

The State, the Market and the Euro

Chartalism versus Metallism in the Theory of Money

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and the elites also draw out the implications of history and institutions for theory, and Guttman spends the first two thirds of his chapter on the same subjects. Nell contrasts the way institutions worked in different historical periods, and argues that theory must reflect such differences in practice. Why likewise surveys historical practices, while Bell develops theory. Each of the chapters, in fact, covers most of the issues raised by Goodhart. We chose an order of presentation that seemed to allow the discussion to develop. The book ends with Goodhart's commentary and reply.

Edward J. Nell and Stephanie A. Bell

1. The two concepts of money: Implications for the analysis of optimal currency areas

Charles A.E. Goodhart

1. INTRODUCTION

Much of the economic analysis and assessment of the comparative advantages and disadvantages of moving to a single currency, euro, area in Europe has been undertaken within the context of the Optimal Currency Area paradigm. This, in its turn, is the spatial/geographic facet of the currently dominating model of the nature and evolution of money. This latter views money as having developed by a process whereby the private sector has sought to minimize the costs of making exchanges in the process of trading. In this chapter I shall argue, first, that there is a second, alternative approach to the story of the evolution and nature of money, which is historically and empirically more compelling. Next, I shall claim that this second approach is far better able to predict and explain the observed relationship between sovereign countries and their associated currencies than is the OCA model.

There has, in fact, been a continuing debate between those who argue that the use of currency was based essentially on the power of the issuing authority (Cartalists) – that is, that currency becomes money primarily because the coins (or monetary instruments more widely) are struck with the insignia of sovereignty, and not so much because they happen to be made of gold, silver and copper (or later of paper) – and those who argue that the value of currency depends primarily, or solely, on the intrinsic value of the backing of that currency (Metallists).¹ A conjoint debate exists between those who have argued that money evolved as a private-sector, market-oriented, response to overcome the transactions costs inherent in barter (let us call them Mengerians),² and those who again argue that the state³ has generally played a central role in the evolution and use of money (Cartalists).

There is little doubt that the M team has assembled the more illustrious collection of economists (plus the endorsement of Aristotle⁴ and Locke⁵), and has expressed its analysis in more formal and elegant terms, from the earlier economists such as Jevons (1875), and Menger,⁶ via Mises (1912/34), Brunner

The key relationship in the C team model is the centrality of the link between political sovereignty and fiscal authority on the one hand and money creation, the mint and the central bank, on the other. A key fact in the proposed euro system is that that link is to be weakened to a degree rarely, if ever, known before. A primary constitutional feature of the European Central Bank (ECB) is to be its absolute independence from government (at any level). Meanwhile, the political and fiscal powers of the various European institutions (Parliament, Commission, and so on) at the matching federal level are far weaker (than has been the case in other previous federal states). That, in itself, raises constitutional and political issues, such as what would happen if the wishes of the community, expressed (through its various (democratic) institutions), did not coincide with either the objectives or the operations of the European System of Central Banks (ESCB)?

Within the euro area, the main political and fiscal powers are, instead, to remain at the level of the nation state. Historically the nation states have been able, in *extremis* (whether in the course of war or other – often self-induced – crisis), to call upon the assistance of the money-creating institutions, whether the mint via the debasement of the currency, a Treasury printing press, or the Central Bank. Whenever states (as in the USA or Australia), provinces (as in Canada), cantons, *länder*, and so on, have joined together in a larger federal unity, both the main political, the main fiscal and the monetary powers and competences have similarly emigrated to the federal level. The euro area will not be like that.

In particular the participating nation states will continue to have the main fiscal responsibilities; but in the monetary field their status will have changed to a *subsidiary* level, in the sense that they can no longer, at a pinch, call upon the monetary authority to create money to finance their domestic national debt. There is to be an unprecedented divorce between the main monetary and fiscal authorities.

The thrust of the M team's theoretical analysis is that this divorce is all to the good; indeed it is largely the purpose of the exercise. The blame for recent inflation has been placed on political myopia, via the time inconsistency analysis, and the ability of the political (fiscal) authorities to bend and misuse monetary powers for their own short-term objectives. While there is much truth and realism in this analysis, the C team analysts worry whether the divorce may not have some unforeseen side-effects.

2. ON THE NATURE AND ORIGINS OF MONEY

Many economists and historians have noted the severe transactions costs involved in barter, and also the advantageous characteristics of precious metals

(1971) and Alchian (1977b), on more recently to Kiyotaki and Wright (1989) and (1993), plus a host of other eminent economists.

Against them the C team has arrayed a more motley, fringe group of economists, such as Knapp in Germany (1905), Mireaux in France (1930),⁷ and (most of) the post-Keynesians in the UK and USA.⁸ Nevertheless as Méliéz (1974) and Redish (1992) have noted, the C team approach has also received the support of a large number, probably a sizeable majority, of those in other disciplines, for example anthropologists, numismatists and historians concerned with the origin of money.⁹ Whereas the M group has been strong on formal theory, it has been constitutionally weak on institutional detail and historical empiricism. Méliéz is the only current economist, known to me, from the M team who tries to address the anthropological and historical issues presented by the C team.

I shall expand on this discussion in Section 2, and attempt to demonstrate where the M team's model has its main weaknesses, and to provide further evidence, historical and analytical, in support of the C team approach.

The Optimal Currency Area theory (OCA) connected with the names of Mundell, McKinnan and Kenen is a natural extension of M team theory into the spatial, geographic, domain. If the origin of money is to be seen in terms of private sector market evolution, whose function is to minimize transactions costs, then the evolution of a number of separate moneys in differing geographical areas should, analogously, be analysed in terms of private sector market evolution, whose function would have been to minimize some set of (micro-level) transaction and (macro-level) adjustment costs.

Against this, the C team analysts would claim that the spatial determination of separate currencies has almost nothing to do with such economic cost minimization and almost everything to do with considerations of political sovereignty. In Section 3, I shall argue that the C team hypothesis does far better in explaining and predicting historical reality than the M team (OCA) model. Indeed, the discrepancy is so marked, that the continued supremacy among economists of the M (OCA) model indicates how strong remains the attachment of economists to nicely constructed models, whatever the facts may be (the belief that Central Banks not only can, but also do, control the monetary base of their economy is another example of this genre). The comparative paradigmatic success of the M team (OCA) model may also reflect economists' normative preference for systems determined by private sector cost minimization rather than messier political factors.

Much of the discussion of the cost/benefit balance of, and the appropriate boundaries for, the single currency, euro, area within the European Union have been undertaken within the context of the M (OCA) model. If we should reject that model in favour of the C model, as is argued here, this would suggest a need for reconsideration of the issues that arise.

mint process whereby the identification costs could be drastically reduced by means of stamping a quality guarantee upon a coin (see Appendix B). Thus the argument is that a combination of the innate characteristics of the precious metals, plus the identification cost reduction allowed by minting, enabled the private sector to evolve towards a monetary system.

Again, however, that analysis is historically flawed. Although, once the idea and technical process is discovered, minting would seem to be as capable of being done within the private sector as any other metal-working process, in practice minting has, in the vast majority of cases, been a government, public sector operation.¹² Amongst the experts on the historical evolution of minting coins are MacDonald (1916), Grierson (1970/1977), (1979) and Craig (1953). These authorities, in turn, refer to hosts of other earlier writers. In those cases where the mint has been run by the private sector, the government has in most cases both set the standards of fineness and extracted a rent, or seigniorage tax, that collected most of the available profits. This concentration of minting under the government's aegis is not accidental. There are two associated reasons why this is so.

First, a mint requires an inventory of precious metals. It will, therefore, act as a magnet for opportunistic theft and violence. It will require protection, and the protector (who wields the force necessary to maintain law and order in the economic system) will therefore be able to extract most of the rent from the system.

Second, the costs of identifying the true value (quality) of the metals included in the minted coin lead to time inconsistency. The mint operator is bound to claim that that quality will be maintained forever, but in practice will always be tempted to debase the currency in pursuit of a quick and immediately larger return.¹³ Olson (1996) has described how the development of a secure, dynamic regime reduces time inconsistency in the ruler¹⁴ (see also McGuire and Olson, 1996).

Few inventions are made by government bodies (except perhaps within the military field, for example the Manhattan project). This has also been so in the monetary field. The metallurgical developments and the invention of banknotes in China and the West, came initially from the private sector. But money's initial role as a means of payment, for wergeld, bride price, religious occasions and so on (which probably predated money's role as a medium of exchange), and its role in facilitating the fiscal basis of government (discussed further later) meant that government made the monetary process, for example the guarantee through minting of the fineness and at the outset of the weight of the coins, into a pillar of the sovereign state.¹⁵

There is, as set out by Grierson, a further argument leading to the same conclusion. Society cannot work if violent behaviour is too prevalent. Some people will always be violent. An initial act of violence provokes revenge and a possibly endless feud. Feuds destroy society. One early crucial function of

as a medium of exchange (for example durability, divisibility, portability). Clower (1969) is a good example. This conjunction has led numerous economists to construct models showing how the private sector could evolve towards a monetary economy as a function of a search for cost minimization procedures within a private sector system, within which government does not necessarily enter at all. Kiyotaki and Wright (1989 and 1993) provide the current state-of-the-art examples of such models. Menger's work from the *Economic Journal*, 1892, is, perhaps, the most quoted early example.

Apart from their lack of historical support (not that any such has usually been considered to be necessary), the main drawback of such models is that they fail to recognize the informational difficulties of using precious metals as money. As I have previously noted (1989, 34),

Precious metals in an unworked state have been used as a means of payment in exchanges only under very special circumstances – e.g., in the various gold rushes in California and Klondike – and even then the picture, immortalised, for example, in a film by Charlie Chaplin, of merchants and bar tenders weighing and checking the gold dust before accepting it in payment, suggests that payment in unworked precious metals has more in common with barter than with a monetary payment.

When the ordinary person goes into a jeweller's shop, he (or she) has very little capacity to judge the fineness, or weight, of a gold or silver object put before him. We usually take on trust the jeweller's claim about the carats involved, supported by the fact that the claim is potentially objectively and independently verifiable, and that the jeweller's reputation depends on such verifiable claims being upheld.

Nevertheless the cost, and time involved, in such verification is not small. The whole thrust of Alchian's paper (1977b) is that money arises as a result of the existence of a good whose identification costs are low.¹⁶

But the costs of identifying the quality of either unworked or fabricated precious metal for the ordinary person are high. An individual could, of course, go to a money-changer for expert advice, but that would also involve costs. So such costs were probably higher, for example, than the cost of identifying the value of items in common every-day use, for example salt, corn, nails or even perhaps cattle (most people in a rural agricultural community would reckon to be able to assess the value of a cow).¹⁷ Likewise such costs are again greater than the cost of assessing the value of an item which is acceptable by being part of a set of items needed for some intra-societal functions (for example religious or wergeld). Grierson (1970/1977) is a leading advocate of this latter view (see Appendix A); also see Einzig (1949/1966).

The above argument may appear to be a straw-man; few people argued that precious metals would be used as a medium-of-exchange currency until the identification problem was largely resolved by the technical innovation of a

bullion it might be coined even in the absence of fiscal need. On the other hand, expenditures could be met by other issues, for example, coins received in taxes.

In any case, when the barbarians submerged Rome, strong government disintegrated. Both governments and mints fragmented into weaker smaller units. MacDonald (1916) describes the process (see Appendix C) as does Craig (1953), who also notes that amongst the ruling bodies operating mints at this time were Lords Spiritual, as well as Temporal.¹⁸ With governments being weaker and less secure, their currencies became of lower quality, more likely to be debased, and less acceptable in commerce (much of the minting that occurred was not to finance trade, but for Dageget and other facets of (military) relationships between power centres). Meanwhile most, but not all, commercial relationships reverted to barter. This decline was halted by Charlemagne and his successor, Louis the Pious.

It is only when a settled and strong government has been established that the authorities can offer both a sufficiently long time horizon and the necessary control to establish a high quality mint. At the same time the creation of money greatly eased and benefited the authorities' fiscal position, as well as much reducing transactions costs for the general public. This may have been so even at the very outset of coinage: as Redish (1992) notes (also see Grierson, 1970/1977).

Namismatis believe that the earliest coins were produced at Lydia (now Western Turkey) in the mid-seventh century ac. The coins were made of electrum, a naturally occurring alloy of gold and silver. They had a design on one side and were of uniform weight but had a highly variable proportion of gold. In an influential article Cook (1958) argued that these coins were introduced to pay mercenaries, a thesis modified by Kraay (1964) who suggested that governments minted coins to pay mercenaries only in order to create a medium for the payment of taxes. Both interpretations stress the role of the government in the introduction of coinage.¹⁹

The linkages between the creation of currency and taxation are multifaceted,²⁰ and the subject deserves a major study in its own right (it is largely because of the domination of the M theory's denial of the importance and necessity of such links for the creation of money, that this has not been forthcoming). First, without money, it would be hard to place taxes on anything other than the production, transport and trade of goods, since only goods (or labour time) could be delivered. Once money exists, poll, income and expenditure taxes, as well as taxes on the production of services become easier to levy. When taxes are received in goods or labour, the balance of goods (and labour) obtained will not be that required for public sector expenditures, so money reduces the transactions costs of governments, *pari passu* with that of the private sector.

money, would, was to set a tariff whereby (the relatives of) the initial offender could recompense the damaged party. This practice spread to other interpersonal relationships (bride-price, slaves), in some cases before formal markets and the use of money in trade arose.¹⁶ See also Exodus 21: 32 and 35 and Deuteronomy 22: 13-19; 28-29. Kleinman (1987b, 261-87) describes such compensations.

I take it as a maintained assumption that the establishment of law and order involves and requires a governance structure. Others, for example Benson (1990), do not accept that; it is, indeed, a major underlying issue. If law and order, the enforcement of contracts, and the whole infrastructure of settled behaviour that makes markets (and money) work is really independent of the governance structure of our societies, then the M team approach becomes much sounder - the more so, if governments are actually inimical to such necessary infrastructure. But to me, the concept that the existence of law and order is independent of government seems pure (anarchist) wish-fulfillment.

What is remarkable when reading the various histories of minting and currency is the correlation between strong kings (for example Charlemagne and Edward I) and successful currency reforms. Naturally, however, the temptation to debase the currency increases when (external) pressures threaten the continuing life of a government. Thus Henry VIII's debasement was related to war with France and Scotland at a time when 'The Exchange's poverty was extreme...' (Craig, 1953, p. 108). For a splendid account of how that process (currency debasement) worked in practice, see Sargent and Smith (1995). Glasner (1989 and forthcoming), emphasizes the value to governments facing (military) crises of having control over money creation.

Under the C view of money creation, the collapse of strong government would lead to the cessation, or downgrading of the quality, of minting and a reversion towards barter.¹⁷ Under the M view, once the private sector has established a monetary equilibrium, thereby much reducing transactions costs, there is no conceivable mechanism within the model which would lead back to barter. Let us look at history. In Japan, for example, 'Rice and fabrics had been commonly used as a medium of exchange after the government ceased the mintage of coins in 958 AD....' (Seno'o, 1996). Also, 'by the end of the tenth century, money circulation ceased and the economy regressed back to a barter economy' (Cargill *et al.*, 1997).

In Europe, during Roman times, all coins were minted on the state's account; according to Crawford (1970), the fiscal needs of the state determined the quantity of mint output and coin in circulation. As Redish (1992) notes,

Howe (1990) has recently amplified this view suggesting that there was no one-to-one correlation between state expenditures and new coinage. If the state acquired

was equally natural. The interesting questions relate, instead, to the factors determining the historical timing of the switch. The growing power of the nation state and the extra seignorage that could be obtained (particularly the need for such in wartime) pushed for an earlier adoption of fiat currency. Historical inertia, credibility effects (time inconsistency problems were always foreseen and legal tender fiat currency invariably had a bad reputation as potentially low quality money), and perhaps at times concerns about counterfeiting, tended to delay the switch.

Let me conclude this section by pointing out that M-form theory finds it difficult to account for the role, or existence, of money within a general equilibrium model. Money in the utility function, or cash-in-advance models, are proposed, without much conviction. This difficulty is not surprising given that such models also abstract from the existence and role of government. While it is, of course, the relationship between taxation and the demand for money that the C-form theory emphasizes, it should also be remembered that it is the maintenance of law and order, the form and enforcement of contracts, and the whole infrastructure of regulation within society, that allow the epiphenomena of (organized) (private sector) markets to occur at all.

A disclaimer may, however, also be needed. The purpose of this section was to argue, first, that money frequently played an initial means-of-payment role in inter-personal social and governmental roles *before* it played a major role as a medium-of-exchange in market transactions, and second that the relationship of the State, the governing body, to currency in all its roles has almost always been close and direct. But I do *not* claim that the private sector cannot, and has not, ever been able to develop monetary systems without the involvement of state authorities. Perhaps the most likely early historical example of purely private sector monetary systems is the Aztec cocoa bean money (Mélitz, 1974, 129-30), but more recent examples include the cigarette money of POW camps, Radford (1945, 189-201), and the use of vehicle currencies in foreign exchange trading (Swoboda, 1969, and Hartmann, 1994). Several national currencies have in the course of history become widely accepted internationally, for example the Byzantine Hyperpyron or 'Bezant', the Florentine Guilder, the Venetian Ducat, and more recently the pound sterling, US dollar and in some countries the Deutschemark, in some cases against the wishes, and without any involvement, of the issuing government. Indeed many economic agents voluntarily hold money issued by a state other than their own, for example US dollars almost everywhere. Deutschemarks in East Europe (see Cohen, 1996). Other examples can be added. Moreover, were the state authorities now consciously to choose to abdicate their monetary role, the void would surely be taken up by commercial institutions.

By the same token taxes payable in monetary form raise the demand for base money. Since a government obtains seignorage from money creation, this benefits the fiscal position twice over, not only from the taxes levied but also from the seignorage resulting from the induced monetary demand. This was, as Leater (1951) notes, one of the major reasons for the introduction of Confederate currency by the South in the US Civil War.

Secretary Menninger saw two immediate and indispensable benefits from levying taxes payable in government notes. First, taxes created a demand for the paper issued by the government and gave it value. Since all taxpayers needed the paper, they were willing to exchange goods for it, and the notes circulated as money. Second, to the extent that taxation raises revenue, it reduced the number of new notes that had to be issued. Menninger's numerous public statements during the war show that he clearly realized that increasing a country's stock of money much faster than its real income leads to runaway prices. They also show that he believed that a strong tax program lessens the possibility of inflation.²¹ (p. 508)

Indeed the imposition of taxes, payable only in money (and not in goods or in kind), has been used on numerous occasions in colonial history for the primary purpose of forcing taxpayers out of a (non-monetary) subsistence economy and into a cash economy producing goods for sale in the world economy; the receipt of extra fiscal revenues was in some cases just a subsidiary motive, as recorded by writers such as Ake (1981), Rodney (1981), and Amin and Pearce (1976).

There is, indeed, a large literature on the use of taxes, payable in monetary form, as a means of driving peasants into a monetary relationship with a capitalist economy. This is not only to be found in the literature on colonial development, but also in the earlier development of capitalism in Europe, for example Hoppe and Langton (1994).

Once the close link between money creation and taxation (and of both to the underlying structure and stability of government) is understood, the move from metallic currency to a fiat, paper, currency becomes much more straightforward to understand. Even if one should accept the M theory of the evolution of metallic coins as money, it is problematic to use that same theory in its pure form to explain why agents should suddenly *not* be willing to jump from using paper notes which were ultimately claims on precious metals (that is private or public sector banknotes convertible into such precious metals) to paper notes which were backed by no specific assets.²² Instead those notes were, and are, backed by the power of government (for example legal tender laws) and its ability to impose taxes payable (and often only payable) in that fiat currency (as well as legal tender for the discharge of all other payments within the country).

Thus the M-form theory has difficulties with explaining the introduction and use of fiat currency. The C-form theory has no such difficulties.²³ The transition

recovers one of the most robust regularities of monetary economics: the one-to-one correspondence between countries and currencies, if monetary unification precedes political unification in Europe, it will be an unprecedented event. (p. 12)

Yet the economics profession has taken little notice of this 'robust regularity' in its assessment of monetary theory (national or international), and in its adherence to the M-form theory of private sector evolution. Moreover, it is difficult to see how several large countries, encompassing regions geographically separate, sometimes at very different stages of development, often with regionally concentrated production, could possibly meet the criteria for OCAs, for example USSR before its collapse, Brazil, Australia, Canada, and even USA.

In how many countries do we find multiple currencies? Prospectively there will be, after 1997, one such country, China, where the Special Autonomous Region of Hong Kong will keep its separate currency (for 50 years). Given the political circumstances of the planned arrangements, this could be described as an exception that proves the rule.²⁵ In some countries which have suffered hyperinflation, 'dollarization' has occurred, as in Argentina, Peru and – to some extent – Russia, and similarly with respect to the Deutschemark in Yugoslavia (see Petrovic and Vujosevic, 1996, on the Yugoslav hyperinflation of the 1990s). What is remarkable in these cases is how high the inflation tax rate on domestic currencies has to climb before the public switches to an alternative foreign currency – although once such a switch has occurred it does not reverse easily or quickly. And when the public does decide to abandon the inflating domestic paper currency, the alternative, privately chosen, good money can virtually drive out the 'bad' official money (Bernholz, 1989).

There have, however, been a few historical examples where currencies from several states were treated as equally acceptable in all of them. These included the Latin Monetary Union (1865–1914)²⁶ and the Scandinavian Monetary Union (1873–1914).²⁷ 28 Cohen (1993) has studied the historical cases of such monetary union,²⁹ and concludes that the economic factors considered in standard OCA theory have little, or no, explanatory or predictive power to explain the varied history of the sustainability of such unions, and that political considerations are overriding.

Only in one single respect does the M-form, OCA theory have much statistically significant explanatory power, and that is that tiny states (principalities like Liechtenstein, San Marino, Monaco and Andorra), will generally not have their own currencies; and that there is some (statistical) tendency for larger states to adopt more flexible exchange rates and smaller states to have pegged exchange rates (see, for example, Al-Marhubi and Willett, 1996). But this is observationally equivalent, in some considerable extent, with the belief that the tiny principalities have very little sovereign power, and are in several cases effectively vassal subsidiaries of their larger neighbour. Consider, for example

3. THE M-FORM SPATIAL THEORY, OR OPTIMAL CURRENCY AREAS

If the use of money can evolve through a (search) process of cost-minimization, without any necessary intervention by a government, then by analogous reasoning the spatial domain for any one money²⁴ can also evolve from such a similar cost-minimization search process. The Optimal Currency Area analysis has, indeed, followed that approach. It has, broadly, compared the benefit, in terms of transaction cost minimization, of having a single currency over a wider area against the costs in terms of adjustment difficulties (Krugman, 1993). Those costs depend in part on market imperfections whereby there is imperfect flexibility (either spatial, that is, migration, or in (nominal) wages) in labour markets. The standard list of factors affecting OCAs then follows, such as production, labour market flexibility, concentration or diversity of size, openness, labour market flexibility, concentration or diversity of production, nature of and specificity of shocks (whether symmetric or asymmetric), and so on.

Note, however, that following M-form theory the functions and role of government do not necessarily, or even usually, enter this list. Under the (pure) OCA theory (Mundell, 1961) there is no reason why currency domains need to be co-incident and co-terminous with sovereign states. There is no reason why such a state should not have any number of currencies from zero to n , and an Optimal Currency Area, in turn, should be able, in theory, to incorporate (parts of) any number of separate countries from one to n . There should under the M-form OCA theory be a divorce between currency areas and the boundaries of sovereign states. Most subsequent OCA applied research has, however, simply taken for granted the initial starting concordance of sovereign governments and currencies, and then applied the standard tenets of OCA theory to the question of monetary union between such countries. But that ignores the 'political economy' factors that made currency areas coincident with countries in the first place, and hence is likely to overlook the crucial political economy factors that will determine the success, or failure, of such unions, including EMU.

Such lack of concern for political economy considerations is not the case with C-form theory. Since under this theory money is intimately bound up with the stable existence and fiscal functions of government in any area, the sovereign government of that area is predicted to maintain its single currency within the area's boundaries.

Which theory has the better predictive and explanatory power? *Si monumentum requiris, circumscribe!* In a recent paper, Eichengreen (1996), writes,

Michael Mussa is fond of describing how, each time he walks to the IMF cafeteria, he down the corridor where the currency notes of the member states are arrayed, he

to a unique extent. Money creation will be the responsibility of a federal body, the European System of Central Banks, intentionally made, by the Maastricht Treaty, entirely independent of government(s), whereas most other fiscal and other powers will remain in the hand of the participating nation states.

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ments have often used their money creation powers to support and benefit themselves (via debasement and the inflation tax), though usually when they are weak and/or threatened, especially by war. Clearly access to the inflation tax benefits such governments. Whether it has benefited, or harmed, the public depends on the circumstances, for example the relative value to them of maintaining their existing government. A properly organized system of privately determined money creation could, so it is argued, provide a monetary system with a superior quality. This is the approach taken by economists such as Hayek, many (but not all) monetarists and the Free Banking School. In the absence of any more radical moves in this direction, the separation of the powers of money creation in an independent Central Bank (which under the Maastricht Treaty is required not to take instructions from government(s)), is (usually) seen as, at least, a step in the right direction by M-form theorists.

More generally there has been an overlap between M-form theorists and those who believe that the intervention of government within the economy is excessive, unnecessary (in most cases) and should be reduced. There is, therefore, an (disguised, but not hidden) agenda of M-form theory in advocating a reduced role for the state in economic affairs. By contrast, C-form theorists tend to believe that government intervention is an inevitable concomitant of the operation and organization of our (political) system. And many worry whether the prospective European Central Bank (ECB) may not suffer from a 'democratic deficit'. But that is a larger issue which we shall not pursue further here.

4. CONCLUSION

OCA theory has little, or no, predictive or explanatory capacity. Unlike C-form theory it is unable to account for the close relationship between sovereignty and currency areas, a relationship that tenaciously persists through the course of the creation, and break-up, of federal states. The empirical weakness of OCA theory, the spatial facet of M-form theory, throws further doubts on the ability and value of the latter to explain the evolution and nature of money as well as C-form theory can. The main advantages of M-form theory appear to be technical, in that it lends itself better to mathematical formalization, and ideological, in that it is based on a process of private sector cost minimization, rather than a messier political economy process. It is, however, a pity to suspect that monetary economies may be driven more by technical and ideologically purity than by empirical and predictive capacity.

If, then, the key issue is the (political) relationship between control over money and sovereign power, we need to consider carefully what problems this may portend for the future euro single currency area. In the euro area the traditional historical links between money creation and sovereignty will be broken

Through most of the Middle Ages, many individual coins of the same issue differed substantially in weight and fineness. Indeed, prior to the 13th century, coinage methods hardly permitted less than a 5 to 10 percent variation in weight between individual coins struck from the same plate. Thus, accounting for differences in weight belonging to the same denomination and issue often varied. Differences in weight and fineness, along with a host of other factors, like varying admixtures, ordinary wear, clipping, and sweating, continued to produce differences in accounting prices of money units of the same denomination and issue all the way down to the 17th and 18th centuries.

With coins of varying weight, but of a known, given fineness, transactors would have to make a difficult choice between weighing coins, a time-consuming exercise (or of getting a specialist to assess them), or accepting them as equivalent, without weighing, for example by tale, which carried the risk that some (underweight) coins would not be subsequently acceptable. See, for example, Sargent and Smith (1995).

Kleinman (1987a) notes that a defrauded party, when overcharged, could revoke a deal within a certain time span.

Ascertaining the 'right' price of an article was thus supposed to be a matter of, at most, several hours. The only exception was defrauded coins, of which it was said: 'Until when is one permitted to revoke [the deal]? In cities, until one can show [the coin] to a moneychanger; and in villages — until [the following] Sabbath eve.'

To understand we have to remember that the coinage circulating in the Roman world of the first two centuries AD was most variegated.

Moreover, it was sometimes difficult to check whether the fineness of the coin was as stated, without complex, and destructive, metallurgical testing. During the Tokugawa Shogunate in Japan, not only was the fineness of the coins never published (see Ueda, Taguchi and Saito, 1996), but also,

In spite of enormous differences in the fineness of the Kobans created by a series of reignages, the color of the surface did not deteriorate much and the surface generally shined with a golden color. The Kobans of low fineness, namely the Genroku Koban and the Gembun Koban do look slightly inferior in the surface color to other types of Kobans, but other Kobans minted in and after the Bunsei era show just as beautiful a golden color as the high fineness Keicho and Kyoho Kobans even though their fineness is even more inferior.

This phenomenon is produced by the last process in the minting of the Koban called 'color dressing' (color improvement or coloring). This process dissipates the silver element on the surface of Koban by heating it after coating the surface with chemical substances. This process seems to be unique to Japan in the history of minting and we have not heard of any similar instances in other countries....

APPENDIX A. GRIERSON'S VIEWS ON THE SOCIETAL ORIGINS OF MONEY

In his pamphlet on 'The Origins of Money' (1977, 1978), Grierson writes (19-21):

In any case, the generalized application of monetary values in commodities could scarcely have come about before the appearance of market economies, and monetary valuations were already in existence in what Sir John Hicks has felicitously christened 'subsistence' and 'commodity' pre-market societies. *A History of economic thought*, (1969), pp. 2 ff. (Use of the market, 63-8 (origins of money). He has to some extent telescoped the invention of money and the invention of coinage, and in my view he exaggerates the 'store of value' element in early money. Nor, if my argument that money antedated the development of the market is correct, is it the case that the standard 'should be something that is regularly traded'. In such societies they provide a scale of evaluating personal injuries in the institution which the Anglo-Saxons termed the *wergeld*, and it is in this institution that the origin of money as a standard of value must, I believe, be sought.

The practice of *wergeld*, that of paying a compensation primarily for the killing of a man but the term by extension covering compensations for injuries to himself or his family and household, is most familiar to us in its Indo-European setting....

The general object of these laws was simple, that of the provision of a tariff of compensations which in any circumstances their compilers liked to envisage would prevent resort to the bloodfeud and all the inconvenient social consequences that might flow therefrom.... The object of the laws is that of preventing retaliation by resort to force, and the principle behind the assessments is less the physical loss or injury suffered, than the need to assuage the anger of the injured party and make good his loss in public reputation. It would cost one four times as much to deprive a Russian of his mustache or beard as to cut off one of his fingers... Karl Menger, in an impressive article on the origins of money published many years ago, argued ingeniously that one would expect monetary standards to be based on the commodities most commonly and easily exchanged in the market, since these would have the maximum saleability. The law codes suggest that while this may be true of money substitutes, it is not true, or at least is not necessarily true, of the commodities used as standards themselves. [NB for detailed references see the original.]

APPENDIX B. LIMITS TO THE ABILITY OF EARLY MINTS TO GUARANTEE THE QUALITY OF COINS

Although the development of mints provided a major advance in identifying and guaranteeing the quality and weight of coins, several problems however remained. Until a process was found to give coins milled edges, coins could be clipped, and thereby lose weight. Also, as Méliuz (1974, 71), notes,

APPENDIX C. MACDONALD'S DESCRIPTION OF THE MONETARY DISORDERS AFTER THE FALL OF ROME

In his book on *The Evolution of Coinage* (1916), MacDonald describes the monetary consequences of the collapse of the Roman Empire in the following terms (29-31):

When Rome fell, the triumphant invaders took over the institution of coinage from the rulers whose power they had destroyed. The earliest history of the new nations was chiefly composed of direct, and not always very skilful, imitations of the imperial currency. This was partly because the barbarian chiefs sometimes chose to maintain the fiction that they were merely the vassals of the Emperor of the East, partly because they were aware that their own issues were more likely to be readily accepted if they conformed in outward appearance to what the mass of the population had for generations been accustomed to use. Even after a certain amount of independence had been developed, the confusion that the Empire had bequeathed showed no sign of passing away. On the contrary, once the restraining hand of a centralized control had been removed, the evil tended to become more and more sharply accentuated. The number of persons in whose names coins were struck multiplied rapidly....

Delegation of authority was the pivot on which the whole of that system turned, and the multiplication of mints by which its development was attended did not, therefore, imply - in theory at least - any breach of the cardinal principle that the right of striking money was an attribute of the sovereign power. In point of fact, the penalties that visited on transgressors were more severe now than in any other period of the world's history....

A similar desire for self-assertion was unquestionably operative in the case of the feudal lords generally. But in the majority of instances there was a baser motive present too. The business of minting could be made personally profitable, if one chose to play fast and loose with the responsibility which the possession of the right implied. The usual practice was to call in the current issues from time to time, or to collect a supply of pieces struck by a neighbour, and adulterate the metal or reduce the weight, and then give out a larger number of coins than had been originally received, the nominal value of each being the same but the intrinsic worth considerably less. This money the people had perforce to use, except in so far as they were able to transact business, as they did to a certain extent, through exchanging actual commodities. The hardships they endured in consequence are testified to by many contemporary witnesses. And there were various aggravations. Minting authorities often made exorbitant charges under the guise of dues. Again, bad as the money was, worse was frequently imported from abroad. Lastly, there was 'clipping', a species of fraud which consists in putting the edges of coins in circulation, in order to accumulate silver.

NOTES

1. As noted in Crossland (1889), Chapter 2, 34. The problems which the switch to fiat money cause for M-form analysis are addressed later in Section 2.
2. After Karl Meninger, especially his 1892 paper.
3. The religious authorities also played a major role, see subsequent footnotes (13 and 18).

4. *Politics*, Vol. 1 (lines 340 BC), also see comments by Gerson (1970/77), 9, and Reinke II, 11.
5. *Two Treatises of Government*, Second Treatise, 318-20. Also, in the same vein, see S. Pufendorf (1744), Book V, Chapter 1.
6. In his *Economic Journal* paper of 1892, Meninger assembled virtually all the elements of the intuitive analysis that has remained at the heart of the M-form theory. Subsequent economists with similar views have developed more technically advanced and mathematically rigorous models of the same process without much change to its central message.
7. Also see Fontana (1996).
8. Keynes (1933, 3, 4), believed that fiat money had to be explained on a 'Catholic basis', but there is less evidence on this view of the earlier origins of money.
9. A leading contributor in this group is Critchton. His pamphlet on 'The Origins of Money' (1970/77) is particularly useful. Also see Kinzig (1989/1969) and Peckin (1957).
10. Now, if there is some good in which identification costs are both (a) low and (b) low for everyone, that will permit purchase of product identification information cheaply from the specialized intermediary expert. This costs of identifying that offered (noisy?) good are less than the reductions in costs by using the specialist for information about the basic goods, the total costs of identification can be reduced' (p. 147).
11. Costs of identifying qualities of a good are what counts. If costs for same good are low and generally low across members of society, the good will become a medium through which information costs can be reduced and exchange made more economical' (pp. 121-2). Page numbers are from the reprint in *Economic Forces of World* (1973).
12. Buntin (1927) records that hinges, bars or instruments in copper became acceptable in exchange in the early civilizations such as Egypt, Babylon and China, but that there was sometimes reluctance to switch from the use of cattle for certain quasi-monetary purposes. 'The cattle unit [in Rome] died hard, for twenty years later [c. 480 BC] it was necessary to order by law [the law of Perugia] that payments in copper should replace payments in cattle' (p. 17).
13. 'And he too man have a name but the King', from the ordonnance of Aethelred (Wenzig, 1002) reported in Craig (1953).
14. 'The Chronicle of Winchester records that the current specie of this country was so much debased in consequence of the great number of mints established in different cities, of which the masters seemed to contend with each other who should enrich himself most at the expense of the public, that it would pass neither in foreign markets nor even in our own' (pp. 27-8).
15. Perhaps the most interesting evidence about the importance of a monarch's time horizon comes from the historical concern about the longevity of monarchs and from the associated belief in the social desirability of dynasties. There are many ways to wish a King well, but the King's subjects, as the foregoing argument shows, have more reason to be sincere when they say 'long live the King'. If the King anticipates and values dynastic succession, that further lengthens the planning horizon and is good for his subjects.
16. The historical prevalence of dynastic succession, an epitome of the near-zero probability that the oldest son of a king is the most talented person for the job, probably owes something to an intuitive sense that everyone in a domain, including the present ruler, gives when rulers have a reason to take a long run view' (Chapter 2, 23).
17. On this see Deidolf (1983) and Jans (1993).
18. Maffei (1974, 39-43) accepts that money in its guise of a means of payment for such transactions transfers antecedent money as a general medium of exchange in markets. But, on p. 77, he defines money as a medium of exchange held 'in order to economize on transaction costs in the activity of trading a variety of other types of goods'. My argument is that the means of payment role was (usually) prior in time and helped to facilitate and develop the subsequent more general medium of exchange role.
19. The temporal ordering of the various uses of money remains, however, a contentious issue. The Bible (Genesis, XXIII, 16 and XXXVII, 25, 28) indicates that silver was used as a medium of exchange for (large) payments from a very early date. In early history money and religion were often as closely, or more closely, inter-related than money and the state. Temples were the great economic centres of the ancient world. They provided an opportunity to trade, especially at the festivals marking the end of the agricultural season, and having amassed

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considerable wealth from the gifts of their cult's devotees. They very often became bankers and bankers on a great scale, hence their need for a monetary standard, which probably preceded that of the State. I am indebted to Professor Kitchin for pointing me in this direction. Also, see Keener (1963, 75-86).

17. In more recent centuries, however, the alternative chosen by the private sector has been, instead, to switch from using the inflationary currency of the domestic government to the more stable currency of some other government (see Brandt, 1989). The existence of such substitute currencies places some (high) upper limit on the potential savings of the inflation tax.

18. Thus Craig (ibid. 12) writes that, "Monies run by ecclesiastics on the other hand were proprietary. Only two are known to have survived from the earliest primitive period. The nobility of Castile had two units... The single unit of the abbey of St. Augustine's was merged in this property in or before the tenure of the See by the canon Simon of Chalkentith, St. Dunstan. The saint's three minims were active; he was a hard man of affairs who once shocked his colleagues by suspending Easter mass until they had paid certain counterfeits of his coin, whose trial the people would have delayed till Monday out of respect for the day."

19. This interpretation has not gone unchallenged, as Reich (1992) again notes, "More recently, Price (1983) has observed that the early election coins were privately issued and not issued by states. Further, he argues that the election coin which was of uniform weight but had a highly variable proportion of gold, would have been overvalued if it traded at a uniform value. This he concludes makes it unlikely that intermediaries would have accepted it. Price's interpretation is that the early coins emerged in the context of a gift-exchange economy, and provided a means for standard bonus payments, and that the impact was used to identify the issuer, not to guarantee the coin's value. Only later, according to Price, with the introduction of gold and silver coin, did coin become a means of standardizing payments. However, Price does not explain why individuals accepted overvalued coins as gifts. Indeed, it is not clear whether these coins had a uniform value and if what point the pieces of stamped metal crossed the line between metal and coin."

20. Selgin and White (1995) state that "Government monopoly in issuing currency can thus be understood as part of the tax system... That is certainly one key facet of the relationships between money and government."

21. Part in the sense that the move to fiat paper money is also capable of explanation as a private-sector cost-minimization process. Of course, if M theorists are prepared to accept that government had taken over (temporarily) the operation of the monetary base by then, the rest is straightforward. The abandonment of sensitivity to a real metallic base was an (unhappy) act of government (as is clear from history). What remains, perhaps, at issue between the M and C theorists is how much of the subsequent acceptance of fiat money is due to the power of government, for example to impose taxes (C theory), or to network factors and inertia encouraging people, without prompting from government, to stay with the existing currency (M theory). I am indebted to correspondence with Professor Kevin Dowd for raising this issue with me, and also for sending me his (1995) working paper, with Selgin.

22. Quite a number of economists combine the belief that M form cost-minimization search theory explained the initial development of money, but that more recently the state has clearly taken over the provision of fiat currency. So, whether or not they like the result, they accept that C form theory is at present more realistic, see Congdon's (1984). "The provision of a second currency, a necessary function of the state."

Ritter (1993) argues that a community could benefit from moving to a fiat money economy. If the issuers could commit to limiting the growth of such base money. Quite so, but as Selgin (1997) argues, there is a, probably insuperable, co-ordination problem within society, unless the authorities can cover the residents simultaneously to switch (as with the introduction of the euro in 2002). Money or fiat currency has, virtually without exception, been introduced at times of war and other crises, when the rate of growth of base money has been high, on many occasions "excessive", and certainly not subject to any credible limitation commitment.

23. Not surprisingly, Adam Smith understood the relationship between fiat money and fiat currency, even before any widespread usage of the latter. Thus Professor M. Forster of City/Imperial College, has brought to my notice "...the following sentence on page 322 of the justly famous

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Canadian edition of *The Wealth of Nations*: "A prince, who should enact that a certain proportion of his taxes should be paid in paper money of a certain kind, might thereby give a certain value to his paper money; even though the terms of its final discharge and redemption should depend altogether upon the will of the prince." "Cannat's 'scholar' (his summary of each paragraph given in the margin for this paragraph reads: "A requirement that certain taxes should be paid in particular paper money might give the paper a certain value even if it was inconvertible.")

24. Dowd and Orear (1993, 1180-9), have described how "network externalities" will tend to limit the use of money for ordinary retail purposes in any area to a single kind of money, (in which, of course, there will be substitutes of many values exchangeable at fixed, set ratios). When the quality of money in an area declines sharply (hyperinflation, inflation), residents may turn increasingly to a higher quality money (collaterally). The costs of overcoming such network externalities may make such a switch partly irreversible. The dominance of a single currency in a single area does not, of course, rule out multiple currency holdings near boundaries, nor holdings of foreign currencies (yes, yes, for trade, travel and portfolio diversification reasons; on the latter see Cohen (1996)).

The proposed joint usage of national currencies and euros during the changeover transition period within EMU (1999-2002) is not a counter example, since the ratio of the value of the euro to the national currency will be absolutely fixed and irreversible. What is, however, new is that this fixed ratio will be highly user-unfriendly (for example 1 euro = 0.336534 National Units). It has been agreed that the rate will be applied to six significant figures), and not the standard user-friendly progression of currency values, for example 1, 2, 5, 10, 20, 50... There will, therefore, be serious additional information and familiarization costs involved in the transition. Note that virtually all prior currency reforms involved switching zeros off existing currencies, for example 1 New Franc = 100 Old Francs. They were often somewhat traumatic for residents, the switch to the euro will be much more so.

25. Also see Kitchin (1994, 365-9) for a discussion of the agreement on currency usage in the area of the autonomous Palestinian authority. Andwera and Namha also have more than one legal tender.

26. "The nation managed to hold together until the generalised breakdown of monetary relations during World War I. Following Switzerland's decision to withdraw in 1916, the LAMU was formally dissolved in 1927" Cohen (1993, 191).

27. By the turn of the century, the SMU had come to function, in effect, as a single region for all payments purposes, until relations were disrupted by the suspension of convertibility and freezing of individual currencies at the start of World War I. Despite subsequent efforts during and after the war to restore at least some elements of the union, particularly after the members' return to the gold standard in the mid 1920s, the agreement was finally abandoned, following the global financial crisis of 1931. Cohen (1993, 191).

28. The Gold Standard did not represent an example of such a monetary union. While foreign agents could obtain national currencies at relatively low transaction cost by shipping gold in either coin or bar form, the currency circulation within each participating country was as overwhelmingly national as now (and the gold value of national currencies could, and did, vary between time-varying physical inflight points).

29. Amongst current monetary unions, Cohen also studies the CFA and Eastern Caribbean Currency Area. The CFA has been held together by French political, even including military, and financial support, while the population of the ECCA are so tiny that the entire region is still too small for anything other than a currency board.

30. One useful and illuminating way of thinking about EMU is to regard this as the monetary symbol of a political pact between the two largest countries of Western Europe, Germany and France, that their currency and must not ever in future be a serious crisis. Let alone a war, in their bilateral relationships. This line of thought comes naturally to C form theorists and to political economists such as Kohl. It makes no sense, of course, to M form theorists who see no necessary or desirable connections between monetary and political relationships.

31. When the First Continental Congress met in 1775 in Philadelphia, the first order of business was to establish a national currency (Kohn, 1991, 70). But since "note issues were not then banned, and that plans of course, reliance on the issue of 'Continentals' to finance the War of

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independence led by major nations. This led the Constitutional Convention to establish in Article 1 of the Constitution of 1789 that Congress, and not the states, 'shall have power to coin money; regulate the value thereof and of foreign coin; and bear the State shall coin money; and shall have the sole and exclusive right of emitting bills of credit, which shall not be paid in payment of debts' (1789, 1964, 466).

32. In its pamphlet, entitled *The Federalist*, which the Bookstall published on its 25th anniversary in 1790, the opening paragraphs read as follows:

'The newly established Federal Government in the organization of the coinage, paper money, and bank-note systems, an integral and delicate task. Probably in no Department of the entire national economic system were the disadvantages of the political disunion of Germany so clearly defined as in this; for an economic disunion were greater advantages to be expected from a political union.

Although the customs union (Zollverein) had happily united the greater part of Germany in a commercial union, similar attempts in necessary affairs had not with but modest success, and were absolutely fruitless in banking.

33. The inter-venture 'near completion' was the multiplicity and variety of the different college systems known in all in the different states, when the want of an adequate, regulated circulation of gold coins.

34. As reprinted by Chauvel (1911, 294).

'The great political fragmentation of Italy left the country at the beginning of the 1830s with ... conditions of the institutions of issue and the paper currency that were [absolutely and unorganized, since there was a mixture of institutions, different in nature and privilege, and a hybrid circulation, partly private and partly belonging to the State, which could not truly solve the economic and monetary conditions of the country']

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