

market notes:

The Pulse of Digital Asset Markets

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**market notes... The Pulse of Digital Asset Markets
9/16/22 - Marcel Kasumovich and Mathias Nwokejiobi**

1. Pulse. It is a fundamental sign of life. The simple measure of heartbeat provides incredible insight on health, taking an impossibly complex system of arteries down to a single, intuitive number. The simple measure of the number of heartbeats in a minute provides incredible insight into health, taking an impossibly complex system of arteries down to a single, intuitive number. Its use as a health diagnostic stands the test of time, referenced in the oldest known written story, Gilgamesh, in 2600 BC. Today, pulse is interpreted with nuance, building on thousands of years of experimentation and study.
2. Who are we to argue with thousands of years of research and development? Our goal is to measure the pulse of the digital asset ecosystem. It starts with data. Digital assets are rich in on-chain metrics. Making sense of that data is an undertaking, and we learned by doing. The inputs must be simple enough to capture the most relevant common fundamentals across digital assets, but not so simple as to detract from their usefulness. We strive for a balance in creating the Pulse, now a year in development.
3. The Pulse is a single number that summarizes the fundamental health of digital asset markets. It is based on the Coinbase CORE Index constituents, though more than seventy assets and customized scores are available at our fingertips. It is intentionally built to avoid connection to market prices – the attention is on fundamentals. We organize those fundamentals to be descriptive, not necessarily predictive, of future prices. The lessons we learn will integrate into our asset management toolkit in more nuanced ways, ranging from risk management to trading signals.
4. The Pulse was 52.7 for the One River Digital Core Index as of midnight Thursday, close to a neutral reading (Figure 1). The score is calibrated so that 50 is neutral inside a range of 0 to 100. A value above 50 indicates that overall activity in the ecosystem is growing, like a traditional Purchasing Manager Index. Interestingly, there is considerable dispersion across constituent assets today (Figure 2). Bitcoin and its close relative, Litecoin, are positively influencing the Pulse reading. However, Ethereum and Polygon are contracting with weak levels, despite substantial development progress, a negative influence. This isn’t proof-of-work beating proof-of-stake – Bitcoin Cash has the weakest score.
5. Let’s look under the hood of the headline Pulse. Figure 3 shows the category scores in Index assets with complete data. There are seven categories of fundamentals that are integrated into the score, from the volume of transactions to the distribution of assets across the network. Hundreds of on-chain data are copied, calculated, normalized, and stored to populate those fundamental categories. Scores are updated at midnight ET every calendar day – digital never

sleeps. The tool makes it easy to glean themes – most notable, fundamental weakness today is being driven by measures of adoption. User growth, active users, and asset transfers are all at weak levels. It's winter in digital asset markets, after all.

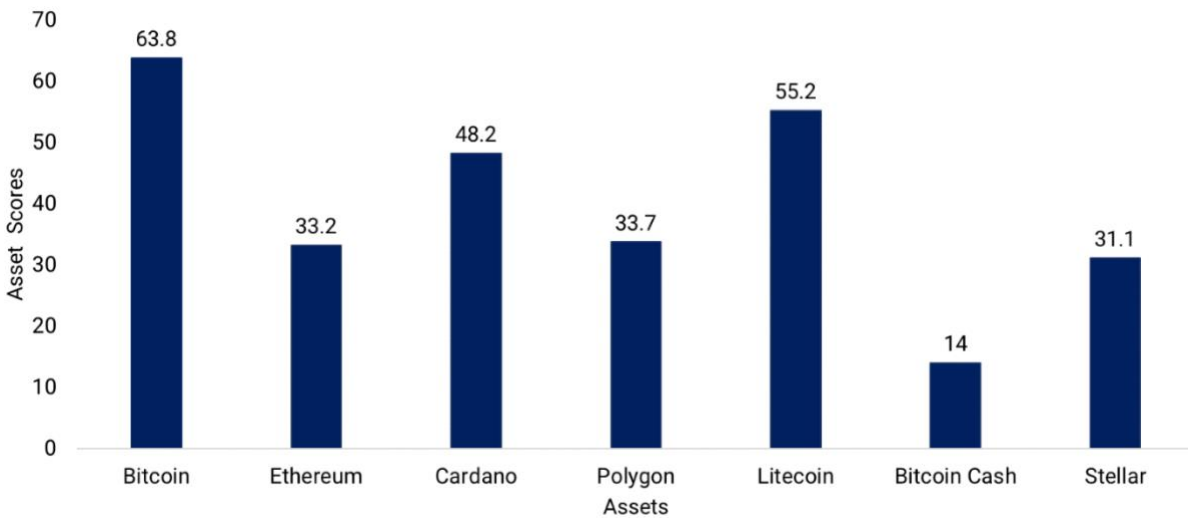
6. We've been running the Pulse for several months internally. It helps us refine our understanding of digital assets, and we will continue to build unique indicators accordingly. There are two dimensions that matter for expanding knowledge – depth and breadth. We are adding depth through asset-specific indicators that we will categorize into the health diagnostics in the future. To expand broadly, we added two macro indicators to the Pulse.
7. The Pulse's macro reading is based on economic data from the [Institute of Supply Managers](#). Economic activity is divided into four states, from high-and-rising activity to low-and-falling. Transition probabilities are estimated to capture the odds of moving from one state to a future state based on historical experience (Figure 4). The probability-weighted economic state is calibrated to mirror the 0-to-100 scale of the Digital Pulse. A weak, improving Macro Pulse reading signals a cyclical upward trend in digital asset prices. A strong, eroding Macro Pulse reading warns of a downward trend.
8. The Digital Financial Conditions Index (DFCI) is a faster-twitch macro muscle. Like traditional FCIs, it is based on short-term rates, credit, equity, and foreign exchange. But it is drawn only from the digital ecosystem. Figure 5 illustrates the Digital FCI relative to our Size-Tilt Index. Two observations are notable. First, 2021 tightening in financial conditions was well ahead of the price downturn, an early warning indicator. Second, digital asset prices have declined disproportionately, undershooting financial conditions. The Digital FCI Pulse measures changes in the DFCI, capturing marginal tightening or easing. It complements fundamentals, recognizing macro conditions slow the transmission of fundamentals to price.
9. The Digital Pulse suggests that the worst of the fundamental downdraft is behind us. The same is true for financial conditions, which have tightened to the same degree as past crypto winters, notably and surprisingly more slowly. However, the Macro Pulse indicates that conditions are weakening, and yet to find their floor. This week's upside surprise to US inflation is indicative of the macro influence over digital asset markets – accelerated rate hikes are expected to quash inflation with a greater risk of recession. A trough in the Macro Pulse would send a consistent positive message on the next cycle's trend – we're closer, just not yet there.
10. Like any health diagnostic, different doctors draw different inferences in the pulse. You will have the opportunity to read the Pulse through your lens. Starting next week, our Digital Daily will be dedicated to The Pulse each Friday. With more than 70 assets covered across a wide range of indicators, the tool has a lot to offer. Your questions will make it more powerful. Please contact [Mathias](#) if you would like to be added to the Digital Daily or for a demo of the live tool on our intranet.

Figure 1: Digital Pulse Scores for One River Indices



Source: Coin Metrics. One River Digital Calculations. Percentage changes are weekly.

Figure 2: Pulse Network Scores



Source: Coin Metrics. One River Digital Calculations.

Figure 3: Index Constituent Breakdown

Assets	Asset Score	Volume	Transfer Count	Active Users	User Growth	Valuation	Velocity	Network Distribution
Core	52.7	64.4	45.0	42.9	28.4	34.1	65.9	87.9
Size Tilt	46.9	58.8	34.5	33.9	25.9	34.4	55.7	85.3
Bitcoin	63.8	69.5	55.8	56.7	39.1	26.8	98.8	99.6
Ethereum	33.2	58.7	31.2	21.6	6.8	49.6	0.8	63.7
Cardano	48.2	43.8	16.6	10.1	33.9	34.1	99.3	99.9
Polygon	33.7	54.8	10.4	8.4	10.4	51.9	10.5	89.2
Litecoin	55.2	59.1	27.7	42.6	42.5	15.5	99.8	99.5
Bitcoin Cash	14.0	40.2	2.5	5.0	5.4	24.5	0.3	19.8
Stellar	31.1	31.4	3.0	29.8	32.9	19.7	0.5	100.0

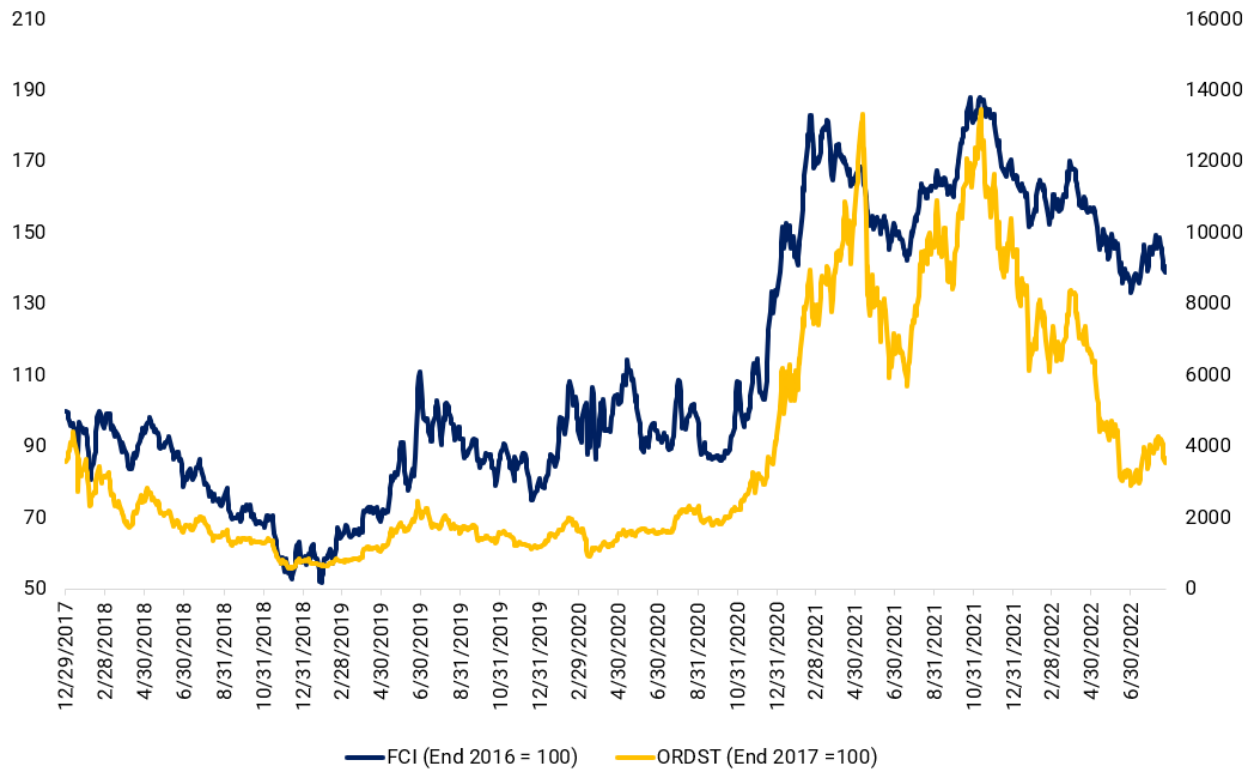
Source: Coin Metrics. One River Digital Calculations.

Figure 4: Macro Pulse Probability Transition Matrix

<p>LOW RISING</p> <p>3m Probability Transition 0%</p>	<p>HIGH RISING</p> <p>3m Probability Transition 29%</p>
<p>LOW FALLING</p> <p>3m Probability Transition 13%</p>	<p>CURRENT STATE</p> <p>HIGH FALLING</p> <p>3m Probability Transition 57%</p>

Source: Coin Metrics. One River Digital Calculations.

Figure 5: ORDAM Financials Conditions Index vs One River Size Tilt Index



Source: Bloomberg LP. MVIS. One River Digital Calculations.

Metric Definitions

1. Volume – The aggregated value of native units transferred between addresses on-chain.
2. Transfer Count – The sum count of transfers between addresses. It becomes more valuable when used in conjunction with Volume.
 - 2.1 Low Transfer Count & High Volume: High volume but transferred by a few addresses.
 - 2.2 High Transfer Count & Lower Volume: Indicates higher retail activity or exchanges amongst small accounts.
 - 2.3 Lower Transfer Count & Lower Volume: Indicates slower network usage and low network demand.
 - 2.4 High Transfer Count & Higher Volume: Indicates high network usage. A persistent trend is substantial.
3. Active Users: Number of addresses active in the network as recipients or originators of ledger change. This includes value transfers, signing blocks, and other forms of ledger change activity.
 - 3.1 High Value: High network usage and high demand.
 - 3.2 Low Value: Low network usage and low demand.
4. User Growth Rate: The rate at which new addresses with non-zero balances are added to the network.
 - 4.1 High Value: Indicates users being added to the network at an increasing rate.
 - 4.2 Low Value: Indicates users being added to the network at a slower pace.
5. Valuation: This metric compares the on-chain volume to the realized capitalization representing the value of the network. Realized capitalization is a revised form of market capitalization that accounts for the value of the coin at the time the coin was last spent. A lower volume compared to the high value of the network indicates the network could be overvalued and vice versa.
 - 5.1 High Value: Indicates the network is closer to its real value based on the on-chain volume.
 - 5.2 Low Value: Indicates the network is very close to being overvalued considering the activity on the network.
 - 5.3 Medium value: Asset is reasonably valued—sustainable demand for transactions.
6. Velocity: This indicator shows the turnover of coins in the network as measured by on-chain volume divided by active supply. The primary use of this metric in this instance is to help assess an asset's market-relevant supply.
 - 6.1 High Value: There is greater circulation of coins in the network and use for payments.
 - 6.2 Lower Value: There is lower circulation of coins in the network and use for payments.
7. Network distribution: The metric used, the SER ratio, compares the smallest accounts (sum held by accounts with a balance less than 0.00001% of the supply) against the richest accounts (sum held by the top 1% addresses).
 - 7.1 High Value: Signifies high distribution of supply and higher decentralization.
 - 7.2 Low Value: Low supply distribution and heavy concentration amongst a few wallets.

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