Krugman Meets Marx and Keynes at the Baby-sitting Co-op

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Abstract

Paul Krugman tells the story of the Capitol Hill baby-sitting co-op as a means of introducing readers to the economics of recessions. This story, like many others in economics, is a wonderful teaching device in undergraduate courses. We take the story from where Krugman stops and develop it by presenting different aspects of a monetary economy with the help of a graphical analysis. This is done with the introduction of history of economic thought to the curriculum by visiting monetary theories of Karl Marx's *Capital* (1867) and John Maynard Keynes's *A Treatise on Money* (1930). The benefit of using these two sources is twofold. First, it is possible to find a common theory in both Marx and Keynes's writings to explain the baby-sitting co-op story. Second, it is possible to move beyond the story and introduce other aspects of a monetary economy such as endogenoity of money, industrial and financial circulation of money, etc. In addition, a graphical framework is developed as teaching aid.

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1. Introduction

Krugman (1994, 1999) often uses the Baby-Sitting Co-op story, which was originally told by Sweeney and Sweeney (1977), in order to show that there is no mystery behind the study of recessions and recoveries of current economies although the details are complex. The present study treats Krugman's story, like similar stories (e.g., cigarette money in POW camp), as a pedagogically functional one in terms of teaching the foundations of monetary theory and the way a monetary economy works. One can find different functions of money (i.e., measure of value, medium of exchange, store of value), consequences of hoarding, and the relationship between financial and real sides of a monetary economy in the same story.

We take the story from where Krugman stops and develop it by presenting different aspects of a monetary economy with the help of a graphical analysis. This is done with the introduction of history of economic thought to the curriculum by visiting monetary theories of Karl Marx's *Capital* (1867) and John Maynard Keynes's *A Treatise on Money* (1930). The benefit of using these two sources is twofold. One is that it is possible to find a common theory in both Marx and Keynes's writings to explain the baby-sitting co-op story. In addition, it is possible to move beyond the story and introduce other aspects of a monetary economy such as endogenoity of money, industrial and financial circulation of money, etc.

Krugman's baby-sitting co-op story and its potential in terms of teaching the fundamentals of a monetary economy are introduced in the following section. This is followed by the study of Marx's Chapter 3 of Volume I of *Capital* where one can find a simple theoretical presentation of Krugman's story and possibility of crisis even within this simple story. With the incorporation of Keynes's analysis of asset markets in *A Treatise on Money*, the paper shows the reasons behind holding money by extending the simple story to provide a more realistic picture of a monetary economy. The paper ends with some conclusions.

2. Krugman at the Co-op

In his popular writings, Paul Krugman (1994, 1999) has made extensive use of the Capital Hill baby-sitting co-op experience. The story of the co-op was first introduced by Sweeny and Sweeny (1977). In the original, both the co-op board and Federal Reserve faced the daunting task of fighting inflation. Krugman focused attention only on the earlier trouble of a recession in the co-op.

The baby-sitting co-op consisted of a large group of professionals in the Washington D.C. area to look after each other's babies. In order to run smoothly and avoid book-keeping hassles, the co-op issued scrip (money). Each scrip represented one-half hour of baby-sitting services. In this sense, the scrip was intended to serve as a unit of account and medium of exchange in this small economy. However, the co-op got into a recession when the scrip began serving as a store of value. In Krugman's version of the story, some members attempted to increase their reserves of scrip to use later in times of need. This attempt to increase reserves automatically implied fewer purchases of baby-sitting services. In other words, the desire to increase reserves had the natural consequence of a decrease in demand for goods (i.e., baby-sitting hours). The baby-sitting co-op found itself in the middle of a recession.

Krugman is able to use the baby-sitting co-op story to relate Keynes's theory of, and one policy recommendation for, a recession. According to Krugman, the desire to increase holdings of money, for Keynes, implied a decrease in the immediate desire to purchase goods and services. Fewer purchases translated to lost sales (declining incomes) and further spending cuts. In short, the desire on the part of the public to increase cash holdings leads to a contraction in the economy. One possible policy recommendation for the recession is to increase the total quantity of money. This will allow the public to hold more money without cutting back spending. In fact, after failed legislative remedies, the co-op board printed more scrip and the baby-sitting economy recovered. The rest of the story is predictable. The baby-sitting economy began experiencing a 'sort' of inflation (remember, the price of a half hour of baby-sitting was set at one scrip) when too much scrip was being printed.

No one story can address all concerns in macroeconomics. There are several markets missing from the baby-sitting economy (e.g., the loan market). On the other hand, a story or model which attempted to address all concerns would simply get too complicated for undergraduate students. The baby-sitting story provides a useful introduction to students of the importance of money within the economy. It is precisely because of the simple nature of the baby-sitting economy which allows students to focus on the essential role of money.

As a teaching tool, the baby-sitting co-op is one of the more useful stories that one can tell in a macroeconomics course. The story not only gives students an important insight into a monetary economy but also illustrates the ideas of one of the great thinkers on the subject. In the following sections, we attempt to build on these themes by showing how the story can be graphically formalized and further connections made to the history of economic thought.

3. Marx Joins the Co-op

Krugman uses the babying-sitting co-op story to illustrate an important insight by Keynes on the nature of a monetary economy and recessions. In addition to Keynes, the story helps to illustrate a simple analysis put forth by Marx. This connection may come as a surprise to some readers.[1] Admittedly, Marx is not known for his monetary theory.[2] This is unfortunate, especially in the present context, since Marx's theory of crisis began with the role of money in the economy. The baby-sitting co-op story, on the other hand, is particularly useful in introducing students to Marx as an economist.

Part I of Volume I of *Capital* (1867) describes a very simple type of economy. Individuals are producing commodities for the market. There is no distinction between workers and capitalists at this point. There is no government or central bank. Therefore, money is simply the commodity (e.g., gold) which has been chosen by the society, or naturally arises due to certain physical characteristics, to serve as a unit of account. Overall, this mental construct by Marx has a strong similarity to the actual baby-sitting co-op.

In the last chapter of Part I, Marx develops the modern functions of money (i.e., unit of account, medium of exchange, store of value, and means of settling debt). The simple economy of Part I is envisioned in terms of a circuit of exchange, C-M-C'. In words, an individual sells his/her commodity (C) for money (M) which is then used to purchase a different commodity (C'). Significantly, this is the circuit of exchange in a simple commodity production economy where commodities are smoothly exchanged with other commodities and money only helps ease the transactions. [3] Therefore, it is not the circuit of capital, M-C-M'.[4] This is significant since the baby-sitting 'co-op' is not a capitalist economy. Instead, it functions like Marx's hypothetical simple commodity production economy. At this point in the circuit of exchange, money acts merely as a unit of account and medium of exchange.

However, the exchange circuit presents the potential for a specific problem even in (this simple commodity production) economy where money acts merely as a unit of account and medium of exchange. In contrast, in a barter economy (C-C') a sale (supply) always represents a subsequent purchase (demand) made by an individual.[5] Once money is introduced, and for Marx money must be introduced, a possibility of a crisis arises where money will serve as a store of value. In terms of the exchange circuit, the initial sale (C-M) does not necessarily imply a subsequent purchase (M-C'). In other words, the desire to increase one's hoard, or reserve, of money necessarily implies someone else's commodity will not be sold. At this point, there is only a possibility of a crisis (recession) occurring since the motivation behind hoarding money has not been developed.

At this point, the exchange circuit can be translated into the equation of exchange ($MV=Py$). However, as Marx did in the *Capital* Vol. 1, it has to be treated differently from its traditional interpretation. Marx argued that if one wants to treat it as an equation, then it should normally be read from right to left. Marx's reasoning can be explained as the following. First, commodities come onto market with prices attached. That is, the prices of commodities are originally determined in the production sphere (i.e., prices of production). Thus, prices are not determined by the quantity of money as suggested by the traditional interpretation of the equation.[6] Second, the money in the equation is the money in circulation for transaction purposes (i.e., narrow money). Therefore, as long as velocity of (narrow) money in circulation is constant, the sum of prices (*Py*) determines the amount of money in circulation.[7] At certain abnormal times (e.g., crisis) however, money would flow out of circulation and into hoards. That is, a part of the money in circulation used for exchange would be kept in hoards where money would function as a store of value. There is no need to say that when this happens the velocity of the money in circulation becomes unstable. Then the equation of exchange would be read from left to right. The sum of prices would need to adjust to demand by a decrease either in prices (*P*) and/or output (*y*). [8]

The analysis by Marx can be graphically formalized. The graph can also be used in the discussion of the baby-sitting co-op. The lower quadrant in Figure 1 illustrates the public's choice of how to use money (scrip). The total money supply (M^S) can be divided between money in hoards (M^H, store of value) and money in circulation (M^C, medium of exchange). The sum of prices (*Py*), or nominal aggregate supply (NS), in the upper quadrant is initially taken as given. The horizontal nominal supply schedule is a graphical interpretation of Marx's idea that commodities come onto the market with prices attached. As long as the velocity of money in circulation is stable, *MV* can be index for aggregate demand. [9] Therefore, the nominal aggregate demand (ND) schedule represents the left hand side of the quantity equation. Care must be taken when interpreting this schedule. In the traditional sense, this schedule represents the transactions demand for money schedule with causation running from income (vertical axis) to money in circulation (horizontal axis). In terms of Krugman's analysis of the baby-sitting co-op and Marx's theory of the potential for crisis, the ND schedule can be read from the money in circulation to aggregate demand in the economy. In this sense, the decision concerning how to hold money also determines the aggregate demand for commodities.

[Insert Figure 1 here]

During normal times, according to Marx, the nominal aggregate supply of commodities will determine the amount of money in circulation. Stylistically, as the economy expands during the expansion phase of the business cycle, NS schedule shifts upward. The increase in effective supply of narrow money (M^C) is realized by a shift in the public's composition of money from hoards (M^H) to circulation (M^C). This is seen as a movement from point 1 to point 2 in Figure 1.[10] Here, the ND schedule acts very much like the normal transactions demand for money. The additional feature is to note this process taking place without an increase in the total money supply when the money hoards accommodate the increased demand for money in circulation.

Just as the recession in the baby-sitting economy, the potential for crisis in a monetary economy is always present.[11] When the members of the co-op began attempting to add to their reserve of scrip, there was necessarily a decrease in the demand for baby-sitting services. For Marx, when individuals began to hoard money after a sale, then the exchange circuit would necessarily not be completed with an excess supply of commodities the result. Beginning at point 2 in Figure 1, when the public increases its money hoards to point 1 in the lower quadrant, then the economy moves down along the ND schedule. The increase in money hoards leads to a crisis in Marx's terms and a recession in the baby-sitting economy. In this case, the money in circulation declines, left-hand side of the quantity equation, which calls forth a decrease in the sum of prices, right-hand side.

Figure 1 is a literal graphical translation of the beginning of Marx's analysis of a monetary economy and the baby-sitting economy. It has the added benefit of being able to illustrate the policy recommendation of increasing the money supply. The money supply should be increased enough to meet the demand for money hoards (reserves of scrip) without decreasing the money (scrip) in circulation. However, it is not capable of explaining the motivation behind the desire to increase money hoards (reserves of scrip). For Marx, this was why at this stage the crisis was only a potential.

4. Along Comes Keynes

Krugman identifies the experience of the baby-sitting co-op with Keynes's theory of recessions in the *General Theory of Employment, Interest, and Money*. Although a convenient connection to draw, Keynes's work in the *Treatise on Money* provides a better framework from which to directly build on the co-op experience. It is here that Keynes addresses the motivation behind holding money in terms of, what he calls industrial and financial circulation of money. In doing so, many of the monetary aspects of the *Treatise on Money* provide an important complement to Marx's work.[12]

In the *Treatise on Money*, Keynes divides the total deposits (or, bank money) into income deposits, business deposits, and saving deposits. The three types of deposits are separated into money operating in the industrial circulation (income plus part of the business deposits) and financial circulation (saving plus the remaining business deposits). The money in the industrial circulation moved with income and output. The money in the financial circulation depended upon the bearish sentiment of the public. The demand for money operating in the two circulations could move together or inversely.

The bearish sentiment of the public provides the step forward in the analysis of the baby-sitting co-op and Marx's possibility of crisis. Keynes identifies a four-fold classification of the state of speculation in the stock market (Keynes, 1930). A bull (bear) market with a consensus of opinion was defined as asset prices were expected to rise (fall) and therefore a decrease (increase) in the financial circulation. A bull (bear) market with a division of opinion existed when asset prices were rising (falling) with an increasing (decreasing) bear position, thus an increase (decrease) in the financial circulation.

Combining the different types of speculative asset markets with liquidity preference results in a fairly complete account of the desire to hold idle money balances (financial circulation). In the *Treatise on Money*, liquidity preference was a schedule inversely relating the financial circulation with expected asset prices. The motivation behind holding idle money balances (hoards for Marx, and reserves of scrip for Krugman) was an expectation that asset prices would fall.[13]

The speculative asset markets and liquidity preference schedule can be added to the previous graphical representation in order to incorporate Keynes's ideas.[14] The Northwest quadrant of Figure 2 shows the state of the asset market as a relation between the right hand side of the equation of exchange, (*Py*), and expected asset prices. As drawn, the upward sloping line indicates a bull (bear) market with consensus. A downward sloping line in this quadrant would indicate a bull (bear) market with a division of opinion. The Southwest quadrant incorporates the liquidity preference function. The lower *y*-axis (M^H) can now be thought of as a measure of the financial circulation whereas the right side of the *x*-axis (M^C) is a measure of the industrial circulation. These roughly correspond to Marx's money hoards and money in circulation, respectively.

[Insert Figure 2 here]

Keynes associated the early expansion (contraction) phase of the business cycle with a bull (bear) market with consensus. For example, the early expansion phase is illustrated in Figure 2 by an increase in the nominal aggregate supply. As output expands during a bull market with consensus and a given liquidity preference function, the financial circulation will decline. This decline in the financial circulation allows the industrial circulation to expand in response to the expansion in the economy. In this case, the total demand for money need not rise during the early expansion phase.[15] The link to Marx's 'normal' situation is obvious and demonstrates that both Marx and Keynes allowed the quantity equation to be read from right (*Py*) to left (*MV*).

The late expansion (contraction) phase of the business cycle was normally associated with a bull (bear) market with a division of opinion. Figure 3 shows an increase in the nominal aggregate supply combined with an expectation of a fall in expected future asset prices. Given the liquidity preference function, the financial circulation begins to increase. The industrial circulation can no longer expand with income and output. Thus, the expansion (contraction) is broken unless a change in the banking system occurs to increase the total money supply.

[Insert Figure 3 here]

Incorporating Keynes's classification of asset markets and liquidity preference is a natural extension of the baby-sitting co-op story. It brings the story closer to an actual economy without many of the complications students will soon face. This is, of course, only one possible extension. Another possibility is to link the story to the *General Theory* framework by incorporating the liquidity preference theory of the interest rate. However, as traditionally taught, this theory does not make a clear distinction between the financial and industrial circulation. It also perpetuates the mistaken notion that an increase in output will necessarily lead to an increase in the interest rate. For example, in the traditional Keynesian story, an increase in income and output will cause an increase in the transactions demand for money. The increased demand for money leads to an increase in the interest rate and subsequent fall in investment spending. The process of rising interest rate and falling incomes continues until the excess demand for money is eliminated. In the current context, the process depends upon the bearish sentiment of the public since the composition of total money supply is allowed to change. This typical Keynesian story which students will soon learn ends up blurring a key message from Krugman, Marx, and Keynes.

5. Conclusion

The present study exploits the pedagogical benefits of telling a simple story frequently used by Krugman in order to teach macroeconomics at the undergraduate level. The baby-sitting co-op story acts as a simple entry point to teach the foundations of monetary theory and the way a monetary economy works. It helps to present clearly the importance of different functions of money and the role they play with respect to the interaction between real and financial sides of contemporary economies. It is also possible to show the fundamental reasons behind economic crises within the same story.

In order to achieve all these, however, it is necessary to introduce a theoretical framework which comes from the writings of Marx and Keynes. This demonstrates that the study of history of economic thought can become a very inspiring and functional component of teaching economics. The graphical analysis developed in this paper is a simple example of how one can integrate history of economic thought to the existing curriculum.

In a similar vein, the present study hopes to give an impetus to the development of a heterodox curriculum for teaching economics. The graphical analysis of Krugman's story in this study is based on a synthesis of monetary theories of Marx and Keynes. The present study exploits the potential of complementary aspects of different heterodox theories in order to develop a heterodox curriculum for economics.

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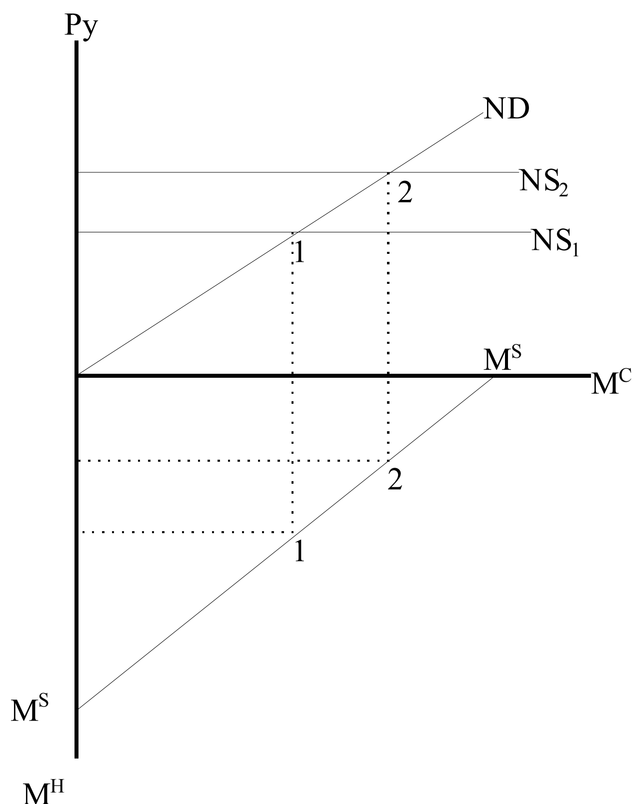

Figure 1

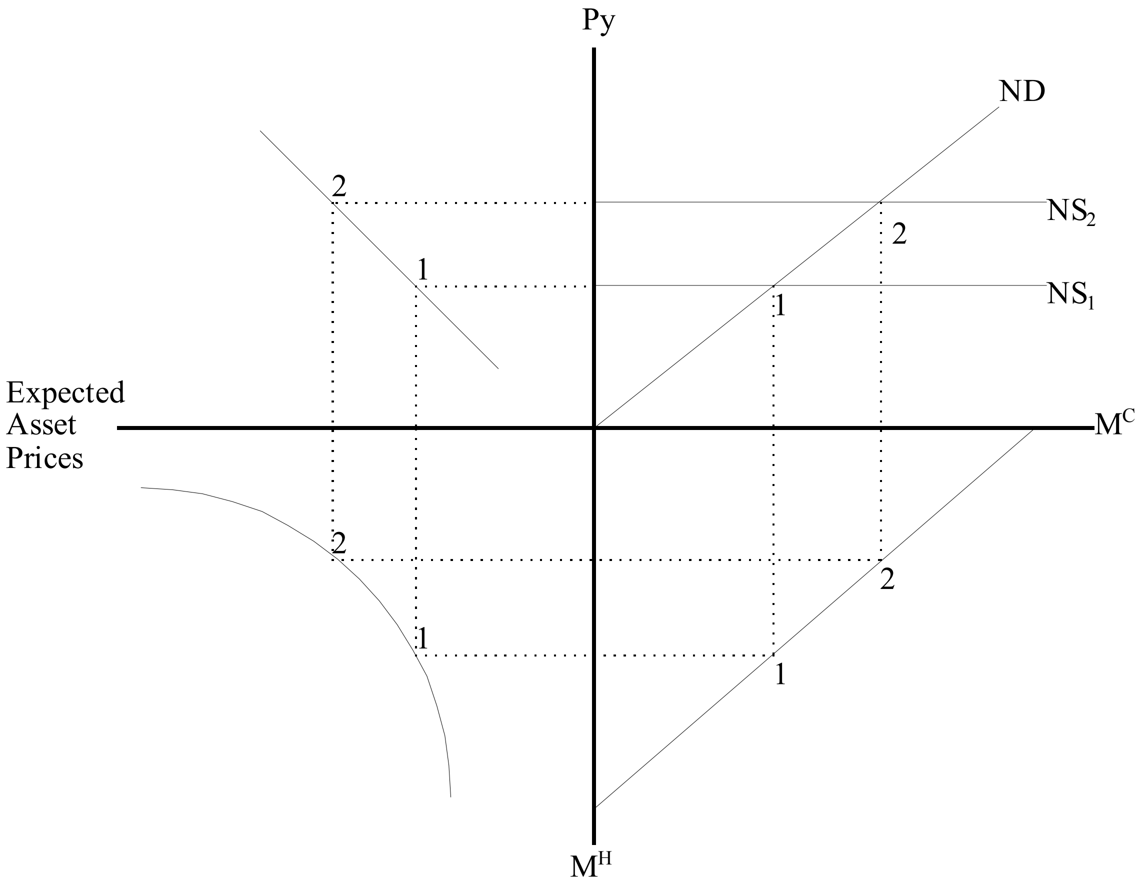

Figure 2

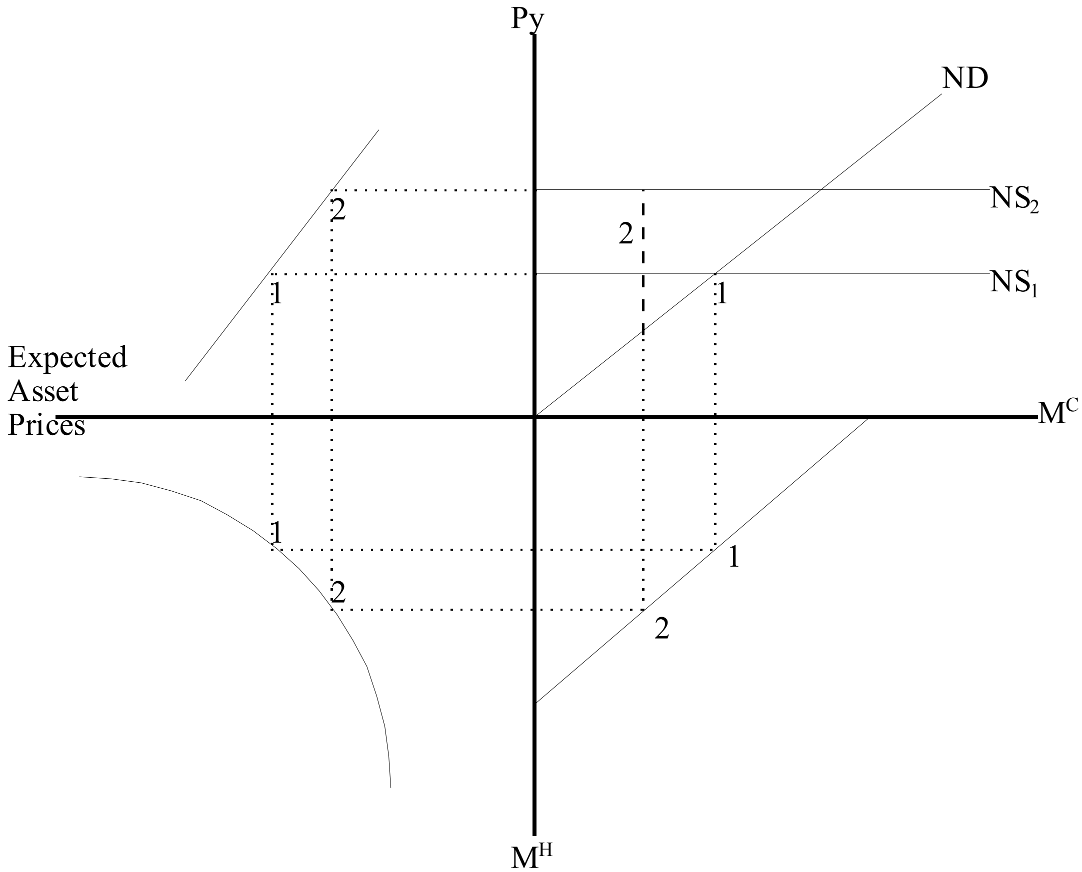

Figure 3

FOOTNOTES

1. In fact, the relevance of Marx for the story is not out of place at all. Marx's critical remarks on labor-money schemes are very relevant in this context. In addition, Marx's critic of Ricardo and others on Say's Law relies heavily on the understanding of money and a monetary economy.

2. See Schumpeter's (1954) condemnation of Marx as a monetary theorist. This condemnation has carried much weight. For an alternative point of view from non-Marxists, see Rogers (1989), Wray (1990), and Moore (1988).

3.Such economy reflects typical Say's world where supply would always be equal to demand. Marx used this hypothetical simple commodity production economy as a mental exercise to criticize Say's Law. For an excellent presentation of this point see Kenway (1980).

4. It is within the circuit of capital that potential problems can begin to mount. First, financing must be arranged to begin production. Second, the commodity must be sold at a price that will yield a normal profit. Third, the sale of the commodity must take place within a particular period of time in order to meet debt obligations.

5. As a useful exercise, the circular flow can be drawn for the baby-sitting co-op without scrip. This can be compared to the circular flow with scrip. At this point, the double coincidence of wants can be discussed along with the benefits (e.g., absence of time in

book-keeping) of the scrip.

6.However, Marx notes that these prices may or may not be realized depending upon the market conditions.

7. It is in this sense that Marx can be said to have an endogenous theory of the money supply. When a banking system and bank money is introduced in Volume III of *Capital* (1894), Marx continues to build on this endogenous money supply theme.

8. Which of these actually adjusted was not the main concern at this stage. The point was that the increase in the desire to hoard money would initiate a crisis. Marx (1939, p. 447) usually assumed some combination of price and output adjustment.

9. Authors are indebted this point to Korkut Ertürk.

10. At a more advanced stage in his analysis, though little developed, Marx argues that the interest rate does not necessarily rise during the early expansion phase of the business cycle. The reason being, is the accommodating increase in the money in circulation.

11. See Crotty (1985, 1986, 1987) and Kenway (1980) for more on Marx's possibility for crisis.

12. In the *Treatise on Money* Keynes did not acknowledge any inspiration from Marx. However, soon after the publication of the *Treatise on Money*, while working on 'a monetary theory of production', the early drafts of the *General Theory* make an explicit appreciation of Marx's theory of a monetary economy . Significantly, in these early

drafts, Keynes (1973) was developing a classification of economies. The classification was not intended to represent real economies but rather approaches to economic theory. Some of this mirrored Marx's criticism of his classical predecessors mistaken devotion to Say's law on the basis of theorizing about a different type of economy.

13. See Ertürk (2002) for the inspiration behind this reading of the *Treatise on Money*.

14. Note that the velocity of money here is still velocity of narrow money and stable. Keynes employed narrow money in the *Treatise* while he had broad money whose velocity is not stable in the *General Theory* (Ertürk, 1998).

15. The limitations of the traditional liquidity preference theory of the interest rate are obvious at the point. In the traditional theory, an expansion of output causes an excess demand for money which raises the interest rate. Here, the increased demand in the industrial circulation is accommodated by a decrease in the financial circulation.