LCI 20

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Some Text.[1]

We focus on weighted average but have maximum weights

1.1 Definition

Let t denote time index starting at time t_0, $t = t_0, t_1, t_2, \ldots$. And let $\mathcal{C}_t$ denote the set of coins that are traded at time t.

- Price $p_{i,t}$: price of asset i at time t
- Quantity $q_{i,t}$: overall number of shares/items per asset i at time t
- Market Capitalization of asset i at time t is $c_{i,t}$

$$\text{LCI20}_t = \frac{\sum_{i \in \mathcal{C}_t} w_{i,t} c_{i,t}}{Divisor}$$

1. Calculate each coins market share $s_{i,t}$.
2. Truncate market shares by maximum $\bar{s}$: $\bar{s}_{i,t} = \max\{s_{i,t}, \bar{s}\}$
3. Rescale them, so weights sum up to one: $w_{i,t} = \frac{\bar{s}_{i,t}}{\sum_{i \in \mathcal{C}_t} \bar{s}_{i,t}}$. Note that $w_{i,t}$ is afterwards greater than 0.25 due to rescaling.
4. $$\widetilde{\text{LCI20}}_t = \sum_{i \in \mathcal{C}_t} w_{i,t} c_{i,t}$$

[1] Code and .tex-files can be found at https://github.com/onnokleen/crypto-index

5. The initial value of the weighted sum is given by

$$\widetilde{\text{LCI20}}_{t_0} = \sum_{i \in \mathcal{C}_t} w_{i,t_0} c_{i,t_0}$$

6. $Divisor = \widetilde{\text{LCI20}}_{t_0} * 100$

1.2 Questions to address

- Why 20 currencies? 19-09-2017 14:41 20th market capitalisation (STEEM) is only $286.382.955 and 24 hour trading volume of $686.
- "Dead coins" a problem?
- If there is a split (like Bitcoin), new currency is part of Lykke 20 but is part of constituents-check at the end of the week.
- Basis: 100 Punkte?
- How to get market capitalization of public float?
- Maximal weight maybe 20%? DAX: Maximum weight 10%.

1.3 How does it work in other indices

- DAX: Weighting based on market capitalization of public float (bedeutet Streubesitz, keine Aktien von Langzeitanlegern wie Familie Porsche/Quant).

1.4 Features

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- Constituent changes each week. Maybe Friday? Maybe based on trade volume in last 7 days? Good against "dead coins".

2 Example

Data is from https://www.kaggle.com/sudalairajkumar/cryptocurrencypricehistory or CoinCap.io via Rest API
Something nice to illustrate:

- Volatility in August (Bitcoin-split versus July). Show new composition after split.