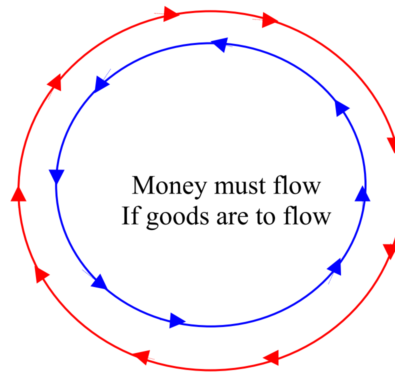
Exit Lucas, Reenter Keynes



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Abstract

Keynes (1936) said that shortage of money caused by hoarding or failure to invest led to unemployment, but Lucas (1972) said that money does not affect unemployment.

The tables have now turned. Gani (2003) produced a model of indirect trade in which money is necessary as a means of payment. Involuntary unemployment occurs under indirect exchange, just when the demand for labor is equal to supply, and the wage rate is precisely the market-clearing one, if and only the necessary money as a means of payment is missing. This seems impossible to those who think of money as merely a numeraire, or a store of value. But if money is a means of payment, then it must be used even when price is right. The relevant new graph drives neutrality away.

Keywords:

Neutrality, Unemployment, Macroeconomics, Interest, Means of Payment, Circulation of Money.
Keynes, Lucas, Mises, Leontief.

JEL Classifications:

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1 Preamble

This is like a child custody court. Who deserves custody of the child named monetary theory? Disputants Mr. Keynes claims that money affects employment, and Mr. Lucas denies this allegation. Whoever correctly describes the behavior of money is entitled to get custody.

Their written testimonies need not be reviewed here, because their arguments are beside the point. Our own independent investigation settles the issue. Those who care for justice may read the written testimonies of the disputants to see if they are to the point.

2. Opening Statement

The disputants agree that when the prices are the ones to make demand equal to supply, the market clears. If the correct price clears the market, why is there any mention of money? Mr. Keynes testifies that under a variety of scenarios, the price of capital or of labor or of goods may not be the correct one required to clear the market. That is beside the point, because the issue is money and not price. Has money anything to do with clearing the market? Mr. Keynes has not clarified what money has to do with market clearing.

Mr. Lucas shows no reason to talk about money either. What is money doing in the market?. He has nothing to connect money to market clearing. The use of expectations to restore the correct price is entirely beside the point. Let the price be the market clearing price. Explain the role of money in market clearing. Mr. Lucas has chosen to take the fifth.

In our investigation, we have found that money is a means of payment. We have found that buyers actually pay for real goods with money. When they do not have money they cannot pay, and hence they fail to clear the market. Since the disputants have nothing to say about money as a means of payment, it is left to us to talk about it.

3. Why Money is Relevant to Market Clearing?

Money is relevant to market clearing as a means of payment. It is plausible that if money is a means of payment, then its absence could abort payment and prevent market clearing. Money may be store of value (bond) or unit of account (numeraire), but that has nothing to do with market clearing. Hence, we do not allow distraction by arguing beside the point. We allow money only as a means of payment.

4. Issues to settle

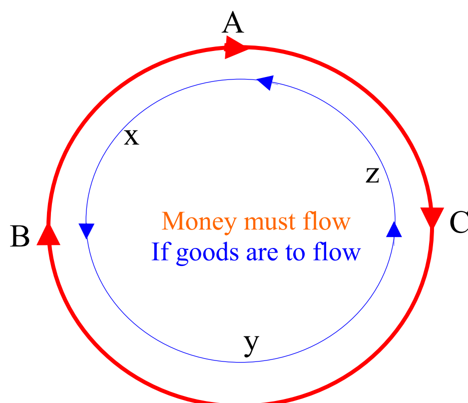
Whether money has anything to do with market clearing may be summed up in two parts. The first is the logical issue of necessity. Is money necessary to pay the seller under indirect trade, or can barter move the goods from the seller to the buyer?

The second question is empirical relevance. Does shortage of money actually occur to give rise to actual unemployment, or is this merely a hypothetical possibility? How can shortage of money occur?

5. Evidence on Necessity.

We found through our own investigation that Mr. A sold $1 worth of x to Mr. B and got $1. Then Mr. A spent the money to buy a quantity of z from Mr. C. Lastly, Mr. C used $1 to buy a quantity of y from Mr. B. Since the correct price is required to clear the market, we do not let any talk about incorrect price. Demand must be equal to supply for every good. We found the case where x, y and z has demand equal to supply, and the prices are just the clearing one.

The following circles show the direction of the movement of money and goods. The outer red circle moves clockwise to show the direction of money from Mr. B to Mr. A to Mr. C to Mr. B. The inner circle shows the counter-clockwise movement of x from A to B, y from B to C, and z from C to A.



We asked Messrs A, B and C to explain their curious conduct. Each already had in his possession some real good worth one dollar. We asked why they sold it to someone who also had something worth 1 dollar, but did not buy the real good and instead took money, and then bought something worth 1 dollar from somebody else. Since all three goods are worth 1 dollar each, why buy one, sell the other, and ignore the third?

Specifically, we asked them to explain why they did not take the real good from their customers in barter. Mr. B was ready to give 1 dollar worth of y in exchange for 1 dollar worth of x from Mr. A, but Mr. A did not take y, and instead asked for money with which he bought 1 dollar worth of z. In his testimony, Mr. A reported that he preferred z to x, and preferred x to y. We gathered similar testimony on preferences. Their preferences are reported below. U refers to utility, and its superscripts denotes the individual.

$U^A(y) < U^A(x) < U^A(z)$
$U^B(z) < U^B(y) < U^B(x)$
$U^C(x) < U^C(z) < U^C(y)$

The conduct of the agents seemed quite paradoxical. If Mr. A prefers z to x, why does not he produce z instead of producing x, selling it to Mr. B and buying it from Mr. C? Similar questions are asked of each.

Expert testimony from Mr. Adam Smith provides a very interesting explanation. Of the three equally valued goods (x, y, z), Mr. A happens to have the absolute cost advantage in the production of x, and that is why he produces it. If he wished to produce z, he would not be able to produce as much z as he can get in exchange for x because Mr. C is indeed the very best producer of z. We are thankful to Mr. Adam smith for this convincing testimony.

Expert testimony from Mr. Arrow did not convince us, because he looked at the preference orders to say that it is impossible for society to formulate a transitive social welfare function. But it was surely not impossible for the three agents to maximize social welfare by giving each the good they most preferred in exchange for a less preferred good in each case.

It seems that Mr. Arrow believes only in allocation and has not considered the idea of exchange. What he thinks is impossible is quiet easy to the entrepreneurs according to Mr. Mises, our other expert. In his testimony, Mr. Mises credited his mentor Mr. Menger, and praised his disciple Mr. Kirzner, to explain that enterprising men like Messrs A, B, and C stay alert to the opportunity of pure gains, and seize the opportunities if they find them. That is clearly what has happened. We express our deep gratitude to Mr. Mises and Mr. Kirzner.

Now, it is obvious that barter is impossible because in every case, the customer happens to have the good that is least preferred by the supplier. Thus Mr. A's customer owns y, which Mr. A likes least among the three goods and refuses to buy it because he incurs utility loss. The similar explanation is valid for all agents.

This makes it clear that no trade is possible without money. Barter is ruled out. We also rule out subsistence, because it makes no sense for Mr. A to produce and consume z because he is a terrible producer of z, and is immensely better off relying on Mr. C to produce z.

We further rule out borrowing and lending. Every agent has a budget balance in real terms and nobody has either a deficit to need borrowing or a surplus to be able to lend. If money is a store of value, it is entirely irrelevant here, because our problem is to find out if money is spent. A store of value is simply stored and cannot possibly be spent. Storage has nothing to do with buying or selling.

The first point is settled. Money is a necessary means of payment in indirect trade. If there is no money, no trade is possible, and all agents must be involuntarily unemployed despite perfect equality of demand and supply for each good at the absolutely correct market clearing price. Price alone cannot clear the market, the buyer must also be able to pay. Mr. Lucas' claim of neutrality is dismissed. Mr. Keynes's claim is sustained.

6. Empirical Issues

Our last issue is to decide if in real markets, there is any evidence of shortage of money and occurrence of unemployment. There is general evidence that unemployment actually occurs. However, whether there is shortage of money cannot be decided unless we know how much money is needed. We expected Mr. Leontief to be able to offer expert testimony with his supremely reliable input-output table. But he is extremely busy with inter-industry analysis. We ourselves applied Mr. Leontief's tool to measure the exact need of money.

The sales and purchases of Messrs A, B and C are shown in the following matrix. Thanks to Mr. Wicksell, this is a three-way exchange. In his honor, the matrix is called Wicksell Matrix. The matrix on the left shows the real goods. The one in the middle shows where the money must be. The right-most matrix shows how a real good is matched by money of exactly equal value.

Wicksell's real good + Keynes' money = full employment
(No money, no jobs) (Yes to money, yes to jobs)

$$\begin{pmatrix} 0 & \mathbf{1} & 0 \\ 0 & 0 & \mathbf{1} \\ \mathbf{1} & 0 & 0 \end{pmatrix} + \begin{pmatrix} 0 & 0 & \underline{1} \\ \underline{1} & 0 & 0 \\ 0 & \underline{1} & 0 \end{pmatrix} = \begin{pmatrix} 0 & \mathbf{1} & \underline{1} \\ \underline{1} & 0 & \mathbf{1} \\ \mathbf{1} & \underline{1} & 0 \end{pmatrix}$$

This matrix shows that Mr. A sold \$1 of x to Mr. B, but did not buy anything from him. Mr. B sold \$1 of y to Mr. C, but did not buy anything back. Lastly, Mr. C sold \$1 of z to Mr. A, but did not buy anything back. The amount of money is exactly equal to the value of the good.

Now that we have found how to measure the need for money exactly, we can find out if there is shortage or excess, and how that happens. Regarding this, the disputants have written unintelligible discourses on endogenous money, which we reject for the straight reasons as follows.

First, Mr. Keynes wrote at length about savings and investment, but it has no relevance to market clearing, first because we began with the existence of equality of demand and supply for every good at correct price. Indeed, savings as such does not even enter the market, because one cannot meaningfully argue that he is bad at savings and so he lets other do the savings for him, which he buys. Credits do enter the market, and it is clear that if one has a budget deficit, one cannot buy as much as one wants. It is obvious that if the surplus the lenders want to lend is not borrowed by the borrowers, then there is oversupply. It is of course possible that in a short term, surpluses are unequal to deficits, and there is oversupply. But there is no convincing reason why the lenders would not manage to lend the surplus at the correct interest rate in the longer run. Mr. Keynes has not shown that if interest is right, money has anything to prevent employment.

Secondly, the idea of endogenous money makes no sense if it is to be used as payment. Real people can produce and consume real goods but cannot produce money. Money is not a good. It is a management tool to accomplish the transfer of claims. When Mr. A gives $1 of x to Mr. B, Mr. B cannot produce the money. His good y is rejected, and it will not be accepted as money. The whole reason Mr. A wants money is that he wants to get z from Mr. C. There is nothing an ordinary person can do to enable somebody else to deliver real goods on his behalf without barter. Remember that Mr. A wants z from Mr. C without giving any real good to Mr. C. How can Mr. B persuade Mr. C to give his good to Mr. A without compensation? He cannot. Endogenous savings is possible, but endogenous money is not. Lending is possible, but creation of money is not. B cannot lend C's good to A.

Mr. Lucas brought his eminent friend Mr. Friedman to tell that money falls from the sky. This is not convincing at all. One can assign any numeraire value to his or her goods, but the numeraire is not a means of payment and is entirely irrelevant. Indeed, price is not the issue here at all: the issue is money as a means of payment.

Mr. Menger's testimony on spontaneous emergence of endogenous money is also not convincing unless it specifically means commodity money. .It is possible that an enterprising Mr. A could indeed turn Mr. B's good into commodity money first by buying it without an intention to consume and then selling it to Mr. C. And indeed commodity money arose spontaneously. But commodity money, including the finest ones such as gold and silver coins have gone out of circulation for a very strong reason of murderously high transaction cost. Modern people no longer use commodity money, because it is incomparably cheaper to use fiat money. And fiat money is definitely exogenous money.

It is disappointing that neither Mr. Keynes nor Mr. Lucas would mention banks collectively as the outside issuers of fiat money. There is no room for doubt that the outsiders do not care at all about the need for money as measured by the Wicksell Matrix, but care about creditworthiness and such other criteria entirely irrelevant to the need for money. Bankers alone are able to issue more money even when there is no increase in tradable output, and thereby create inflation. And bankers are certainly able to shrink the supply of money whenever they please and for whatever reasons, without any connection to the need for money.

Mr. Lucas has regrettably not observed the circulation of money as shown by our payment circuit. It would have helped if he cared to find out why people would borrow more money when Mr. Greenspan was willing to supply more money, say by lowering the interest rate. To be sure, no rational or even irrational man would borrow money merely to raise the wages of his workers. People borrow more money if and only if they think they can use it to put to use hitherto unused resources, and profitably so. No matter what they expect, if money becomes cheaper and it is now feasible to undertake projects that were previously not feasible, people will borrow.

Mr. Lucas has done major violence to demand theory. Without any change in real price, a higher income permits a larger demand at the old price. Our high school students know how to shift the demand curve when the budget increases. They fail their exams if they claim that more employment is possible only if the real wage goes up. The claim that if the real price remains the same, the demand for labor cannot increase is absurd.

Thus what evidently happens is that there are unemployed resources that firms wish to employ, but they cannot make payments unless there is more money to permit payment for a larger traded output. It is not possible to increase the money supply endogenously. If banks do not provide the additional liquidity, the resources must necessarily remain unemployed. It has simply nothing to do with price or the wage rate.

The odd concept of velocity of circulation reveals major confusion. The proponent of the idea of velocity of circulation had no genuine right to use the term without drawing a circuit in which the money was to circulate. It is just empty term. One must show how money circulates to make any sense of velocity of circulation. The payment circuit we have drawn permits us to check how the flow of money affects output and prices along its circulation path. If Mr. A could get $2 in place of the usual $1, and if he had good reason to borrow $2 in place of the usual $1, how would it affect his spending decisions?

First consider the full employment scenario. Mr. A, who is supposed to see the future, certainly should see the present enough to know that Mr. C cannot produce any more z. Hence no matter how low the interest rate is, Mr. A would not borrow the extra dollar merely to raise the price of z. It would be rational for him to borrow an additional dollar if and only if he expected both to buy more real output and sell more real output in order to repay the loan.

Secondly, consider the scenario in which some unemployed resources exist. Mr. A borrows an extra dollar and orders Mr. C to produce a larger quantity of z. Suppose that Mr. C finds it necessary to raise the wage rate by 60% to hire the additional workers for the larger output, and hence also raises the price of his good by 60%. Now, if he sells $2 of z, he must increase real output by 25% (as $2 deflated for 60% increase in price is $1.25 in real terms at old price). Let all others do the same. The aggregate output increases by 25%, the nominal price increases by 60%, so that the nominal value of output increases by 100%. Though the real price is the same, the real output is higher by 25%. This is high school economics of shifting the supply curve. Remember the point Mr. Lucas: even when real price is the same, demand is higher with higher income of the buyer.

Empirical work must see a lot more detail. While our discussion is illustrative, in the field, the effect of higher income leading to higher demand must work through the income elasticity of demand, demand elasticity of price, and price elasticity of supply.

Had Mr. Keynes said that investors need money from banks and not just real savings in the form of pumpkin seeds et cetera, he could have clarified why the refusal of bankers to lend

more money made it impossible to make payments to the workers, since workers do not take the real product of their employer in wages (except for a fraction).

Bankers could be moved by animal spirits when some of their borrowers went bankrupt, and they panicked to shrink further loans. They could also be exuberant when some borrowers made killings, especially by speculating in stocks and bonds unrelated to real output and hence created loan deluge.

Mr. Lucas wrote discourses on real business cycle. For it to be real, he ought to prove that business cycle is possible in non-monetized economies under subsistence, and barter. He cannot prove that, because in real economies, there is no transmission mechanism to spread the effect of failure of one sector (or product) to another. Under barter, if one fails to sell his output, he cannot affect anybody else. Under indirect trade, there is a transmission mechanism, because the same money passes from one to another in a circuit and affect them. If one dollar in cash is withdrawn, $n of trade is aborted if the money is sued n times in its circuit. Real business cycle is not possible simply because there is no transmission mechanism. But money is the mechanism to spread its effect across the circuit.

7. Conclusion:

Mr. Lucas has failed to show what money has to do with market clearing or stability. His claim is not sustained. Goodbye Mr. Lucas.

Mr. Keynes has not articulated why money is relevant in market clearing. But his claim is sustained by our independent investigation. Welcome back Mr. Keynes.

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