

# **A Production Theory of Money**

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## **Abstract**

Post-Keynesian and Circuit theories of money strongly associate money and production. This paper makes clear exactly the nature of the essential causal role of production in the existence and valuation of money. Neoclassical theories of money are considered and rejected. A desert island production economy model is described, that gives rise to the existence of money serving the three traditional functions: money of account; medium of exchange and store of value. The importance for this of an enforcing authority in a triangular relationship is emphasised. It is also argued that cessation of production entails the eventual cessation of the use of money. The implications of the co-existence with production-backed money of non production-backed money in the form of household and speculative loans are discussed.

## 1. Money and Production

What is it we really want to know about money? In Geoffrey Ingham's (2004) view a theory of money should provide satisfactory answers to the following questions:

1. What is money?
2. Where does it come from?
3. How does it get or lose its value?

Within heterodox economics, in contrast to the neoclassical mainstream, it is accepted that the existence and value of money are endogenous to the rest of the economy and are inextricably bound up with production. Circuit theory and Post-Keynesian theory stress the importance of initial finance in starting the production process, circuit theorists in particular emphasising that this finance is required to hire the labour required to manufacture both consumer and capital goods (Graziani 2003 p69). According to Keynes, when he was working on the *General Theory* he was seeking a 'monetary theory of production' where money was one of the 'operative factors' and 'played a part of its own'. (CW 13, pp408-9; quoted in Wray 2006, p10) Since initial finance can only come from the creation of bank credit, which in turn is associated with the formation of bank deposits, the connection between production and money is established. In the words of Rochon 'money endogeneity...is part and parcel of the production process'. Rochon goes on to be more explicit, 'With respect to production, credit precedes production, while money is created in the process of production, as the entrepreneur draws down his or her bank account to pay wages or to purchase other raw materials' (Rochon 1999, p5).

As long as banks are satisfied that they have an adequate probability of repayment and of receiving full interest payments (what is adequate will depend on their own profitability targets), they will issue loans on demand. Essentially, 'with a

contract in hand for delivery of goods in the future a business firm can obtain a loan' (Eichner 1989, p810). Eichner (1989, p809) also points out that the 'advantage of relying on banks to provide business firms with working capital is that the amount of funds in circulation is a response to the level of economic activity'.

The particular argument of this paper is that production is at least as important for money as credit-money is important for production. While production might be feasible without initial finance, and thus without giving rise to bank deposits, the acceptance of money in its modern form could not exist without its link to production, and when that link is broken in the issue of credit-money there are serious implications.

I start with a a description and analysis of a desert island production economy which gives rise to money and follow this with a discussion of theories of money in general. The following sections respectively discuss the essential role of production in the existence and valuation of money, including state money, and the implications of this. Finally I make some concluding remarks.

## **2. The Desert Island Economy**

In a description of the complexity of the modern economy, it can be difficult to see how credit, production and money all fit together. To this end I would like to describe a skeleton monetary economy set on a desert island. This story is of an island now occupied not only by Robinson Crusoe as in the traditional description of a single producer/consumer economy, but also Man Friday.

### **2.1 Independent Production Phase**

Robinson Crusoe and Man Friday are doing tolerably well on their desert island, since Crusoe is pretty good at climbing trees to find fruit and Friday has a certain knack for digging to find water sources. By exchanging fruit and water they have a pretty

comfortable existence, but by and by they start to wonder if there might not be a better way to do things. Robinson suggests that instead of walking across half the island to climb tall trees, all of which is pretty exhausting, he could plant some trees near to their living area. In this way he could obtain more fruit for less effort. This plan, however would involve the need for extra water to irrigate the new trees, and so Friday must expend more time and effort to find water. He decides that it is worth his while to do this if Crusoe gives him a share of the extra fruit grown. Crusoe believes that he can give Friday a share of the extra fruit and have enough left over for himself to be better off than he was before. Thus the new arrangement would be Pareto-improving, with both Crusoe and Friday being better off.

Unfortunately, on reflection, given certain events in the past, Friday begins to think that he is not so sure he can trust Crusoe. The bang on the head Crusoe received in the shipwreck has rendered him a bit forgetful at times, and given Crusoe's training in unarmed combat from his days in the Royal Navy, Friday is worried that he might renege on their deal, with Friday being unable to force him to give up his share of the extra fruit that is to be grown. And since it will take some time for Crusoe's trees to mature, Friday would end up with no return for his extra water-obtaining effort. So despite the fact that the arrangement, if it worked, would be Pareto-improving, it does not go ahead. On the smallest possible scale, this is a production process with Crusoe holding capital in the form of the trees and Friday his employee, paid in wages of fruit. The output of Crusoe's 'firm' is the additional fruit that is now grown.

## **2.2 The Benefits of Banking**

It so happens that a few days later, a Mr. Lloyd Barclay is himself shipwrecked on the island. Mr. Barclay is a big strong chap, appearing quite capable of overpowering Crusoe, but he really is much inferior to Friday in finding water and to

Crusoe in finding or growing fruit. Thinking about this one night, as the three of them sit around the campfire, Lloyd Barclay suggests a way in which all three of them might become better off. If Friday will work to produce the extra water so that Crusoe can grow the fruit trees near the living area, Lloyd will guarantee Friday that he gets his share of the fruit grown. Friday asks Lloyd what's in it for him. Why should he trust him any more than Friday? So Lloyd points out that he too will take a share of the extra fruit that Crusoe will grow and so will also have an interest in ensuring that Crusoe fulfils his side of the bargain. Although Friday will now receive less fruit than he would otherwise from Crusoe, and Crusoe's own share will be a bit smaller, since Lloyd is taking on the responsibility of ensuring that the whole process goes ahead as planned, they reckon this is a fair deal.

To make it easy for everyone to remember who owes what to whom, Lloyd gives Crusoe some specially marked leaves (since his feet are distinctive and bigger than anyone else's on the island he uses his footprint to mark them) that Crusoe can hand to Friday as he supplies the water. When the crop of new fruit is ripe Friday hands these marked leaves back to Crusoe in exchange for his fruit share. Implicitly this means that both the water and the fruit to be produced in the future have been priced in terms of the leaf tokens. Crusoe then returns the leaves to Lloyd as a signal that both Friday and Crusoe are happy that the fruit production process has been completed satisfactorily, and the output distributed fairly. It only remains for Crusoe to hand Lloyd's share of the fruit to him and all three island-dwellers are very satisfied.

### **2.3 The Facilitation of Exchange**

As time goes by, more unfortunates become shipwrecked on the island. First to arrive is a certain Reinhold Bonington, who surprisingly turns out to be a talented rock-climber. He is able to get access to the cliffs on the island where thousands of seabirds

live and manages to collect a considerable amount of guano to fertilise Crusoe's fruit trees and increase the crop. So Lloyd gives Crusoe a few more marked leaves and Crusoe gives some of these to Rheinhold in exchange for guano. Like Friday, Rheinhold exchanges these for fruit when the crop is ready. Once again Crusoe returns all the leaves to Lloyd, along with his share of the fruit (now increased thanks to the guano). Despite his climbing skills, however, Rheinhold finds that his guano-harvesting exploits are not really providing him with enough to eat. He collects some of the eggs he finds on the cliffs, but doesn't much like the taste. But he takes them back to Friday who finds them quite acceptable. Unfortunately Friday is a bit low on fruit at the moment, and cannot exchange any with Rheinhold. Rheinhold thinks about this for a bit, and then suggests to Friday that he will take some of Friday's marked leaves, which he knows he will be able to exchange for fruit when it is ready to be picked.

As the island acquires more shipwrecked residents, who all have different skills and tastes, it turns out that these sort of transactions involving exchange of the leaves for goods or services rendered becomes more and more common, since they also allow people to delay their consumption or decisions about consumption and save on the time spent searching for someone else to make a direct exchange with. Others opt to grow fruit or other food crops as Crusoe did and in each case Lloyd is willing to enforce these arrangements in exchange for a share of the extra output produced, and each time he issues more of his specially marked leaves which are returned to him as each process is completed.

#### **2.4 Analysing the Desert Island Model**

It should be clear the role that Lloyd Barclay's marked leaves are playing here. They are initially established as a unit of account; they are used as a means of exchange; and when held they are a store of value. In other words, the marked leaves

are money, and they are accepted because they always represent a claim on consumption that has been deferred to a later date as a consequence of the growing (production) process,<sup>1</sup>a claim that is enforced by Lloyd Barclay's physical authority in the model. The role of production can be emphasized by considering what would happen if say the desert island was affected by a toxic spillage from a passing tanker that meant that while the water was still drinkable and the forest still provided food, no further cultivation was possible in the living area. Once all Pareto-efficient exchanges of existing goods were carried out, anyone left with money would have something intrinsically worthless for which no exchange would be possible. Anticipating this, once production ceased so would monetary exchange. I will expand on this idea later.

The desert island model demonstrates other key points. Firstly, there is some level of exchange going on before any type of money is introduced, but it is purely bilateral (as it can only be given the initial presence of only two agents) so we haven't said anything about whether it is reasonable to think that money could arise spontaneously simply as an aid to the efficiency of multilateral barter. Secondly, we have the problem of uncertainty over a bilateral contract for production. Even the apparent willingness of both parties to co-operate may not be enough where the labour has to be provided some time before production is completed. Thirdly, the uncertainty problem can be resolved if an authority exists that can enforce a credit contract, where a credit token is issued with a specified value in terms of the production output which it facilitates. Fourthly, once the tokens representing a claim on production exist, they can indeed serve as an aid to efficient exchange when more commodities become available. Finally, by serving as a means of exchange and provided there is an expectation of

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<sup>1</sup>I think this approach can be differentiated from that of characterising money as 'assignable debt'. If a debt is a contract to repay money, then I am not sure that defining money as a contract to repay money – even if assignable – provides us with the insight we seek.

them retaining their value, these tokens are automatically a store of wealth when held for any length of time.

The desert island model shows in a very basic way how it is possible for the issuing of intrinsically worthless tokens to become acceptable means of exchange when they are enforceable claims to guaranteed future output. Once the initial agreement to pay Lloyd for his enforcement services is made, the motivation for accepting these tokens thereafter is a purely individual one. If it is known that there is a mechanism in place that will ultimately force Robinson to give up part of his output in exchange for tokens, these tokens will have value to each individual quite apart from their 'public good' benefits of enhanced exchange. No collective agreement or convention is required to establish the acceptance or valuation of money in this case. Moreover, by ensuring Friday of his due share in Robinson's increased output an improved use of available resources is enabled that allows the production of goods that would not otherwise have been achieved. The existence of money has increased output as a whole for the desert island.

Of course the desert island economy is very different from a modern economy. There is initially only one productive 'firm', only one 'bank' and no bank deposits, government sector or central bank. Given the limited consumption possibilities on the island, Lloyd is happy to accept his 'interest' in produced goods rather than cash. Robinson's cash revenue can never exceed his cash payments to Friday or Rheinhold, so he makes no money profits.

The strength of the desert island story is not in the logical certainty of the described outcome, since for this to be a Nash equilibrium would require various restrictive conditions, but I hope, its plausibility given an average combination of

human suspicion and willingness to co-operate for mutual advantage. This is in contrast to neoclassical ideas of money's origin, which are the starting point for the next section.

### **3. Theories of the origin of money**

Ingham (2004) describes how in much thinking about money, precious metal coins and convertible paper symbols have been distinguished from credit and how the neoclassical ideas of supply and demand and marginal utility have been applied to it. This money is simply a neutral veil that has no other effect than to overcome the absence of a 'double coincidence of wants'. Neoclassical explanations posit money as the result of the individual economic rationality of myriad individuals holding stocks of the most tradable commodity, usually a precious metal. Ingham points out that since the advantage for a given agent to use money depends on all other agents doing likewise, the existence of money as an institution is only presupposed and not explained by such ideas. A commodity, or a claim on a commodity, cannot in any case spontaneously be a money of account since its exchange value must vary in transactions with different individuals, and so cannot be fixed in the market.

Ingham thus argues that an abstract money of account is logically anterior to money's specific forms and functions; and can provide in itself many of the important attributes of money such as price and debt contracts. Keynes claimed the same thing in his *Treatise on Money*, saying 'the money is the description or title and the money is the thing which answers to the description' (CW 5, p3). Although Keynes himself maintains a nominal distinction between 'money proper' and 'bank money', he describes the latter as 'acknowledgements of debt [which] are themselves a serviceable substitute for money proper in the settlement of transactions' (CW 5, p5). This is an exact description of what happened on the desert island. As we shall see, what Keynes

describes as ‘money proper’ arises in a way exactly analogous to that of ‘bank money’, with the state playing the role of producer. At least as far as ‘bank money’ is concerned Schumpeter is in complete agreement with this view:

‘It may be more useful to start [with credit transactions] in the first place, to look upon capitalist finance as a clearing system that cancels claims and debts and carries forward the differences – so that ‘money’ payments come in only as a special case without any particular fundamental importance. In other words, practically and analytically, a credit theory of money is possibly preferable to a monetary theory of credit’ (Schumpeter 1954, p717)

Thus, in Ingham’s words ‘money is itself a social relation; that is to say, money is a ‘claim’ or ‘credit’ that is constituted by social relations that exist independently of the production and exchange of commodities.’ (Ingham 2004, p12) But of course an IOU in a bilateral transaction is not money; so that money as debt must be transferable and denominated in the abstract unit of account. The value of all money is its value as credit denominated in the abstract money of account.

The origin of the power of money is in the promise between the issuer and user of the money in an *enforceable* claim or credit. This enforceability requires an authority. The historical record suggests that money arose initially as ‘money of account’, before it become materialized into forms such as notes and coin, and that the authority backing money issue was not (as on our desert island) just someone who happened to have the necessary authority in contract-enforcing terms, but *the* authority in the relevant geographical jurisdiction in the form of the local ruler. This might be expected. Power over the money of account of the region gives the ability to acquire goods and services from the citizens at a return fair to the extent that protection, justice (including enforcement of contracts) and other services are provided by the state. How fair that return is depends on the prices offered by the state for the goods and services

of its citizens in relation to the taxes it imposes in its currency. We shall see the relevance of this concept of fairness in the next section.

### **3 Why production is critical for money creation**

Having established how money fits into the production process as the result of third-party credit creation for initial finance, we turn to the consideration of the causal role of production for money. People must trust that whatever ‘tokens of value’ (including the electronic traces on computer hard discs) are the form taken by money, they will in fact retain their value. Ingham quotes Simmel in pointing out that this ‘kind of trust is only a weak form of inductive knowledge’ (Ingham 2004, pp62-3). Without an amount of information unlikely to be present there can never be sufficient information for it to be the only basis for accepting and holding money. What can then establish this trust without extreme physical coercion? Weber, again quoted by Ingham, claimed that there must exist for money ‘the probability that it will be at some future time acceptable in exchange for specified or unspecified goods in price relationships which are capable of approximate estimate’ (Ingham 2004, p67). So what is it that ensures that this probability not only exists but is confidently assumed by the users of money?

The status of money as wealth is a peculiar one. While it seems to consist of pieces of paper or more commonly magnetic or electronic configurations on computer storage devices, we do not anticipate that everyone deciding to spend the money they had would render it worthless. Yet, currently virtually all goods and services that correspond to real non-financial wealth lie in some hands or other. How can such worthless items as these money ‘marks’ appear to be so powerful? There is the following line of thought, the basis of which has been suggested by Kiyotaki and Moore, who refer to a series of monetary transactions as follows:

‘I was willing to hold money yesterday because I believed the dentist would accept it today. She was willing to hold money today because she believes someone else will accept it tomorrow. And so on. If there were a known endpoint to history the entire structure of beliefs would collapse back from the end.’ (Kiyotaki and Moore 2001, p3)

(In fact I will argue that only an endpoint to production is necessary to produce this result.) A similar thought has also been expressed by Tobin (1992, p774).

Generalising the idea of the toxic spill around the desert island, if all production in a monetary economy were for some reason to cease with no hope of its being restarted, once all remaining Pareto-efficient exchanges are completed and all stocks used up, no further exchange would take place. Anyone left holding money would be in possession of something completely worthless as a means of exchange and consequently also as a store of value. And indeed as soon as it is known that production is to cease, no-one would accept money as to accept it would mean holding it when no further exchange is possible, and so would be to accept something worthless. Since no-one will accept money in the last transaction, they will not be willing to accept it in the last-but-one transaction, and so it will not be acceptable in the transaction prior to this, and so on by backward induction to the point at which the cessation of production becomes anticipated. It follows that the same process is relevant when a reduction in production is anticipated rather than a complete cessation, with a corresponding reduction in the acceptability of money occurring. The converse – a rise in the value of money when an increase in production is anticipated, can also be predicted. In this way the perceived value of money can be linked to future expectations of production capacity and the expected utility value of production output. It is because money represents *future* production of goods that it can itself be worthless tokens and represent real wealth to its holders.

As we have already argued, although money clearly is useful as a medium of exchange once it exists, unless this was the intention of the first users of money this cannot be taken to be the cause of its origin. And no amount of social benefit from everyone using money can be expected to persuade initial users of money that they should take the risk of doing so when currently no-one else is. A positive externality for society as a whole cannot ensure that individuals will accept money that is not in some way backed by commodities. Without the prospect of tangible goods in future to be exchanged for it, money would not be accepted. Consumption goods can be the only final means of payment of the 'claim' stated in money's purchasing power (Schumpeter 1954, p321). So we have the expectation of future consumption goods as a result of production both as the cause of the existence of money and of its valuation.

Do we have to make an exception for state-backed money, as issued as notes and coin or as commercial banks' balances at the central bank, that which Keynes referred to as 'money proper'? I don't believe so. While autocratic regimes may enforce the use of their own currency by coercion (with legal tender laws and penalties for non-payment of taxes), regimes based on greater or lesser degrees of consent must induce their citizens to use their currency by providing services demanded by them. In this sense state money is supported by state production in the form of the sort of things described in section 3.

#### **4 Implications of money as a social construction based on production**

If money is a social construction, based on some consensual authority (Lloyd Barclay on the desert island; the banking system, ultimately backed by the force of the state, in a modern economy), then the benefits of money must be evaluated socially. Where money-creation is associated with socially beneficial production, as takes place

on the desert island because the additional consumption made possible by the more efficient division of labour is sufficient to reward all the agents involved in a ‘triangular contract’ as referred to by Graziani (2003), then the additional purchasing power entering the economy for the period until consumption takes place is in step with the additional goods to be purchased. In certain other circumstances of money-creation that co-exist in a modern monetary economy this is less clear cut. The public at large and indeed many economists do not understand the importance of production for money. Thus the establishment of money-creating institutions based originally on production transactions can give rise to lending and money creation that is no longer based on production. Given previous arguments, it seems likely the money resulting exists in a parasitic relationship to production-backed money. The categories of such money include consumer or household lending and speculative lending. We shall discuss each in turn.

#### **4.1 Consumer or household lending**

We need to consider here two separate categories of lending here, since their demand has different motivations and their supply different implications.

##### **4.1.1 Housing debt**

In the past (say prior to 20 years ago), borrowing for house purchase in the UK was simply a matter of spreading payments for the acquisition of living accommodation so as to match the usual pattern of lifetime income. Outgoings of a mortgage holder included not only the interest on his or her loan, but always repayment of the principal either directly out of regular income or indirectly through an investment vehicle. In this sense the difference between paying rent and paying off a mortgage was mainly a matter of how ultimate responsibility for the fabric of the property was allocated.

Generally by the time the debt was fully discharged, the total amount paid could seem quite small in relation to income received by the mortgagee at that stage of their life. That borrowing for the purchasing of housing was essentially a co-operative arrangement is emphasised by the structure of the bodies that were responsible in the UK for such lending. Rather than private or shareholder-owned firms these 'building societies' were owned by their savers and borrowers, with any surplus interest received to that paid returning to their benefit. Now, there are very few institutions remaining with this structure in the UK, and the nature of lending for the purchase of dwellings has changed dramatically. Today most mortgage debts start with low payments that become higher (often considerably higher for the unwary) later on. The size of debt may anticipate a capital gain to be made from an increase in the value of the property, and frequently this and an increase in the income of the mortgage holder is assumed to allow repayment of the principal in the future, with no specific provision for this at the time of the loan contract.

#### **4.1.2 Unsecured debt**

Since these are not attached to any asset which can appreciate in value repayment can only be predicated on

1. Future reduced consumption out of income
2. A future increase of income

It seems unlikely that the former is seriously planned by those compiling large credit card debts, although not infrequently this is what happens. Statistically the latter is likely until middle age, but clearly the expansion of current consumer debt suggests that those trends are not in balance. The point is that where money is entering the economy via debt creation unbacked by (future) production there is clearly an overall

dilution of the value of money (as a ratio of usable spending power to what is available to spend it on).

The problem is that this dilution is only visible observing the economy as a whole. To the individual who wishes to raise his/her material standard of living now, on the basis of a hoped-for increase in income or increase in the market value of his/her property, this dilution is probably invisible and certainly of little immediate importance.

#### **4.2 Speculative lending**

The other important source of money creation is debt created for the purchase of assets on a speculative basis. Since these happen in organised markets, promoted and encouraged by national and international institutions, there is clearly at least a theoretical assumption of benefit from the transactions that are enabled by such speculative lending. For those doing the borrowing to the extent that they are purely speculative, their gains are simply the plus side of a zero-sum game, since those who sold them the asset which has risen in value are clearly opportunity-cost losers

The social justification for speculative borrowing is confused, because it is based on efficiency arguments that actually mean the borrowing and purchase cannot have been strictly speculative to begin with. Pure speculation is based purely on knowledge; an asset is purchased not because of what the purchaser plans to do with it that the seller does not – and this may be (and is assumed to be if it will thus earn higher income) to social benefit – but because the purchaser knows something or thinks he knows something that the seller does not. This is purely zero-sum; in fact it is less than zero-sum as far as the productive sector of the economy is concerned, since there must be a movement of wealth in the form of purchasing power away from that sector via interest payments and the dilution of purchasing power for the economy as a whole.

Borrowing for the speculative purchase of financial assets puts this process at a further remove. Financial assets can be regarded as 'bite-sized' portions of larger income earning units. Purchase of these, by providing initial finance or lowering the cost of initial finance can mean that production efficiency can be enhanced. And the availability of borrowing for the purchase of such sections makes their purchase and exchange easier and more attractive. But to what extent is this ease of exchange beneficial? If share capital is easier and cheaper to obtain for socially valuable production, then the existence of a liquid secondary market in shares is in turn potentially socially beneficial. If the transfer of ownership of an underperforming (in a social sense) company is transferred from passive to active shareholders who will use the voting powers these shares give them to improve performance (in a social sense) then the existence of a liquid secondary market in this company's shares is also socially beneficial.

To assess overall social benefit of lending for the purchase of financial assets, the benefits of liquidity in the market for shares must be weighed against the interest payments incurred (representing a shift in wealth from the production to the banking sector; so 'who' the banking sector is and what they plan to do with this purchasing power is of critical social importance) and the dilution of the purchasing power represented by each unit of account while the additional money is in circulation. Thus there must be considerably less likelihood of social benefit from these non production-backed loans, than when there is a production output backing the creation of money.

## **5 Concluding remarks**

The current governor of the Bank of England gave a lecture one year ago about money. At one point in his talk he said

‘A more sensible solution is to create institutions in which we can have trust. On the front of this Bank of England £20 note is written “I promise to pay the bearer on demand the sum of Twenty Pounds.” In essence the promise is that the ‘stuff’ that you can buy with this note does not change much from one year to the next. In other words, the general purchasing power of this note is broadly stable – we have price stability.’ (King 2006, p9)

Since he went on to talk purely in terms of interest rate policy, there is apparent confusion demonstrated here between the issue of the creation of money and the issue of the stability of its narrow CPI purchasing power, with the result that important aspects of the ‘trust’ underlying money’s acceptance are ignored.

Because money is a social construction and very clearly different aspects of its creation have very different social effects and outcomes, it seems clear that society as a whole has legitimate interest in money creation at source, particularly when it is divorced from its root in production. It seems to follow that monetary policy should not just be about the exogenous imposition of a blanket penalty for economic activity. This simply attempts a post-hoc compressing of all existing purchasing power, while ignoring the shifts in relative purchasing power that have already taken place.

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