

Regarding Bitcoin, the Internet of Money and Economic Progress

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In releasing Notice 2014-21, the IRS has declared virtual currency to be property [1]. While this may be a disappointment for some people who wished cryptocurrency to be treated the same as regular currency, the classification as property has placed virtual currency, such as Bitcoin, on par with precious metals as a means of storing equity. This is an ultimate development of current classically based information technologies and has an enormous impact on developing and emerging markets around the world which are striving to implement microfinance schemes that hold the promise of bringing a large portion of Earth's population out of abstract poverty. The transportability, transferability, liquidity and relative security of cryptocurrency opens the global marketplace to people who would otherwise be forced to work through a long line of intermediaries. This holds potential for further advancing the utilitarian maximization of the state of happiness for portions of the planet that are currently struggling with meeting basic needs.

I. WE ARE ALONE, FOR NOW

Richard Feynman at the height of his career provided a somewhat profound statement about life in the universe:

From my knowledge of my world that I see around me, I think that it is much more likely that the reports of flying saucers are the result of the known irrational characteristics of terrestrial intelligence rather than the unknown, rational efforts of extraterrestrial intelligence.

While many might find it depressing that we may live in a universe devoid of intelligent life beyond Earth, in the face of all evidence collected to date, we have to proceed under the assumption that we are likely the most technically advanced species in our immediate galactic neighborhood.

This possibility should be seen in a positive light rather than a negative one. That we may have unique status in the universe should place new emphasis on the value of every human life, regardless of how large our population may *appear* to be. This observation runs counter to the irrational tendency of humans to discriminate against their fellow man. The fundamental belief shared by many that they have an intrinsic value is a rational end state of intelligent deduction driven by scientific discovery processes instead of an inductive statement derived from the

deification of an irrational anthropomorphic projection.

As an intelligent social species, our ability to show empathy is a powerful regulator of social behavior and serves us well in ensuring that irrational excesses do not impede the diversification and development of humanity as a whole. As of this writing, there are 7.1 billion people on the planet, and the thought that there are that many unique views of the universe that are nearly equally complex is an absolutely fantastic starting point for how we should approach our future growth.

How far we can predict the future is a difficult question. However, it is certainly more economical to predict the future within my children's life than something beyond that. There are some things we can already observe that help us frame the problem. The first principle observation is the economy is tied to advancements in technology, energy and population. While there are justifiable argument for constraints on the availability of energy and the growth of population, the constraints on the growth of technology are very ambiguous and predictions of when technological development will end are dubious. In many respects, the predictions of the limits of technology are similar to predictions of the end of the world, which generally are a vulgar display of personal hubris and have been more tied towards limiting human potential than embracing it.

The development of the internet of money [3] in terms of cryptocurrency is ground breaking. Putting aside some of the rhetoric about why one would want to have a currency that does not need to be routed through traditional financial institutions, the fact that the Bitcoin protocol has led to a networked system that can preserve value which can be globally distributed is a technical feat made possible only in a modern digital society. If people are looking for models of the spontaneous emergence of artificial intelligence, the sudden emergence of Bitcoin as a major economic force from a set of simple rules is a good place to start [4]. People need to recognize the Bitcoin supercomputer is now one of the most powerful computational devices on the planet, outstripping standalone systems by several orders of magnitude [3]. With this realization, the possibility the first alienesque intelligence will emerge here on Earth in the form of an AI from some distributed network in a purely unplanned way is a fact of life we must consider. So the real question for humanity centers around the type of world we plan on exposing that entity to if it finally arises.

II. MONEY FOR NOTHING, OR NOT

Money has had an interesting evolutionary path [5]. Trade in bartered goods eventually led to portable commodities such as gold and silver to be used as money; paper money which represented those commodities eventually emerged to simplify transportation and expand the monetary base; ultimately fiat currency which carries value by government decree and has no intrinsic value has helped fuel some of the largest economic expansions in history. However, the requirement that fiat money's value be controlled by large public, or sometimes private, institutions has led to criticism that it is less independent than money derived from an underlying commodity.

This is largely true. The CEO of Xapo, provides good insight when he talks of the crushing effects of failed monetary policy on ordinary people as hyper-inflation takes hold [6]. The advantage of holding a commodity of limited supply is that as long as there is demand, it holds value. So while there are sometimes unpredictable market swings, a

commodity like gold still retains value in the face of runaway inflation.

Digital currency, similarly, will always be in limited supply, and even more importantly, the introduction of new supply is highly regulated by design, so no sudden growth in the underlying quantity is possible. At first this might sound like a potential death blow to cryptocurrency since there are potential for deflationary pressures on a digital currency based economy [7]. However, proponents of this argument forget there is no limit on the number of cryptocurrencies in circulation, each of which requires expenditure of effort as part of the mining process. Bitcoin has a blockchain distinguishable from Litecoin or Dogecoin, as well as any of the over 100+ sister currencies looking for a piece of the market. Just as there are different elements on the periodic table, there are infinitely different variations of cryptocurrency available to be mined.

While the finiteness of any particular cryptocurrency is often the focus of discussion, the real difference that separates fiat currency from those that follow the Bitcoin protocol is indeed the expenditure of real effort. This expenditure of effort is germane to the discussion of utility as it relates to the debate instigated by Bastiat [8] in the rhetorical question:

What would become of the glazier, if nobody ever broke windows?

The paradox highlighted in asking this question is whether one should need a cycle of creation and destruction in order to effectively find utilitarian happiness, e.g. in order to benefit from the fruits of labor, one must first set the conditions by which there is a potential for demand for that labor. Bastiat would argue correctly that destruction cannot ultimately be the basis for economy as it ultimately creates a downward spiral as resources are lost into oblivion.

In modern thought the problem posed by Bastiat is best represented by the problem posed by how to change a Pareto optimal distribution. A Pareto efficient distribution is defined as one where it is not possible to make one individual better off without making another worse off. However, asset based distributions are ambiguous as to how much misery

or happiness is associated with a particular efficient allocation. So the inevitable question in all human economic discussion is how to transform from a miserable distribution to a happy one without some significant cycle of destruction? Naively one assumes the answer lies in creation, which provides new excess that causes suboptimal conditions forcing new resources to be allocated. However, what about in cases of overproduction? Does not common sense dictate that destruction of unusable goods when the value of the underlying material is greater than the good itself and the retention of the leads to suboptimal conditions?

Herein we begin to see some of the power of cryptocurrency:

1. It is finite within a blockchain, so there is never a risk of overproduction of underlying assets within a blockchain.
2. While finite within a blockchain, there is no restriction on the number of independent blockchains, so growth is not strictly tied to one variant of cryptocurrency.
3. It requires expenditure of real effort to produce, which reduces the rapid inflation risk of fiat currency and ties the asset base to the physical world.
4. While the underlying asset requires physical expenditure, the asset has no significant physical existence, which makes it extraordinarily transportable.
5. The bulk of its value is ultimately tied to its social status and practical utility, a fundamental feature because happiness as an objective is ultimately more dynamic than the allocation of assets and the allocation of assets is not necessarily a proxy for happiness.

It is this last point which is important. There are very few, if any, well defined measures of happiness which one can use accurately in a Pareto optimal allocation. Utilitarianism ultimately struggles with this problem, because the edict to maximize happiness for the most people is somewhat meaningless if it is seemingly impossible to know whether happiness is at an optimal Pareto distribution or not. If you ask rich person if they would be happy to take some of their assets and give to a poor person,

the response is very likely to be no, or sufficiently caveated as to be almost impossible to meet.

If however we know the market value of a cryptocurrency partially reflects the social status of the currency, then while we do not necessarily get a true measure of happiness, we do get some indication of desire. If we accept the quick Google definition, desire is:

...a strong feeling of wanting to have something or wishing for something to happen.

Logically one assumes people will want crypto currency because obtaining it would provide some level of satisfaction, which we can define as [10]:

...a happy or pleased feeling because of something that you did or something that happened to you

There should be little question that the rapid development and growth of Bitcoin in particular has only been possible because it gives a good number of individuals a great deal of satisfaction, or in effect, it has made them happy. So that it has made them happy, we might conclude that in some capacity they were not happy before. The question then is whether their happiness has in some way disproportionately made others miserable? Perhaps a better way to ask the question is to follow to be a little Reaganesque:

Are more people happier since the introduction of Bitcoin?

If the rapid growth of Bitcoin is an indication, the answer should surely be yes, more people are happier, and I would argue they are happier because they have found something to do with their time that is valuable... which is incidentally a great way to address unhappy boredom.

Market indexes invariably reflect the attitudes and sentiment of multiple individuals and it is not surprising market values are low when people are miserable and high when people are happy. This fact is immortalized by Alan Greenspan in his comments on irrational exuberance [11]:

Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?

While poignant, the comment begs the question about how much of our economic world really is driven by the valuation of the people participating in it? I hope I don't surprise anyone when I say,

All of it.

At the end of the day, there is virtually nothing in the universe that has "intrinsic value" outside of the willingness of people to assign value to it. This is trivially proven by pointing out that gold has no value if there are no people around to use it. The only true item that has "intrinsic value" then are people themselves.

If more people value something today than the day before, more people find some level of satisfaction from that something and if more people are happier today because of that something, then we realize we were living with a suboptimal Pareto distribution as the direct result of that something. Furthermore, it seems extremely likely that we are perpetually living with some suboptimal Pareto distribution as it relates to happiness. Meaning there is always room for improvement for everyone, and the goal of Utilitarianism to maximize happiness is no longer constrained by a fear of inevitable misery for some portion of the population relative to another as we progress into the future.

That cryptocurrency in some ways represents new happiness, the next question is how do we use this new source of happiness to make more people happy?

III. JOY TO THE WORLD

Protocols are systems of rules governing conduct in formal situations. There are many emerging and competing protocols for how to use Bitcoin and other cryptocurrencies as part of a Neo-Banking system. The final form of this system is currently unpredictable, but with the IRS declaration of cryptocurrency as property, any protocol that uses precious metals can now effectively use cryptocurrency instead. Again, because cryptocurrency are far more flexible and transportable relative to precious metals, their value to developing economies should only increase in time.

The World Bank has an active interest in bringing responsible financial options to the world's poor. The facts they provide are staggering:

There are an estimated 2.5 billion financially excluded adults today, with almost 80 percent of those living under \$2 per day having no accounts at formal financial institutions.

The World Bank's Global Financial Inclusion Database (Global Findex) reports that three-quarters of the world's poor lack a bank account because of poverty, costs, travel distances and the often burdensome requirements involved in opening an account. Only 25 percent of adults earning less than \$2 a day have saved money at a formal financial institution. Being "unbanked" is linked to income inequality: The richest 20 percent of adults in developing countries are more than twice as likely to have a formal account.

The demand for bringing finance options to those struggling in poverty is clearly present. What is not clear is how best to aid development for these underrepresented populations.

As mentioned, Bitcoin as property is an important development. From a U.S. constitutional perspective, the Seventh Amendment guarantees the following [12]:

In Suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved, and no fact tried by a jury, shall be otherwise re-

examined in any Court of the United States, than according to the rules of the common law.

So if Bitcoin is property and has value translatable to dollars, disputes of civil nature can be heard in front of a jury and not be dismissed on simple bureaucratic technicalities. This brings a considerable legal weight to virtual currency, even if they are not strictly recognized as currency themselves. Although how this will ultimately play out in courts is unknown, but as it stands, there is legal recourse for disputes involving Bitcoin. So in cases of theft or fraud, there are evolving protections that cover individuals, which could effectively extend transnationally when all is said and done.

Further, the Fifth Amendment states the following [13]:

*No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service in time of War or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, **nor be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation.***

The guarantee of due process and just compensation provides additional legal weight to cryptocurrency that was largely ambiguous prior to its classification as property under Notice 2014-21.

This fact is important, because the protocols associated with approaches to microfinance using precious metal as collateral are developing [14]. Using gold as collateral is something that is being done in big finance as well, with J.P. Morgan accepting gold as collateral from hedge funds as recently as 2011 [15]. Why the move to gold?

"Many clients are holding gold on their balance sheets as an inflation hedge and are

looking to make these assets work for them as collateral,"

This is the same point brought out by Xapo's CEO about the interest in Bitcoin [6]. This puts Bitcoin as a direct competitor to gold and other precious metals.

If one were to look objectively at the fundamentals of gold versus Bitcoin, one would find the following:

1. Gold and Bitcoin are finite, but Bitcoin is more finite than gold, with a predictable final quantity.
2. Gold can be physically stolen, and while Bitcoin has been subject to digital theft, assets are arguably more secure and less visible to potential thieves.
3. Gold is malleable, but Bitcoin is divisible to 100,000,000 Satoshi, which means there are potentially 2,100,000,000,000,000 Satoshi mineable, e.g. 2,100 trillion Satoshi, and new blockchains can be created if valuation of one blockchain becomes too high.
4. Gold is not very transportable in comparison to Bitcoin, and a large portion is locked in inaccessible vaults located at key storage facilities around the globe. In fact a lot of gold that is owned by central banks is not kept locally. There are no real limits on the transportability and storage of Bitcoin.
5. Bitcoin can be traded directly on global digital markets, whereas gold must be typically be traded via fiat currency through intermediaries that may be dishonest.
6. Bitcoin has relatively low overhead as compared to gold and other competing forms of collateral, significantly reducing the burden rate on impoverished populations.

As access to the global web becomes more feasible to people living in impoverished areas, a rational actor will understand that Bitcoin and other cryptocurrencies has several advantages over precious metals, and if microfinance offers people opportunities to retain fruits of their labor and capitalize their assets, then the additional flexibility of cryptocurrency will make it significantly safer for individuals and reduce the institutional costs associated with banking in the developed world.

IV. CONCLUSION: WHEN HAS PROGRESS EVER REALLY STOPPED?

In this paper I have argued that the best state humanity can achieve is one aligned with the Utilitarian goal of maximizing happiness for the most people, and happiness is always a goal that can be achieved without bringing others misery because it is perpetually suboptimally distributed.

The clearest immediate plan that can facilitate achieving happiness is the alleviation of poverty, and the introduction of microfinance is a major step in accomplishing this task. This task is the responsibility of all of humanity and we should be motivated to accomplish this task out of empathy for our fellow people who we recognize as having universal value.

The key technology that will make this plan possible is cryptocurrency, whose risks have been

substantially mitigated after their classification as property by the IRS, which now brings substantial legal weight since their status inside constitutional law is clear. Even if the legal status changes substantially by some future action, convertibility and liquidity ensures future adaptability.

The development of digital currency was an unexpected event made possible only through the use of modern technology and computational theory. As such it is new territory and an ultimate product of our society and holds enormous promise in assisting humanity. This represents real progress and as people become more aware of its potential, it is increasingly unlikely to be thwarted from further development.

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