

VIRTUAL CURRENCIES: THE CHALLENGE TO GLOBAL FIAT PARADIGMS

**Colabella, Patrick
St. John's University**

**Shoff, Michael
St. John's University**

ABSTRACT

According to the GAO, "A virtual economy is comprised by the economic activities among a community of entities that interact within a virtual setting but there are no legal definitions for a virtual economy or currency". A virtual currency is unit of measurement that is an intangible digital unit of exchange similarly not backed by any government-issued physical legal tender. A virtual currency then can be used entirely within this virtual economy, or it can be used in lieu of a government-issued currency to purchase goods and services in the real economy. It is this ability now present in the hands of the global general public operating the Internet that can redefine the traditional world economy as we know it. It is this realization that generates an examination of the paradigm currency and Challenges that can prevail in its demise This paper examines the potential impact of virtual currencies and offers a means by which a global synergy is attainable if governments can harness values created from virtual economy for the purpose of serving the social good.

INTRODUCTION

Virtual currency is an intangible medium of exchange that was created, exists and is exchanged in a cyber network, typically the Internet, and it not backed by any government. Cyber criminals were among the first to utilize virtual currency. Digital cash as it is sometimes called has been linked several new forms of money and is a catalyst to money laundering and the full spectrum of illegal activity. Despite the criminal usage of these currencies, the US Senate believed that current banking law especially anti-money laundering statutes were sufficient to thwart any challenge virtual currency was expected to present. Virtual currencies, perhaps most notably Bitcoins, have captured the imagination of all who have heard of the them and struck fear in government agencies, especially Homeland Security, but they also agreed that the new forms of currency have a place as a legitimate form of exchange and that current banking laws appear to be adequate to regulate it. However we don't think so and this paper addresses such issues.

There is no Bitcoin company nor is there any traceable middleman between sender/buyer and the receiver/seller but there are examples, traditional credit methods, bank wires or other payment systems handling such transactions. Generally, any computer running Bitcoin software will work and can join the Bitcoin network. The system is encrypted with "private keys" and each computer in the system needs a Bitcoin address to handle transactions. (See genesis: The Creation of Bitcoins in appendix)

The reality is that a virtual currency system holds out a number of powerfully beneficial social and economic outcomes, including global financial inclusion, enhanced personal liberty, financial privacy and a stable money supply for people in countries where monetary instability may threaten prosperity. It represents a viable challenge to all global fiat paradigms

LEGAL CURRENCY

Legal currency as it is used in the United States, also known as legal tender, is a medium of payment allowed by law within its structured economy. It is recognized by the legal system to be valid for meeting "financial obligations. Paper currency and coins are common forms of legal tender in many countries however, virtual currency, as it has evolved, is generally a digital unit of exchange recognizable only in the cyber community. It is not backed by any government-issued legal tender nor is it reasonably controlled by any government. The Coinage Act of 1965, Section 31 U.S.C. 5103, states "United States coins and currency are legal tender for all debts, public charges, taxes, and dues." meaning all United States money are a valid legal "offer" payment for debts when tendered to a creditor. However, there is no Federal statute mandating that a private business, a person, or an organization must accept currency or coins as for payment for goods and/or services. Private businesses are therefore free to develop their own "policies" on whether or not to accept cash, so called legal tender, unless there is a State law which says otherwise. For example, a public transit line may prohibit fares paid in pennies or dollar bills. In addition, movie theaters, convenience stores and gas stations may refuse to accept large denomination currency (usually notes above \$20) as a matter their own business policy.

VIRTUAL ECONOMIES, VIRTUAL CURRENCIES AND LEGAL TENDER

With the development of the Internet and the markets that operate on the Internet in a virtual economy that can be viewed separately and is an economy that has dynamics which can alter the traditional paradigms of commerce, prosperity and wealth. According to the United States Government Accounting Office (GAO), a virtual economy is comprised of the economic activities among a community of entities that interact within a virtual setting such as the Internet or subsets thereof (White). While the GAO contends that there is no "legal" definition for a virtual economy nor is there a structured legal currency assigned to any virtual economy, nevertheless they exist and they thrive and present significant issues to the world economic order. The GAO further expounds that a virtual currency can be used entirely within a so called "virtual economy," or it can now effectively be used in lieu of government-issued currency to purchase goods and services in the real economy. This creates a significant standoff between legal tender versus virtual currency. The fact of the existence of virtual currency in the worldwide economy now brings to light the stark confrontation of a traditional paradigm of transactional and wealth measurement with a new paradigm of measurement, transactional accounting and wealth creation.

THE CURRENCY FIAT, VALUE AND WEALTH

Currency was borne out of the need to temporarily measure an exchange of labor or goods in any given transaction with evidence of the value exchanged. Similarly, "accounting" evolved out of the need to quantify, in terms of currency, the measurement of the economic accumulation of wealth derived from the process of these exchanges. To this realization we can argue that the transaction/exchange itself creates currency and currency therefore creates the measure of wealth. Currency is therefore an evolution of the perceptions of what it represented in an exchange. For example, if the exchange was gold for carrots and the currency defined an amount for gold in exchange for carrots the evidence of either commodity in the transaction became the currency. This is how diamonds came to be measured in Karats. However, in most cases the common core measured was a precious metal that was sought after, valued and derived from significant labor in extracting it from the earth. Because the measured commodities were too inconvenient to conduct transactions, anything of similar perception on the parties to any transaction could have sufficed

for the purposes of the creation of what is known as paper currency. The currency itself is the paper representation that the commodity exists in another location. Naturally we fall upon a representation in paper or some other easily exchangeable medium to evidence the measurement of the boundaries of transactions. As paper evolved the notion that it was exchangeable into gold rendered the confidence of entrepreneurs in accepting paper money as a common medium of exchange and inspired the invention of Pagioli's system of accounting that became the standard measurement device upon which all of wealth and economics is based.

The fiat which we call the currency paradigm is now far removed from any connection to gold or any other precious physical media of exchange. Essentially the value of the actual currency is now drawn from the perception of the stability of the government in power. This would indicate that only the ability of a government to guarantee the redemption of its notes on a global scale becomes in essence, the currency paradigm thus giving any currency associated with that government credible trading power.

THE SUBJECTIVE THEORY OF VALUE AND THE VIRTUAL ECONOMY

The subjective theory of value is a theory which advances the notion that the value of a tradable good is not determined by its inherent property nor measured by the labor required to produce it but instead its value is solely determined by the relative importance an individual places on a good for the achievement of their desired ends. Theoretically then subjective value determines the value of the currency that is tied to the transaction of the exchange equal to the tradable good in the market that exists at that point in time (Mises).

Traditionally the amount of currency expected to be expended on any good or service is initially compiled as the recovery of production and selling costs plus the accumulation of desired profits as it moves through the markets until the good is ultimately consumed or is destroyed and no longer tradable. As the particular asset remains in existence, value becomes more "subjective" as it is tradable over several accounting periods at prices bearing no relation to production or acquisition costs and the value traded becomes purely subjective to the offer and acceptance of the trade. The Subjective theory of value astutely explains the "value" of any currency virtual or otherwise that connected the trade in that economy. The subjective theory of value also supports the inference that all voluntary trade is mutually beneficial, profitable or not, and that an individual purchases a thing because he values it equally for whatever he offers in trade; otherwise he wouldn't make the trade. Likewise, the seller agrees to trade only if similarly values his goods being.

As trade takes place with a virtual currency value for the currency is created as long as the virtual economy exists. Once that economy falls apart so does the currency used in that system. For example, confederate currency had a value as long and the "Confederate States" existed. Once it was collapsed its value dissipated into subjective oblivion. Considering that the Internet is the "virtual economy" virtual currencies that gain acceptance will retain a subjective value. The difference between the Internet and a political entity like the confederacy is that force and power that keep it in existence. So is there a force and power to effectively collapse the Internet? No doubt that if the internet went away virtual currency would not exist but can it disappear? Similarly if the United States did not exist, the value of the dollar would disappear. Therefore the persistence of existence of the Internet which is the intangible that now gives credibility to a virtual currency. The likelihood or unlikelihood of its disappearance is the factor support and sustains a virtual currency. Governments have made attempts and claim to be able to collapse the Internet but not to specifically thwart virtual currencies. The point is that where feeble attempts to shut down the Internet locally are truly empty attempts to corral the "World Wide Web". As long as electronic infrastructure exists for government to exist, the Internet will be available for digital commerce and so too digital currency systems. There is enough external validity to conclude that only a

cataclysmic event can curtail the Internet and that realization is the face of the new paradigm of virtual currency replacing traditional currency.

VIRTUAL CURRENCY AND THE SHADOW ECONOMY

In a free market, both parties enter the exchange in the belief that they will both receive more value than they give up. This is a broadly accepted notion that most would not take issue with except for the concept of “free” in free market. We assume free means free from most intervention by government or no intervention at all. In a black market government is purposely excluded and governments are powerless to curtail black markets and shadow economies as they are similarly called. The values traded in a black market are generally for currencies only but now that spectrum has been broadened to include virtual currencies. Consider the layer of virtual currency in such a market flagrantly conducting international black market transactions, anonymously! Therefore there is an expediency that needs to be recognized by the world order in that technology will render traditional the paradigms of economics to their purest state. The political and ideological constraints that beset pure economic activity will become useless unless world economic community embraces a “world wide virtual economy” and finds a way to thrive from it.

The question is can the world economic order be restructured to accommodate virtual currencies and a global virtual economy?

TYPES OF VIRTUAL ECONOMIES

The GAO has identified three typical virtual economies that enable the use of virtual currencies: closed-flow, hybrid flow and open flow. In a “closed-flow” virtual currency system, a virtual currency can be used only within a game or virtual environment to purchase virtual goods or services, such as additional tools to use within an internet game. Virtual tools amassed by players can be traded in an internet game for other in-game assets or to advance to higher play levels, but they hold no value outside of the game and cannot be cashed out for dollars or other government-issued currencies.

In a hybrid system, one or more of the flows between the virtual currency and real dollars or goods and services is closed. For example, participants can purchase virtual currency with real dollars or earn virtual currency by completing tasks, such as taking surveys, and then use the currency to purchase real or virtual currency with real dollars or virtual goods and services. However, the virtual currency might not be exchangeable back into real dollars. An example of a hybrid system is some massively multiplayer online role-playing games (MMORPG). MMORPGs allow users to create avatars, or graphical representations of themselves, that exist within a digital world and interact with other avatars around the globe to carry out tasks. Some MMORPGs operate as a closed-flow systems can leak into the real economy.

In an “open-flow” system, virtual currencies can be used to purchase both real and virtual goods and services, as well as be readily exchanged for government-issued currency, such as U.S. dollars. An example is bitcoin, a decentralized digital currency that uses a peer-to-peer computer network to move bitcoins around the world. Developed in 2009 by an anonymous programmer or programmers, bitcoin is a privately-issued digital currency that exists only as a long string of numbers and letters in a user’s computer file. Bitcoins use cryptography to secure and safeguard against counterfeiting.

There have been numerous examples of this in Hybrid and Open virtual economies. Hybrid economies show that the subjectivity in the value of virtual goods because people are willing to exchange “government issued” currency for virtual goods of little, in any actual cost. Virtual goods and services have very little if any cost to them and therefore would have little intrinsic value.

When you strip all of the economics around money you are left with the idea that value is created through perceptions and it is the exchange of these perceptions that create value, therefore if these two premises are true than the value of money is intrinsically derived from the transaction between two parties.

THE STORY OF THE BITCOIN

Unlike U.S. dollars and other currencies, bitcoin is not government issued and does not have a physical coin or bill associated with its circulation, such as a Federal Reserve note. Bitcoin has grown in popularity since its introduction and, according to academics and user groups with whom we spoke, is the most widely circulated virtual currency available. Bitcoins act as a real world currency in that users pay for real goods and services, such as coffee or web development services, with bitcoins as opposed to U.S. dollars or other government-issued currencies. Third-party exchanges allow bitcoin users to exchange their bitcoins back to government-issued currencies, such as U.S. dollars, euro, or yen. Bitcoins are distributed, as a peer-to-peer digital currency that functions without the intermediation of any central authority. Bitcoin is considered a cryptocurrency because it uses cryptography to control transactions and prevent double-spending, a problem for digital currencies. The mechanics of bitcoin are highlighted in exhibit 1 but in essence the transactions the exchange of digital keys between two parties. Once the information is exchanged it goes through the process of validation. Once validated, every individual transaction is permanently recorded in a public ledger known as the blockchain. Payment processing is done by a network of private computers often specially tailored to this task. The operators of these computers, known as “miners”, are rewarded with transaction fees and newly minted bitcoins.

New Bitcoins are created at an ever-decreasing rate. Bitcoins are increasingly used as a payment method for products and services because merchants have an incentive to accept the currency because transaction fees are lower than the 2 to 3% typically imposed by credit card processors. Bitcoin began attracting media attention in late 2012, and numerous news articles have been written about it. In 2013, some mainstream services such as OkCupid, Baidu, Reddit and Fodler began accepting bitcoin as a payment method Bundle and Fodler began accepting it. That year also saw the first interventions by law enforcement. Assets belonging to the Mt.Gox exchange were seized, and the Silk Road drugs market was shut down. Large fluctuations in the value of Bitcoin have led some to question its ability to function as a currency. In addition, its deflationary bias encourages hoarding. This reduces the use value of a currency, and has been the downfall of other private currencies. However, currently Bitcoin does see some use as a currency.

The creation of Bitcoins can be a very abstract and difficult idea to understand, especially if you have little to no knowledge about cryptography, economics or currency markets. In essence, Bitcoins are created by a line of code in the program that releases at a decreasing rate until all 20+ million coins are in the system. Bitcoins are released at a predetermined rate in a random lottery like fashion. The best way to explain how a Bitcoin is created is through analogies. So imagine a large box in the center of the room. In this room there is a lottery machine that is attached to a timer, everyone safety deposit boxes and a mechanical arm that is attached to a giant treasure chest that holds all of the Bitcoins that have not yet been distributed into the economy. Each of the safety deposit box owners have lottery tickets that they earn through validating transactions between other participates. When the timer goes off the lottery machine picks a number and the mechanical arm deposits a coin into the winner’s safety deposit box.

GOVCOINS

Bitcoin have gained popularity in countries with problematic national currencies, as it can be used to circumvent inflation, capital controls, and international sanctions. Bitcoins are used by some Argentineans as an alternative to the official fiat currency, which is stymied by inflation and strict

capital controls. In addition, some Iranians use Bitcoins to evade currency sanctions (Raskin). Financial journalists and analysts have suggested that there was a correlation between higher Bitcoin usage in Spain and the 2012–2013 Cypriot financial crises (Salyer).

Governments can effectively profit from the system by actually competing against Bitcoin directly by issuing government backed virtual currency using the Bitcoin model as blueprint and legitimizing it to legal tender status (GOVCOINS). The dynamic that legal tender status brings to virtual currency is the security of government. The marketplace should react to this with a shift to the safer virtual currency. This will effectively subordinate other competing virtual currencies. A government backed global virtual market can create greater global wealth by virtually removing government constraints of international trade. Under the subjective theory of value the mere act of voluntary trade increases total wealth in society in terms of GDP no matter how it is measured. However, the cost to society will be a loss of economic controls. The overriding issue of the potential loss of economic control makes it imperative that governments address the changing paradigm. This will involve alternative international trading schemes and a serious evaluation of taxation systems, presuming that there is and will be an emergence of a virtual economy that is not constrainable. We can conclude that a virtual economy will naturally establish itself insulated from ideological threats and governmental controls. It is obvious that there is contemplation of chaotic commerce rivaling shadow economies and black markets where the virtual economy consolidates all of these.

TAXATION ISSUES

What are the government alternatives to the challenge that virtual currencies present? Based on the ability to feed the shadow economy/black market, the income tax law will be drastically subverted in any country relying the income tax to provide a main source of revenue. Value added taxes would also be thwarted by virtual currency because virtual currencies operate outside legal currency and all virtual trade is essentially a barter transaction so value added systems will fail to garner any revenues.

Because of this, the only system that will work to capture government revenue into the traditional economy is a transaction tax which only taxes disbursements. There are many such taxation schemes but the only plausible scheme is the “Withdrawals Tax” (See appendix). This system electronically taps only bank or “wallet” disbursements. Any transaction tax that attempt to tax both sides of the transaction is not feasible. Subjecting incoming virtual currency to taxation would in effect be difficult at best because of reporting issues. While taxing both sides of the transaction works for auctions, it would hamper the system here. The absence of an income tax leaves the participants to a transaction free to tender virtual monies without hiding assets which is an inherent fault of taxing incomes

A transaction taxes can also be conformed to operate in place of local sales taxes utilizing location services to track transaction sources and feed local municipalities with sufficient revenue. In addition it relieves local taxation systems from compliance cost of administering a sales tax system and captures all applicable sales.

Systems of taxation from the earliest of civilization were borne out of the perceived need of a society, conducting commerce within the boundaries of a given governing entity, the power to arm, protect and nurture economics and the way of life afforded its citizens. Taxation, in its most rudimentary form, was similarly initiated by the government or a governor in power of the venue. The ability to extract items of value from citizens either by force or by intimidation is conceptually viewed as a tax but may be more precisely a theft. In any case a value excised from citizens in some manner either at the transaction level or as a direct assessment against the assets of the citizen.

Accordingly, a system of taxation is heavily rooted in accounting systems. Whether the system operates efficiently depends largely their effect on the society that engages them. Civilized developed societies have blended the perception of government as a needed entity with the ideology of factions in control of the government such as fascists, socialists and communists. These particular ideologies feed off the economic activity in parasitic fashion but utilize the dynamics of economics and currencies as well.

Transactions within virtual economies or using virtual currencies could produce taxable income in a number of ways depending on their specific facts and circumstances. U.S. tax laws and regulations generally require taxpayers to report and pay taxes on all income, regardless of the source from which the income was derived; there are no additional rules specific to virtual currencies or economies. For example, similar to cash transactions, there are no third-party reporting requirements specific to virtual economy or currency transactions, as there are with some other types of electronic funds transactions, such as with transactions conducted through third-party payment networks. Taxpayers are required to account for any taxable income, including income that is not subject to third-party information reporting.

IRS, tax experts, academics, and others have identified various tax compliance risks associated with virtual economies and currencies, including underreporting, mischaracterization, and evasion. These risks are not unique to virtual economies and currencies, as they also exist for other types of transactions, such as cash transactions, where there are not always clear records or third-party tracking and reporting of transactions. The tax compliance risks identified for virtual economies and currencies are described below.

TAXPAYER LACK OF KNOWLEDGE OF TAX

Income is generally defined as any undeniable accessions to wealth, clearly realized, and over which the taxpayers have complete dominion. The unsophisticated taxpayer may not properly identify income earned through virtual economies or currencies, such as virtual online game assets exchanged for real word currency, as taxable income. If taxpayers using virtual currencies turn to the Internet for tax help, they may find misinformation in the absence of clear guidance from IRS. For example, a simple Internet search for information on taxation of bitcoin transactions, produced a number of websites, wikis, and blogs that provided differing opinions on the tax treatment of Bitcoins, including some that could lead taxpayers to believe that transacting in virtual currencies relieves them of their responsibilities to report and pay taxes.

UNCERTAINTY OVER HOW TO CHARACTERIZE INCOME

Even if taxpayers are aware that they may have a tax liability, they may be uncertain about the proper tax treatment of virtual transactions, according to tax experts, including academics and tax practitioners. For example, characterization depends on whether the virtual economy activity or virtual currency unit is to be treated as property, barter, foreign currency, or a financial instrument. According to some experts, some virtual currency transactions could be considered barter transactions, which may not be an obvious characterization to unsophisticated taxpayers. This characterization could result in noncompliance with requirements for reporting and paying tax on barter income.

UNCERTAINTY OVER HOW TO CALCULATE BASIS FOR GAINS

Income earned from virtual economy or currency transactions may not be taxable if it is equivalent to that from an occasional online garage sale, meaning occasional income from selling goods for less than their original purchase price. It may be difficult for individuals receiving income from virtual economies to determine their basis for calculating gains. For example, some online games

require players to pay a monthly fee in exchange for use of the game and a monthly allowance of virtual currency. If a player then sells a virtual tool gained in the game for real money, calculating the basis for any taxable gain may be difficult for the unsophisticated taxpayer.

CHALLENGES WITH THRID-PARTY REPORTING

Third-party information reporting requirements do not apply specifically to transactions using virtual economies or currencies. Virtual economy or currency transactions may be subject to third-party information reporting to the extent that these transactions involve the use of a third-party payment network to mediate the transaction and the taxpayer meets reporting threshold requirements. Because virtual economy and currency transactions are inherently difficult to track, including identifying the true identities of the parties to the transaction, third-party information reporting may be difficult or prohibitively burdensome for some virtual economy and currency issuers to administer.

EVASION

Some taxpayers may use virtual economies and currencies as a way to evade taxes. Because transactions can be difficult to trace and many virtual economies and currencies offer some level of anonymity, taxpayers may use them to hide taxable income. Because of the limited reliable data available on their size, it is difficult to determine how significant virtual economy and currency markets may be or how much tax revenue is at risk through their usage. Some experts with whom we spoke indicated that there is potential for growth in the use of virtual currencies. Additionally, the European Central Bank recently issued a report on virtual currencies, acknowledging their potential for future growth and interaction with the real economy. If the use of virtual economies and currencies expands, it can be expected that associated revenue at risk of tax noncompliance will grow. IRS has assessed the tax compliance risks from virtual economies and virtual currencies used within those economies, and developed a plan to address them in a manner consistent with internal control standards.

THE IRS SURVEY OF VIRTUAL CURRENCY

Virtual currency is a derivative of a transaction initiated inside electronic communication and forged from the values transacted therein. In essence, this is a reversion to the rudimentary trading that gave rise to actual currency in its infancy. It important to note her that such currencies created on paper evidence of the transaction were initially derived from transactions without government oversight or taxation. Governments arrived in the paradigm of fiat currency when accounting engaged a unit of measurement to give mathematical substance by algebraic formula ($A = L + E$), measuring an entity's historic value. This evolved into the concept of taxation of incomes. The government has not yet arrived on the scene to tax or control the process of virtual currency.

There has been some regulation and guidance in reference to Bitcoin but there has been no comprehensive legislation or regulation of a virtual currency. The question here is whether or not we need to have government involvement and if not, what would be the effect of a global virtual currency operating in direct competition with other controlled currencies? The facts are that a viable substitute fiat now might exist. This substitute viability brings into light the government's role in a non government issues currency and the potential shift in the entire currency paradigm on a worldwide scale.

Beginning in 2007, IRS's Electronic Business and Emerging Issues (EBEI) policy group identified and surveyed internal and external information sources, gathered data on the industry, and collect trend information, among other efforts. EBEI determined that virtual economies presented opportunities for income underreporting and developed (1) a potential compliance strategy, including initiating a compliance improvement project to gather research data and analyze

compliance trends, and (2) a potential action plan for specific compliance activities. According to IRS compliance officials, IRS ultimately decided not to pursue these actions in light of available IRS resources and other higher priority needs. Also, IRS did not find strong evidence of the potential for tax noncompliance related to virtual economies, such as the number of U.S. taxpayers involved in such activity or the amount of federal tax revenue at risk. However, in November 2009, based on EBEI having determined the need, IRS posted information on its website on the tax consequences of virtual economy transactions. The web page points out that, in general, taxpayers can receive income in the form of money, property, or services from a virtual economy, and that if taxpayers receive more income than they spend, they may be required to report their gains as taxable income. The page further states that IRS has provided guidance on the tax treatment of issues similar to online gaming activities, including bartering, gambling, business, and hobby income, and provides links to IRS publications on those topics. IRS officials who were involved in issuing this guidance reported it cost less to make an online statement pointing taxpayers to existing guidance than it would have cost to develop and publish new guidance specific to virtual economies.

IRS has not assessed the tax compliance risks of open-flow virtual currencies developed and used outside of virtual economies. These types of currencies, generally, were introduced after IRS's last review of compliance related to virtual economy transactions. According to IRS compliance officials, IRS would learn about tax compliance issues related to virtual currencies as it would any other tax compliance issue, such as IRS examiners identifying compliance problems during examinations or taxpayers requesting guidance on how to comply with certain tax requirements. To date, these processes have not resulted in IRS identifying virtual currencies used outside of virtual economies as a compliance risk that warrants specific attention.

Likewise, IRS has not issued guidance specific to virtual currencies used outside of virtual economies due to competing priorities and resource constraints, and because the use of virtual currencies is a relatively recent development that requires further consideration before guidance can be issued, according to IRS's Office of Chief Counsel and compliance officials.

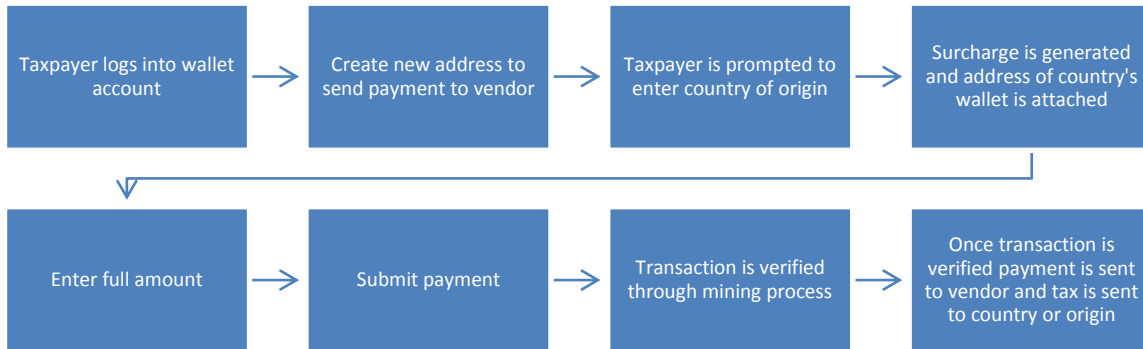
VC TAX SYSTEM AND VIRTUAL CURRENCY TRANSACTIONS

The rise of Virtual currencies has come from increases in technology and increase use of the internet. Virtual currencies like Bitcoin have been revolutionary in the fact that a decentralized currency can be a viable option. What makes virtual currencies so attractive is the anonymity and ease of use in today's global internet environment. Currently, the antiquated tax code is not an efficient means for taxation for a virtual currency. So far there are two approaches under the current tax system that would deal with a virtual currency transaction. The first is classifying a virtual currency as tool for bartering. Having a taxpayer report a virtual currency transaction like a barter exchange would be difficult to regulate and highly inefficient. This would lead to

A separate VC tax system is similar to the consumer based withdrawals tax. The buyer of goods or services using a virtual currency like Bitcoins would pay a small percentage of the value transaction that would be collected automatically and distributed to the proper federal and local government authority's accounts. The tax will be completely automated and acts like a surcharge for any transaction. The government will collect the tax in the virtual currency and exchange it in the open market for government issued currency or use the virtual currency directly. An interesting facet of the VC tax is the payer of the tax decided on the government the tax revenue will be recognized, which is down to keep the taxpayer anonymity intact.

For example a person wants to purchase an item from the internet using Bitcoins. The person would log into their wallet account and create a new address to send the payment. Creating a new address is the trigger for a future taxable event. When the person clicks the button to create a new address,

they will be prompted to input country of origin and once the information is entered then he will be able to submit payment with the surcharge tax amount. The transaction will be verified through the public block chain and once the transaction has been verified the payment to vendor and government will be processed.



CONCLUSIONS

Currency, value and wealth is created through the process of transactions. Without transactions, currency would just be a symbol of value and wealth with no real relevance in the economy. Virtual currencies like Bitcoin show that alternative currencies can viably exists and compete with traditional legal tender without being backed or control by government. This compelling fact presents an interesting oppourtuny for governments to shift from a physical fiat to a virtual fiat. The shift to a virtual fiat will also give rise to the opportunity for governments to shift their antiquated tax system to a modern electronically collected consumption tax. The lines between virtual economies and the actual economies are becoming increasingly blurred. Today’s internet based economy represent a new and overriding paradigm that governeemnts will have to embrace to have their individaul economies remain viable.

REFERENCES

- Raskin, Max (2012). "Dollar-Less Iranians Discover Virtual Currency". *BloombergBusinessWeek*. November 29, <http://www.businessweek.com/articles/2012-11-29/dollar-less-iranians-discover-virtual-currency>
- Salyer, Kirsten (2013). "Fleeing the Euro for Bitcoins". Bloomberg L.P. April 10, 2013. <http://www.bloomberg.com/news/2013-03-20/fleeing-the-euro-for-bitcoins-.html>
- White, James (2013), *Virtual Economies and Currencies and Additional IRS Guidance Could Reduce Tax Compliance Risk*, Government Accountability Office Report Reference, GAP-13-516.
- Jerry Brito and Andrea Castillo (2013). "Bitcoin: A Primer for Policymakers" m Mercauts Center. George Mason University. Retrived November 11, 2013
- Kharif, Olga (2013). "Bitcoin Mining Rush Means Real Cash for Hardware Makers". *bloomberg.com*. Bloomberg LP. October 14, 2013.
- Mises, Ludwig von. (2010) "Human Action" <http://mises.org/resources/3250>, page 96
- Allen, P., 1993, "Artificial Currencies: SDRs and ECUs," *Open Economic Review*, 4, pp.97-110
- "Legal Tender Guidelines"(2007). British Royal Mint. February 9, 2007
- Colabella, Patrick, (2006)"Applying the WTX to The Shadow Economy"
- Colabella, Partrick, Richard, Coppinger Young, Choi (1999) The Withdrawal Tax System (WTX), *The Global Institute for Taxation*
- Nakamoto, Satoshi (2009). "Bitcoin: A Peer-to-Peer Electronic Cash System"

How a Bitcoin transaction works

Bob, an online merchant, decides to begin accepting bitcoins as payment. Alice, a buyer, has bitcoins and wants to purchase merchandise from Bob.

WALLETS AND ADDRESSES

Bob and Alice both have Bitcoin "wallets" on their computers.

Wallets are files that provide access to multiple Bitcoin addresses.

CREATING A NEW ADDRESS

Bob creates a new Bitcoin address for Alice to send her payment to.

Each address has its own balance of bitcoins.

An address is a string of letters and numbers, such as 1HULMzEPKjEPeCh438eKJLyoLCWTDpNk.

SUBMITTING A PAYMENT

Private key

Public key

Public Key Cryptography 101

When Bob creates a new address, what he's really doing is generating a "cryptographic key pair," composed of a private key and a public key. If you sign a message with a private key (which only you know), it can be verified by using the matching public key (which is known to anyone). Bob's new Bitcoin address represents a unique public key, and the corresponding private key is stored in his wallet. The public key allows anyone to verify that a message signed with the private key is valid.

It's tempting to think of addresses as bank accounts, but they work a bit differently. Bitcoin users can create as many addresses as they wish and in fact are encouraged to create a new one for every new transaction to increase privacy. So long as no one knows which addresses are Alice's, her anonymity is protected.

Alice tells her Bitcoin client that she'd like to transfer the purchase amount to Bob's address.

Private key

Public key

Alice's wallet holds the private key for each of her addresses. The Bitcoin client signs her transaction request with the private key of the address she's transferring bitcoins from.

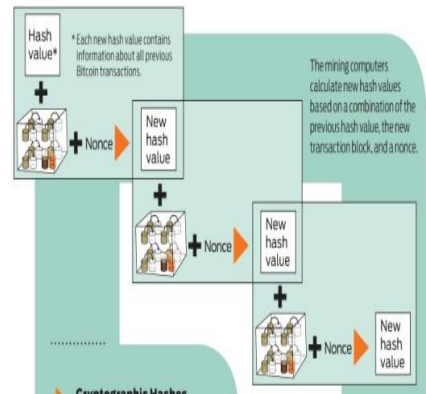
Anyone on the network can now use the public key to verify that the transaction request is actually coming from the legitimate account owner.

VERIFYING THE TRANSACTION

Gary, Garth, and Glenn are Bitcoin miners.

The miners' computers are set up to calculate cryptographic hash functions.

Their computers bundle the transactions of the past 10 minutes into a new "transaction block."



Cryptographic Hashes

Cryptographic hash functions transform a collection of data into an alphanumeric string with a fixed length, called a hash value. Even tiny changes in the original data drastically change the resulting hash value. And it's essentially impossible to predict which initial data set will create a specific hash value.

The root of all evil ???

0000 0000
0000...

Creating hashes is computationally trivial, but the Bitcoin system requires that the new hash value have a particular form—specifically, it must start with a certain number of zeros.

Nonces

To create different hash values from the same data, Bitcoin uses "nonces." A nonce is just a random number that's added to data prior to hashing. Changing the nonce results in a wildly different hash value.

The root of all evil

600a 1899 086a... (56 more characters)

The root of all evil

486c 6b4 6d6e...

The root of all evil

b6db 7ee9 8392...

The miners have no way to predict which nonce will produce a hash value with the required number of leading zeros. So they're forced to generate many hashes with different nonces until they happen upon one that works.

Each block includes a "coinbase" transaction that pays out 50 bitcoins to the winning miner—in this case, Gary. A new address is created in Gary's wallet with a balance of newly minted bitcoins.


TRANSACTION VERIFIED

As time goes on, Alice's transfer to Bob gets buried beneath other, more recent transactions. For anyone to modify the details, he would have to redo the work that Gary did—because any changes require a completely different winning nonce—and then redo the work of all the subsequent miners. Such a feat is nearly impossible.

Bob & Alice


© 2014 ASBBS. ALL RIGHTS RESERVED. COURTESY OF BITCOIN

GENESIS: THE CREATION OF BITCOINS




Created in 2009 by Satoshi Nakamoto.
The network is created and the Genesis block is mined.


WHAT ARE BITCOINS?



Online virtual currency:
Can be easily transferred from one party to another.




Decentralized: It is not controlled by any institution or government.



Peer-to-peer system:
Operates on a network of user based computers.

HOW ARE BITCOINS CREATED?




Bitcoin Mining: The process of verifying transactions conducted on the network using Bitcoin mining software and hardware.


As a reward, Bitcoin miners receive Bitcoins for their work, a new block is created around every 10 minutes. The current reward is 25 Bitcoins, this value halves every four years until all Bitcoins are mined.

HOW DO I GET BITCOINS?

Start by setting up a secure wallet to hold your coins then fill it up with 2 options:




1) Through the process of Bitcoin mining.
Not recommended for beginners.




2) Through a trusted Bitcoin exchange.
Where you can convert your fiat into Bitcoins.

WHO IS INVOLVED IN THE EXCHANGE?


There are three parties involved with every exchange platform



The Buyers




The Exchange





The Sellers

HOW DOES THE EXCHANGE WORK?



The buyers try to buy Bitcoins at the lowest possible price






The sellers try to sell Bitcoins at the highest possible price

The buying and selling bids are entered into what is called an order book.

When a buyer or seller place the same price, the order is automatically executed.


The exchange keeps a small percentage as a commission for making the trade.

Buy Orders		Latest Trades		Sell Orders	
PRICE	AMOUNT	PRICE	AMOUNT	PRICE	AMOUNT
115.00	1.00	115.00	1.00	115.00	1.00
114.50	2.00	114.50	2.00	114.50	2.00
114.00	3.00	114.00	3.00	114.00	3.00
113.50	4.00	113.50	4.00	113.50	4.00
113.00	5.00	113.00	5.00	113.00	5.00
112.50	6.00	112.50	6.00	112.50	6.00
112.00	7.00	112.00	7.00	112.00	7.00
111.50	8.00	111.50	8.00	111.50	8.00
111.00	9.00	111.00	9.00	111.00	9.00
110.50	10.00	110.50	10.00	110.50	10.00
110.00	11.00	110.00	11.00	110.00	11.00
109.50	12.00	109.50	12.00	109.50	12.00
109.00	13.00	109.00	13.00	109.00	13.00
108.50	14.00	108.50	14.00	108.50	14.00
108.00	15.00	108.00	15.00	108.00	15.00
107.50	16.00	107.50	16.00	107.50	16.00
107.00	17.00	107.00	17.00	107.00	17.00
106.50	18.00	106.50	18.00	106.50	18.00
106.00	19.00	106.00	19.00	106.00	19.00
105.50	20.00	105.50	20.00	105.50	20.00
105.00	21.00	105.00	21.00	105.00	21.00
104.50	22.00	104.50	22.00	104.50	22.00
104.00	23.00	104.00	23.00	104.00	23.00
103.50	24.00	103.50	24.00	103.50	24.00
103.00	25.00	103.00	25.00	103.00	25.00
102.50	26.00	102.50	26.00	102.50	26.00
102.00	27.00	102.00	27.00	102.00	27.00
101.50	28.00	101.50	28.00	101.50	28.00
101.00	29.00	101.00	29.00	101.00	29.00
100.50	30.00	100.50	30.00	100.50	30.00
100.00	31.00	100.00	31.00	100.00	31.00
99.50	32.00	99.50	32.00	99.50	32.00
99.00	33.00	99.00	33.00	99.00	33.00
98.50	34.00	98.50	34.00	98.50	34.00
98.00	35.00	98.00	35.00	98.00	35.00
97.50	36.00	97.50	36.00	97.50	36.00
97.00	37.00	97.00	37.00	97.00	37.00
96.50	38.00	96.50	38.00	96.50	38.00
96.00	39.00	96.00	39.00	96.00	39.00
95.50	40.00	95.50	40.00	95.50	40.00
95.00	41.00	95.00	41.00	95.00	41.00
94.50	42.00	94.50	42.00	94.50	42.00
94.00	43.00	94.00	43.00	94.00	43.00
93.50	44.00	93.50	44.00	93.50	44.00
93.00	45.00	93.00	45.00	93.00	45.00
92.50	46.00	92.50	46.00	92.50	46.00
92.00	47.00	92.00	47.00	92.00	47.00
91.50	48.00	91.50	48.00	91.50	48.00
91.00	49.00	91.00	49.00	91.00	49.00
90.50	50.00	90.50	50.00	90.50	50.00
90.00	51.00	90.00	51.00	90.00	51.00
89.50	52.00	89.50	52.00	89.50	52.00
89.00	53.00	89.00	53.00	89.00	53.00
88.50	54.00	88.50	54.00	88.50	54.00
88.00	55.00	88.00	55.00	88.00	55.00
87.50	56.00	87.50	56.00	87.50	56.00
87.00	57.00	87.00	57.00	87.00	57.00
86.50	58.00	86.50	58.00	86.50	58.00
86.00	59.00	86.00	59.00	86.00	59.00
85.50	60.00	85.50	60.00	85.50	60.00
85.00	61.00	85.00	61.00	85.00	61.00
84.50	62.00	84.50	62.00	84.50	62.00
84.00	63.00	84.00	63.00	84.00	63.00
83.50	64.00	83.50	64.00	83.50	64.00
83.00	65.00	83.00	65.00	83.00	65.00
82.50	66.00	82.50	66.00	82.50	66.00
82.00	67.00	82.00	67.00	82.00	67.00
81.50	68.00	81.50	68.00	81.50	68.00
81.00	69.00	81.00	69.00	81.00	69.00
80.50	70.00	80.50	70.00	80.50	70.00
80.00	71.00	80.00	71.00	80.00	71.00
79.50	72.00	79.50	72.00	79.50	72.00
79.00	73.00	79.00	73.00	79.00	73.00
78.50	74.00	78.50	74.00	78.50	74.00
78.00	75.00	78.00	75.00	78.00	75.00
77.50	76.00	77.50	76.00	77.50	76.00
77.00	77.00	77.00	77.00	77.00	77.00
76.50	78.00	76.50	78.00	76.50	78.00
76.00	79.00	76.00	79.00	76.00	79.00
75.50	80.00	75.50	80.00	75.50	80.00
75.00	81.00	75.00	81.00	75.00	81.00
74.50	82.00	74.50	82.00	74.50	82.00
74.00	83.00	74.00	83.00	74.00	83.00
73.50	84.00	73.50	84.00	73.50	84.00
73.00	85.00	73.00	85.00	73.00	85.00
72.50	86.00	72.50	86.00	72.50	86.00
72.00	87.00	72.00	87.00	72.00	87.00
71.50	88.00	71.50	88.00	71.50	88.00
71.00	89.00	71.00	89.00	71.00	89.00
70.50	90.00	70.50	90.00	70.50	90.00
70.00	91.00	70.00	91.00	70.00	91.00
69.50	92.00	69.50	92.00	69.50	92.00
69.00	93.00	69.00	93.00	69.00	93.00
68.50	94.00	68.50	94.00	68.50	94.00
68.00	95.00	68.00	95.00	68.00	95.00
67.50	96.00	67.50	96.00	67.50	96.00
67.00	97.00	67.00	97.00	67.00	97.00
66.50	98.00	66.50	98.00	66.50	98.00
66.00	99.00	66.00	99.00	66.00	99.00
65.50	100.00	65.50	100.00	65.50	100.00




HOW DO TRANSACTIONS WORK?


Bob wants to purchase something from Joe's store.




Bob sends Joe the amount using the unique address.




Joe's store provides bob with a unique address to send the payment to:
Ex: 1Ks32kdDgHt7J8iuYhT56



Joe's store receives the Bitcoins & the transaction is recorded.



The transaction is processed by the miners.



Excerpted from “APPLYING THE WTX SYSTEM TO THE SHADOW ECONOMY”

By

Dr Patrick R. Colabella CPA, Ed.D

THE WITHDRAWALS TAX MODAL FOR A VIRTUAL ECONOMY

Conceptually, the Withdrawals Tax is based on a single flat rate (This is NOT the Flat Tax) which is progressively applied and automatically collected on withdrawals or usage of cash outflow from banks and other banking type institutions. The tax will be collected from taxpayers accounts, by electronic funds transfer functioning within a bank clearing house operation linked to all applicable financial intermediaries. It will apply to individuals and businesses alike. The Withdrawals tax does not tax bank credits or deposits nor does it tax uses of funds from financing activities such as loans and certain inter-bank transfers that are essentially rollovers. By taxing only the withdrawal aspect of cash flow, the tax effectively levies a simultaneous tax on income consumption and transfers of wealth. It also effectively levy a tax on all corporate expenditures make the tax a fixed cost of capital recoverable in price of goods and services sold. By combining the taxation of these elements the entire public finance system will be simpler, less cost compliant, and a more accountable to the people and businesses. No tax returns will need to be filed and the amount of the collection of revenue will be the same if not better than the taxes it replaces. This model can also effectively eliminate sales tax, estate taxes at every level of government. Moreover, tax compliance savings would be huge and there would be an enormous dividend realized in the human capital conserved by eliminating the conflict between the government and its citizens in collecting taxes.

Many economists have advocated a total shift to consumption taxation for three straightforward reasons: simplicity, efficiency, and fairness. Simplicity in that income taxes are difficult and costly to administer, nearly impossible to measure accurately while consumption is observable fairly aligned with income and more representative of the trappings of wealth. A tax on consumption tax is said to be more efficient because it eliminates inter-temporal consumption distortion by ending the tax on savings by reducing the tax on capital. This encourages economic growth through greater rates of investment.

Bradford (1995). Other economists have argued for a shift to consumption taxation based on fairness. Hobbes justifies consumption taxation on a benefits principle. Kaldor (1955) argued that complexities of the income tax are so great that a shift to an expenditure tax would in fact raise more revenue from the very wealthy than does the income tax.

The foundation of the WTX model is the fact based on these predecessors learned contributions. The uniqueness of the WTX is that it is a more practical model than it is a theoretical foundation \for the consumption tax The WTX focuses on how taxpayers use their economic equity for some gainful purpose, consumption or just give it away. The WTX model unilaterally automates revenues collection in the process by using the banking system to collect and account for the tax. The WTX forges an unbreakable union of the banking system that will be very difficult to avoid or evade and at this focal point the shadow economy is defeated both systematically and philosophically. The simplicity of an automated tax collection system eliminates the human capital that is exhausted by taxpayers in the pervasive litigious confrontations between them and the government under

our current system. This eliminates one major philosophical contributing factor to the underground economy, Gutmann and Fiege.

FUNDATMENTALS OF THE WTX SYSTEM IN A VIRTUAL ECONOMY

In order to make an econometric model of how the WTX can impact the shadow economy a clear understanding of the mechanics of the system is needed. The focus of the WTX is *generic* withdrawals by check, debit advices, exiting wires from the taxpayer's financial institution regardless of most intended purposes. All funds deposited in the account go into the operating account, such as paychecks, business receipts and rents etc. unless they are earmarked for non-taxable distribution and placed in the non-taxable sub account. Currency, once withdrawn from the account cannot be replaced in the account without taxing it again. Certain control mechanisms are in place to avoid double taxation.

“Securities” accounts are a taxpayer’s investment account encompassing all monetary assets held in the form of securities, money market funds, commodities and the like that under the management of a particular custodial/broker institution. The income making activity of the account namely the security purchases and sales is not be taxed. Instead, the account would be treated like an IRA account, taxing all withdrawals regardless of their nature. This account would have no escrow component. Redeposit of cash would have treated like a normal account “Insurance” accounts are essentially insurance policies. Theoretically, all insurance premium payments are taxed, as they are withdrawn from the taxpayer's bank account. Claims paid are only be subjected to tax in excess of premiums paid. Therefore, an insurance account will be comprised of an escrow fund. “Accumulated premiums paid” would act as a contra-account to the operating portion, which taxable disbursements are to be made from as claims are paid.

The tax base derived for individuals would be different than for commercial enterprises. Individuals pay tax as they withdrew or transferred cash or a cash equivalent from their accounts for any purpose.

Individual transactions subject to the WTX include the following:

- Check withdrawals
- ATM or Cash withdrawals of any kind from checking or savings accounts
- Inter-bank transfers or wires of money directed by an individual for any purpose
- Title transfers by gift at fair market value
- Transfer of an estate at death at fair market value
- Distributions from trusts in cash
- Distributions of property from trusts and estates at fair market value
- Check cashing

Individual's transactions not subject to tax would be:

- Credit card purchases
- Cash advances
- Use of credit lines
- Disbursement of mortgage proceeds
- Transfers to similarly titled accounts (rollovers)

- Transfers to trusts
- Transfers of cash and property to controlled entities

The commercial enterprise tax base derived for business entities is more problematic but it is intentionally designed to be simple to avoid any exceptions to certain businesses and cause inequities. The following would be subject to tax at the source:

- All business operating expenditures made in cash or by cash equivalent
- All transfers of cash or cash equivalents that are not rollovers
- Payments of all dividends
- Retirement of debt paid in cash or cash equivalents
- Boot paid

The following corporate transactions not subject to tax:

- Transfers of cash or property to a wholly owned subsidiary
- Rollovers of cash to similarly titled accounts
- Disbursement of bond proceeds
- Disbursements from credit line
- Letters of credit

The nature and complexity of business transactions creates allocation problems, but none of these problems are less workable in the WTX system than are those of the income and sales tax systems. It is possible for businesses to avoid the tax by shifting the burden and measures are expected to counter unforeseen situations. Title transfers and non-cash transfers of title for any purpose can be affected without liquidation and escape the WTX. Accordingly, a tax all significant title transfers at fair market value would be collected upon legal recordation of titles and levy the tax on only those large items such as real estate, vessels and vehicles. Finally, the WTX electronic currency system can short-circuit the shadow economy on many fronts. Notably, rising tax rates and distrust of the government cited as main catalysts to the underground economy's growth and maintenance. This paper should further support the installation of consumption tax systems as mainline public finance systems that facilitate fiscal policy initiatives and bring to shadow economy out of darkness.