

**THE “MONETARY EXPRESSION OF LABOR”
IN THE CASE OF NON-COMMODITY MONEY**

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It is well known that Marx assumed in *Capital* that money is a produced commodity, such as gold. However, the question remains open: was this assumption an essential part of Marx’s theory or just a historical contingency, which Marx assumed because he was trying to explain the actual capitalist economy in the 19th century. Some critics have argued that money must be a commodity in Marx’s theory as a theoretical necessity (e.g. Lavoie 1986), and argue that the fact that money is no longer a commodity in today’s economy contradicts Marx’s theory. These critics conclude that Marx’s theory of money is invalid, or is no longer applicable to modern capitalism with non-commodity money.

In considering this criticism, it is important to distinguish between the different functions of money (which is not always done), and especially between the functions of **measure of value** and **means of circulation**. It is clear that money as means of circulation does not have to be a commodity in Marx’s theory, as Marx himself emphasized (Marx 1867, pp. 221-27, and Marx 1859, pp. 107-22). The only question is whether money must be a commodity in Marx’s theory in its function as measure of value.

I argued in Moseley (2005a) that money does not have to be a commodity in Marx’s theory, even in its function of measure of value. The measure of value does not itself have to possess value. Inconvertible paper money (not backed by gold in any way) can also function as the measure of value. In order to function as the measure of value, a particular thing must be accepted by commodity-owners as the general equivalent, i.e. as directly exchangeable with all other commodities. Until the 1930s, capitalists required that the general equivalent (and hence the measure of value) had to be a commodity, or at least convertible into a commodity at legally defined rates. However, in the Great Depression it became impossible to maintain the convertibility of paper money into commodity money. Convertibility required tight monetary policy, which was making the depression worse. In order to escape this “cross of gold”,

governments ended convertibility, and made credit money, without gold backing, the general equivalent. Capitalists had no choice but to accept inconvertible paper money by itself as the general equivalent, and hence as the measure of value.¹

However, this conclusion raises the important further question for Marx's theory: if social labor is represented by paper money that is not convertible into gold, then what determines the quantity of money that represents an hour of social labor in the economy as a whole (since it can no longer be determined by the gold produced in an hour, as in the case of commodity money)? In other words, what determines the "monetary expression of labour-time" (MELT) in the case of inconvertible paper money? Unfortunately, that important question has not yet been adequately answered. As Duncan Foley (2004) expressed it, this question has been "left hanging theoretically".

Foley has suggested that we can obtain an ex-post, observable measure of the MELT, as the ratio of the total money value added in a given period (MVA) to the total current living labor employed (LL), i.e. $MELT = MVA / LL$.² However, this empirical measure of the MELT does not explain its theoretical determination. This equation cannot serve to determine the MELT because that would be circular reasoning. In Marx's theory, the MELT is used to determine the total money value added according to the equation: $MVA = (MELT) LL$. Since the MVA is determined by the MELT, the MELT cannot be determined by the MVA. The theoretical determination of the MELT remains "hanging".

The aim of this paper is to suggest a way to determine the MELT in the case of today's regime of inconvertible credit money - a way that is consistent with Marx's general theory of money and is essentially the same as the Marx's determination of the MELT in the case of the inconvertible fiat money of his time. In order to explain this method of determination of the MELT in the case of inconvertible credit money, it is first necessary to review Marx's determination of the MELT in the case of commodity money, and then in the case of inconvertible fiat money of Marx's time.

1. Commodity money

In Marx's labor theory of value with commodity money, the **prices** of commodities are the exchange-values between all other commodities and the money commodity, and these prices are determined by the relative quantities of socially necessary labor time contained in all other commodities and the money commodity (e.g. gold). Algebraically:

$$(1) \quad \mathbf{P}_i = (\mathbf{1} / \mathbf{L}_g) \mathbf{L}_i$$

where \mathbf{P}_i is the price of each commodity, \mathbf{L}_i is the socially necessary labour-time contained in each commodity, and \mathbf{L}_g is the labour-time contained in a unit of gold (i.e. the "value of money"). The inverse of \mathbf{L}_g is the gold produced per hour, which determines the quantity of money new-value produced by one hour of socially necessary labour-time in all other industries. This quantity of money new-value produced per hour has been called the "monetary expression of labor time" or the "**MELT**":

$$(2) \quad \mathbf{MELT} = \mathbf{1} / \mathbf{L}_g$$

Equation (1) can be rewritten as:

$$(3) \quad \mathbf{P}_i = (\mathbf{MELT}) \mathbf{L}_i$$

Thus we can see that the price of each commodity is proportional to the socially necessary labour-time contained in it, with the MELT as the factor of proportionality.³

An important conclusion that follows from Marx's labor theory of prices has to do with the relation between the **quantity of money** in circulation and the total **sum of prices** of commodities. According to Marx's theory, the prices of commodities are determined as in the equations above, as functions of the quantities of socially necessary labour-time contained in commodities and gold. It follows that the sum of prices also depends on the sum of the quantities of socially necessary labour-time contained in all the commodities together (the \mathbf{L}_i 's in the above equations), and is independent of the quantity of money in circulation (i.e. there is no \mathbf{M} in the above equations for prices). Marx argued, to the contrary, that the relation between the quantity of money and the sum of prices is the other way around: the quantity of money in

circulation is determined by the sum of prices ($P = \sum P_i$), along with the velocity of money, according to:

$$(4) \quad M^* = P / V$$

Marx argued that the quantity of money in circulation would adjust to the sum of prices (i.e. to the “needs of circulation”) by hoarding and dishoarding and/or by changes in the velocity of money.⁴

These quantitative conclusions are the basis of Marx’s critique of the quantity theory of money of Hume and Ricardo, etc. Marx argued that the fundamental mistake of the quantity theory is that it considers money only as means of circulation, and ignores the other functions of money, especially the most fundamental function of measure of value, and also the function of store of value. We have seen above that, when money functions as the measure of value in order to determine prices, prices depend on the relative quantities of labour-time contained in commodities and money, and do not depend on the quantity of money in circulation. An autonomous change in the quantity of money does not result in a change of prices (assuming no change in the labour-times contained in commodities), but instead is offset by hoarding and dishoarding (as hoards, money functions as store of value) and/or by a change in the velocity of money.

2. Inconvertible fiat money

Marx’s theory of the relation between the quantity of money in circulation and the sum of prices summarized above assumes that money in circulation is either gold coins or tokens or paper money that is convertible into gold at legally defined rates. The case of inconvertible fiat money, in which the government forces into circulation paper money that is not convertible into gold (or silver), is somewhat different. In this case, according to Marx, the MELT depends not only on L_g , but also on the **ratio** between the quantity of paper money forced into circulation (M_p) and the quantity of gold money (M_g^*) that would be required if commodities sold at gold prices (as determined by equation (4) above); (for Marx’s analysis of inconvertible fiat money,

see Marx 1857-58 , pp. 131-36; Marx 1858, pp. 119-22; and Marx 1867, pp. 221-26).

Algebraically:

$$(5) \quad \text{MELT}_p = (1 / L_g) (M_p / M_g^*)$$

For example, if twice as much paper money were forced into circulation than is required for circulation on the basis of gold prices (i.e. $M_p / M_g^* = 2$), then the MELT would double and hence the prices of all commodities would also double. Marx argued that in this case, the paper money does not represent labor-time directly, but rather **indirectly** through gold. In the above example, twice as much money would represent the same quantity of gold money required for circulation, and this quantity of gold money would continue to represent the same quantity of socially necessary labour-time contained in all other commodities.

If the paper money exceeds its proper limit, i.e. the amount of gold coins of the same denomination that could have been in circulation, then ... it will still represent within the world of commodities only that quantity of gold which is fixed by its immanent laws. No greater quantity is capable of being represented. If the quantity of paper money represents twice the amount of gold available, then in practice £1 will be the money-name not of 1/4 of an ounce of gold, but of 1/8 of an ounce. The effect is the same as if an alternation had taken place in the function of gold as the standard of prices. The values previously expressed by the price of £1 would now be expressed by the price of £2. (Marx 1867, p. 225)

Therefore, in the case of inconvertible fiat money, Marx's theory is similar to the quantity theory of money, in the sense that the quantity of money is independent of prices and determines prices (in part). However, Marx's theory is still significantly different from the quantity theory in the sense that the quantity of money does not determine prices directly, but rather indirectly through the MELT. And Marx's theory is superior to the quantity theory in the following important respects: (1) Marx's theory also explains the necessity of money in a commodity economy, and the quantity theory does not; (2) Marx's theory explains not only the general price level (by the MELT), but also explains individual prices, as determined by the MELT and quantities of socially necessary labour-time (as in equation (3) above) and the quantity theory does not; and, most importantly, (3) Marx's theory of money also provides the

basis for a theory of surplus-value and for a theory of the dynamics of capital accumulation, and the quantity theory does not.

3. Modern inconvertible credit money

I suggest that, in the case of today's monetary system of inconvertible credit money, with no reference to gold at all, the determination of the **MELT** is essentially the same as Marx's case of inconvertible fiat money just discussed (paper money denominated in gold, but temporarily not convertible into gold). As we have just seen, the **MELT** is determined in this latter case by equation (5):

$$(5) \quad \mathbf{MELT}_p = [1 / L_g] [M_p / M_g^*]$$

M_g^* in this equation is the quantity of gold that would be required if commodities sold at gold prices, and is determined by equation (4):

$$(4) \quad M_g^* = P / V$$

where P in this equation is the sum of individual gold-prices (ΣP_i) that would obtain money were convertible into gold. These individual gold prices are in turn determined by equation (1):

$$(1) \quad P_i = L_i / L_g$$

And the sum of these individual gold prices are:

$$(1') \quad P = [1 / L_g] [\Sigma L_i] = [1 / L_g] L$$

Now, if we substitute equation (4) for M_g^* into equation (5), we obtain:

$$(6) \quad \mathbf{MELT}_p = [1 / L_g] [M_p / M_g^*] = [1 / L_g] [M_p / (P / V)] = [1 / L_g] [M_p V / P]$$

Finally, if we substitute equation (1') for P into equation (6), we obtain:

$$(7) \quad \mathbf{MELT}_p = [1 / L_g] [M_p V / P] = [1 / L_g] [M_p V / (L / L_g)] = [1 / L_g] [M_p V L_g / L] \\ = M_p V / L$$

Thus we can see that, in Marx's case of inconvertible fiat money, the **MELT** reduces to $M_p V / L$, and does not ultimately depend on the value of gold (i.e. the labor time contained in gold, L_g). The **MELT** in this case is the product of two fractions, and L_g is in the denominator of

one fraction and in the numerator of the other fraction, so that L_g cancels out in their product, the $MELT_p$. Therefore, a change of L_g has no effect on the MELT. For example, if L_g were doubled, then $(1/L_g)$ would be cut in half, so that the net effect on their product (the $MELT_p$) would be zero. On the other hand, if M_p were doubled, then the $MELT_p$ would also double, according to either equation (7) or equation (5).

I think that this conclusion provides the answer to the question posed at the beginning of this paper about the determination of the MELT in the case of modern **inconvertible credit money**. In this case, the determination of the MELT is **quantitatively identical** to Marx's case of inconvertible fiat money. In both cases, the MELT is determined as in equation (6), by the ratio of the total quantity of paper money in circulation (adjusted for velocity) (M_pV) to the total quantity of SNLT (L). The difference between the two cases is that, in the case of pure paper money, the MELT is determined by the quantity of paper money **directly**, not indirectly through gold, as in equation (5). But the magnitude of the MELT is the same in both cases: M_pV / L .

The rationale for this determination of the MELT in the case of inconvertible credit money, that is consistent with Marx's general theory of the necessity of money is the following: It is a requirement of a commodity economy (i.e. a market economy) that one hour of SNLT must be represented by some quantity of money. The reason for this requirement is that labor in a commodity economy is not regulated directly and consciously according to a social plan, but is instead **regulated indirectly and unconsciously** through money-prices. In any type of society, the quantities of labor-time necessary to produce different goods must of necessity play a role in the allocation of social labor. However, since there is no direct regulation of social labor in a commodity economy, the only way the quantities of labor-time necessary to produce goods can play a role in the regulation of social labor is by being **indirectly represented** as the (average) price of commodities. That is why SNLT must be represented as quantities of money-prices in a commodity economy. (For discussions of Marx's derivation of the necessity of money from his labor theory of value, see Rosdolsky 1977, Chapters 5 and 6; Banaji 1979; Weeks 1981, Chapter 6; and Murray 1988, Chapter 14)

In the case of **commodity money**, one hour or SNLT is represented simply by the quantity of gold produced in one hour of SNLT (L_g), as in equation (3). In the case of **inconvertible fiat money** analyzed by Marx, the quantity of money that represents one hour of SNLT depends on the quantity of gold produced in one hour **and** also on the ratio between the quantity of paper money forced into circulation (M_p) and the quantity of gold money that would be required if money were convertible into gold (M^*), as in equation (5). Equation (5) reduces down to equation (7), so that the magnitude of the MELT in this case does not really depend on the value of gold at all, but instead depends on the ratio of the total quantity of paper money in circulation (adjusted for velocity) ($M_p V$), to the total SNLT (L), as in equation (7). In the case of modern **inconvertible credit money**, the quantity of money that represents one hour of SNLT is quantitatively the same as in the case of inconvertible fiat money analyzed by Marx - by the ratio of the total quantity of paper money in circulation (adjusted for velocity) to the total SNLT that must be represented (i.e. $M_p V / L$), as in equation (7).

In the case of inconvertible credit money, in any given period in the economy, there exists a certain quantity of L , the total quantity of SNLT that **must be represented** in some way, and there is no other way except by credit money. At the same time, there also exists $M_p V$, the total quantity of paper money adjusted for velocity **that is available to represent SNLT**. Therefore, the amount of paper money that represents one hour of SNLT is determined by the ratio of these two objective aggregate quantities ($M_p V / L$). In this way, inconvertible credit money performs the necessary function of the measure of value, similar to commodity money in the past: one hour of SNLT is represented by a definite quantity of credit money, which is determined by the ratio $M_p V / L$.

As in Marx's analysis of the case of inconvertible fiat money, my extension of Marx's theory to the case of modern inconvertible credit money is similar to the quantity theory of money, in the sense that the quantity of money is independent of prices and determines prices (in part). However, this extension of Marx's theory is still significantly different from - and

superior to - the quantity theory in the same important respects noted above: (1) the quantity of money does not determine prices directly, but rather indirectly through the MELT; (2) the necessity of money in a commodity economy is explained; (3) not only is the general price level explained (by the MELT), but individual prices are also explained; and, most importantly, (4) Marx's theory of money also provides the basis for a theory of surplus-value and for a theory of the dynamics of capital accumulation, and the quantity theory does not.

4. Conclusion

In this paper, I have suggested an interpretation of the determination of the MELT in the case of inconvertible credit money that is consistent with Marx's general theory of money, and is also **quantitatively identical** to Marx's theory of the determination of the MELT in the case of the inconvertible fiat money of his time. Therefore, I conclude that today's monetary regime of inconvertible credit money does not contradict Marx's theory, and that Marx's theory of money remains applicable to the modern monetary regime of inconvertible credit money, as well as to the commodity money of Marx's day. Credit money functions as the measure of value, even though it is not a produced commodity.

This conclusion suggests that the debate over whether or not gold still plays a role in the function of measure of value in today's economy is less important for Marx's theory than previously thought. Whether or not gold still plays such a monetary role, i.e. whether it is assumed that credit money represents SNLT **directly** by itself, or **indirectly** through gold, **it does not make any difference** to the quantitative determination of the MELT in Marx's theory. In both cases, the MELT is equal to the ratio $M_p V / L$, as in equation (7). Therefore, it also does not make any difference to the determination of the aggregate price level, nor of the total surplus-value produced.

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Review of Political Economy, 12:4, 435-51.

ENDNOTES

¹ Others who have come to similar conclusions – that money as measure of value in Marx's theory does not have to be a commodity - include Foley 2005, Lapavitsas 2000, Williams 2000, and Campbell 1997. The main proponent of the contrary view is Claus Germer (e.g. Germer 2005), who argues that money does have to be a commodity in Marx's theory of the measure of value, and that gold still functions as the ultimate measure of value in the world economy today.

² This is not a perfect empirical measure of the MELT because each hour of labor is treated as equivalent to all other hours of labor with respect to the production of value, and thus no account is taken of unequal skills and unequal intensities of labor. Foley (2005) discusses these measurement issues.

³ These prices determined in Volume 1 are simple abstract prices, which do not take into account the equalization of profit rates across industries. However, Marx argued that the sum of prices does not change as a result of the equalization of profit rates, so that the further conclusions discussed in the following paragraphs in the text regarding the sum of prices are not affected by this equalization. This argument is of course very controversial; I support Marx's argument in Moseley 2005b.

⁴ This simple equation can be further developed by taking into account credit sales and debt payments. Also most of the total money necessary in circulation might be supplied by credit money (backed by gold). But the main point would remain the same: the total money required for circulation is determined by the sum of prices, not the other way around. (See Lapavitsas 1991 for both of these points.)