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The Great Recession and the teaching of macroeconomics: A critical analysis of the Blanchard, Amighini and Giavazzi textbook

Giancarlo Bertocco and Andrea Kalajzić

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*Giancarlo Bertocco**, *Andrea Kalajzić***

*Giancarlo Bertocco is an Associate Professor of Macroeconomics and Monetary Economics at Department of Economics, University of Insubria, Varese, Italy.

**Andrea Kalajzić (PhD) is at Department of Economics, University of Insubria, Varese, Italy.

Abstract

The publication of the seventh edition of Blanchard's textbook (Blanchard 2017) and of the third edition of the textbook authored by Blanchard, Amighini and Giavazzi (2017) represents a significant opportunity to assess the impact of the Great Recession on macroeconomic theory and on the teaching of macroeconomics. The authors acknowledge that the mainstream economic model presented in the previous editions of their textbooks is unable to offer a significant explanation of the causes of the crisis as it completely neglects the role of the financial system. They believe that the economics profession has learned the lesson of the crisis since economists understood the limitations of the theoretical model elaborated over the last decades. In the revised editions of their textbooks they present a new theoretical model taking into account the financial system. The objective of this work is twofold: i) to show that the new model does not allow to elaborate a coherent explanation of the Great Recession and: ii) to present the pillars of an alternative theoretical model based on the lessons of Keynes, Schumpeter and Minsky.

JEL Classification: E10, E20, E30, E40, E44.

Key words: Financial markets, Crises, Keynes, Schumpeter, Minsky.

Introduction

The publication of the seventh edition of Blanchard's textbook (Blanchard 2017), and of the third edition of the textbook authored by Blanchard, Amighini and Giavazzi (2017, hereafter BAG) represents a significant opportunity to assess the impact of the Great Recession on macroeconomic theory and on the teaching of macroeconomics.

The authors acknowledge that the crisis has highlighted a fundamental limit of the theoretical model presented in the previous editions of their textbook. In fact, they recognize that the mainstream theoretical model elaborated over the last decades is unable to offer a significant explanation of the causes of the Great Recession, as it completely neglects the role of the financial system. In order to illustrate the origins of the Great Recession, in the new edition of their textbooks the authors have thus elaborated a new version of their theoretical model explicitly taking into account the financial system.

The aim of this paper is twofold. First, to show that the theoretical model presented in the new version of BAG's textbook does not allow for the elaboration of a significant explanation of the Great Recession. Indeed, this new model, notwithstanding the presence of banks and bank money, is substantially identical to its previous version, that is, a model in which the flexibility of prices and wages still guarantees the achievement of the 'natural' equilibrium and the absence of catastrophic crises¹ A model with these characteristics does not allow elaborating a significant explanation of the contemporary crisis. This conclusion is confirmed by the fact that the authors are forced to use concepts and relationships contradicting the foundations of their theoretical framework. This contradiction reveals the need to develop a different theoretical model consistent with the concepts and relationships used by BAG to explain the economic phenomena that have occurred in the last decade.

The second objective of the paper thus consists in presenting the fundamental elements of an alternative economic paradigm based on the theories developed by Keynes, Schumpeter and Minsky. The paper is divided into three parts. The first part summarizes the main features of the theoretical model presented by BAG. The second part highlights the contradictions between this model and BAG's interpretation of the origins of the Great Recession. Finally, the third part presents the basic elements of the alternative theoretical paradigm.

1. The model of Blanchard, Amighini and Giavazzi

In the new edition of their textbook BAG acknowledge that the Great Recession has highlighted the failure of macroeconomics. In fact, in recent decades economists have developed a theoretical model in which the possibility of the occurrence of a catastrophic crisis was completely ruled out. According to BAG, this limit of the mainstream macroeconomic model derives from its neglect of the role of the financial system:

There is no question that the crisis reflects a major intellectual failure on the part of macroeconomics. The failure was in not realizing that such a large crisis could happen, that the characteristics of the economy were such that a relatively small shock, in this case the decrease in U.S. housing prices, could lead to a major financial and macroeconomic global crisis. The source of this failure, in turn, was insufficient focus on the role of the financial institutions in the economy. By and large, the financial system, and the complex role of banks and other financial institutions in the intermediation of funds between lenders and borrowers, was ignored. (BAG 2017, p. 518)

In BAG's opinion, the Great Recession has been caused by the behavior of financial intermediaries. The mainstream macroeconomic model developed before the outbreak of the crisis must therefore be modified in order to explicitly take into account the presence of the

financial system. BAG (2017, p. 519) conclude that: “After eight years since the start of the crisis, things have changed dramatically. Not surprisingly, researchers have turned their attention to the financial system and the nature of macro financial linkages. Further work is taking place on the various pieces, and these pieces are starting to be integrated into the large macroeconomic models.” The latest version of their textbook is thus characterized by the introduction of significant changes aimed at highlighting the role played by the actors of the financial system.

BAG (2017, p. 518) underline that the theoretical model described in the new version of their textbook represents a synthesis of different paradigms elaborated in recent decades. The model is based on the concept of ‘natural’ equilibrium, a concept corresponding to the equilibrium position reached by the economic system in the medium run (a decade) thanks to the flexibility of prices and wages.² In the model presented in their textbook BAG describe an economy characterized by the production of a single homogeneous good,³ which, “in the medium run, say a decade, [...] tends to return to the level of output determined by supply factors: the capital stocks, the level of technology and the size of the labour force” (BAG 2017, p. 35). Once the system reaches its natural equilibrium position the concept of natural rate of interest and Say’s Law are valid. However, in the short run, the achievement of the ‘natural’ equilibrium can be prevented by the rigidity of prices and wages. Thus, the short run is ruled by Keynes’s principle of effective demand.

There are three important differences between the macroeconomic model described in the latest version of BAG’s textbook and its earlier versions. The first difference concerns the adjustment mechanism driving the economic system towards its ‘natural’ equilibrium. In the previous editions of BAG’s textbook this mechanism was based on the flexibility of prices and wages. When income exceeded its natural level, an increase in monetary wages

and prices led to a reduction in the real quantity of money, and hence to an increase in the rate of interest bringing income and employment back to their natural values. In the opposite case, the return of the levels of income and employment to their natural values depended on a decrease in the rate of interest caused by the reduction of monetary wages and prices.

This adjustment mechanism is based on the assumption that the central bank controls the nominal quantity of money and that the rate of interest is determined by the equilibrium between the demand and the supply of money. However, BAG (2017, p. 177) underline that, though valid in the past, this hypothesis does not hold anymore, since today central banks directly control the monetary rate of interest. Thus, today the process of convergence towards the natural equilibrium depends on the behavior of the monetary authorities. When an increasing inflation rate signals that income exceeds its natural level, the central bank increases the rate of interest. In the opposite case, it reduces the rate of interest.

The second difference with earlier versions of BAG's model regards the concept of the natural rate of interest, that is, the rate of interest associated to the natural equilibrium position (BAG 2017, p. 178). In the new version of their textbook BAG remark that the level of the natural rate of interest may even be negative, and that this circumstance limits the efficacy of monetary policy, as the policy rate cannot be further lowered when it reaches the zero lower bound (BAG 2017, p. 180).

Finally, in the latest version of their model BAG explicitly consider the banks and bank money. BAG explain the relevance of the banks following the approach developed since the 1990s by Bernanke, Gertler and other scholars.⁴ Studying the macroeconomic role of the financial system they reached the conclusion that the importance of financial markets is explained by the presence of frictions impeding the smooth transfer of funds from savers to businesses.⁵ This approach has been developed by applying the conclusions of Akerlof's

seminal work on information asymmetries (Akerlof 1970) to the credit market.⁶ According to this view, the primary function of financial intermediaries is to overcome the problems associated with asymmetric information. As in the case of second-hand cars, the effects of asymmetric information can be eliminated through the presence of an intermediary specializing in the evaluation of the quality of the exchanged goods. Thus, within the mainstream theoretical approach, financial intermediaries such as banks play the same role as a mechanic in the second-hand car market.⁷

In our opinion, BAG's new model does not provide a satisfactory explanation of the origins of the Great Recession. In fact, the application of the asymmetric information approach to the financial markets does not allow explaining the causal relationship between the financial system and economic crises, as it results in a theory of finance that basically does not differ from that characterizing the macroeconomic model elaborated before the outbreak of the crisis, a model that, as remembered above, completely overlooked the role of the financial system. To explain this point, we must remember that the choice of the economics profession to elaborate macroeconomic models without taking into account the presence of financial markets was not justified by the objective to simplify the analysis, but by the acceptance of a particular theory of finance. According to this theory, the role of the financial system is explained by the dissociation between saving and investment decisions. This approach underlines the close link between saving decisions and credit supply on the one hand, and between investment decisions and credit demand on the other hand.⁸

An important implication of this approach is the explicit separation of the process of money creation from the process of credit creation. Friedman and Schwartz (1982) emphasize this point with particular clarity. After pointing out that the fundamental function of money consists in being a medium of exchange, Friedman and Schwartz conclude that

the price of money is the amount of goods that can be purchased with a unit of money. Hence, the price of money is the reverse of the price level: if the general price level doubles, the price of money is halved. Conversely, the price of credit is the rate of interest. Any imbalance between the supply and the demand of credit will be eliminated by a change in the level of the rate of interest and not by a change in the general price level. From the point of view of the orthodox theory, monetary authorities control the quantity of money and, thus, the price of money, but not the supply of credit, which instead depends on the saving decisions of economic agents.

These considerations allow explaining why mainstream economists developed theoretical models based only on saving and investment decisions, without taking into account the credit market. In fact, in the world depicted by mainstream economists, the demand and the supply of credit are no more than a reflection of saving and investment decisions.⁹

The elimination of the credit market means neglecting the risk of insolvency, that is, the possibility that debtors can fail and be unable to repay loans. Such a choice is perfectly justified, if the theorist describes the economy through models based on the assumption that only one homogeneous good is produced. Classical economists, especially Smith and Ricardo, described an economy in which only corn is produced, and in which the amount of unconsumed corn can be used as an investment good, namely as seeds or as wages paid to workers hired for the production of capital goods such as spades or ploughs. Böhm-Bawerk (1884) illustrated his theory of the rate of interest with reference to an economy in which only fish is produced. He remarked that the production of a community of fishermen would increase considerably by shifting from a fishing technique involving only the use of labour, to a more sophisticated fishing technique involving the use of capital goods like fishing nets

and boats. These capital goods can be built provided that a portion of the fish caught is saved to pay the workers employed to produce nets and boats. Böhm-Bawerk pointed out that households are encouraged to save by the prospective to receive a flow of interests that entrepreneurs will be able to pay thanks to the higher productivity of the fishing activity ensured by the use of capital goods.

In these cases, the productivity of the amount of corn used as seed or of the fishes representing the wages of the workers employed to build boats allows the debtor to repay the loan and to pay an interest rate in real terms. An economy of this type can be characterized by the Wicksellian concept of the natural rate of interest, that is, the rate of interest that would be paid in a world without banks and without bank money, and in which exchanges of capital goods on the credit market occur in kind.

The asymmetric information approach does not change the structural features of this theoretical model. According to this approach, the dissociation between saving and investment decisions introduces an element of fragility, because the savers are forced to gather information on the characteristics of the investment projects and on the characteristics of the potential borrowers. The presence of imperfect information gives rise to institutions, like the banks, specializing in acquiring information on potential borrowers.

Since the function of the banks, like that of the mechanics, is to grant the achievement of the results that would be obtained in an ideal world characterized by the presence of perfect information, this approach does not allow for the elaboration of a meaningful explanation of the origins of the Great Recession. In the medium run, the system still converges towards its natural equilibrium. In such a world, the probability of the outbreak of a global crisis is equal to the probability of a general block of the automobile traffic due to the sudden inability of the mechanics to assess the quality of the circulating cars.

This conclusion is confirmed by the explanation of the origins of the Great Recession contained in the new version of BAG's textbook. In fact, BAG's interpretation is based on concepts and relationships that are at odds with a theoretical model in which banks are considered as simple intermediaries transferring previously collected resources by overcoming the problems caused by the presence of imperfect information.

2. The origins of the Great Recession according to Blanchard, Amighini and Giavazzi

According to BAG, the crisis has been triggered by a malfunctioning of the process of financial intermediation resulting in a sudden and sharp reduction in the availability of credit from the banks:

In normal times [financial intermediaries] function smoothly. They borrow and lend, charging a slightly higher interest rate than the rate at which they borrow so as to make a profit. Once in a while, however, they run into trouble, and this is indeed what happened in the recent crisis. (BAG 2017, p. 110)

The distinction between normal times, in which the process of intermediation performed by the banks runs smoothly, and times of crisis, in which it does not work, contrasts with the theoretical approach based on information asymmetries. In fact, within the asymmetric information approach it is certainly possible to imagine that a minority of banks may not be able to properly assess the quality of potential borrowers. Nonetheless, it cannot be assumed that the generality of banks has suddenly lost the ability to correctly assess the creditworthiness of their clients. The latter assumption would be equivalent to the hypothesis that mechanics are no longer able to evaluate the quality of second-hand cars.¹⁰

The limit of the asymmetric information approach is confirmed by the fact that, in order to explain the origins of the Great Recession, BAG introduce three elements contradicting the tenets of their theoretical model: i) the concept of risk of insolvency; ii) the phenomena of speculation and speculative bubbles; iii) the relationship between bank money and credit.

BAG (2017, p. 111) underline that a bank becomes insolvent when a reduction of the value of its assets exceeds the value of its net worth. The banking system as a whole becomes insolvent when a sharp devaluation of the assets affects a significant number of banks. Such a phenomenon may occur in the world in which we actually live, but certainly not in the economy described by the model developed by BAG, that is, in an economy in which the presence of banks is justified by the introduction of imperfections in the credit market. As seen above, the choice to neglect the credit market and the risk of insolvency is perfectly plausible if we consider an economy characterized by the production of a single homogeneous good, as in the case of a corn economy or the fishermen economy described by Böhm-Bawerk.

The risk of insolvency can be overlooked also in models explicitly considering the presence of banks based on the assumption that the credit market is characterized by information asymmetries. Stiglitz and Weiss (1990), for example, describe the role of banks with reference to an agricultural economy in which banks are simple intermediaries lending unconsumed resources previously collected from the savers. It is obviously possible that a single bank may be unable to evaluate the quality of the borrowers, and that the value of its assets will thus decrease so as to write off its entire net worth. Nevertheless, it is unrealistic to assume that the value of the credits granted by the entire banking system may depreciate,

because, for example, every bank suddenly lost the ability to properly assess the creditworthiness of the borrowers receiving a share of the unconsumed production of corn.

2.1. Speculation and speculative bubbles

The second element characterizing BAG's explanation of the origins of the Great Recession concerns the specification of the causes underlying the fall of the value of the banks' assets. This phenomenon was triggered by the collapse of housing prices that started in the second half of 2006 in the United States.¹¹ The sharp decrease of housing prices interrupted the period of unprecedented growth of the housing price index observed between 2000 and mid-2006. Indeed, during this period the housing price index jumped from 100 to 226 (BAG 2017, p. 116).

To explain the strong increase of housing prices and their subsequent collapse BAG make use of the concepts of 'speculation' and of 'speculative bubbles'. They remark that economies may experience "deviations of [stock and other asset prices] from their fundamental value, namely bubbles or fads" (BAG 2017, p. 300). BAG underline that in speculative markets exchanges are based on the expectations concerning the future price of particular assets.¹² According to BAG, the real estate bubble that developed in the United States was fueled by low interest rates and the choice of the banks to expand the granting of 'subprime' loans to low-income earners. The latter were encouraged to subscribe these mortgages by their expectations of a continuous rise in housing prices. Furthermore, the banks' behavior is explained by the spread of compensation schemes based on the distribution of performance-linked bonuses. The banks' managers were thus induced to use securitization techniques in a distorted way, thereby causing a reduction of the quality of the loans (BAG 2017, pp. 116-120).

The problem with this explanation lies in the impossibility to introduce speculative markets within the model described by BAG, a model in which banks are simple intermediaries, and savings and investment flows can be defined in terms of quantities of goods. In fact, the phenomena of speculation and speculative bubbles can be defined only with reference to an economy characterized by the relevance of the concept of wealth. The wealth of an individual includes all the financial assets and durable goods (e.g. residential and land properties) owned at a certain time. Over time, wealth can vary depending on the flows of savings. When an individual decides to save part of his income, he adds new financial assets or new durable goods to his pre-existing stock of wealth.

The relationship between saving decisions and wealth is hard to explain in the context of a corn economy such as that described in the model elaborated by BAG. If savings consist of unconsumed corn, it is unrealistic to assume the existence of a process of wealth accumulation by which, from year to year, an individual piles up an ever-growing quantity of corn. Instead, it is more reasonable to assume that an economy of this type is characterized by a physiological limit to the total amount of goods that individuals wish to accumulate. Indeed, a farmer would never wish to accumulate an infinite amount of corn, nor would a craftsman wish to pile up a limitless amount of tables.

In a famous essay of 1930, Keynes described an economic system with these features, predicting that, within few generations, the economic problem of mankind would be solved.¹³ Keynes's prediction was based on the hypothesis of satiety of needs characterizing economies in which needs are given and limited.¹⁴

The relationship between saving decisions and wealth can be associated to an economic system in which: i) incomes are distributed in monetary form; ii) the hypothesis of insatiability of needs is valid. In an economy of this kind, to save means to increase wealth

by accumulating, first of all, money.¹⁵ Keynes's deductions of 1930 allow underlining that the process of wealth accumulation and the phenomenon of speculation are relevant in an economy characterized by the insatiability of needs. The desire to accumulate unlimited amounts of money and wealth can be explained assuming that individuals feel unlimited needs. If needs are insatiable, resources are inevitably scarce and the process of wealth accumulation becomes relevant.

The description of the process of wealth accumulation leads to emphasize the relevance of the decisions concerning the composition of wealth. As underlined by Keynes (1936, p. 166), a saver is a wealth holder who first decides how to save and then chooses "in *what form* he will hold the command over future consumption." The choices concerning the composition of wealth are realized within speculative markets in which the demand and supply of financial assets or durable goods depend on the expectations on their future prices.

2.2. Bank money

The third element of the explanation of the origins of the Great Recession provided by BAG that contradicts their theoretical model concerns the description of the macroeconomic effects of the collapse of housing prices. BAG (2017, p. 117) remark that in mid-2008 the losses on mortgages granted by US banks were estimated around \$ 300 billion, a figure not very high in relation to the size of the US economy. For this reason, economists thought that the financial crisis would not have had significant repercussions on the levels of income and employment. Furthermore, BAG underline that economists had underestimated the impact of the collapse of housing prices on the banks' propensity to provide loans to households and businesses. BAG point out that the collapse of housing prices has led to a reduction in

the value of the banks' assets, which caused a reduction of their net worth and an increase of their leverage. In order to reduce their leverage, the banks thus chose to reduce the supply of credit:

As housing prices declined and some mortgages went bad, high leverage implied a sharp decline in the capital of banks and SIVs (structured investment vehicles). This in turn forced them to sell some of their assets. Because these assets were often hard to value, they had to sell them at fire sale prices. This, in turn, decreased the value of similar assets remaining on their balance sheet, or on the balance sheet of other financial intermediaries, leading to a further decline in capital ratio and forcing further sales of assets and further declines in prices. The complexity of the securities held by banks and SIVs made it difficult to assess their solvency. [...] On September 15, 2008, Lehman Brothers, a major bank with more than \$600 billion in assets, declared bankruptcy, leading financial participants to conclude that many, if not most, other banks and financial institutions were indeed at risk. By mid-September 2008, the financial system had become paralyzed. Banks basically stopped lending to each other or to anyone else. Quickly, what had been largely a financial crisis turned into a macroeconomic crisis. (BAG 2017, p. 119)

In Chapter 6 of their textbook, BAG describe the macroeconomic consequences of the burst of the housing bubble by making use of a version of the IS-LM model with the following two characteristics: i) the central bank directly controls the monetary rate of interest; as emphasized by Romer (2000), this means that, in correspondence with the policy rate fixed by the central bank, the LM curve is horizontal; ii) businesses finance their activities by borrowing from the banks. Investment decisions are thus a function of the rate of interest set by the banks, which apply a risk premium x to the policy rate r fixed by the monetary authorities. Given the level of the policy rate, the position of the IS curve depends on the risk premium. A financial crisis can cause an increase of x "because one financial institution has gone bankrupt and investors have become worried about the health of other banks,

starting a run, forcing the other banks to reduce lending” (BAG 2017, pp. 114-5). This will produce recessive effects moving the IS curve to the left. Furthermore, BAG recognize that the recessive effects of the financial crisis are transmitted not only through an increase of the rate of interest on loans, but also through the decision of the banks to reduce the credit supply at a given level of the rate of interest, that is, through the rationing of credit to households and businesses.¹⁶

The relationship between the collapse of the value of bank assets and the decision to stop the supply of loans to households and businesses holds only in an economy in which banks may vary the supply of credit regardless of saving decisions. In fact, BAG argue that the fall of the supply of credit that led to the recession was not caused by a reduction in the flow of savings, but by autonomous decisions of the banks regarding the level of their leverage. The relationship between the financial crisis and the banks’ propensity to provide credit to the economy contrasts with BAG’s theoretical model. In their textbook, BAG assume that banks are simple intermediaries operating in an economy that converges towards a natural equilibrium determined solely by supply factors, regardless of the presence of the banks.

The macroeconomic consequences of the financial crisis described by BAG characterize an economic system in which banks can supply credit by creating new money. In chapter 4 of their textbook, BAG recognize that the liabilities of banks are used as a means of payment, but they continue to separate the processes of money and credit creation. Since the amount of bank deposits is a multiple of the monetary base created by the central bank, BAG underline that, even in an economy based on the use of bank money, monetary authorities control of the supply of money. Nevertheless, as banks can create deposits by granting loans, BAG overlook that the multiplication of deposits set in motion starting from

a given flow of central bank money implies a corresponding increase of the supply of bank loans. In an economy characterized by the use of bank money, the supply of credit is tightly bound to the supply of money and independent from the flow of savings. Thus, the processes of money and credit creation cannot be clearly separated.

In conclusion, we can observe that the explanation of the origins of the Great Recession developed by BAG is valid only in an economy with characteristics that profoundly differ from those described in the theoretical model elaborated in their textbook. According to BAG's interpretation, the crisis has occurred in an economy in which: i) the banks may become insolvent because their debtors go bankrupt; ii) speculative phenomena and speculative bubbles are relevant; iii) the banking system can modify the supply of credit regardless of saving decisions. Nonetheless, even the latest version of BAG's theoretical model describes an economy in which: i) banks cannot fail because they are assumed to be simple intermediaries that, in presence of imperfect information, facilitate the transfer of real resources from savers to businesses; ii) speculative markets do not exist because the system is characterized by the principle of satiety of needs and, thus, by the irrelevance of the process of wealth accumulation; iii) the supply of credit is not controlled by the banks but depends solely on the saving decisions of economic agents.

The distance between BAG's theoretical framework and the concepts used to explain the origins of the Great Recession highlights the need to develop a different theoretical model allowing to analyze the characteristics of the economic system emerging from the interpretation of the crisis elaborated by BAG.

3. The alternative theoretical model

The pillars of an alternative theoretical model allowing to describe an economy characterized by: i) the possibility that banks go bankrupt; ii) the presence of speculative markets; iii) a

supply of credit independent of saving decisions, can be defined starting from the works of Keynes, Schumpeter and Minsky.¹⁷ The new version of BAG's textbook contains some references at the thought of these authors that can be used to elaborate an alternative macroeconomic model.

3.1. Schumpeter, money and economic development

BAG refer to Schumpeter when they describe the effects of technological progress. In chapter 12 of their textbook, BAG define technological progress as the factor determining an increase of each worker's productivity, thus inducing a reduction of the number of workers required to realize a given quantity of goods. In the following chapter, BAG cite Schumpeter to underline that technological progress changes the structural features of the economic system: "Technological progress is a process of structural change. This theme was central to the work of Joseph Schumpeter, a Harvard economist who, in the 1930s, emphasized that the process of growth was fundamentally a process of *creative destruction*. New goods are developed, making old ones obsolete. New techniques of production are introduced, requiring new skills and making some old skills less useful" (BAG 2017, p. 267).

Even though they cite Schumpeter, BAG neglect some elements of his analytical approach that are essential for the explanation of the contemporary crisis. Schumpeter emphasizes that innovations are not introduced as a consequence of the demand for new goods coming from consumers, but following decisions taken by entrepreneurs. This means that needs are not exogenously given, but that they are continuously influenced by the innovations introduced by entrepreneurs.¹⁸ To explain the role of innovations Schumpeter introduces the concepts of growth and development. With the term *growth* Schumpeter refers to an economy, like that characterized by the production of a single homogeneous good, in

which the changes observed over time concern only the volume of production. With the term *development* Schumpeter instead indicates the structural changes produced by the introduction of innovations that “are forced by producers on consumers” (Schumpeter 1939, p. 47).

The distinction between *growth* and *development* allows explaining the concepts of satiability and insatiability of needs introduced in paragraph 2.1. The first concept applies to an economy characterized by the production of a single homogeneous good, and in which innovations consist of new technologies increasing the workers’ productivity. In an economy of this kind, Keynes’s predictions concerning the economic possibilities of ‘his’ grandchildren are valid (see Keynes 1930). The principle of insatiability of needs instead applies to the capitalist economies described by Schumpeter, that is, to economies in which the introduction of new goods continuously amplifies the needs of consumers. Since needs become insatiable, in these economies resources are necessarily scarce. As seen earlier, the concept of insatiability of needs allows explaining the relationship between saving decisions, wealth and the presence of speculative markets.

Furthermore, Schumpeter underlines that the process of economic development depends not only on the introduction of innovations, but also on the fundamental presence of bank money. According to Schumpeter, bank money is not a neutral means of exchange, but represents a structural factor of the process of economic development. Schumpeter eliminates the separation between money and credit defined by the orthodox theory and underlines that banks are able to offer credit by creating new money. He describes the key role of bank money in the process of change by underlining that, generally, innovations are introduced by ‘new men’ who, unlike those running existing businesses, do not have the control over the basic production factors, that is, labor and land.¹⁹ Bank money is the tool

allowing entrepreneurs-innovators to gain control over the production factors, in particular over the workforce, required to realize their innovations. The supply of credit based on the creation of new money by the banks therefore represents an essential element of the process of change characterizing capitalist economies. Without banks and credit the presence of a consistent flow of investments and the process of economic development of capitalist economies could not take place.

3.2. Keynes, money and economic crises

Keynes is the other great economist whose thought allows for the elaboration of a theoretical model that can be used to illustrate the characteristics of the economic system emerging from BAG's analysis of the Great Recession. BAG (2017, p. 509) consider Keynes as the founding father of modern macroeconomics and as the economist that offered a convincing interpretation of the Great Depression. But, according to BAG, the validity of Keynes's principle of effective demand is confined to the short run, when prices and wages are rigid. BAG thus judge Keynes's analysis as a particular case of the more general neoclassical theoretical framework that does not cast doubts about the convergence of the economy towards its natural equilibrium.

In our opinion, such an interpretation of Keynes's thought impedes the elaboration of a meaningful explanation of the origins of the Great Recession, as it completely neglects the possibility that an economy characterized by flexible wages and prices can generate a catastrophic crisis. BAG seem to be aware of the limits of their model. In fact, they underline that the Great Recession has led the economists to raise doubts about the efficacy of the adjustment mechanisms that should drive the economic system towards its natural equilibrium:

The Great Depression had, rightly, led most economists to question the macroeconomic properties of a market economy and to suggest a larger role for government intervention. The crisis is raising similar questions. Both the new classical and new Keynesian models had in common the belief that, in the medium run at least, the economy naturally returned to its natural level. [...] Many economists today believe that this optimism was excessive. After seven years in the liquidity trap in the United States, it is clear that the usual adjustment mechanism, namely a decrease in interest rates in response to low output – is not operational. It is also clear that the room for policy, be it monetary policy or fiscal policy, is also more limited than previously thought. (BAG 2017, p. 519)

The elaboration of a meaningful explanation of the Great Recession requires recovering some elements of Keynes's theoretical approach neglected by BAG. In the preparatory drafts of *The General Theory*, Keynes (1933a, 1933b) expressed the need to elaborate a *monetary theory of production*, emphasizing that fluctuations in aggregate demand are a “monetary phenomenon” (Keynes 1933b, p. 85). According to Keynes, money is thus essential to explain the fluctuations of income and employment characterizing contemporary economies. Keynes's monetary theory of production is characterized by two elements: i) the principle of effective demand; ii) the recognition of the importance of the phenomenon of speculation and of the presence of speculative markets. We will show that these two points are valid in an economy characterized by the relationship between bank money and innovations described by Schumpeter.

In Keynes's view the principle of effective demand does not hold in what he defines as the economy of Robinson Crusoe, that is, an economy that can be described by a model in which a single homogeneous good is produced. An economy of this kind is characterized by the validity of Say's Law. Keynes argues that the principle of effective demand instead holds in what he calls a *monetary economy*. Keynes uses this expression to underline that

money deeply affects the structure of the economic system (Keynes 1933a, p. 408-409). This point is common to the analyses of Keynes and Schumpeter. Both stress that the presence of fiat money deeply affects the structure of modern market economies compared to the structure of a barter economy in which money represents no more than a useful means of exchange.

In a monetary economy, investments have the characteristics of Schumpeter's innovations,²⁰ and savings do not correspond to unconsumed corn, but coincide with the share of monetary income feeding the process of wealth accumulation. These characteristics of saving and investment decisions allow us to highlight that in a monetary economy Say's Law and the concept of the natural rate of interest do not apply, because there does not necessarily exist a value of the rate of interest pushing businesses to realize a flow of investments consistent with full employment.

In a monetary economy the existence of a flow of investments consistent with full employment depends not only on the level of the rate of interest, but on two further conditions: i) the presence of entrepreneurs-innovators, who, driven by their animal spirits, plan to realize exactly that flow of investments; 2) the willingness of the banks to finance the investment projects submitted by entrepreneurs-innovators. The fulfillment of these conditions does not depend on a particular level of the rate of interest. In other words, even a rate of interest equal to zero or a negative rate of interest may not be sufficient to achieve full employment.²¹ In fact, given the level of the rate of interest set by the banking system, the flow of investments depends on the animal spirits of entrepreneurs willing to carry out innovative projects. If these entrepreneurs do not exist, unemployment emerges even if the rate of interest were equal to zero or negative.

BAG address the issue of expectations in chapters 15 and 16 of their textbook. They recognize that “investment decisions, just as consumption decisions, depend [...] very much on expectations of the future” (BAG 2017, p. 316). BAG underline that expectations about future profits influence the inclination and the position of the IS curve as “firms are not likely to change their investment plans very much in response to a decrease in the current real interest rate if they do not expect future real interest rates to be lower as well” (BAG 2017, p. 332). Furthermore, they recognize that monetary policy may not produce any effect on expectations: “[...] the steep IS curve [...] implies that the decrease in the current interest rate has only a small effect on output. Changes in the current interest rate, if not accompanied by changes in expectations, have only a small effect on spending and, in turn, a small effect on output” (BAG 2017, p. 334).

BAG thus acknowledge that the introduction of expectations may completely neutralize the effectiveness of the adjustment mechanism that should ensure the convergence of the economy towards its ‘natural’ equilibrium. It must be underlined that expectations about future profits are not relevant in a corn economy or in Böhm-Bawerk’s fishermen economy, as, in these cases, the results of production decisions can be defined in terms of the amount of goods produced. Since the existing technology univocally defines the relationship between the input of productive factors and the quantity of the final product, the results of production decisions are certain.²²

Expectations about future profits are instead relevant in a monetary economy in which investment decisions have the characteristics of Schumpeterian innovations. In a monetary economy, production decisions are taken under conditions of uncertainty. In this economy the goal of an entrepreneur is not to produce a certain amount of goods, for example cars to be bartered for other goods, but to sell goods in exchange for money. Thus, the results of

production decisions consist in the monetary proceeds obtained by selling the products realized thanks to the initial investment. As the monetary proceeds depend on the reaction of consumers to innovations and on the ability of entrepreneurs-innovators to influence consumer behaviors, in a monetary economy it is impossible to assume that, *ex ante*, entrepreneurs-innovators are sure to sell their whole production.²³

Furthermore, given the rate of interest set by the banking system, the presence of entrepreneurs-innovators planning to realize a flow of investments consistent with full employment is not sufficient to achieve the natural equilibrium condition. In fact, what is needed is also the willingness of the banks to finance the projects of entrepreneurs-innovators. But since in a monetary economy banks are not mere intermediaries lending out resources previously collected from the savers, there is no guarantee that they will act in this way. In a monetary economy, banks finance investments by creating new money, and, similarly to the entrepreneurs-innovators, they take their decisions under conditions of uncertainty. Their evaluations of the quality of investment projects may therefore be profoundly different from the evaluations made by entrepreneurs. For example, banks may consider an entrepreneur planning to build a railway as an eccentric individual whose investment project has no chance of success. In this case, innovative investments will not be realized and the system will not reach a situation of full employment. We can thus conclude that in a monetary economy Say's Law is not valid and that, even in the medium run, such an economy is characterized by the principle of effective demand.²⁴

The second fundamental element of Keynes's monetary theory of production is the presence of speculation and speculative markets. In section 2.1. we have underlined that it is impossible to introduce speculative markets in the theoretical model described by BAG. The phenomena of speculation and speculative bubbles can be defined only in an economy

characterized by the relationship between saving decisions and wealth. This relationship works in an economy based on the principle of insatiability of needs, that is, in an economy in which the introduction of new goods continuously amplifies the needs of consumers.

We can conclude that the theoretical approaches of Keynes and Schumpeter allow defining the characteristics of the economic system in which, according to BAG's description, the Great Recession has unfolded. This economic system is characterized by: i) the use of bank money and the independence of the supply of credit from saving decisions; ii) the possibility that banks go bankrupt due to the insolvency of their debtors; iii) the presence of speculative markets and of banks that may choose to adopt speculative behaviors.

Hyman Minsky (1975, 1980, 1982, 1996) is the contemporary economist who more than any other has studied the structural nature of economic crises starting from the theoretical frameworks of Keynes and Schumpeter. Minsky underlines that, over time, 'Keynesian policies', such as those advocated by the exponents of the Neoclassical Synthesis, would not allow the maintenance of a steady state characterized by high incomes and full employment, because "stability, even if it is the result of policy, is destabilizing" (Minsky 1975, p. 12). The shift from 'tranquil' to booming periods can be explained through the relationship between bank money, investment decisions and uncertainty described in the preceding pages. In an economy in which investments are realized under conditions of uncertainty it is possible to experience periods of euphoria. During these periods, entrepreneurs and bankers remove the memories of previous crises and are caught by an overoptimistic attitude leading to believe that the economy has entered into a 'new era' and to deride the warnings of those suggesting the opportunity of more cautious behaviors,.

BAG seem to have learned Minsky's lesson when they describe the behavior of the US banking system that fostered the outbreak of the crisis:

Banks were highly levered. Why was it so? For a number of reasons. First, banks probably underestimated the risk they were taking: times were good and in good times banks, just like people, tend to underestimate the risk of bad times. Second, the compensation and bonus system also gave incentives to managers to go for high expected returns without fully taking the risk of bankruptcy into account. Third, although financial regulation required banks to keep their capital ratio above some minimum, banks found new ways of avoiding the regulation, by creating new financial structures called *structured investment vehicles*. (BAG 2017, p. 117)

But, once again, we must underline that such considerations about bank's optimistic attitude have no meaning in a corn economy in which the function of banks consists in eliminating the consequences of the presence of asymmetric information. These considerations can instead be referred to a monetary economy in which economic crises occur when, as pointed out by Keynes, 'speculation' prevails over 'enterprise'.²⁵

Conclusions

The new edition of BAG's textbook represents an important opportunity to assess the impact of the Great Recession on macroeconomic theory. The authors believe that, ten years after the burst of the real estate bubble in the United States, economists have learned the lesson of the crisis. They argue that, from the beginning of the 1970s until the outbreak of the Great Recession, economists have been responsible for the development of a theoretical framework that completely neglects the role of the financial system. The theoretical model presented in the new edition of BAG's textbook thus explicitly considers the role of the

financial system and, in particular, that of the banking system. Nevertheless, the structural features of their previous theoretical model have not changed.

The presence of banks is explained by recognizing the existence of imperfections hindering the direct financing of businesses by savers. The function of banks is to eliminate the effects of these imperfections, thus enabling the economic system to reach the results that would be achieved in a world without imperfections and in which banks would have no reason to exist. However, it is difficult to explain the origins of the Great Recession by making use of a theoretical model based on the assumption that the economy converges towards a 'natural' equilibrium and that crises cannot occur.

This contradiction clearly emerges from BAG's interpretation of the origins of the Great Recession. BAG's explanation may be valid in an economy with different characteristics from those described in the theoretical model developed in their textbook. According to BAG, the crisis occurred in an economic system characterized by: i) the possibility that banks go bankrupt; ii) the presence of speculative markets and of banks that may choose to adopt speculative behaviors; iii) the independence of the credit supply from saving decisions, as the supply of credit depends only on the choices of the banking system.

The contrast between the theoretical paradigm presented in BAG's textbook and their explanation of the origins of the Great Recession highlights the need to elaborate an alternative paradigm allowing to describe the functioning of an economic system in which deep financial and economic crises can occur. The last part of this paper therefore illustrates the pillars of an alternative theoretical model based on the lessons of Keynes, Schumpeter and Minsky.

Notes

¹ This point is confirmed by Blanchard (2018). Blanchard recognizes that the contemporary crisis has highlighted important limits of the current DSGE models. Nevertheless, he concludes that “the DSGEs make the right basic strategic choices and the current flaws can be addressed.” (Blanchard 2018, p. 47)

² Blanchard stresses that “[m]acroeconomics is about general equilibrium.” (Blanchard 2018, p. 49)

³ “Assume that all firms produce the same good, which can then be used by consumers for consumption, by firms for investments, or by government. With this (big) simplification, we need to look at only one market – the market for ‘the’ good - and think about what determines supply and demand in that market.” (BAG 2017, p. 48)

⁴ See Bernanke (1992–1993, 2007), Bernanke and Blinder (1988), Bernanke and Gertler (1995), Bernanke and Lown (1991) and Bernanke *et alia* (1999).

⁵ “In a frictionless economy, funds are liquid and can flow to the most profitable project or to the person who values the funds most. Differences in productivity, patience, risk aversion or optimism determine fund flows, but for the aggregate output only the total capital and labor matter. [...] In contrast, with financial frictions liquidity considerations become important and the wealth distribution matters. External funding is typically more expensive than internal funding through retained earnings.” (Brunnermeier *et alia* 2013, p. 3)

⁶ See, for example, Wurgler (2000), Stulz (2001), Gorton and Winton (2002), Levine (2002, 2004), Stiglitz and Greenwald (2003).

⁷ “Until now we have looked at *direct finance*: that is, borrowing directly by the ultimate borrowers from the ultimate lenders. In fact, much of the borrowing and lending takes place through financial intermediaries, which are financial institutions that receive funds from some investors and then lend these funds to others. Among these institutions are banks. [...] Financial intermediaries perform an important function. They develop expertise about specific borrowers and can tailor lending to their specific needs.” (BAG 2017, p. 110)

⁸ “It is easy to imagine a world in which there is a high level of saving and investment, but in which there is an unfavorable climate for financial intermediaries. At the extreme, each of the economy’s spending units – whether of the household, business, or government variety – would have a balanced budget on income and product account. For each spending unit, current income would equal the sum of current and capital expenditures. There could still be saving and investment, but each spending unit’s saving would be precisely matched by its investment in tangible assets. In a world of balanced budgets, security issues by spending units would be zero, or very close to zero. The same would be true of the accumulation of financial assets. Consequently, this world would be a highly uncongenial one for financial intermediaries; the saving–investment process would grind away without them.” (Gurley and Shaw 1956, pp. 257–258)

⁹ Bennett McCallum clearly explains the reasons why mainstream analysis focuses on the money market and neglects the credit market: “[C]an it be sensible to discuss monetary economics with little attention devoted to the workings of financial markets? [...] The question’s answer is [...] fairly straightforward. It rests basically on the fact that in making their borrowing and lending decisions, rational households (and firms) are fundamentally concerned with goods and services consumed or provided at various points in time. They are

basically concerned, that is, with choices involving consumption and labor supply in the present and in the future. But such choices must satisfy budget constraints and thus are precisely equivalent to decisions about borrowing and lending – that is, supply and demand choices for financial assets. Thus, for example, a household that chooses to consume this year in excess of this year’s income, equivalently chooses to borrow (or to draw down its assets) to the required extent. Consequently, there is no need to consider *both* types of decisions explicitly. The practice adopted in this book is to focus attention on consumption/saving decisions rather than on borrowing/lending decisions, letting the latter be determined implicitly. [...] From the perspective just expressed, it is seriously misleading to discuss issues in terms of possible connections between ‘the financial and real sectors of the economy’, to use a phrase that appears occasionally in the literature on monetary policy. The phrase is misleading because it fails to recognize that the financial sector *is* a real sector.” (McCallum 1989, pp. 29–30)

¹⁰ An important result obtained by the asymmetric information approach has been to show that the banks may ration credit, since an increase of the rate of interest can cause an adverse selection effect (see, for example, Stiglitz and Weiss 1981, 1990). This result is based on the assumption that the banks, whose function consists in evaluating the creditworthiness of potential borrowers, are unable to perfectly screen the qualities of businesses. As remarked by Minsky (1992-93, p. 79), the weakness of such an approach is that it starts from the hypothesis that the “non-neutrality [of money] depends upon borrowers being smart and bankers being dumb.”

¹¹ “When housing prices started declining in the United States in 2006, most economists forecast that this would lead to a decrease in demand and a slowdown in growth. Few economists anticipated that it would lead to a major macroeconomic crisis.” (BAG 2017, p. 116)

¹² “People might be willing to pay more than the fundamental value of a stock if they expect its price to further increase in the future. And the same argument applies to other assets, such as housing, gold, and paintings.” (BAG 2017, p. 302)

¹³ Keynes foresaw that “in the long run [...] *mankind is solving its economic problem*. I would predict that the standard of life in progressive countries one hundred years hence will be between four and eight times as high as it is today. [...] This means that the economic problem is not – if we look into the *future – the permanent problem of the human race*.” (Keynes 1930 [2013], pp. 325–326)

¹⁴ “Now it is true that the needs of human beings may seem to be insatiable. But they fall into two classes – those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be, and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows. Needs of the second class, those which satisfy the desire for superiority, may indeed be insatiable; for the higher the general level, the higher still are they. But this is not so true of the absolute needs – a point may soon be reached, much sooner perhaps than we all of us are aware of, when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes.” (Keynes 1930 [2013], p. 326).

¹⁵ This relationship is described by BAG when they specify the concept of the demand for money: “Saving is that part of the after-tax income that you do not spend. [...] At a given moment in time, you cannot change the total amount of your financial wealth. It can only change over time as you save or dissave [...]” (BAG 2017,

p. 68). The relationship between saving decisions and wealth is a central point of Keynes's analysis: "An act of individual saving means – so to speak – a decision not to have dinner to-day. But it does *not* necessitate a decision to have dinner or to buy a pair of boots a week hence or to consume any specified thing at any specified date. [...] The act of saving implies [...] a desire for 'wealth' as such, that is for a potentiality of consuming an unspecified article at an unspecified time." (Keynes 1936 [2013], pp. 210–211)

¹⁶ "Most macro models assumed that monetary policy worked through interest rates and that firms could borrow as much as they wanted at the market interest rate. In practice, many firms can borrow only from banks. And banks often turn down potential borrowers, despite the willingness of these borrowers to pay the interest rate charged by the bank." (BAG 2017, p. 517)

¹⁷ For a detailed description of this alternative paradigm, see Bertocco 2017.

¹⁸ "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 electric lamps or rayon stockings, 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." (Schumpeter 1939 [1964], p. 47)

¹⁹ "[...] it is not essential to the matter - though it may happen – that the new combinations should be carried out by the same people who control the productive or commercial process which is to be displaced by the new. On the contrary, new combinations are, as a rule, embodied, as it were, in new firms which generally do not arise out of the old one but start produce beside them. [...] in general it is not the owner of stage-coaches who builds railways." (Schumpeter 1912 [1949], p. 66)

²⁰ The investment decisions described by Keynes in *The General Theory* correspond to Schumpeter's innovations: "The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made. Our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the goodwill of a patent medicine, an Atlantic liner, a building in the City of London amounts to little and sometimes to nothing; or even five years hence." (Keynes 1936 [2013], pp. 149–150)

²¹ In an economic system characterized by the use of money, that is, a non-perishable asset without storage costs, the rate of interest on money cannot reach strongly negative values. In fact, it is possible to imagine the presence of negative interest rates if the costs of holding cash are higher than zero. Nevertheless, it is difficult to assume that they can reach significant values. As Rogoff (2014, p. 2) argues: "it [...] suddenly becomes very hard to push interest rates below levels of, say, -0,25 to -0,50, certainly not on a sustained basis. Hoarding cash may be inconvenient and risky, but if rates become too negative, it becomes worth it."

²² Also in a corn economy farmers can fail because of bad weather, wars, earthquakes or plagues, phenomena that Schumpeter (1939, p. 1) defined as: "factors which act without the economic sphere (external factors)". These factors should thus be excluded from the economic analysis.

²³ This point is forcefully underlined by Keynes: "The classical theory supposes that the readiness of the entrepreneur to start up a productive process depends on the amount of value in terms of product which he

expects to fall to his share; i.e. that only an expectation of more *product* for himself will induce him to offer more employment. But in an entrepreneur economy this is a wrong analysis of the nature of business calculation. An entrepreneur is interested, not in the amount of product, but in the amount of *money* which will fall to his share. He will increase his output if by so doing he expects to increase his money profit, even though this profit represents a smaller quantity of product than before.” (Keynes 1933b [2013], p. 82)

²⁴ In Bertocco 2017, chapter 5, the monetary nature of the principle of effective demand is illustrated through a simple linear model.

²⁵ “Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of *laissez-faire* capitalism – which is not surprising, if I am right in thinking that the best brains of Wall Street have been in fact directed towards a different object.” (Keynes 1936 [2013a], p. 159)

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