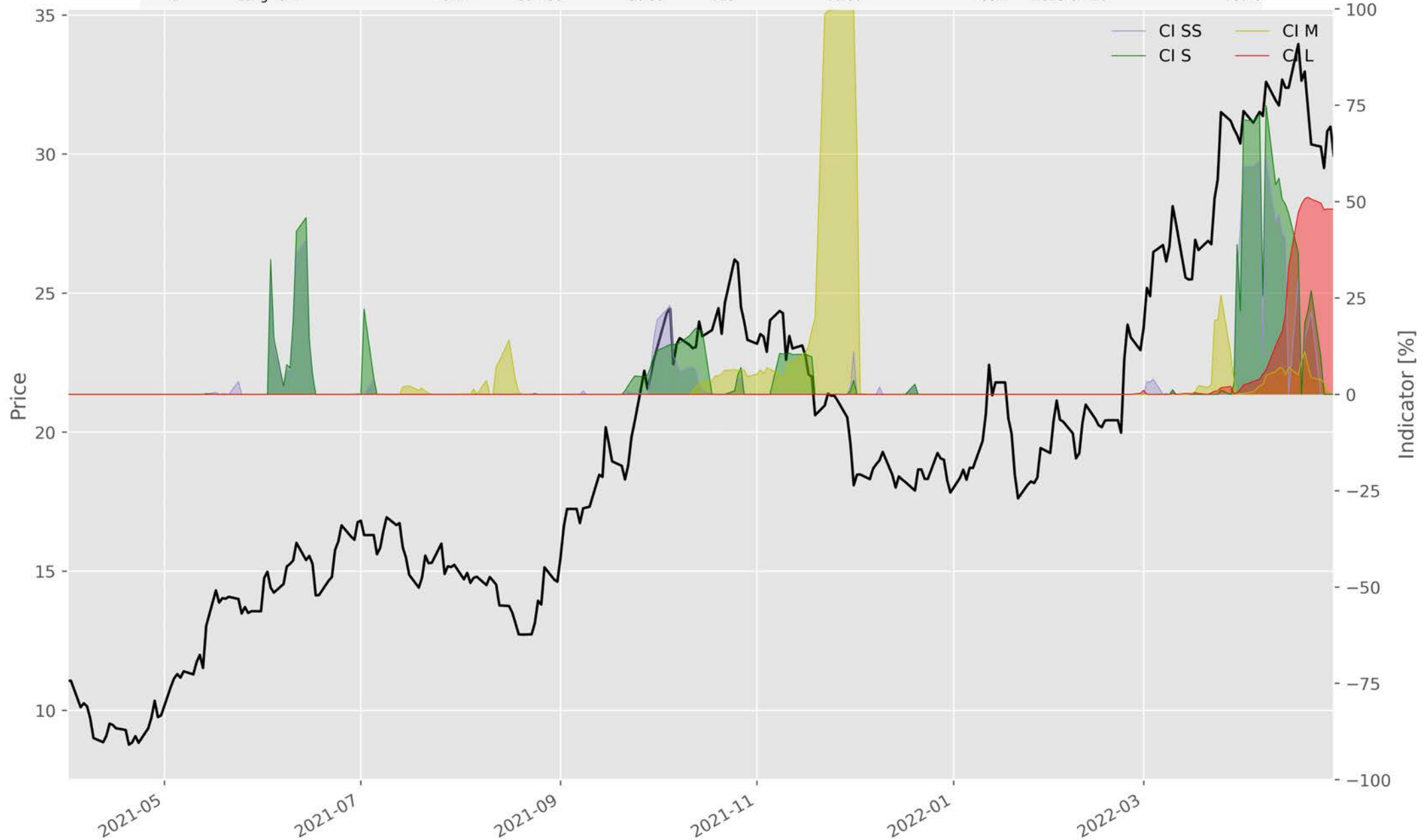
Morphosys (Xet)

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	Medium Term	61.82	-82.45	-59.73	482	92.41	69.88	2022-06-08	65.94



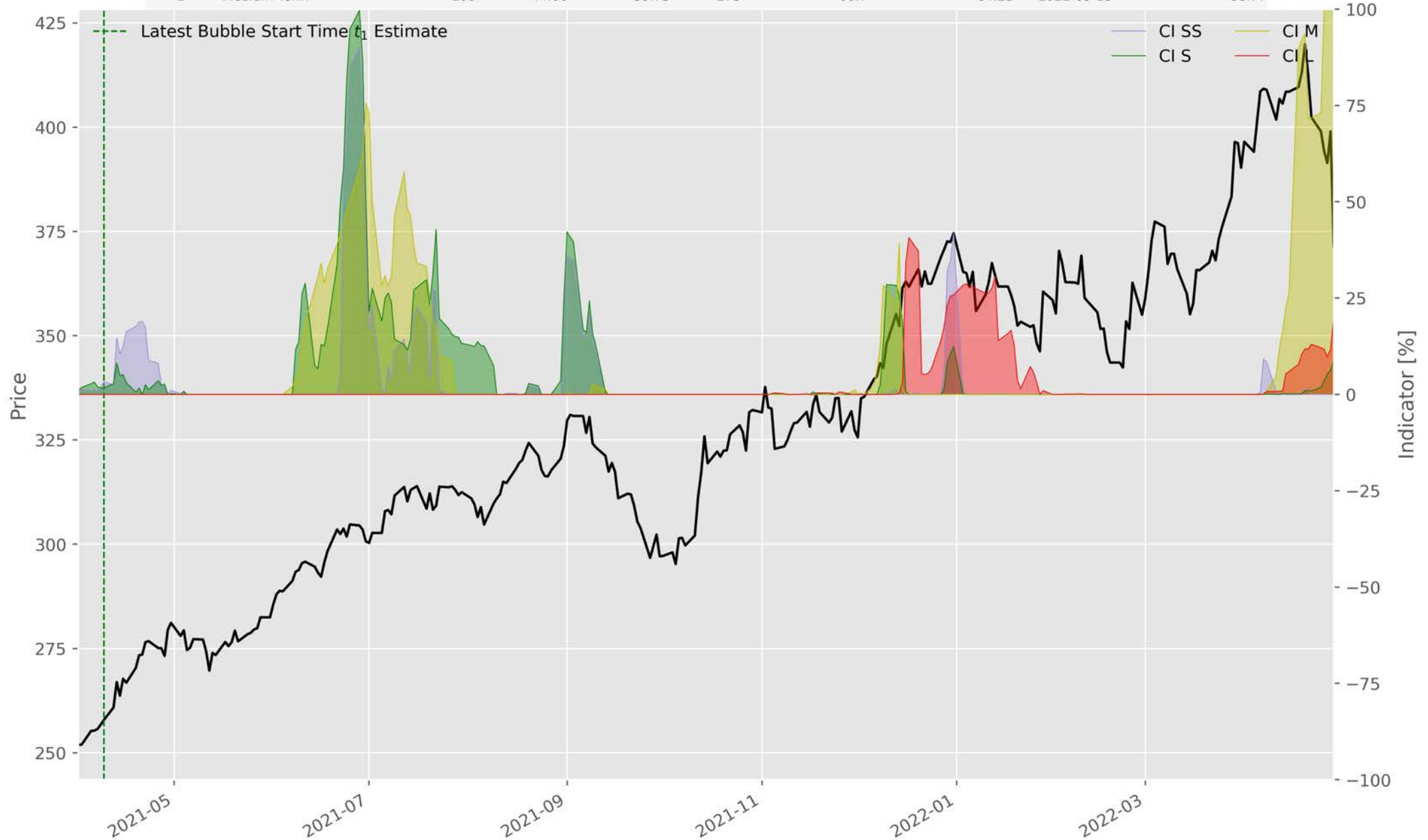
Range Res.

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	Long Term	48.14	594.66	98.39	713	66.68	68.1	2023-04-20	75.46



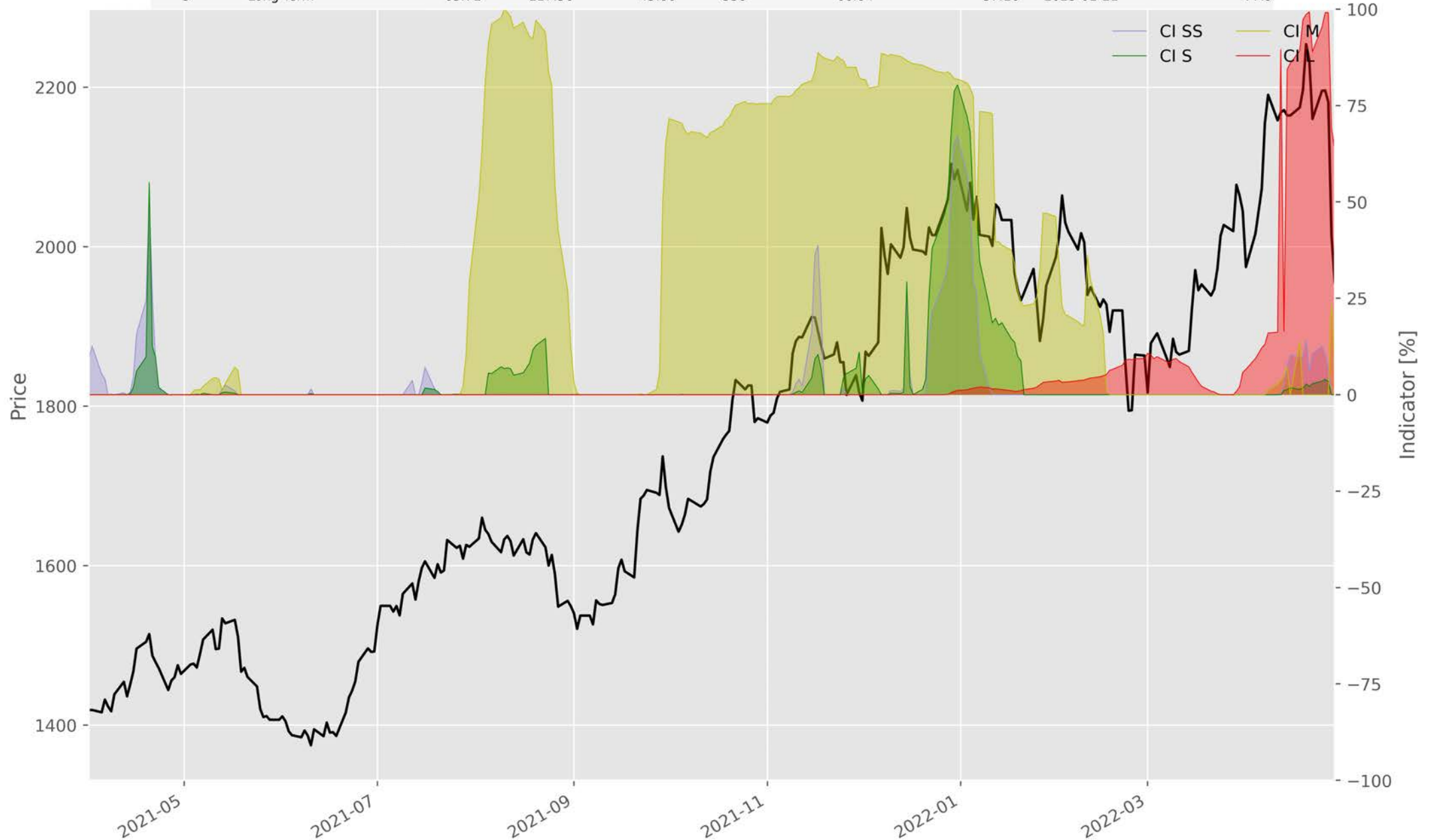
Public Storage

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	Medium Term	100	44.06	39.73	275	66.7	64.23	2022-09-13	88.77



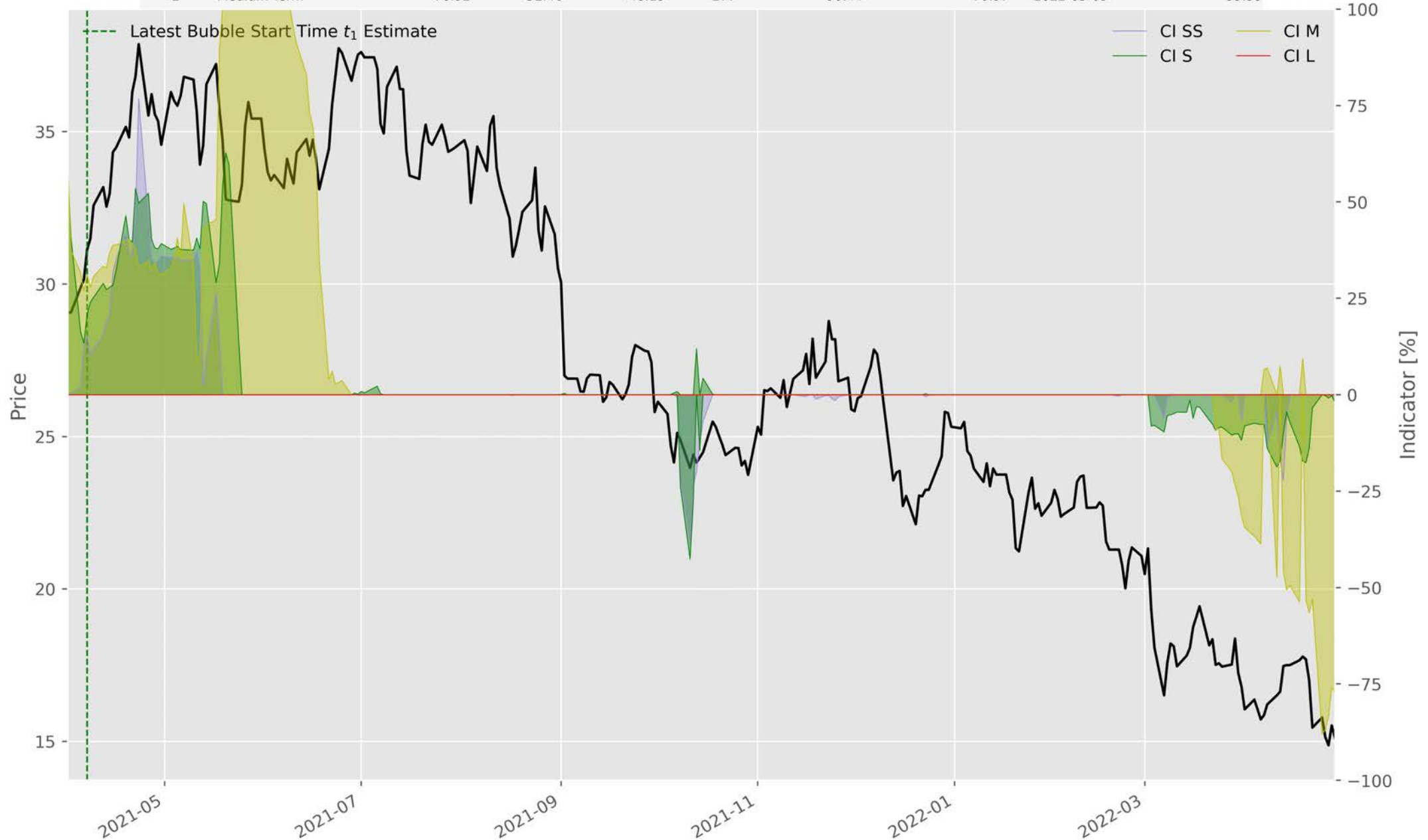
Autozone

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	Long Term	63.71	117.36	43.86	538	66.84	57.16	2023-01-21	77.9



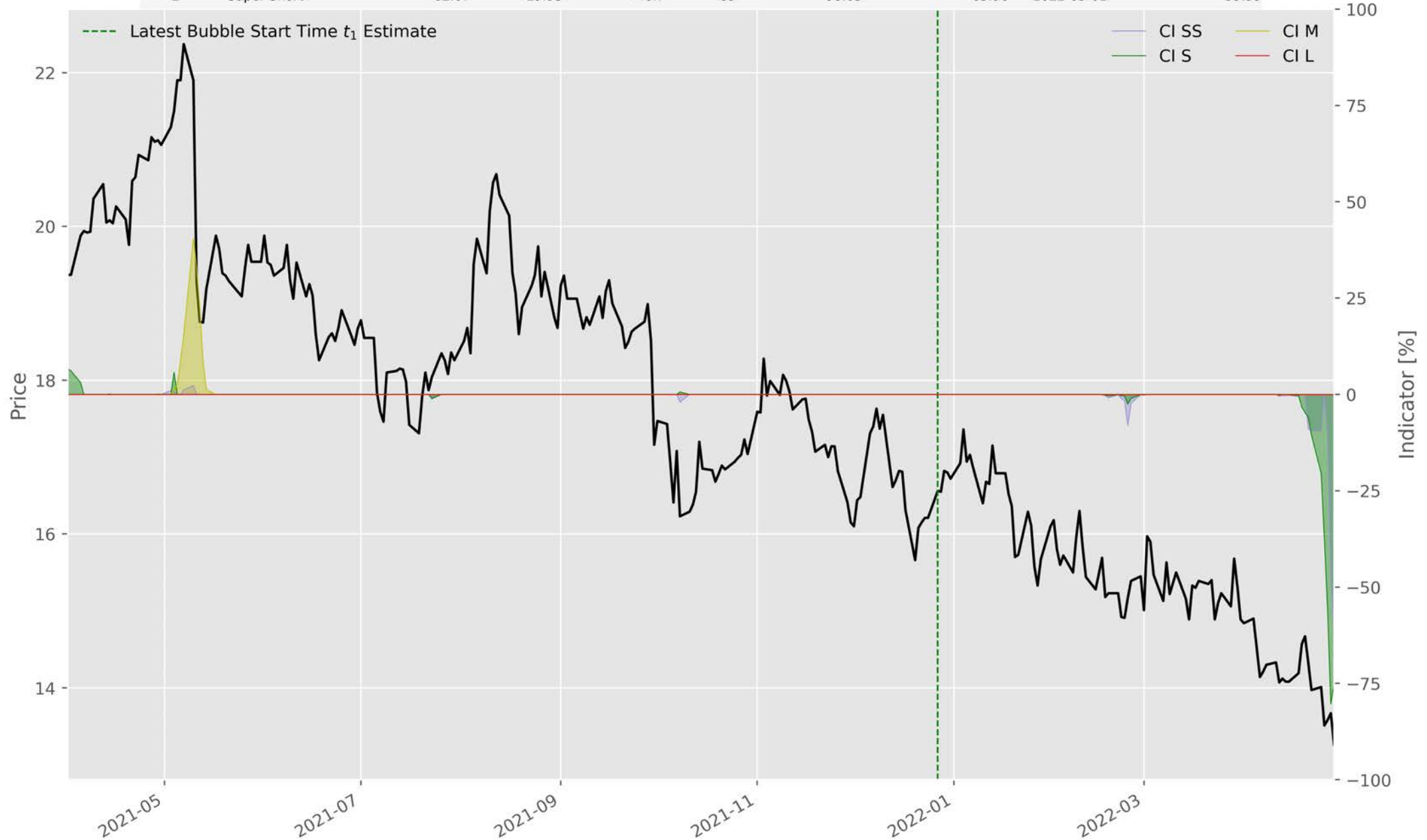
Amer.Eag.Outfitters

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	Medium Term	76.92	-51.46	-48.19	277	96.44	70.97	2022-05-09	99.99



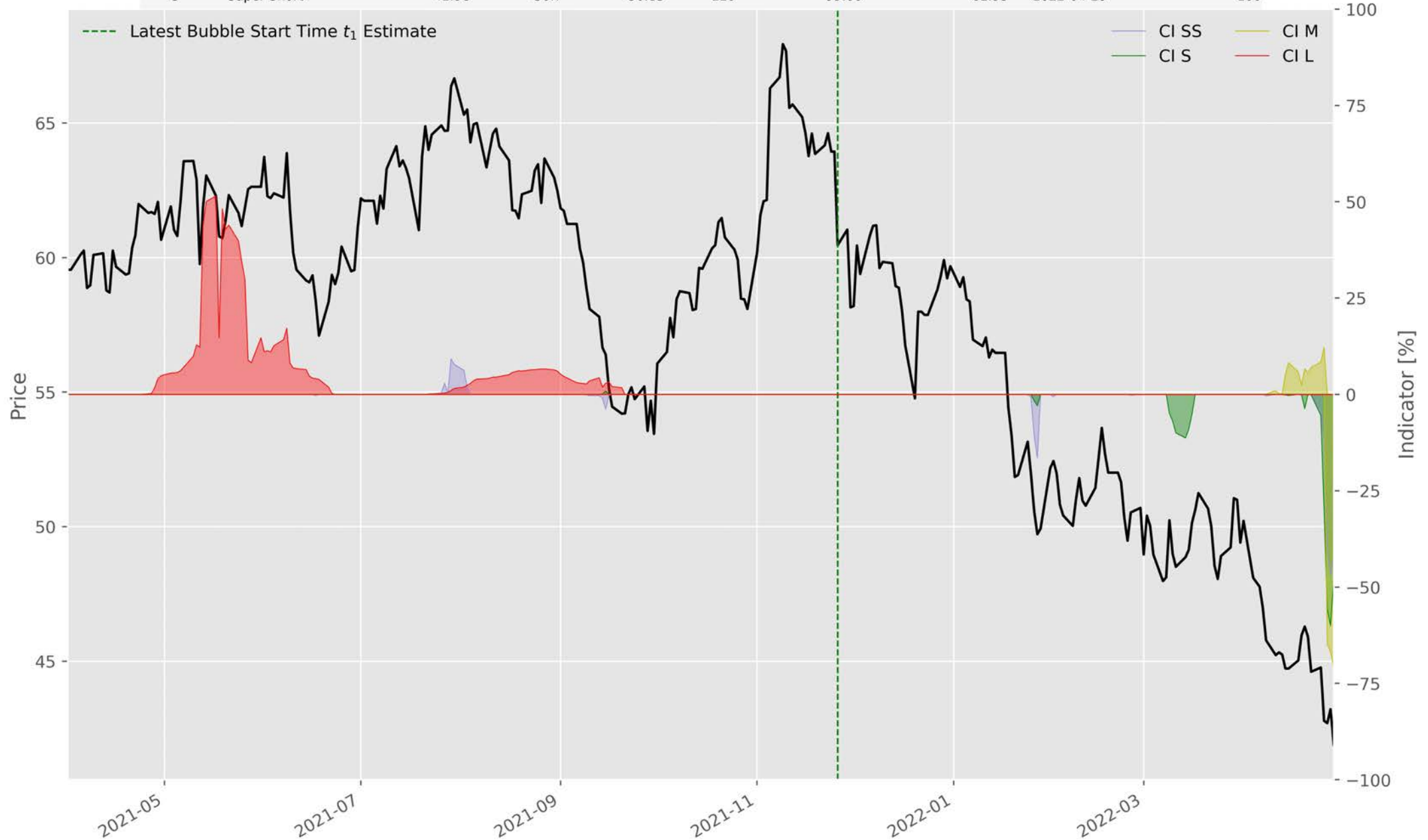
Hanesbrands

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 [%]
2	Super Short	62.67	-19.93	-46.7	89	98.05	65.96	2022-05-01	99.99



Spx

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	41.98	-30.7	-56.83	110	99.66	61.95	2022-04-29	100



Equity Indices

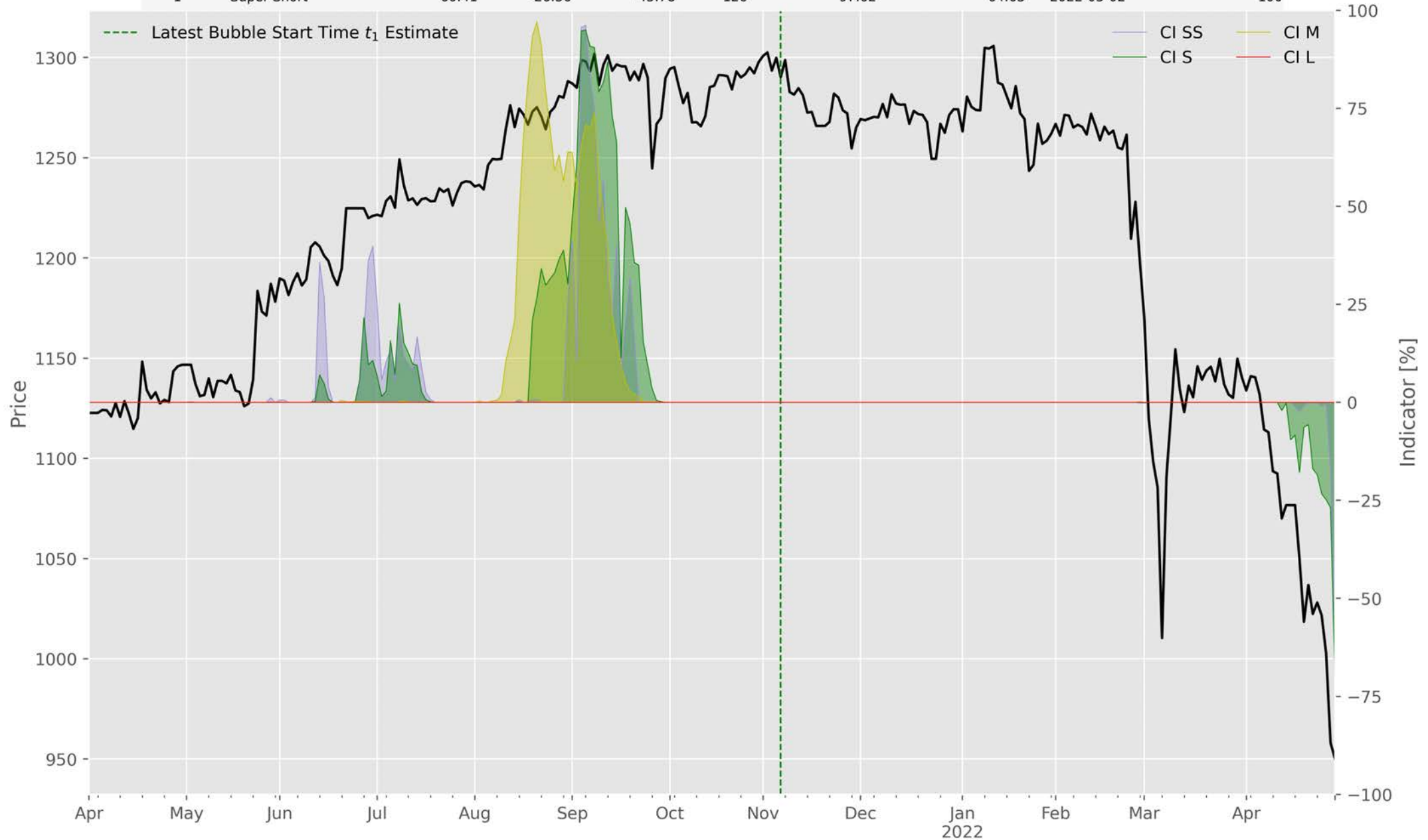
Bist National 100

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)	\hat{t}_c	[%]
1	Medium Term	60.64	123.57	56.3	454	96.51	69.07	2022-05-15	73.48



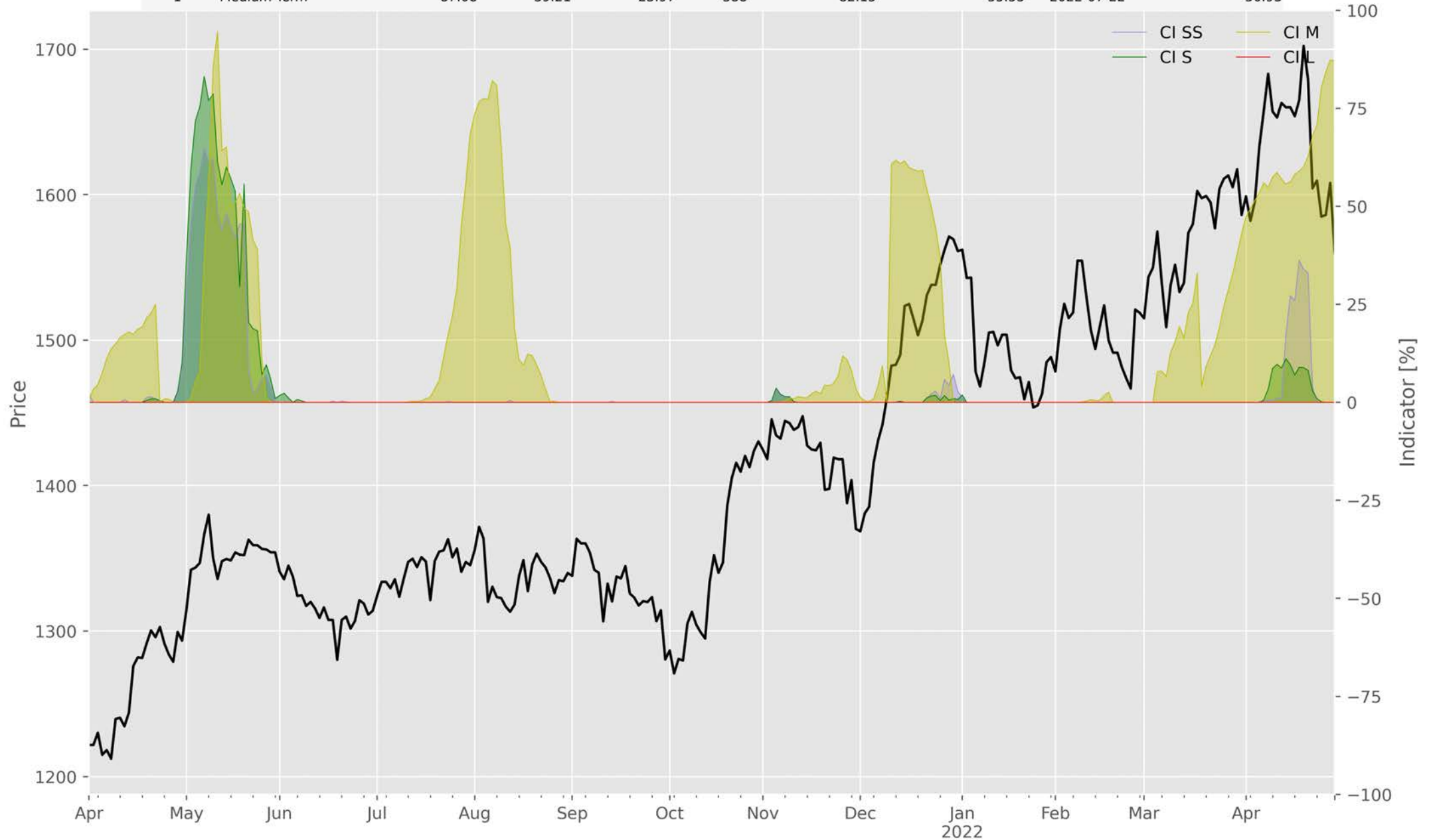
Omx Riga (Omxr)

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	60.41	-26.36	-45.78	126	97.62	64.63	2022-05-02	100



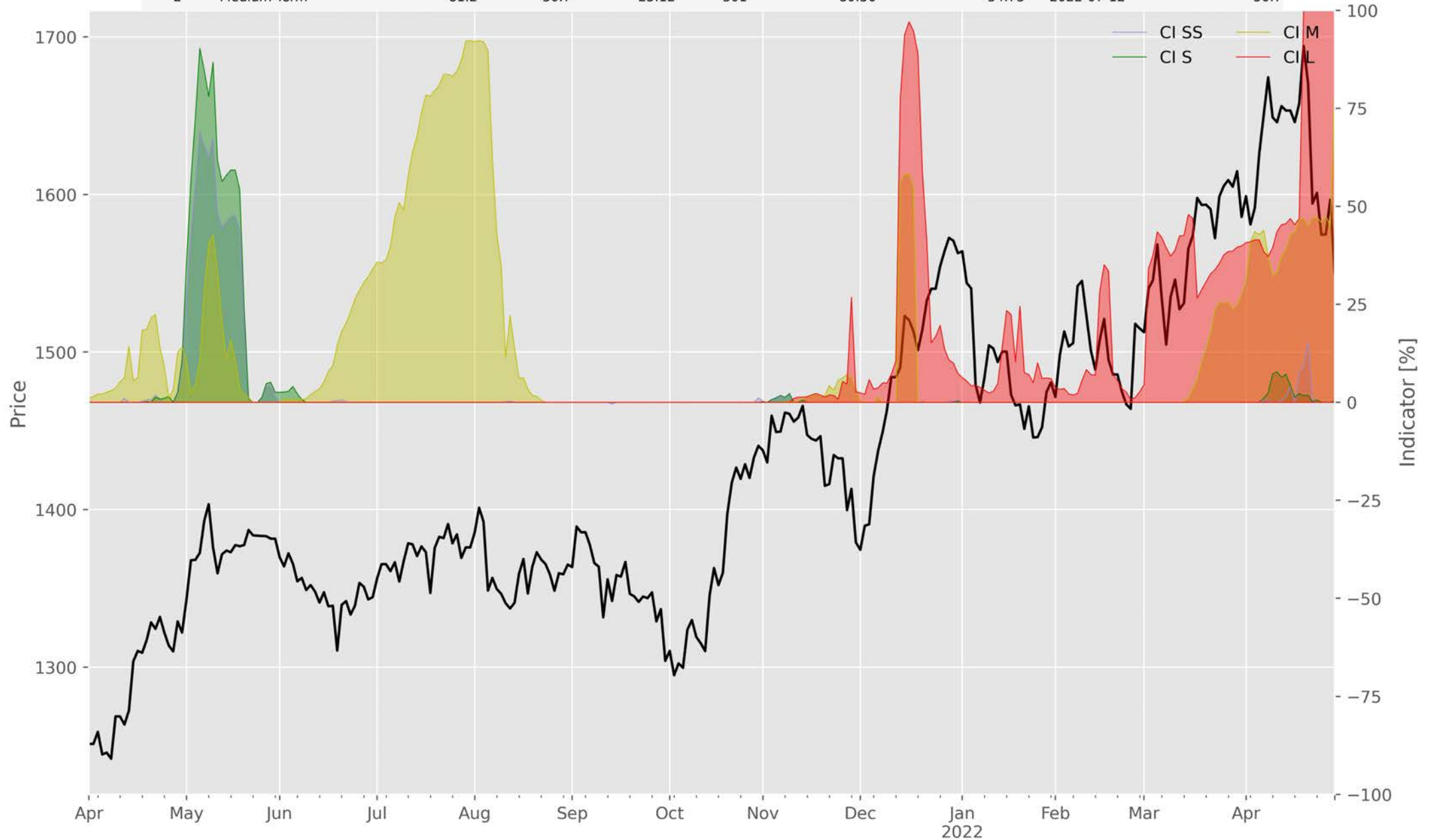
S&P500 Health Care Prov & Serv

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	87.08	39.21	23.97	388	82.15	55.55	2022-07-22	56.93



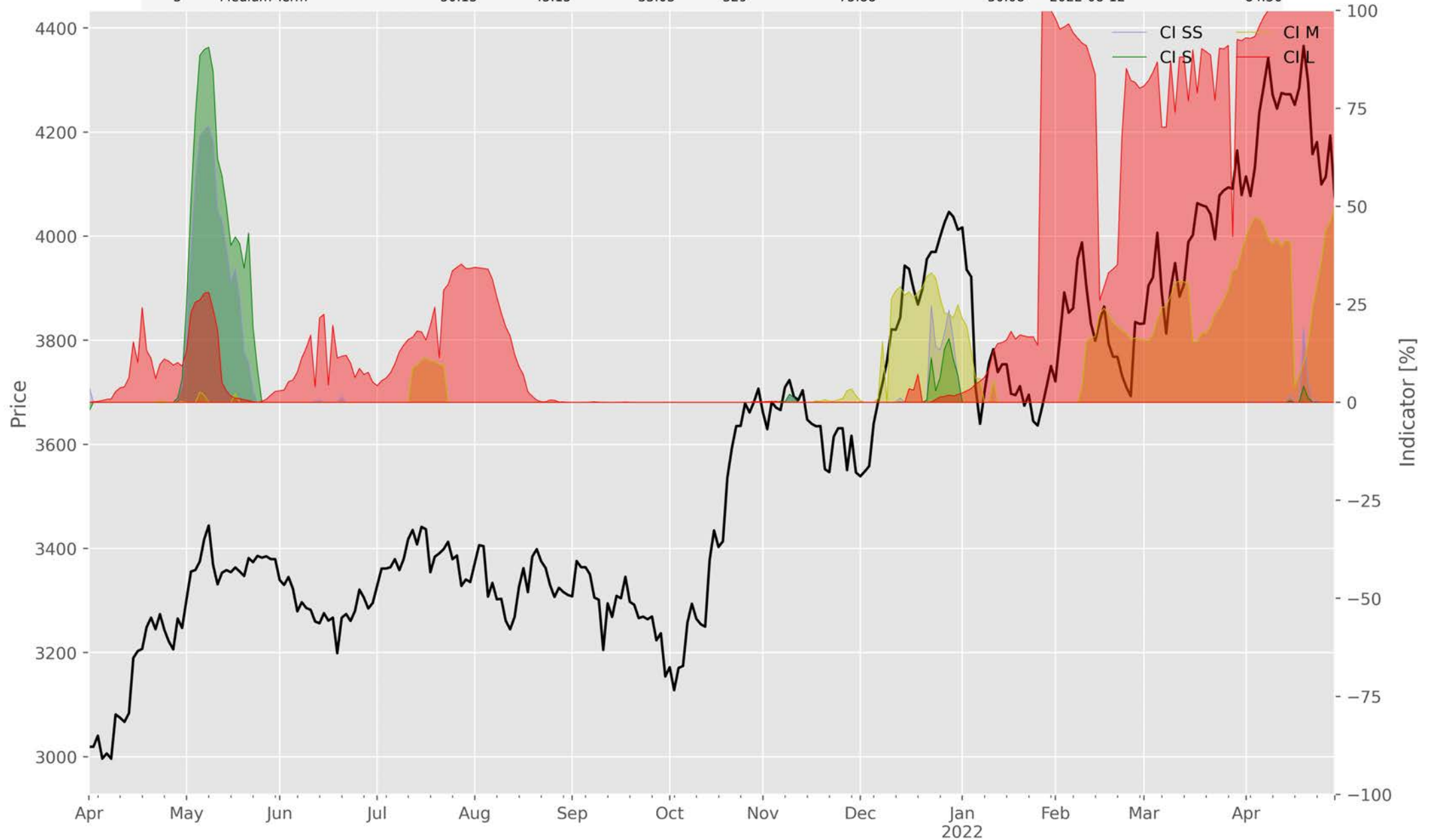
S&P1500 Health Care Prov & Serv

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	Medium Term	81.2	30.7	25.12	301	80.36	54.73	2022-07-12	50.7



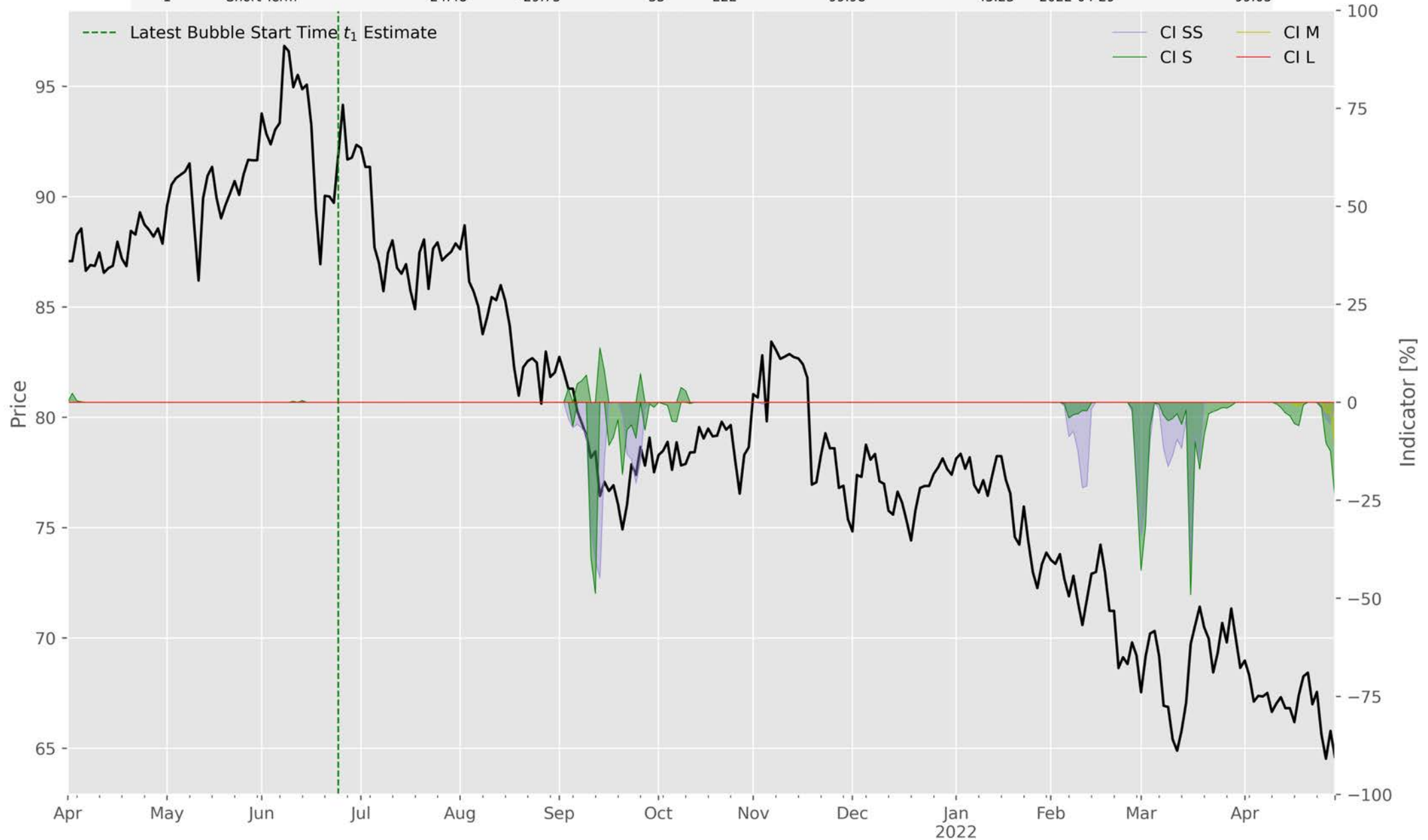
S&P500 Managed Health Care

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	50.13	45.15	33.03	329	75.88	50.08	2022-08-12	84.36



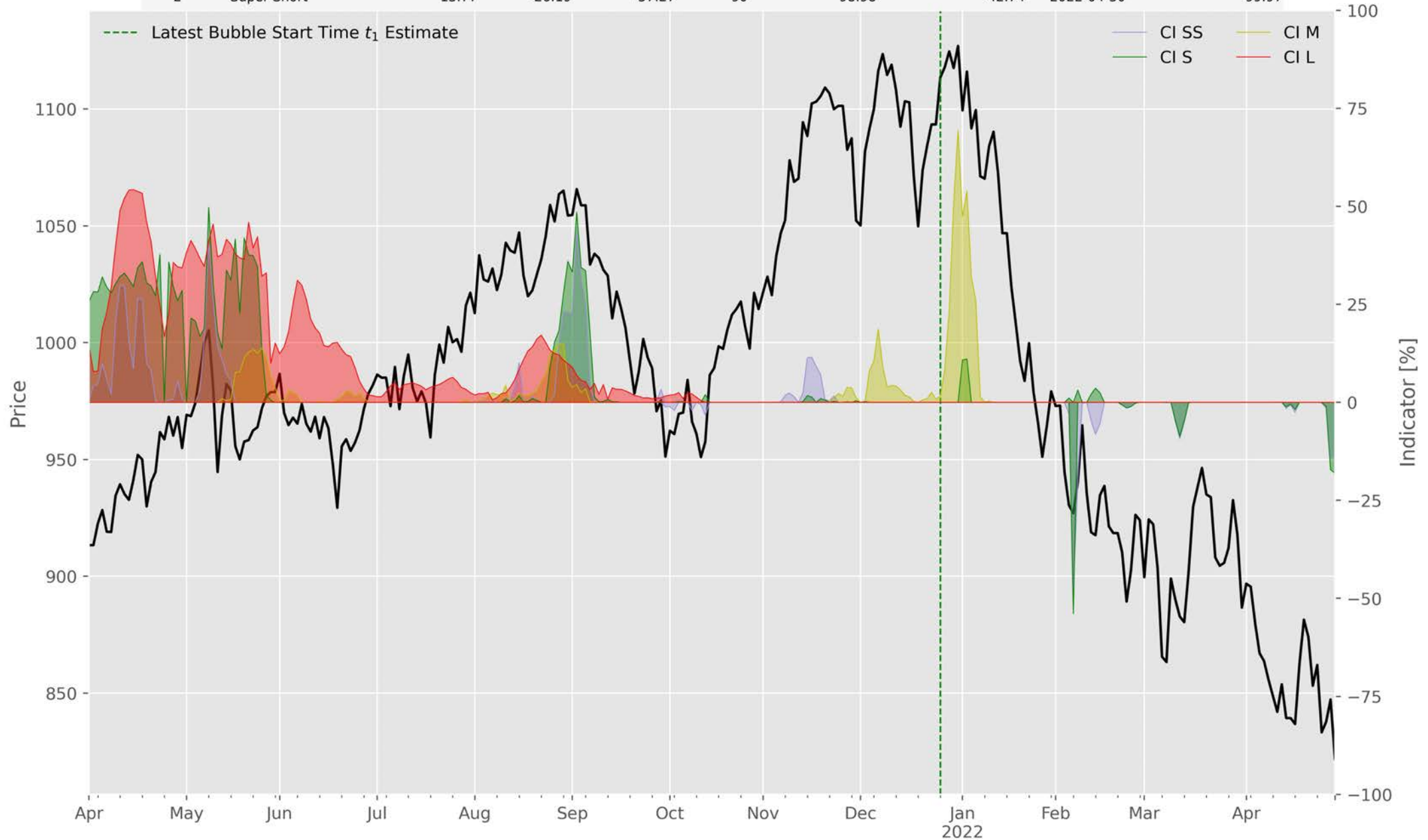
S&P1500 Commercial Printing

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	Short Term	24.48	-29.73	-33	222	99.98	43.23	2022-04-29	99.05



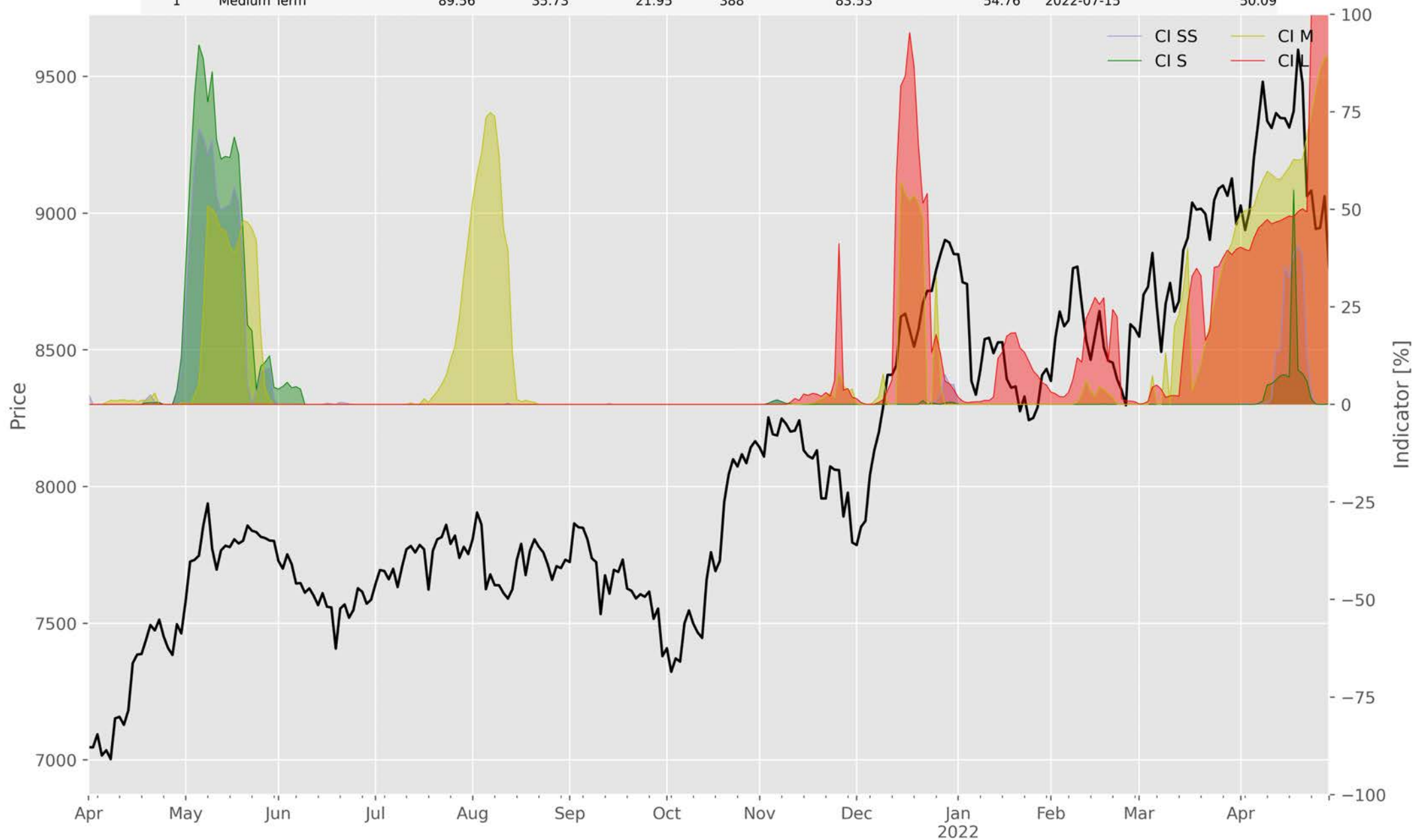
S&P1500 Building Products

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	13.77	-26.19	-57.27	90	98.98	42.74	2022-04-30	99.97



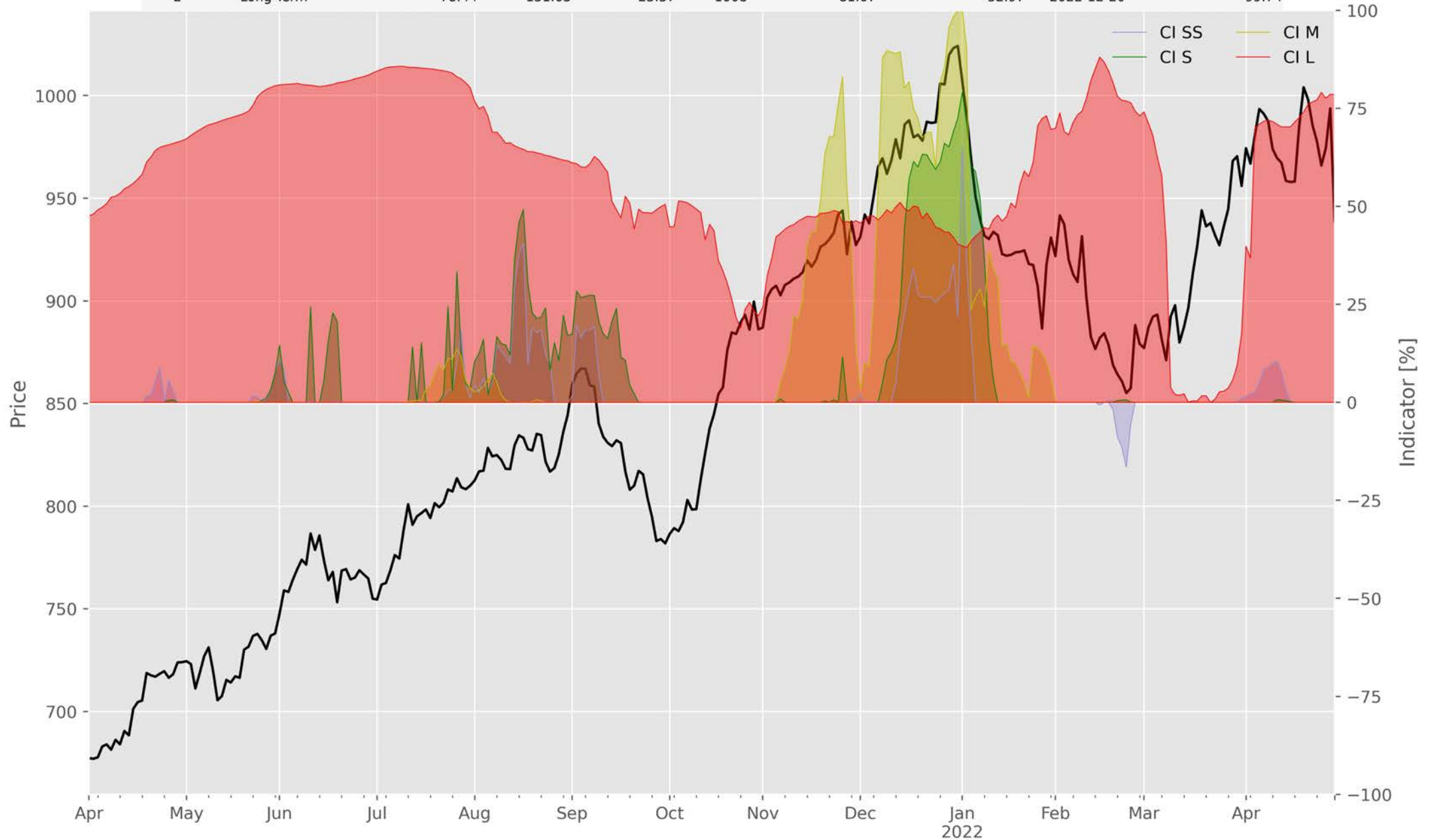
S&P Global 1200 H/C Prov & Svs

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, bg, bp</i>)	Critical Time \hat{t}_c	Scenario Probability [%]
1	Medium Term	89.56	35.73	21.95	388	83.53	54.76	2022-07-15	50.09



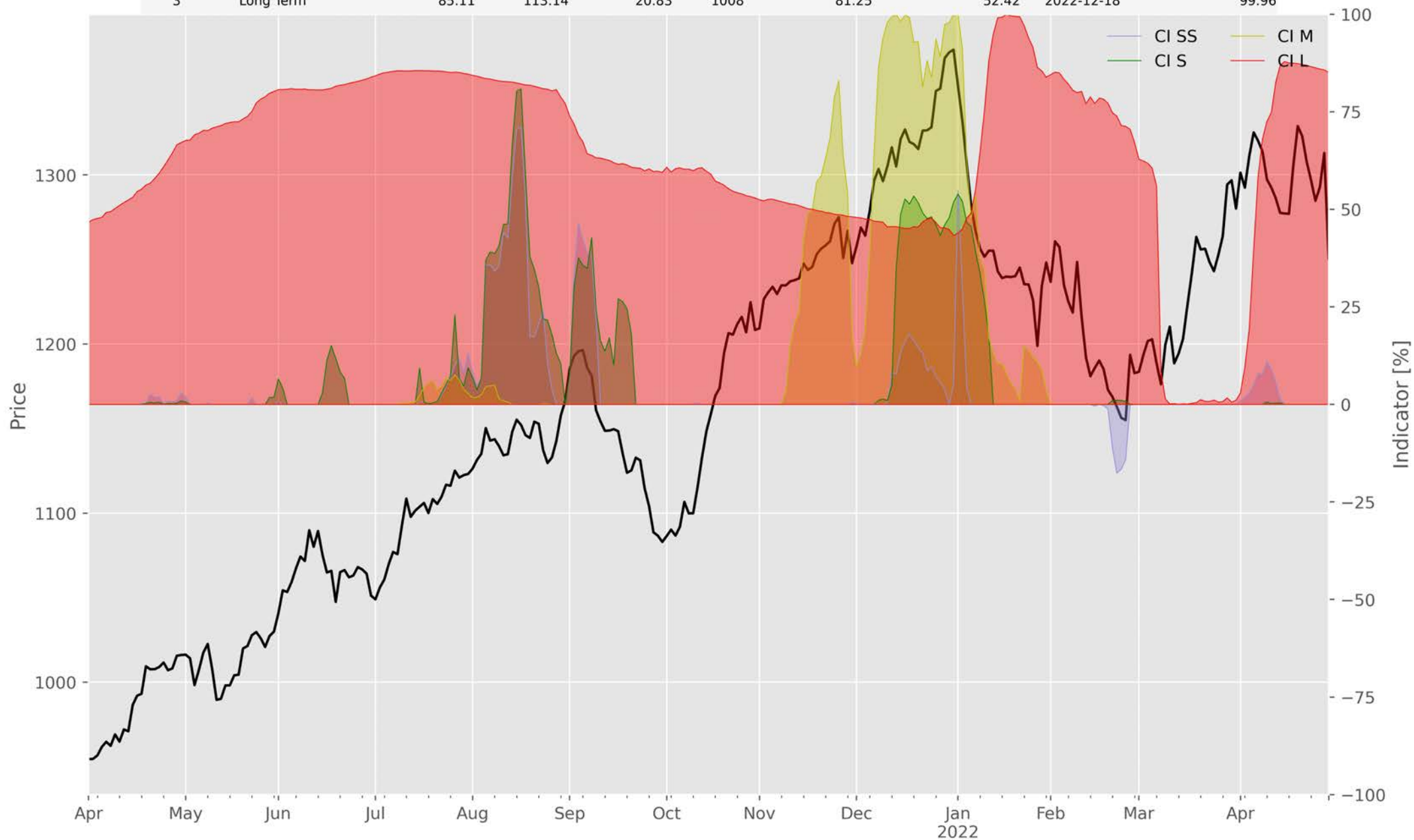
S&P Global 1200 Industrial Reits

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	Long Term	78.44	131.63	23.37	1008	81.07	52.97	2022-12-20	99.74



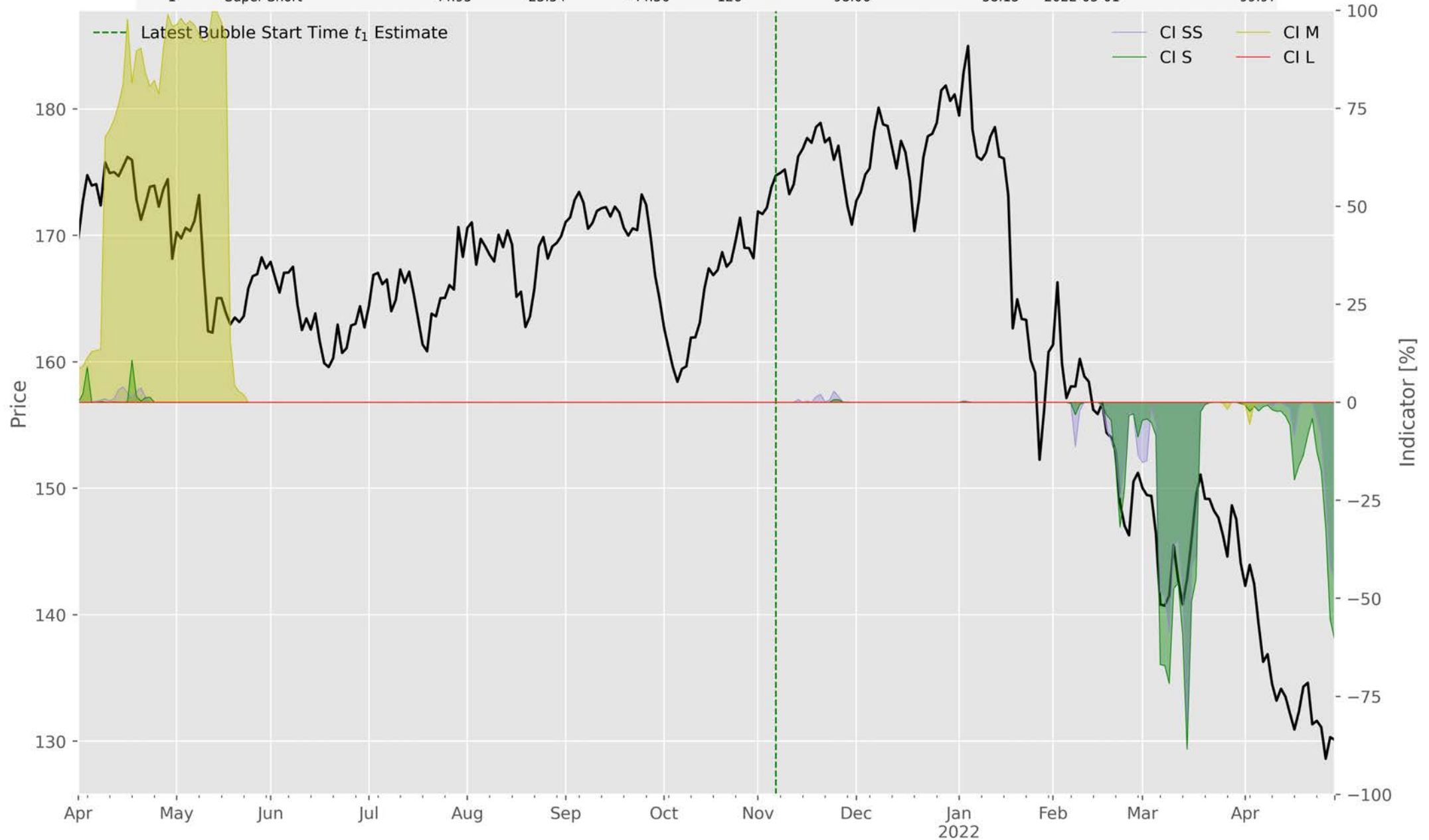
Msci World Indust Reit \$

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	Long Term	85.11	113.14	20.83	1008	81.25	52.42	2022-12-18	99.96



Msci World Hh Dur \$

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	44.95	-25.54	-44.56	126	98.06	58.13	2022-05-01	99.97



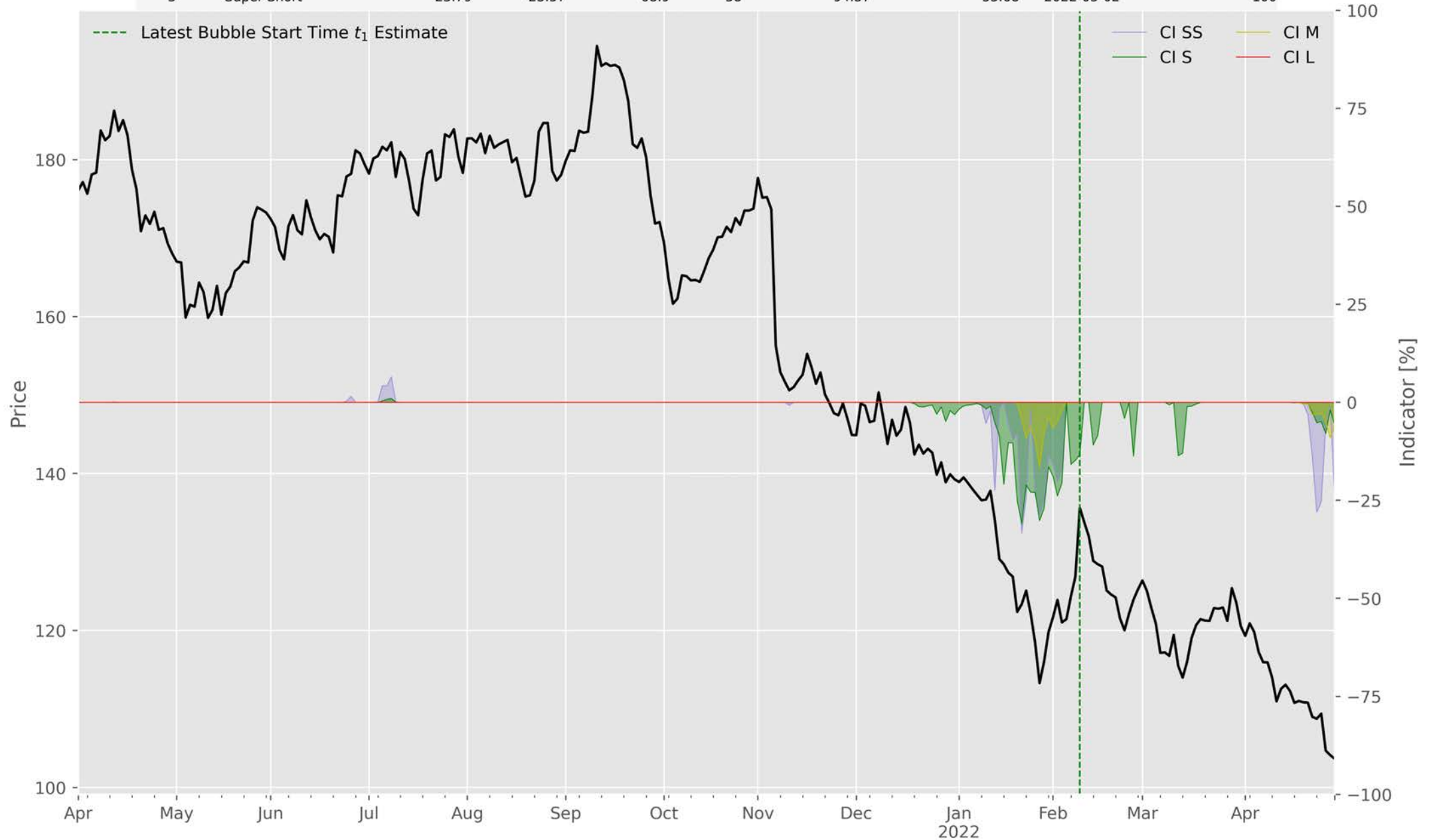
S&P Global 1200 H/H Durables

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	42.58	-25.55	-44.57	126	98.12	57.1	2022-05-01	99.99



Msci World Leis Eq/Prd \$

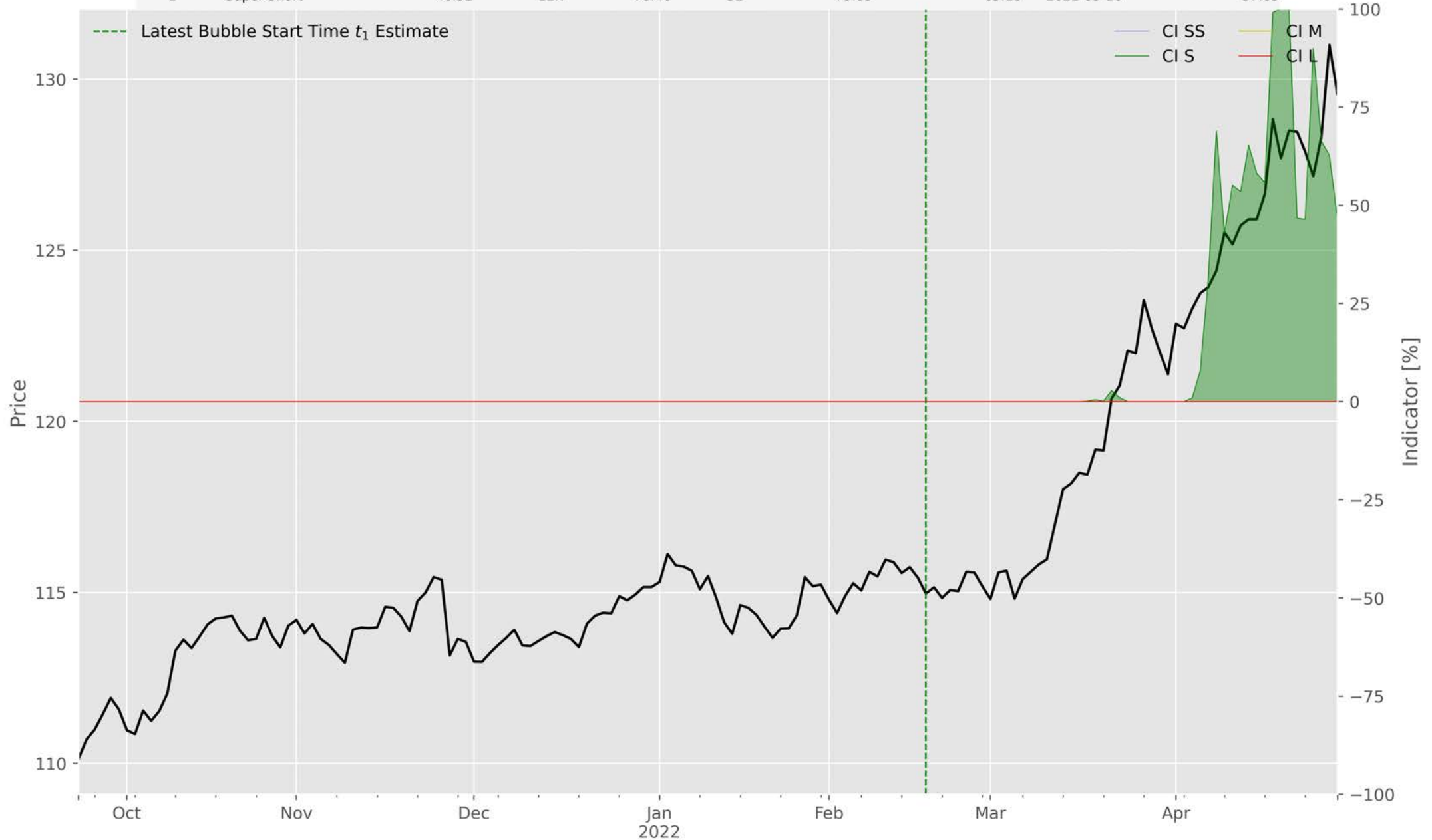
Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average (<i>ci</i> , <i>bg</i> , <i>bp</i>)	Critical Time \hat{t}_c	Scenario Probability [%]
3	Super Short	23.79	-23.57	-68.9	58	94.37	53.68	2022-05-02	100



Forex

Japanese Yen To Us \$ (Wmr)

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	46.52	12.7	78.46	52	75.85	65.18	2022-05-16	57.85



Jpm Uruguay 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	Super Short	12.5	11.96	44.72	77	84.72	36.18	2022-05-13	59.79



Jpm Uk Reer Ppi (2010=100)

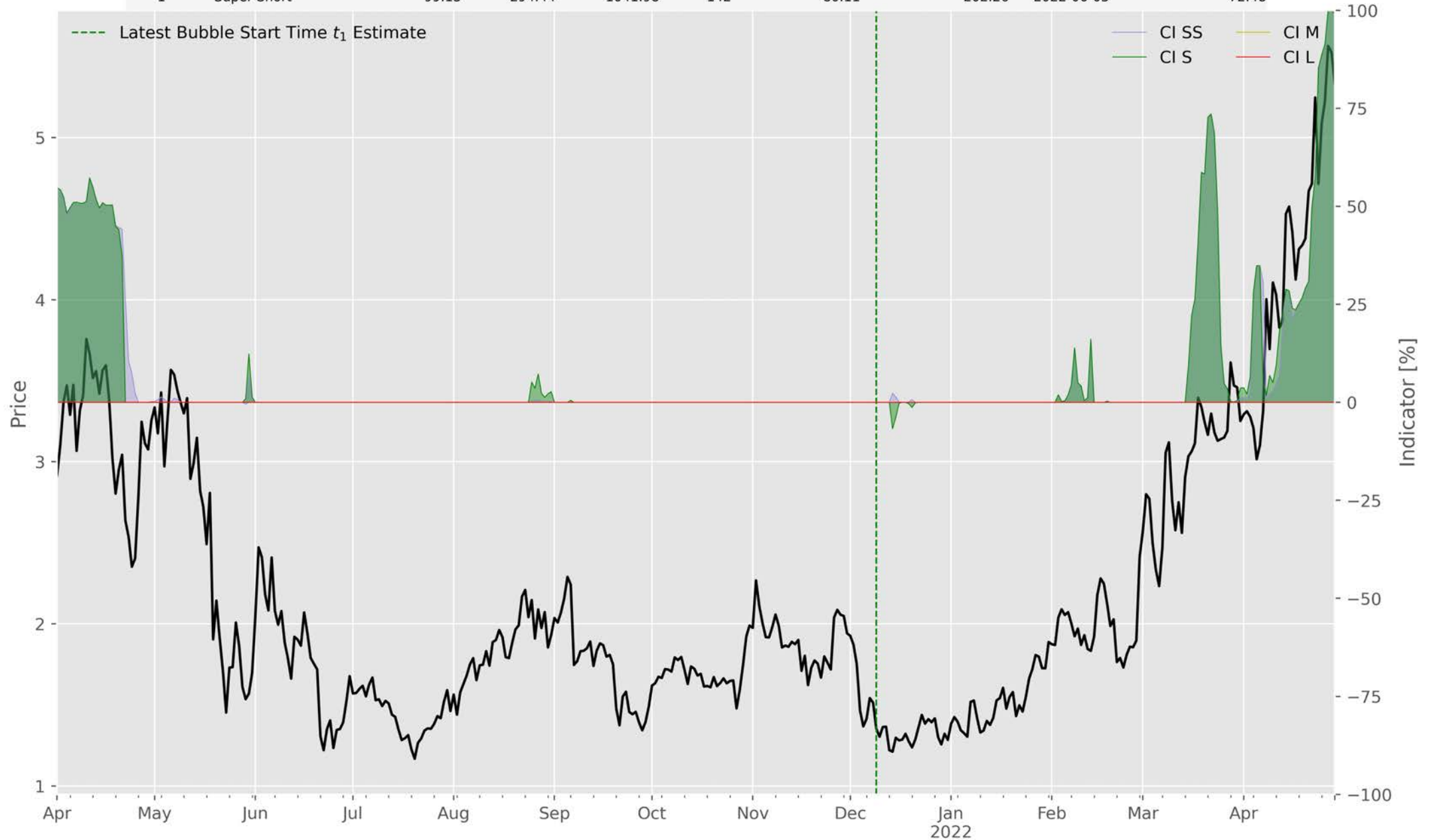
Rank	Strongest Signal	DS-LPPLS Confidence <i>ci</i> [%]	Bubble Size <i>bs</i> [%]	Bubble CAGR <i>bg</i> [%]	Duration [days]	Bubble Progress <i>bp</i> [%]	Geometric Average (<i>ci</i> , <i>bg</i> , <i>bp</i>)	Critical Time \hat{t}_c	Scenario Probability [%]
1	Short Term	30.87	-10.42	-11.7	223	66.7	28.88	2022-08-18	99.98



CryptoX

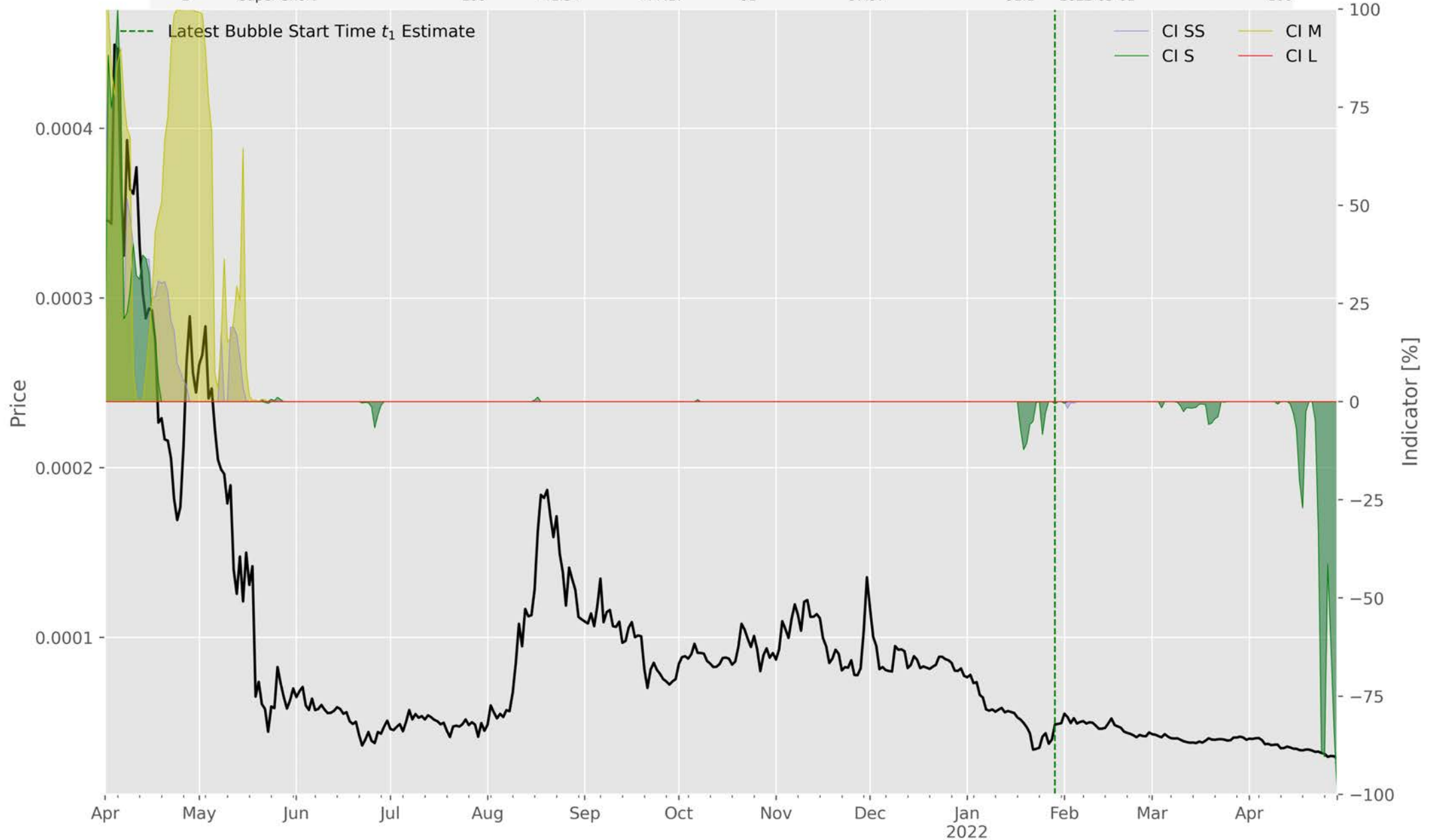
Kyber Network/USD

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	99.13	294.44	1041.98	142	80.11	202.26	2022-06-03	72.48



Kin/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 \tilde{t}_c	Scenario Probability [%]
1	Super Short	100	-41.34	-77.17	91	97.97	91.1	2022-05-01	100



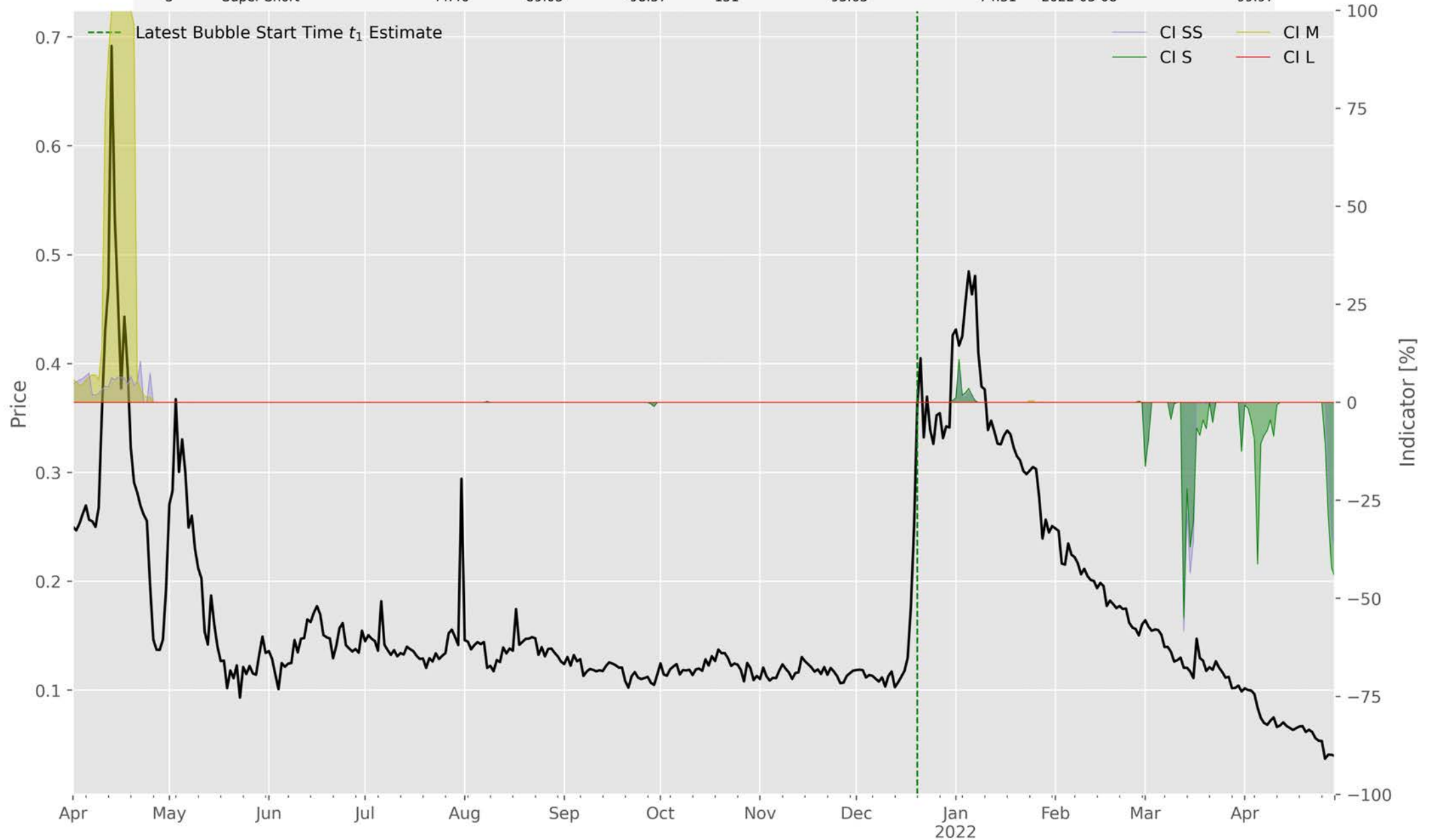
Ubiq/USD

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 [%]
2	Super Short	54.35	-44.4	-82.45	85	93.55	74.84	2022-05-05	99.98



GoldCoin/USD

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	44.46	-89.03	-98.57	131	93.63	74.31	2022-05-08	99.97

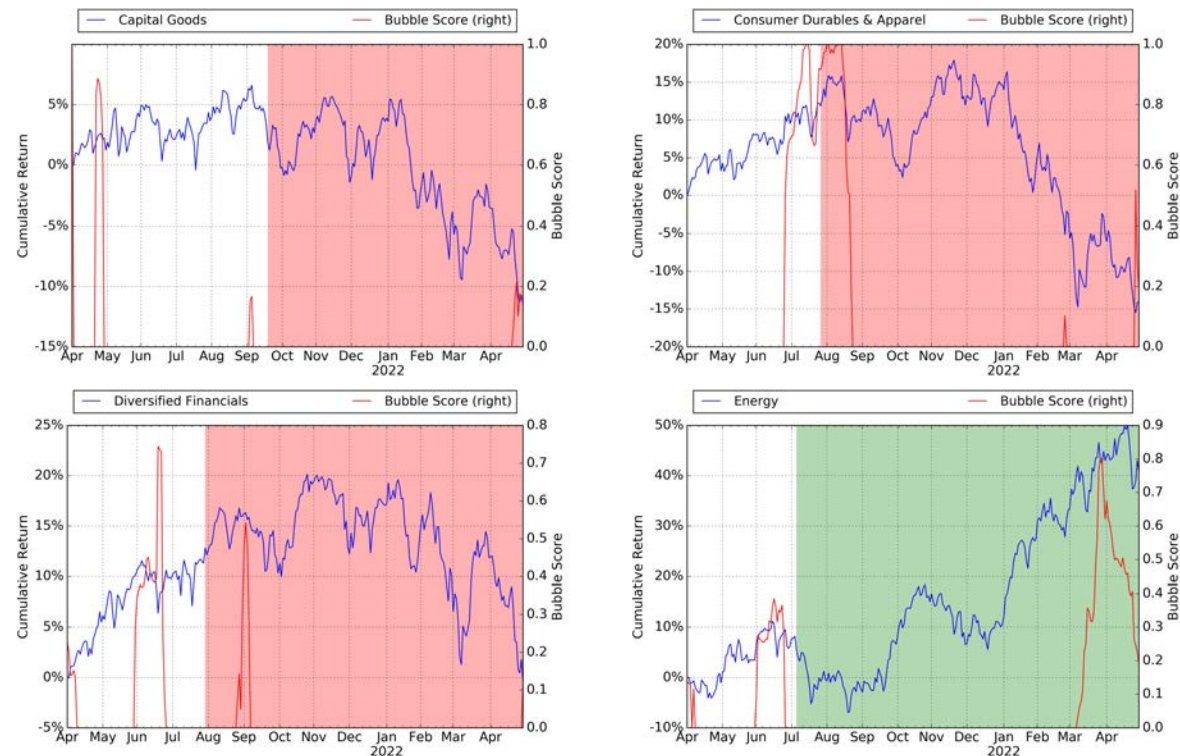


Sectors

GICS Industry Group Name	Yearly Return		Bubble Size		Bubble Score		Value Score		Growth Score	
	May 1st	Apr 1st	May 1st	Apr 1st	May 1st	Apr 1st	May 1st	Apr 1st	May 1st	Apr 1st
Pharmaceuticals, Biotechnology & Life Sciences	7.3%	14.2%	0.0%	0.0%	0.0%	0.0%	60.3%	61.3%	57.5%	57.6%
Consumer Services	-9.2%	-8.0%	0.0%	0.0%	0.0%	0.0%	19.1%	18.8%	61.6%	62.0%
Retailing	-18.4%	-8.5%	0.0%	0.0%	0.0%	0.0%	21.8%	21.5%	42.7%	44.8%
Transportation	-10.5%	3.0%	0.0%	0.0%	0.0%	0.0%	49.0%	49.4%	51.8%	52.3%
Consumer Durables & Apparel	-16.0%	-9.0%	-23.1%	0.0%	-19.5%	0.0%	34.1%	35.1%	39.8%	41.3%
Semiconductors & Semiconductor Equipment	4.9%	15.1%	0.0%	0.0%	0.0%	0.0%	65.8%	64.3%	39.0%	40.3%
Technology Hardware & Equipment	14.7%	21.6%	0.0%	0.0%	0.0%	0.0%	82.6%	83.3%	58.8%	58.8%
Automobiles & Components	8.8%	13.6%	0.0%	0.0%	0.0%	0.0%	48.3%	47.4%	48.8%	47.2%
Telecommunication Services	-15.4%	-11.2%	0.0%	0.0%	0.0%	0.0%	57.6%	56.2%	44.4%	44.6%
Energy	36.7%	43.7%	33.7%	46.5%	19.3%	62.2%	52.9%	53.3%	51.4%	49.8%
Software & Services	-6.9%	-2.2%	0.0%	0.0%	0.0%	0.0%	35.5%	36.6%	52.3%	53.2%
Materials	-5.4%	5.8%	0.0%	0.0%	0.0%	0.0%	45.9%	46.0%	51.7%	51.9%
Health Care Equipment & Services	-1.2%	7.2%	0.0%	0.0%	0.0%	0.0%	48.5%	49.1%	56.4%	56.4%
Capital Goods	-12.7%	-5.0%	-13.1%	0.0%	-14.9%	0.0%	48.7%	47.4%	50.0%	50.7%
Media & Entertainment	-21.6%	-7.7%	0.0%	0.0%	0.0%	0.0%	37.5%	39.0%	34.2%	36.0%
Commercial & Professional Services	-1.8%	5.2%	0.0%	0.0%	0.0%	0.0%	31.1%	31.9%	56.0%	56.3%
Food & Staples Retailing	12.4%	18.6%	0.0%	0.0%	0.0%	0.0%	39.9%	41.2%	59.3%	60.2%
Household & Personal Products	-5.7%	-6.1%	0.0%	0.0%	0.0%	0.0%	27.6%	27.9%	55.0%	53.4%
Food, Beverage & Tobacco	4.5%	6.6%	0.0%	0.0%	0.0%	0.0%	49.1%	49.5%	60.2%	59.8%
Utilities	2.2%	5.2%	0.0%	0.0%	0.0%	0.0%	45.1%	44.5%	53.7%	57.2%
Insurance	-1.1%	8.8%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Real Estate	3.5%	8.7%	0.0%	0.0%	0.0%	0.0%	-	-	-	-
Diversified Financials	-6.3%	8.7%	-11.8%	0.0%	-13.0%	0.0%	-	-	-	-
Banks	-12.1%	2.2%	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.
- ▶ This month we observe three industry group index with small negative bubble score: *Consumer Durables & Apparel*, *Capital Goods*, and *Diversified Financials*. The negative bubble signal indicates a high probability of rebound in the future when the bubble matures.
- ▶ *Energy*, the industry group index with a high positive bubble score identified last, have corrected strongly in the past monthly, although remaining a medium level positive bubble score. As noted last month, the energy price has been strongly driven by exogenous factors recently and should be monitored closely.



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.

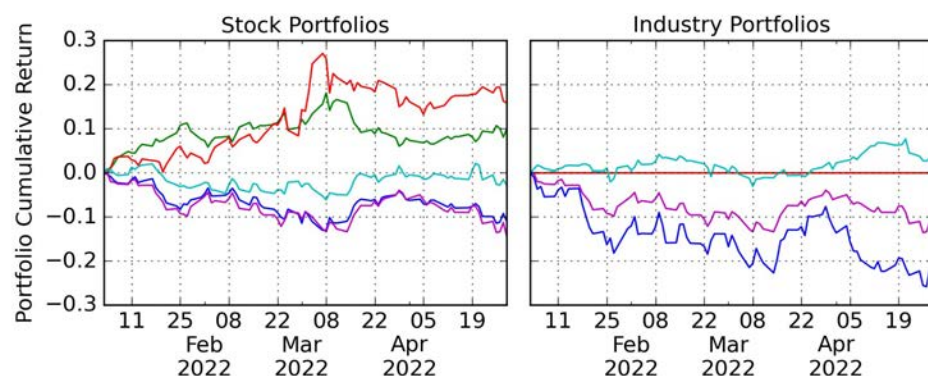
Portfolio Construction & Performance

- ▶ 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.

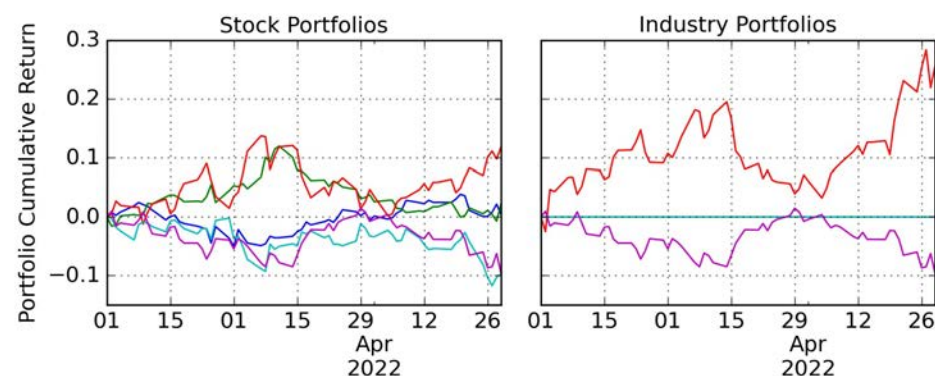
Portfolio Construction & Performance

- ▶ The S&P 500 index had a 10% drawdown in the past month, marking a potential start of a bear market. Our Short Portfolios have profited from the drawdowns while the Contrarian Long Portfolio seems to outperform the market.
- ▶ 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.

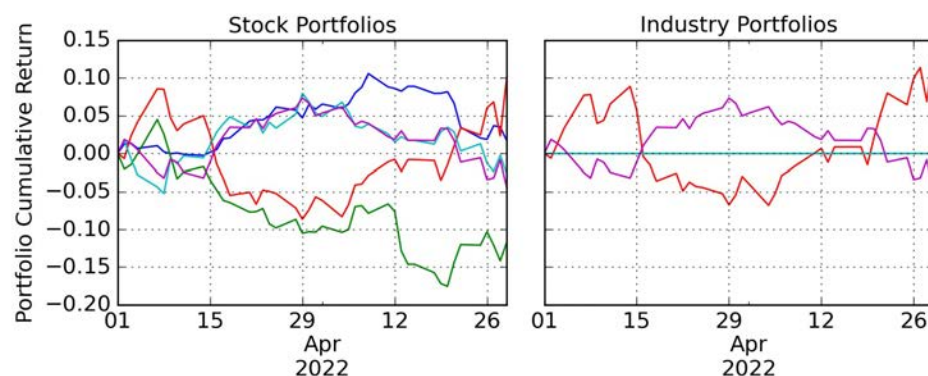
Portfolios Initiated in January 2022



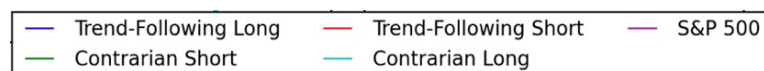
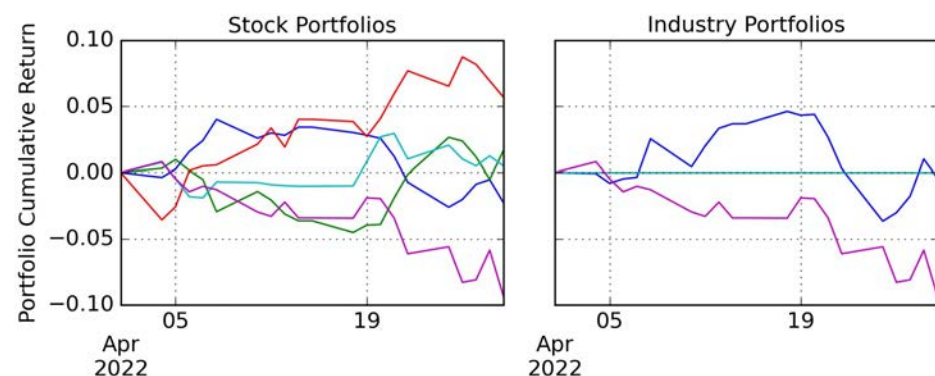
Portfolios Initiated in February 2022



Portfolios Initiated in March 2022

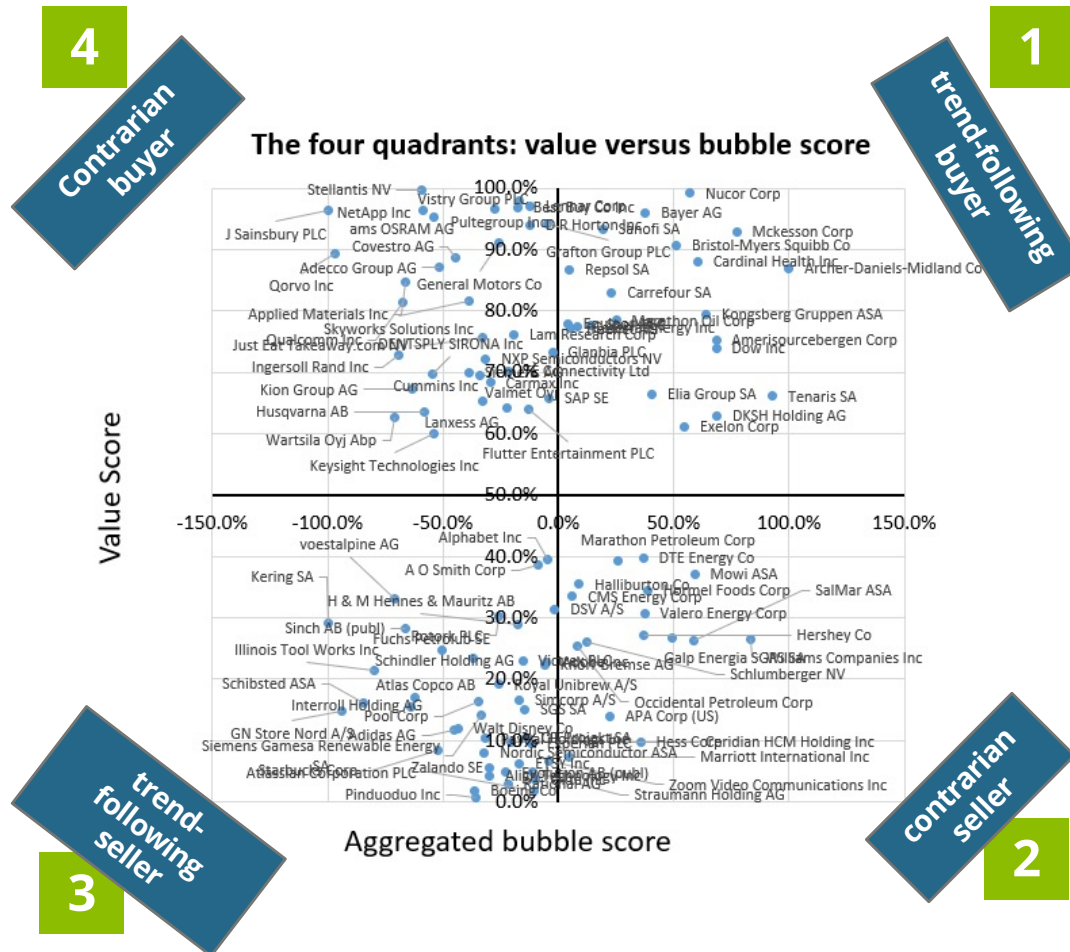


Portfolios Initiated in April 2022



Single Stocks

We can divide the stocks into four quadrants¹⁾



- **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. Tenaris SA
- **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. Hershey Co
- **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. Kering SA
- **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. Qorvo Inc

¹⁾ 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 817 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.

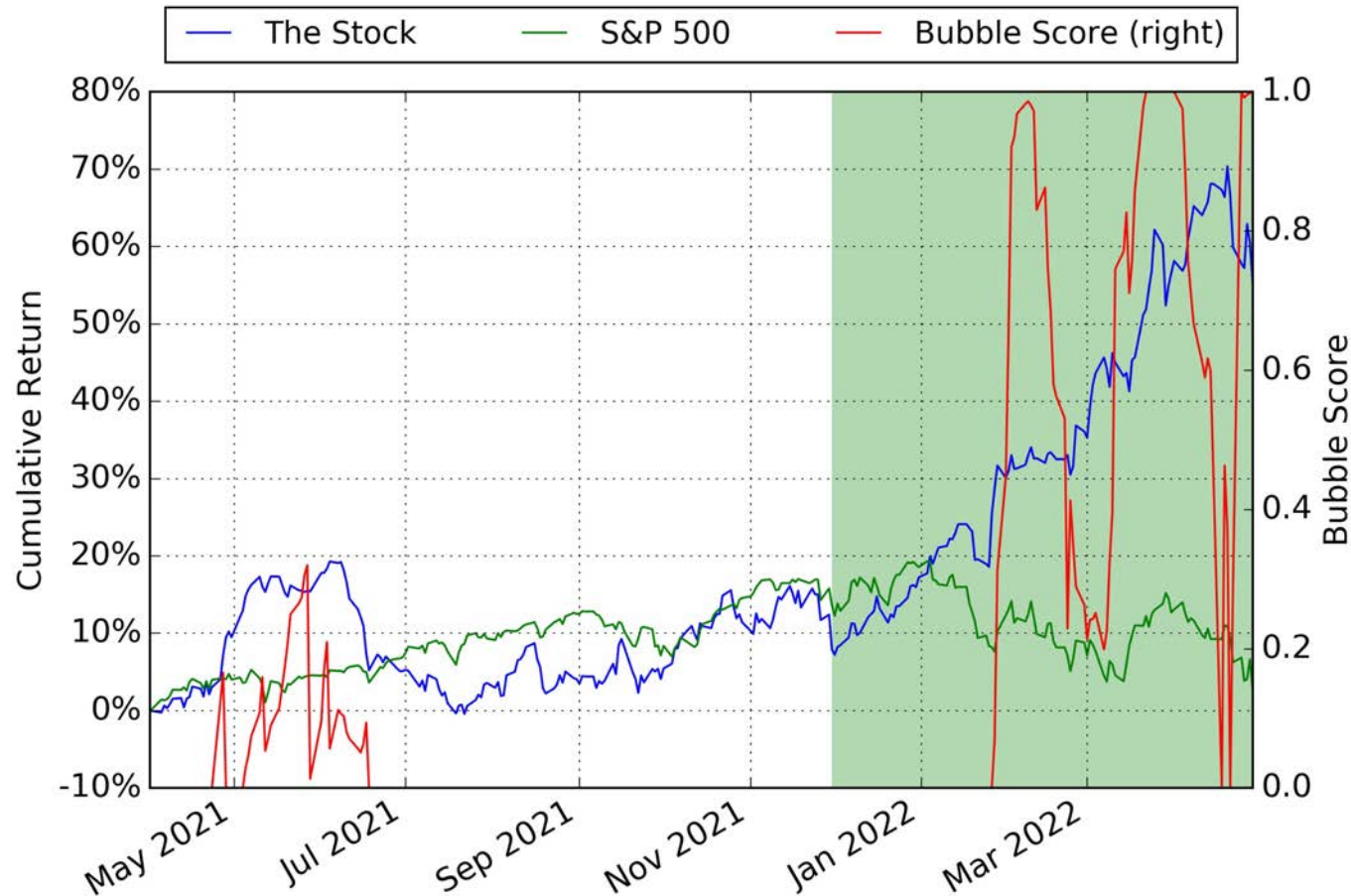
Single Stocks

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
Coterra Energy Inc	United States of America	Energy	71.5%	88.5%	Jul-21	8.2%	77.3%	96.8%
Exelon Corp	United States of America	Utilities	47.7%	30.9%	Oct-21	54.7%	61.0%	36.4%
Cardinal Health Inc	United States of America	Health Care Equipment & Services	3.5%	17.4%	Sep-21	60.4%	88.0%	22.2%
Amerisourcebergen Corp	United States of America	Health Care Equipment & Services	26.6%	25.2%	Dec-21	68.4%	75.2%	65.9%
Nucor Corp	United States of America	Materials	53.6%	45.7%	Nov-21	57.0%	99.1%	31.1%
Marathon Oil Corp	United States of America	Energy	125.1%	114.3%	Sep-21	25.0%	78.4%	8.0%
Archer-Daniels-Midland Co	United States of America	Food, Beverage & Tobacco	33.4%	44.0%	Nov-21	100.0%	86.9%	28.6%
Mckesson Corp	United States of America	Health Care Equipment & Services	58.2%	41.4%	Nov-21	77.3%	92.8%	78.2%
Bristol-Myers Squibb Co	United States of America	Pharmaceuticals, Biotechnology & Life Sciences	15.7%	31.5%	Oct-21	51.1%	90.7%	34.6%
Dow Inc	United States of America	Materials	-2.3%	26.0%	Dec-21	68.4%	73.9%	27.0%
Bayer AG	Germany	Pharmaceuticals, Biotechnology & Life Sciences	10.2%	35.3%	Sep-21	37.8%	96.0%	16.8%
DKSH Holding AG	Switzerland	Commercial & Professional Services	19.2%	15.0%	Dec-21	68.8%	62.9%	11.8%
Tenaris SA	Luxembourg	Energy	53.3%	67.5%	Nov-21	92.9%	66.1%	2.5%
Sanofi SA	France	Pharmaceuticals, Biotechnology & Life Sciences	16.8%	21.5%	Sep-21	19.4%	93.3%	29.7%
Carrefour SA	France	Food & Staples Retailing	19.0%	31.3%	Oct-21	23.2%	83.0%	23.7%
freenet AG	Germany	Telecommunication Services	22.6%	19.9%	Sep-21	5.4%	77.1%	0.5%
Repsol SA	Spain	Energy	31.7%	29.1%	Oct-21	4.8%	86.8%	5.3%
Elia Group SA	Belgium	Utilities	71.2%	42.6%	Sep-21	40.6%	66.4%	55.8%
Equinor ASA	Norway	Energy	80.5%	71.3%	Jun-21	4.1%	77.8%	83.2%
Kongsberg Gruppen ASA	Norway	Capital Goods	95.2%	50.7%	Dec-21	64.0%	79.4%	36.0%
Shell PLC	United Kingdom	Energy	57.2%	27.2%	Oct-21	14.1%	77.6%	33.8%

Single Stocks

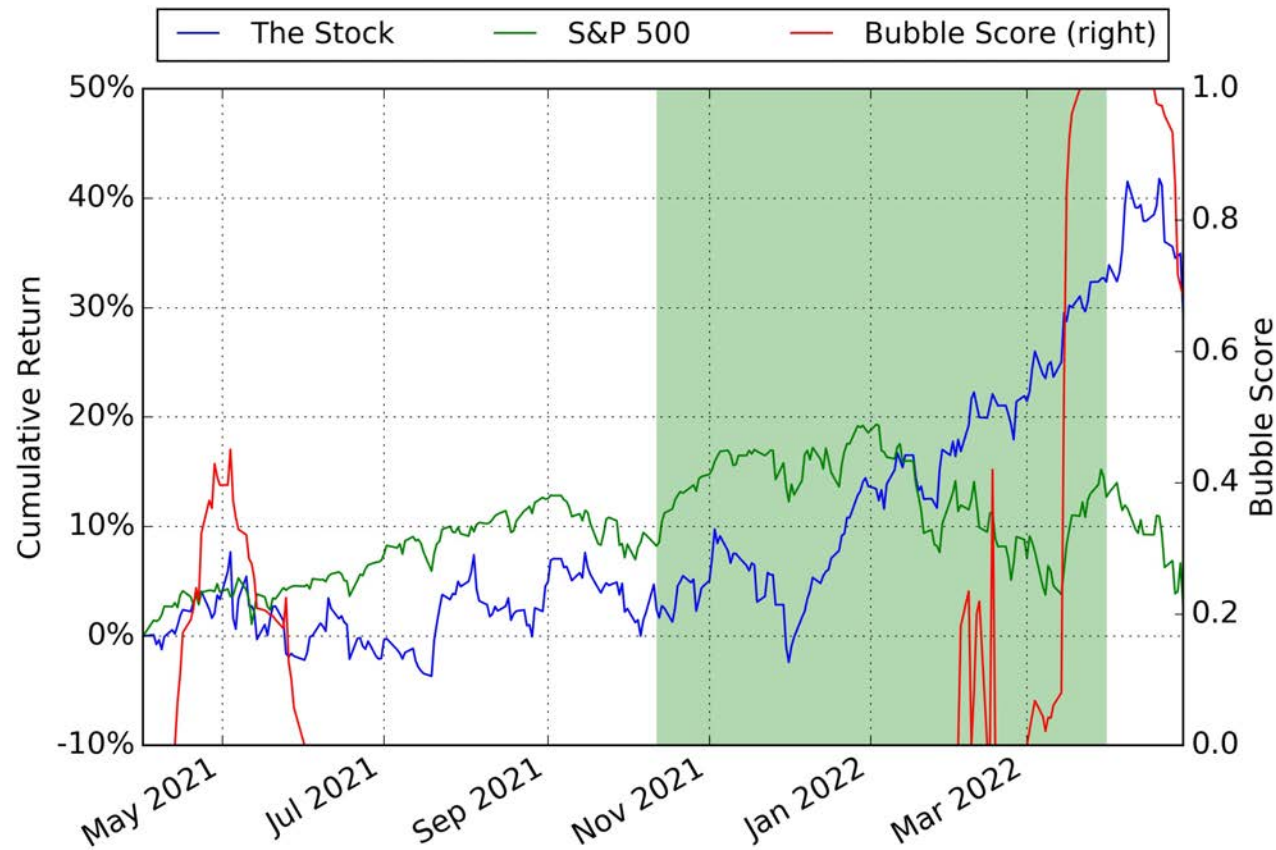
Quadrant 1 Stocks Current Month Example – Archer-Daniels-Midland Co.



- 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 green shaded period delineates the time interval within which the positive bubble is identified. The Bubble Score of this five-month bubble has reached 100% with a bubble size 44%. The high bubble score indicates a high probability of correction in the future due to the unsustainable bubble growth, which seems to start in recent weeks.

Single Stocks

Quadrant 1 Stocks Last Month Example – Amerisourcebergen Corp.



- The figure above plots the one-year cumulative return of the stock (blue), S&P 500 (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 continued to increase in most of April and has more recently started a correction together with the market drawdown in the past month. This is in agreement with our DS LPPLS Bubble Signal. One should remain cautious as there is still a positive bubble score this month.

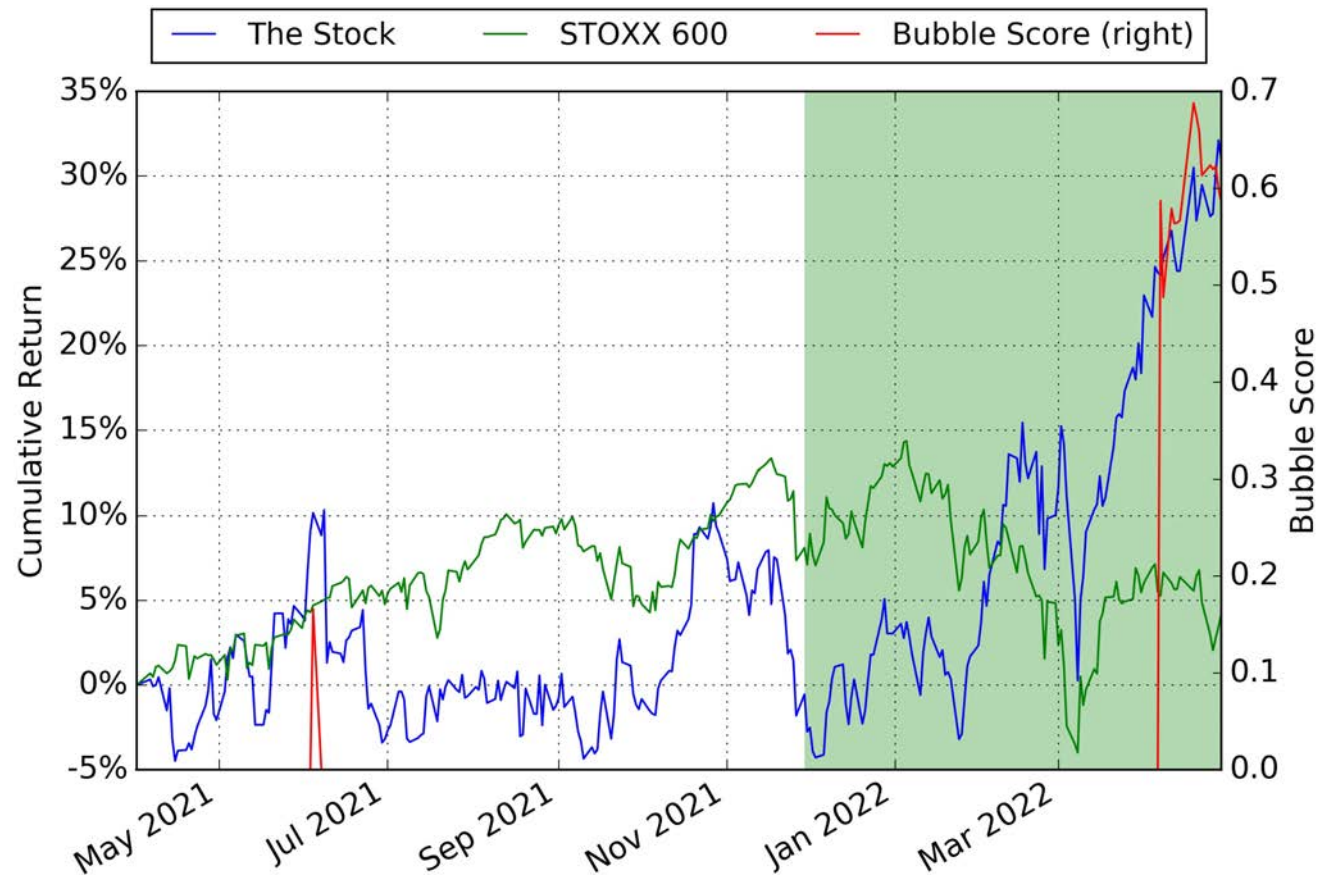
Single Stocks

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
Williams Companies Inc	United States of America	Energy	35.1%	21.5%	Nov-21	83.2%	26.5%	91.3%
Occidental Petroleum Corp	United States of America	Energy	132.3%	112.9%	May-21	8.3%	25.4%	31.5%
Valero Energy Corp	United States of America	Energy	42.0%	51.4%	Oct-21	37.3%	30.8%	6.6%
Hershey Co	United States of America	Food, Beverage & Tobacco	31.6%	31.6%	May-21	37.1%	27.1%	59.7%
Schlumberger NV	United States of America	Energy	22.8%	25.2%	Jul-21	12.3%	26.1%	54.9%
CMS Energy Corp	United States of America	Utilities	8.1%	9.9%	Sep-21	6.1%	33.5%	71.7%
APA Corp (US)	United States of America	Energy	100.6%	56.0%	Nov-21	22.3%	14.0%	85.7%
Hess Corp	United States of America	Energy	29.7%	21.7%	Oct-21	35.7%	9.8%	66.4%
Marriott International Inc	United States of America	Consumer Services	27.5%	27.5%	May-21	4.7%	7.4%	28.4%
Marathon Petroleum Corp	United States of America	Energy	48.5%	52.8%	Sep-21	25.7%	39.3%	5.4%
Hormel Foods Corp	United States of America	Food, Beverage & Tobacco	10.5%	20.2%	Sep-21	38.7%	34.4%	66.8%
Halliburton Co	United States of America	Energy	59.2%	60.2%	Jul-21	9.0%	35.4%	50.5%
DTE Energy Co	United States of America	Utilities	9.8%	14.9%	Sep-21	36.9%	39.7%	63.4%
SalMar ASA	Norway	Food, Beverage & Tobacco	30.4%	34.4%	Dec-21	58.6%	26.2%	87.3%
Galp Energia SGPS SA	Portugal	Energy	15.7%	29.3%	Oct-21	49.3%	26.7%	91.9%
Mowi ASA	Norway	Food, Beverage & Tobacco	26.3%	26.4%	Nov-21	59.0%	37.1%	31.7%

Single Stocks

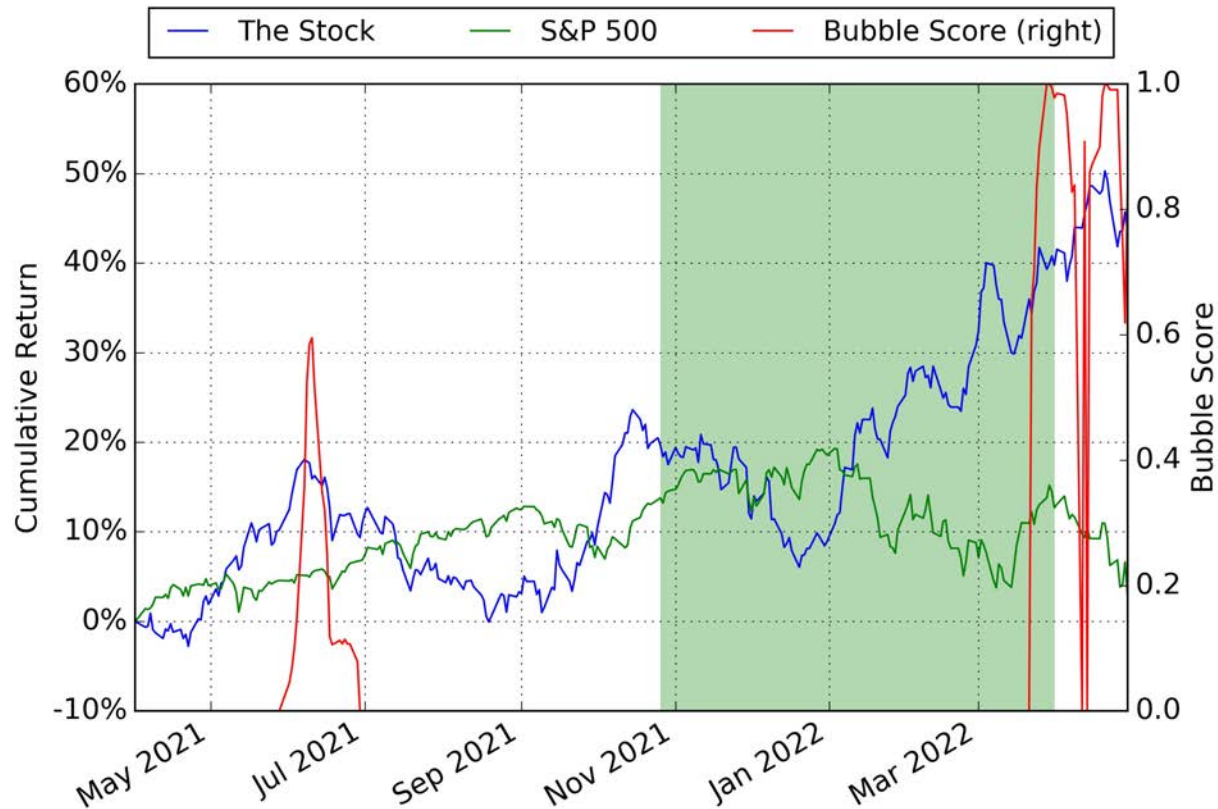
Quadrant 2 Stocks Current Month Example – SalMar ASA.



- 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 five-month bubble has reached 58.6% with a bubble size 34.4%. 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 – Williams Companies Inc.



The figure above plots the one-year cumulative return of the stock (blue), S&P 500 (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 continued to rise at the beginning of the past month before starting its correction. The strong bubble signal identified last month turned out to be too early, as the bubble score remains significantly high. Together with the weak fundamentals, this suggests a significant risk for the stock price to exhibit further corrections.

Single Stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GIICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Pool Corp	United States of America	Retailing	-6.8%	-18.8%	Oct-21	-34.6%	16.3%	30.6%
Boeing Co	United States of America	Capital Goods	-33.1%	-33.7%	Nov-21	-36.1%	1.7%	99.0%
Walt Disney Co	United States of America	Media & Entertainment	-37.4%	-37.4%	May-21	-43.7%	11.9%	49.4%
Ceridian HCM Holding Inc	United States of America	Software & Services	-34.0%	-45.2%	Aug-21	-20.5%	9.7%	55.6%
A O Smith Corp	United States of America	Capital Goods	-17.8%	-25.4%	Nov-21	-9.0%	38.6%	28.1%
Align Technology Inc	United States of America	Health Care Equipment & Services	-47.6%	-54.3%	Nov-21	-29.8%	4.2%	79.7%
Alphabet Inc	United States of America	Media & Entertainment	2.4%	-18.1%	Oct-21	-4.7%	39.5%	25.4%
ETSY Inc	United States of America	Retailing	-40.5%	-53.0%	Jun-21	-16.8%	6.1%	11.2%
PayPal Holdings Inc	United States of America	Software & Services	-63.5%	-69.5%	Jun-21	-31.7%	10.3%	61.2%
Illinois Tool Works Inc	United States of America	Capital Goods	-17.2%	-15.3%	Nov-21	-79.9%	21.3%	49.3%
Adobe Inc	United States of America	Software & Services	-16.5%	-30.0%	Jun-21	-5.1%	22.7%	67.0%
Starbucks Corp	United States of America	Consumer Services	-32.4%	-36.2%	Nov-21	-52.2%	8.3%	38.6%
Zoom Video Communications Inc	United States of America	Software & Services	-65.7%	-73.3%	Jun-21	-4.0%	6.6%	19.0%
Atlassian Corporation PLC	Australia	Software & Services	5.8%	-38.6%	Aug-21	-10.6%	1.8%	63.5%
Okta Inc	United States of America	Software & Services	-46.2%	-51.7%	Oct-21	-10.0%	3.6%	51.8%
Pinduoduo Inc	China	Retailing	-62.6%	-51.6%	Sep-21	-35.8%	0.6%	3.9%
Sinch AB (publ)	Sweden	Software & Services	-64.8%	-66.0%	Nov-21	-66.4%	28.3%	11.9%
Fuchs Petrolub SE	Germany	Materials	-27.9%	-28.2%	Nov-21	-50.3%	24.8%	52.1%
Interroll Holding AG	Switzerland	Capital Goods	-2.1%	-30.4%	Oct-21	-63.8%	15.4%	23.5%

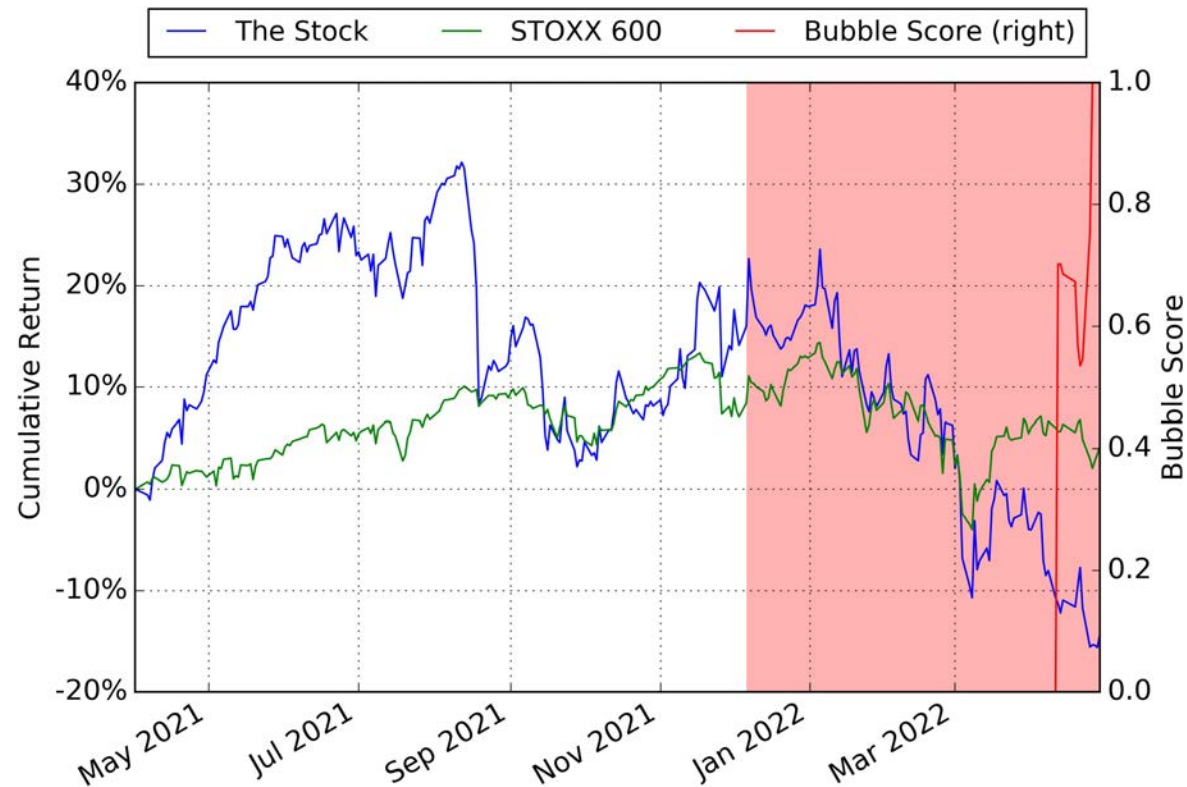
Single Stocks

Quadrant 3 stocks: strong negative bubble signals with weak fundamentals

Company Name	Country of Headquarters	GIICS Industry Group Name	Yearly Return	Bubble Size	Bubble Start	Bubble Score	Value Score	Growth Score
Victrex PLC	United Kingdom	Materials	-22.4%	-24.3%	Jun-21	-15.5%	22.9%	89.3%
Evolution AB (publ)	Sweden	Consumer Services	-28.5%	-30.5%	May-21	-22.6%	4.8%	75.1%
Rational AG	Germany	Capital Goods	-22.8%	-29.4%	Sep-21	-21.9%	2.8%	74.5%
SGS SA	Switzerland	Commercial & Professional Services	-7.1%	-14.2%	Jul-21	-14.5%	15.0%	68.1%
Rotork PLC	United Kingdom	Capital Goods	-13.3%	-13.3%	May-21	-26.0%	30.3%	54.8%
Kering SA	France	Consumer Durables & Apparel	-26.3%	-28.5%	Dec-21	-100.0%	29.0%	29.5%
Siemens Gamesa Renewable Energy SA	Spain	Capital Goods	-39.1%	-39.0%	Aug-21	-33.6%	14.2%	4.9%
Schindler Holding AG	Switzerland	Capital Goods	-26.5%	-24.2%	Nov-21	-36.8%	23.3%	13.7%
Atlas Copco AB	Sweden	Capital Goods	-11.4%	-25.2%	Aug-21	-62.3%	17.0%	77.0%
Zalando SE	Germany	Retailing	-54.8%	-52.4%	Oct-21	-29.6%	5.6%	86.6%
H & M Hennes & Mauritz AB	Sweden	Retailing	-38.1%	-30.3%	Sep-21	-17.7%	28.8%	23.3%
Schibsted ASA	Norway	Media & Entertainment	-48.5%	-44.2%	Dec-21	-84.3%	16.1%	93.4%
Adidas AG	Germany	Consumer Durables & Apparel	-32.0%	-37.8%	Jun-21	-45.4%	11.8%	53.3%
CD Projekt SA	Poland	Media & Entertainment	-23.4%	-35.3%	Sep-21	-14.2%	10.4%	93.5%
Straumann Holding AG	Switzerland	Health Care Equipment & Services	-12.3%	-26.2%	Jul-21	-11.3%	4.9%	43.9%
Knorr Bremse AG	Germany	Capital Goods	-33.9%	-31.1%	Jun-21	-6.0%	22.3%	44.4%
DSV A/S	Denmark	Transportation	-14.3%	-29.0%	Sep-21	-1.5%	31.4%	81.3%
Experian PLC	Ireland; Republic of	Commercial & Professional Services	6.0%	-11.9%	Jul-21	-11.7%	9.6%	75.4%
Royal Unibrew A/S	Denmark	Food, Beverage & Tobacco	-21.3%	-25.0%	Jul-21	-25.9%	19.1%	74.6%
voestalpine AG	Austria	Materials	-31.6%	-22.5%	Oct-21	-71.1%	33.1%	4.0%
GN Store Nord A/S	Denmark	Health Care Equipment & Services	-43.4%	-29.2%	Dec-21	-94.0%	14.7%	90.1%
Nordic Semiconductor ASA	Norway	Semiconductors & Semiconductor Equipment	0.8%	-33.0%	Aug-21	-32.0%	8.0%	50.0%
Simcorp A/S	Denmark	Software & Services	-33.4%	-38.1%	Nov-21	-16.8%	16.5%	27.3%

Single Stocks

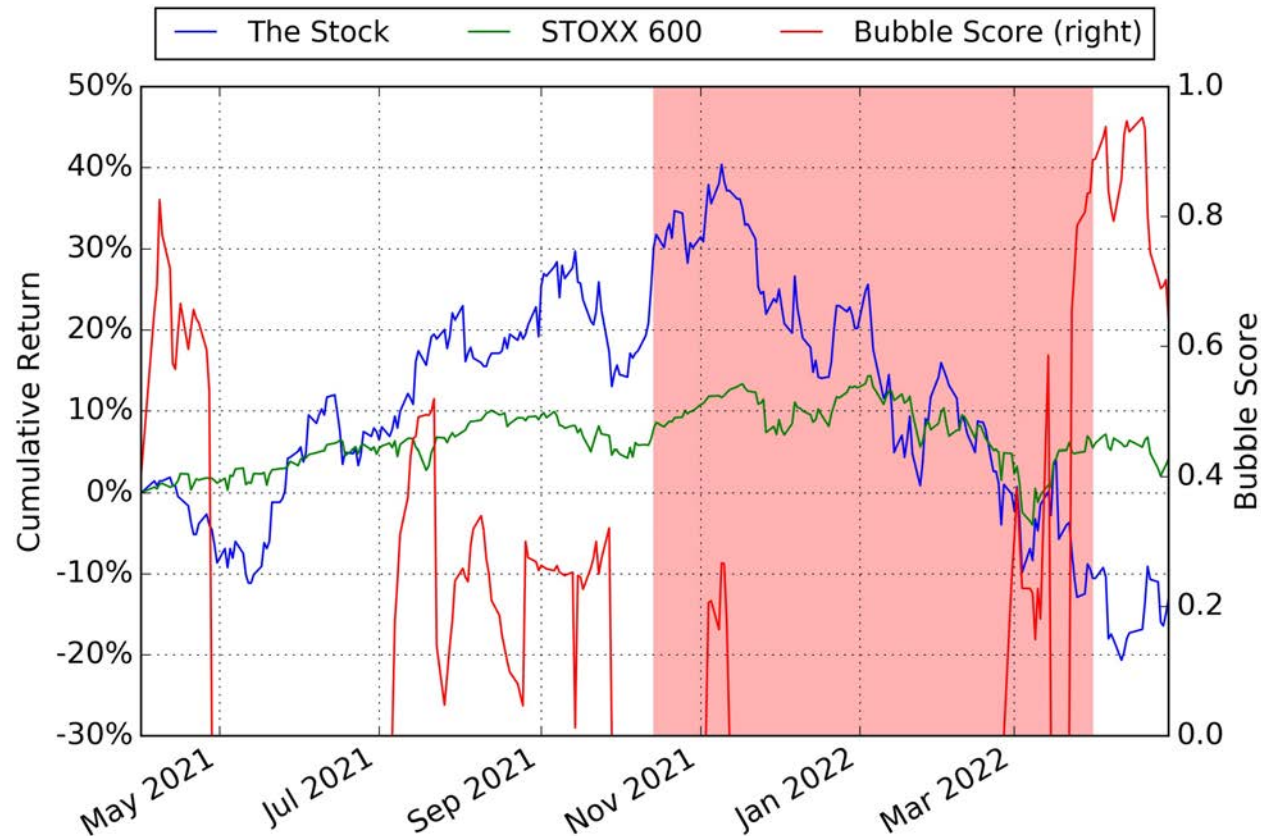
Quadrant 3 Stocks Current Month Example – Kering SA.



- 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 five-month bubble has reached 100% with a bubble size -28.5%.

Single Stocks

Quadrant 3 Stocks Last Month Example – Interroll Holding 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 had lost its downward momentum in the past month. The bubble score remains significant this month, indicating the regime shift has not yet finished. One should remain cautious however, given the weak fundamentals of this stock, which may indicate a continuation of the negative bubble in the future.

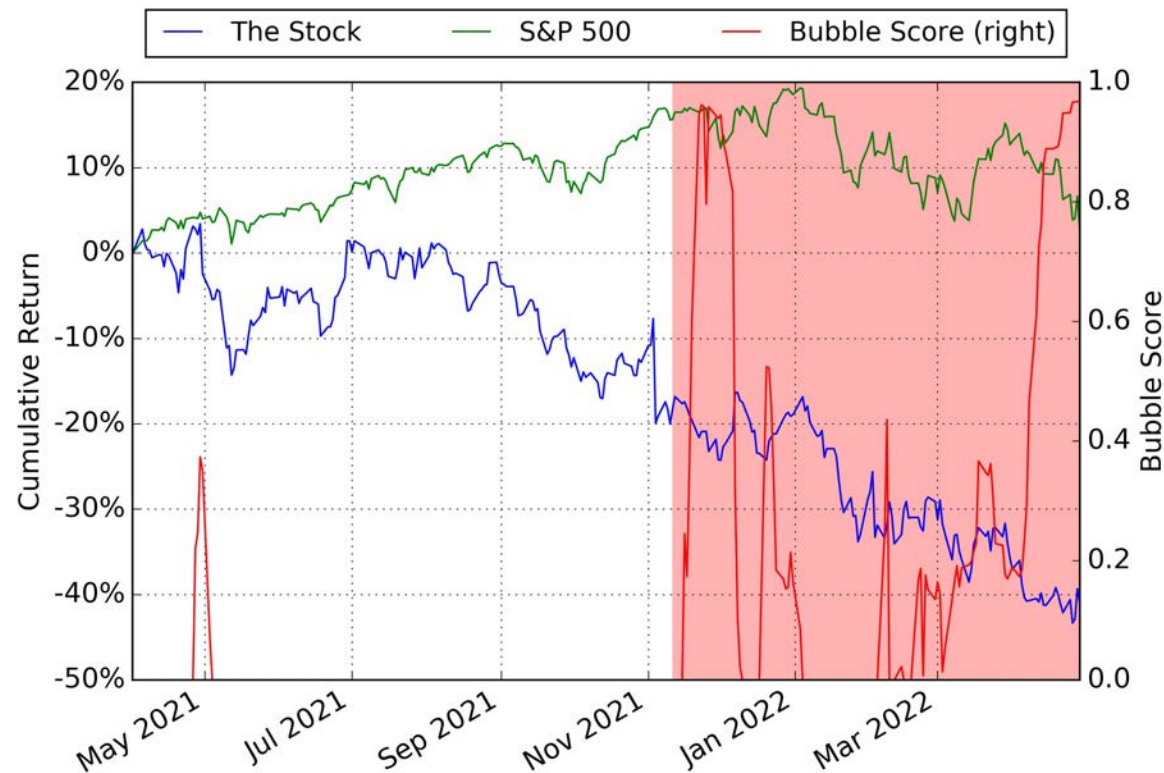
Single Stocks

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
Qorvo Inc	United States of America	Semiconductors & Semiconductor Equipment	-31.8%	-27.8%	Nov-21	-96.8%	89.3%	21.8%
D R Horton Inc	United States of America	Consumer Durables & Apparel	-26.7%	-28.6%	Nov-21	-12.3%	93.9%	9.2%
Applied Materials Inc	United States of America	Semiconductors & Semiconductor Equipment	-8.0%	-25.2%	Nov-21	-66.1%	84.7%	61.3%
Keysight Technologies Inc	United States of America	Technology Hardware & Equipment	1.6%	-16.6%	Oct-21	-54.2%	60.0%	35.3%
Cummins Inc	United States of America	Capital Goods	-28.0%	-22.1%	Oct-21	-32.9%	65.3%	67.8%
NetApp Inc	United States of America	Technology Hardware & Equipment	-4.4%	-21.0%	Sep-21	-58.9%	96.4%	40.8%
Ingersoll Rand Inc	United States of America	Capital Goods	-7.6%	-25.4%	Nov-21	-69.2%	72.8%	22.1%
TE Connectivity Ltd	Switzerland	Technology Hardware & Equipment	-5.1%	-24.3%	Nov-21	-21.8%	70.2%	38.8%
NXP Semiconductors NV	Netherlands	Semiconductors & Semiconductor Equipment	-8.3%	-17.3%	Nov-21	-31.4%	72.1%	54.0%
Lennar Corp	United States of America	Consumer Durables & Apparel	-22.5%	-29.0%	Nov-21	-12.3%	97.1%	21.2%
Qualcomm Inc	United States of America	Semiconductors & Semiconductor Equipment	9.9%	-23.2%	Nov-21	-67.7%	81.4%	27.6%
Pultegroup Inc	United States of America	Consumer Durables & Apparel	-28.1%	-22.6%	Dec-21	-27.6%	96.7%	10.8%
DENTSPLY SIRONA Inc	United States of America	Health Care Equipment & Services	-40.0%	-34.0%	Aug-21	-54.3%	69.6%	29.4%
General Motors Co	United States of America	Automobiles & Components	-30.6%	-32.8%	Oct-21	-25.8%	91.1%	7.0%
Best Buy Co Inc	United States of America	Retailing	-24.4%	-24.4%	May-21	-17.6%	96.8%	48.5%
Carmax Inc	United States of America	Retailing	-29.2%	-35.9%	Jul-21	-29.6%	68.3%	82.8%
Lam Research Corp	United States of America	Semiconductors & Semiconductor Equipment	-20.3%	-23.7%	Nov-21	-19.3%	76.1%	34.4%
Skyworks Solutions Inc	United States of America	Semiconductors & Semiconductor Equipment	-30.1%	-27.9%	Nov-21	-38.7%	81.5%	32.1%
Siemens AG	Germany	Capital Goods	-16.1%	-18.9%	Nov-21	-38.7%	69.9%	83.5%
Adecco Group AG	Switzerland	Commercial & Professional Services	-36.4%	-21.4%	Oct-21	-51.5%	87.0%	5.0%
Glanbia PLC	Ireland; Republic of	Food, Beverage & Tobacco	-17.4%	-20.1%	May-21	-2.6%	73.2%	58.1%
ams OSRAM AG	Austria	Semiconductors & Semiconductor Equipment	-31.4%	-31.2%	Aug-21	-54.1%	95.3%	81.7%
Flutter Entertainment PLC	Ireland; Republic of	Consumer Services	-35.6%	-23.5%	Dec-21	-13.0%	64.0%	91.1%
Husqvarna AB	Sweden	Capital Goods	-20.3%	-32.7%	Dec-21	-58.0%	63.5%	19.5%
Valmet Oyj	Finland	Capital Goods	-24.7%	-29.1%	Nov-21	-33.9%	69.4%	81.0%
Vistry Group PLC	United Kingdom	Consumer Durables & Apparel	-33.4%	-31.4%	Oct-21	-16.9%	97.9%	45.2%
Wartsila Oyj Abp	Finland	Capital Goods	-27.2%	-40.5%	Nov-21	-71.0%	62.7%	94.5%
J Sainsbury PLC	United Kingdom	Food & Staples Retailing	-10.0%	-20.5%	Nov-21	-100%	96.3%	84.2%
Just Eat Takeaway.com NV	Netherlands	Retailing	-63.7%	-61.9%	Sep-21	-32.8%	75.7%	99.3%
Covestro AG	Germany	Materials	-28.1%	-19.4%	Nov-21	-44.4%	88.6%	83.0%
Stellantis NV	Netherlands	Automobiles & Components	-11.4%	-22.8%	Nov-21	-59.1%	99.8%	0.4%
Lanxess AG	Germany	Materials	-40.4%	-40.8%	May-21	-22.4%	64.2%	1.7%
Grafton Group PLC	Ireland; Republic of	Capital Goods	-18.7%	-30.6%	Aug-21	-5.0%	94.2%	4.8%
Kion Group AG	Germany	Capital Goods	-36.4%	-45.0%	Nov-21	-63.2%	67.2%	2.7%
SAP SE	Germany	Software & Services	-13.0%	-22.4%	Aug-21	-4.0%	65.7%	11.6%

Single Stocks

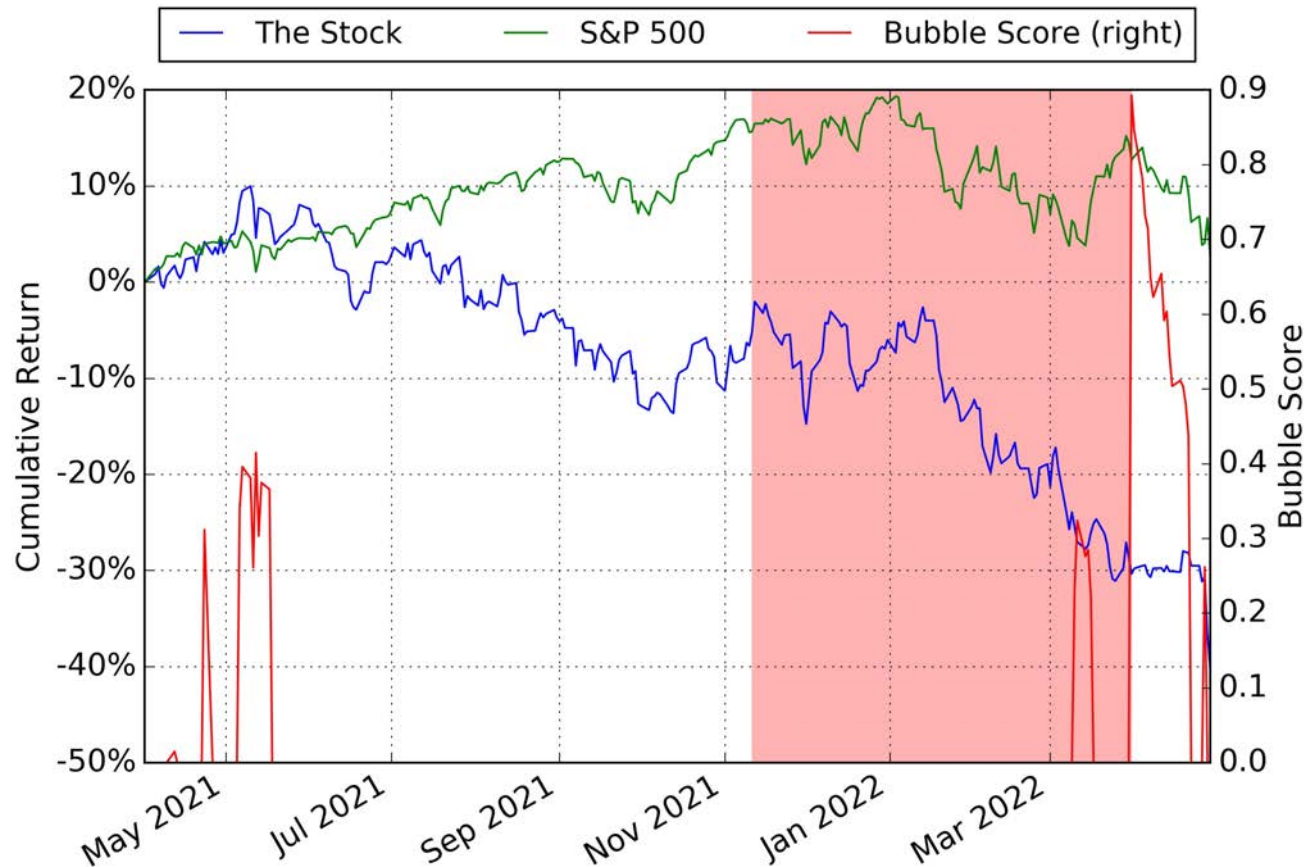
Quadrant 4 Stocks Current Month Example – Qorvo Inc.



- 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 96.8% with a negative bubble size -27.8%. We expect a rebound in the future, given our diagnostic of a negative bubble signal with strong fundamentals, calling for a contrarian buyer position.

Single Stocks

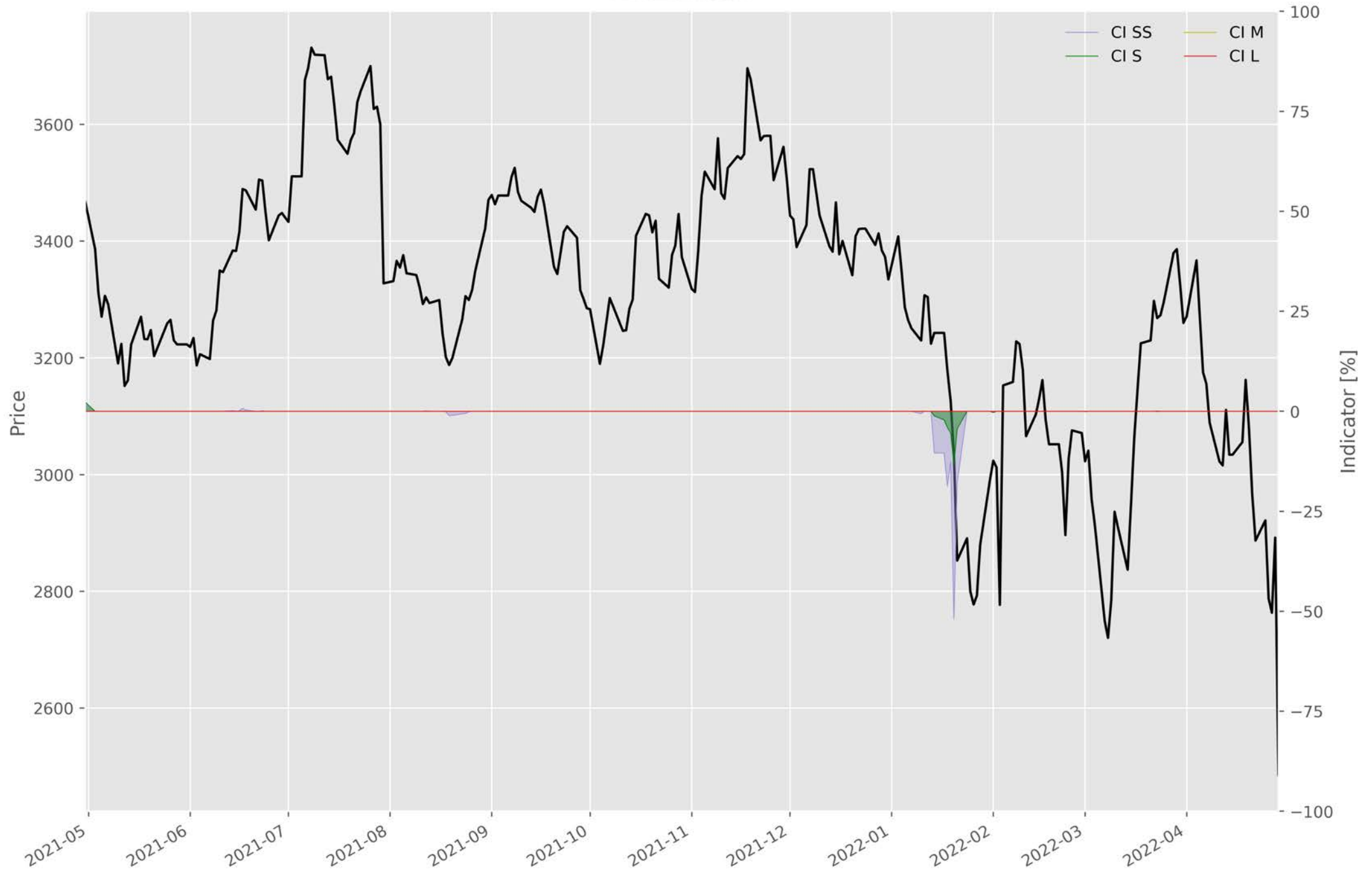
Quadrant 4 Stocks Last Month Example – Stanley Black & Decker Inc.



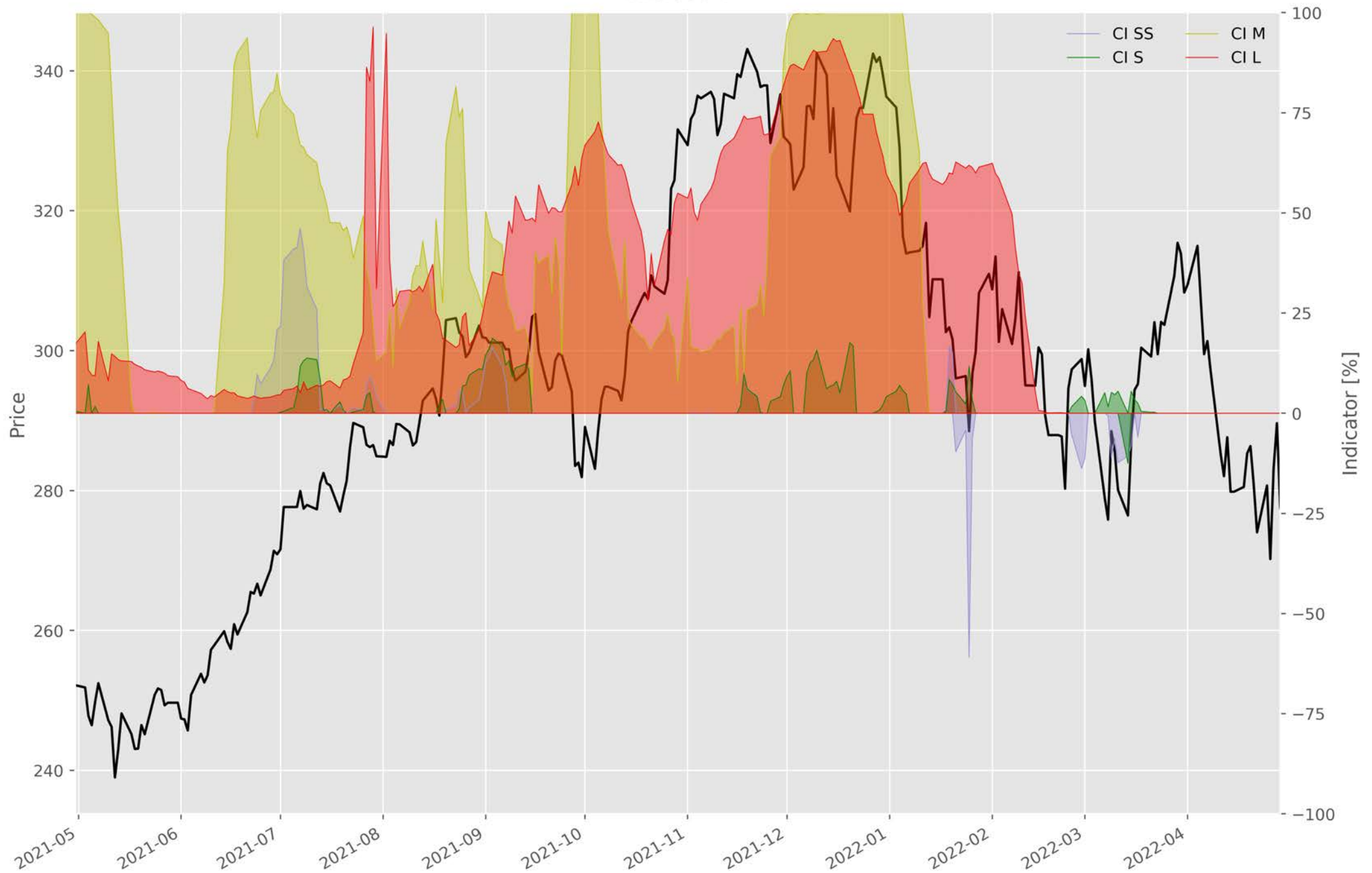
- The figure above plots the one-year cumulative return of the stock (blue), S&P 500 (green) and LPPLS Bubble Score (red line on the right y-axis). The red shaded period delineates the time interval within which the strong negative bubble was identified and reported last month. The stock price first plateaued as if a change of regime was occurring but then dropped by 15% entrained by the overall US market correction. This is in contradiction with our DS LPPLS Bubble Signal that was suggesting a change of regime. The signal last month thus seems to be a false positive, and the negative bubble may continue to evolve into a larger negative bubble.

Appendix

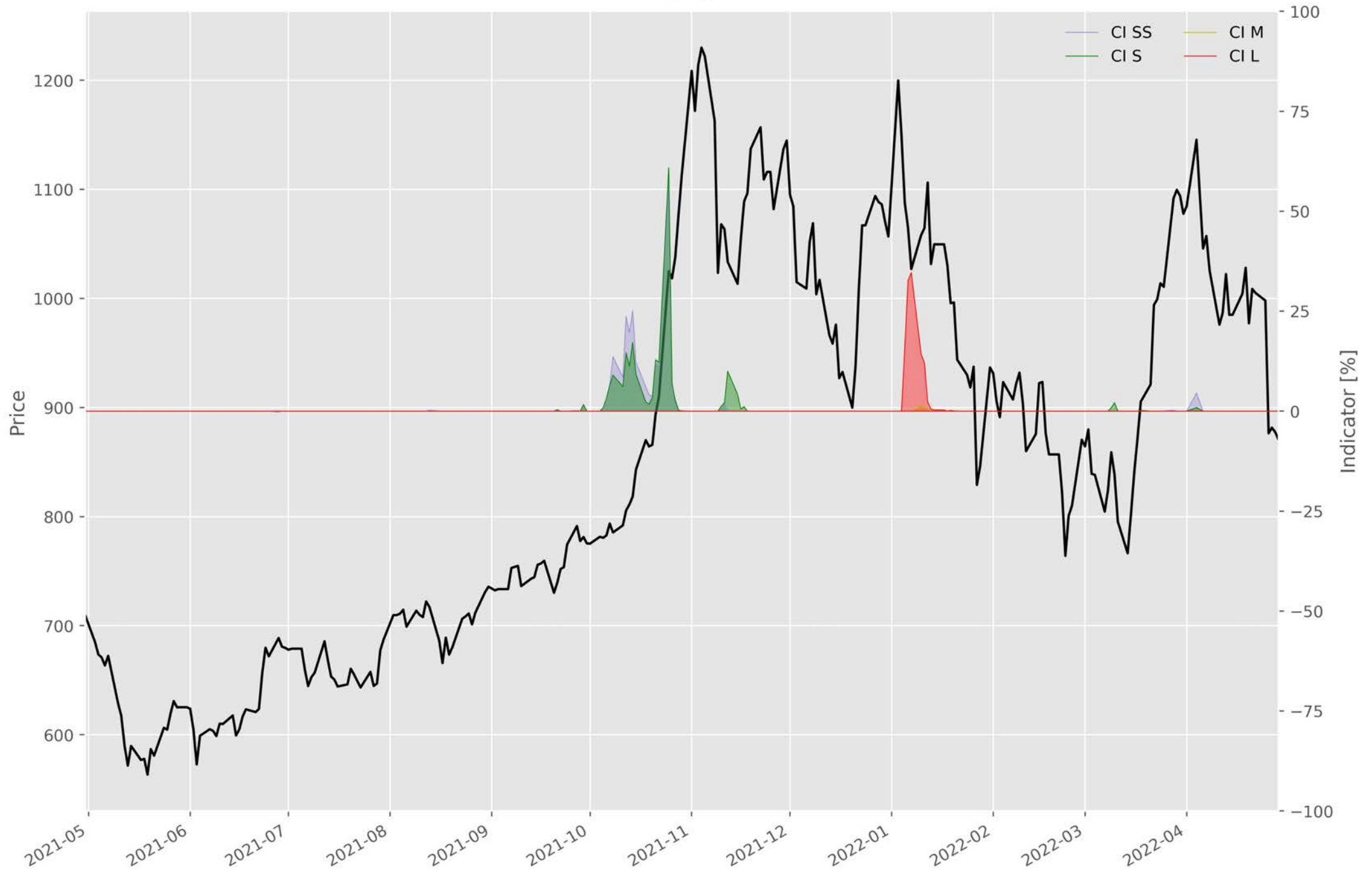
Amazon.Com



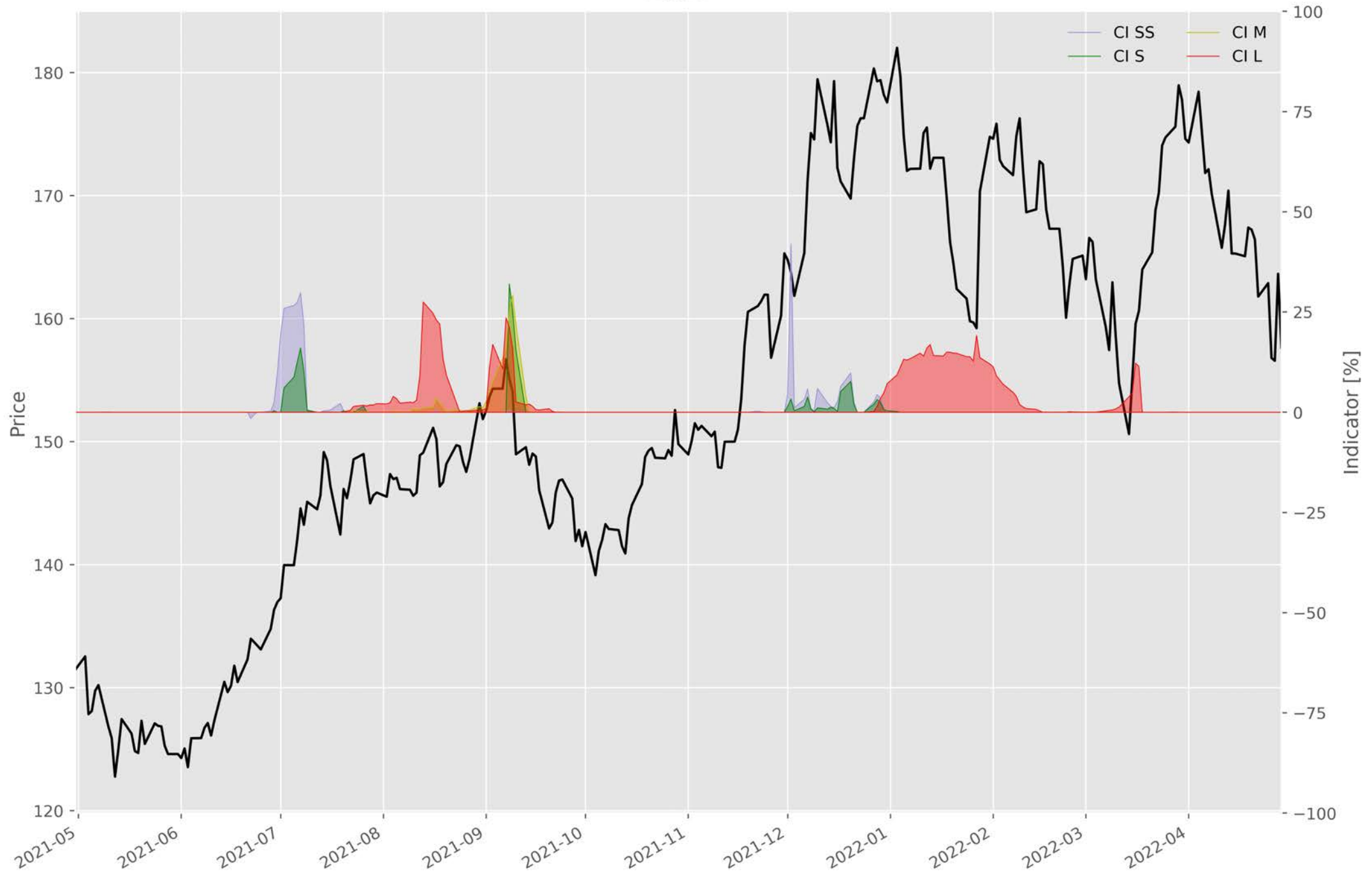
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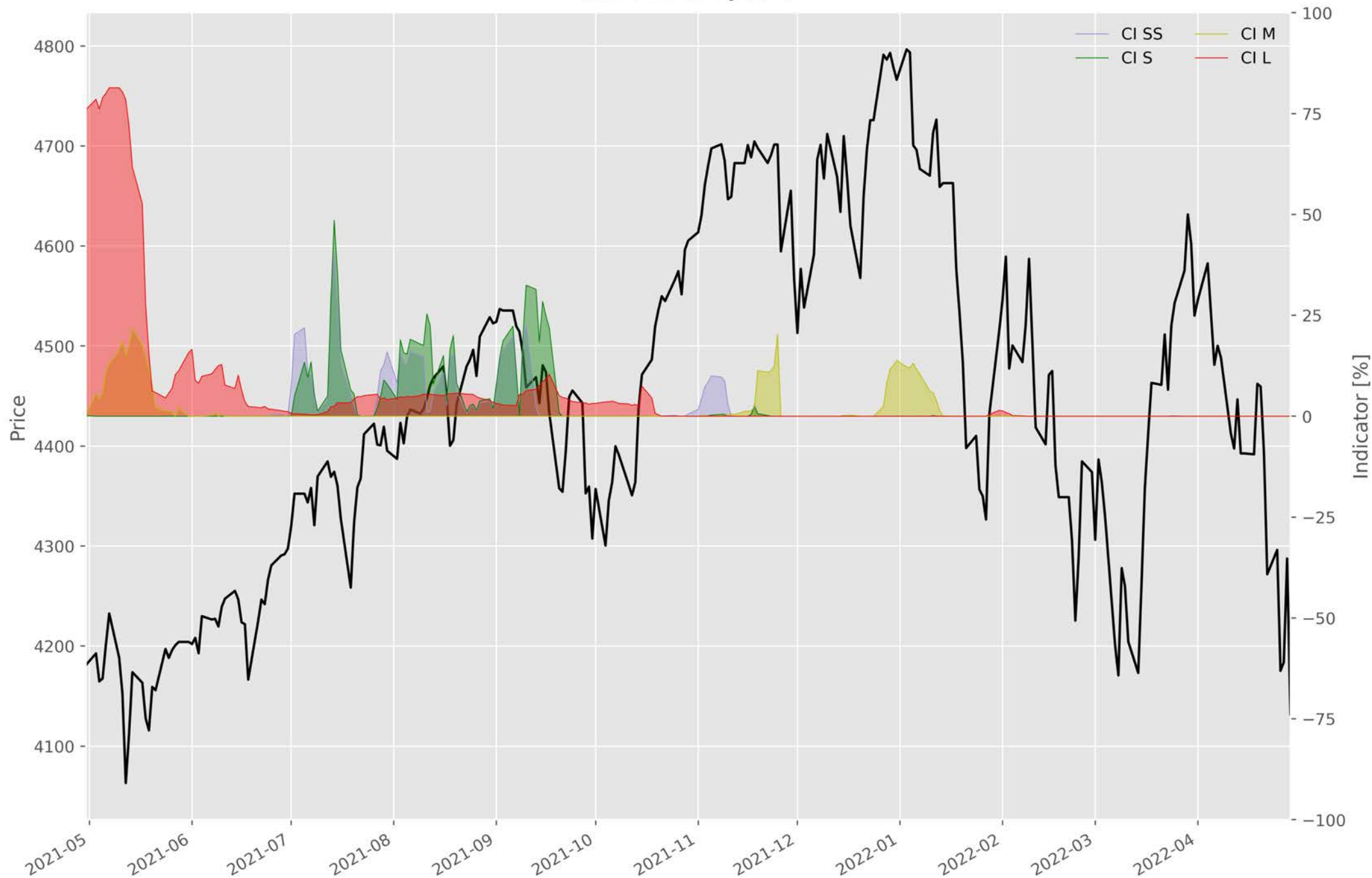
Tesla



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>

- ▶ **Contacts ETH Zurich**

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