
MONEY FOR HUMANS

Abstract

Money is a force for human good, lubricating exchange for our benefit. However, the dominance of debt money in our contemporary economic system is making this human good systemically scarce — there is never enough to pay all that is owed. Humans are already outcompeted in the pursuit of money by large, non-human entities. A future of increased automation and artificial intelligence will only make this situation worse. Existing possible solutions to this dilemma, such as community currencies and cryptocurrencies, have not achieved sufficient scale, despite their innovations.

We propose (QQ) as a solution. (QQ) is a platform for building democratically controlled money with blockchain technology. On (QQ), communities control the issuance of their currency, and each community member receives an equal allotment. A system using these cyber-enabled community currencies would be fair, stable, liquid, resistant to fraud, inexpensive to run, and simple to use by the common human community. A system of such currencies could make money once again work to benefit humans and potentially solve some socio-economic problems.

Keywords

Ethereum, Bitcoin, Money, Community, Currency, Basic Income, Szabo, Satoshi, Cryptocurrency, Owl

Introduction

Today, we live in a world of widespread poverty [14] in the midst of astronomical quantities of money — estimates of up to a quadrillion dollars at stake in financial instruments and trillions in the world's markets [3]. We argue in this paper that the most compelling cause of this disparity is the way we bring money into existence. Money is created through debt. More is owed than was created, so no matter how much there is, there is less to go around than everyone needs. In the competition for this limited resource, large corporations, banks, and governments, inevitably outcompete individual humans.

Alternatives to this system are possible. Communities such as L.E.T.S. (Local Exchange Trading System), timebanks and Bunz, and cryptocurrencies such as Bitcoin and Ether, show that trade is viable through alternative means. However, as yet, practicalities of use, barriers to entry, or systemically small economic scale have all prevented significant uptake.

We argue that a fairer, democratic means of exchange is possible. A combination of cryptocurrency, community controlled issuance of tokens and guaranteed basic access could meet the traditional requirements of money, but with greater flexibility than community currencies, greater accessibility than cryptocurrencies and more equal availability than fiat currencies. We call this (QQ).

With (QQ), self-identified and regulated communities conduct trades using their own currency, and the community-specific currencies network with one another, sharing a single platform. The whole system operates alongside national currencies, making communities more resilient and economically diverse.

Part One of this paper sets out a brief critique of existing forms of money: its method of production and the problem this poses for humans. Part Two examines the characteristics of a successful money system and evaluates how existing alternative currencies measure up. Part Three outlines (QQ) money and evaluates it using the same criteria. Part Four presents the conclusion to the paper, as well as future projections.

Part One: Money We Know

“The process by which money is created is so simple the mind is repelled.” [5]

The Good

Money is amazing! Where I’m from, even the tooth fairy deals in dollars. It is one of humanity’s greatest inventions and is the extraordinary lubricant which enables us to exchange the things we have for the things we need and want to enhance our humans lives.

The Bad

Money is such an attractive good that humans just can’t get enough. Greed is hardly the root of the problem, however. Money is created in a way that makes it systemically scarce, and, in its pursuit, humans are at a disadvantage.

Debt Money

Modern fiat money exists in two forms: physical and digital. Physical money, while easily the most recognizable, constitutes only a small portion of the overall money supply. Digital fiat money (such as demand deposits, central bank reserves, money market instruments) is created through debt and constitutes the vast majority of the money supply [11]. The creation of money through debt ensures its economic scarcity [9]. To illustrate this, let’s conduct a thought experiment:

Money on Mars (ɱɱ):

Let’s imagine money on Mars. The Mars Government decrees that they will outsource all money creation to Martian banks, according to leveraging rules and accounting procedures set out by the Martian Central Bank (MCB). This is not an alien concept and is exactly how it is done on Earth. There is quite a lot of effort around setting this up, but Mars days are 40 minutes longer than Earth days, giving Martians an absolute time advantage.

An ex-Earthling with a newly minted Mars ID takes out the very first Mars loan. She borrows 100ɱɱ, with the promise to pay back 110ɱɱ in one Mars year (687 Earth days). At this Mars moment, paying back that amount is impossible. There are only 100ɱɱ in the Mars money system, and she has them all! How can she pay 110ɱɱ back? I too am on the edge of my seat.

In an unsurprising twist, Elon Musk has also made the trip to Mars. His reputation yields him a better rate, and he takes out the second Mars loan. He too promises to pay back more than he borrows, as do other Martians and multi-planetary companies. After all, there is much work to be done on Mars.

As it turns out, the Mars economy is red hot and the ex-Earthling is able to earn enough at Mars Tesla to pay back the 110ɱɱ. The 10ɱɱ of scarcity created from her loan, however, remains in the system. From each borrower's perspective and the collective perspective of the ɱɱ system, Mars money is scarce, and the repayment of this loan has increased the scarcity. Each participant must pay back more than they borrowed, and to do so, must compete against other participants who also must pay back more than they borrowed. While the ex-Earthling may have been successful this time in the competition for Mars money, competing against Mars Musk is not a great long-term strategy.

Creating money through debt ensures its economic scarcity. Borrowers have to pay back more than exists; the losers of the competition to obtain this scarce resource are required to borrow more, and so on it goes, ad infinitum. The recursive nature of the cycle ensures that there will never be enough ɱɱ.

The Competition of Non-Human Interests

The problem, however, is not just money's scarcity. It is that humans are impacted by the scarcity more than any other player. The issue is far more inimical than the obvious fact that large corporations and governments have much more leverage than humans, enabling them to obtain debt at better rates, insure themselves better against losses of money, and reduce their obligations to other players (tax breaks, holding companies, etc.). Governments and corporations pursue strategies with money, the side effect being the systemic reduction of opportunities for humans to obtain money [1].

Each corporation, for instance, and every one of its constituent entities, while not required to increase shareholder value, are highly incentivized to do so. It sells goods and services to achieve this, collaterally providing employment — but it must always seek ways to reduce its costs of labour, through automation, or finding cheaper workers. Governments have more complex motivations but are limited in their capacity to increase employment or provide the economic impetus for humans, due to bureaucracy and the judgements of the financial markets.

The consequences go further than lower wages or less secure work. Research shows that when large corporations come to dominate, the diversity and resilience of each local economy is compromised [13]. The impact is that money remains in a place for

only a few transactions, rather than circulating through many hands and many local businesses. The corporations may be able to provide things more cheaply, but at the cost of lost opportunities for the diverse host of small-scale entrepreneurs.

The Ugly

From a Darwinian point of view, the situation is not likely to improve. In fact, with artificial intelligence developing to the point where algorithms can undertake complex white-collar tasks more predictably and cheaply than humans, as robots already do in much of manufacturing, it will become more and more difficult for humans to compete. Once artificially intelligent entities become points of interface within financial systems, the situation will worsen further, as the limited ability we still have for human values to determine where money goes will again be outcompeted by a non-human entity [7].

The traditional solution to a problem of wealth distribution, such as the one we face, would be to organise politically — but with the prospect of a machine-dominated world, this seems ineffective. A better option is to do something about the scarcity of money itself. At the heart of the problem we have diagnosed, is the lack of alternatives humans have for obtaining their daily bread, outside of the debt money system.

We therefore suggest creating alternative money, designed specifically to stimulate a broad diversity of local and community economies. This would reinvigorate trade and employment, and wean us from the shrinking availability of traditional money. It would enable us to co-exist with the machines and corporations without competing directly with them.

 Part Two: Money We Want

The Human Element

Our first task is to be clear about the characteristics of successful money. Any alternative money will have to be at least as good as fiat money when considered against these criteria.

A successful money performs three functions well: a medium of exchange, store of value and unit of account [8]. This means fulfilling a complex list of requirements:

- Easy to carry, store, and count
- Hard to fake
- Divisible
- Durable
- Accessible to and used by everyone in the trading community
- Sufficiently abundant to cover all trades and values in that community
- Stability in value and volatility

The latter three qualities mean that successful money does not just stand on its own, but exists within a system for managing its liquidity and pegging its value to a resilient and stable economy of production.

To better serve humans, money must also fulfil some requirements as to its distribution and the activities it best serves. As mammals, we live and work within a relatively small local radius and in groups or communities of trust. Money for us must therefore stimulate a diversified economy of niches and productivity throughout our communities, in both the daily and longer time-scales around which our needs revolve.

Review of Existing Options

Fiat Money

Traditional fiat currencies as they have evolved over time are effective, flexible, and supported by an excellent array of infrastructure and law. However, as we have seen in Part One, their method of production and trickle-down approach to distribution rarely benefit humans and the communities they live in. Decisions around the supply and availability of fiat money tend to be made using a top-down management approach with a focus on the big picture, rather than the needs of humans wishing to trade within their communities.

Community Money

Alternative currencies using time as a unit of value, or some local representation or promissory note linked to the prevailing national currency, do already exist. While they have often had moments of initial success in stimulating local economic activity, none has achieved the longevity or wide use of fiat money. The combination of reasons is unique to each case, but common factors of failure include [7,9]:

- The economy they are pegged to is too small
- There is too little coin
- Prohibitive overhead costs (e.g. to print intricate enough designs to avoid fraud)
- Management miscalculations
- Fluctuations in the underlying value tokenized by the community money

Computer Money

Cryptocurrency — a form of digital money — is a more recent alternative. Participants stake resources (computing power, network resources, money) in support of a network, and in return are rewarded with tokens representing ownership in that same network. These tokens are used to access the network and trade with other participants.

As money, this system exhibits some useful innovations. The value of tokens is tied to tangible benefits and resources (and not simply value in trade), and a predictable rather than speculative method of issuance [10]. Records and trades are guaranteed by a decentralised and automated form of ledger called a blockchain, designed for use in a trustless environment. These ledgers do not require a trusted third party to facilitate exchange or humans to manage supply. Instead, they rely on computer algorithms to perform much of the upkeep of the network. Uptake of cryptocurrencies remains limited, however, because of prohibitive barriers to entry (many financial companies will not deal

in cryptocurrencies) and the extreme competition for tokens through the staking of computing resources. From a human point of view, cryptocurrency also still cedes power to those with the most staked, as the fiat system does, rather than the democracy of all users.

Lessons Learned

Looking back at all the models — fiat currency, community currency, cryptocurrency — there is an obvious conclusion. What humans need is a form of money that marries the benefits of successful money with better access and more democratic control [6-7]. We need to take the best from the adaptability of fiat, the localised nature of community currencies, and the predictable and automated nature of cryptocurrencies.

Is this possible? We say that it is if we learn from the successes and failures of past currencies. The rest of this paper is devoted to developing such an alternative.

Part Three: (QQ) – Money for Humans

We begin with an overview of (QQ), our model for a system of money designed for humans.

(QQ) Basics

(QQ) is an online platform for building communities that manage themselves through a democratised supply of trading tokens. The key components are as follows. Each day, a digital token factory supplies each member of the (QQ) community with a number of tokens — the same number for each member. Using these tokens, members trade with one another in goods, skills, and services. An automated, decentralised ledger records the results of these trades and keeps accounts of how many tokens each member holds. Periodically, all members vote to decide how large the daily issuance of tokens should be, with each member having one and only one vote, regardless of how many tokens they have accrued. Underlying all this — the ledger, the issuing of tokens, the voting — is a blockchain technology platform called Ethereum, that ensures security, integrity, communicability, and accuracy of records.

There is no limit to how large or small a (QQ) community might be, or the range of goods and services traded through it. Similarly, there is no limit to the number of communities to which an individual may belong. (QQ) expects individuals to join a variety of communities that, taken together, meet the individual's needs, and for the various communities to find their niche and size according to their ability to meet their members' needs.

(QQ) Implementation

Having given an overview of the (QQ) system, we will now look in more detail at some of its workings and constituent elements.

Technology

Blockchains are distributed record management systems that use cryptography and consensus algorithms to maintain accurate ledgers and reach agreement on updates to these ledgers. Blockchains reach consensus on updates to these ledgers by creating incentive structures that reward good behaviour and punish bad behaviour. Good behaviour is typically rewarded using tokens (cryptocurrencies), and bad behaviour is usually punished by the cost incurred in wasted resources (electricity, computing power,

or tokens) [2]. Blockchains can thus operate under very adversarial conditions, and retain the integrity of records despite the attentions of hackers and scoundrels. They are the database of choice for those with trust issues.

There are many different blockchains, each with their individual reward incentive and purpose. It is proposed that (QQ) be built on the Ethereum blockchain, using the underlying economy of competition between computers for “ether” (Ethereum’s cryptocurrency) to enable a cooperative economy amongst humans.

Membership

Membership plays a crucial role in (QQ) communities. At a minimum, all members of a community will have the following basic rights:

1) The right to vote on community matters
2) The right to an equal issuance

Membership is denoted by an account appearing on the community’s public issuance list. Once an account is added to this list, the owner of the account becomes a member of the community and enjoys all the rights of membership. Removing an account from the issuance list revokes the account holder’s membership.

Community members determine membership requirements within each community. However, no matter which criteria are used, a vote is required by existing members to add or remove members. This system increases both trust and responsibility within a (QQ) community and allows membership criteria to be flexible in nature and not necessarily rely on various forms of official ID.

In all cases, membership is voluntary, open, and auditable.

Tokens and Issuance

Each (QQ) community has a token factory. All tokens originate from the token factory and community members own this means of production. These tokens form the base money supply in the community. Tokens serve two purposes on (QQ):

1) They are used to vote on community rules
2) They are used to trade within the community

In a simple community, members might vote only on changes to the issuance rate and the introduction or removal of members. More advanced communities may wish to decide more variables through this mechanism, such as the frequency of token issuance (i.e. changing from the default daily issuance) or the default level of consensus needed to precipitate a change.

All transactions on (QQ) are final. Once tokens are issued into a member's account, they are the property of that account. Sending transactions on (QQ) is as simple as sending a message to the blockchain network. As long as the account owns the tokens and they are in sufficient supply, the network will propagate this message and update the appropriate accounts. The underlying decentralised technology is censorship-resistant and does not require intermediaries.

Because all (QQ) communities are built on the same platform, it is possible for different communities to trade with one another. Accounts can be held in multiple communities and hold multiple types of tokens.

(QQ) Evaluation

How well does (QQ) measure up to the criteria of a successful money system and the desirable qualities of human money?

A Good Money

Because it consists of tokens issued on a virtual system, (QQ) is easy to carry, count and store. At the same time, because transactions are verified with very powerful encryption, it is near impossible to defraud. (QQ)'s use of a decentralised ledger means that it is also infinitely durable. In meeting the basic characteristics of a means of exchange, unit of account, and store of value, (QQ) thus has many advantages.

Availability

On (QQ), tokens are not only in principle available to all (a necessary factor for any good money [6-7]) but issued in such a way that everyone is guaranteed the same minimum level of the means of exchange and an equally weighted vote on matters relating to the means of exchange.

This inbuilt basic level of economic equality means that (QQ) has increased benefit as a medium for transactions in comparison with fiat money. There are no potential markets systemically without the means to buy, and no consumers holding back because tomorrow they may not have the means of participating. Similarly, while there is an

advantage to selling goods and services to other members (to accumulate more tokens than the daily allowance), there is little incentive to hold onto them too long, since the constant flow of new tokens reduces the value of hoarded ones (see Appendix: Token Hoarding).

Stability

(QQ) also has advantages in terms of its built-in resistance to unpredictable or excessive fluctuations in supply and value.

Firstly, the supply of money is predictable because there is a constant daily issuance of tokens at an agreed rate. There are no sudden shocks in the supply — no sudden flooding of a market with new coin or withdrawals. Supply changes predictably through time and consensus.

Secondly, the accounting and membership of (QQ) provide a high degree of certainty about the value of the tokens in an account. Because no third party can alter ledgers, confiscate tokens, or perform any other actions that might undermine the trust being built within the community, members can be confident that what is in their account is incontrovertibly there. Similarly, they can be assured that when a trade takes place, the tokens they receive from another member are entirely valid. Moreover, community membership is auditable and is determined by the members. The membership requirements assure members that the people they are trading with have the right kind of skills and wants, which provides them with a modicum guarantee of value for the tokens.

These mechanisms make (QQ) potentially more stable as a means for human exchange than a comparable fiat currency. The mechanism for controlling supply is direct, and benefits from the “wisdom of the crowd” (as opposed to the indirect means of a central bank interest rate) and the membership retains control over access to the community. Finally, all recordkeeping is done using a decentralized ledger to prevent forgery.

Flexibility

Finally, despite its apparent confinement to community-specific micro-economies, (QQ) offers strengths as a means of exchange flexible enough to cover any transaction.

The flexibility of (QQ) is demonstrated by the control it gives members of micro-economies over their economic means. To better serve the present and

anticipated needs, community members can collectively change token issuance rates and the time between issuances. This enables a highly sensitive adjustment of the basic economic means, one which is likely to achieve an optimum level of liquidity for the community.

Additionally, an individual can belong to as many (QQ) communities as they want to and which will accept them. An individual interacting across many (QQ) communities gains the advantage of optimum liquidity for their transactions in each of them, even though the tokens for each are different. Moreover, since all communities built on (QQ) must use shared token standards, all (QQ) communities have the potential to trade with one another.

Despite its origins as an ecology of community-specific moneys, (QQ) can in principle be used for any humanly desirable trade. Moreover, taken as a whole, it may be in some ways more flexible than fiat currency — merely by the fact that its liquidity mechanism is more reactive and sensitive to the fluctuations of each micro-economy, rather than the quarterly adjustments of interest rates or easements of leveraging rules that fiat relies on.

Part Four: Conclusions and Possibilities

We have argued in this paper that the current financial system entails money being systemically scarce, despite its apparent abundance, and that this scarcity disadvantages humans more than other financial agents. Money is created through lending at interest, which ensures that there is never enough money to pay back all that is owed. The financial muscle of large corporations, banks, and governments directs money to economic activities that serve institutional interests rather than human ones. Consequently, a geographically even pattern of locally diverse and resilient economies is replaced by concentrations of economic activity that move from place to place with little regard for humanity.

We have also argued that a potential solution to this problem — from a human point of view — exists in alternative moneys operating outside the debt-fuelled economy to stimulate community-specific trade. As yet, such alternatives have failed to achieve scale, because they have not been able to combine the desired human characteristics of democratic control of their creation and availability with the successful characteristics of the fiat currencies that debt is denominated in. Enough lessons have been learned, however, to create a new generation of alternative money.

(QQ) is our model for a new money. It uses blockchain technology to guarantee economic transactions and records amongst the members of a self-identified community, issuing members an equal daily amount of trading tokens, with the rates and membership criteria decided autonomously in each community through a one member, one vote process. In principle, this system fulfils the underlying requirements for a strong money: ease of use, divisibility, durability and difficulty of fraud, and exhibits distinct advantages in its systems for ensuring stability, availability and flexibility in trade. At the same time, it retains the key elements of democratic human control of its creation and localised economic stimulus.

The Future of (QQ)

At present, (QQ) is a conceptual system. However, we do have a long-term vision for how (QQ) might progress, the range of economies in which it would be fruitful, and the ways in which it — suitably morphed in the harsh light of practical implementation — might develop. We finish by setting out this vision.

(QQ) is not — certainly in embryo — a direct competitor to fiat, but a supplement to it. It enables trades that would not otherwise take place, either due to their niche nature or because of a lack of means amongst its participants. Our prediction is that the space of economic desire for such a supplement is growing, and will continue to grow, as money becomes more scarce and artificial intelligence makes further inroads into the workplace.

As a result, in the not too distant future, in a city or online community somewhere, applications that necessitate (QQ) will spontaneously emerge:

- as a forum for a neighbourhood to exchange services, produce, and craft goods
- as a bazaar for second-hand goods
- as a commons-based peer production governance model
- as a community for knowledge exchange
- as the technique for moderating decentralised forums on the internet
- as a technology facilitator for participatory budgeting
- as the backbone for a basic income scheme

Once begun, the numbers of niche communities using (QQ) will grow, learning from failures, and connecting with one another. Alongside trade denominated in debt-fuelled fiat money, which will continue to expand in its leveraged scarcity, this second ecology will flourish, taking over whatever humanly desirable markets fiat leaves behind [7]. Perhaps, eventually, most human trades will be conducted through (QQ).

How long this vision takes to come about, or how similar to our embryonic proposal the eventual (QQ) ecology looks, we cannot say. However, that its time is coming is certain.

Fictional Use Cases

We conclude with four fictional use cases which illustrate how (QQ) might tackle some of the key socio-economic crises humanity currently faces.

Sanctuary City

The elimination of cash has made it difficult for those living on the fringe of society to meet their needs in the formal economy. Nowadays, most transactions require accounts at regulated financial institutions. Aliens, orphans, transients, and the homeless, are unable to produce the necessary ID to open an account, and therefore are excluded from the means of receiving and using money, regardless of their skills or propensity to work. This is a tragedy for the society as a whole — since it incentivises black markets

and illegal action — as well as for those who go hungry or shelterless because they have no bank account.

The community in Sanctuary City devised a novel solution for this problem. Each day, all members of the community would receive a fixed number of tokens, and these could be exchanged for goods and services around the community. This system ran alongside Sanctuary dollars, the local fiat currency, and required only a phone or access to a library computer. The community rallied around the cause, and soon members everywhere were looking for ways to help. Most didn't use their tokens, some donated them to others, but all were happy that they were there if they needed them. Crucially, they provided a way for the many migrants and homeless in the shanty settlements at the edge of Sanctuary City to trade with the community as a whole. Quickly, utility companies and service providers saw that there was a whole new economic market they could trade with, and the shanties ceased to be places of near starvation and exposure, but regular — if down-at-heel — neighbourhoods.

Our Quinoa

It's 2025. Despite a series of bumper harvests, poor people across the Andes can't afford their staple food (quinoa) because of its growing popularity amongst the global middle classes.

Bolivia, however, has decided to innovate. First, they nationalise quinoa. They insist that all quinoa be supplied to the National Quinoa Board, which sets aside enough quinoa to cover the nutritional needs of every individual in the country, then sells the excess on the open market. Quinoa growers proportionally share the profits. The novel thing is what the country does with the quinoa kept for the country itself. Instead of just selling it cheaply, the Board sets up a (QQ) quinoa community, in which everyone receives 100 tokens a day, representing their daily share of the harvest. People can redeem their tokens in quinoa or spend them on services (or other foods and goods) in the community. Any of the daily national quinoa not redeemed is treated as excess and sold on the open market, with the profits going back to the growers.

As a result of this, quinoa ounces have become a token currency for everyone. The additional circulation of money has stimulated a more diverse farming and manufacturing sector and helped the country transition from dependence on oil for its national earnings. Its GDP is increasing, and it is no longer the poorest of the South American countries.

Ideological Press

After the election of 2016, a group of concerned netizens decided to do something about the polarisation of news. They understood that fact-checking, investigation, and "truth-telling" take time and resources and are currently undervalued by producers and consumers of news. So, they decided to innovate. They set up a website offering Side by Side news, populated by the most trending stories on different sides of the political and cultural divide. To populate it, they persuaded journalists, op-ed writers, and bloggers to join a (QQ) community trading in Confirmation Bias tokens. When members sign up to the Side by Side website, they must indicate their ideological allegiances. Each morning, everyone is issued 100 Confirmation Bias tokens, to favour news that confirms their ideology and disfavours news which doesn't. The website then packages the tagged news into a daily publication, sorting the stories according to which declared ideologies are favouring/disfavouring them and grouping ideological allegiances according to the patterns of stories they favour. The parallel news streams run side by side, with the diverse worlds visible to one another.

Interestingly, this has not only proven to be a great way for people to get the news that they are interested in hearing, with the streams running side by side, readers have started to look into each other's stories. As time has passed, polarisation has become less acute and vitriolic — though it still exists.

Polyglossia

The members of a language club create a (QQ) community to facilitate language exchange. They decide that each member of the club should receive 10 tokens a day to aid them on their journey to polyglotism. Members price their services according to likely demand, knowing that every member will receive an additional 10 tokens each day. Naturally, the price of lessons fluctuates according to demand and reputation, and some members are more sought after as teachers than others. Soon, token-rich members begin selling tokens in exchange for other goods and services — after all, Polyglossia members are a cosmopolitan, highly educated, and international lot. As time goes by, a thriving economy in niche specialisms, overseas house swaps, art, garden design and the like emerges, which the members could never afford, were it not for their Polyglossia tokens.

Appendix: Further Considerations

Inflation

Earlier, we noted that rates of inflation are more predictable in (QQ), owing to the predictable nature of token issuance within each community. We now need to discuss this in more detail.

Put simply, inflation is the general rise in prices. While there are a number of reasons why the individual prices of goods and services may increase (scarcity of goods, cost of underlying goods increasing, etc.), general inflation is caused by the oversupply and consequent devaluation of money [12]. In the current system of debt money, achieving the optimum level of inflation is fraught with difficulty. For one thing, most new money comes in and out of circulation because of debt or speculation, and is created both opaquely (no-one knows how much money there really is), and in the interests of banks, rather than the community at large. Secondly, mechanisms for adjusting inflation, such as the central bank interest rate and the rules on how much leverage banks can use to lend, tend to have only an indirect (and not wholly predictable) influence on the activities of the lending banks: they do not control whom banks lend to or force them to lend [11]. In addition, these methods are used to achieve the optimum level of inflation for the economy as a whole, rather than the specific, human-scale, localised and regional economies within it.

In (QQ), however, the mechanism for controlling the money supply is both direct and focused specifically on the human economy. All token creation is done in the open, and only the token factory may issue new tokens. This means that all (QQ) communities have a measurable and finite supply of tokens. This money supply increases predictably through the regular issuance of tokens to the system, and through the acquisition of new members. Both these sources of extra money are entirely under the control of members (they have an explicit vote on new members as well as on the daily increment), and applicable solely to the micro-economy the (QQ) money serves.

This design makes it much more likely for the token supply to create an appropriate level of inflation [4]. On the one hand, expectations about the availability of money are stable and predictable, because the rate of issuance and addition of new members is known to all. This encourages a stable level of increase in prices on the part of sellers. On the other hand, if a community does aggressively pursue new members or continually vote for increases in the daily token allowance, the feedback to them in

erratically increasing prices will become immediately apparent. This bottom-up approach to token supply management incentivises members to act according to their best interests, while precisely balancing the needs of the (QQ) micro-economy.

Token Hoarding

We noted earlier that (QQ) mitigates some of the incentives for hoarding coin (savings), and it is time to unpack this point a little more.

If money is a public good, then saving is an example of “the tragedy of the commons”. Although it is rational for individuals to save, saving reduces the availability of money for others to use to trade. Individuals may save to insulate themselves against future scarcity of money, to hold a reserve for a highly favourable investment, or because they need to “save up” for a particularly large purchase. The usual means of discouraging too much saving are inflation and the lowering of interest rates. As with the means for controlling inflation discussed above, these instruments are determined relatively far from the point of decision to save, and are thus not completely reliable in their effects.

The design of (QQ) addresses a number of the incentives to save, and the mechanisms by which it does this impinge directly on the point of decision. The basic daily increment itself offsets anxiety about future scarcity and the need to “scrimp and save” for expensive items. The option to vote to increase the daily increment reinforces this underlying abundance mindset. While anxiety and the need to save for expensive items are not vitiated entirely, the amount of saving relative to the system as a whole is, therefore, smaller than that likely in a fiat money system.

Moreover, these mechanisms have the effect of constantly reducing the relative value of savings and thus constantly reducing their value in trade. Take, as an example, a community of 100 members, awarded one token a day. At the end of ten days’ aggressive trading, Mylo has accrued 100 of these tokens (10% of the whole), but on the eleventh day he begins to hoard. In a fiat currency, taking 10% of the liquidity out of the system would be a pretty big hit. However, the 100 tokens that Mylo has taken out are added back into the system the very next day because the system always adds 100 tokens per day. In other words, the system has aggressively counteracted the reduction of available coin Mylo’s hoarding caused. Because each member of a (QQ) community has a guaranteed minimum level of access to the community, none can be fully robbed by the hoarding of others.

Fiat Tokens

Fiat tokens are tokens pegged to the value of a fiat currency. (QQ) seeks to avoid interaction with these tokens initially. This is because if (QQ) tokens begin to be priced in terms of dollars and cents, there will be a natural tendency to start relying on that price as a common measure of value across communities — in which case (QQ) would cease to provide an alternative economic space. Rather, (QQ) tokens should function self-referentially, as the rewards in a blockchain do, gaining value through the economic transactions they facilitate and the community they serve.

Fraud

The greatest threat to a (QQ) community is the destabilisation of voting rights and token issuance. The potential for fraud exists both through the creation of fake identities and the hacking of the underlying system. While (QQ) communities will typically operate at a small scale, even small-scale internal frauds drastically erode trust and precipitate a fall in use.

Having acknowledged that no system can guarantee itself against fraud, (QQ) has considerable defences. The underlying technology (Ethereum) is a very powerful encryption platform, making it difficult to hack the system as a whole or to gain entry to individual accounts. Even if a fraudster did subvert the system as a whole, she would be unlikely to pursue the small, community-specific values represented by (QQ) accounts but would instead pursue the millions of dollars of fiat currency backing the platform as a whole.

Sybil attacks involve the creation of many pseudonymous identities to undermine the network as as whole. In the case of (QQ), this would result in a person receiving tokens for multiple accounts. Such an attack would need to be countered carefully through prudent member requirements. Each community controls access to itself and is thus responsible for its own protection.

Infrastructure Costs and Implications

(QQ) will use the Ethereum platform as the underlying infrastructure for communities. As such, there are costs to consider. Ethereum and other blockchains traditionally employ a pay-per-use model to prevent freeloading. This means all transactions (issuing tokens, voting, and trading) incur costs.

In a previous section, it was highlighted that the growth of cryptocurrencies had been partially stunted by the tenuous connection between the traditional financial system and the cryptoworld. Access to public blockchain technology and the ability to trade is contingent on a participant's access to cryptocurrencies. After all, all transactions incur fees, and fees are paid in cryptocurrencies.

For (QQ) to guarantee a minimum level of access to community members, it is important that these costs be borne either by the community as a whole or the platform provider. Requiring every member to exchange fiat money for cryptocurrencies at the start is a high barrier to entry and has the potential to hamper community growth.

The cost of running a community will be directly related to the number of community members, the frequency of token issuance, and the overall activity of the community. Communities that vote or trade often will incur more costs.

These costs can be managed through the token factory. By supplying the token factory with a reservoir of Ethereum's cryptocurrency (ether) at the outset, and maintaining its balance, it can act as a faucet of both tokens and the means to transact.

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Further Reading

Bitcoin Whitepaper
https://bitcoin.org/bitcoin.pdf

Ethereum Whitepaper
https://github.com/ethereum/wiki/wiki/White-Paper

The Dawn of Trustworth Computing
http://unenumerated.blogspot.ca/2014/12/the-dawn-of-trustworthy-computing.html

The Memory Bank: Money in an Unequal World
http://thememorybank.co.uk/book/