A Schumpeterian analysis of the credit market

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A B S T R A C T

Schumpeter shows that bank credit acts as money-capital and, therefore, constitutes the necessary premise for the realization of the innovative processes planned by entrepreneurs. This makes it important to specify the debt contracts between each bank and entrepreneurs during the prosperity phase of Schumpeter's cyclical development. The present paper aims to point out the achievements and the limits of Schumpeter's monetary theory with respect to this point, that is the debt contract design. On the side of the limits, I maintain that Schumpeter's approach, although representing one of the most stimulating contributions in the history of economic analysis, asks for refinements as regard to the objective-function of the individual banks, the determination of the interest rates, and the usableness of the credit demand and supply curves. Schumpeter's posthumous treatise on money provides stimulating insights for the definition of these refinements.

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1. Introduction

Schumpeter's monetary theory gives great importance to the role of banks. It shows that bank credit acts as (money)-capital and, therefore, constitutes the necessary premise for the realization of the innovative processes planned by the entrepreneurs and their imitators. In a previous paper (Messori, 2004) I have examined the differences between this monetary approach which Schumpeter (1954) names 'credit theory of money', and a more traditional approach labeled by the same author as 'monetary theory of credit'. The differences between these two approaches have offered the opportunity for a detailed analysis of the time sequence which characterizes Schumpeter's framework of the cyclical development. In this sequence, each production process takes time so that the purchase of productive inputs precede the sale of produced outputs; and this is the reason why credit

matters and banks have a crucial role to play. However, in Messori (2004) I have not examined the determination of the debt contracts between banks and entrepreneurs (including imitators) during the two-phase cycle.

This is an analytical gap since Schumpeter's theory concerning the specification of the debt contracts between banks and innovative firms offers valuable hints and theoretical pieces in a field at length neglected by the economic theory, even by those approaches – mainly, the sequential Schemes – which explicitly deal with the problem of how to advance credit to open the markets of inputs and then to start the production processes. In this respect, examples are offered by Wicksell (1898), Robertson (1926), and Keynes (1930). In these outstanding works the determination of the supply and demand functions in the credit market is oversimplified or exogenously given. The same applies to more recent sequential schemes. The analyses based on a single period (cf. Graziani, 1992), treat banks' supply as infinitely elastic and firms' demand for credit as given; and, despite the stimulating attempts made by Hicks (1989) and Amendola–Gaffard (1998, chapter 2), the neo-Austrian multiperiods models of Hicks (1965) and

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Amendola–Gaffard (1988 and 2006) are unable to incorporate banks' behavior in their analytical framework.[1] This prevents the sequential models to include in their more general scheme the results, reached in partial equilibrium, by the asymmetric information literature on the existence of financial intermediaries and on the working of the credit market (see Diamond, 1984; Gale–Hellwig, 1985; Stiglitz–Weiss 1981 and Stiglitz–Weiss 1992; Innes, 1991; and for an analytical review: Freixas–Rochet, 1997).

The present paper aims to build up a Schumpeterian debt contract to be integrated with the just mentioned literature on the role played by banks. It should be noted that Schumpeter's approach leaves many problems unsolved as regard to the definition of the objective-function of the individual banks, to the determination of the interest rates, and to the usableness of the credit demand and supply curves. Hence, at first it is necessary to point out the main weaknesses of Schumpeter's analysis of the debt contracts signed by savers and innovators, and to suggest some solutions to these weaknesses in a Schumpeterian sequential framework. Then Schumpeter's assumptions on the behavior of lending banks must be fitted into this sequential framework, and the consequent determination of the credit market equilibria must be refined in a Schumpeterian vein. My sequential model is characterized by three periods: the first represents a stationary state, the second allows for the introduction of an innovative process, and the third marks the realization of the new output on the market. My analysis of the credit market is focused on the debt contracts signed at the opening phase of the second and third period.

The remaining parts of this paper are organized as follow. I first investigate the drawbacks raised by Schumpeter's analysis of the market relations between capitalists and entrepreneurs (Section 2), and I outline possible improvements (Section 3). I then point out the changes required by the substitution of banks for capitalists (Section 4), and I refine Schumpeter's analysis of bank behavior in order to determine temporary equilibria in the credit market (Section 5). This last step shows that a Schumpeterian approach to the credit market is robust to the criticism raised by Schumpeter himself (Section 6), and highlights the important contribution that this approach could give as a precursor of the literature on the debt contracts design with asymmetric information (Section 7). A point to be stressed is that, differently from what has been stated by many critics, *Das Wesen des Geldes* and – in general – the *Theory of money and banking*[2] play a crucial role in the drafting of this contribution.

2. Interest rate in Schumpeter's monetary market

Schumpeter's economic process takes place in a sequence of exchanges characterized by a time lag between the instant in which the producers purchase the desired inputs through the payment of money wages, and the instant in which they realize monetary proceeds through the sale of the final goods obtained utilizing those previously acquired inputs.[3] This time lag between the purchase of inputs and the sale of outputs can be neglected in the stationary state, since the unchanging reproduction of the economic process period after period allows for the synchronization of the exchanges (cf. Schumpeter, 1970, pp. 113–116). Vice versa, in the cyclical development, this same time lag implies that the entrepreneurs as innovators (and, even if for a smaller amount, their imitators) need an external financing in order to hire that amount of labor services which is necessary for the implementation of the innovative (or imitative) production processes. Following Schumpeter, in this paper I mostly assume that the only possible source of external financing is bank credit. As a consequence, I mainly examine how the debt contracts between banks and entrepreneurs are drawn up and how a temporary equilibrium in the credit market can be reached.[4]

In the Schumpeterian framework each debt contract between lending banks and borrowing entrepreneurs is characterized by two variables: the amount of the loan granted, and the level of the interest rate (see also below, n. 6). The definition of money as capital, the lack of a capital market and of a positive interest rate in the stationary state, and my arbitrary exclusion of land services imply that the amount of bank financing to new innovative firms is equal to the amount of money wages to be paid by these firms in order to purchase that amount of labor services necessary to start and complete their innovative activities. These definitions and assumptions also imply that Schumpeter's interest rate is a purely monetary variable determined in the monetary (or credit) market.[5] In particular, being the

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[1] Hicks (1956) denominates the analysis offered by single-period models as "single-period theory", and that offered by multiperiod models as "continuation theory". He maintains that, even if the "single-period theory is a part, and indeed an essential part, of dynamic analysis", "it needs to be completed by some form of continuation theory if it is to do its properly dynamic job of analyzing a process" (p. 223).

[2] For reasons explained in Messori (1997), under this latter title I mean not only the twelve chapters included in Schumpeter' treatise on money (Schumpeter, 1970), but also four typescripts which are written in German and most likely represent chapters XIII, XIV and XV of this treatise. I found the four typescripts in the Harvard University Archives under Schumpeter, Joseph Alois, and I published them for the first time in an Italian edition (see Schumpeter, 1996, first part).

[3] Schumpeter (e.g.: 1912, chapter 1) follows the Austrian representation of vertically integrated production processes and affirms that there are two productive factors: labor services and land services. In this paper I only refer to the labor services because the analysis of the land services would require further qualifications. Moreover, I am assuming that the labor units are homogeneous.

[4] It should be noted that I do not analyze in a detailed way the different forms taken by bank financing and the various possibilities to transform short-term bank credits into securities placed in the capital market (see Schumpeter, 1970, pp. 176–189; see also: Schumpeter, 1912, pp.159–161; engl. trans., pp.111–112). Furthermore, it ought to be remembered that, in Schumpeter's framework, the credit market and the security (or financial) market are not separated markets since the latter is reduced to a section of the former (cf. Schumpeter, 1939, pp. 113–114, 618, and 621; 1970, pp. 315–318). Finally it should be noted that, in order not to complicate matters, from now on I will use the term entrepreneur for indicating both the innovators and the imitators.

[5] It is evident that the monetary determination of Schumpeter's interest rate depends on the lack of a positive interest rate in the stationary state. Many critics have considered the latter point as one of the most controversial results of Schumpeter's analysis. However, Samuelson (1982) offers a possible rationale for Schumpeter's position.