

## 100 PERCENT RESERVE MONEY: THE SMALL CHANGE CHALLENGE

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*Abstract:* In a free market economy from which fiduciary media are excluded, economic progress will be limited, perhaps severely, by the high cost and correspondingly limited supply of small-denomination money—money that is needed to accomplish retail and other low-value exchanges. Historically, fiduciary token coins have proven to be the only practical means for addressing the small change problem, whether officially or unofficially. In particular, privately-supplied, fiduciary token coins played a crucial part in Great Britain’s Industrial Revolution, which might not have been possible without them.

### INTRODUCTION

The debate on 100 percent versus fractional reserve money and banking has already taken up a large part of contemporary Austrian discussions of monetary economics. Yet, in the course of researching my book on private coinage during Great Britain’s Industrial Revolution (Selgin 2008), I became aware of an important, practical challenge to any 100 percent money scheme that has been overlooked by participants in the debate thus far. That challenge concerns the provision of small change, that is, of exchange media suitable for small payments, and especially for giving change to purchasers of retail goods. I will argue that, absent government intervention (or an unlikely degree of charity), an otherwise free-market economy in which fiduciary media are outlawed will be unable to solve what Cipolla (1956, p. 31) and Thomas

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Sargent and François Velde (2003) refer to as “the big problem of small change.” Historically, insistence upon 100 percent money, including a 100 percent reserve requirement on “token” coins like those that made up most of Great Britain’s small change during its Industrial Revolution, would have severely restricted trade and economic progress.

In making this argument, I will say relatively little concerning the claim that the fractionally-backed money substitutes or “fiduciary media” are inherently fraudulent.<sup>1</sup> My focus will instead be on the special difficulties that make it impractical to apply a 100 percent rule to small change. However, I will also show that a principal complaint of those who insist on the fraudulent nature of fiduciary media—the claim that it is dishonest to use the term “deposits” to designate debt obligations rather than bailments—cannot be lodged against Great Britain’s private suppliers of fiduciary or “token” coins.

For the sake of convenience, I will couch most of my arguments in terms of a gold standard, which seems to be favored by many proponents of 100 percent reserve banking. However, it should be readily apparent that the arguments apply, not only to a gold standard, but to any commodity-money arrangement.

#### 100 PERCENT RESERVE MONEY AND LARGE PAYMENTS

Under a gold standard, the standard money unit is nothing more than a specific quantity of gold, often (though not always) embodied in a particular “full-bodied” gold coin—a coin whose face value reflects the quantity and quality of the metal it is made from.<sup>2</sup> In any advanced monetary economy, the size of individual money payments will vary dramatically. An individual payment may be worth millions of the economy’s standard gold unit, or it may be for some small fraction of that unit.

The inconvenience of carrying and conveying large quantities of coin supplies a rationale for employing redeemable paper checks or banknotes in place of gold coins themselves. Where fractional reserves are used,

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<sup>1</sup>For some of my and Lawrence White’s arguments in defense of fractional-reserve banking, see Selgin and White (1996), Selgin (2000), and White (2003, 2007a, 2007b). The last two references constitute a partial reply to De Soto’s (2006) protracted critique.

<sup>2</sup>The case of Great Britain was unusual in that, at the start of the private coinage episode, there was no gold coin corresponding to the standard £1 (or 20 shilling) unit. The gold guinea, which was the closest thing, was worth 21 shillings. The first British £1 coin, the gold sovereign, was introduced in 1816.

notes and deposit balances based on them become “fiduciary” media, their acceptance at face value depending on trust that the issuers will be capable of redeeming them on demand. In this case the bankers earn revenue by exchanging some portion of the gold deposited with them for loans and other interest-earning assets. The bankers give some of this revenue to their creditors (or those holding deposit credits at any rate), while retaining the rest to cover their costs, or as profit.

In a strict 100 percent money system, in contrast, checks are drawn on bank deposits backed by 100 percent reserves of gold, while banknotes (if they are feasible) become akin to warehouse “certificates.” According to proponents of 100 percent reserve banking, bankers providing such 100 percent backed commodity money substitutes would profit by billing their depositors for the costs involved, including gold storage or “warehousing” costs as well as the costs of printing and handling notes and checks. However, as Lawrence White (2003, p. 425) has observed, the assessment of such fees against holders of money certificates isn’t as straightforward as proponents of 100 percent reserve banking appear to suppose. The reason for this is that, if money certificates are allowed to circulate, as they must if they are to serve in place of coin itself, bankers will be unable to keep track of their holders so as to be able to charge them appropriate pro-rata shares of money storage and related fees.

Insofar as only larger payments are concerned, White’s argument doesn’t necessarily point to the utter impracticality of 100 percent reserves. After all, full-bodied gold coins themselves can always be employed in place of paper certificates, and their use will not be all that burdensome in transactions requiring a small number of such coins only. For many other transactions, either bullion or checks and other devices for the direct transfer of deposit credits can be resorted to. Moreover, even circulating certificates may still play a part, for when such certificates are competitively issued, they are unlikely to circulate very long before being re-deposited<sup>3</sup>; and the larger they are the lower will be the costs of producing and handling them as a percentage of their nominal worth.<sup>4</sup> Consequently, the original drawer of a certificate may be willing to incur the full costs connected to its use, including the expected cost

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<sup>3</sup>In historic, free-banking arrangements, competitively-issued banknotes typically remained in circulation for between one and two weeks before being re-deposited, usually with rival banks that would then return them to their sources for payment. The notes of a monopoly bank of issue, in contrast, tend to be re-issued by non-issuing banks that receive them on deposit unless they are damaged or worn.

<sup>4</sup>The cost of producing the most recent and technologically sophisticated Federal Reserve note is about 6 cents.

of storing the certificates' gold backing while it remains outstanding, even though he or she may retain the certificate itself—and hence, retain ownership of deposited gold—for only a fraction of the certificates' circulation period. One might argue in this case that, although the situation is one in which externalities are at play, the externalities may be unimportant, if not “irrelevant,” in the sense that attempts to correct them, by abandoning the 100 percent reserve rule or otherwise, might not result in any very substantial reduction in the social or overall transactions costs of exchange, and so might not entail any substantial gain in economic activity or welfare.

This is not to say that such an argument would be correct, of course: it is merely to observe that it is not *obviously* incorrect.

### THE SMALL CHANGE CHALLENGE

Providing for small payments, however, poses challenges to proponents of 100 percent money beyond those pointed out by White—challenges that suggest that a 100 percent rule would almost certainly result in a substantial increase the transactions costs of exchange, and a corresponding reduction in economic activity and associated gains. These effects, it bears observing, are distinct from those stemming from the reduction in real savings, intermediation, and investment that must accompany any switch from fractional to 100 percent reserves. The latter reduction itself supplies important grounds for questioning the desirability of a 100 percent reserve rule. But having discussed this point elsewhere (Selgin 2007), I set it aside here in order to concentrate on the particular challenges posed by smaller payments.

The use of paper notes, whether money certificates or fractionally-backed, as small change is generally not economical, given the values involved and the relatively rapid turnover of small-value notes, which causes them to wear out rapidly.<sup>5</sup> Allowing for this, a market economy faces three alternatives for supplying itself with small change. It can (1) strike full-bodied coins using gold alone, with lighter coins for low denominations; (2) strike full-bodied coins using both gold and a second, less valuable metal, with coins of the less valuable metal serving as small change; and (3) mint “token” coins, that is, metallic equivalents of banknotes,

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<sup>5</sup>According to Neil Carothers (1930, pp. 162–63), the fractional notes issued in response to the severe coin shortage that broke out at the onset of the U.S. Civil War “wore out so rapidly that the expenses of issue and reprinting were greater than the interest return to the issuing bank.” Of course the loss would have been greater still had the notes been warehouse certificates rather than fiduciary media.

using very low value metals, and commanding their face values owing solely to their free convertibility into gold.

In making his case for a 100 percent gold dollar, Murray Rothbard seems to have the first option in mind when he observes (1974) that, while “ingots or bars of [gold] bullion” might serve in the largest transactions, “[f]or smaller, everyday transactions, the gold would be divided into . . . coins, hardened by the slight infusion of an alloy to prevent abrasion.” Rothbard overlooks the fact that, to be of sufficiently low value to serve in many “everyday” payments, full-bodied gold coins would have to be so small as to be both difficult to handle and easily lost. In Great Britain, for example, quarter-guinea gold coins, worth five and a quarter shillings, or 64 pence, were tried twice—in 1718 and again in 1762—but were discontinued in each case owing to public complaints concerning their small size. Yet a quarter guinea, being the equivalent of a week’s wages for the average worker in those days, was hardly very small change at the time! That British authorities never seriously contemplated striking full-bodied gold coins to represent still smaller values, such as shillings or pennies (let alone halfpennies or farthings), goes without saying.<sup>6</sup>

It was owing to the impracticality of minting small change from gold itself that monetary authorities in all past gold standard arrangements turned to striking coins from less valuable metals. Of the options they faced for doing so, that of employing *full bodied* coins of two or more distinct metals proved to have its own insurmountable drawbacks. This option has two different variants. The more familiar one, bimetallism, involves defining the economy’s monetary unit in terms of particular amounts of two metals simultaneously. By retaining a single monetary unit, this approach seeks to

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<sup>6</sup>Reliance on gold coins for small change today, with gold approaching \$1,000 an ounce, would of course be more impractical than ever. Historical private gold mints in the U.S. never produced anything less than a \$5 coin, weighing approximately one quarter of an ounce.

Under a silver standard, full-bodied silver coins would of course be practical for denominations considerably smaller than those for which gold coin might serve. Yet here as well the need for still smaller change would go unsatisfied. Thus when, in 1464 (when Great Britain was still on a silver standard), the Royal Mint tried to issue silver farthings that weighed only three troy grains each, the farthings were “lost almost as fast as they were coined” (Snelling 1766, preface).

A referee observes that full-bodied gold coins representing smaller denomination coins could be made conveniently large by alloying the gold with generous amounts of copper or other base metal. But this solution is, for metallurgical reasons, not generally practical. For example, coins of less than 18 carat (75 percent) gold are prone to tarnishing and chemical attack.

avoid the need for any fluctuating internal monetary exchange rate, and the additional calculation burdens such a rate poses.

Bimetallism tends, however, to give play to Gresham's Law whenever the exchange rate implicit in the mint (coining) rates for the two metals differs from the metals' market rate of exchange. It has for this reason generally been condemned by monetary economists, including advocates of 100 percent money. Murray Rothbard observes, for example (1962, pp. 783–84), that “No country . . . can maintain a bimetallic system in practice, since one money will always [*sic*] be undervalued in terms of the other. The overvalued always displaces the other from circulation.” In a gold-silver bimetallic system, if silver is undervalued, no one will bring silver bullion to the mint to be coined, while outstanding coins made from it will be melted or shortened,<sup>7</sup> making unimpaired small change scarce.

Gresham's Law can be avoided, despite having full bodied coins of multiple metals, by allowing each metal to define a distinct monetary unit, so that instead of having one *de facto* monetary standard the economy has two or more “parallel” standards. With parallel standards coins of different metals trade at freely-fluctuating market exchange rates, so there's no risk that those of either metal will be worth less if employed as money than if melted into bullion. Although he condemns bimetallism Rothbard (1974, n. 9) sees nothing wrong with parallel standards, which he regards as being both workable and more consistent with a truly free market approach to money; and although he never says so explicitly, Rothbard may have regarded parallel standards as satisfactory means for addressing the small change problem.

But while a “parallel” small change system would indeed be immune to Gresham's Law, such a system would involve high costs of transacting, for change would have to be made using coins of a standard money different from that on which the economy's principle exchange media would be based. If one were to imagine that shopkeepers in the U.S. today were obliged to make change with euro coins, one would have some idea of the costs in question, and of the nuisance they would entail. Indeed, many nations, the U.S. among them, have at some point in their histories had to rely on various foreign coins for some or all of their payments, and it was problems posed by the ensuing, non-par exchanges that supplied the greatest impetus for efforts to establish complete and uniform domestic coinage systems. The American colonists, for example, were forced to rely on Spanish silver coins for routine payments, while keeping accounts in English monetary units; and a

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<sup>7</sup>That is, reduced in weight through shaving, clipping, or chemical abrasion.

desire to escape the inconveniences of this state of affairs was among the chief motivations behind the post-revolutionary drive to establish a national coinage (cf. Carothers 1930, pp. 33–34).

The third and final way of supplying small change, using token coins, is the one employed by all modern economies. It also has its difficulties. Because token coins cost much less to produce than their face values, they can prove tempting targets for counterfeiters—though generally less tempting ones than banknotes, which bear still higher ratios of nominal value to material production cost. Also, to prevent them from falling to a discount relative to their face values, issuers of token coins must take steps to assure that the supply of such coins does not exceed the demand for them as small change. In practice this can be done either through deliberate regulation or by making the coins freely convertible into standard money. Of the two approaches the last, though less common, is preferable because it provides for the automatic return of excess or worn coins. Finally, care must be taken to assure that the metal from which token coins are struck does not rise in value to a point at which the coins lose their token status, becoming instead worth more as scrap than as money. Here also free convertibility is advantageous, as it allows for ongoing renewal of the stock of token coinage, with associated opportunities for adjusting their metallic composition.

Although it took centuries for governments to tackle the difficulties involved in establishing relatively successful token coinage systems, and although many modern token coinage systems are to some degree—if not seriously—flawed, the token coin solution has proven far more practical than small-change systems based on full-bodied coins. Indeed, governments resorted to it in most instances only after having tried without success to rely exclusively on full-bodied money. “[T]oken coinage,” Mises observes (1980, p. 70),

is always the result of attempts to remedy deficiencies in the existing monetary system. It is those technical difficulties, that hinder the subdivision of the monetary unit into small coins, that have led, after all sorts of unsuccessful attempts, to the solution of the problem that we adopt nowadays.

Token coinage, finally, has always been the preferred *private-market* solution to the small change problem: in the past, when governments have failed to supply their citizens with adequate small change, private entrepreneurs have often stepped in to fill the breach, and have done so in every known instance by issuing some sort of token money. The British case explored in my book is exceptional only because the shortage of official coin was so severe, because private coinage was allowed to go on to the point of eclipsing official coinage, and because the resulting private

coinage regime was so strikingly superior to previous small-change systems.

### THE HEAVY BURDEN OF A 100 PERCENT RESERVE TOKEN COINAGE

That the token coinage alternative works best presents a challenge to proponents of 100 percent money. The challenge arises because in practice private token coins must also be *fiduciary* coins. That is, they must be issued on a fractional-reserve basis in order to be economically viable. A strict 100 percent rule would add substantially to the cost of issuing of token coins, limiting an economy subject to it to a substantially lowered volume of exchange activity.

The cost of producing a token coin, including that of its constituent metal, though it must always be less than the coin's face value if the tokens are to avoid the fate of being melted, often represents a substantial share of that face value. Indeed, governments frequently find it difficult to keep the production costs of their lowest value coins from exceeding those coins' face value. In the U.S. as this is being written (autumn 2008), for instance, nickels cost about 7.7 cents each to produce, whilst pennies cost 1.26 cents.<sup>8</sup>

Bearing this in mind, consider the hurdle faced by a retailer wishing to employ his own tokens as small change in an economy committed to 100 percent money. Suppose that the cost of one dollar's worth of custom-made token coins, including that of their constituent metal, is 50 cents.<sup>9</sup> Under the 100 percent rule, not only must the retailer bear this cost, but he (or his redemption agent) must keep on hand gold reserves equal to the full nominal value of any tokens placed into circulation. Finally, the retailer must pay any fees charged for keeping his gold under safe storage. Even if, following White (2003, p. 426) we suppose that the latter fees are as modest as that charged by modern gold storage services, that is, one percent per annum, it will cost our retailer \$1.51 to place just one-dollar's worth of tokens into circulation for one year.

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<sup>8</sup>Congress recently (May 2008) passed legislation (H.R. 5512) to authorize production of steel nickels and pennies, which would reduce their estimated cost of pennies to .7 cents.

<sup>9</sup>I base this figure on the British experience, in which a typical, private, copper halfpenny cost just under a farthing to produce, inclusive of the cost of the copper. The cost of private silver tokens was likewise close to half their face value. The relationship reflected the need to maintain token coins' cost of production at levels which, in conjunction with resort to anti-counterfeiting devices, would serve to deter would-be counterfeiters.



Suppose, for example, that the economy's smallest practical gold coin is worth \$5 and that the retailer's profit (net of interest) on a \$6 pint of brandy would be just 6 cents—a one percent margin—if he received exact change for the bottle.<sup>10</sup> If instead he is handed a \$10 gold coin, and elects to give four new one-dollar tokens for it, his immediate profit *net* of the full cost of the small change will be  $\$0.06 - \$2.00$  or *minus* \$1.94, *not* deducting the costs of gold storage.

To allow for the fact that the retailer's tokens may be returned for redemption, so that he can either reissue them or sell them as scrap, let us assume that they have a useful life of 5 years, after which they can be scrapped for one-half their initial cost, and that the average token is redeemed four times a year.<sup>11</sup> In that case, the tokens will suffice to allow the retailer to make change enough to sell four pints of brandy in a year, and his annual profit from the sales net of his small change cost will, using straight line depreciation, be  $\$0.24 - \$0.24 = \$0$  (four cents being the annual cost of gold storage in this case). Evidently the retailer will be tempted in this and like cases to let customers bear the burden of coming up with exact change, or will resist doing business with them at all. Retail trade will consequently suffer, if it isn't altogether stifled, by the high cost and resulting scarcity of small change.

Now assume instead that our retailer backs his tokens with fractional reserves of gold only, and that he is therefore able to realize a 4 percent return on any gold he obtains in exchange for them, instead of having to pay a storage fee for that gold. In that case, his profit will be  $\$0.24 - \$0.20 + \$0.16 = \$0.20$ , which, though still less than he would make were he not called upon to pay for his own change, is still positive. The lower opportunity cost of providing small change translates into a correspondingly higher level of exchange activity.

Of course, if the cost of token coins, instead of being borne entirely by the coins' issuers, could be spread among all the coins' users according to the length of time coins stayed among their holdings, private issuance of 100 percent reserve token coins would not be so unprofitable, although it would still be costly compared to a fiduciary coinage alternative. But the tracking and billing of token coin holders presents a challenge far more daunting even than that, considered by White, of tracking and billing holders of money certificates. Furthermore, because

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<sup>10</sup>In the U.S. today, large retail firms often operate on profit margins of close to 1 percent. Margins for smaller retailers tend to be somewhat higher.

<sup>11</sup>Because tokens can only be redeemed in minimal amounts equal to the smallest gold coin—in this example, \$5—their circulation periods tend to be longer than those of larger-value competitively-issued banknotes or money certificates.

the cost of producing tokens represents a far larger portion of their value than that of producing larger denomination certificates, it is far less likely that anyone will be willing to bear more than their proper share of that cost.

The arguments just considered help to account for the fact that actual token coins have *always* been fiduciary media, that is, media backed by fractional rather than 100 percent reserves of standard money.<sup>12</sup> It is for this reason that Mises—who, as we have seen, regarded token coinage as the only practical means for addressing the small change problem—also insists on classifying such coins as “credit instruments” (1980, p. 72 n).

### THE BRITISH EXPERIENCE

Great Britain’s experience demonstrates, furthermore, that fiduciary token coins, far from being a consequence of government interference with monetary freedom, were a natural outgrowth of such freedom.

In the first decades of the Industrial Revolution, Great Britain was confronted by a very serious small change shortage. The bimetallic legislation then in effect undervalued silver, so that few if any silver coins were minted, while those already in circulation tended either to be melted into bullion or to be very badly impaired. Although the Royal Mint also issued copper halfpennies and farthings that were, in effect (if not in law) mere tokens, the quality of those coins was such that they were aggressively counterfeited. Also, regal copper coins could be obtained only from the Mint itself, that is, at the Tower of London, where purchasers were asked to pay the coins’ full face value, no deduction being made for transport costs. Finally, copper coins weren’t redeemable, so persons holding excess quantities had no convenient way to unburden themselves of them. Together these arrangements had the effect of making copper coin scarce in country towns and manufacturing districts, where it was desperately needed for making change and paying wages, even when unwanted stocks of were accumulating in breweries and other wholesale businesses in London. Responding to complaints from such wholesalers as well as to the proliferation of lightweight counterfeit coppers (which were said to

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<sup>12</sup>The statement uses the term “fiduciary media” in the Austrian sense meaning media that are neither full-bodied coins nor IOUs fully backed by standard metal. Confusingly, some writers (e.g., Carothers 1930) use the term “fiduciary coinage” to refer to what I call “token coinage,” without reference to the nature of assets backing the coins in question. This practice no doubt reflects those writers’ (historically justified) assumption that tokens are never issued except on a fractional-reserve basis.

have been made by recycling full weight regal coins), the Royal Mint suspended copper coinage altogether for a generation beginning in 1775, leaving British factory owners and retailers more desperate than ever for small change.

It was owing to these circumstances, and to the British government's refusal to respond to their pleas for coinage reform, that British businessmen, starting in 1787 with Thomas Williams (who owned what was then the world's biggest copper mine, in Wales), took to minting and issuing their own token coins. Between 1787 and 1797, when the government finally attempted to reform its own token coinage, a score of private mints had supplied several hundred private coin issuers with some 600 tons of custom made copper pennies and halfpennies, which was more copper coin than the Royal Mint had issued over the course of the previous half century. By 1811 change was again in very short supply, the government's reform efforts having proven inadequate. Consequently, another round of private coinage took place, this time involving silver as well as copper tokens. That round ended several years later, when the government decided to outlaw private coins. My book documents at length both the crucial role private tokens played in allowing normal business transactions to proceed and the hardship caused by the decision to suppress them.

The facts of this episode germane to the particular issue at hand are, first, that Great Britain's private tokens were, like official ones then and since, fiduciary media. Their many suppliers simply could not have afforded to purchase and issue them otherwise. Indeed, most private token issuers profited very little, if at all, from their involvement in token coinage despite not having kept to 100 percent reserves. For example, when private silver tokens were outlawed, one of the larger issuers of 19th-century silver tokens, the bankers Garratt & Co., of Bristol, took a reckoning by which the firm concluded that it had lost £5,588 on 640,000 (or £32,000 worth of) shilling tokens it had issued. The losses were, to be sure, aggravated by the firm's having been compelled to redeem many of its tokens prematurely. But the point is that its "float" earnings up to the point when tokens were outlawed were far from substantial, falling well-short of its costs of acquiring and administering its token issues.

Second, the fiduciary status of Great Britain's private tokens was not enforced or encouraged by any legislation. On the contrary, private tokens, far from having had any legal standing, were technically illegal, having been banned by a still-extant royal proclamation of 1672. Consequently, the manner in which tokens were issued, redeemed, and backed was left entirely in the hands of private market participants. The acceptance of

private tokens was likewise entirely voluntary. Unlike official coins, they were not legal tender even for the smallest payments, so that people were free to refuse them, whereas they could not legally refuse official or “regal” halfpennies in transactions of six pence or less. Yet private tokens were so generally preferred to regal copper coins that, despite the latter coins’ limited legal tender status, they were frequently refused altogether, or were accepted only at rates roughly corresponding to their metallic worth.

Did the seemingly voluntary nature of private token transactions mask some underlying fraud perpetuated against the persons to whom they were issued? Although I don’t intend here to re-join the general debate concerning whether fiduciary media are inherently fraudulent, the manner in which most private tokens were placed into circulation makes at least one of the “fraud” arguments put forward by opponents of fiduciary media quite inapplicable to them. Tokens were typically issued by factory owners and retailers, not in exchange for “deposits” of standard money, but to workers as part of their wages or to shoppers as change. In all such instances the matter of the supposedly misleading use of the term “deposits” to stand, not for an actual bailment of gold, but for a debt incurred, did not arise. A retail customer proffering a \$10 gold coin in payment and receiving \$4 in token coins as change, or a worker offered similar tokens as part of his wages, was not making a “deposit” of gold in any sense of the term, and was not given any reason for supposing that \$4 in gold would be put into safe storage on his behalf. Token issuers merely pledged to redeem their tokens on demand for their face value in standard money. Typically, this pledge was indicated on the tokens themselves. For example, the reverses of the first British private tokens, the “Druid” pennies of the Parys Mine Company in Anglesea, Wales, bore a legend declaring “We Promise to Pay the Bearer One Penny.” The legend was continued on the coins’ edges: “On Demand, in London, Liverpool, or Anglesea.” Only a very obtuse shopper or worker, or one prone to great flights of fancy, could, upon being offered such tokens as change or in payment of wages, have construed the pledges they bore as indicating any sort of bailment.

#### CONCLUSION

The small-change challenge to 100 percent money is, of course, only a challenge insofar as coins of some sort are needed to effect small payments. Point-of-sale electronic transfer opportunities have already considerably reduced this need compared to just a few decades ago, and may one day dispense with it entirely.

The brunt of my “challenge” to proponents of 100 percent money concerns what strict adherence to their preferred regime would have meant in the past. I have tried to show that it would have had the effect of severely discouraging, and perhaps preventing altogether, the private issuance of token coins, and so would have ruled-out any free-market solution to the short-change shortages that plagued Great Britain and other nations throughout past centuries. The change shortages Great Britain experienced during the early years of its Industrial Revolution posed such a serious burden to factory owners and retailers that they threatened to bring that Revolution to a premature end. The modern market economy as we understand it was able to emerge when it did only because British factory owners and retailers took the initiative of making and issuing their own fiduciary token coins.

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