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'Proof of Equity': A Solution to Financial Inequality using Stablecoins

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Abstract - *Money is vital to an economy due its static and dynamic roles. The value of currency is determined by the demand and supply in the market. Money is a medium of exchange authorized by the issuing government as a legal tender. In the short term, the value remains constant but for the long term due to inflation and banknote printings, the value of currency keeps on depreciating and this phenomenon is known as Time Value of Money. The dynamics of money is such that it works for rich people rather than poor people. Higher income groups have the potential to create a demand in the market which can eventually appreciate or depreciate the prices unlike low income groups. Rich people strive less compared to poor people in order to acquire or earn the same amount of money. This research paper discusses the approach of Proof of Equity protocol where in order to earn the same amount of money, the struggle for high income groups increases compared to low income groups. The currency self adjusts such that people who strive more tend to earn money at a faster rate compared to people who strive less.*

Key Words: **Cryptocurrency, Money, Fiat currency, Stable coins, financial inequality, economics, cryptocurrency**

1. INTRODUCTION

World's 26 richest people own as much as the poorest 50% says Oxfam [1]. The world's 2,153 billionaires have more than 4.6 billion people combined, Oxfam says [2]. A 0.5 % increase in taxes on the wealthy would generate enough funding to create 117 million jobs in sectors like education and health, according to the researchers [3].

There are many factors like education, finance, infrastructure and governance that lead to global financial inequality. But a major reason that has widened the gap between higher income groups and lower income groups is the dynamics of the money. Money is certainly biased towards the high net worth individuals compared to low net worth individuals. Low income groups tackle with harsh competitions and inflation in order to earn the same amount of money as compared to the rich individuals. Due to this, the rich tend to get richer and Poor tend to get poorer. Even after so many steps taken by government authorities like printing notes, changing interest rates, universal basic income and tax benefits, it has not really helped the government to bridge the gap between them. Instead all the steps have gone against the poor due to its repercussions like high inflation and huge taxations.

A Modified Stable coin cryptocurrency can help to overcome the drawbacks by using Proof of Equity protocol. As Money tends to be equally available for both the rich and the poor, the struggle between them may not be the same. The Rich have to struggle less compared to the Poor in order to acquire the same amount of money. A mathematical model for cryptocurrency, such that the struggle for acquiring the same amount of money for rich and the poor be swapped in order such that low income groups strive less compared to high income groups. Hence, the rate of earning changes as per the struggle by the individuals.

Table -1: Rate vs Struggle

Rate vs Struggle			
Struggle	Risk	Rate	Amount percentage
High	Positive	More	More
High	Negative	More	More in negative
Low	Positive	Less	Less
Low	Negative	Less	Less in negative

2. METHODS

This section provides a description of two important concepts used for this cryptocurrency system. The main components are:

1. Modified Stable Coin
2. Proof of Equity protocol

1. Modified Stable Coin:

Stable coins can facilitate the payments within or across the nations. Stable-coins are a new set of security-tokens built as a substitute to Fiat currencies that attempts to maintain price stability and integrity within the government norms. They are backed by assets and reserves similar to the working of fiat currencies. It attempts to offer instant processing and security. Stable coins achieve price stability through liquidation in the market. Unlike Bitcoin H Hellani, A E Samhat, M Chamoun, H E Ghor, A Serhrouchni (2018) [4] which has huge price

fluctuations and follows a deflationary model, stable coins are introduced which are volatile-free and generally follow an inflationary model. The inflation can easily be controlled by central authorities in case of stable-coins by either changing interest rates or by providing liquidity in the market by printing notes. On the contrary, the supply of bitcoin is limited to 21 million D Canellis (2020) [5] and hence inflation cannot be controlled as prices are affected directly by demand. For instance, Bitcoin price rose from the level of around $5,950 in November 2019 to above $19,700 in December 2019, and then declined by around two-thirds to the level of $6,900 by February 2020 Adam Hayes (2020) [6]. This makes Bitcoin and many cryptocurrencies unsuitable for people as they would refrain from a value adoption where future purchasing power is unsure.

Tether(USDT) Johnson (2000) [7] is a popular stable-coin which is backed by the Federal Reserve Bank of USA. Price of 1 Tether equals the price of 1 USD and it is built on open blockchain technologies leveraging the security and transparency in a system. Tether is the most widely integrated digital-to-fiat currency and provides security while meeting Standards and Regulations. A stable coin like Tether can be modified such that it changes its amount of coins at a single time frame. This process is carried out in a decentralized Peer-to-Peer J. Sen (2013) [8] network without any intermediaries or involvement of central authority. The transactions are immediate and secure without any third party service provider. If the stable coin follows Proof of Equity protocol then for a unit time, the supply will be made less for high networth individuals and the supply will be made more for low networth individuals. As the supply for low income groups is more compared to high income groups, low income groups tend to earn at a faster rate compared to high networth individuals. The exchange of funds is recorded in a single private distributed ledger unlike Banks which requires multiple ledgers for verification and validation of participants in a transaction. Permissioned Blockchain technology adds another security layer and access control in a transaction where only known participants are allowed to join the network.

Fig -2: Supply for RICH vs POOR using Proof of Equity

2. Proof Of Equity:

There are four parameters for earning the currency.

1. Competition
2. Profile Rank
3. Striving factor
4. Risk

1. Competition:

1. An activity or condition of striving to gain something as means of establishing superiority or supremacy over others is called Competition.

2. Mathematically, competition in a particular section is directly proportional to population striving in that section.

competition ∝ population striving/Section

competition ∝ population density

2. Profile Ranking:

1. A particular position, that may be higher or lower than others in a particular section is Profile Ranking.

2. Mathematically, profile ranking is the percentile of an individual in a particular section.

profile rank Percentile in that section

3. Striving factor:

1. Devotion of serious effort and struggle in order to attain something is called strive.

2. The Intensity with which an individual strives compared to population striving in that section is Striving factor.

Striving factor= time taken to acquire money / Avg time taken by population to acquire same amount of money

4. Risk:

1. Risk is defined in financial terms as the chance that an outcome or investment's actual gains will differ from an expected outcome or return.

2. Risk doesn't depend on the financial condition of an individual.

3. If an investment is less risky, it is for both-the poor and the rich, similarly an investment is more risky, it is for both-the rich and the poor.

3. But the struggle to earn money depends from individual to individual.

Risk Volatility

Struggle to earn money **competition**

Struggle to earn money **1/profile rank**

Struggle to earn money **striving factor**

TRADITIONAL CURRENCY:

t_s ---> Struggle in Traditional currency

t_s (competition X striving factor)/profile rank

T_AMOUNT 1/t_s

T_AMOUNT Risk

T_AMOUNT Risk X 1/t_s

CRYPTOCURRENCY USING STABLE COINS:

c_s---> Struggle in Cryptocurrency using Proof of Equity

c_s profile rank/(competition X striving factor)

C_AMOUNT c_s

C_AMOUNT Risk

C_AMOUNT c_s X Risk

RELATION

$\underline{T\_AMOUNT} = \underline{t\_s}$

C_AMOUNT c_s

c_s = 1/t_s

Hence,

$C\_AMOUNT = \underline{T\_AMOUNT}$

$t\_s \; X \; t\_s$

3. CONCLUSIONS

Note: *The Poor competes with both the rich and the poor but the rich competes with only the rich. This is because the Rich consists of large chunks of money compared to a group of poor people combined.*

Case 1: All are rich

competition is more

striving factor is more

struggle is more

USING Traditional currency

Relative earnings rate is insignificant

USING Proof of Equity

Relative earnings rate is insignificant

Case 2: All are poor

Competition is more

Striving factor is more

Struggle is more

USING Traditional currency

Relative earning rate is insignificant

USING Proof of Equity

Relative earning rate is insignificant

Case 3: Rich individuals less than poor individuals

Competition is less for rich than poor

Striving factor is less for rich than poor

Profile rank is more for rich than poor

Traditionally, struggle is less for rich than poor

USING Traditional currency

Earnings rate is more for rich than poor

USING Proof of Equity

Earnings rate is less for rich than poor

Case 4: Rich individuals equals poor individuals

Competition is less for rich than poor

Striving factor is less for rich than poor

Profile rank is more for rich than poor

Traditionally, struggle is less for rich than poor

USING Traditional currency

Earnings rate is more for rich than poor

USING Proof of Equity

Earnings rate is less for rich than poor

Case 5: Rich individuals more than poor individuals

Competition is less for rich than poor

Striving factor is less for rich than poor

Profile rank is more for rich than poor

Traditionally, struggle is less for rich than poor

USING Traditional currency

Earnings rate is more for rich than poor

USING Proof of Equity

Earnings rate is less for rich than poor

1. **Bridge the Financial Inequality gap**

Due to the flawed dynamics of currency as it works for rich people rather than poor people, the self-adjusted cryptocurrency tries to narrow down the gap. In the self adjusted cryptocurrency system, the struggle by poor individuals to earn the same amount of money becomes less compared to high networth individuals. Hence the rate for low income groups is higher compared to high income groups.

2. **Uniform Taxation**

As the rate is directly proportional to the struggle, in the long term basis, lower income groups tend to earn more percentage of money compared to higher income groups. Hence, instead of hefty taxation on rich individuals, the government can correspondingly tax on medium and high income groups.

3. **Healthy Lifestyle**

The self adjusted cryptocurrency enables the Middle class and poor class to have a higher percentage of money in the long term than super rich individuals. Thus, a country can build a healthy lifestyle in this system as it benefits uniformly with respective conditions.

4. **Healthy competition**

If people have a healthy lifestyle, it creates a healthy competition as the system refrains to create a monopoly business. Thus, uniform prices of products will be enabled compared to traditional systems.

REFERENCES

[1] Elliott, L., 2020. World's 26 Richest People Own As Much As Poorest 50%, Says Oxfam. [online] the Guardian. Available at: <https://www.theguardian.com/business/2019/jan/21/world-26-richest-people-own-as-much-as-poorest-50-per-cent-oxfam-report> [Accessed 17 September 2020].

[2] Taylor, C., 2020. The World's 2,153 Billionaires Have More Wealth Than 4.6 Billion People Combined, Oxfam Says. [online] CNBC. Available at: <https://www.cnbc.com/2020/01/20/oxfam-worlds-billionaires-richer-than-a-combined-4point6-billion-people.html> [Accessed 17 September 2020].

[3] Taylor, C., 2020. The World's 2,153 Billionaires Have More Wealth Than 4.6 Billion People Combined, Oxfam Says. [online] CNBC. Available at: <https://www.cnbc.com/2020/01/20/oxfam-worlds-billionaires-richer-than-a-combined-4point6-billion-people.html> [Accessed 17 September 2020].

[4] H. Hellani, A. E. Samhat, M. Chamoun, H. E. Ghor and A. Serhrouchni, "On BlockChain Technology: Overview of Bitcoin and Future Insights," 2018 IEEE International Multidisciplinary Conference on Engineering Technology (IMCET), Beirut, 2018, pp. 1-8, doi: 10.1109/IMCET.2018.8603029.

[5] Canellis, D., 2020. Here'S Why Satoshi Nakamoto Set Bitcoin'S Supply Limit to 21 Million. [online] Hard Fork | the Next Web. Available at: <https://thenextweb.com/hardfork/2019/07/08/her

es-why-satoshi-nakamoto-set-bitcoin-supply-limit-to-21-million/> [Accessed 10 August 2020].

[6] HAYES, A., 2020. Stablecoin. [online] Investopedia. Available at: <https://www.investopedia.com/terms/s/stablecoin.asp> [Accessed 10 August 2020].

[7] L. Johnson, "The tether solution [space propulsion, electrodynamic tether]," in IEEE Spectrum, vol. 37, no. 7, pp. 38-43, July 2000, doi: 10.1109/6.852050.

[8] J. Sen, "Secure and user privacy-preserving searching in peer-to-peer networks," in Logic Journal of the IGPL, vol. 21, no. 4, pp. 603-629, Aug. 2013, doi: 10.1093/jigpal/jzs036.