Penny wise

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Thomas J. Sargent and François R. Velde
THE BIG PROBLEM OF SMALL CHANGE
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This might have been a good year for looking at monetary problems. At the beginning of 2002, Europeans had to adapt to a new and unfamiliar coinage and bank notes, in strange shapes and colours. To the surprise of sceptics, the massive exercise of the physical introduction of the euro was strangely uneventful, and many people seem to have found the challenge of the new coins quite enjoyable. Retrospectively, it is easy to imagine conditions in which the introduction of the euro might have produced chaos. If there had been a shortage of the tight denominations of coins or notes, ordinary payments would have snarled up. In Italy, motorists actually found it impossible to pay motorway tolls because they had only high value notes rather than the right small change. What if Italian circumstances had been general'? Faced with enormous lines at ticket machines and booths, Europeans could have simply refused to buy tickets for public transport. In the supermarkets, they might have responded to impossible delays by simply walking out with the goods. The basic conventions that make modem society orderly (which include an agreement about the use of money) might easily have broken down.

The most fundamental modern convention about money is that it is simply a medium of exchange, no more and no less, and that it has no intrinsic value. But this is very different to the tradition -thousands of years old - in which money had its own value (because it was made from precious metals). The old system generated large problems. Coins could be of different size and still be called the same name - for a long time, simply "penny" or "denarius". When more complex systems of coins developed, their precious metal content changed. The relative price of gold and silver fluctuated. Small coins periodically and suddenly became scarce, making ordinary transactions difficult or impossible. The "big problem" of Thomas J. Sargent and François R. Velde's study, *The Big Problem of Small Change*, is that, in a coinage based on precious metals that could he smelted down and exported, the shortage of coinage indeed paralysed transactions.

Employing an impressive array of instruments from monetary theory, economic and monetary history, as well as from legal and intellectual history, the authors show how writers on economic affairs identified this problem, struggled with it, and provided a solution, which they termed the "standard formula". Sargent and Velde begin with a sophisticated modem analytical depiction of the issue, which relies on multiple coins with fluctuating values relative to each other, and in terms of the precious metal content. In this way they show in what circumstances small coinage could become scarce. The familiar maxim "Look after the pennies and the pounds will look after themselves" was, in consequence, not simply an appeal for thrift, but rather a demand on governments to do some thing about the small change issue.

This is an important and wide-ranging book, which will reshape the way in which we think of the origins of modern money and modern monetary theory. It is technically demanding it parts, but so well organized that the lay reader can get the message simply by reading the fascinating narrative and taking for granted the mathematical account of the standard formula presented in two chapters at the conclusion. It is also splendidly illustrated and beautifully produced.

Sargent and Velde show that the problem was both a technical one and an intellectual one, involving the understanding of what money meant. Canon law traditions explained that debts could only be repaid in the same coin. But as long as money was understood as simply a commodity, a specific amount of gold or silver, the problem would continue to disturb economic life. 1t could only be solved by the adoption of a token or subsidiary coinage that was convertible into something else (precious metals) and that was secure against reproduction or forgery. In understanding coins in that way, modern monetary theory developed: the "big problem" thus created a big theoretical response.

An English writer, Sir Henry Slingsby, in 1661 produced a version of this "standard formula". It was not at first widely accepted: there was, in particular, a big setback in Britain in the 1690s when the Secretary of the Treasury, Thomas Lowndes, produced a recommendation for the debasement of the coinage by 20 per cent as a way of dealing with the coin shortage. Behind the debasement proposal lay a nominal theory of money, in which money was simply assigned value. Lowndes was opposed by John Locke, who made a fundamentally political argument, that authority depended on the sanctity of contracts, and this would be violated by a debasement. "Men in their bargains contract not for denominations or sounds but for intrinsick value: which is the quantity of Silver by publick Authority warranted to be in pieces of such denominations." Such Lockean arguments continued to maintain their appeal even in the twentieth century: perhaps *especially* in the twentieth century, when governments abused their monetary authority. In the 1970s and 80s, nostalgic commentators still liked to explain why the Gold Standard was the only legitimate monetary authority that was safe from government arbitrariness.

In the course of their long examination of episodes in the history of monetary scarcity, the authors come to reinterpret completely (and. to my mind. quite convincingly) some of the most commonly received historical interpretations, especially in regard to the great turmoils of the sixteenth century. The widespread coinage debasements were a response to coinage shortage much more than they were attempts by the greedy new monarchs of a supposedly "new" early modem state to seize additional revenue through *seigneurage*. The Spanish attempt to issue large quantities of base metal alloy coins (billón) was a legitimate response to the problem, but it was marred by the failure to understand the convertibility requirement (which resulted eventually in over-issue and inflation). More surprisingly, perhaps, the authors conclude that the great price inflation of the sixteenth century was only in a minor part due to the inflow of new bullion from the Americas: was, more importantly, due to the effects of repeated coin shortages.

It was only with James Watt's steam engine and Matthew Boulton's steam press that mints had the technical capacity to turn out large quantities of high quality token coins that were difficult to forge. Then the standard formula could be applied in the British Coinage Act (or Lord Liverpool's Act) of 1816, which made private coinage illegal, gold the sole standard of value and made silver coins representative rather that based on their intrinsic monetary value. Other countries (the United States and France) used important elements of the standard forma while keeping a bimetallic (gold and silver) standard, whereas Germany had a silver standard and the "standard formula" after the Dresden coinage treaty of 1838. In a rather odd formulation, Sargent and veldt state: "Given the ambiguity that long surrounded aspects of Britain's implementation of the standard formula Germany should be considered the first count to implement it thoroughly." But actually Germany at this time was politically quite chaotic and a large variety of coins, of very different units, and some of foreign origin, circulated until the political (and subsequent monetary unification of the 1870s. Until national unification, German states actually looked very like Sargent and Velde's depiction of the chaotic coinage of Renaissance Italy, with complex and multi-value coins making ordinary commerce quite hard. In the end, it required a single political authority to impose the new approach to money. Technically the modem state offered a good answer to the problem: but politically, the new theories might be - and in the twentieth century, were - subject to massive abuse and mismanagement.