A History of Alternative Currencies

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Abstract: Alternative currencies, which are defined as any non-legal tender medium of exchange, have been a regular feature of the economic landscape over the last half-millennia. A survey of this history finds that alternative currencies often arise out of similar socio-economic circumstances and then cease to circulate within a relatively short time after their introduction. This pattern of decline is explained largely by three forces: regulation, technological innovation, and – most commonly – insufficient demand due to factors such as transaction inefficiencies, low institutional support, and diminished social motivation. Present-day alternative currencies, such as bitcoin and the Brixton pound, show both similarities and differences with past alternative currencies. Bitcoin in particular possesses several radical new characteristics, including a relatively decentralized structure, efficient transactions across borders, global awareness, and support from powerful institutions.

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I. Introduction

In an influential 1974 paper economist Benjamin Klein stated "few areas of economic activity can claim as long and unanimous a record of agreement on the appropriateness of governmental intervention as the supply of money".[1] However, the rapid growth of new alternative currencies like bitcoin is leading to a reexamination of this sentiment and prompting questions about the possible use of alternative currencies alongside or even as a substitute for national currencies.[2]

While bitcoin is relatively new, having first been introduced in October 2008, alternative currencies have been a feature of the monetary landscape for the last several centuries and perhaps much earlier still.[3] This paper surveys this history and addresses three principle questions:

1. What factors explain the rise of alternative currencies? More specifically, do alternative currencies tend to proliferate under consistent socio-economic and or political conditions?

2. Why do nearly all alternative currencies decline and cease to exist, often only a few short years following their introduction?

3. What does the history of alternative currencies suggest about the prospects for contemporary alternative currencies, such as bitcoin and the Brixton pound?

Historical alternative currencies have been recorded in considerable detail by numismatists, historians and others. However, obtaining complete numerical data on monetary instruments that circulated in relatively small quantities and often had a relatively short

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[1] (Klein 1974p. 423)

[2] For example, in a 18 November 2013 statement delivered to a U.S. Senate hearing on Bitcoin, Chairman of the Federal Reserve Ben Bernanke stated that virtual currencies "may hold long-term promise" http://qz.com/148399/ben-bernanke-bitcoin-may-hold-long-term-promise/.

[3] There is some evidence of currency token use in Greek and Roman times (Burns 1927ch. 12)

lifespan has proven difficult to date. [4] Further, the total number of all alternative currencies, past and present, is quite large. For example, during the 16th-18th centuries within London alone hundreds if not thousands of unique merchant tokens circulated. Prior to the recent proliferation of cryptocurrencies it has been suggested by some that there are approximately 4,000 alternative currencies in existence today.[5] In sum, while data limitations impose some restrictions on the conclusions we can draw from the history of alternative currencies enough data exists to identify some patterns.

The remainder of the paper is structured as follows: a conceptual discussion of money and alternative currencies addresses the confusion surrounding currency terminology and definitions, and a new currency taxonomy is proposed. Next, an overview is provided of the history of alternative currencies over the past 500 years and concludes with some observations on historical precedents and patterns. Throughout the paper questions around contemporary alternative currency are addressed, including whether bitcoin should be considered money and how bitcoin is different and similar to other alternative currencies.

[4] For a recent example of a data-oriented research effort on alternative currencies which was unable to yield results due to insufficient data see (Amato, Fantacci, and Doria 2003).
[5] As of October 2014 there were over 500 cryptocurrencies with non-negligible market capitalizations according to the website conimarketcap.com. The estimate of 4,000 alternative currencies around the globe comes from Lietar (2004).

II. Money and currency – a conceptual framework

Today a common yet somewhat bedeviling question is whether bitcoin should be thought of as *money*, a *currency*, both, or something entirely different? The existing monetary literature does not lend a very precise or ultimately satisfactory answer to this question. In fact, a review of monetary and alternative currency literature reveals open disagreement over both monetary terminology as well as definitions.[6]

The purpose of this section of the paper is to help clarify what is meant by terms such as money and currency. Definitional clarity is essential to answer questions such as whether bitcoin is money. Further, conducing research without a commonly shared taxonomy makes the study of alternative currencies cumbersome and difficult to follow for scholars and non-scholars alike. The taxonomy introduced below will also serve to link the terms and definitions used in this paper to the terminology used in the existing alternative currency literature, which spans several centuries.

What is money?

The effort of scholars to arrive at a precise and shared definition of money has yielded mixed results.[7] Definitional clarity has been achieved in some financial areas, such as the difference between money and *credit*.[8] However, Mankiw and Taylor (2011) state "in a complex economy, it is in general not easy to draw a line between assets that can be called 'money' and assets that cannot".[9]

The scholarly debate over what is and is not money traces back over many centuries. Some have argued for an *a priori* definition of money, while others contend that money is best

[6] See (Dwyer Jr 1996p. 3) for further commentary on the confusion surrounding how best to define 'money'.
[7] See for example, (Friedman and Schwartz 1970Ch. 2-3) Schwartz (1970) and (Schumpeter 1991).
[8] "Even though a credit card can be used to make purchases, neither a credit card nor its unused balance is money. When someone uses a credit card to buy a dinner, the purchaser is promising to pay later with money" (Dwyer Jr 1996)
[9] (Mankiw and Taylor 2011pp. 619-21)

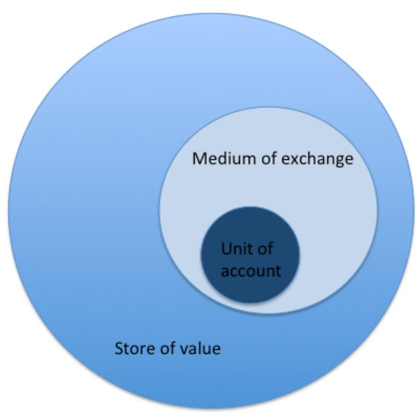
simply an analytic or accounting convention and defined on the basis of efficiency and utility.[10] Arguably one of the more elegant definitions of money was the one offered by Kocherlakota who, long before the existence of bitcoin's blockchain ledger, stated "money is memory".[11] In other words, if a shared, perfect monetary memory existed then there would be no need for constructs such as notes and coins as our collective memory of all transactions and balances would fulfill the functions of money.

If you open any leading contemporary economics textbook you will find that 'modern' money is defined as performing the following three functions[12]:

1. *Medium of exchange* – for transacting goods and services, solving 'double coincidence of wants' problem
2. *Store of value* – retains purchasing power into the future
3. *Unit of account* – a yardstick; the unit in which goods and services are priced

Some argue that these three functions of money can be defined hierarchically (Figure 1).

Figure 1: Hierarchical Depiction of the Three Functions of Money



Source: Ali et al (2014)

[10] (Newlyn 1971)
[11] (Kocherlakota 1998)
[12] This definition can be found in most economics textbooks. See for example (Mankiw and Taylor 2011; Lipsey and Chrystal 2011). For a discussion of the differences between modern and some historical forms of money see (Fantacci 2005). "In the *ancien régime* there were two different kinds of money: *ideal money*, which was used as a unit of account, and *real money*, used as a medium of exchange" (p. 3).

According to Ali et al (2014) in a passage worth quoting at length:

> *"There are many assets that people view as a store of value – houses, for instance – that are not used as media of exchange. By comparison, an asset can only act as a medium of exchange if at least two people (as parties to a transaction) are prepared to treat it as a store of value, at least temporarily. Finally, for an asset to be considered a unit of account, it must be able – in principle, at least, to be used as a medium of exchange across a variety of transactions between several people and as such represents a form of coordination across society. For this reason, some economists consider the operation as a unit of account to be the most important characteristic of money."*[13]

The above textbook definition of money, while undeniably useful and generally agreed upon, is too abstract to precisely answer definitional questions such as whether bitcoin should be considered money and prompts further questions. For example, should *breadth of use* be weighed in determining whether an instrument such as bitcoin meets the definitional criteria of being a medium of exchange, or should as soon as something serves as a media of exchange for the first time then we should consider this definitional requirement is satisfied? Going further, does the particular instrument in question need to be *dominant* in all three monetary functions within a particular geographical or state boundary to be considered money? Or if a non-dominant level of use across a given geographic can still qualify an instrument to be considered money then precisely how much use? Also, how *stable* should the value of the instrument be, and against what should the volatility in its value be measured, for it to pass the store of value definitional test? The existing literature fails to address such questions.

It is argued here that the widely accepted textbook definition of money can be made more useful introducing points of reference by considering any one instrument relative to

[13] (Ali et al. 2014)

another. In other words, by comparing two monetary instruments we can answer questions about how well an instrument meets the generally accepted definition of money. For example, bitcoin today in various ways fulfills all the traditional definitional functions of money, including serving as a unit of account for some organizations and online marketplaces. However, when comparing bitcoin to the U.S. dollar it can be definitively said that the U.S. dollar is the more widely used unit of account and medium of exchange, and that therefore with regard to these two monetary functions the U.S. dollar is superior to bitcoin as a form of money. Further, by comparing the two over some period of time against a well defined and generally agreed upon measure of value we could also say which of the two is a better store of value. Thus, while the introduction of a reference point cannot settle the question of whether or not bitcoin is money based on the traditional definition of money, reference points can help identify instruments that perform the functions of money in a superior manner.

Differences between money and currency

The primary definitional question of importance for this paper is in what way if any do *alternative currencies* differ from *money*. Relatedly, should we define the term *currency* differently that we define the term money?

When we think of currency we most commonly think of metal coins and paper notes minted by governments. Generally speaking these *national* currencies retain value from day-to-day (store of value), can be legally exchanged to meet obligations and transact (medium of exchange), and are to denominate prices for goods and services (unit of account). In such a way national notes and coins meet the traditional definition of money. National currencies, however, are not the only type of currency.

As noted previously, the currency literature can be somewhat confusing due to inconsistent terminology. For example, economists will sometimes refer to a currency that is used in some illegal manner as a *parallel* currency (or as the 'parallel market'). [14] While it is true that these currencies function alongside (or in parallel) to an officially government recognized currency there are compelling arguments to instead refer to any illegally used currency as *black market* currency. The reason labeling black market currencies as parallel currencies leads to problems is because the term parallel currency is also commonly affixed to some legal (non-black market) currencies. For example, prior to the phased implementation of the euro existing national currencies, such as the Italian lira and Portuguese escudo, were legally operating alongside (in parallel) the newly introduced euro. Today, many who are advocating for the return of national legal tender currencies to operate alongside the euro in countries struck by crisis such as Greece refer to these Greek euros or new drachmas as a 'parallel' currency.[15] In sum, while a black market currency may also be functioning in parallel to another currency, not all parallel currencies are in some way illegal and thus part of a black market. A generally agreed upon classification scheme for different currency types would help address this confusion.

Five different currency types

To address the confusion surrounding currency terminology this paper introduces a new currency classification framework. The framework features five distinct currency types, and these currency types are organized into two overarching categories – *legal* and *non-legal tender*. This framework along with summary definitions and examples is presented in Table 1.

[14] See for example (Agénor 1992). Such black market currencies while illegal may often be tolerated. They are also often traded at an illegal rate that can differ significantly from an official rate and thus provide a useful source of market exchange rate information. Those working in countries and studying these currencies may wish to avoid using the term 'black market' in favor of the term parallel for reasons relating to political optics.

[15] See for example (Feldstein 2010) http://www.nber.org/feldstein/ft02172010.html

Table 1: The Five Difference Types of Currency

	Type	Description	Examples: Historical	Examples: Contemporary
Legal Tender	National	Currency minted by a central government for use as the dominant domestic legal tender	U.S. National Banks Era (1863-1913)	U.S. dollar
	Adopted	Foreign national currency used as the dominant official (or *de facto*) legal tender	19th century Maria Theresa Dollar used in Africa	U.S. dollar in Ecuador
	Parallel	Non-dominant national currency used alongside another national currency	Bimetallic currency system (gold and silver); Swiss franc split exchange rate markets (late-1940s)	1999-2002 pre-euro national currencies
Non-Legal Tender	Black Market	Illegal (yet often tolerated) currency; also legal tender exchanged at an illegal rate that often differs significantly from the officially set rate	1940s 'Free' British £ in Zurich and NY	U.S. dollar in Argentina ("blue dollar" rate)
	Alternative	Legal (or tolerated) currency which is neither minted by a central government nor serves as official (or *de facto*) legal tender	1932 Austrian Freigeld; 17^{th}-19^{th} century British merchant tokens	Bitcoin, Brixton pound

Nearly all the world's central governments have established official national currencies as 'legal tender' (e.g., U.S. dollar), and these national currencies are the most common form of legal tender. National currencies are also typically the dominant currency in their respective geographical domain, meaning they face very little if any competition from other currencies. In a small number of cases foreign legal tender has been *adopted* as the official domestic currency. For example, Ecuador and Panama currently use the U.S. dollar as their official national currency.[16] A parallel currency is a legal tender currency in use alongside one or more other currencies. For example, many countries circulate their own national currencies alongside the U.S. dollar.[17] Historical examples of parallel currencies include bimetallic gold and silver systems. Perhaps the earliest recorded example of a parallel currency system was in 220 B.C. when copper and silver circulated alongside one another in Ptolemaic Egypt.[18]

Looking at non-legal tender currencies, a currency black marke*t* can be said to exist if a government attempts to impose legal restrictions on the use of a currency but fails to eliminate the use of that currency, or is unable to enforce an official exchange rate that differs significantly from a black market rate. For example, the U.S. dollar is currently widely used by Argentinians to store value, transacting goods and services, and for setting prices due to the persistent inflation and devaluation of Argentinian peso. In response to this development the Argentinian government has placed legal restrictions on the use and transfer of the vast quantity of U.S. dollar banknotes in Argentina.[19] These rules, however, have not stopped U.S.

[16] Panama started using the U.S. dollar in 1904 and Ecuador adopted U.S. dollar in 2000. While these two countries have adopted the U.S. banknotes as the exclusive paper currency both countries mint and circulate their own national coinage alongside U.S. coins. Panama and Ecuador are part of a group of ten countries that have officially adopted the U.S. Dollar. A number of dependencies also use the U.S. dollar exclusively, including Bonaire, British Indian Ocean Territory, British Virgin Islands, Saba, Sint Eustatius, Turks and Caicos Islands.

[17] For example, Zimbabwe, Micronesia, and Palau.

[18] (Reekmans 1949)

[19] (Judson 2012) It has been estimated that more than $50 billion in U.S. dollar banknotes circulate inside Argentina's borders. See also http://www.businessweek.com/articles/2013-05-15/argentines-hold-more-than-50-billion-in-u-dot-s-dot-currency-dot-heres-how-we-know

dollars from circulating widely in Argentina. The U.S. dollar, which is perfectly legal to use in many parts of the world, can therefore be considered a black market currency in Argentina.[20]

An alternative currency is any instrument that serves as a medium of exchange but which is not minted by the central government, considered to be illegal, or recognized as legal tender. For alternative currencies it is important to highlight the distinction drawn here between legal tender minted by a central government and currency minted or sponsored by a regional or other local government (e.g., municipalities). Throughout history regional and local governments have often been involved with the issuance of what are often called *local* currencies. When evaluating whether such a local currency should be considered an alternative currency a simple definitional test is whether the local currency be used to pay taxes levied by the central government. Local government sponsored alternative currencies typically cannot be used to pay central government taxes, nor can they legally provide satisfaction for the settlement of debts throughout the state.

Is the term 'alternative currency' the correct or best one to describe the various instruments that typically fall under this heading? For example, two other labels often used with such currencies are *complementary* and *community*. Practitioners as well as scholars have also used other terms such as *scrip*.[21] For example, Amato et al (2003) place 'alternative', 'competing', 'local', and 'community' currencies all under the heading of 'complementary

[20] The Argentinian case also illustrates the dual definitional nature of certain currencies; the U.S. dollar can simultaneously serve as both legal tender in the U.S. and other parts of the world while being defined as a black market currency in Argentina. A historical example of a black market currency was the so-called 'free' British sterling banknotes that were traded in London, New York, Zurich, and other financial centers in the 1940s at a substantial discount to the official exchange rate. The British outlawed and actively sought to tamp down the exchange of sterling at any rate other than official ones during the 1940s. Following the adoption of Bretton Woods restrictions also applied to any trade in currencies at rates other than the official par rates in signatory countries, such as the United States. However, except for an 18-month period between 1944-46 it was legal to exchange free sterling in Switzerland. In this case the New York market was arguably 'more black' than the Zurich market given the domestic restrictions (Hileman 2012).
[21] See for example (Harper 1948p. 13)

currencies'.[22] Recently regulators and other officials have used terms such as *digital* and *virtual* to describe currencies like bitcoin.[23]

This rebranding of alternative currencies into some of the above terms can be problematic and inaccurate in some instances. For example, the term 'digital' can also apply to the digital for of national currencies. Further, some 'virtual' currencies like bitcoin arguably also have tangible manifestations. The 'complementary' term is often meant to connote the idea that a particular currency is not intended as a substitute for national currency. This connotation would seem appropriate for a currency like the Brixton pound, which is fundamentally linked to and dependent upon Britain's national currency, pound sterling.[24] However, other alternative currencies like bitcoin are not similarly dependent upon a national currency. Further, many bitcoin proponents would like to see it substitute and ultimately supplant national currencies. In this way 'alternative currency' is arguably a more accurate and therefore better category term for instruments such as bitcoin and the Brixton pound than other terms described here. Instead, terms like 'local' or 'complimentary', and perhaps also 'virtual' can be considered sub-classifications of various different alternative currency types.

Classification challenges

Several currencies are difficult to classify within the currency framework presented in Table 1. For example, following the March 2013 imposition of capital controls in Cyprus did the 'Cypriot euros', which had legal restrictions limiting their international movement and exchange into other currencies, constitute a parallel currency? Cypriot euros, like all other non-Cypriot euros, could be legally used in Cyprus for the purchase of goods and services. However, unlike

[22] (Amato, Fantacci, and Doria 2003p. 2) Amato et al incorrectly reference Hugh-Jones (1950) as a work on 'loyalty points' as a private currency when in fact Hugh-Jone's paper is on government points used for rationing goods during the 1940s.
[23] The Bank of England refers to bitcoin as a 'digital' currency (Ali et al. 2014) while the New York Department of Financial Services and U.S. Treasury refer to bitcoin as a 'virtual' currency.
[24] The Brixton pound has a 1:1 exchange rate with British pound sterling, and sterling that has been exchanged for Brixton pounds is held at the Brixton Credit Union (London Mutual Credit Union).

other euros most Cypriot euros could not legally be used in other Eurozone countries to purchase goods and services. This limitation made a Cypriot euro in principle less valuable than other non-Cypriot euros. Because non-Cypriot euros can be used similarly to Cypriot euros inside Cyprus, the Cypriot euro should be considered a parallel currency.

Looking further back into history we find other perhaps even more challenging classification examples, such as the various banknotes that existed during the U.S. Free Banking period of 1837-1862. During this period banks issued their own currencies that were redeemable at the issuing bank for specie at par. These banknotes could be exchanged for goods and services as well as for banknotes issued by other banks. However, the exchange rates on banknotes often depreciated the greater the distance they were transacted from the issuing bank.[25]

How should such U.S. Free Banking notes be classified? In terms of the government's role in the Free Banking period, banks were required to meet certain legal obligations to issue banknotes, such as purchasing municipal bonds and then depositing those bonds with the state.[26] However, most state governments did not enforce banknote-to-specie convertibility. Klein (1974) provides the following description:

> *"private bank notes…were all denominated in dollars, where 'dollar' denoted a particular weight of gold"; this period could thus be described as "much closer to multiple monies circulating at fixed exchange rates than to multiple monies circulating at flexible exchange rates".*[27]

[25] Bank note exchange rates were published in newspapers and other reports. For more on the price differences see (Dwyer Jr 1996pp. 5-6; Calomiris and Schweikart 1991; Gorton 1996p. 348)
[26] Requirements such as this one have led some to question whether the period should be termed 'free' banking.
[27] (Klein 1974pp. 439-40)

Whether antebellum banknotes should be classified as a national, parallel, alternative, a combination of the above, or some altogether different currency is open to debate.[28] Similar classification challenges are confronted when examining Scottish free banking in the 17th-19th century.[29]

In sum, while the classification challenge presented by U.S. Free Banking notes and today's Cypriot euro illustrates some current limitations with the currency classification scheme presented in this paper the vast majority of currencies fit within the Table 1 framework.

Four different alternative currency types

Four different types of alternative currencies can be distinguished across two overarching categories of alternative currencies, designated as *tangible* and *digital*.[30] This alternative currency classification framework, first published in Hileman (2014), is presented below (Table 2 and Table 3).[31]

Table 2: Tangible Alternative Currency Classification Framework

	Historical	**Contemporary**
Intrinsic Utility	Metals, cigarettes during Second World War[32]	African SIM airtime minutes[33]
Token	17th-19th c. British tokens, 1930s Great Depression-era scrip[34]	Chiemgau, Brixton pound, BerkShares

[28] It is interesting to note that the instances of alternative currencies, or what Harper (1948) describes as 'local money', declined dramatically during the 'U.S. Free Banking' period (Harper 1948p. 16).
[29] See for example (White 1984; Rothbard 1988; Sechrest 1988)
[30] It should be noted that some instruments, such as the Brixton pound, have both a digital and physical currency.
[31] (Hileman 2014)
[32] (Radford 1945)
[33] (Economist 2013)
[34] (Harper 1948)

These different categories of alternative currencies are also ordered in Table 2 according to their plausible first use in history. While our records of financial antiquity are incomplete it is a reasonable conjecture that items possessing *intrinsic* utility or value, such as metals, were likely the earliest alternative currencies to be exchanged. Intrinsic money is also commonly referred to as *commodity* money. Part of the value of intrinsic alternative currencies is derived from their relative physical scarcity. Such intrinsic currencies obviate the need for the degree of value abstraction that is required with more-conceptual monetary systems. Another advantage of using an instrument that possesses wide utility is the avoidance of geographically bounding. This portability of early currencies made it possible for intrinsic currencies to be used across great distances and fits our understanding of the nomadic nature of early human history.

Circulating alongside or perhaps even prior to the existence of intrinsic currencies were *token* currencies. Token currencies are also physical currencies but with little to no intrinsic utility or value. Instead their value is derived from social constructs, such as agreements that they be accepted as a medium of exchange and that their supply be limited. In recent centuries token alternative currencies have often been issued by businesses or institutions for use in day-to-day transactions with customers and other stakeholders. These tokens are often used only within a limited geographic range, such as a borough, town, or region, and are therefore often referred to as ‘local’ or ‘community’ currencies. With efforts to create inter-regional exchanges for alternative currencies both during the Great Depression as well as more recently, efforts have been made to significantly expand the range where token currencies can be used. This link to a particular set of institutions and or location are two of the defining features of token currencies.

Table 3: Digital Alternative Currency Classification Framework

	Closed	Open
Centralized	Linden Dollar, World of Warcraft Gold	Flooz, Beenz
Decentralized	N/A	Bitcoin, Litecoin

While *digital* alternative currencies have received a great deal of public and academic attention of late they have been an active topic in cryptography and technology circles since well before the birth of the Internet.[35] On the different types of digital currencies, it is perhaps useful to first distinguish between *closed* and *open* digital currencies. Closed digital currencies, such as the Linden dollar (L$) used in the artificial reality environment called Second Life*,* are largely transacted inside a virtual world.[36] Linden Lab, which created and owns Second Life, retained central control over the issuance and supply of Linden dollars. These two features make the Linden dollar both a closed and *centralized* alternative currency. Some community currencies, such as the Brixton pound, also have a digital equivalent which can be used to conduct the same goods and services transactions as physical currency notes. Because the Brixton pound is operated by a central organization, and because Brixton pounds are largely transacted within a limited geographic range, Brixton pounds can also be considered a closed-digital currency.

In contrast, open digital currencies are largely unbounded instruments that can be transacted outside of a limited, clearly demarcated digital environment. Bitcoin is often

[35] The technology landscape is littered with failed pre-bitcoin efforts: "Cypherpunks, the 1990s movement of libertarian cryptographers, dedicated themselves to the project. Yet every effort to create virtual cash had foundered. Ecash, an anonymous system launched in the early 1990s by cryptographer David Chaum, failed in part because it depended on the existing infrastructures of government and credit card companies. Other proposals followed—bit gold, RPOW, b-money—but none got off the ground" (Wallace 2011).
[36] Linden dollars were designed for transactions within the Second Life virtual world. However, there is nothing preventing individuals from conducting exchanges with Linden dollars outside of Second Life and then arranging settlement inside Second Life, as has apparently happened through auction sites like eBay.

characterized as the first open and *decentralized* alternative currency. Centralized digital currencies feature a single issuer-operator who maintains control over important currency features, such as supply, use rules, and other important functional aspects of the currency. In contrast, decentralized currencies (e.g., bitcoin) function in a more devolved fashion with open source development, no single currency issuer or processing, and publicly distributed ledgers (e.g., the bitcoin 'block chain'.[37]

Just as some currencies are difficult to classify within the Table 1currency framework, several alternative currencies are not easy to classify within the Table 2 and Table 3 frameworks. For example, should travellers' cheques, which were first issued in 1772 and widely popularized starting in 1891 by American Express, be considered an alternative currency? In many ways they resemble community currencies like the Brixton pound, which also has a fixed 1:1 exchange rate with a national currency. While travellers cheques could historically be used over a much wider geographic range than most community currencies they are also similar to community currencies in that they are only accepted by select merchants and institutions.

Are alternative currencies a form of money?

At least one leading economics textbook, Mankiw and Taylor (2011), briefly discusses an alternative currency very similar to the Brixton pound called the Stroud pound and how it "can fulfill many of the requirements of national currencies" like the British pound.[38] In Brixton restaurant menus can be found with prices in Brixton pounds, and the local Brixton council government through a program called 'Payroll Local' allows Lambeth council employees to

[37] There is considerable debate over whether bitcoin is truly decentralized. For example, in March 2013 members of the Bitcoin community corrected a fork in the blockchain through an organized effort. Bitcoin has also come under criticism for its high degree of ownership and mining concentration. For further discussion see http://bitcoinmagazine.com/bitcoin-network-shaken-by-blockchain-fork/
[38] (Mankiw and Taylor 2011p. 620)

receive a portion of their salary in Brixton pounds.[39] In other words, within a defined geography and for a certain set of goods and services there is little practical difference between Brixton and British pounds other than that, similar to a merchant loyalty or rewards scheme, you can often receive a discount of 10% on transactions by paying with Brixton pounds. However, Mankiw and Taylor stop short of explicitly stating whether or not currencies like the Brixton or Stroud pounds should be defined as money.

While the terms money and currency are often used synonymously it can be useful to define as separate and distinct from one another.[40] As noted earlier by Ali et al, some economists argue that money's most decisive definitional function is serving as a unit of account. However, other economists argue that serving as a medium of exchange is money's defining feature.[41] This paper argues that serving as a medium of exchange may be more usefully defined as *the primary function of currency, but one of only several functions of money*. Some currencies, like the U.S. dollar, are widely perform all three functions of money, while other mediums of exchange may not serve as a widely used unit of account.[42] In short, while all money is currency, not all currency is money. However, if an alternative currency were to sufficiently embody all three of the traditional functions of money then it could also be considered money. In other words, the designation of what is and is not money does not depend on law or a government defining such a currency as legal tender.

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[39] There is no maximum set of the portion of Lambeth Council employees' salaries that can be received in Brixton pounds, but according to Brixton pound organizers most who are participating at present receive about £100 Brixton pounds per month. It is also advised that Lambeth Council employees take no more than 10% of their salary in Brixton pounds as acceptance outside of retailers for items such as housing rent is more limited.

[40] For a detailed discussion of modern money and currency see (Bernstein 1965Ch. 4-5)

[41] (Lipsey and Chrystal 2011pp. 448, 659; Woodford and WALSH 2005; Ali et al. 2014)

[42] Attempting a precise and generally agreed upon definition of what constitutes a 'store of value' is beyond the scope of this paper. For example, some will argue that the significant decline in the U.S. dollar's purchasing power over time due to inflation makes it a poor store of value, and it is certainly true that there are both other currencies (e.g., Swiss franc) and asset classes (e.g., equities) which have over a long period served as a better store of value. However, over the short-run (e.g., less than a month) the U.S. dollar has generally effectively stored value over the last several decades, along with serving as a widely used unit of account and medium of exchange.

III. Historical Overview of Alternative Currencies

Alternative currencies are nothing new and as noted earlier their use may date as far back as the early classical period. Numismatic works published in the 19th century perhaps comprise some of the earliest scholarship on alternative currencies. This section of the paper surveys the alternative currency literature over the past several hundred years covering North America, Britain and continental Europe – the regions where a relatively good historical record of alternative currencies has been maintained. One aim of this historical survey is to examine whether there are any commonalties between the historical and contemporary alternative currencies, as well as the political and economic contexts in which they arose.

Alternative currencies in North America

Prior to the American Revolution there are numerous reports that colonists made significant use of privately produced paper money issued by merchants and traders.[43] Even after the founding of the Boston mint in 1652 there are reports of merchant issued currency, and complaints of currency 'hoarding' during economic downturns persist well into the 18th century.[44] Such complaints can be taken as evidence of the continued importance of alternative currencies following the introduction of government supported currency in America.[45]

Given the frequency with which inflation accompanies war it is not surprising that there was a proliferation of alternative currencies during the American Revolution, where lottery tickets, private tokens (shinplasters), and other mediums of exchange circulated.[46] In post-revolutionary America banks frequently failed, which often led to financial panics and shortages

[43] (McLeod 1898pp. 229-30)

[44] (Sumner 1874p. 26) Further north in Canada, in 1685 a French official created a new 'playing card' currency by cutting a deck of cards into quarters, writing an amounts of livres on the cards, signed his name, and then instructed members of a community to accept them. By 1714 approximately two million livres of depreciated playing card currency were in circulation (Chalmers 1893p. 118; Del Mar 1899p. 118).

[45] (Harper 1948p. 10)

[46] (Del Mar 1899p. 116)

in small denomination currency in particular. In these environments various forms of alternative currency proliferated, including notes issued by cities, states, individuals, merchants, and churches.[47]

This shortage of small denominations of currency is a phenomenon that has been referred to as 'The Big Problem of Small Change', a phrase that was originally introduced by Cipolla (1956) and elaborated on by Sargent and Velde (2002) and others.[48] According to Sargent and Velde, the problem of not enough small change was rooted in two issues: poor economic theory and inadequate technology.[49] This 'Big Problem' has in fact been the driving force behind the introduction of a number of alternative currencies.[50] For example, in 1792 Albany, New York introduced small notes to address the chronic shortage of smaller denominations.[51]

In the decades immediately following the adoption of the U.S. Constitution up through the Civil War bank money played a more important role even though various alternative currencies issued by private individuals and merchants as well as local government continued to circulate. A noticeable decline in alternative currencies was witnessed during the 'U.S. Free Banking' era of 1837-1862 – a period of relative peace from military conflict. However, Harper does note that:

> *"the proportion of local non-bank instruments tended to increase as banks failed with each period of crisis and depression, and to diminish with the revival of business."*[52]

During the Great Depression various alternative currencies referred to by Harper as 'scrip' were widely used throughout the United States and Europe, including commodity notes

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[47] (Harper 1948pp. 14-15)
[48] See for example (Kohn 2005ch. 7)
[49] (Sargent and Velde 2002p. XVIII)
[50] (Sargent and Velde 2002; Cipolla 1956)
[51](Carothers 1967)
[52] (Harper 1948pp. 14-5)

exchangeable for goods and services as well as municipal notes. [53] The scrip which Harper focuses on was that issued by chambers of commerce and local governments; self-help groups, merchant groups, and others private actors also issued scrip. Similar to today's local complementary currencies like the Brixton pound, one purpose of this Great Depression-era scrip was to limit out-of-town expenditures or purchases at non-local chain stores.[54] Similar to today's Freicoin, many U.S. scrip currencies and the Austrian Freigeld incorporated the concept of *demurrage* that was developed by economist Silvio Gesell.[55]

A number of challenges faced by Great Depression-era scrip are also commonly seen in today's alternative currencies. Establishing wide acceptance and practical issues, such as poor paper quality and not having enough physical space on the scrip note for stamps. The most significant problem confronting 1930s scrip was the need to purchase goods and services outside the local community where the scrip was actively circulated. Efforts aimed at addressing this problem included establishing local clearinghouses, inter-community barter exchanges, and a national scrip plan, were met with varying degrees of success and failure.[56]

Historical Overview of Alternative Currencies in Europe

North America is not the only region to possess a history of alternative currencies. In 16th and 17th century England, alternative currencies, commonly referred to as *token* currency in the literature, came into widespread use. [57] There is also significant evidence of earlier use in

[53] (Harper 1948p. 7, Figure 1) Harper's thesis contains a map that plots the different types of scrip used in different parts of the U.S. For European alternative currencies from this period see (Amato, Fantacci, and Doria 2003p. 1)
[54] (Harper 1948pp. 1-2)
[55] (Harper 1948p. 3) Under such a plan stamps with dates are affixed to scrip at regular intervals. Harper notes that 'transaction' stamps were more common than the 'time' stamp system described by Gesell (Gesell 1929).
[56] (Harper 1948pp. 5-6) The national scrip plan proposal was "rejected by Congress in favor of plans by the Secretary of the Treasury and the Federal Reserve Board for an increase in the paper currency issues of the Federal Reserve Banks".
[57] The term token appears to have a number of uses. For example, Sargent and Velde define the term token as "a stamped piece of metal, often coin, issued as a medium of exchange by a private person or company who promises to exchange it for its nominal value for goods or legal currency" (Sargent and Velde 2002p. 376). However, not all

England and throughout other areas of Europe during the medieval period.[58] English token currency were in the words of one author a "money of necessity".[59] Tokens were issued in response to the aforementioned 'Big Problem of Small Change' along with inconveniences associated with using silver, which due to its small weight and size was often lost. In 1594 Queen Elizabeth gave the Mayor of the Corporation of Bristol approval to mint a 'Corporation farthing', which gained a wide circulation and was able to maintain its value.[60] Tradesmen also issued lead coins up through the early 17th century.

The year of 1648 is first in which tokens are reported to have appeared.[61] During the 17th – 19th century the issuance of tokens became widespread throughout England, Wales and Ireland.[62] A shortage of 'low value copper coinage' in 17th century Great Britain afflicted trade and the government did not address the shortage by minting more 'regal coinage', which was made of gold and silver. [63] As a result, businesses and local authorities minted their own copper coins 'without authority'.[64]

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token currency has always been metal. Further, currencies described as tokens were sometimes issued by public entities, such as cities.

[58] Evidence of medieval token use has primarily been obtained in the more financially sophisticated regions in Europe during this period of Flanders, northern France and Italy, and Catalonia. In contrast with England, in France and the Low Countries token currency was suppressed through government action (Sargent and Velde 2002pp. 216-8)

[59] Echoing the tone and language one often finds surrounding today's alternative currency movements, Boyne and Williamson continue: "they (tokens) would never have been issued but for the indifference of a Government to a public need, and their issue forms a remarkable instance of a people supplying their own needs by an illegal issue of coinage, and in this way forcing a legislature to comply with demands and requests at once just and imperative" (Boyne and Williamson 1889p. b-2). Boyne and Williamson note that the token currency was illegal, which based on the historical record appears to be true for at least some period. However, it does not appear that these alternative currencies were at all times illegal, such as the instance noted in this paper when Bristol was authorized to issue its own local currency in 1594. As noted by Sargent and Velde, "in England, where the mint produced very few small denominations, tokens were tolerated and at times official authorized" (Sargent and Velde 2002p. 217)

[60] (Searle and Cambridge Antiquarian Society. 1871p. 42) Given the fact that the crown approved the minting of Bristol's 'Corporation farthing' it could be argued that this was not in fact a pure alternative currency. There may be some confusion or disagreement on the exact date as Sargent and Velde report a similar instance of Elizabeth approving a lead token to be used within 10 miles of Bristol in 1582 (Sargent and Velde 2002pp. 217-8)

[61] (Searle and Cambridge Antiquarian Society. 1871p. 43)

[62] (Boyne and Williamson 1891; Whiting 1971; Mathias and Barrington Brown 1962)

[63] Copper, which had been used for money in earlier centuries during feudal times, was considered "unfitting for the head of the monarch". In 1404 the House of Commons had been petitioned to solve lack of small coins by minting lead tokens. Queen Elizabeth first created a pattern for coins to be minted off of a base metal but perhaps

A wide range of sectors of the British economy minted farthing, halfpenny, penny and tokens in the 17th century as show in Table 4. In addition to commercial establishments a number of somewhat more eclectic organizations and institutions issued tokens, including workhouses, churchyards, colleges and prisons.

only Bristol issued any, which were used only in a 10-mile radius of the city. The Romans had also used copper coins, and many European countries used copper by 1651. (Whiting 1971p. 13-4, 16)

[64] (Searle and Cambridge Antiquarian Society. 1871p. 43)

Table 4: Issuers of Alternative Currency, 17th Century Britain

Sector	Examples
Shops	grocers, butcher, baker, haberdasher, tobacco sellers, spectacle makers, pewter shops, furrier, bookshop, cap-maker
Vittles*	coffee houses, inns, taverns, pubs
Industry	tallow chandler, weaver, clothier, leatherworker, goldsmiths, oilmen, brushmaker, ironmonger, coal mining,
Services	barber, barber-surgeons, apothecary
Transportation	coachmen, wagoner, canal in 18th century
Communication	postal service
Institutions	workhouses, colleges (Chelsea College c. 1667), churchyards (Flemish, London), prisons (Newgate c.1669)
Politics	political coins used for “spreading propaganda, subversive agitation or other forms of advertisement”

*issued the most tokens of any economic sector, over 1,000
Source: Whiting 1971, pp. 34-44, 59, 76-7

These tokens have been described as “ingenious in their style” and generally contained information about the trade of the issuer and their location.[65] Tradesmen often kept a sorting box so that they could keep track of the various tokens produced by other merchants that they received in exchange. And in cities like London there are parallels with modern alternative

[65] (Searle and Cambridge Antiquarian Society. 1871p. 45)

currency ecosystem firms, with ‘farthing changers’ operating as market makers and issuing their own tokens.[66]

Efforts at regulating the burgeoning token market were introduced as early as 1655 and again in 1669 until a proclamation was made by the King of England in July 1672 that:

> *“no person or persons should for the future make, coin, exchange or use any farthings or tokens except such as should be coined in his Majesty’s mint”*[67]

Tokens continued to be minted for some time despite repeated proclamations from the crown that offenders were to be prosecuted for issuing private tokens. At last, a proclamation in December 1674 appears to have succeeded in halting private token issuance for over a century[68], until reports surfaced of widespread counterfeiting of coins from the official mint lead to the reactivation of the private token market in 1784.[69]

Alternative Currencies around the World

There is unfortunately not nearly as much historical information on alternative currencies in other regions of the world as compared with what is available for North America and Europe. However, there is significant evidence that alternative currencies were not simply a North Atlantic phenomenon. For example, in 19th century Japan both Lietaer (2004) and Maruyama (1994, 1999) note that alternative currencies were operational. Japan also played a role in developing alternative currency systems in the post-World War II period. [70] Echoing the

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[66] (Searle and Cambridge Antiquarian Society. 1871p. 46)
[67] And with a possible reference to the shortage of money which the tokens were issued to address the proclamation continues “his Majesty having given directions for the speedy making of a considerable quantity of farthings, to be made current for exchange of monies” (Searle and Cambridge Antiquarian Society. 1871p. 47)
[68] (Searle and Cambridge Antiquarian Society. 1871p. 48)
[69] (Searle and Cambridge Antiquarian Society. 1871p. 118)
[70] (Lietaer 2004pp. 3-4) He also suggests that these efforts had previously been largely overlooked due to the fact that women organized them.

sentiment expressed by scholars studying alternative currencies during the Great Depression, Lietaer references the general economic problems that Japan has suffered since 1990 as an explanatory factor in why alternative currencies have been launched in the country. He does not, however, argue that there is a link between alternative currencies and specific economic factors in Japan, such as deflation or low or negative economic growth. Today, it is estimated that over 600 active alternative currencies exist in Japan.

Other recent scholarship on 20th century and contemporary alternative currencies includes research by Tibbett (1997), Amato et al (2003), and North (2007). [71] Tibbet's contemporary survey of alternative currencies in existence examined their role as a form of protest against globalization. In recent times alternative currencies have gained traction in British Commonwealth countries, such as New Zealand and Australia.

Patterns in the rise of alternative currencies

There are many similarities between the conditions that gave rise to history's alternative currencies and today's. Commenting on the use of 'local money' in the U.S. prior to 1932[72], Harper remarks that these earlier currencies:

> *"resulted from conditions sufficiently like those of the recent depression to suggest the possibility that local money in some form is likely to recur in response to a public demand under substantially similar circumstances"*.[73]

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[71] (Amato, Fantacci, and Doria 2003; Tibbett 1997; North 2007)

[72] A criticism of Harper's study of this earlier period is a tendency to conflate credit and money (or currency). For example, he described pre-revolutionary 'loan bills', such as due bills and shop notes, which were used by 'gentlemen of substance' (individuals and merchants) as local money (p.9). However, his description states that these provided "evidences of indebtedness" and contains no discussion of whether these bills circulated as currency. These and other debt instruments he describes may more aptly be termed credit rather than currency or money. Harper does, however, highlight a number of alternative currencies before the Great Depression, such as a system during the U.S. Revolutionary War period where merchants discounted each other's bills (p. 12).

[73] (Harper 1948p. 2)

Interestingly, Harper anticipated the return of alternative currencies we have seen today when he wrote:

> *"the purpose of this treatise is not only to describe the nature of the scrip instruments and their use, but also to obtain and present the reasons for their use, and an evaluation of their effectiveness for the purposes for which they were issued. It is believed that an examination of the record of scrip experience and a consideration of the conclusions to be drawn from it may be of value if similar conditions should develop in the future."*[74]

Throughout history and today there appear to be seven principle socio-economic factors that drive demand for alternative currencies (Table 5).[75] Interestingly, historical precedent is found for all of these forces except environmentalism.

[74] (Harper 1948p. 6)
[75] (Hileman 2014)

Table 5: Socio-Economic Forces Driving Demand for Alternative Currencies

Force	Description
Environmentalism	Concerns over environmental impact of globalization, ‘peak oil’, industrial agriculture
Localism	Protect ‘high street’ retailers, neighborly commerce
Technology	Open source software creates low barriers to entry; widespread use of mobile devices
Economic Sentiment	Concerns over inequality, quantitative easing, inflation, ‘Too Big to Fail’, high unemployment, slow growth, high debt, financial insecurity
Inefficiencies	Slow and expensive financial system; 3% Visa/MasterCard merchant charges)
Financial repression	Growing use of capital controls (e.g., Eurozone, Argentina, China)
Speculation	Currency appreciation due to wider use and acceptance (e.g., Bitcoin)

IV. Conclusion

In examining the historical data on alternative currencies that have either ceased to exist or are in decline, three main causes would appear to dominate:

Technological change – advancements disrupt or obviate the need for an alternative currency. The final decline and cessation of British merchant tokens in the 19th century occurred alongside the development of the standard formula described by Sargent and Velde for determining the proper mix of small change, as well as technological advances in minting which made the production of small coins less expensive. Both the technological advance in economic theory and manufacturing processes combined to eliminate the persistent shortage of small coins.

Government intervention – throughout the history of alternative currencies governments have periodically intervened to reduce or eliminate the use of such currencies. One example is the Austrian Freigeld currency, which was introduced in 1932 and was outlawed by the Austrian central bank in 1933. What is not entirely clear is whether the Freigeld was shut down due to how similar it appeared to the normal Austrian schilling or because the authorities feared that the upstart currency might gain more widespread adoption.

Lack of sustainable demand – early scholarship notes the persistent difficulty in gaining adoption which alternative currencies face. More recently, the UK LETS scheme is illustrative. While LETS is still functioning it has experienced a steady decline, having gone from 350 chapters in 1995, to 303 in 2001, and now 186 in 2005.[76] LETS simply has not been compelling or convenient enough to sustain its early momentum and thus we see the continued rise in community currencies like the Brixton pound that do away with bartering.

[76] (North 2007)

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