

# Finance and development: Is Schumpeter's analysis still relevant?

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## Abstract

In recent years, numerous studies have been published highlighting the role of financial structures in the development process of contemporary economies. In these recent studies, there is always a reference to the pioneering work of Schumpeter; in particular in the writings of Rajan and Zingales [Rajan, R., Zingales, L. 2003a. Banks and markets: The changing character of European finance, NBER Working Paper Series, No. 9595, March; Rajan, R., Zingales, L. 2003b. The great reversal: The politics of financial development in the twentieth century, *Journal of Financial Economics* 69, 5–50; Rajan, R., Zingales, L. 2003c. *Saving Capitalism from Capitalist*, Crown Business Division of Random House, New York], important elements of Schumpeter's theoretical framework are used. These works afford us an interesting opportunity to re-evaluate the importance of Schumpeter's contribution. The thesis put forward in this paper is that while they do indeed highlight important elements of Schumpeter's theory, Rajan and Zingales do not take the implications thereof into account and, furthermore, they neglect certain fundamental aspects of the Schumpeterian analysis that are closely connected with the parts that they consider. This renders their work incomplete, and prevents their analysis from achieving the coherence of Schumpeter's theory.

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## 1. Introduction

In recent years, numerous studies have been published highlighting the role of financial structures in the development process of contemporary economies.<sup>1</sup> These works represent a break with a widely-held theoretical view holding that income, wealth and economic growth are independent of the monetary and financial variables, and which thus considers money and the financial structure as neutral variables.<sup>2</sup> In these recent studies there is always a reference

to the pioneering work of Schumpeter; in many cases it is just a superficial mention, in other ones and in particular in the writings of Rajan and Zingales (2003a,b,c), important elements of Schumpeter's theoretical framework are used. Hence, these works afford us an interesting opportunity to re-evaluate the importance of Schumpeter's contribution.<sup>3</sup>

The thesis put forward in this paper is that while they do indeed highlight important elements of Schumpeter's theory, Rajan and Zingales do not take the implications thereof into account and, furthermore, they neglect certain

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<sup>1</sup> See for example: King and Levine (1993), Levine (1997, 2002, 2004), Rajan and Zingales (1998, 2003a,b,c), Wurgler (2000), Stulz (2001), Gorton and Winton (2002), Wachtel (2003), Capasso (2004), Fergusson (2006).

<sup>2</sup> The modern theory on economic growth is based on the key work of Solow (1956) who underlines the importance of the availability of capital and labour in the growth process and completely overlooks the role of the financial structure.

<sup>3</sup> Commenting on the work of Rajan and Zingales, Sylla (2006) underlines the link between their analysis and Schumpeter's work.

fundamental aspects of the Schumpeterian analysis that are closely connected with the parts that they consider. This renders their work incomplete, and prevents their analysis from achieving the coherence of Schumpeter's theory.

This paper is divided into two parts. In the first part, the most important points of the analysis of Rajan and Zingales are described; in the second part, the elements of Schumpeter's theory that they overlook are pointed out, and it is shown that by using the Schumpeterian theoretical framework it is possible to analyse the relation between financial structure and economic growth in a more coherent and in-depth way than the one used by Rajan and Zingales.

## 2. First part: The analysis of Rajan and Zingales

### 2.1. Financial development and innovations

Rajan and Zingales (henceforth, RZ) subscribe to the argument, put forward in recent years in many studies, that the presence of a well-developed financial system is a necessary condition for the achievement of high economic growth rates. This thesis is based on two points. First, the elaboration of a theory that explains the link between financial structure and economic development. The second point is the definition and measurement of the level of development of the financial structure; in other words, defining what distinguishes a developed financial structure from an undeveloped financial structure.

RZ develop these two points in a different way from the main body of studies that analyse the relation between the financial structure and the economic development process. The approach generally followed is to underline that the role of the financial structure becomes significant if we abandon the hypothesis of perfect markets on which the neoclassical theorems of the irrelevance of money and the financial variables were founded and we acknowledge that in reality markets are characterised by imperfections which impede their functioning. The presence of imperfections is particularly important in financial markets given the nature of the exchange that takes place between debtors and creditors; in these markets a given amount of money is exchanged for the promise of receiving a greater amount of money in the future. The temporal dimension of the credit contract leads the creditors to gather information in order to evaluate the ability of debtors to pay back the loan, so the difficulties the creditor encounters in obtaining information may make the exchange impossible. The presence of imperfect information therefore constitutes the factor justifying the creation of a financial structure. Levine (2004, pp. 2–4), notes that all the theoretical approaches that analyse the relation between financial system and growth are characterised by a common element:

In all of these models, the financial sector provides real services: it ameliorates information and transactions costs. Thus, these models lift the veil that sometimes rises between the so-called real and financial sectors ...

The costs of acquiring information, enforcing contracts, and making transactions create incentives for the emergence of particular types of financial contracts, markets, and intermediaries ... In arising to ameliorate markets frictions, financial systems naturally influence the allocation of resources across space and time.<sup>4</sup>

Having defined the fundamental role of the financial system, Levine (2004, pp. 5–6) observes that the level of development of a financial structure should be measured in relation to its capacity to produce services that reduce the effects of imperfect information and diminish the transaction costs:

Financial development occurs when financial instruments, markets, and intermediaries ameliorate – though do not necessarily eliminate – the effects of information enforcement, and transaction costs ... Thus, financial development involves improvements in the (i) production of ex ante information about possible investments, (ii) monitoring of investments and implementation of corporate governance, (iii) trading, diversification, and management of risk, (iv) mobilization and pooling of savings, and (v) exchange of goods and services. Each of these financial functions may influence savings and investment decisions and hence economic growth.

By carrying out these functions the financial structure contributes to the growth of the economic system in that it determines an efficient allocation of the resources that are put to the most productive uses:

The financial sector is important, because the financial intermediaries are responsible for resource allocation. Well-working financial intermediaries improve the efficiency of capital allocation, encourage savings, and lead to more capital formation (Wachtel, 2003, p. 35).

RZ take a different approach. To measure the level of development of a financial structure they use the concept of innovation that underlies Schumpeter's analysis. As is well known, Schumpeter emphasises that the key element of a *capitalist economy* is change,<sup>5</sup> and his aim is to elaborate a theory that can explain the continuous evolution process typical of the capitalist economy. He maintains that this process is not caused by: "... change (which) occurs in the non-social data (natural conditions) or in non-economic social data (here belongs the effects of war, changes in commercial, social, or economic policy), or in

<sup>4</sup> See also: Wurgler (2000), Stulz (2001), Gorton and Winton (2002), Wachtel (2003), Capasso (2004), Fergusson (2006).

<sup>5</sup> "Unlike other economic systems, the capitalism system is geared to incessant economic change. Its very nature implies recurrent industrial revolutions which are the main sources of the profit and interest incomes of entrepreneurs and capitalists and supply the main opportunities for new investments ... Whereas a stationary feudal economy would still be a feudal economy, and a stationary socialist economy would still be a socialist economy, stationary capitalism is a contradiction in terms" (Schumpeter, 1943, p. 178).

consumers' tastes . . ." (Schumpeter, 1912, p. 62). This process, defined by Schumpeter as 'development', is determined by two factors that are economic in nature, that is two factors he considers as endogenous.<sup>6</sup> The first one concerns the system of production and comprises the innovations introduced by entrepreneurs; these innovations might consist in the realisation of a new product, the adoption of a new production method, or the opening of new markets. The second key element of the process of economic development is the creation of money by banks through credit; this second factor, which RZ completely overlook, shall be thoroughly analysed in the second part.

RZ assert that the level of development of a financial structure can be measured in relation to its capacity to finance innovations:

The . . . problem is how to measure financial development. The right measure would capture the ease with which any entrepreneur or company with a sound project can obtain finance, and the confidence with which investors anticipate an adequate return . . . In our view the most important word in the above definition is "any". In a perfect financial system, it will be the quality of the underlying assets or ideas that will determine whether finance is forthcoming, and the identity of the owner . . . will be irrelevant . . . Our focus is on how easy it is to raise finance without prior connections on wealth . . . In some financial systems, capital is easily available for anyone within a circle of firms and financiers, but it does not percolate outside . . . In a sense, we adopt the Schumpeterian view that a critical role of finance is creative destruction, and this is possible only if there is a constant flow of capital into new firms and out of old firms" (Rajan and Zingales, 2003b, pp. 9–10).

RZ highlight an important aspect of Schumpeter's analysis, which is its affirmation that innovations are not normally introduced by the existing firms, but rather they are made by new economic agents. Schumpeter (1912, pp. 79–81), emphasizes that innovations break the equilibrium that allows the productive system to reproduce itself constantly in the same way and threaten the interests of existing firms; the introduction of innovations thus requires different capabilities from those necessary for running existing businesses. RZ highlight these views of Schumpeter when they state that:

. . . it is not safe to assume . . . that established firms will want to undertake projects that lead to extraordinary change. Technological change can render obsolete the expertise of those who run the firm. Young firms are therefore special when there is a potential for extraordinary change because they have no vested interests in the status quo (Rajan and Zingales, 2003a, pp. 22–23).

<sup>6</sup> "By 'development' . . . we shall understand only such changes in economic life as are not forced upon it from without but arise by its own initiative, from within" (Schumpeter, 1912, p. 63).

RZ therefore conclude that a developed financial system facilitates the financing of innovations undertaken by new firms that lack capital and whose decisions may affect the interests of established firms. The next step in their analysis is to define the characteristics that a financial structure capable of financing the innovations must possess.

## 2.2. Relationship-based system and arm's-length system

RZ observe that to have a developed financial system, two conditions are necessary: (a) the presence of a government that respects and safeguards property rights and, hence, of a legal system which enforces private property rights, facilitates private contracting and protects the legal rights of investors (Rajan and Zingales, 2003b, p. 18); (b) the presence of institutions and innovations that make it possible to take on the risk of financing innovations. They note that financing innovations is much riskier than financing the productive activity of existing firms and consequently they maintain that a well-developed financial system must be characterised by a series of institutions and financial institutions that make it bearable to take on the risk of innovation – both for the firm introducing it and the financier.

The first important institution mentioned by RZ is the limited-liability joint stock company (Rajan and Zingales, 2003c, p. 45). The second element characterising a developed financial system is the presence of institutions capable of overcoming problems of *adverse selection* and *moral hazard* caused by imperfect information: (Rajan and Zingales, 2003c, pp. 28–30). They note that developed financial systems are characterised by the presence of agents who specialise in the collection of information about the financial situation of firms.<sup>7</sup> Finally, developed financial systems are characterised by innovations that can be considered as an application of theoretical developments stimulated by the pioneering work of Tobin and Markowitz on the portfolio allocation theory. RZ note that the conclusions of the portfolio selection theory produced significant changes in the management criteria of important institutional investors such as pension funds; at the end of the 1970s American pension funds changed their 'prudent rule' and started to invest in riskier assets such as those issued by venture capital funds and by buyout funds, thereby contributing in a vital way to the creation of the private

<sup>7</sup> "In the small, self-contained communities of the past, the local banker generally obtained information about the creditworthiness of borrowers through the grapevine. Today, enormous corporations maintain data on the credit history of borrowers. For example, Dun and Bradstreet (D&B) collects information about a firm from millions of on-site and telephone contacts with business owners and managers as well as from government filings, the firm's banking and trade partners, and public new sources. . . . The wider availability of information has greatly expanded the availability of credit. It is fairly easy for credit histories to be verified anywhere in the United States, so potential borrowers are no longer tied to their local banker" (Rajan and Zingales, 2003c, pp. 51–52).

equity market (Rajan and Zingales, 2003c, pp. 70–71); furthermore, they underline the importance of financial derivatives.<sup>8</sup>

RZ conclude that the different level of development of the financial structure gives rise to different configurations of the financial system described using a classification that distinguishes between a relation-based system and an arm's-length system; the former characterises a backward financial system while the latter is the feature of a developed financial system.<sup>9</sup> The first system marks an economy in which there is no information disclosed and publicly available about the characteristics of debtors and in which financing is granted on the basis of information gathered by the financier through a direct relation with the debtor and with the environment in which the debtor operates. It is an only slightly developed financial structure having three basic features; the first concerns the agents that are financed, the second regards the type of relation that is created between the financier and the debtor and the type of financial instruments that are used, and the last relates to the nature of the economic operations that are financed. RZ observe, in the first place, that a relationship-lending system is able to fund just a limited number of agents: those that are known, or those that can provide guarantees.<sup>10</sup> In this situation the financier exercises monopolistic power over the debtor, who, given the scarce disclosure of information, finds it difficult to obtain alternative financing.<sup>11</sup> Rajan and Zingales place the banks at the centre of a relationship-based system; the activity of the banks is described as follows:

In a relationship-based system, a bank will have close ties with a potential borrowing firm, perhaps because of frequent past contacts or because of ownership links. In assessing the borrowing needs of the firm and its ability to pay interest and principal, the bank will consider not only the firm's current debt-servicing capability,

<sup>8</sup> "While stocks are crude instruments for allocating risk, financial derivatives can slice and dice risk precisely, placing it on those who can best bear it and making risky ventures even easier to finance" (Rajan and Zingales, 2003c, p. 47).

<sup>9</sup> Rajan and Zingales, 2003a note that the relationship-based system is prevalent in Continental Europe, while the arm's-length system predominates in the Anglo-American economies.

<sup>10</sup> "In the absence of good disclosure and proper enforcement, financing is typically relationship-based. The financier uses connections to obtain information to monitor loans, and uses various informal levers of power to cajole repayment. The key, therefore, to the ability to lend is relationships with those who have influence over the firm (managers, other lenders, suppliers, politicians, etc.) . . ." (Rajan and Zingales, 2003b, p. 18).

<sup>11</sup> "... relationship-based financing ensures a return to the financiers by granting her some form of power over the firm being financed . . . the financier typically attempts to secure her return on investment by retaining some kind of monopoly over the firms she finances. As with every monopoly, this requires some barriers to entry. These barriers may be due to regulation, or to a lack of transparency – or opacity – of the system, which substantially rises the costs of entry to potential competitors" (Rajan and Zingales, 2003a, p. 11).

but also its long-term ability to repay, and the various non-contractual levers the bank can push to extract repayment. The interest rate charged will be repeatedly negotiated over time, and may not have a direct relationship to the intrinsic risk of the project (Rajan and Zingales, 2003a, pp. 11–12).

The particular type of relation that is established between the bank and the debtor firm in a relationship-based system explains the characteristics of the banks' assets and liabilities. Their assets are composed of illiquid assets that represent credit issued on the basis of private information (Rajan and Zingales, 2003a, p. 17). The characteristics of the assets explain those of the liabilities; the lack of public information about the nature of their credits forces banks to issue liabilities, such as sight deposits, that reassure their financiers.<sup>12</sup>

The last distinguishing feature of a relationship-based system is the type of economic operation financed; a system of this kind, according to RZ, is not capable of financing innovations. As we have seen, in line with Schumpeter they emphasize that innovations are not carried out by existing firms, but especially by new entrepreneurs who are unable to provide guarantees and who compete with established firms. A relationship-based system is not able to take the risk of financing innovations for a number of reason. In the first place, banks tend to finance agents known to them directly or who can offer guarantees; second, they tend to use their monopolistic power to appropriate a considerable part of the profits of the innovation.<sup>13</sup> Finally, the relationships that the banks maintain with existing firms make it less likely that they will finance innovations that could compromise the profitability of their debtors:

Relationship finance . . . has at least two strikes against it at times of great change. First, the way the system scrutinizes new ventures makes it more likely that more out-of-the-ordinary new opportunities will be left without finance than in the arm's length system . . . Second, the opaque nature of the system makes it discriminate against outsiders, especially newcomers. Thus, those who have the greatest incentive to force change have the least resources to do so. Since the players in the system lack both the mindset and the incentive to innovate, relationship finance is a serious drag in times of great

<sup>12</sup> "Because of lack of transparency and disclosure in relationship-based systems intermediaries finance assets that only they understand . . . Not to absorb a massive amount of rents, they have to credibly commit to pay out collections to depositors. This requires to issue hard claims; the hardest being demandable claims subject to runs" (Rajan and Zingales, 2003a, p. 18).

<sup>13</sup> "... in a relationship-based system . . . the financier's information is largely private especially when the projects being financed consist of intangible assets such as intellectual property. As a result, in a relationship-based system the initial financier tends to appropriate a greater share of the return to new technologies . . . this depresses the incentives to form new start-up ventures, making entrepreneurship in high tech industries a rare phenomenon" (Rajan and Zingales, 2003a, pp. 16–17).

change. But there is a third strike also. Relationship systems tend to protect mature incumbents firms that get into trouble. In normal times, this lends stability to the system. In times of extraordinary change, this can keep resources far too long in unproductive uses (Rajan and Zingales, 2003a, pp. 23–24).

These limitations are overcome in a developed financial system, that is in a financial system having institutions and rules that guarantee and protect property rights and that make it possible to take on the risks associated with financing innovations. The most important effect of the presence of these institutions and rules is the multiplication of the number of financiers to whom the entrepreneur who intends to innovate can refer; this makes it easier than in a relationship-based system, to finance new projects presented by agents lacking capital.<sup>14</sup> RZ illustrate their conclusions with an analogy describing the decisions of two different publishing houses:

Suppose you just wrote your version of the Great American Novel and wanted to get it published. You could send it to Fusty House, where a couple of editors would look at it and make a joint decision on whether to publish the manuscript. The book would be published only if both agreed. Or you could send it to Chancy house, where editors decide independently. If an editor rejects the manuscript, you have the option of sending it to another editor within the house who will not know the book's previous history (Rajan and Zingales, 2003c, p. 252).

The first publishing house subjects manuscripts to a stricter control and therefore rejects a larger number of them than the second publishing house. It is more unlikely that Fusty House will publish books of unknown authors and therefore the probability of its rejecting bestsellers of new authors is higher, while Chancy House, on the other hand, will publish a greater number of low-quality books. The relationship-based system works like Fusty House; in both cases the risk of turning down profitable proposals is higher. This risk does not have serious consequences in a period in which the manuscripts come predominately from established authors, that is, in a period in which innovations consist mainly of gradual changes in the productive

processes already in use by existing firms. In this case the Fusty House approach will produce better results than Chancy House, which will instead publish a large number of poor-quality books. In contrast, the choices of Chancy House, which can be compared to an arm's-length system, produce better results in periods of great change in which the public is willing to accept new literary proposals that offer a fresh approach compared with already published works (Rajan and Zingales, 2003c, pp. 253–254).

Within the financial structure, venture capitalists constitute the equivalent of Chancy House; their presence does increase the number of potential financiers to whom the innovator entrepreneurs can turn. RZ observe that the presence of venture capitalists constitutes a distinctive feature of a developed financial system even if they are relationship-based intermediaries; they consider venture capital to be:

...an institution that seems to emerge only in a free access financial system with high disclosure. Venture capitalists invest only a little at a time. They continue only projects that look as if they will be great successes, but quickly cut short those that look as if they will be dogs. Thus they reap a bonanza from the successful projects, while losing little from those that fail. This sort of return profile makes them willing to experiment. As a result, entrepreneurs need not be dejected by a single rejection by a venture capitalist since there may always be some other venture capitalist who see things more their way (Rajan and Zingales, 2003a, p. 22).

RZ note that the spread of venture capitalists requires the presence of a credible system of collection and transmission of the information that allows the market to correctly define the value of a firm at the time the venture capitalist decides to sell the quota of shares in the innovating firm.<sup>15</sup> RZ note that over the last twenty years, in many countries, there has been a significant development in the financial structure that has produced very important effects:

Instead of an aristocracy of the merely rich, we are moving to an aristocracy of the capable *and* the rich. The financial revolution is opening the gates of the aristocrat clubs to everyone. In this respect, the financial revolution is thoroughly liberal in spirit. Instead of capital, it puts the human being at the center of economic activity

<sup>14</sup> "An arm's-length system, where there is more public information, gives new firms, attempting new technologies, a better chance of obtaining financing. The reason is that there are many investors from a variety of backgrounds, each of whom has the basic information to assess a new technology. While each investor may be biased, and each investor may receive only part of the information that is collectively known, each investor investigates the firm's prospects independently. Thus the firm gets a number of chances to attempt to convince investors of the merits of its technology. If the technology is sufficient new, it may need all those chances to obtain financing somewhere. The relationship-based system works in a very different way. Given the paucity of public information and the limited access in a relationship-based system, the firm has, at best, one or two well-informed financiers who can make an assessment" (Rajan and Zingales, 2003a, pp. 20–21).

<sup>15</sup> "Venture capitalists ... are rare in relationship-based economies. They are rare because venture capitalists need a reliable system of disclosure, not just because they fund young companies, but also because they get their reward only when they grow these firms to the point that they can be sold on the public equity markets. And for the public investor to pay an adequate price for the shares that are sold, they have to be confident of what is truly going on inside the firms. Reliable disclosure makes such confidence possible" (Rajan and Zingales, 2003a, p. 22). Similar considerations can be found in Gompers (1995), Freel (2000), Mason and Harrison (2001), Carpenter and Petersen (2002).

because, when capital is freely available, it is skills, ideas, hard work, and inescapably, luck that create wealth (Rajan and Zingales, 2003c, p. 92).

The last important point of RZ's analysis deriving from Schumpeter's concept of innovation is that it stresses that the realisation of a developed financial system is not the result of a spontaneous process, but it presupposes that the resistance of those agents whose interests are being negatively affected by the introduction of the innovations undertaken by new entrepreneurs has been overcome.<sup>16</sup> The development of the financial structure therefore requires a political intervention that makes it possible to overcome this resistance:

...financial development could pose a threat to established large industrial firms, a group we will call industrial incumbents. In normal times, these incumbents do not require a developed financial system. They can finance new projects out of earnings – as most established firms do – without accessing external capital markets. Even when their business does not generate sufficient cash to fund desired investment, they can use the collateral from existing projects and their prior reputation to borrow. Such borrowing does not require much sophistication from the financial system ... Because of their privileged systems, incumbents also enjoy a positional rent ... All these rents will be impaired by broadening the access to finance. A more efficient financial system facilitates entry, and thus leads to lower profits for incumbents firms. From the perspectives of incumbents, the competition-enhancing effects of financial development may offset the other undoubted benefits that financial development brings (Rajan and Zingales, 2003a, pp. 30–31).

### 2.3. Banks and asymmetric information

The widespread presence of banks, according to RZ, is the manifestation of the backwardness of the financial structure as the banks tend to protect the interests of established firms with whom they have a consolidated relation and to exclude from financing the new entrepreneurs who intend to introduce innovations. This judgement on the presence of banks strongly contrasts with the conclusions of a theoretical approach that has gained ground in recent years and which emphasizes the credit market rather than the money market; what renders the credit market particularly significant is the presence of asymmetrical information.<sup>17</sup> This approach, which we can call the asymmetric

information approach, provides a persuasive theory of financial intermediaries according to which their function is to reduce the costs associated with asymmetric information; as asserted by Blinder and Stiglitz (1983, p. 299): "Imperfect information about the probability of default has several fundamental implications for the nature of capital markets ... it gives rise to institutions – like banks – that specialize in acquiring information about default risk". The objective of a financial intermediation theory is to provide a justification for the existence of financial intermediaries. The theory which characterises this approach starts from the observation that the presence of debtors and creditors is the necessary premise to justify the presence of financial intermediaries. The recourse to financial intermediaries entails a cost for creditors and debtors; for this reason, the theory should explain what are the services provided by the financial intermediaries which compensate for the costs of intermediation (Hellwig, 1991, p. 42). The presence of asymmetric information allows us to formulate a good answer: the service offered by the intermediaries is to gather information. Akerlof (1970) emphasized that the presence of asymmetric information stimulates the creation of agents whose purpose is to reduce the information costs; he considered, in particular, the activity of merchants that specialize in evaluating the quality of the goods exchanged. The banks play the same role in the capital market as the merchants play in Akerlof's used car market. Banks acquire information in two distinct moments in time. First, before they give the financing, they acquire information about the profitability of the investment projects that the firms intend to carry out (*ex-ante information asymmetry*). Then, once they have granted the loan, the banks gather information in order to monitor whether the decisions taken by the firms are consistent with the interests of the creditors (*ex-post information asymmetry*); in both cases the intervention of the banks reduces the information costs (see for example: Stiglitz and Weiss, 1981; Jaffee and Stiglitz, 1990; Stiglitz and Greenwald, 2003). Fama (1985, p. 85) illustrates the role played by financial intermediaries using the distinction between inside debt and outside debt:

Inside debt is defined as a contract where the debtholder gets access to information from an organization's decision process not otherwise publicly available ... Bank loans are inside debt, as are the other types of debt commonly classified as private placements. In contrast, outside debt is defined as publicly traded debt where the debtholder relies on publicly available information generated by the organization or information purchased by the organization (for example, independent audits and bond ratings).

The characteristic of banks is to provide finance through inside debt contracts stipulated on the basis of information not publicly available, which is obtained in virtue of the close relation with the debtors. Also Goodhart (1987) underlines that banks' special role is justified by the characteristics of

<sup>16</sup> "Financial systems do not ... emerge simply as a result of their superiority in a particular environment. The power of vested interest distorts the process of evolution ... neither the European bank-centered system nor the American market-based one is the natural outcome of market forces. They are both the result of political choices" (Rajan and Zingales, 2003a, pp. 2–3).

<sup>17</sup> The characteristics of this theory are highlighted by Stiglitz (2002) in his Nobel Lecture; see also: Stiglitz and Greenwald (2003).

their assets: he observes that banks' specificity cannot be justified by their capability to create money since there is nothing to prevent other intermediaries from creating money. He maintains that a financial system in which the monetary function were carried out by investments funds rather than banks would probably be safer and more stable; he asserts that the fact that the monetary function is carried out by banks is the result of an historical process. This leads Goodhart (1987, p. 85) to conclude that banks' specificity is justified by the characteristics of their assets.

Economists such as Stiglitz, Blinder, Fama, Goodhart and Levine maintain that the presence of banks is justified by the existence of imperfections, such as imperfect information, which prevent savers from directly financing firms; in contrast RZ, while highlighting the presence of asymmetric information in capital markets, state that a financial system founded on banks is an underdeveloped system. The reason for these different conclusions lies in the fact that the two analyses consider two different worlds. The asymmetric information approach assumes that the credit market works in the same way as Akerlof's used car market. It assumes that it is possible to attribute values representing the expected yield and the degree of risk to the future yield of each investment project; the asymmetric information between debtor and creditor can relate to one or both of these values. The role of the bank is to collect information about the expected yield and the risk of the investment project, just as Akerlof's merchant assesses the quality of the used cars. Banks make it possible to eliminate the obstacles that the presence of imperfect information creates, in the real world, to the achievement of the results which characterise the ideal world with perfect information in which the savers directly finance firms.<sup>18</sup> If the role of banks were analogous to that of Aker-

lof's merchants who have to evaluate the quality of used cars, or that of the intermediary who, in the example of Stiglitz and Weiss mentioned in the previous footnote, must evaluate the productivity of the plots of land, then the conclusions about their behaviour would be immediate. The banks must show that they are able to correctly evaluate the quality of the used cars or the plots of land; otherwise, the owners of the cars and of the plots of land, the 'savers', would not have any reason to bear the costs of intermediation and the incompetent banks would be expelled from the market.

What makes the world analysed by RZ different from that described in the asymmetric information approach is the presence of innovations; assessing the future financial results of an innovation is much different from gauging the quality of a used car. We can highlight this difference using the concept of uncertainty as defined by Keynes: a world where innovations are made is a world in which the dimension of uncertainty is relevant. As is widely known, Keynes (1973a,b) states that the basic difference between his own theory and the classical one is the hypothesis introduced about the way expectations regarding future results of economic decisions are specified. The classical theory assumes that it is possible to objectively represent these results by using tools of financial mathematics and probability theory. In contrast, Keynes assumes that there are no objective methods that allow the future results of investment decisions to be represented; these decisions are taken in conditions of uncertainty. Keynes (1973a,b) points out that a world with uncertainty is a world in which investment decisions have an important weight; he accuses the classical theory of being able to describe just an economy without uncertainty and investments, an economy based on consumption decisions. We can explain the relation between uncertainty and investment decisions using the concept of innovation that is at the basis of Schumpeter's analysis. Investment decisions are the instrument through which innovations are introduced; the Keynesian entrepreneur who makes investment decisions then coincides with the Schumpeterian entrepreneur who introduces innovations (see Davidson, 2000, p. 113). Investment decisions do not consist simply of adding to the stock of capital goods new units of capital goods that are perfectly identical to the existing ones, but they are the instrument through which firms launch new products on the market, or alter the productive process through which the existing goods are made, or else open new markets. The introduction of innovations determines the process of continuous evolution that prevents us from considering the past and the present as a base on which to elaborate forecasts in probabilistic terms about the future results of economic decisions.<sup>19</sup>

<sup>18</sup> The implicit hypothesis on which the asymmetric information approach is based is that it is possible to specify an ideal world characterised by perfect information, in which the savers directly finance firms and in which there are no intermediaries; in this world the neoclassical interest rate theory applies. The presence of the banks does not modify the nature of the credit market with respect to the ideal world without imperfections; the key actors which operate in this market are the savers and investors, and the object of the exchange can either be a real good or money. It is significant that Stiglitz and Weiss (1990, pp. 91–92), refer to a credit market of an agricultural economy, in which the object of the exchange is seed to be planted in plots of land having different productivity: "The need for credit arises from the discrepancy between individual's resource endowments and investment opportunities. This can be seen most simply if we imagine a primitive agricultural economy, where different individuals own different plots of land and have different endowments of seed with which to plant the land . . . The marginal return to additional seed on different plots of land may differ markedly. National output can be increased enormously if the seed can be reallocated from plots of lands where it has a low marginal product to plots where it has a high marginal product. But this requires *credit*, that is, some farmers will have to get more seed than their endowment in return for a *promise* to repay next period, when the crop is harvested. Banks are the institutions within this society for screening the loan applicants, for determining which plots have really high marginal returns, and for monitoring, for ensuring that the seed are actually planted, rather than, say, consumed by the borrower in a consuming binge".

<sup>19</sup> It can be observed that when Schumpeter (1912, pp. 84–85), describes the behaviour of the innovator-entrepreneur, the views he expresses are similar to those of Keynes about the impossibility of predicting the future effects of economic decisions on the basis of observations on the past.

A world with uncertainty is significantly different from a world with asymmetric information; in a world with asymmetric information the different evaluations of individuals about the quality of a used car or about the future returns on a given investment project depend only on the different information which individual agents have at their disposal. If all the operators had the same information they would make the same evaluations;<sup>20</sup> instead, in the presence of uncertainty even if the operators had the same information they would elaborate different forecasts.<sup>21</sup> In the presence of uncertainty and therefore disparity of opinions on the future outcome of an innovation, the probability that a given innovation will be financed rises as the number of potential financiers increases. The different decisions of the two publishing houses that appear in RZ's example are not due to the different availability of information, but rather to the different way the writers' manuscripts are examined; even if we assume that both publishing houses have the same information about the authors, the probabilities of publishing the work of a new author increases as the number of editors to whom the new author can submit his work increases.<sup>22</sup>

We can observe that the different evaluation made by RZ of the working of a bank-based system compared to the one formulated under the asymmetric information approach depends essentially on the use of the Schumpeterian concept of innovation. The explicit consideration of this concept highlights the weakness of the explanation of the relation between finance and development based on

the asymmetric information approach that characterises, for example, the works of Levine quoted in Section 2.1.

Finally, we can observe that RZ's analysis raises a problem: if, in a world characterised by the presence of innovations and uncertainty, the function of the banks is not to eliminate the problems of asymmetric information, the reason for their presence must still be explained. Schumpeter deals with this point and elaborates an explanation that RZ do not consider; I believe that this explanation, which will be analysed in the second part, furnishes important elements to enable us to define the relation between financial structure and the development of the economic system.

### 3. Second part: Financial structure and development in Schumpeter's analysis

#### 3.1. Banks and credit

While RZ maintain that the widespread presence of banks is an obstacle to the growth of the economic system, Schumpeter on the contrary considers banks to be an essential element of the development phenomenon. The fundamental role of banks is to create new means of payment to finance the innovator-entrepreneur. This function becomes essential in a *capitalist economy* based on the private ownership of means of production, as innovations are normally carried out by new men who do not possess means of production. Schumpeter notes that the role of banks would be irrelevant if innovations were undertaken by existing firms since, in order to carry out the innovations, the entrepreneur would use the productive means already available. The creation of new means of payment and the credit phenomenon become necessary factors for development when innovations are made by new entrepreneurs who do not own means of production; indeed bank money is the tool through which control of the means of production is taken away from existing firms and given to new economic agents to carry out innovations. Banks and bank money constitute the second endogenous factor which can explain the continuous evolution process typical of the capitalist economy. Schumpeter (1912, pp. 69–70), states that credit:

... is the characteristic method of the capitalist type of society – and important enough to serve as its *differentia specifica* – for forcing the economic system into new channels, for putting its means at the service of new ends ... it is as clear *a priori* as it is established historically that credit is primarily necessary to new combinations. ...

By creating money to finance the innovator-entrepreneurs, the banks alter the distribution of ownership of the means of production. The instrument permitting the ownership and control of the means of production to be transferred to the innovator-entrepreneurs is inflation triggered by the fact that the demand for means of production on the part of the innovator-entrepreneurs is added to that

<sup>20</sup> Allen and Gale maintain that the asymmetric information approach is based on the hypothesis that: "... agents share the same prior probability ... Posterior probability beliefs differed because agents have different information sets. If everybody shared their information, their beliefs would be the same" (Allen and Gale, 2000, p. 403).

<sup>21</sup> Allen and Gale note that when we deal with the issue of funding innovations, we must abandon the assumption on which the asymmetric information approach is based: "... we consider contexts in which the common prior assumption is not appropriate. It can be argued that the common prior assumption is not appropriate when considering new industries and new technologies. Casual empiricism suggests that there is a wide variation in views on the effectiveness and value of innovations. Since the amount of data available based on actual experience with new products or technologies is nonexistent or small, such differences in views would appear to be due to differences in priors. There is diversity of opinion, and people agree to disagree" (Allen and Gale, 2000, p. 404).

<sup>22</sup> Allen and Gale express similar conclusions to those of Rajan and Zingales about the lower propensity of a bank-based system to finance innovations: "The nature of intermediated finance is that the decision on whether to invest in a project is delegated to the manager of the intermediary ... The main advantage of an intermediary is the economizing on information acquisition. Only the manager needs to become informed. When there is wide agreement, this kind of delegation works well and can result in considerable savings ... The problem comes when there is diversity of opinion. Even if the manager does his best to choose projects he honestly believes are profitable ... diversity of opinion implies that some of the providers of finance would disagree with those decisions if they had the same information as the manager. If the possibility of disagreement is sufficiently high, the investors may be unwilling to provide funds. Thus, intermediated finance may result in underfunding of innovative projects" (Allen and Gale, 2000, pp. 405–406).



of the already existing firms; this increase in the demand with respect to a constant supply of productive services causes an increase in the price of services enabling the innovator to divert resources from their current allocation (Schumpeter, 1956, pp. 205–206).<sup>23</sup>

The theory of credit and of the banks constitutes a fundamental part of the Schumpeterian explanation of the working of a capitalist economy; it is an alternative theory to the Walrasian and Marshallian one that, according to Schumpeter (1939, p. 72), is able to explain only the working of a static economy and therefore the phenomenon of growth but not the phenomenon of economic evolution or development:

...we shall designate by the term Growth changes in population and in the sum total of saving plus accumulations corrected for variation in the purchasing power of the monetary unit. That term is to emphasize not only that variation in both those variables is continuous in the mathematical sense but also that it occurs at a rate which changes but slowly and is per se incapable of producing those fluctuations in industry and trade which interest us here ... The changes in the economic process brought about by innovation, together with all their effects, and the response to them by the economic system, we shall designate by the term Economic Evolution (Schumpeter, 1939, pp. 58–61).

Schumpeter observes that the traditional theory considers an economic system in which money is a neutral variable; to describe the working of a capitalist economy he elaborates a theory based on a double heresy:

...first to the heresy that money, and then to the second heresy that also other means of payment, perform an essential function, hence that processes in terms of means of payment are not merely reflexes of processes in terms of goods (Schumpeter, 1912, p. 95).

Schumpeter points out that it is not possible to describe the process of change that characterises a capitalist economy by means of the traditional theory which is apt to describe a static economy since the presence of banks and bank money makes possible the occurrence of phenomena that cannot be found in a static economy. In particular, by creating money banks allow new players to make innovations by taking control of the productive resources away from existing firms; in the absence of banks and credit money this would not be possible because the existing firms would continue to use the productive resources in the traditional productive processes and they would not have

any reason to transfer them to new agents who intend to alter the existing productive equilibriums.

RZ completely neglect this part of Schumpeter's analysis. I believe that this 'oversight' had significant consequences as it leads the two authors to: (a) give less weight than is warranted to the importance of 'development'; (b) underestimate the role of the financial structure in the process of development.

### 3.2. *The limits of the analysis of Rajan and Zingales*

As we have seen, Schumpeter assigns a fundamental role to the banks; their presence makes it possible to carry out operations that cannot be carried out in a world in which bank money does not exist; bank money is thus not a veil covering a real world whose working is independent of its presence. RZ do not give any importance to this dimension of Schumpeter's analysis; they consider banks as mere intermediaries and explain, as we recalled in the preceding pages, the particular characteristics of their assets and liabilities in relation to the conditions of backwardness of the financial system. Moreover, when they describe the characteristics of the developed financial systems they note that these systems are characterised by the presence of a multiplicity of potential financiers willing to finance the innovator-entrepreneurs even without guarantees. If we overlook Schumpeter's comments about the process of money creation in a *capitalist economy*, then we can immediately identify the financiers that RZ talk about with the savers.

Considering the banks as mere intermediaries, neglecting their capacity to create money, and identifying the financiers with the savers leads to the implicit acceptance of two points that Wicksell's theory and the supporters of the loanable funds theory and the asymmetric information approach have in common. First, acceptance of the idea that there exists an 'ideal' world in which savers transfer directly the unconsumed resources to the firms that are able to utilise them in the most productive way; this is an economy without banks and without bank money to which the concept of natural interest rate introduced by Wicksell applies. Second, acceptance of the Wicksellian idea that a pure credit economy converges in the long run, towards the natural interest rate equilibrium; following the asymmetric information approach the second point consists in accepting the idea that the action of the financial institutions aimed at eliminating the situation of asymmetric information allows the real economies to achieve the results that characterise the 'ideal' economy in which the savers directly finance the firms.

RZ seem to accept this vision when they state that an evolved financial system makes it possible to finance the most meritorious regardless of the capital or relations at their disposal. They state that: "... In a perfect financial system, it will be the quality of the underlying assets or ideas that will determine whether finance is forthcoming, and the identity of the owner ... will be irrelevant. ...

<sup>23</sup> Schumpeter distances himself from the classical theory of credit that considers banks as mere intermediaries and which he believed was the dominant theory at the beginning of the 1900s (Schumpeter, 1954, p. 1113); in a *capitalist economy* banks do not lend purchasing power given to them by savers, but rather they create substitutes of legal-tender money that have the same functions as legal-tender money.

our focus is on how easy it is to raise finance without prior connections on wealth . . .” (Rajan and Zingales, 2003b, p. 9).

But in the world described by Schumpeter the fundamental problem is precisely that of evaluating the quality of innovations; assessing the quality of an innovation is not the same as gauging the quality of a used car. RZ state that the quality of innovations can be defined in relation to their capacity to satisfy the consumer needs:

In a competitive free market economy, the decisions of myriad anonymous participants determine prices, which, in turn, determine what is produced and who is rewarded. The invisible hand of the market substitutes for bureaucrats and politicians in all these decisions (Rajan and Zingales, 2003c, p. 293).

The example of the publishing houses used by Rajan and Zingales to illustrate the differences between a backward financial system and a developed financial system is significant; a developed financial system can be compared to a world in which the selection criteria applied by the publishing houses renders the probability for an unknown author to publish his book high. In any case it will always be the reading public who will decree the success or failure of a book; in the same way, it is consumers who will decree the success or failure of an innovation. Consumer preference becomes the datum that allows us to give meaning to the process of ‘creative destruction’ set off by the Schumpeterian innovations. These preferences constitute the fundamental component of an ideal world in which a developed financial system allows the saved resources to be used to carry out the innovations that make it possible to better satisfy consumer demands.

This reassuring conclusion contrasts with Schumpeter’s theory that in a capitalist economy characterised by innovations the principle of consumer sovereignty, in accordance with which the tastes and preferences of consumers drive the production decisions of enterprises, is not valid; consumers’ choices are conditioned by the decisions of entrepreneurs and of the banks;<sup>24</sup> Schumpeter (1939, p. 47) illustrates this point very effectively:

“Railroads have not emerged because any consumers took the initiative in displaying an effective demand for their service in preference to the services of mail coaches. Nor did the consumers display any such initiative wish to have electronic lamps or rayon stocking, or to

travel by motorcar or airplane, or to listen to radios, or to chew gum. The great majority of changes in commodities consumed has been forced by producers on consumers who, more often than not, have resisted the change and have had to be educated up by elaborate psychotechnics of advertising”.

The process of evolution that characterises a capitalist economy is therefore not determined by consumer preferences, but by the decisions of banks and the entrepreneur-innovators.<sup>25</sup> Schumpeter underlines the fundamental role of the banks, observing that they have the same function as the central authority in a socialist economy. In a socialist economy the means of production are publicly owned and so it is the central authority that decides how to use the available productive factors. When such authority decides to produce a new good, it orders a certain quantity of productive factors from a given sector to be collected and used in the new activity. In a capitalist economy in which the means of production are privately owned, the role of the central authority is carried out by the banks who offer the entrepreneur-innovator the purchasing power to enable him to use the productive factors, diverting them away from the uses to which they were previously destined (Schumpeter, 1939, p. 86).

Credit and bank money radically change the structure of the economic system with respect to a barter economy or that which Schumpeter defines a *pure exchange economy*; banks and bank money are the necessary elements of a *capitalist economy*.<sup>26</sup> In order to highlight the structural differences between these two economies, Schumpeter asserts that the concepts of capital, profit and interest have different meanings in the two economies. He highlights the monetary nature that these variables take on in a *capitalist economy*; that is to say, he notes that in such economy the meaning of these variables can be defined only starting from the presence of banks and bank money. Schumpeter affirms that the definition of capital as a set of goods used as means of production cannot be applied to a capitalist system because it is a definition that can be adapted to

<sup>24</sup> “. . . innovations in the economic system do not as a rule take place in such a way that first new wants arise spontaneously in consumers and then the productive apparatus swings round through their pressure. We do not deny the presence of this nexus. It is, however, the producer who as a rule initiates economic change, and consumers are educated by him if necessary . . . Therefore, while it is permissible and even necessary to consider consumers’ wants as an independent and indeed the fundamental force in a theory of circular flow, we must take a different attitude as soon as we analyse *change*” Schumpeter (1912, p. 65).

<sup>25</sup> Morishima (1992, p. 20) stresses this point, declaring that: “. . . the vision that the financial sectors play a crucial role in the economy is common between Schumpeter and Keynes. It then follows that the path the economy will trace out depends on the attitudes of the financial organizations. It is obvious that the capital goods accumulated when they support, say, the electronics industry would be completely different from those accumulated when they support the ship building industry. In the long run the economy will turn out to be of a greatly different kind according to which of these options is taken”.

<sup>26</sup> Schumpeter (1943, p. 175) defines a *capitalist economy*, as an economic system that possesses three characteristics: “. . . capitalism will be defined by three features of industrial society: private ownership of the physical means of production; private profits and private responsibility for losses; and the creation of means of payments – banknotes or deposits – by private banks. The first two features suffice to define private enterprise. But no concept of capitalism can be satisfactory without including the set of typically capitalist phenomena covered by the third.”

any economic system.<sup>27</sup> Schumpeter's definition reflects the importance he assigns to bank money in the development process; in fact, he identifies capital with the purchasing power made available to entrepreneurs so that they can carry out their innovations: "We shall define capital ... as that sum of means of payments which is available at any moment for transference to entrepreneurs" (Schumpeter, 1912, p. 122).

By specifying the monetary nature of capital, Schumpeter (1939, p. 175) affirms that profits cannot be considered as the result of the productivity of a particular productive factor; he (Schumpeter, 1912, p. 154), considers profits as a phenomenon present only in a monetary economy in which innovations, financed by money created by the banks, invest entrepreneurs with a monopolistic power that allows them to get a monetary surplus over costs. Profits cannot even be considered as the reward for bearing risk since normally the entrepreneur does not own the means of production, but he obtains them by getting into debt:

The entrepreneur is never the risk bearer ... The one who gives credit comes to grief if the undertaking fails ... But even if the entrepreneur finances himself out of former profits ... the risk falls on him as capitalist or as possessor of goods, not as entrepreneur. Risk-taking is in no case an element of the entrepreneurial function. Even though he may risk his reputation, the direct economic responsibility of failure never falls on him (Schumpeter, 1912, p. 137).

Moreover, Schumpeter highlights the monetary nature of the interest rate; it does not constitute the reward for forgoing consumption because the supply of credit does not coincide with the saving. Schumpeter derives the monetary nature of the interest rate from the monetary nature of capital. He criticises the theories that consider the interest rate as a reward for abstinence from consumption or as the compensation for a production factor (Schumpeter, 1912, p. 183; Schumpeter, 1939, p. 100), and emphasises (Schumpeter, 1912, p. 195), that the transaction that generates interest is not the exchange of goods between savers and firms, but the exchange of money taking place on the credit market between banks and firms. Schumpeter (1939, p. 101) criticises the distinction introduced by Wicksell between the monetary interest fixed by banks, and the natural interest rate corresponding to the rate that would arise on the credit market if capital goods were directly traded:

"The necessity of reconciling a nonmonetary theory with obvious facts of the sphere of money and credit is, in particular, responsible for the idea that there are

two kinds of interest rates, a 'natural' or 'real' one which would also exist in a barter economy and which represents the essence of the phenomenon, a permanent net return from physical means of production, and a monetary one, which fundamentally is but the former's reflex in the monetary sphere ... The roots of this idea reach very far into the past ... Its role in the thought of our own time is due to the teaching of Knut Wicksell ... For us, however, there is no such thing as a real rate of interest, except in the same sense in which we speak of real wages ... the money market with all that happens in it acquires for us a much deeper significance than can be attributed to it from the standpoint just glanced at. It becomes the heart, although it never becomes the brain, of the capitalist organism."

The element that Schumpeter and Wicksell have in common is to recognise the role of the banks in the process of money creation; they both underline that the object of the credit granted by banks to the entrepreneurs is not the resources saved by the families but the money created by the banks.<sup>28</sup> Where Schumpeter and Wicksell sharply diverge is on the analysis of the consequences of the presence of bank money. Introducing the distinction between natural interest rate and monetary interest rate, Wicksell declares that a pure credit economy converges towards the position of equilibrium that characterises an economy without bank money in which there is no credit market, but just a capital market in which families transfer saved resources directly to firms. In contrast, Schumpeter maintains that the presence of bank money radically changes the structure of the economic system in that it makes possible phenomena that cannot arise in what he calls a *real exchange economy*. In particular, the presence of bank money makes possible the process of continuous change that characterises a *capitalist economy* stimulated by the innovations introduced by entrepreneurs; without bank money there would be no innovations.

The difference between the framework used by Schumpeter and that of RZ can be illustrated by using the concept of path dependence that defines dynamic processes that do not converge towards a position of unique and stable equilibrium, but that produce results which are fundamentally conditioned by events of the past, that is they produce historically conditioned results (David, 2001, 2005). Schumpeter's view is coherent with the concept of path dependence and with the analysis of North, who points out that the process of change characterising economic systems is distinguished by subsequent transformations caused not by natural facts, as is the case in the biological world

<sup>27</sup> "... capital defined so as to consist of goods belongs to every economic organisation and hence is not suitable for characterising the capitalistic one ..." Schumpeter (1912, p. 117); and again: "Capital is neither the whole nor a part of the means of production – original or produced. Nor is capital a stock of consumption goods" Schumpeter (1912, p. 123).

<sup>28</sup> Wicksell (1898, p. 83) remarks that in an economy in which bank money is used, the object of credit is not real goods: "It is said that what is lent in reality is not money but real capital; money is only an instrument, a way of lending capital and so on. But this is not strictly true: what is lent is money and nothing else ...".

according to Darwinian evolutionary theory, but by the choices of economic agents.<sup>29</sup> In North's view, these transformations do not converge towards an optimal world, but they produce new forms of uncertainty that induce the economic agents to take new decisions that change the structure of the economic system giving rise to new uncertainty.<sup>30</sup>

We can conclude that the use of the Schumpeterian concept of innovation (which, as we have seen, forces us to consider the dimension of uncertainty and the conflict of interest between the existing firms and the innovating entrepreneurs), does not seem to move RZ far from the neoclassical and asymmetric information approaches which are characterised by two points: (a) the conviction that an 'ideal' world exists in which the saved resources foster firms' investment decisions; (b) the belief that the role of the financial system is to facilitate reaching this ideal world.

### 3.3. Banks and venture capitalists: Do they carry out the same function?

Finally, we can highlight a problem that arises out of the different way Schumpeter, on the one hand, and RZ on the other, analyse the role of banks. Schumpeter emphasises their monetary function, that is their capacity to create means of payment to finance innovations, while RZ underline their tendency to finance existing firms rather than the new agents who intend to carry out innovations; the innovations are financed by financial institutions such as venture capitalists. Many studies highlight the fact that bank credit is not a very suitable instrument for financing the particularly risky investment projects that, if successful, could yield high returns. Indeed, in these cases the banks would have to apply exceedingly high interest rates – above the legal limits for usury – that would constitute an intolerable burden for firms. In fact, venture capitalists finance firms by underwriting shares, counting more on the possi-

ble gain in capital account to be obtained by the sale of shares than on the dividends.<sup>31</sup>

These two analyses raise a problem: if, following Schumpeter's theory, the importance of the monetary function played by banks is acknowledged while on the basis of RZ's analysis it is recognised that in contemporary economies innovations are not financed by banks but above all by agents such as venture capitalists, then we must ask if also these agents are able to carry out a monetary function similar to the one that characterises the banks.

At first sight it would seem that the banks have a particular characteristic that distinguishes them from the other financial institutions, i.e. the fact that their liabilities are used as a means of payment; thus banks can finance a firm by authorising it to issue cheques, whereas other financial institutions lend up what they are able to collect. Unlike what happens for the banks, the action of the non-bank financial institutions seems to presuppose the existence of savers and firms: these institutions collect financial resources from the savers and they lend them to firms. An economic system based on non-bank financial institutions therefore seems to possess characteristics which are coherent with the neoclassical theory of credit according to which saving decisions constitute the original phenomenon determining the credit supply and, thus, investment decisions; this theory posits that the financing of innovations with money collected from savers has no effect on the level of the aggregate demand since set against the greater demand on the part of the innovator entrepreneur is the lower demand on the part of the savers.

It is possible to demonstrate the lack of basis to this conclusion by using the arguments Schumpeter made to criticise the theory of credit accepted by the majority of economists in the early 1900s. Schumpeter (1954, p. 1113) highlighted that the traditional theory considers the phenomenon of credit as independent of the presence of banks: "credit is quite independent of the existence or non-existence of banks and can be understood without any reference to them". According to the traditional theory, at the origin of the credit phenomenon there is an economic agent who possesses money, such as – Schumpeter mentions – gold coin; to the extent that he decides not to spend it in consumer goods nor to hoard it, he shall choose to save it and therefore to invest it directly or indirectly by lending it to another economic agent. Schumpeter says that this (1954, p. 1113): "... is the fundamental fact about credit" according to the traditional theory; the presence of the banks does not alter the nature of this phenomenon: they are just intermediaries and depositors are the ultimate lenders. He takes as an example of the traditional theory Canan's view that the nature of bank deposits is the same as deposits of real goods that are entrusted to an agent who undertakes to look after them.

<sup>29</sup> "Economic change is a process ... In contrast to Darwinian evolutionary theory, the key to human evolutionary change is the intentionality of the players. The selection mechanisms in Darwinian evolutionary theory are not informed by beliefs about the eventual consequences. In contrast, human evolution is guided by the perceptions of the players ... Economic change ... is for the most part a deliberate process shaped by the perceptions of the actors about the consequences of their actions. The perceptions come from the beliefs of the players – the theories they have about the consequences of their actions – beliefs that are typically blended with their preferences" (North, 2005, p. viii).

<sup>30</sup> "The alteration of institutions that has led to the reduction in the uncertainties of the physical environment has created the complex human environment which has produced a whole new (and in many cases still unresolved) set of uncertainties. The revolution in technology of the past several centuries has made possible a level of human well-being of unimaginable proportions as compared to the past, but it also has produced a world of interdependence and universal externalities, and in consequence a whole new set of uncertainties. The law merchant, patent law, the institutional integration of distributed knowledge, the creation of a judicial system, have been important parts of efforts making markets more efficient in developed countries. And they are leading us into an unknown world of future uncertainties" (North, 2005, pp. 20–21).

<sup>31</sup> See for example: Gompers (1995), Berger and Udell (1998), Freel (2000), Mason and Harrison (2001), Carpenter and Petersen (2002).

Schumpeter (1954, pp. 1113–1114), criticises Cannan's thesis, noting that there is a fundamental difference between bank deposits and deposits involving real goods. Whoever deposits an object renounces using that object until the moment it is returned; he shall get a claim that will allow him to obtain the return of object deposited, but this claim cannot of course perform the same function as the object deposited. This is not true in the case of the bank deposit; in fact, in this case, the depositor receives from the bank a claim that he can use as a means of payment and that therefore performs the same function as gold coin. Hence, Schumpeter concludes that in the case of money, the depositors:

...continue to spend, paying by check instead of by coin. And while they go on spending just as if they had kept their coins, the borrowers likewise spend "the same money at the same time". Evidently this phenomenon is peculiar to money and has no analogue in the world of commodities. No claim to sheep increases the number of sheep. But a deposit though legally only a claim to legal-tender money, serves within very wide limits the same purposes that this money itself would serve. ... this alters the analytic situation profoundly and makes it highly inadvisable to construe bank credit on the model of existing funds' being withdrawn from previous uses by an entirely imaginary act of saving and then lent out by their owners. It is much more realistic to say that the banks 'create credit', that is, that they create deposits in their act of lending, than to say that they lend the deposits that have been entrusted to them (Schumpeter, 1954, p. 1114).

This view allows us to analyse the role of venture capitalists and to underscore that even if venture capitalists do not create new money, their action cannot be analysed within the framework of the neoclassical theory that sets against the greater demand for goods by the players who obtained the financing, the lower demand for goods on the part of whoever underwrites the liabilities of the intermediary. Let us suppose that the venture capitalists obtain the necessary financing funds from agents who decide not to consume part of their income and underwrite quotas of venture capital firms, that is from savers. Following Schumpeter's reasoning, we can observe that the savers who decide to finance a venture capitalist do not renounce demanding goods at all because at any time they can sell their shares in the venture capital firms and so, it could be said, use these quotas as a means of payment. Thus, it can be stated that in a financial system in which financial assets can be liquidated with ease, venture capitalists, though not creating bank money, do create new liquidity when they collect money by offering their quotas to savers.

Schumpeter's analysis leads us to conclude that in the presence of a developed financial system the decision to save does not necessarily mean that savers must refrain from demanding goods, but it consists in a decision to accumulate financial assets, whether these be issued by a bank or a venture capitalist. The financial structure is thus

not a veil over the real world in which saving means refraining from consuming already produced goods and deciding to use them to expand the stock of capital goods, as happens in Wicksell's world, in which the concept of the natural rate of interest applies. In the world described by Schumpeter the carrying out of innovations or investment decisions is independent of saving decisions understood as decisions to give up demanding goods.<sup>32</sup>

We can conclude that Schumpeter's analysis allows us to highlight an essential function of the financial structure that can be performed by banks or by institutions such as venture capitalists: that of supplying innovating entrepreneurs with the liquidity necessary to carry out their projects. The presence of banks or venture capitalists constitutes the necessary condition for carrying out operations that could not take place in a world without a developed financial system because the existing firms would never transfer the productive resources to the new entrepreneurs.<sup>33</sup>

#### 4. Conclusions

RZ analyse the relation between the financial structure and economic development using the Schumpeterian concept of innovation, and they formulate an evaluation of the role of banks that is in contrast with the one based on the asymmetric information approach, which is the most widely-used theoretical scheme to study the relation between financial structure and development. In fact, this approach holds that the function of the banks is to overcome the problems due to the presence of asymmetric information, while RZ state that a financial system based on banks is a backward system that tends to finance existing firms, and is not suitable for financing innovations. We have highlighted that the explicit consideration of the Schumpeterian concept of innovation spotlights the limits of the asymmetric information approach.

<sup>32</sup> In setting out his critique of the traditional credit theory, Schumpeter (1954, p. 1114) states that: "... depositors should not be invested with the insignia of a role which they do not play. The theory to which economists clung so tenaciously makes them out to be savers when they neither save nor intend to do; it attributes to them an influence on the 'supply of credit' which they do not have. The theory of "credit creation" ... brings out the peculiar mechanism of saving and investment that is characteristic of fullfledged capitalist society ..."

<sup>33</sup> These considerations are coherent with the conclusions reached in the historical analyses which emphasise the role of the financial institutions in the industrial revolution in England in the eighteenth century; North and Wiengast, for example, stress that the development of these institutions made it possible to finance new productive activities by encouraging wealth owners to underwrite new financial instruments by selling precious metals: "The rise of banks and an increasingly differentiated set of securities, providing a relatively secure means of saving, brought individual savings into the financial system. Ashton reports that this 'meant that men were less concerned than their fathers ... to keep quantities of coin, bullion, and plate locked up in safes or buried in their orchards and gardens' (North and Wiengast, 1989, p. 825).

The work of RZ affords us the opportunity to reconsider Schumpeter's analysis; in this paper it is highlighted that RZ overlook an essential element of his theory. The presence of banks and the credit phenomenon are of fundamental importance in Schumpeter's explanation of the development process characterising a *capitalist economy* that is determined by two endogenous factors: innovations and credit. Bank money and credit are the elements that enable us to explain the specificity of a *capitalist economy* with respect to other economic systems, and the presence of phenomena that cannot occur in a world in which they are absent; in fact, the presence of banks makes it possible for innovator-entrepreneurs to take control of the productive resources away from existing firms.

RZ instead consider banks and other financial institutions as intermediaries and this brings their analysis closer to the neoclassic theory that conceives the credit market as the place in which the saved resources are transferred to firms. They maintain that a developed financial system makes it possible to finance the most meritorious actors, i.e. those best able to satisfy consumer demands, and not those that have close relations with the institutions that grant loans. In the case of the asymmetric information approach, the obstacle that prevents us from using the resources in an efficient way is the presence of imperfect information, while RZ believe that the obstacle to the development of the financial system derives especially from the resistance of agents whose interests are threatened by the introduction of the innovations.

Schumpeter instead maintains that an economy characterised by the presence of a developed financial system has characteristics that cannot be described by the concept of efficient resource allocation defined by taking consumer preference as a reference. It is a system characterised by the presence of uncertainty, and in which the banks, and more in general, the financial system are charged with a great responsibility: they must select the innovations to be made and their decisions influence the evolution of the economic system.

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