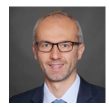
# PULSe Indicator Spikes Again in Q1 2022

Amid geopolitical and pandemic concerns.

May 2022

### KEY INSIGHTS

- In the first quarter of 2022, the PULSe indicator spiked in March because of the Russia-Ukraine conflict and the omicron wave of the coronavirus in China.
- The Pandemic factor also surged in March, as China reported the highest number of daily new cases since March 2020 and the BA.2 variant of omicron hit Europe.
- The Uncertainty and Liquidity factors fell in March as markets started to digest the implications of the Russian sanctions on earnings and credit spreads.



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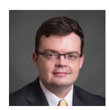

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PULSe is a composite indicator that is designed to monitor the state of global financial markets since the coronavirus crisis. It stands for Pandemic, Uncertainty, Liquidity, and Sentiment—four factors that we believe encompass much of the market's dynamics. High positive values of PULSe are typically a negative sign for market stability.[1]

The PULSe composite indicator reached another post-pandemic high in March as the geopolitical tension in Eastern Europe escalated sharply after Russia invaded Ukraine and while the omicron variant of the coronavirus spread in China. It has been abating since, ending the quarter only a little higher than at the start of the year.

The PULSe indicator decreased from its peak in early March, thanks to improvements in the Uncertainty (U) and the Liquidity (L) factors. PULSe was characterized as stable as of March 31, 2022.

- The Pandemic (P) factor spiked above the crisis zone before edging back as the BA.2 omicron variant hit Europe and omicron spread rapidly in China. Positive test ratios rose in Europe, indicating the spread of the virus might be broader than reported. Consumer activities were negatively affected as reflected in lower Google retail mobility data.
- The economic Uncertainty factor decreased as U.S. oil inventories destocked, long-term government bond yields surged, and earnings forecasts continued to be revised higher.
- The Liquidity factor plummeted as the spreads of U.S. 3-month commercial paper, Euro IG financials, and U.S. high yield all contracted after their initial surge following the conflict in Ukraine and the sanctions against Russia.
- The Sentiment (Se) factor also climbed (i.e., worsened) in March due to the increased equity put/call ratio and extreme S&P 500 Index daily price movements before falling back.

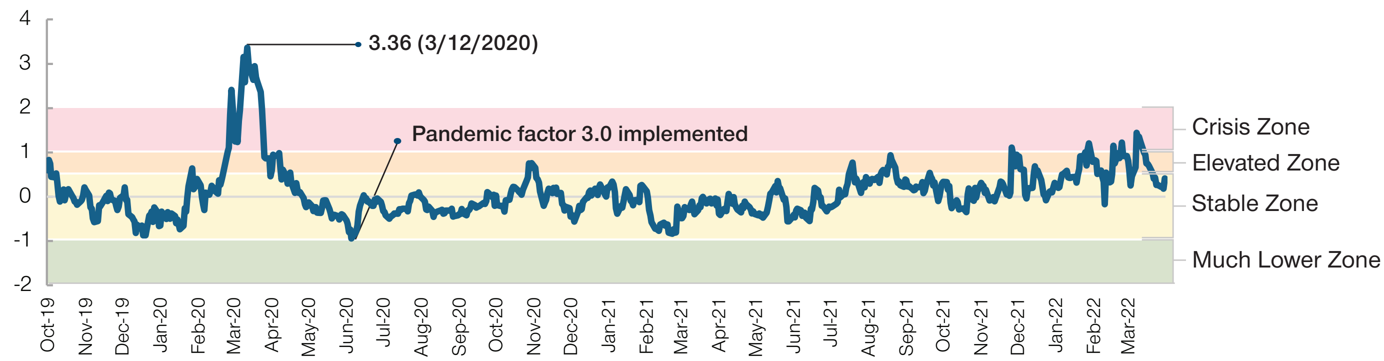
[1] For full details, please see additional information at the end of this paper.

## Visualizing the PULSe Indicator

(Fig. 1) Expressed as an average of the four component indicators

| | PULSe | Pandemic | Uncertainty | Liquidity | Sentiment |
|---|---|---|---|---|---|
| Current | 0.41 | 1.76 | 0.29 | -0.82 | 0.43 |
| Zone | Stable | Crisis | Stable | Stable | Stable |
| 5-Day Trend | → 0.15 | → -0.29 | → 0.12 | ↑ 0.74 | → 0.01 |
| 1-Month Trend | ↓ -0.51 | → 0.13 | → -0.29 | ↓ -1.97 | → 0.09 |
| 3-Month Trend | → 0.32 | → 0.41 | → 0.38 | → 0.03 | → 0.46 |

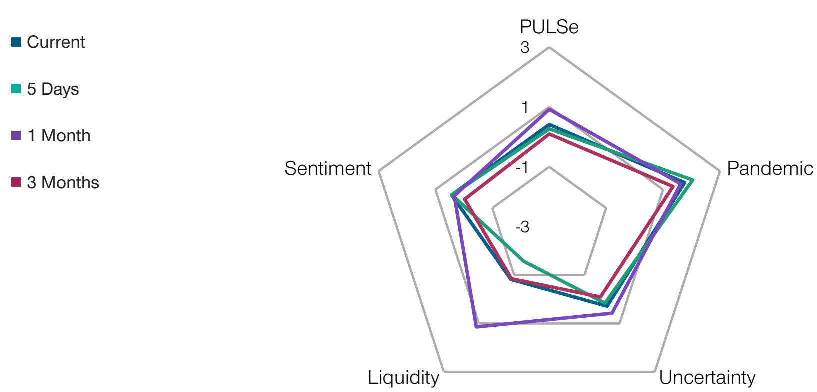
### PULSe Indicator History




As of March 31, 2022.
Sources: Haver Analytics/Bloomberg Finance L.P. Analysis by T. Rowe Price.
For illustrative purposes only. Subject to change. The PULSe indicator has been developed by T. Rowe Price. Using different underlying indicators and data could yield different results. Future outcomes may differ significantly. Note that positive indicator values are typically a negative sign for market stability. The division of PULSe into zones is subjective, based on historical data and statistical assumptions. "Trends" represent the change in the given indicator over the stated period. Please see additional disclosures on the PULSe indicator at the end of this paper.

## Radar Chart Showing the PULSe Indicator and Its Components

(Fig. 2) Radial axes expressed as z-scores (number of standard deviations from the mean)

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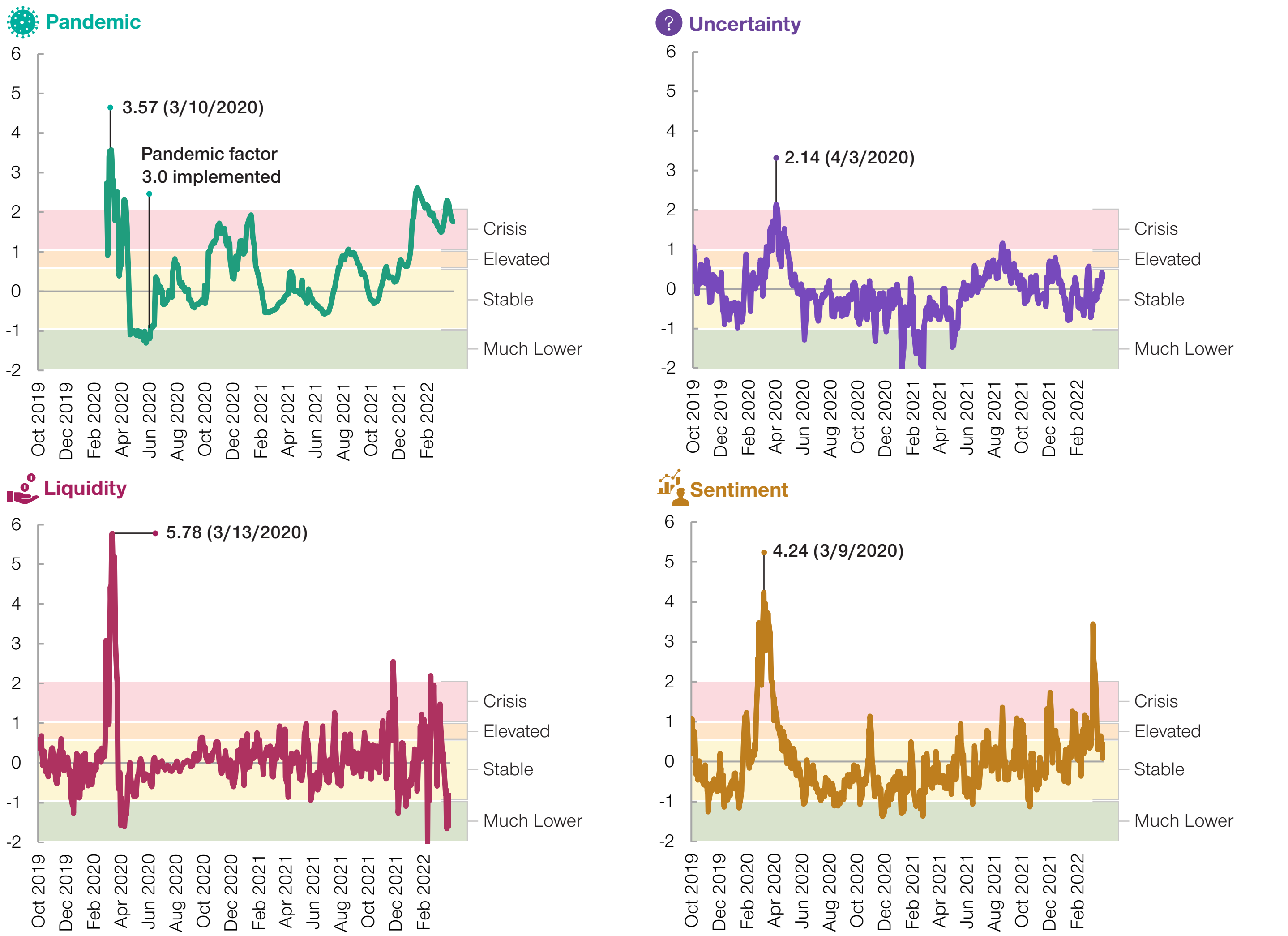
## The Four Components of PULSe

(Fig. 3) Currently only Pandemic is elevated

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Indicator level on left-hand side expressed as a z-score and subjective stability zone on right-hand side of each chart.

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### Background Note

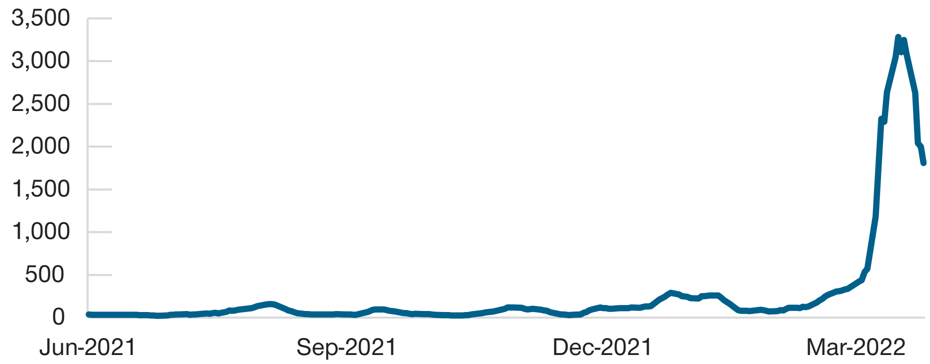
In this note, we highlight two factors that contributed meaningfully to the PULSe indicator over the month: The omicron variant spread in China showed signs of peaking, and U.S. oil inventories destocked.

1. **The Omicron Variant Spread in China Showed Signs of Peaking**

In late March, China reported the highest number of daily new cases since March 2020. More than 40 million people in Shanghai, Shenzhen, and Jilin province came under lockdown. This confirmed the Chinese government's determination to stick to the dynamic zero-COVID policy at the expense of economic growth, at least in the near term. But as the lockdown-related death

### The Omicron Wave in China Showed Signs of Peaking

(Fig. 4) China daily new cases (5-day average)




As of March 31, 2022.
Source: Bloomberg Finance L.P.

toll started to mount and basic grocery supply and food distribution in Shanghai encountered obstacles, the public's view toward reopening was seen to be shifting. COVID-19 control measures in China's largest industrial cities had taken a toll on the factory operation and transportation networks, putting additional pressure on global supply chains.

On the bright side, shortly after the National People's Congress in March, the State Council announced a trial scheme for antigen testing. In the same week, China's state-owned enterprise Genertec and Pfizer signed a contract for marketing and distributing Paxlovid antiviral medication in China. Furthermore, according to Hong Kong University Medical School's analysis of the recent virus wave, three doses of Sinovac do reduce the risk of hospitalization by 80%. Our health care research team believes that effective vaccination against severe symptoms, availability of oral antiviral drugs, and home-based antigen testing are three prerequisites for loosening the restrictions and ultimately reopening the Chinese economy. Given the low percentage of cases with severe symptoms, China modified its COVID-19 treatment guidelines, which specified that patients with mild symptoms are now required to quarantine at designated places instead of hospitals in order to preserve health care resources.

Toward the end of March, daily new cases in China showed signs of peaking. Nevertheless, in the near term, the spread of the omicron variant is likely to continue to disrupt economic activity. We believe China will need to take more policy actions if it is to achieve what now looks like an ambitious goal of 5.5% gross domestic product growth in 2022.

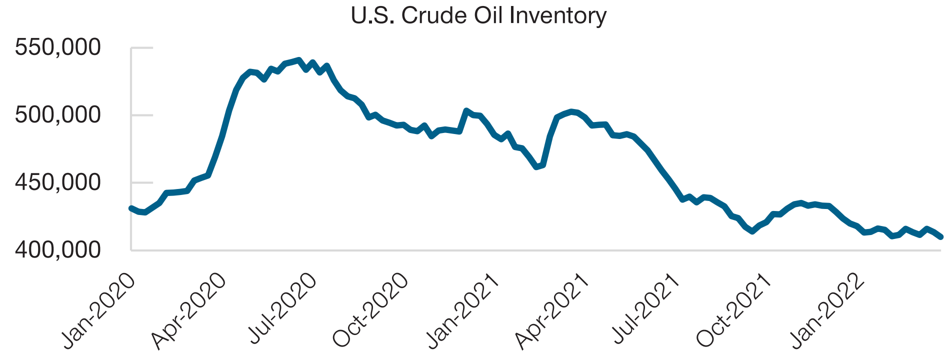
**2. U.S. Oil Inventory Has Destocked**

Since mid-2020, U.S. crude oil inventory had been declining as the global economy reopened and OPEC+ pursued a conservative oil supply strategy. After stabilizing at around 415k barrels in January and February, the inventory level resumed its declining trend in March. While the previous demand-driven destocking reflected lower economic uncertainty, the recent drop was driven by a supply shock from escalating geopolitical tension in Eastern Europe, which, on the contrary, should signal a deterioration in economic uncertainty.

Russia's invasion of Ukraine and the subsequent sanctions imposed by the U.S., the UK, and Europe created a shock to the world energy supply with unknown duration and severity. This happened at a time when energy demand from the

## U.S. Crude Oil Inventories Remain Low

(Fig. 5) Crude oil stocks in million barrels




As of March 31, 2022.
Source: Bloomberg Finance L.P.

rest of the world was recovering steadily on the back of economic reopening. The gap between energy supply and demand has profound adverse effects on consumer spending; industrial production; CAPEX investment; and, ultimately, future productivity.

Although the U.S. economy appears to be insulated from the war disruption and is self-sufficient in oil supply, it cannot operate in a vacuum. Countries that used to rely heavily on Russian oil supply had to switch to other sources, with second order impacts on U.S. oil markets. Despite the U.S. government's plan to release 1 million barrels of oil per day from its strategic reserves to reduce the demand-supply gap, U.S. oil inventory inevitably embarked on a declining trend.

Increased energy supply risk rings particularly true for the European Union, which sourced more than 35% of its imported natural gas and almost 23% of its crude oil and petroleum products from Russia in 2020. Portfolio Manager Shinwoo Kim believes that policymakers in key economies are likely to seek to accelerate the push to clean energy to ensure future energy security. The transition would take significant time and investment, providing plentiful opportunities for active stock pickers. In the near term though, governments are expected to take a more pragmatic approach to the pace at which they phase out of legacy sources of energy, as supply security now becomes an important factor in shaping energy policy.

**Additional Information Regarding the PULSe Indicator:**

The PULSe Indicator was developed by the Global Multi-Asset team.

We stress that the PULSe indicator is directional only, meant to show whether the key factors underlying the market turbulence are strengthening or weakening over time. It is not meant to be the basis for making market or asset allocation decisions and is not designed to be a market timing indicator.

A high number for the PULSe indicator is a sign of market stresses and, thus, potential turbulence.

Z-score: We focus on how the latest market data are different from the recent past using a z-score, where each data point is expressed in terms of the number of standard deviations above or below the mean, or average, of the series.

The Pandemic factor or score differs slightly from the other three factors in terms of its underlying principles and, thus, the manner of its construction. Our Pandemic series is measured focusing on the largest economies such as the G_7. In the current Pandemic factor model, we look at three metrics: (1) daily new cases to track the spread of the COVID-19 (the disease caused by the coronavirus); (2) positive test ratio to confirm the trend of the diffusion curve; and (3) Google retail mobility to assess the impact of the pandemic on consumer behavior. We believe the crisis will only end when the COVID-19 outbreak is globally under control (i.e., very few new cases) and an effective treatment appears. Our Uncertainty factor focuses on economic data and how they differ from market expectations. Examples of underlying data include the Bloomberg economic surprise indices, changes in oil supply and demand, yield curves, and earnings per share growth forecasts. The Liquidity indicator aims to identify any stresses in the credit market. Spreads on credit typically widen when liquidity dries up. Our Liquidity gauge uses commercial paper spread, the financial sector spread, the high yield energy and ex-energy spreads, and ratio. Finally, our gauge of market Sentiment looks at risk appetite from market participants. This includes put/call ratio, implied volatility, a measure of extremes in daily returns, currency sentiment, and some commodity prices.

Our aggregate PULSe indicator is composed of the four components or factors that are themselves composite indices. A simple average is taken across the four components. We believe each factor and its components contain useful information that can help investors gauge the current state of the market and how or when conditions are starting to improve or normalize.

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