BHW Index: Cryptocurrency Market Tool

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**Abstract.** The cryptocurrency market is in its infancy and highly volatile. A new index is required to help this market grow for the curious and seasoned investors of cryptocurrency. The BHW Index is a cryptocurrency market tool that can be used to measure investments against the market while also showing the strength of the cryptocurrency market. Considerations for the index include the following: purpose, segment, membership, algorithm, rebalancing, data, adoption. This paper will detail the making of the tool.

# 1 Introduction

The cryptocurrency market started in 2009 with the bitcoin network and in 2010, the first bitcoin exchange opened. As of September 7, 2017, there are 5,475 cryptocurrency exchanges according to Coin Market Cap and the total market capitalization is $164 billion for 867 currencies. For comparison, this market capitalization represents 20% of Apple’s market cap.

The market is growing exponentially. For instance, the number two cryptocurrency in market capitalization, Ethereum, grew 4,100% in eight months. The Standard and Poor’s 500 Index which is made up of 500 of the most widely traded US stocks took over 40 years to achieve the same kind of growth. The cryptocurrency market is currently in its infancy and to enable it to grow into maturity will require solid measurements by which investors can rely upon.

With so much growth in an industry, many people want to get involved in the opportunity but don’t have the knowledge or background to comfortably invest. A rapidly expanding market has enormous opportunities. But, it also has major risks. One of these risk is price fluctuation or price volatility. As of September 9, 2017, the total market capitalization is $147 billion. That is a 10% slide in the market in two days. Bitcoin makes up 47% of the cap, so its price fluctuation probably drives the market. The challenge for investors today is navigating this young, volatile new market.

Our belief is that an appropriately designed index would help investors and financial managers describe the market and determine if it was up or down. This new index could then be used to compare returns on specific investments. In addition, exchange-traded funds (ETF) could be developed to follow the index or try and beat it.

# 2 Background

Notes:

* Precedence for market indices.
* What are the past approaches?
  + Of these create a table of segment/membership, data, algorithm, rebalance, adoption details.
* Work to date in cryptocurrency market.

# 3 Approach

Notes:

* Research problem space and past work. Also, survey marketplace to gauge interest and need.
* Segment/Membership: Decide on symbols (market) to use for portfolio.
* Data: Build tool to pull data by range from a large exchange that provides symbol pairs for USD. Store data in a DB.
* Data: Study time series data and index of portfolio.
* Algorithm: Iterate on an algorithm and compare with portfolio individual pairs.
* Rebalance: Decide on rebalance criteria and experiment.
* Adoption: Create a plan for mass adoption. Are other tools needed?

# 4 Ethics

Notes:

* What are the ethical concerns in the cryptocurrency market?

# 5 Analysis

Notes:

* Exploratory data analysis.
* Algorithm development

# 6 Results

Notes:

* Application of algorithm
* Feedback from community if appropriate

# 7 Future Work

# References

Below is place holder:

1. Baldonado, M., Chang, C.-C.K., Gravano, L., Paepcke, A.: The Stanford Digital Library Metadata Architecture. Int. J. Digit. Libr. 1 (1997) 108–121

2. Bruce, K.B., Cardelli, L., Pierce, B.C.: Comparing Object Encodings. In: Abadi, M., Ito, T. (eds.): Theoretical Aspects of Computer Software. Lecture Notes in Computer Science, Vol. 1281. Springer-Verlag, Berlin Heidelberg New York (1997) 415–438

3. van Leeuwen, J. (ed.): Computer Science Today. Recent Trends and Developments. Lecture Notes in Computer Science, Vol. 1000. Springer-Verlag, Berlin Heidelberg New York (1995)

4. Michalewicz, Z.: Genetic Algorithms + Data Structures = Evolution Programs. 3rd edn. Springer-Verlag, Berlin Heidelberg New York (1996)

**Dr. Engels Comments:**

Comments on your proposal - first a formatting comment: please follow the format exactly.  Do not change it.  ~~For example, there is no blank line between paragraphs.~~

Question on your proposal: What is the problem you are solving? In addition, how do you measure success? Why is it not trivial to create an index? Specifically, how would it be created?  How would it be used?

In writing, do not state your opinions…eg do not use “Our belief…” Write neutral.  This is not an opinion piece.

The concept is good, but it’s not clear why this is a capstone project.  Indexes are created all the time. Why is it hard? How is this more than a simple exercise? How do you assess success?   You are missing all of the problem details and measures of success.

Please add the problem and additional details.

**Milestones:**



