Market Valuation Indicators

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1 Fundamental Indicators

1. **MVRV**
   Market Value = (last traded price) x (number of coins in circulation)
   Realized Capitalization = Market value of coins since last moved on the blockchain
   Is the traded price below "fair value"?

$$\text{MVRV} = \frac{\text{Market Value}}{\text{Realized Cap}} \tag{1}$$

2. **SOPR**
   UTXO: Balance in a bitcoin address
   Asumming that when coins move, they're being sold,

$$\text{SOPR} = \frac{\text{dollar value when UTXO created}}{\text{dollar value when UTXO spent}} \tag{2}$$

   Over time period T:
   SOPR $> 0 \Rightarrow$ coins being moved between wallets are overall in profit
   SOPR $< 0 \Rightarrow$ coins being moved between wallets are overall in a loss
   SOPR uptrend $\Rightarrow$ increased levels of realized profits
   SOPR downtrend $\Rightarrow$ fall in realized profits

3. **CDD**
   Every day one coin unit remains unspent, it accumulates one "coin day"
   Over time period T:
   CDD = (number of coins spent) x (lifespan of those coins)
   As more coin-days are accumulated by the network, the 'floor value' steadily rises, and peaks are more pronounced

4. **NUPL**
   Unrealized Profit: Total *profit* accrued by UTXOs which were created when the price of the asset was lower than the current price.

Unrealized Loss: Total *loss* accrued by UTXOs which were created when the price of the asset was higher than the current price.

In general, the further NUPL deviates from zero, the closer the market trends towards tops and bottoms

5. **IFP**
   Considers the cumulative amount of bitcoin going from Coinbase to derivative exchanges.

   Crossing the **above** the SMA (90): Risk-on market sentiment, traders are using leverage or BTC as collateral
   Crossing the **under** the SMA (90): Risk-off market sentiment, traders increasingly take coins out of derivative exchanges to spot exchanges to sell into fiat

6. **Realized Profit & Loss**
   Marked-to-market value when the (long/short) position is closed, as a percent of initial margin balance.

7. **Price to Metcalfe Value**
   Metcalfe's Law: *The value of a network is proportional to the square of its users*
   The Metcalfe value itself measures demand-drive network effects, when the asset has a fixed supply, while the ratio seeks to model supply/demand dynamics.
   Is the price (higher/lower) than demand would suggest?

8. **True Market Deviation (AVIV Ratio)**
   True Market Mean (or Active-Investor Price) is a cost-basis model for all coins acquired on secondary cryptocurrency markets. It models average on-chain acquisition price by investors, providing a reference point for mean-reversion models.

   ThermoCap: Aggregate coins paid out to miners: measures true capital flows into the market.
   Investor Cap: RealizedCap - ThermoCap
   Discounts the capital paid out to miners from the market's general cost-basis

   AVIV (Active-Value-to-Investor-Value) Ratio = (Market Value of Active Addresses) / (Investor Cap)

2 Formulas

1. **Sharpe Ratio**

$$S_a = \frac{E[R_a - R_b]}{\sigma_a} \tag{3}$$

R_a = asset's returns
R_b = risk-free return
σ_a = standard deviation of excess asset returns

2. **Market Breadth**

3. **Profit & Loss Margin**

$$\left(\frac{\text{Total Gains}}{\text{NWT}}\right)\left(\frac{\text{NLT}}{\text{Total Losses}}\right) \tag{4}$$

3 Key Terms

1. **Cost Basis**
   Original value of an asset.
   If additional shares are purchased, dividends re-invested, or the stock splits, then the cost-basis is adjusted to account for these events.