

**Digital Currency Systems: Emerging B2B e-Commerce
Alternative During Monetary Crisis in the United States**

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Abstract

Digital currency systems form the triumvirate nexus of government policies, money, and technology. Each has a global reach and responds to the needs of business and consumers. E-commerce depends on private and government financial institutions to enable payment transactions; the basis of e-commerce. As the United States financial crisis continues B2B enterprises may need to abandon traditional payment transaction systems and look to alternatives, in the form of Web based digital currency systems accessed via the Internet. The various types of digital currency systems generally fit into five categories: Barter Exchange Software Systems, Non-Bank Digital Currency Payment Systems, Digital Precious Metal Systems, Online Value Transfer Software Systems, and Online Stored Value Transaction Software Systems. Digital currency systems are not online banking. Digital currency systems use private electronic monies: electronic tokens, barter-exchange currencies, digital cash, and stored value e-cash vouchers. We explore the history of money against a backdrop of banking and government policies that cause cyclic monetary crisis's, how these current digital systems operate, how business can thereby benefit in their use, and why digital currency systems are such an underutilized service in the United States.

Digital Currency Systems: Emerging B2B e-Commerce Alternative During Monetary Crisis in the United States

Introduction

This paper is presented in two major sections addressing the problems and advantages of business using digital currency systems in times of currency instability in the United States. The first section will give context to digital currency systems by providing historical and background information of what is already used for e-commerce payments and the economic environment that is driving the need for businesses to adopt the newer digital currency systems (DCS). The second section concentrates on the available and newest DCS's, solutions that address traditional disadvantages, and the advantages to businesses in adopting a DCS during the current economic climate in which they find themselves.

Background on the Digital Currency System

Digital currency systems (DCS) cross borders as do credit card companies such as Master Card, PayPal, VISA, and others but surprisingly, there is little promotional efforts being conducted on the DCS's. Each credit card company's system allows merchants to conduct commerce globally and transact payments amongst various currencies but only DCS's allow commodities (gold and silver) and currencies, for payment of products and services. To date, DCS's are mostly underutilized by business in conducting e-commerce in the United States but are a major payment system used in Russia. DCS's allow business to use the highest valued currency and money that best suits their needs, thereby escaping the detrimental repercussions of a currency that is inflated and loses its value. For instance, gold, like the Internet, transcends borders: its value as a commodity and the conventions for its usage are internationally recognized and accepted. Due to the nature of commodities, DCS's provide business with an easy, affordable, and safe way to continue conducting e-commerce in unstable business environments.

Historical problems of U.S. banking instability, sometimes blamed on the gold standard, is on closer inspection rooted in banking regulations that unwittingly weakened private U.S. banks. In a study covering many decades in a large sample of countries, Federal Reserve Bank economists found that “money growth, in terms of inflation, are higher” under fiat debt instruments than under currency anchored to gold and silver standards. Hence, businesses are left in a quandary by being unaware of the advantages of using digital currency systems in times of hyper-money growth, as an alternative in helping them circumvent instability and bankruptcy.

The status of the United States’ unsubstantiated fiat currency is anticipated to have a severely damaging effect on business and e-commerce if only the traditional payment systems continue to be used. An alternative is required, in effect, a ‘plan B’. This is evident by the fact that legislators in at least ten states have introduced bills in the past few years to allow state commerce to be conducted with gold and silver. Legislators have proposed resolution, mostly since 2009, to include gold and silver in its accepted currency forms. As of January, 2011, the states seeking this legislation are Georgia, Virginia, Montana, Missouri, Colorado, Idaho, Indiana, New Hampshire, South Carolina, Utah, and Washington. In addition, suddenly JPMorgan Chase Bank has jumped into the act (Satter, 2011). John Rivett, collateral management executive for J.P. Morgan Worldwide Securities Services, said in a report 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. By combining our collateral management and vaulting capabilities, we provide clients with greater flexibility in how they mobilize collateral (including ETF’s backed by gold bars). The move will permit its clients to mobilize collateral across borders (Satter).

We will discuss ‘vaulting’ in more detail and in relation to particular digital currency systems, called Digital Precious Metal Systems, later in the paper.

Digital Currency System Sources and Research

There are few current research white papers available specifically on digital currency systems functionality, within the United States. Therefore, it fell to a large extent, the publication called Digital Gold Currency (DGC) Magazine, edited by Mark Herpel, to provide analysis and documentation on today's available systems within the digital currency system industry. Generally, the various types of digital currency systems fit into five categories:

1. Barter Exchange Software Systems
2. Non-Bank Digital Currency Payment Systems
3. Digital Precious Metal Systems (require 'vaulting')
4. Online Value Transfer Software Systems
5. Online Stored Value Transaction Software Systems

Unlike traditional credit card payment and central bank systems, digital currency systems use four private electronic monies: electronic tokens, barter-exchange currencies, digital cash, and stored value. The words, precious metals, gold, silver, asset, and commodity, are equivalent terms and are used interchangeably. The words Federal Reserve Bank, Federal Reserve Banks, and central banks, are also used interchangeably

Barter Exchange Software Systems

The time worn practice of barter continues to contribute billions of dollars in commercial transactions each year to businesses within the United States. Digital currency barter systems deal in tokens or 'trade dollars' and commodities that are pegged to the U.S. dollar and silver. Barter systems are the most numerous digital currency systems found today in the United States. The few barter system sites that also accept silver assets in addition to US dollars, are the gathering place of merchants who prefer to be paid in precious metals (Trudell, 2010).

In speaking with Free World Market founder, Jeremy Trudell, some barter sites, for example, can pay in silver. They peg the value of their transactions to the American Open Currency Standard (AOCS). The IRS code section on barter states that whatever is paid in exchange, must be equivalent, hence barter obviates gains paid on “gold or silver assets” when they are used, per current legal tender laws. In addition there is no way barter sites can be monitored and audited, as most traditional payment systems can be, today. If or when the IRS attempts to audit the small business owner of a barter system, there may be no merchant accounts to audit. With some barter systems, the B2B or B2C transactions are recorded but the transactions are not accumulated and posted in merchant accounts. Smaller barter systems only calculate the transactions in real-time (Trudell) while larger barter systems, in terms of members, do in fact, report monthly account balances to their merchant members and are easily audited by the IRS.

Non-Bank Digital Currency Payment Systems

For conducting Internet business, these multifunctional payment tools handle multiple issued currencies and precious metals. These systems are popular with Internet users that do not have bank accounts nor are bank accounts required (Herpel, 2009a). They provide a multi-currency z-purse or e-wallet, online financial services, P2P payment solutions, Internet based trading platforms, merchant services, and online billing processes. As a software platform, digital payment systems hold no assets, they merely provide all of the functionality to connect users to their purses or e-wallets and transact business via the Internet (Herpel).

Though not used to any extent in the United States, these digital currency accounts offer the worldwide electronic movement of funds using a personal computer or mobile device. For business these payment systems support local payment solutions for Internet merchandisers and service providers. The sites generally publish participating merchant’s information on the

website, exposing them to all consumers of the payment system. This encourages the building of long-term business relationships. For business transactions, it gives an automated platform that allows a business to produce and sell, offer services and pay suppliers, contractors, and personnel via the Internet. The system also allows members to buy goods and services on credit or borrow funds from other users.

Digital Precious Metal Systems

Digital precious metal currency or also referred to as digital gold currency (DGC) is actual gold or silver ownership combined with the latest Internet technology (Herpel, 2009a; Herpel, 2009b). DGC is not a paper certificate or a promise of gold; DGC is allocated gold held in a vault on behalf of the customer. Digital precious metal combines the sound money properties of gold and other precious metals with the Internet (Herpel). These systems' functionality is not dependent upon a network of traditional financial institutions. Therefore, these payment systems are an alternative to the banking system. Digital precious metals systems allow users to buy, own, and store precious metals (GoldMoney, 2011).

These asset backed digital systems give customers the ability to use monetary commodities as currency by making payments to the digital systems vaults. Members can make gold and other precious metal payments to other customers electronically. These systems allow members around the world to make instant payments to each other, at a fraction of the cost of a standard bank transfer.

These systems too conduct a vigorous verification process, before a member can transfer money to fund their Holding and start buying metals.

Online Value Transfer Software Systems

This type of system is cutting-edge in terms of technology and business model and uses digital cash assets and usage tokens stored in an e-wallet. The systems allow various methods of private value transfer and privacy features (Herpel, 2009a).

An online value transfer system, known as Loom.cc, is both a general-purpose digital accounting software and an informal online value transfer software system. The system offers users the ability to create, send, and receive digital units (assets). The Loom.cc site is designed using open source software (Herpel).

Another new Peer-to-Peer (P2P) anonymous digital currency system is Bitcoin.org (Herpel). As stated on the Bitcoin site, peer-to-peer means that there is no central authority to issue new money or keep track of transactions. Instead, these tasks are managed collectively by the nodes of the network. Bitcoin.org's value transfer software system is a free, open-source system that uses a network-based digital "cryptocurrency" and all transactions are non-recourse.

Online Stored Value Transaction Software Systems

This type of system is the most cutting-edge next generation technology (Herpel, 2009a). One of these systems is Voucher-Safe. It is an online mechanism used for the secure, anonymous exchange of digital vouchers and peer-to-peer interaction between users. It is implemented as an extension to XMPP (Jabber); an instant messaging service. The P2P Voucher System is designed to emulate the model of circulating cash in the digital world. The voucher payment system itself is transactionally unconditional, just as it is entirely open as to the nature of the backing asset.

A stored value software system like this operates entirely independently from digital precious metal currency systems, i.e., digital gold currency (DGC) systems. This is important to a successful business model in that it is not a branch of or related to any DGC. But an online stored value system does partner with a DGC system in order to facilitate a reputable issue,

similar to how barter exchange systems peg their tokens and transactions to the American Open Currency Standard (AOCS) silver standards.

The Problems that Drive Digital Currency Systems

The problems lie around government policy, money and technology. The money problem lies with the economic instability brought to us by fiat money, and in particular with government policies that enforce only its' use. This is driving the evolving and maturing DCS industry, and how business can use DCS's in their e-commerce efforts to stem the tide of losses. The U.S. dollar has no defined value in terms of a commodity or basket of commodities; there is no convertibility principle operating; and there is no monetary rule to ensure strategic price stability. This economic policy inevitably results in inflation and sooner or later, hyperinflation or depression. Inflation distorts markets due to misdirected capital investment (Hazlitt, 1946). It leads business owners to make investments they might not otherwise have made, and these decisions can easily result in widespread business bankruptcy.

Anti-Money Laundering

Fear that digital currency systems will be used by foreign or domestic money laundering firms to hide their gains find tough anti-money laundering rules enforced in the United States. Disclosure statements from investor accounts contain anti-money laundering verbiage as follows: to help the government fight the funding of terrorism and money laundering activities, Federal law requires all financial institutions to obtain, verify, and record information that identifies each person who opens an account. The U.S. Department of the Treasury, Securities and Exchange Commission, Financial Industry Regulatory Authority (FINRA), and NYSE regulation require you to provide additional information, such as net worth, annual income, occupation, employment information, investment experience and objectives, and risk tolerance.

The disclosure continues by stressing the fact that unless the information is provided, the business firm can not open an account or process transactions and if the firm has an account, it will be closed.

Section 312 of the USA PATRIOT Act stipulates that, financial institutions must (FinCEN, 2005):

1. Determine the identity of all nominal and beneficial owners of the private banking account.
2. Determine whether any such owner is a senior foreign political official and, thus, is subject to enhanced scrutiny.
3. Determine the source(s) of funds deposited into the private banking account and the purpose and expected use of the account.
4. Review the activity of the account to ensure that the activity is consistent with the information obtained about the source of funds, the stated purpose, the expected use of the account, and to report any suspicious activity (FinCEN).

In addition, anti-money laundering suspicious activities may be further investigated due to Section 215 of the USA PATRIOT Act which allows the Federal Bureau of Investigation to compel anyone, including banks, investor custodian, doctors, libraries, bookstores, universities, and Internet service providers, to relinquish records on their clients or customers. What is more, it should be remembered, that if or when a firm's records are relinquished by their custodian organization, the custodian is prevented from notifying the business firm that their records are being searched by the Federal Bureau of Investigation.

But somehow, all of these laws, rules, and guidelines seem to not be enough to assuage the fear of banks and government enforcement agencies.

Privacy and Sovereignty

Another problem for business today is that the government desires, and in many cases, does monitor monetary e-commerce transactions. Governments hunger for control of the resources and citizens within their borders (Gordon, 2010). This hunger is seen today in the United Kingdom. The United Kingdom's tax collection agency is putting forth a proposal that all employers send employee paychecks to the government, after which the government will deduct what it deems as the appropriate tax and pay the employee's by bank transfer (Knight, 2010). Here, the United Kingdom's system will exploit the economic crisis to completely dominate and control the lives of their citizens.

Unlike the United States current financial systems, online cash payment systems would deprive the government of a great deal of surveillance information (Harper, 2007). But, due to the nature of technology, digital currency transfers always leave a detailed transaction record. In the United States privacy and anonymity war with the commercial viability for a fully private system therefore as these digital currency system providers expand, they become highly regulated enterprises. And due to the traceability of transactions, digital currency issuers require a high degree of user identification in order to comply and compete in today's online e-commerce marketplace (Herpel, 2009a). This, by and large, negates the wholesale usage of these systems by terrorists and money launderers.

True digital cash, the fully untraceable private form, will allow some new channels for criminal activity (May, 1997). Privacy and sovereignty for free citizens has its price. The ability of people to plot crimes and commit crimes behind privately closed doors is obvious, and yet we do not demand that cameras and microphones be installed in homes, apartments, kitchens, bathrooms, bedrooms, and hotel rooms. While there may be no specific mention of privacy in the

U.S. Constitution, many would argue that the First and Fourth Amendments make private economic transactions not subject to government intrusion.

Legal Tender Laws

The Legal Tender Act of February 25, 1862, declared Treasury notes of the United States to be legal tender for the payment of public and private debts. The 1862 Act was enacted to issue paper money to only temporarily finance the Civil War without raising taxes. Article I, Section 8 of the Constitution specifically gives Congress the power to "borrow money", "coin money", "regulate the value" of both U.S. and foreign coins, and regulate interstate commerce, but it does not explicitly and absolutely endow Congress with the power to print paper money or make it legal tender in place of gold and silver coin.

Today, legal tender laws are enforced by the IRS and the Federal Reserve Bank for the United States government. Dr. Ron Paul, a Congressman of Texas, serves on the House Financial Services Committee and is a distinguished counselor to the Ludwig von Mises Institute. Dr. Paul states on his website that

Sound money (backed by gold and silver coin) keeps government spending in check, keeps trade fair and honest, which reduces the temptations, and many underlying causes, for governments to wage wars. So if sound money is such a good thing, what is stopping people from simply trading with each other in gold and silver? Why are you still being paid in fiat dollars, and why can't you pay for gas in gold? The answer is that the government has enacted policies that provide considerable stumbling blocks to such transactions.

One of the main stumbling blocks are these Federal legal tender laws, which state that government-controlled fiat currency must be accepted for most monetary transactions (Paul, 2008). In the absence of government legal tender laws, people are free to accept the medium of exchange of their choice, and are likely to insist on payment in something of real value.

Legal tender laws in the United States dissuade business from transacting e-commerce payments in commodities, for they must pay sales tax on the purchase of gold. This is identical to paying sales tax at the bank if a person was to convert dollars into quarters (Paul). The privately owned and run Federal Reserve Bank uses the IRS to enforce payment of 'capital gains' tax on gold when redeemed for U.S. dollars. This is in fact proof that said gains on gold represent the decline in the value of the dollar and the fact that legal gold and silver coin are considered assets not money, by the IRS. Therefore, to mitigate the detrimental effect to business that our legal tender laws incur, Ron Paul has introduced House Resolution (HR) 4248, The Free Competition in Currency Act.

A conversation with Dr. Bill Greene, content writer of the Constitutional Tender Act, as cited on Congressman Dr. Ron Paul's website, states that since gold and silver American Eagles, as well as pre-1965 silver coins, are all officially "legal tender" under Title 31- Money and Finance, U.S.C. Section 5112- General Authority, 5112(a) (7) through (a) (10), 31 U.S.C. Section 5112(e) and 5112(h), and the Coinage Act of 1965 (Pub. L. 89, 81, 79 Stat. 254), state that any transaction conducted using those coins as money cannot be considered a taxable "purchase" or "sale" of those coins, any more than using Federal Reserve Notes is a "purchase" or "sale". Greene further explained it is correct that under most circumstances, if a person attempted to use gold or silver coins as current money, they would only be accepted at "face value" and not at "melt value".

Hence, Dr. Greene continued, by the same reasoning; if a business owner chose to pay their employees in Silver Eagles, then that employee could legally declare on their taxes that they were paid \$10 face value, per week. These types of business transactions are conducted today, but they are not publicized because people understand that the IRS will prosecute them on the "gains", regardless of the U.S. Legal tender laws.

Nevertheless, under the current legal tender laws, using digital currency systems (DCS's) are not feasible in the United States. But, states Dr. Greene, under the proposed Constitutional Tender Act, it would become feasible within the United States, since it would "nullify" federal legal tender laws in transactions with the State and would allow the residents of the State to use gold and silver coins and their electronic equivalents via DCS's, or any other currency agreed to by parties involved, at the currency's current market value.

Moving to a gold standard or some other asset-backed currency would limit the supply of dollars and prevent a response to a rapid increase in the demand for dollars caused by increased uncertainty about the value of other assets (Niskanen, 2007a). Because of this, the source of the fiat currency, the Federal Reserve Banks, will resist these efforts.

Quantitative Easing Measures

Quantitative easing (QE) means the Federal Reserve central banks can switch its focus from the price of reserves (interest rates), to the quantity or growth of reserves (fiat currency) (Bernanke and Reinhart, 2004). The central bank can expand the quantity of reserves beyond the level required to hold the overnight rate at zero but quantitative easing is not compatible with a positive overnight rate (Bernanke and Reinhart). This means overnight loans between banks will range from zero to 0.25 percent (Chapman, 2009). Economists hope that quantitative easing will stimulate the economy even when interest rates are near zero, but historically when attempted, this has yet to ever show evidence of success.

With each new effort to increase reserve's, by printing more fiat currency, it causes QE2, meaning the second (2) round of printing and infusing new reserves into the banking system and hence into the overall business and consumer economy. The new currency ultimately trickles down to business and consumers in the form of fractional reserve loans and credit. Consequently, without also increasing the amount of new goods available, in parallel with the increase in new

currency, the price of goods must increase, which is known as inflation. Some economist say the QE2 round of newly printed currency is over a trillion dollars in addition to the already disbursed TARP money of roughly \$700 billion (Kiyosaki, 2010). As of February, 2011, government officials are now talking of QE3, i.e. round three of printing more dollars.

In addition to the trillions of dollars flooding the economy is the fact that a lot of the new fiat money is being used by the Federal Reserve central banks to directly buy United States treasury bonds from the Treasury, which in effect, means the government is buying its own debt with newly printed dollars (Kiyosaki, 2010; Bowley, 2011). This monetary policy usually results in hyperinflation. Hence, this problem can be mitigated by the proactive moves of business to protect themselves by being aware of alternatives, such as digital currency systems that preserve their buying and purchasing power.

Fiat currencies have collapsed time and time again throughout history causing businesses to close their doors due to bankruptcy (Harper, 2007; White, 1959). When citizens of the United States begin to lose confidence as to whether others will recognize the value a government has assigned to fiat money, they demand more and more of it for the things they sell. Hyperinflation results as the value people recognize for fiat money falls closer and closer to zero (Harper). This is strongly anticipated as of 2010 and 2011 as the government enacts QE2 measures. Due to the volume of debt the United States government has incurred, economists anticipate hyperinflation, the likes of which we have not seen in the United States. Today, all major world currencies are fiat currencies (Harper) and monetary policy must maintain stable purchasing power, avoid deflationary excess demands for money, and avoid inflationary excess supplies of money (Jordan and Stevens, 1997).

Electronic Commerce through Digital Currency Systems

Part One

Electronic commerce continues to expand in terms of its' openness, speed, anonymity, digitization, and global accessibility (Lee, Yu and Ku, 2001). Electronic payment transactions are conducted in different e-commerce categories; Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Business (C2B) and Consumer-to-Consumer (C2C). Electronic commerce enables real-time, online business activities. Generally, the term electronic payment includes any payment to businesses, bank, or public services, from citizens or businesses, which are executed through a telecommunications or electronic network (Internet) (Sumanjeet, 2009).

Using e-commerce for online payment finds us concerned about security during transactions. This is nothing new as the credit card industry is fraught with identity theft and fraud. Many of us already know the risks of conducting e-commerce transactions using major credit card companies such as VISA, MasterCard, and PayPal as well as wire-transfer services. Despite the risks, these traditional payment systems have conducted payment transactions for many decades. This indicates how acceptable this model is by merchants and consumers.

Lee et al. indicates that "if even the slightest possibility exists that electronic payment systems may be insecure, consumers, merchant's, and bankers' confidence in this system might erode". This is true as we already know that despite consistent evidence of insecure electronic payment systems, we continue to accept and use credit card company's transaction services, globally, with our eroded confidence securely in place as a certain percentage of fraud is accepted as unavoidable (Nakamoto, 2008.) as is money laundering.

It is true that an electronic payment system must deliver many performance criteria, especially security. An electronic payment system must fulfill the requirements of authenticity, privacy, integrity, and non-repudiation (Lee et al., 2001), all four of which, can not be wholly

fulfilled by our well established credit card, debit card, and online banking systems. Electronic commerce has created new financial needs that cannot be effectively fulfilled by traditional payment systems (Sumanjeet, 2009). Currently, business and consumers use electronic payment systems that are electronic versions of existing payment systems such as checks and credit cards.

Security for large value e-commerce transactions of \$1,000 and greater generally require highly secure protocols whose implementations are costly (Sumanjeet, 2009). Digital currency payment systems have the same advantages as paper currency payment; that of anonymity and convenience. Of particular note is, again, credit cards present the highest possibilities of fraud. Therefore, both buyers and sellers are shifting from credit cards to other innovative payment products, such as smart cards and electronic money (Sumanjeet).

With this in mind, electronic payment systems can be broadly divided into four general types:

- Online credit card payment system
- Electronic cheque system
- Electronic cash system
- Smart card based electronic payment System (Lee et al).

Since these systems have been researched in depth by others, the project will not spend a lot of time in further analyzing them. They will be used only as a springboard to comparing digital currency system functionalities and benefits. See Appendix A, Figure 1, for a table comparing contemporary payment systems.

Next are the quandaries found with traditional U.S. banks and financial institutions as well as with the government that regulates them. Historical problems of U.S. banking instability, sometimes blamed on the gold standard, emerge on closer inspection to have had been rooted in banking regulations that inadvertently weakened U.S. banks (White, 2008). Moving to a gold

standard or some other asset-backed currency would limit the supply of dollars and prevent a rapid increase in the demand for dollars. The relentless demand for dollars is fueled by the increased uncertainty about the value of other assets (Niskanen, 2007a).

Addressing the privacy and sovereignty of citizens and business, we find that historically, true bank anonymity and sovereignty was based on the Austrian Sparbuch, which translated to English means, savings book (Starchild, 2000). In Austria only, today it requires no name, identification, or address. The issuing bank will not require any references, passport, or other identifying information. The account may be issued to merely a 'passbook holder'. The account bearer is the presumed owner and the physical savings book may be transferred to anyone of the bearers choosing and the bank need not be informed of the transfer. What is more, the sparbuch is as negotiable and liquid as cash and leaves no paper trail.

The central banks of the United States today play five major roles: monopoly issuer of currency, bankers' bank, regulator of commercial banks, lender of last resort, and conductor of monetary policy (White, 2002). The central banks issue currency today not because they have outcompeted many other private banks at attracting and keeping loyal customers but because their sponsoring government has outlawed private competition, thereby creating the Federal Reserve Bank's monopoly as the only note-issuer (White).

As the price of remote access to offshore banking services falls toward zero, depositors will find it increasingly easy to avoid any and all inefficient restrictions on domestic banks. To prevent shrinkage of the domestic banking industry, regulators must abandon interest rate ceilings, geographic limits, reserve requirements, portfolio restrictions (e.g. the Glass-Steagall Act), binding capital requirements, and high-priced deposit insurance (White).

Transparency has sprung up as the new watch-word during the current U.S. financial crisis, starting mostly in 2007, continuing through into 2011 and assuredly, into 2012. Our central

banks, finance institutions, and other commercial banks want their members to display full transparency and require that they be able to monitor members banking transactions, but this appears to be a one-way street. As of 2011 The Federal Reserve Bank has consistently refused to disclose all of its gold-related records, records that include gold swap arrangements with foreign banks (Powell, 2011) as well as who they dispersed the TARP bail-out money to. Secrecy should not be the normal order of things with central banks and gold (Powell). Previous to this the citizens of the United States and their representatives wanted to know who received the billions in bailout money due to the mortgage-crisis that hit in 2007. This information was not forthcoming for a while but was finally reported in 2008. See Appendix C, Figure 3 for a list of the 2008 recipients.

Financial instability and steeply rising taxes (Belkin, Etter and Brat, 2011; Christie, 2010) continue to impact business and consumers. The current climate has prompted legislators in at least ten states to introduce bills in the past few years to allow state commerce to be conducted with gold and silver (Rayfield, 2011). Starting in 2009 legislators have proposed state legislation to include gold and silver in its accepted currency forms. As of 2011 the states are Georgia, Virginia, Montana, Missouri, Colorado, Idaho, Indiana, New Hampshire, South Carolina, Utah, and Washington (Rayfield). Gold is money and as such demand for gold is spiking upward, not down (Kientz, 2010). Industrial demand is negligible compared to central bank demand. What is more, China is publicly asking their citizens to purchase gold as uneasiness sets-in about the U.S. problems with debt, which China holds a lot of (Kientz) in the form of U.S. Treasury bonds.

The Commonwealth of Virginia introduced House Resolution No. 557 to establish a joint subcommittee to "to study whether the Commonwealth should adopt a currency to serve as an alternative to the currency distributed by the Federal Reserve System (of banks) in the event of a major breakdown of the Federal Reserve System" (Marshall, 2011). In other words, Virginia will

study the fallback plan of a "timely adoption of an alternative sound currency that the Commonwealth's government and citizens may employ without delay in the event of the destruction of the Federal Reserve System's currency". Further, "Americans may employ whatever currency they choose to stipulate as the medium for payment of their private debts, including gold or silver, or both, to the exclusion of a currency not redeemable in gold or silver that Congress may have designated 'legal tender'" (Marshall).

Today, the United States is on a pure fiat money standard with a discretionary (Dorn, 2009) central bank: the dollar has no defined value in terms of a commodity or basket of commodities; hence the QE2 measures in effect today. Consequently, the price level has drifted upward (inflation) without the solid anchor of gold or silver. This anchor was removed by President Richard M. Nixon in 1971 (Takayama, Kitamura and Yoshida, 1998).

James Madison, the chief architect of the Constitution, recognized that convertibility is a more certain way to protect the value of money than reliance on a central bank—even if that central bank were tied to a quantity rule. In 1820, Madison wrote:

It cannot be doubted that a paper currency, rigidly limited in its quantity to purposes absolutely necessary, may be made equal and even superior in value to specie (gold/silver coin). Whenever the paper has not been convertible into specie, and its quantity has depended on the policy of Government, depreciation has been produced by an undue increase, or an apprehension of it.

The depreciation produced in using paper currency takes the form of inflation and ultimately hyperinflation. Sound money is a prerequisite for financial stability and the efficient operation of a free-market price system (Dorn). The question of who is to control the monetary system is usually considered only within the context of some government system, since business and consumers have grown-up assuming that money must be produced by governments. There are, however, numerous historical examples of private commodity or fractional reserve systems,

such as the Scottish free banking system of the 18th and 19th centuries, which functioned successfully for more than 100 years (Friedman, 1982).

The simplest private monetary system is commodity money produced by a number of private firms and used, if need be, by digital currency systems. With multiple firms as well as multiple digital currency systems, businesses then have the option of choosing the most reliable, dependable, and trustworthy coins or system, hence the opportunities for fraud would be rare. Such a system is very much like the competing international monies of the Middle Ages (Friedman).

To alleviate the global recession, the G-20 group of nations recently agreed to authorize the International Monetary Fund (IMF) to allocate \$250 billion worth of Special Drawing Rights (SDR), the IMF's unit of account, to its member states (Anklesaria, 2009). This may point to endeavors by the IMF to make the SDR a new international currency, rivaling the U.S. dollar. Speculation was further fueled by the suggestions of Chinese officials that SDRs could displace the U.S. dollar in foreign exchange reserves. However, economists point out that the SDR is not a currency and has no chance of becoming one (Anklesaria).

However, the newly proposed Amero or ANZAC dollar may be the old SDR legal tender. A study initiated with support from commercial banks, explored and surveyed businesses in New Zealand regarding the creation and use of an ANZAC international currency (Grimes, 2000). The study propounds that there is no necessary economic rationale for independent countries to maintain independent currencies. Further, the study claims that multiple currency arrangements are sub-optimal for banks and possibly businesses. For the United States and Canada, on March 25, 1999 the Senate Committee on Banking, Trade, and Commerce heard five economists give their views on the prospects for a common currency for North America (Grubel, 1999) dubbed

the Amero. During the hearing the economists agreed that there were micro-economic benefits, however, the macro-economic costs could be greater than anticipated to North America.

These various current monetary machinations by governments should give business owners pause as to the current and future viability of the U.S. dollar, and hence give impetus to plan accordingly.

Part Two

B2B transactions account for about 95 percent of e-commerce credit card transactions (Turban, King and Viehland, 2004) which occur using the traditional payment systems discussed in Part One. Currently, in the United States, there is almost no demand for digital currency products and there is a stigma attached to those people who do not have a U.S. bank account and credit card (Herpel, 2011). Digital currency systems (DCS) use various forms of digital currency. Since 'digital currency system' is a newer term there is no description of it yet in traditional online sources such as the Encyclopedia Britannica. However, as stated on Wikipedia, names for digital currency are electronic money, e-currency, e-money, electronic cash, electronic currency, digital money, digital cash, and cyber currency. Further, Electronic Funds Transfer (EFT), direct deposit, digital gold currency (DGC), and virtual currency are all examples of electronic money, and it is a collective term for financial cryptography and technologies enabling it.

For the purposes of this paper, digital currency systems are those computer systems that deal in digital currency as a form of e-money or scrip which is only exchanged electronically to support business owners. Typically, this involves the use of computer networks, the Internet, and digitally stored value systems. Since the technology model and the words that describe the functionality are still new and unfamiliar, refer to the Glossary on page 58 in this document. Digital currency is distinct from traditional online banking and Internet payment systems (Zerzan, 2010). Where credit cards charge businesses fees and high interest rates, digital

currency users usually prefer cash. Research shows that in a digital currency network, cash is often the preferred way to pay. No bank account or credit card is ever required (Herpel, 2011) thereby relieving businesses of onerous credit card transaction fees and interest rates.

After a decade of use, digital currency systems are available for business to use as an alternative to traditional banking products. What is more, digital currency systems are not simply the name given to the network systems. Through the past decade it has been found that commercially successful systems are successful because they are closed account systems. Digital currency systems for B2B mean computer systems transact e-commerce using privately issued electronic money in the form of officially issued currency and commodity money, such as gold and silver (Herpel, 2011). Today, firms such as GoldMoney.com enable customers to make metal payments from an iPhone (GoldMoney, n.d).

It is estimated that less than 1 percent of the U.S. population has ever used a digital currency account (Herpel, 2011). In fact, the concept of privately issued digital currency is so foreign from conventional ideas of money that its everyday use may be difficult to comprehend by business owners. Digital currency transcends the credit card payment model and offers a safe, inexpensive e-commerce option to all Internet users, worldwide.

Government issued fiat currency moves through traditional banks and financial institutions. Digital currency, on the other hand, is issued by private parties and only circulates over the Internet and may originally have had its source from government issued currencies, privately issued currencies, gold, silver, or other precious metals. What is more, digital currency transactions are not fraught with fraudulent charge backs, high fees or a 72 to 96 hour wait time before the funds are made available (Herpel, 2011) to the business.

It is an unmonitored, non-government-based unit of value. Digital currency is also referred to as digital precious metal because its value is linked to a valuable commodity such as

gold and hence, is based on the value of precious metals and not fiat currencies. This currency is exchanged between account holders of the service. As digital currency systems operate outside of any one jurisdiction, it makes government oversight and tampering impossible. The systems have existed for years and research has not discovered any proof of their particular appeal to terrorist supporters (Zerzan).

Digital currencies require two intermediaries when cashing-in or cashing-out to a national currency (Zerzan, 2010). Users acquire the currency through a dealer. The dealer acquires this currency through an exchange that takes national currency for digital currency and vice versa. After the digital currency is acquired, users may then transfer it without the use of intermediaries. This means that settlement is instantaneous and some users can immediately and physically retrieve the precious metal upon which the digital currency is based (Zerzan).

Double-Spending

Double-spending is a problem for online digital cash currency systems owing to the ease of copying bits (e-cash), compared to physical bills or coins. It is easy to spend a digital coin twice. The design of digital currency software systems seeks to alleviate this problem, and many successfully solve the problem by verifying the identity of the double spenders.

Generally, the way to identify the double-spender is through a cut and choose protocols technique. However, Stefan Brands, in his 1995 article, *Electronic Cash on the Internet*, proposes a system which employs a PCMCIA card (Saarela, n.d.). The PCMCIA card is now referred to as a PC Card, which is not the same as a smart card. The PCMCIA card system incorporates all of the most important features for electronic money: privacy, off-line payments, multi-part security, efficiency, and open system.

In the e-cash scheme a user or member, may withdraw, and then anonymously and untraceably, spend an unlimited number of coins, as long as they do not double-spend a coin, or

exceed the spending limit with any merchant (Camenisch, Hohenberger and Lysyanskaya, 2006). If a member does overspend, then these digital currency schemes detect these violations and identify the misbehaving member. Once a misbehaving member is identified the system traces all of the user's previous e-coins (Camenisch et al.) and corrects their account.

In addition to a member double-spending, the service provider is also prevented from double-spending digital coin. If the service provider attempts to cash the e-cash twice, the bank will be alerted by the uniqueness string twice. If the strings are different, it is the member who has copied the coin and the member is identified as the double-spender (Saarela, n.d.).

Types of Digital Currency Systems

As with traditional electronic payment systems there are many contemporary digital currency systems (DCS). For the purposes of this paper, some DCS's are in name only. They are actually just a traditional electronic check system using various input devices such as scanners, cameras, and micr readers as displayed on the site named, Digital Currency Systems at, <http://www.dcsorg.com/>. As they use only government issued U.S. dollars to transact e-commerce, they are not digital currency systems.

When using DCS's, currency and commodity exchange rates are a natural question that arises when transacting e-commerce payments. Exchange-rate policies often originate in polemical politics (Hanke, 2002). There are three types of exchange-rate regimes: floating, fixed, and pegged rates. Each type has different characteristics and generates different results. Although floating and fixed rates appear to be dissimilar, they are members of the same family. Both are "automatic" free-market mechanisms for international payments. If a country wants monetary autonomy and free capital mobility, it must adopt a floating exchange rate. If a country has a pegged exchange rate, it must restrict capital mobility to avoid balance of payments and currency crises. In the case of the U.S. dollar, a floating exchange-rate regime is in effect (Hanke).

But why the great concern about gold and silver money and exchange-rates? The gold-silver ratio is used by precious metals traders across the world (Finweb, n.d.) It has been used for centuries and continues to be relevant to digital currency systems. The gold-silver ratio is essentially the number of ounces of silver that it takes to buy an ounce of gold. In essence, it actually provides investors and business owners with a lot of value (Finweb). See Appendix D, Figure 4, for a list of why the gold-silver ratio is important to business e-commerce.

As mentioned earlier, contemporary digital currency systems can be demarcated into these categories:

1. Barter Exchange Software Systems
2. Non-Bank Digital Currency Payment Systems
3. Digital Precious Metal Systems
4. Online Value Transfer Software Systems
5. Online Stored Value Transaction Software Systems

Barter Exchange Software Systems

In an interview, Mark Herpel, Editor of Digital Gold Currency Magazine, finds that barter exchange Internet based businesses are dominant digital currency systems in the United States but for tax reasons, most base their barter units on the U.S. dollar. Barter-exchange currencies are another type of privately issued currency. These currencies are just trade credits or tokens that allow barter systems to overcome the ‘double-coincidence-of-wants’ problem members. They exist today in paper and electronic form and are becoming increasingly common. The trade association of barter organizations referred to as The Universal Currency of the International Reciprocal Trade Association is an example of an electronic barter-exchange currency that is facilitating bartering via the Internet. Many barter systems work much like an online savings account that allows a business to control their barter operations from the Internet

(Barter Systems, 2011). Some barter systems provide a list of each members monthly transactions and the current trade balance, similar to a monthly checking account statement. Bartering is a taxable activity. Making eligible business purchases through barter is tax-deductible. Hence, barter systems provide IRS-form 1099 to their merchant members (Barter Systems).

The cost of joining barter exchange networks is low. Often, a barter agent opens an account online for the new merchant. Then merchants download interfacing software. Consequently, these electronic money networks are growing rapidly, and the rapid growth itself is increasing the benefits of membership because of the critical mass of positive network externality (Barter Systems, 2011). The introductions of various electronic tokens and barter-exchange currencies have been relatively successful as a result.

Barter systems peg the value of their transactions to the American Open Currency Standard (AOCS) silver and copper standards. The AOCS site provides an evolving and current list of participating AOCS approved silver and copper coin. The AOCS delivers the “standard” for ensuring that all medallions produced are of the highest quality providing participants confidence that what is represented is at least the declared weight and grade.

In an interview, Mark Herpel continues by pointing out that indeed, barter exchange systems peg one barter unit to one U.S. dollar. The disadvantage here is that bartering with a piece of silver, when its face value is pegged at 50 or 100 "units" for the purpose of simplifying the barter process, is clearly circumventing the tax laws as far as the IRS is concerned. But because many barter exchange systems are small the IRS ignores them. However, the IRS likes to make examples out of the few larger Web businesses as of 2009 and 2010. Herpel points out one non-digital, non-online barter exchange business case in 2007, that came to light because the company was paying employee wages with U.S. minted gold and silver coins at face value

(Whitely, 2007; Whitely 2009) in the amount of roughly \$114 million dollars (Bogden, n.d.).

These barter operators won their first case because government prosecutors could not explain how a U.S. coin face value of \$50 had a U.S. dollar worth of \$1,000 for tax purposes. This made evident that face value, no matter how seemingly random or specific, when used to label a precious metal an “asset” does not stand up in court. Hence, spot value or daily value always appears as the certified value. Herpel further comments that there are many barter exchange operations and most of the tokens come from AOCS. For a short list of flourishing barter exchange websites, see Appendix E, Figure 5.

Jeremy Trudell, has other views regarding barter exchange systems. Trudell is the creator and owner of Free World Markets, a barter site. Trudell states that the U.S. barter networks have become too self serving, and are not doing the best for their members (CCMag, 2010). Free World Markets website avoids the current IRS tax laws that mandate silver money is an asset by using it as a medium of barter, i.e. like-for-like transactions.

Unfortunately for traditional barter networks, says Trudell, they are still making the mistake of backing their barter currency with mutual credit, rather than substance, like physical silver and copper. Because of this type of backing, a typical pattern ensues, where, as more merchants leave the network in debt than in credit, the unit of value of barter suffers inflation. And like in any economy, this hurts the people who have savings (CCMag).

In any barter network even the unbacked currencies are supposed to be accepted at face value. In Free World Market states Trudell, all the merchants agree to take the silver at face value, and that draws more users into the system because they effectively get a discount when they start. People who are not interested in the products offered are only going to value the medallions for their silver content, while others will value them more for what they can buy with them. Yet, businesses are more willing to trust the value of silver than trust the debtors in their

barter networks. Free World Markets virtual silver can be spent on a much wider range of high quality goods. Therefore this effectively sets-up a nationwide barter network, with a medium of exchange backed by silver (CCMag).

Another facet of most commercial barter exchanges is that they need an aggressive sales force to compete in a highly monopolized market because banker's dollars control the market of general-purpose exchange (Brock, n.d.). Here, Mr. Brock of the Threebles barter site operates as an e-commerce marketplace for goods from local small businesses, independently of traditional banking channels. As barter exchange sites like Threebles expand, they introduce additional business products to their merchant members such as business loans and lines of credit.

Non-Bank Digital Currency Payment Systems

The importance of e-commerce in today's economy forces business to adapt their behavior towards the different actors of the market. Hence the global marketplace offers many different payment systems, some of which are relatively better than others. One of the better non-bank digital currency payment systems is WebMoney™, located in Russia. WebMoney was created after the Russian banking collapse of 1998. At the height of this crisis many large Russian banks closed, including Inkombank, Oneximbank, and Tokobank, which are a close equivalent, of the Federal Reserve Banks in the United States. As a result, millions of Russians saw their savings disappear and lost money when the banks shut them out. After this collapse, local citizens and businesses turned to nonbank Internet alternatives (Herpel, 2011).

PayPal's target market is adults who possess a bank account and credit card. WebMoney's target market is all people's shopping or doing business online that have a bank account in addition to all Internet users that do not have a bank account or credit card (Herpel, 2010c). WebMoney is a dominant part of everyday life for many Russians (Herpel, 2009a). WebMoney provides 200,000 cash-in terminals throughout Moscow that accept cash and

instantly credit a PayPal account, or pay a utility bill, which is a far superior system to anything found in the United States (Herpel). What is more, business cooperation with existing financial companies enable these types of systems to offer non-bank products.

The digital payment system uses e-wallets or z-purses that require users to use an independent money exchanger to convert the multiple currencies before funding a new z-purse or e-wallet (Herpel, 2009a). P2P payments and B2B payments are automatically supported through a standard WebMoney account. No bank account, no credit check, and no expensive merchant services are needed. As of October 2010, WebMoney has in excess of 12 million account registrations in the system, customers and agents in 8,069 cities throughout 70 countries along with 59,000 places where customers can fund a WebMoney z-purse (Herpel). But interestingly, this global system is mostly unknown in the United States.

Next, during the height of the mortgage crisis in the United States, WebMoney Gold opened in mid 2007, which is backed by gold. WebMoney Transfer™ operates the software platform responsible for transacting all digital payments. The various e-purses are formed as completely separate corporate entities from the software transaction platform. The software platform will not perform any exchanges between purses. This is dissimilar to PayPal or traditional bank credit cards which will automatically swap currencies as the payment requires, which then automatically charges the customer a non-negotiable exceptionally high currency conversion fee.

To join a non-bank digital payment system, the merchant or service provider must obtain Verified Merchant Status verification. Upon passing a rigorous background check, the merchant receiving clearance gets access to the systems API and merchant interfaces, free of charge. Once the relationship is established, ongoing security and verification checks are conducted to keep the business relationship secure.

Digital Precious Metals Systems

With the advent of high technology and computers, a new era has engulfed us. The digital age provides opportunities and threats to previous ideas and methods. The government and the banking system are working hard to rid us of cash and precious metal coin, a commodity that empowers us as individuals by allowing us anonymity and sovereignty, in order to replace it with a digital system that can record all financial transactions (Barber, 2007).

However, since 2006 the digital precious metals business in the United States has been repressed or legally attacked (Kaplan, 2008). Therefore, most digital gold currency (DGC) systems tend to be registered and operated as offshore businesses. Fortunately, outside of the United States international digital currency companies such as WebMoney Gold™, GoldMoney™, e-dinar, Pecunix™ and others, have been growing (Herpel, 2011). Moreover, unlike the non-transparency of the Federal Reserve Banks and other financial institutions, most DGC companies publish a list of the actual precious metal bars from the quarterly audited bar count because these systems are backed by physical precious metals and are privately owned and operated by non-bank entities. With the backing of precious metals, the systems use cybermoney or digital currency.

Gold, like the Internet, transcends borders: its value and conventions for its usage are internationally recognized and accepted (Pecunix, 2002). Digital precious metals systems are an alternative payment system to the federal banking system for asset diversification, providing asset protection and consideration of the geopolitical aspects with regard to banking and investments (Barber, 2007).

Small-business owner's who make regular purchases overseas and worry about currency fluctuations, use GoldMoney.com (Karmin, 2005). Services like GoldMoney are not for everyone. For example, Jeff Wright, a director for the software-development company

TimeWarp in Colorado Springs, Colorado, indicates that the first thing he had to do was persuade his suppliers to accept payments in gold and then set-up online accounts with GoldMoney (Karmin). Small-business owners also use WebMoney Gold (WMG) for day to day personal or business transactions (Benson, 2008). The gold purse WMG, in conjunction with the Pecunix system, enable business owners to pay bills and more (Benson).

Several Caribbean-based digital precious metals Web companies have begun storing gold in places like Dubai, Zurich, and London, as J.P. Morgan has, and allowing Internet users to own pieces of the metal and use it as an online currency (Ballve, 2001). Consumers and businesses, can opt for bullion-based cybermoney, which proponents claim are a cheap and private alternative. This means transactions conducted over the Internet involve national currencies, fraught with the risk of fluctuating exchange rates and the cost of bank commissions (Ballve).

Internet entrepreneurs have attempted, without success, to devise digital payment schemes that would simplify online purchasing. The creators of the digital gold system, GoldMoney, provide a stable, cashless currency that offers instant purchasing power across borders. "Just like every country had its own national currency, the Internet needs its own money too," says GoldMoney's founder James Turk, a former Chase Manhattan international banker, "right now we're just a speck in the world economy" (Ballve).

When the World Wide Web began to blossom, ideas were hatched for anonymous digital currencies. Two businesses, Digicash and Cybercash, failed to sell online merchants on the idea. Both companies have filed for bankruptcy (Ballve, 2001).

In the May/June issue of Foreign Affairs magazine, Brenn Steil a senior fellow and director of International Economics, on loan from the parent Royal Institute in London since 1996, says digital gold, "although a niche business at present, gold banking has grown

dramatically in recent years in tandem with the dollar's decline." Mr. Steil was the Illuminist who drew up the plans for the North American Union and the Amero (dollar).

Most DGS's operate as offshore businesses. A case in point is the prosecution of E-Gold.com that conducts business out of Melbourne, Florida, and is registered as an offshore corporation but operates within the United States. E-Gold was created to provide a system that withstands swings in business cycles and gives people of all incomes a means to transfer money (Kaplan, 2008).

E-Gold.com operates by buying and holding quantities of gold in their vaults, based on dollar amounts that customers put into their accounts. Then ownership of the gold in customer account may be transferred to others (Harper, 2007). Using E-Gold is analogous to using cash. Because it is like cash but unlike U.S. currency, E-Gold has been in legal trouble since 2007. Federal enforcers charged E-Gold with operating an unlicensed money transmitting business and facilitating transfer of criminal proceeds. At the end of the trial, it was found the company simply had failed to file the correct forms indicating they were a money transmitting business.

Another precious metals digital gold system (DGC) is Pecunix, registered offshore in the Republic of Panama. Pecunix Inc. (Pecunix Currency) is a database management company that provides the beneficiaries of The Pecunix Gold Foundation the ability to track and transfer their beneficial interest. The Foundation is a private interest foundation. Pecunix stores physical gold in their vaults. The Pecunix provides a digital gold currency based on gold, not on paper value, dollars, yen, lira or pounds, but on physical gold. Pecunix Inc. does not have a bank account and is not a financial institution (Pecunix, n.d.; Herpel 2011). The Pecunix facilitates only the transfer of gold assets between account holders, does not have a "bank account", and consequently is incapable of any type of transaction with "cash economies". What is more,

Pecunix has a free shopping cart that enables merchants to accept Pecunix payments only.

Pecunix account holders can:

- Convert national currencies (i.e. cash) to Pecunix
- Convert Pecunix to most national currencies
- Convert Pecunix to gold and gold to Pecunix

Both the conversion to national currencies (i.e. cash) to Pecunix and the conversion of Pecunix to most national currencies, are functions performed entirely by independent exchange operators (Pecunix, 2002). Pecunix never deals in fiat currency or conventional banking, or conversions to or from fiat currencies. Regarding the conversion of Pecunix to gold and gold to Pecunix, Pecunix allows a customer to place gold in the vault and receive Pecunix in exchange or vice versa under very strict controls (Pecunix).

European Trust, a Private Banking and Trust organization observes and verifies the details of all movement of Pecunix Gold into or out of the vault. The crux of Pecunix security is the "one to one" rule: every unit of value present in the Pecunix database has, at all times, a corresponding value of gold stored in an internationally approved vault (Pecunix). See Appendix F, Figure 6 for a list of other DGC companies who also permit direct payments to the currency issuer's bank account.

The system developers of the Pecunix system come from Siddley Inc. They are contracted to develop every aspect that would help merchants, investment houses, casinos, and any other user of the Pecunix to seamlessly integrate their websites with the Pecunix system (Pecunix). As of January 2011, the Siddley team offers an online beta test site for testing their new security software found at <http://www.voucher-safe.com>. See Appendix B, Figure 2, for a diagram of the Pecunix system structure.

Exploring the iGolder.com online DGS system it is clear that iGolder provides a website to its members for exchanging electronic gold with each other and does not offer banking services. iGolder facilitates only gold-denominated private trade and exchange between members and stores their gold for them in a vault. iGolder is a closed system, which means it simply records electronic gold ownership titles. iGolder is not a money transmitter, and accepts no currency.

In the spirit of the Austrian sparbuch, precious metal based digital systems can be unlicensed, unsupervised, and unregulated by any industry or government body. Moreover, unlike some DGC systems, iGolder does not endorse any gambling or high-yield investment programs (HYIP). And like many digital currency system businesses, iGolder is not a U.S. registered corporation and has no relationship with the United States government (iGolder).

As Congressman Ron Paul of Texas has suggested; allow competing currencies and gold, and have the state accept payments in those currencies. This is what digital currency systems allow business to do if the entity on the other side of the transaction accepts the arrangement.

Online Value Transfer Software Systems

Online value transfer software systems utilize digital currency representing stores of cash that can be spent on-line in anonymous peer-to-peer transactions without involving the use of a bank or other traditional payment system (Anastasio, 2001). The most popular version of this stored value transfer is electronic money or e-cash. E-cash allows items to be purchased by credit card, check, and money order. It is a system for making anonymous electronic payments using digital coins.

A business or consumer opens an account with a financial institution, and then electronically submits the coins to the enterprise for assignment of value. The enterprise debits the account, and then the coins are used to anonymously purchase goods and services. The coins

are backed by an obligation from the financial institution that assigned the value to the coins. As with debit-based systems, the coins embody claims against the issuer when they are used to transfer preexisting funds to designated accounts (Anastasio).

The value transfer software system, Bitcoin.org, is a peer-to-peer digital currency system that uses electronic coin. This is how Bitcoin explains their operation:

The software system uses public/private key digital signatures. A coin has its owner's public key on it. When a coin is transferred from user A to user B, A adds B's public key to the coin and signs it with his own private key. Now B owns the coin and can transfer it further. To prevent A from transferring the already used coin (double-spending) to another user C, a public list of all the previous transactions is collectively maintained by the network of Bitcoin nodes, and before each transaction the coin's 'unusedness' will be checked.

Information from one of Bitcoin's developers states that Bitcoin is an electronic payment system based on cryptographic proof instead of trust, allowing any two commerce trading parties to transact directly with each other without the need for a trusted third party transactor entity (Nakamoto, 2008). Further, the Bitcoin value transfer payment system "sustains a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions. The system is secure as long as honest nodes collectively control more CPU power than any cooperating (DDoS) group of attacker nodes" (Nakamoto). See Appendix F, Figure 7, for illustrations of the Bitcoin timestamp server and the proof-of-work process.

The structural changes in these payment networks seem to be a reactive response to the recent U.S. prosecution of digital currency companies. Bitcoin.org development is hosted at SourceForge⁵⁷ and currently is the most robust model of an emerging digital currency system (Herpel, 2011).

Loom.com is another value transfer software system. This software system enables people to transfer ownership of assets, however, entry into the system is by invitation only (Loom, 2010). This system too, is a private and closed system that uses digital asset tokens and an e-wallet. The e-wallet stores the set of asset types which the user recognizes and values, and a set of "contact" points where the user can move assets back and forth to other users.

An asset is an item of property, considered valuable. Typically assets are physical goods, like land or a piece of art but are also stock certificates, property deeds, promissory notes, as well as commodities. A Loom asset is a digital form of asset which gives its bearer certain rights. Each Loom asset type has a unique and distinct identifier, referred to as an ID (Loom).

This site allows users to create a new asset type and assign any desired meaning to it. The user can then issue new units of the asset type into existence. However, other Loom members will value that asset only if they can trade it reliably for something valuable in the real world, or for another valuable Loom asset (Loom).

For merchant transactions on the Loom system the merchant creates a Check Out form which requires the customer to paste a contact ID into a text field. When the customer presses the Pay Now button, the merchant sends a single Move command to the Loom server to debit the charge amount from that contact ID. Transactions are this easy for business owners.

In speaking with a Loom.cc developer, the Loom operates by using the Grid function. This function is the core operation of the entire Loom system. The primary function of the Grid is to regulate usage of various limited resources, such as the disk space used by the Grid itself. Consequently members must pay one usage token to buy a grid location. If the member sells a grid location back to the system, the member receives a refund of one usage token. The Grid administrator possesses the issuing location for usage tokens, and can thus regulate the supply of those tokens based on supply and demand for Grid resources.

Online Stored Value Transaction Software Systems

Voucher-safe from Siddley, Inc., is the most cutting-edge next generation technology (Herpel, 2010a). A voucher is an encrypted digital representation which stands for or represents something else. A voucher is said to be "backed" by whatever underlies it, such as gold or silver.

To clarify the actors, there are two; Issuer and Voucher Publisher. The Issuer of the voucher is the party who stores the assets backing the vouchers. The Issuer is responsible for keeping track of all vouchers in circulation, and ensuring that the aggregate weight or value of all vouchers does not exceed the backing. The Issuer knows nothing about users or owners, only voucher amounts and serial numbers (Herpel, 2010a).

The second actor, Voucher Publisher (VP), is the mechanism through which vouchers are introduced or withdrawn from circulation. The VP processes all voucher transactions, assigns voucher serial numbers, signs all vouchers with its private key, and encrypts each with the public key of the owning voucher safe (Herpel, 2010a). The VP reports the assigned serial number to the Issuer. The VP mechanism also issues signed usage tokens, purchased with vouchers, and permits other system components to redeem accumulated tokens for vouchers (Pecunix, 2002).

Vouchers are digital bearer certificates created and validated by a Publisher. The Issuer holds the stored value and instructs the Publisher to create vouchers up to but not exceeding, the available backing. The Issuer has no knowledge of anything beyond the amounts and serial numbers of the vouchers currently in circulation. Vouchers are circulated amongst users by direct peer to peer (P2P) transfer of vouchers. Each transfer is validated by the Publisher to ensure the integrity of the transaction and to prevent double spending (Pecunix, 2002). To ensure the secure and seamless operation of the voucher-safe system, the Siddley team design goals, as listed on their website, are:

- The system must constitute a true digital bearer certificate exchange system, where digital wallets exist but accounts do not.
- To engender user trust in the system, it must be 100 percent open source for the Siddley team code and for any code packages or libraries which are utilized.
- The system must be distributed in order to prevent shut-down by highly organized crime such as DDoS attacks.
- All data must be encrypted, and handled in such a way that the user does not need to trust any of the system operators. The sole exception to this is the Issuer, which must be trusted to store bona fide backing assets.
- Payments must be irrevocable, and untraceable. It must be physically impossible for any component, even the VP, to provide a transaction history for any user.
- The system architecture must provide inherent economic benefits to its operators, while minimizing costs to users.
- To mitigate the threats of DDoS, spam, and easy traffic analysis, the system avoids HTTP browser and email traffic.
- The voucher-safe system will be accessible to wireless, mobile devices.

Any Digital Gold Currency (DGC) company that backs a voucher is simply partnering with voucher-safe to facilitate a reliable, trusted, and reputable issue. This combination is a business relationship that will allow evolved digital gold platforms to continue and operate without taking on the associated P2P payment risks. This is an important issue as noted by the problems experienced by E-Gold.com (Herpel, 2010b).

Conclusions Drawn from the Work

This paper examined the three elements that drive and mold digital currency systems: government, money, and technology. Business owners conducting e-commerce would do well to

understand their alternatives during America's current financial crisis. We touched on the problems that hinder the use of digital currency systems in the United States by businesses in terms of government policies and the types of money we currently use in America: fiat currency and commodities. Instead of sticking to 'good as gold' backed money, the United States chose in 1971 to use financial metaphysics in the form of fiat currency and fractional reserve banking run by a private banking cartel monopoly; The Federal Reserve (group of) Banks. The continual use of the debt instrument, fiat currency, results in depression or hyperinflation. In this cyclic crisis, indicators point to hyperinflation. This is evident by the second round of QE2 measures occurring in 2011. For B2B planning purposes, we identified the available types of digital currency systems: Barter Exchange Software Systems, Non-Bank Digital Currency Payment Systems, Digital Precious Metal Systems, Online Value Transfer Software Systems, and Online Stored Value Transaction Software Systems and the various types of digital monies they use: electronic tokens, barter-exchange currencies, digital cash, and stored value e-cash vouchers. As the U.S. financial crises deepens, it is anticipated that money innovations probably will reduce demand for central bank money even further. This will inevitably segue towards the availability of a stable, privately issued currency that is not convertible into a national currency.

Gold is the money of kings; silver is the money of gentlemen; barter is the money of peasants; but debt (instrument) is the money of slaves.— quote by Norm Franz (Franz, 2001).

Summary of the Contributions

What became evident in researching and discovering the possibilities that digital currency systems (DCS) deliver, is that no monopolistic monetary policy is necessary to control the value of money. This means no single central bank is necessary to 'stabilize' the economy. In fact, the monopolistic Federal Reserve Banks are the perpetrators of the countries cyclic financial crises. Russia experienced financial collapse in 1998 and a DCS, WebMoney, filled the vacuum and

continues to this day, to support e-commerce and payment transactions to an efficient and secure level, without a central bank. Unfortunately, the United States businesses accept the monopolistic practice that only one central bank can issue money. This obviates their awareness that DCS can alleviate depreciating money problems and rising prices. What is more, it causes DCS to lack the critical mass of users necessary to stanch the current monetary crisis experienced by business in the United States. This is exacerbated by the illegal and unconstitutional activities the IRS and Federal Reserve Banks press upon business in their continued attempts to control their monopoly over the sources of money used in the United States. This is why the majority of DCS businesses are registered and operated as offshore corporations.

With QE2, America will experience hyperinflation (like Germany in 1923) not depression, as we did in the 1930's – quote by Robert Kiyosaki (Kiyosaki, 2010).

Prospect of Future Research

We can not predict nor forecast the direction digital currency systems (DCS) will take in the coming years as business reacts to the evolving financial crisis. This is something that must be monitored closely, because if history serves us, it indicates that the speed with which a fiat currency value drops, is alarming (White, 1959). Internet “free banking” needs further study for it deals with how an economic and financial system would operate in the absence of state interventions such as a monopolistic central bank. Russia’s WebMoney should be explored more as well, as that DCS has matured and continues to evolve and may prove to be the savior of businesses in the United States as the US dollar continues its fatal descent. And finally, investigation is needed in the area where DCS’s allow anyone to become a private mint. This is where human nature pushes the line drawn in the sand, by a government, of legality, acceptability, and alleged, morality, in using electronic money. These are the areas often

pioneered by first movers, by those motivated by risk-reward trade-offs to develop new technologies. These are the incentivized users. And, this is where law enforcement and national security communities are also focusing (May, 1997).

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Appendices

APPENDIX A

TRADITIONAL ELECTRONIC PAYMENT SYSTEMS

| | Online Credit Card Payment | Electronic Cash | Electronic Checks | Smart Cards |
|------------------------------------|--|--|--|---|
| Actual Payment Time | Paid later | Prepaid | Paid later | Prepaid |
| Transaction information transfer | The store and bank checks the status of the credit card | Free transfer. No need to leave the name of parties involved | Electronic checks or payment indication must be endorsed | The smart card of both parties make the transfer |
| Online end offline transactions | Online transactions | Online transactions | Offline transfers are allowed | Offline transfers are allowed |
| Bank account involvement | Credit card account makes the payment | No involvement | The bank account makes the payment | The smart card account makes the payment |
| Users | Any legitimate credit card users | Anyone | Anyone with a bank account | Anyone with a bank or credit card amount |
| Party to which payment is made out | Distributing Bank | Store | Store | Store |
| Consumer's transaction risk | Most of the risk is borne by the distributing bank, consumers only have to bear part of the risk | Consumer is at risk of the electronic cash getting stolen, lost, or misused. | Consumer bears most of the risk, but the consumer can stop check payments at any time. | Consumer is a risk of the smart card getting stolen, lost or misused. |
| Current degree of popularity | Credit card organizations check for certification then total the purchases. Therefore it can be used internationally, and is the most popular payment type | Unable to meet financial internet standards in the areas of expansion potential and internationalism | Cannot meet international standards, therefore its not very popular | Credit card organizations check for certification then total the purchases. Therefore, it can be used internationally, and is becoming more widely used |
| Anonymity | Partially or entirely anonymous | Entirely anonymous | No anonymity | Entirely anonymous, but if needed, the central processing agency can ask stores to provide information about a consumer |

| | Online Credit Card Payment | Electronic Cash | Electronic Checks | Smart Cards |
|------------------------------------|--|---|--|---|
| Small payments | Transaction costs are high. Not suitable for small payments | Transaction costs are low, suitable for small payments | Allows stores to accumulate debts until it reaches a limit before paying for it. Suitable for small payments | Transaction costs are allowed. Allows stores to accumulate debts until it reaches a limit before paying for it. Therefore, it is suitable for small payments. |
| Database safeguarding | Safeguards regular credit card account information | Needs to safeguard a large database, and maintain records of the serial numbers of used electronic cash | Safeguards regular account information | Safeguards regular account information |
| Transaction information face value | Can be signed and issued freely in compliance with the limit | Face value is often set, and cannot give change | Can be signed and issued freely in compliance with the limit | Can be deducted freely in compliance with the limit |
| Real/ Virtual word | Can be partially used in real word | Can only be used in the virtual word | Limited to virtual word, but can share a checking account in the real word. | Can be used in real or virtual worlds. |
| Limit on transfer amounts | Dependent on the limit of the credit card | Dependent on how much is prepaid | No limit | Dependent on how much money is saved. |
| Mobility | Yes | No | No | Yes |

Figure 1. The table displays a comparison of the many traditional bank and financial institutions electronic payment systems as retrieved from Lee, Yu and Ku (2001). These are simply online payment transaction systems and tools. They are not digital currency systems.

APPENDIX B

PECUNIX SYSTEM

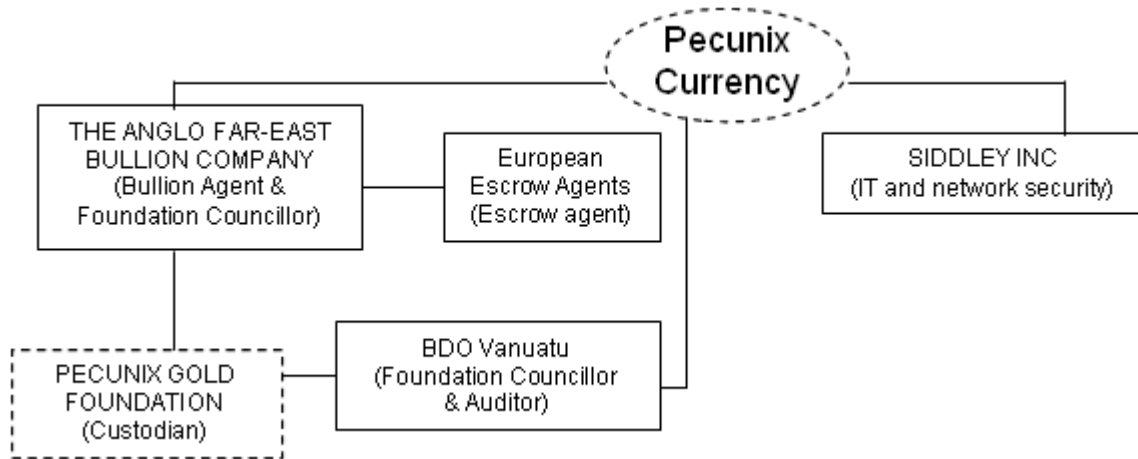


Figure 2. The Pecunix system structure as retrieved Pecunix (2002). The Pecunix Foundation holds the gold bullion that underwrites the Pecunix currency as patrimony.

APPENDIX C

RECIPIENTS OF THE 2007 BAILOUT MONEY

The U.S. Treasury Department committed the following \$700 billion Troubled Asset Relief Program (TARP) (Global Research, 2008) funding to:

| | | | |
|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|
| AIG \$40 billion | Morgan Stanley \$10 billion | SunTrust Banks \$3.5 billion | Zions Bancorp \$1.4 billion |
| JP Morgan \$25 billion | PNC Financial Services \$7.7 billion | BB&T Corp \$3.1 billion | First Horizon National \$866 million |
| Citigroup \$25 billion | Bank of New York Mellon \$3 billion | KeyCorp \$2.5 billion | City National Corp \$395 million |
| Wells Fargo \$25 billion | State Street Corp \$2 billion | Comerica \$2.25 billion | Valley National Bancorp \$330 million |
| Bank of America \$15 billion | Capital One Financial \$3.55 billion | Marshall & Ilsley Corp \$1.7 billion | UCBH Holdings Inc \$298 million |
| Merrill Lynch \$10 billion | Fifth Third Bancorp \$3.45 billion | Northern Trust Corp \$1.5 billion | Umpqua Holdings Corp \$214 million |
| Goldman Sachs \$10 billion | Regions Financial \$3.5 billion | Huntington Bancshares \$1.4 billion | Washington Federal \$200 million |
| First Niagara Financial \$186 million | HF Financial Corp \$25 million | Bank of Commerce \$17 million | |
| TOTAL: \$203.08 billion | | | |

Figure 3. A list of recipients of the 2007 bailout money as retrieved from Global Research (2008). In addition, the Federal Reserve is providing American International Group (AIG) with up to \$112.5 billion in separate loans and funds for asset purchases. The remaining \$350 billion in TARP funding can be accessed only after the White House formally notifies Congress (Global Research). For a fully current and comprehensive list of recipients, see Ericson, He and Schoenfeld, (2011).

APPENDIX D

THE GOLD-SILVER RATIO

Gold-Silver Ratio

The gold-silver ratio is commonly used by precious metals traders interested in trading back and forth between gold and silver. If gold is trading at \$500 per ounce and silver is trading at \$5 per ounce, the gold-silver ratio is 100. This means that 100 ounces are required of silver to buy one ounce of gold. In today's market, the gold-silver ratio usually remains fairly constant.

Trading the Ratio

Extremes in the ratio between gold-silver are significant indicators for executing a transaction. For example, if the gold-silver ratio increases to 200, the trader sells their ounce of gold for 200 ounces of silver. At that point, the trader waits until the ratio comes back down again. When the ratio comes down to 100, the trader might trade that 200 ounces of silver for 2 ounces of gold. By repeating this process the trader is able to accumulate more gold as they go along.

Ignore the Dollar Figures

One of the unique features of trading the gold-silver ratio is that the dollar value of the transaction is not taken into consideration. Instead, the trader is interested only in the ratio of gold to silver. Even though the prices of both of these precious metals will fluctuate, their inherent value is always in place. Therefore, if a business owner is cognizant about inflation, this could present them with a valuable investment opportunity and a way to protect the value of their assets.

How to Trade

There are available several options for trading the gold-silver ratio. One is the purchase of the actual physical gold or silver bullion. This is typically the most difficult method of executing this trade because the buyer must take delivery of the physically shipped gold and silver bullion and protect it.

Figure 4. The gold-silver ratio used by precious metals traders across the world as retrieved from Finweb (n.d.).

APPENDIX E

BARTER EXCHANGE SOFTWARE SYSTEMS

- <http://ncobarter.com/>
- <http://delvalleysilver.com/cart/>
- <http://sites.google.com/site/bartercoins/Home>
- [http://www.creativemaking.com/work/Giro_Valid/sd\\$.html](http://www.creativemaking.com/work/Giro_Valid/sd$.html)

Figure 5. Barter exchange software system websites as retrieved from interview with Mark Herpel (2011).

APPENDIX F

DIGITAL GOLD CURRENCY COMPANIES

| Digital currency company | Direct payments to company bank accounts. | Third party independent exchange transactions permitted |
|--------------------------|---|---|
| GoldMoney | YES | YES, The only 3 rd party agent is Kitco |
| e-Dinar | YES | YES |
| Webmoney | NO | YES, only 3rd party agents |
| Pecunix | NO | YES, only 3rd party agents |
| iGolder | NO | YES, only 3rd party agents |
| gBullion | YES | YES |

Figure 6. A list of DGC companies that permit direct payments to the currency issuer's bank account as retrieved from Herpel (2011).

APPENDIX G

BITCOIN.ORG ONLINE VALUE TRANSFER SOFTWARE SYSTEM STRUCTURE

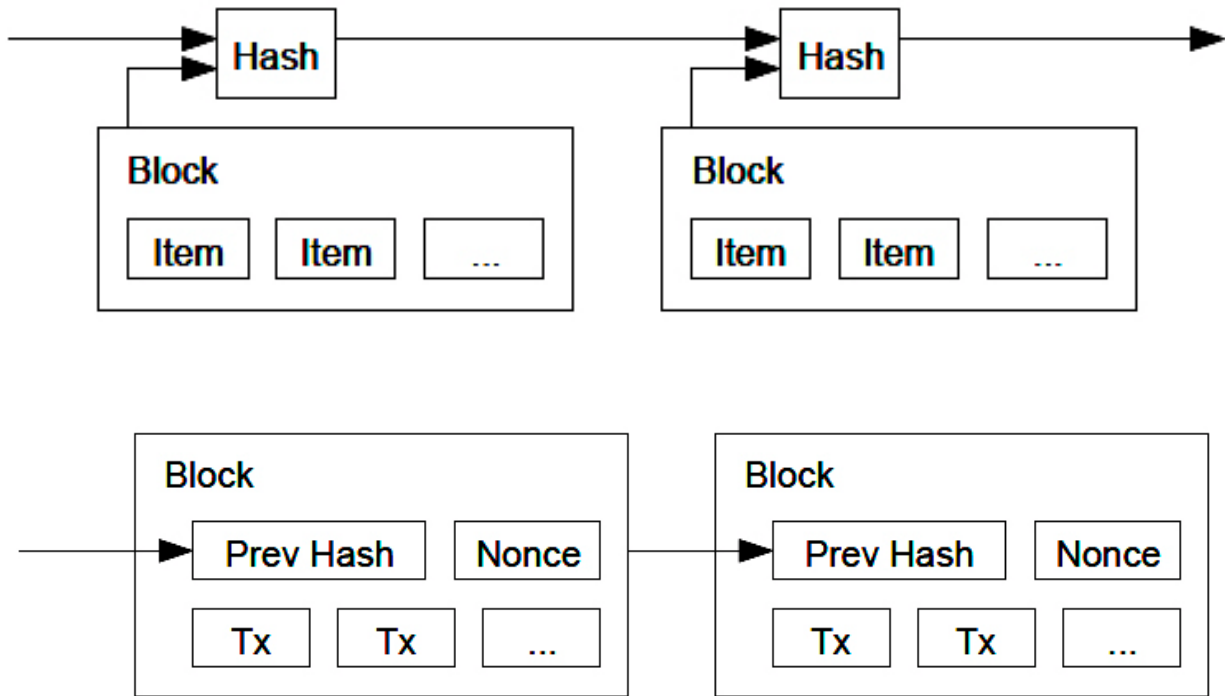


Figure 7. A timestamp server takes a hash of a block of items to be timestamped and widely publishes the hash. The timestamp proves that the data must have existed at the time in order to get into the hash. A distributed timestamp server is implemented with a proof-of-work system. The proof-of-work system solves the problem of determining representation in majority decision making as retrieved from Nakamoto (2008).

Glossary of Terms

DDoS- A Distributed Denial-of-Service attack is one in which a multitude of compromised and high-jacked systems attack a single target, thereby causing denial of service for users of the targeted system. The flood of incoming messages to the target system essentially forces it to shut down, thereby denying service, i.e., access, to the system to legitimate users as stated on the dictionary site SearchSecurity.com

debt instrument- A document that serves as a legally enforceable evidence of a debt and the promise of its timely repayment. Banker's acceptance, bills of exchange, bonds, certificates of deposit, debentures, and promissory (Federal Reserve Bank dollar) notes, all are debt instruments from Business Dictionary.com.

digital currency system- Non-bank, private currency systems that circulate the currency via the Internet's computer systems (Herpel, 2009). These systems therefore, conduct e-commerce transactions using many sources of money and currencies.

ETF- Electronic Traded Funds. A (paper) security that tracks an index, a commodity such as gold/silver, or a basket of assets, like an index fund, but trades like a stock on an exchange. ETFs experience price changes throughout the day as they are bought and sold as stated on the Investopedia.com site. J.P. Morgan Chase Bank now accepts gold ETFs backed by physical gold commodities, as collateral from counterparties.

fiat- The etymology of this word comes to us from the Latin, 'let it be done', to become, be done (because I have spoken it, it is to BE). An authoritative or arbitrary order-decree <government by ~ > from the online Encyclopedia Britannica.

fiat currency- A debt instrument, usually, that has value because a government decrees it is so is called "fiat money" because it is valuable by "fiat," not because of anything intrinsic to it (Harper, 2010). Today, most national currencies are fiat currencies, including the U.S. dollar, the Euro, and all other reserve currencies, and have been since the Nixon Shock of 1971 from Wikipedia.com.

fractional reserve- Fractional reserve banking is a banking system in which only a fraction of bank deposits are backed by actual cash-on-hand and are available for withdrawal as stated on the Investopedia.com dictionary website. With the power of fractional-reserve banking, bankers can earn income out of nothing. This is true only as long as depositors leave their money in the bank, and as long as borrowers are able to earn enough revenues from their business to avoid defaulting on their loan (Murphy, 2010).

Glass-Steagall Act (GSA)- Of 1934 was a result of the 1929 initiated Great Depression and rescinded in 1999. This act separated investment and commercial banking activities. At the time, "improper banking activity", or what was considered overzealous commercial bank involvement in stock market investment, was deemed the main culprit of the financial crash. According to that reasoning, commercial banks took on too much risk with depositors' money. Additional and sometimes non-related explanations for the Great Depression evolved over the

years, and many questioned whether the GSA hindered the establishment of financial services firms that can equally compete against each other as stated on the Investopedia.com dictionary.

HTTP browser- Is a HyperText Transfer Protocol browser cookie. The cookie is a small piece of information sent by a web server to a web browser to be stored for future use. The data in the browser cookie will be sent back to the web server whenever the browser reconnects to the web site. Security issues surround browser cookies, as they are used to store authentication data, such as user names and passwords as stated on the Tech-FAQ.com website.

non-recourse- Situation where an obligation is entered into, or a transaction is conducted, under the stipulation that it is without recourse to the borrower, endorser, or seller. That is, he or she is not personally liable (beyond the specific collateral pledged, if any) to the lender, holder, or buyer for any default, loss, or defect. Presence or absence of recourse determines whether a sale is actually a sale for accounting purposes (hence non-taxable) or is a transfer of ownership (hence taxable) stated on BusinessDictionary.com.

overnight rate- The overnight rate is the interest rate banks charge each other to borrow and lend reserves from one another. At the end of the day, the overnight rate is the amount paid to the bank lending the funds as stated on BusinessDictionary.com.

P2P or peer-to-peer- A peer-to-peer, commonly abbreviated to P2P, is any distributed network architecture composed of participants that make a portion of their resources (such as processing power, disk storage, or network bandwidth) directly available to other network participants, without the need for central coordination instances (such as servers or stable hosts). Peers are both suppliers and consumers of resources, in contrast to the traditional client-server model where only servers supply, and clients consume from Science & Technology Dictionary at <http://dictionary.babylon.com/science/>.

PCMCIA card- Personal Computer Memory Card International Association card or PC Card is a credit card-size memory or I/O device that connects to a personal computer, usually a notebook or laptop computer. The Association consists of some 500 companies that have developed a standard for small, credit card-sized devices, called PC Cards as stated on Webopedia.com.

peer-to-peer network- A local area network, usually using Network Interface Cards (NICs) in each computer, that does not use a central dedicated server, but instead each computer in the network shares the jobs as taken from Computing-Dictionary.com.

PGP key- Pretty Good Privacy key. A commonly used encryption system developed by Philip Zimmermann. It allows users to send messages to anyone in complete privacy. With PGP, the user can send authentication with their messages so that the recipient can verify that the message really came from the actual sender, as retrieved from the Philzimmermann.com website.

scrip- Paper currency or a token issued for temporary use in an emergency. Any of various documents used as evidence that the holder or bearer is entitled to receive something (as a fractional share of stock or an allotment of land) from Wikipedia.com.

SourceForge- Is a Web-based source code repository. It acts as a centralized location for software developers to control and manage open source software development. The site provides free access to hosting and tools for developers of free/open source software as stated on Wikipedia.com.

value system- Coherent set of values adopted and/or evolved by a person, organization, or society as a standard to guide its behavior in preferences in all situations as stated on BusinessDictionary.com.

XMPP- EXtensible Messaging and Presence Protocol is the Internet Engineering Task Force's (IETF) formalization of the base XML streaming protocols for instant messaging and presence developed within the Jabber community starting in 1999 as stated on the <http://xmpp.org/> website.