

SHORT CHANGING 100 PERCENT RESERVES

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ABSTRACT: Selgin (2009) offers a challenge to 100 percent reserve banking by noting that small change would be unprofitable with 100 percent reserve money. This minor challenge fails firstly because 100 percent reserve banking does not require 100 percent reserve money, only market determined money. Small change is shown here to not be a problem in the free market. Evidence from Richard Cantillon (1730) suggests that in the absence of government coercion, small change was not a problem.

KEYWORDS: money, fractional reserve banking, fiduciary media

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George Selgin (2009) offers a challenge to 100 percent reserve money with the problem of small change. He observes that transaction costs will rise and economic activity will be reduced if

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there is a limited amount of small change. He considers token coins¹ to be the preferable solution among the many possible solutions. However, token coins are considered fiduciary media and therefore could represent a violation of the 100 percent reserves. Requiring 100 percent reserves for the token coins would make the issuing of tokens costly and unprofitable. Therefore the 100 percent reserve doctrine would limit small change, hamper exchange and leave economic opportunities foregone.

This challenge, while new and creative, falters on several grounds. Here the focus will be on the free market economy where small change or token money is *a* medium of exchange that need not be backed by reserves even though it is deficient in its intrinsic value of metal relative to *the* medium of exchange.² However, on a more basic level Selgin's association of 100 percent reserve money and 100 percent reserve banking is incorrect. Advocates of 100 percent reserve banking call for 100 percent reserves in banking and for market-determined money, not 100 percent reserve money. The economic problems associated with fractional reserve banking are not related to market-based money, and neither is there an issue of fraud, other than the ordinary sort. Nonetheless, it is still worthwhile to provide a full response to challenge of small change.

Small change has been a technical challenge for coin-based government controlled monetary systems, but we can be reasonably confident that a market-based system would be able to deal with the problem. To that end, evidence will be presented from Richard Cantillon, circa 1730, which demonstrates that the market can effectively handle the problem of small change and do so in a manner that neither violates economic principles nor introduce the problem of fraud.

¹ The type of token coin we are discussing is one for which the value of the metal in the coin "often represents a substantial share of that face value." True token coins with little intrinsic value would be like traveler's checks or money market mutual funds, and would not be considered money.

² Mises (1912, p. 70) discussed token coins in terms of a government dominated monetary system. Here token coins are used to overcome technical difficulties, but what he is discussing is essentially the absence of a market process to solve such problems and all the bureaucratic bungling that was necessary to achieve a tolerable situation.

Selgin's challenge is based on the gold standard where coins must be denominated, exchanged, and redeemed at par. The problem of not being able to mint gold into small enough sized coins would negatively impact such an economy, even though historically people in non-monetized sectors of the economy resorted to barter, book entry accounting, and other methods. Selgin argues that the use of token coins for small change would require that mints hold 100 percent reserves against the coins they issue. Of course, as the author admits, the challenge would be altogether immaterial in the contemporary economy of checks, debit cards and other forms of electronic transactions, and neither would it apply to pre-industrial bimetallism, wherein all coins circulated on the basis of the market value of the metal content and prices were set in terms of an index coin or medium of account.³ However, let us proceed with Selgin's historical challenge.

The gold standard is not the best foundation for the challenge because it was the result of bimetallism and Gresham's Law. Neither advocates of 100 percent reserve banking nor free banking envision their systems as based on bimetallism, wherein government fixes a rigid exchange ratio between two metal monies. Therefore, it is *not* "readily apparent that the arguments apply, not only to a gold standard, but to any commodity-money arrangement," as Selgin suggests (p. 4). Silver was the most common form of money in modern times, which was supplemented with gold for large transactions and balances of international payments; and by copper-based coins for small transactions. In other words, parallel monetary standards for specific purposes.

Parallel monetary systems can be connected through floating exchange rates to avoid the problems of bimetallism and answer Selgin's challenge. However, it would also be possible to have a floating exchange rate between gold and silver, but a notionally fixed exchange rate between the silver and copper coins, where copper coins were nominally denominated as a certain fraction of a silver coin. Such a system would be immune to Gresham's law and would not involve the "high cost of exchange" that Selgin imagines, if "shopkeepers in the U.S. today were *obliged* to make change with euro coins." (p. 8, emphasis added). The key here is

³ Weber (2009).

the word “obliged,” which insinuates that traders would be forced or coerced into accepting any amount of any particular coin. Of course, no one would be obligated to accept unlimited amounts of small change in a free market or make change in mandated alternative foreign currencies.

Also, when discussing token coins, Selgin refers to “free convertibility,” implying that those who possess inferior coins can forcibly exchange them for preferred coins. This is at the heart of the challenge of small change. Selgin claims that token coins must be fiduciary media (p. 10), and therefore the mint would be required to hold reserves against these token coins *and* incur the high cost of producing the tokens, because the cost of the metal in such coins “represents a substantial share of that face value.” The challenge that Selgin has proposed is a real one under his given conditions, although the magnitude of this problem is probably small even in an economy that does not have electronic means of payment.⁴ His challenge essentially *short changes* 100 percent reserve banking, because people are not actually required to accept these coins, make change in them, or redeem them. In certain situations they will either refuse them altogether or discount their value accordingly, as was the case throughout the long history of money.⁵

The reason Selgin’s challenge fails is that token coins would not have legal tender status and there would be no free convertibility. Individuals would not be obliged to accept them or to make change in them. Token coins are simply coins made from less costly metals and are overvalued in terms of metal content compared to their more valuable counterparts (e.g., the copper in 100 pennies has a melt value of, say, 63 percent of a silver dollar). In a free market economy, the value of the metal in the overvalued coins, the qualities of the coins issued, and the competitively determined cost of production would all factor in to create flexible and harmonious conditions between these two mediums of exchange.

⁴ In the United States in 1963, this would have required that more than \$40 million in gold would have been placed in reserve against the number of pennies and nickels issued that year.

⁵ Whether or not token coins would be freely convertible on the free market is an open question. Companies would likely have some features of convertibility for their own coins.

The size, weight, and purity of small change could change over time according to market conditions. Competition would push up the copper content towards the difference between minting costs and the corresponding value of silver (e.g., minting costs of 100 pennies would be close to 37 cents) so that in terms of opportunity cost they would be near par with silver coins.⁶

The whole challenge basically rests on the assumption of force and coercion. The medium of exchange (i.e., silver) is the most commonly accepted medium of exchange, but this does not necessarily extend to other media of exchange (i.e., copper, nickel, etc.). People are not required to accept such coins in a free market economy, and indeed are not even compelled to accept them in some economies hampered by legal tender laws. The challenge would require a par value law that would require a face value with legal tender and convertibility requirements.⁷

Of course people will accept *some* small coins made from less valuable metals which are overvalued, but they need not accept large numbers of such coins unless it is in their interest to do so. For example, an automobile dealer might accept \$10,000 in pennies for an automobile that he was already prepared to discount down to \$6,000. And for the smallest transactions, the price and size of the good can be adjusted to make the acceptance of a single “token” coin profitable (e.g., penny candy and nickel cigars). Naturally, merchants will readily accept some amount of these overvalued coins in the natural course of their business because they need them to make change in subsequent transactions, but they need not accept large quantities of token coins.

Thus, the problem of small change can be solved by the market. The higher minting costs of small change, such as pennies, and the relatively low value of the metal in the coins is sustained in the market for the purpose for which they were intended—small

⁶ In a similar vein, the premium on small gold bullion coins is more than five times greater than large gold coins. Rothbard (2009, pp. 1144–46) shows that there are no special cases or issues such as counterfeiting or standardization with the competitive private minting of coins. He also discusses the benefits of private coinage in section 7 of *What Has Government Done to Our Money?*

⁷ If par value laws existed, then people would be required to accept overvalued small change.

change.⁸ This type of arrangement is neither new nor unique; it is actually ancient and ubiquitous. Such coins are often referred to as billon, which is derived from the Latin *billo*, which means a coin that is made mostly of copper. Such coins date back to at least ancient Greece.⁹

Even with all the chaos of government-managed monetary systems, there have been those who have stumbled onto ideas that mimic the market. For example, medieval jurists held that one should not be allowed to make a repayment in different coins unless one's creditor gave his permission. This would prevent repayment in overvalued token coins. Renaissance law changed this to make all debts equivalent and payable in pennies. In the wake of this change, laws were passed that limited the legal tender status of small change. In particular, these laws limited the amount of small change that could be used to extinguish a debt (Sargent and Velde, 2002, p. 114).

Cantillon (part 3, chapter 4, retranslated from the original French, with *emphasis* and notation in brackets added) addressed Selgin's challenge circa 1730 when he wrote about how such coinage worked. Notice that all the issues raised in Selgin's challenge are addressed, including the profitability of mints and the fact that the coins are easily used in small transactions, but not necessarily in large ones or in foreign exchange.

Today, because copper is only used as money for small purchases, whether alloyed with carbon to make brass as in England, or with a small portion of silver as in France and Germany, it is generally rated in the proportion of 40 to 1, though the market price of copper to that of silver is ordinarily at 80 or 100 to 1. *The reason is that the cost of coining is generally deducted from the weight of the copper. When there is not too much of this small money in circulation for small transactions in the state, coins of copper or copper and alloy are used without difficulty in spite of their defect in intrinsic value.*¹⁰ However, when being used for exchanges with a foreign country,

⁸ We should expect the value of copper and the cost of minting to approach 1/100th of a dollar.

⁹ The word *bullion*, which refers to ingots of metal, seems to have been derived at least in part from *billon*.

¹⁰ Here Cantillon used "intrinsic value" to refer to the metal content of the coin, but in all other instances the term refers to opportunity cost. Notice that the opportunity

they will only be taken for the weight of the copper and the silver alloy. Even in states where there is too much copper in circulation for small transactions, when the greed or ignorance of the governors mandate laws that require a certain amount be received in large payments [i.e., par value laws], it is unwillingly accepted. *Small coins lose a certain percentage when traded for silver*, as is the case with billon coins and ardites in Spain, or when they are used for large payments. *Yet small coins can always be used without difficulty for small purchases because the value of the payments is small and therefore the loss is even smaller. This is why they are accepted without difficulty, and why copper is exchanged for small silver coins above the weight and intrinsic value of copper within a state, but not with other states, because each state has the wherewithal to carry on its small exchanges with its own copper coins.*

But what if one gets stuck with a bunch of billon or ardites coins, perhaps as a merchant or as the wholesaler to a group of merchants? Selgin noted in his book *Good Money* that small change tended to pile up in the hands of breweries (2008, p. 23). This occurred because customers of alehouses often paid for their beer with small change and then the alehouses paid for the kegs they purchased from the brewery with that same small change. The alehouse owner and brewer could in turn pay his labor with the small coins, but the brewer could not generally use them for the large purchases of materials, such as kegs and grain. In order to accomplish these trades, the wholesaler would have to sell copper coins for silver coins at a discount or pay for transactions with copper coins at a discount.¹¹ Would this present a problem and suppress certain wholesale and retail businesses?

Cantillon explained that brewers and other entrepreneurs collected up small change to make large purchases, and that trading with other merchants could be accomplished using account books and market prices. “An alehouse keeper collects by sols and livres the sums he pays to the brewer, who uses them to pay for all the grain and materials he buys from the country.”¹² Cantillon (part 2,

cost of token coins is proportional to other coins because it includes the costs of the metal and the minting of the coins.

¹¹ In this manner businesses would have been encouraged to return worn coins to the mint for reminting.

¹² One livre was equal to twenty sols, and sols were equal to twelve deniers, which was roughly equivalent to the British penny.

chapter 9) explained that the brewery business in London could be highly profitable,¹³ but also highly risky because they depended on the profitability of the alehouses to which they lent kegs of beer.

It is customary for the London brewers to lend a few barrels of beer to the keepers of ale-houses, and when these pay for the first barrels to continue to lend them more. If these ale-houses do a brisk business the brewers sometimes make a profit of 500 per cent per annum; and I have heard that the big brewers grow rich when no more than half the ale-houses go bankrupt upon them in the course of the year.

All the merchants in a state are in the habit of lending merchandise or produce for a time to retailers, and proportion the rate of their profit or interest to that of their risk. This risk is always great because of the high proportion of the borrower's upkeep to the loan. For if the borrower or retailer have not a quick turnover in small business he will quickly go to ruin and will spend all he has borrowed on his own subsistence and will therefore be forced into bankruptcy.

Cantillon calculated that the brewer could earn interest and profit on the kegs of beer in excess of 500 percent per annum. The ultimate consumer who pays for this high return is satisfied with the situation. The potential high return pays for the risk of not receiving payment from the alehouses, and it would seem to easily compensate the brewer for the potential difficulties of receiving payments in large amounts of small change that might have to be discounted to obtain silver money, as well as the high excise taxes it had to pay to government.

These high rates of interest are not only permitted but are in a way useful and necessary in a state. Those who buy fish in the streets pay these high interest charges in the increased price. It suits them and they do not feel it. In like manner an artisan, who drinks a pot of beer and pays for it a price which enables the brewer to get his 500 per cent profit, is satisfied with this convenience and does not feel the loss in so small a detail.

Selgin's challenge of 100 percent reserve money is not a challenge to 100 percent reserve banking, because advocates of this view call for 100 percent reserve banking and market determined money, not 100 percent reserve money. Selgin's challenge itself is only

¹³ Cantillon does not mention this, but English beer was protected by prohibitive tariffs against French wine.

successful to the very limited extent that it maintains elements of government intervention such as bimetallism, legal tender, par value laws and coercion. Cantillon provides evidence that token money serves its purpose in the absence of government compulsion. In a free market economy with monetary freedom and private mints, the challenge evaporates.

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