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AND HOUSING BUBBLE:
A CRITICAL ANALYSIS

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GLOBAL SAVING GLUT AND HOUSING BUBBLE: A CRITICAL ANALYSIS.

Giancarlo Bertocco

Abstract

Bernanke maintains that the housing bubble stemmed from the global saving glut that occurred in the period 1996-2006. This paper has two objectives. First, it highlights the limits of Bernanke's thesis. A theory of the financial crisis must explain two phenomena: the phenomenon of speculation and the process of liquidity creation that can fuel the speculative demand for financial assets; Bernanke's thesis does not offer a satisfactory explanation of these two phenomena. The second objective is to present a satisfactory explanation of the cause of the crisis on the basis of the theories of Wicksell, Schumpeter and Keynes.

Introduction

Bernanke (2005, 2007, 2010) maintains that the housing bubble that caused the financial crisis in 2007 stemmed from the global saving glut that occurred in the period 1996-2006. This saving glut generated the liquidity that at the end of the last century fueled the dot.com bubble and then the housing bubble.

This paper has two objectives. First, it highlights the limits of Bernanke's thesis. A meaningful theory of the financial crises triggered by the bursting of a speculative bubble must explain two phenomena: i) the phenomenon of speculation and the presence of markets in which financial assets are constantly traded; ii) and the process of liquidity creation that can fuel the speculative demand for financial assets.¹ It will be shown that Bernanke's thesis does not offer a satisfactory explanation of these two phenomena. The second objective of this paper is to present a satisfactory explanation of the cause of the crisis on the basis of the theories of economists such as Wicksell, Schumpeter and Keynes.

The paper is divided into three parts. Bernanke's thesis is set out in the first part, the second part contains a critical analysis of the global saving glut hypothesis (henceforth, GSG hypothesis) and in the final section an alternative explanation of the origin of the crisis is set out.

¹ See for example: Minsky (1975, 1982), Kindleberger (1978), Galbraith (1990), Stiglitz (1990), Brunnermeier (2008), Reinhart and Rogoff (2009).

1. Saving glut and the financial crisis: Bernanke's explanation.

Bernanke sets out his theory in some papers dealing with the causes of the large increases in the US current account deficit between 1996 and 2006 (Bernanke 2005, 2007). This deficit went from 120 billion dollars in 1996, equal to 1.5% of GDP, to 640 billion dollars in 2004 (5.5% of GDP) to 812 billion in 2006, equal to 6.2% of GDP.

After recalling that the current account balance corresponds to the difference between the savings and the investments of the domestic agents and that the financial balances of all countries should sum to zero, Bernanke concludes that the worsening of the US's trade deficit corresponds to a growing surplus of the rest of the world with respect to the US. He therefore wonders whether the worsening of the US trade deficit is due to internal factors and in particular to a fall in savings, which was equal to 16% of GDP in 1996 and dropped below 14% in 2006, or whether it is a consequence of phenomena occurring outside the US.

Bernanke excludes the first explanation because he does not think it is coherent with the significant reduction in the real interest rates in the US and in many other countries; the fall in saving propensities should have led to an increase in the interest rates.² He therefore concludes that the US trade deficit is caused by external factors,³ specifically, a saving glut in the developed countries in order to fund the higher pension costs, and in the Asian emerging countries (Bernanke 2005, p. 4). In a subsequent intervention in which also data from 2005 and 2006 is considered, Bernanke gives greater weight to the saving glut in the Asian emerging countries and in the oil-producing economies; indeed, he comments that his explanation:

“...takes as a key driving force a large increase in net desired saving... in emerging-market and oil-producing economies, a change that transformed these countries from modest net demanders to substantial net suppliers of funds to international capital markets. This large increase in the net supply of financial capital from sources outside the industrial countries is what, in my earlier remarks, I called the global saving glut.” (Bernanke 2007, p. 3)

To render this thesis credible, Bernanke specifies the reasons why the emerging economies increased their propensity to save. He identifies three factors: i) the financial crisis that affected the Asian economies in the 1990s; ii) the increase in the price of oil; iii)

² “... a downward shift in the U.S. desired saving rate all else being equal, should have led to greater pressure on economic resources and thus to increases, not decreases, in real interest rates” (Bernanke 2007, pp. 2-3)

³ “...domestic factors alone do not seem to account for the large deterioration in the U.S. external balance.” (Bernanke 2007, p. 3)

the strong growth in Chinese savings linked to the sharp increase in income.⁴ According to this view, therefore, the saving glut in the Asian emerging economies is the cause of the gap between savings and investments in the US, of the consequent increase in the trade deficit and the drop in real interest rates in the period 1996-2006:

“The combined effect of these developments...raised desired saving relative to desired investment in the emerging markets, which in turn led to current account surpluses in those countries. But for the world as a whole, total saving must equal investment, and the sum of national current account balances must be zero. Accordingly, in the industrial economies, realized saving rates had to fall relative to investment, and current account deficits had to emerge as counterparts to the developing countries’ surpluses. This adjustment could be achieved only by declines in real interest rates (as well as increases in asset prices), as we observed. The effects were particularly large in United States, perhaps because high productivity growth and deep capital markets in that country were particularly attractive to foreign capital.” (Bernanke 2007, p. 3)

Bernanke observes that the mechanism through which the effects of the saving glut in Asian emerging economies is transmitted to US citizens’ saving decisions has changed over time; he distinguishes two phases, the first one corresponding to the period 1996-2000 and the second one to the period 2000-2006. In the first phase, the savings accumulated in foreign countries flowed into the US because of the yield expectations connected with the information technology revolution. The inflow of foreign capital fueled the US stock market boom at the end of the last century, and, while on the one hand this led to an increase in investments, on the other it led to a fall in the saving propensities of US families, whose wealth had increased due to the rise in the stock market.⁵ In the second

⁴ “In fact, several factors appear to have contributed to the increase in the supply of net saving from emerging-market countries. First, the financial crises that hit many Asian economies in the 1990s led to significant declines in investment in those countries... and to changes in policies –including a resistance to currency appreciation, the determined accumulation of foreign exchange reserves, and fiscal consolidation– that had the effect of promoting current account surpluses. Second, sharp increases in crude oil prices boosted oil exporters’ incomes by more than those countries were able or willing to increase spending, thereby leading to higher saving and current account surpluses. Finally, Chinese saving rates rose rapidly (by more even than investment rates); that rise in saving was, perhaps, a result of the strong growth in incomes in the midst of an underdeveloped financial sector and a weak social safety net that increases the motivation for precautionary saving.” (Bernanke 2007, p. 3)

⁵ “From about 1996 to early 2000, equity prices played a key equilibrating role in international financial markets. The development and adoption of new technologies and rising productivity in the United States – together with the country’s long-standing advantages such as low political risk, strong property rights, and a good regulatory environment– made the U.S. economy exceptionally attractive to international investors during that period. Consequently, capital flowed rapidly into the United States, helping to fuel large

period the mechanism through which the effects of the saving glut in Asian emerging economies were transmitted to the US economy changed. The stock market collapse in 2000 halted investments in the US and, together with a high global propensity to save, gave rise to a saving glut which pushed interest rates down. In this second phase the drop in US families' propensity to save was caused by the reduction in the interest rates rather than the increase in share values:

“After the stock-market decline that began in March 2000, new capital investment and thus the demand for financing waned around the world. Yet desired global saving remained strong. The textbook analysis suggests that, with desired saving outstripping desired investment, the real rate of interest should fall to equilibrate the market for global saving. Indeed, real interest rates have been relatively low in recent years, not only in the United States but also abroad... The weakening of new capital investment after the drop in equity prices did not much change the net effect of the global saving glut on the U.S. current account. The transmission mechanism changed, however, as low real interest rates rather than high stock prices became a principal cause of lower U.S. saving.” (Bernanke 2005, p. 7)

The reduction in interest rates fueled a second speculative bubble regarding housing prices, which created a wealth effect similar to that produced by the rise in share prices of technological firms and this contributed to keeping the US families' propensity to save low:

“In particular, during the past few years, the key asset-price effects of the global saving glut appear to have occurred in the market for residential investment, as low mortgage rates have supported record levels of home construction and strong gains in housing prices. Indeed, increases in home values, together with a stock-market recovery that began in 2003, have recently returned the wealth-to-income ratio of U.S. households to 5.4, not far from its peak value of 6.2 in 1999 and above its long-run (1960-2003) average of 4.8. The expansion of U.S. housing wealth, much of it easily accessible to households through cash-out refinancing and home equity lines of credit, has kept the U.S. national saving rate low...” (Bernanke 2005, p. 7)

Bernanke thus considers the two speculative bubbles which occurred in the period 1996-2006 as a consequence of the saving glut which affected in particular in the Asian

appreciations in stock prices and in the value of the dollar...higher stock-market wealth increased the willingness of U.S. consumers to spend on goods and services, including large quantities of imports, while the strong dollar made U.S imports cheap.. and export expensive.. creating a rising trade imbalance. From the saving-investment perspective, the U.S. current account deficit rose as capital investment increased... at the same time that the rapid increase in household wealth and expectations of future income gains reduced U.S. residents' perceived need to save. Thus the rapid increase in the U.S. current account deficit between 1996 and 2000 was fueled to a significant extent both by increased global saving and the greater interest on the part of foreigners in investing in the United States.” (Bernanke 2005, p. 6)

emerging countries.⁶ He used the thesis of the global saving glut (Bernanke 2010) to reply to those, such as Taylor (2007, 2009) who maintained instead that the housing bubble was the consequence of the excessively expansionary monetary policy followed by the US monetary authorities in the first half of the last decade. As is well known, Taylor (2007, 2009) defines the characteristics of monetary policy by comparing the behaviour of the rate controlled by the Federal Reserve, the overnight federal funds rate, in the period 2000-2006 with Taylor-rule prescribed federal fund rate. This comparison shows that in the period in question, the historical values of the overnight federal funds rate were considerably lower than those prescribed by the Taylor rule, and Taylor deems that this difference is sufficient to explain the creation of the housing bubble.

Bernanke's reply is based on two points. In the first place, he challenges the specification of the Taylor rule which provides that the Federal Reserve sets the overnight federal funds rate responding to deviations between the actual inflation level and the target level set by the monetary authorities. Bernanke notes that the monetary authorities should instead set the interest rate in accordance with expected inflation rather than the actual rate of inflation since the rate of inflation can be influenced by accidental factors such as, for example, sudden increases in the price of oil-related products. If the monetary authorities deemed the effects of this phenomenon temporary, they would have no reason to raise the reference rate despite the increase in the actual rate of inflation. Bernanke (2010, p. 3) maintains that '...over the past decade, the distinction between current and forecast inflation has been an important one', and he shows (Bernanke 2010, p. 4) that if the Taylor rule is applied using the forecast inflation values instead of the actual ones, the monetary policy implemented before the housing bubble burst could not be considered overly expansionary. He further notes that housing prices did not only rise in the US but in many other industrialised countries and therefore he concludes that if the monetary policy really was a determining factor in explaining the dynamics of housing prices, the countries that adopted more expansionary monetary policies should have registered higher rates of property price increases. The data regarding 20 industrialised countries shows, according

⁶ "This increased supply of saving boosted U.S. equity values during the period of the stock market boom and helped the increase U.S. home values during the more recent period, as a consequence lowering U.S. national saving and contributing to the nation's rising current account deficit." (Bernanke 2005, p. 8)

to Bernanke, that there is not a statistically significant relation between monetary policy and housing prices.⁷

The second part of the reply furnishes a different explanation for the housing bubble. And the explanation that Bernanke resorts to is based on the presence of a saving glut in Asian emerging economies; in support of this argument he notes that the data regarding capital inflows and the behaviour of housing prices of a series of countries show that ‘... countries in which current accounts worsened and capital inflows rose... had the greater price appreciation in the period.’ (Bernanke 2010, p. 7)

2. The limits of the global saving glut hypothesis.

2.1 Saving decisions and liquidity creation.

Bernanke’s thesis strongly influenced economists’ analysis; in many cases it was fully accepted,⁸ in other cases the global saving glut is considered an important factor together with others, in particular with the monetary policy of the Federal Reserve.⁹ Bernanke’s

⁷ As well as Bernanke (2010) see, for example: Gleaser, Gottlieb, Gyourko (2010), Dokko, Doyle, Kiley, Kim, Sherlund, Sim, Van den Heuvel (2009)

⁸ Ferguson for instance states that: “Cautious after years of instability and unused to the panoply of credit facilities we have in the West, Chinese households save an unusually high proportion of their rising incomes, in market contrast to Americans, who in recent years have saved almost none at all. Chinese corporations save an even larger proportion of their soaring profits. So plentiful are savings that, for the first time in centuries, the direction of capital flow is now not from West to East, but from East to West...Welcome to the wonderful dual county of ‘Chimerica’ –China plus America-...For a time it seemed like a marriage made in heaven. The East Chimericans did the savings. The West Chimericans did the spending. Chinese imports kept down US inflation. Chinese savings kept down US interest rates. Chinese labour kept down US wage costs. As a result, it was remarkably cheap to borrow money and remarkably profitable to run a corporation. ...The more China was willing to lend to the United States, the more Americans were willing to borrow. Chimerica, in other words, was the underlying cause of the surge of banking lending, bond issuance, and new derivative contracts that Planet Finance witnessed after 2000. It was the underlying cause of the hedge funds population explosion. It was the underlying reason why private equity partnership were able to borrow money left, right and centre to finance leveraged buyouts. And Chimerica –or the Asian ‘savings glut’, as Ben Bernanke called it- was the underlying reason why the US mortgage market was so awash with cash in 2006 that you could get a 100 per cent mortgage with no income, no job or assets.” (Ferguson 2008, pp. 333-336). See also, for example: Tatom (2007); Tabellini (2008), Alesina and Giavazzi (2009); Belke and Gros (2010); Krugman and Wells (2010).

⁹ See for example: Mizen (2008); Bracke and Fidora (2008); Obstfeld and Rogoff (2009); Mayer-foulkes (2009); Gossè (2009); Diamond and Rajan (2009); Rajan (2010);Catte, Cova, Pagano and Visco (2010).

thesis has also been subject to empirical testing: some of these tests confirm its validity (Gruber and Kamin 2005; Legg, Prasad and Robinson 2007), while others cast doubts on its importance (Brake and Fidora 2008; Laibson and Mollerstrom 2010).

The first objective of this paper is to highlight the weakness of the theoretical foundation of Bernanke's thesis. To this end it is useful to underline the evident link between the explanation of the housing bubble formulated by Bernanke and the mainstream macroeconomic theory borne of the monetarist counter-revolution in the 1970s; both use a concept of finance based on the causal sequence according to which saving decisions determine the credit supply and thus investment decisions.

This is a perfectly valid causal sequence if we assume that in the economic system just one good is produced that can be either consumed or invested; this hypothesis is a common thread in the work of classic economists, neoclassicists right up to contemporary supporters of the mainstream theory. Smith (1776), for instance, describes the effects of saving decisions on the development of the economic system by considering a world in which only corn is produced; Böhm Bawerk (1884) instead consider a fishermen's economy in which only fish are produced. In these economies saving corresponds to the amount of corn or fish produced which is not consumed and that therefore can be used to produce capital goods that will be used to produce more corn or fish; the saving is constituted, for example, by the amount of corn or fish that is required to pay the workers involved in the production of the ploughs or boats. The agents who save may be the same ones who decide to build ploughs or boats and in this case credit is absent, or we can hypothesise that the agents who save are different from those that invest, and in this case the credit phenomenon becomes relevant.¹⁰

¹⁰ Böhm-Bawerk provides an effective example regarding a primitive society of fishermen: "Let us imagine ... a tribe of people who live by fishing and who are entirely without capital. They catch their fish on the seashore by seizing with their bare hands such fish as are stranded in the pools left behind by the receding tide. A workman of this tribe catches and consumes 3 fish a day. If he had a boat and net he could catch 30 fish a day instead of 3. But he cannot construct those implements because their construction would cost him a month's time and labour, and during that interval he would have nothing to live on." Böhm-Bawerk (1884, pp. 280-281. The situation of our fisherman could improve considerably if someone were in a position to lend him sufficient fish to keep him alive in the period in which he is building the boat: in this case, due to the greater production of fish obtained with the boat, he can undertake to repay the loan and pay a premium constituted by the loan interest: "Now someone lends him 90 fish on condition that he promise to pay back 180 fish one month later. Our man agrees to the transition, provides his subsistence out of the borrowed fish for one month and in the meantime constructs a boat and net with which in the following month he catches

In a world where there is a substantial dissociation between saving decisions and investment decisions, the task of the financial system is to ensure that the saved resources are used for the most productive investments.¹¹ The dissociation between saving decisions and investment decisions gives rise to a flow of commercial paper issued by debtors and accumulated by creditors of the same country or of different countries. If, for example, in line with Bernanke's analysis, we consider two geographical areas, the US and the Asian emerging economies, we can conclude that an increase in the propensity to save in Asian emerging economies will lead to an excess of corn supply in capital markets which will push down interest rates. This will result in American families saving less and investing more, giving rise to a US current account deficit and a corresponding current account surplus of the Asian emerging economies.

Mainstream theory allows us to identify the saving glut in the Asian emerging economies as the cause of the US current account deficit; however this is not sufficient to explain the presence of speculative bubbles and the origin of the financial crises. To this end, as we have already noted, it is necessary to explain: i) the presence of markets in which financial assets are continuously traded; ii) the presence of a mechanism of liquidity creation that can fuel the speculative demand for financial assets. Bernanke takes the first point as a given. With regard to the second point, he points out that the saving decisions of the Asian emerging economies gave rise to a mass of liquidity, i.e. money, which poured into the US financial system, driving interest rates down and housing prices up. He uses the terms 'liquidity' and 'money' to refer to the capital that flows from Asian emerging

900 fish instead of 90. From these he cannot only repay the stipulated amount of 180 fish but also retain a sizable net gain for himself." Böhm-Bawerk (1884, pp. 175-6)

¹¹ This definition of the function of the financial system is accepted even by non mainstream economists like Stiglitz and Weiss, who describe the function of banks by considering an agricultural economy in which the object of credit is corn to be used as seed to plant plots of land of 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" (Stiglitz and Weiss 1990, pp. 91-92)

economies to the US financial markets; these capital flows are not made up of the corn produced by the emerging economies, but of the money accumulated by these countries as a result of the saving glut. However, Bernanke overlooks the fact that the explicit consideration of the presence of money creates an insurmountable problem for the GSG hypothesis. In fact, the presence of money prevents us from accepting the causal relation between saving decisions, credit supply and investment decisions and the definition of the nature of the saving and credit phenomena that characterises the mainstream theory.

In a world without money in which only corn is produced, saving decisions constitute the original phenomenon that determines the credit supply and investment decisions. The saver is the one who produces the corn and decides to consume only a part of it, therefore he offers corn on the capital markets to agents who use it to produce more corn as described in the example of Stiglitz and Weiss (footnote 11). In this world the decisions of the producer-saver are at the origin of the causal sequence which determines the supply of credit and investment decisions, but in a world in which money is used this causal sequence is no longer valid. In this case the corn producer produces corn to meet the demand from agents who have money and therefore he sells the corn produced in exchange for money.¹² He does not become a saver at the moment when he decides to produce grain and to consume just a part of it, but at the moment in which he sells the corn for money and decides to accumulate money. The fact that he is a saver does not mean he is a creditor of a specific agent to whom he lent corn, but it means he has purchasing power, obtained by selling corn, that can be used in any future moment to buy goods.

Money transforms savers into wealth owners; this point is highlighted by Keynes when he states that: "... 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, p. 211). All this implies that in a world in which money is used the phenomenon of saving cannot be defined by considering only the decisions of the corn producer but it is necessary to specify the decisions of those who purchase corn in exchange for money. Indeed, the decision of the corn producer to become a saver and to accumulate money depends on the presence of agents who decide to purchase corn because they have money at their disposal; this makes it important to specify the process of money creation.

If we consider a world composed of two geographical areas, one an economically advanced country, the US, and the other of emerging economies, we can assume that the

¹² According to the famous aphorism by Clower: "money buys goods and goods buy money but goods do not buy goods." (Clower 1967, p. 5)

trade between the two areas is carried out in the currency of the more developed country, i.e. the US dollar. In this case, the accumulation of money by the corn producers of the emerging economies cannot only be the result of their decision to produce more corn but it is the consequence of the sale of corn to US consumers or entrepreneurs, and the purchase of corn by the latter is possible thanks to the availability of dollars. The availability of money to US consumers or entrepreneurs thus constitutes the necessary origin of the process that determines the symmetrical imbalances in the trade balances of the US and of the emerging economies.

In a world that uses a bank money the money available could consist of the existing money or of new money created by the banking system; this money can be used to increase consumption or investments. If the demand for goods is met by producers from the developed country there will be no trade imbalance, while if it is met by producers from emerging economies there will be a trade imbalance.¹³ In the latter case the producers of the emerging economies will become savers and thus owners of wealth which is made up of the money from the US (dollars); their saving decisions are thus not the cause of the US trade imbalance, but rather they are the consequence of the decisions of US consumers and firms and of the US financial system. In a world that uses money the saver is not the corn producer who loans the unconsumed corn, but he is the corn producer who satisfies the demand for corn from those who have money at their disposal and therefore saves by accumulating the money received in exchange for the corn sold.

The presence of money and in particular of a money such as bank money, not only changes the meaning of the concept of saving, but it also changes the relation between saving decisions and credit supply. In a money-less world an excess of saving on the part of corn producers from emerging economies translates into an equivalent supply of corn on the capital market and therefore in equivalent credit flows to US entrepreneurs; in this case the credit phenomenon is independent of the presence of money and banks. Wicksell, Schumpeter and Keynes instead underline that in a world in which bank money is used, there is a close relation between money and credit; banks are not mere intermediaries that lend what they collect since they grant credit by creating money. The flow of credit is

¹³ In both cases there will be the same level of investments, savings and money accumulated by savers; in the first case the income level of the developed country will be higher than the level it would reach in the second case.

therefore independent of the saving decisions.¹⁴ The fact that the banks liabilities are used as a means of payment prevents us from considering banks as mere intermediaries who lend what they collect, and from considering saving decisions as generating the credit supply.

The first conclusion that we can draw is to stress that the explicit consideration of the presence of money and in particular, of bank money challenges Bernanke's GSG hypothesis that the saving glut in emerging economies gave rise to the mass of liquidity that flowed into the US financial markets causing the housing bubble. In a world with money, the emerging economies can become savers and therefore accumulate money, only selling goods to the developed country, in our case the US. The origin of the mass of liquidity accumulated by emerging economies must therefore be identified in the decisions of the US financial system which, by creating new money, financed the demand for goods which was fulfilled by emerging economies.¹⁵

As Keynes points out, the presence of money transforms savers into wealth owners who, once they decide how to allocate their effective income between consumption and saving, have to face the problem of deciding the composition of their wealth by deciding to

¹⁴ Wicksell notes that the presence of bank money alters the characteristics of the functions of money supply and demand. In a world in which money is either metallic money or banknotes issued by the central bank, every individual must own a stock of money to finance transactions; therefore, to demand money means to accumulate a store of cash. In this case, the functions of money demand and supply are independent: the quantity of money in circulation may be different from the quantity of money demanded, and the difference between these quantities will cause a variation in the price level, according to the Quantity Theory of Money. He points out that in a bank money world, to demand money does not mean to accumulate stores of money, but rather it means demanding means of payments from the banks. In this case money becomes an endogenous variable because whoever desires money to purchase goods will be able to obtain it by getting into debt with the banks. Wicksell describes the working of a pure credit economy thus: "If we imagine this system developed everywhere to such perfection as it can be said to have attained already in the big banking centres, by means of cheques and a clearing system, and even somewhat further, then all purchases, and in fact all business transactions, could be effected without material coinage simply by means of entries in the books of the banks. ... Here the quantity theory seems, at least on the surface of it, to have lost every inch of ground, because when ... neither coins nor notes are used in the conduct of business, there is no need for any metallic cash holding,... However much 'money' is demanded in the banks, they can pay it out without danger of insolvency, since they do nothing about it, but enter a few figures in their books to represent a loan granted or a deposit withdrawn...supply and demand of money have in short now become one and the same thing." (Wicksell, 1898, pp. 75-76). As regards Keynes and Schumpeter see: Bertocco (2007, 2008, 2009).

¹⁵ These arguments are coherent with: Bibow (2010a, 2010b); Borio and Disyatat (2011).

accumulate money or alternative financial instruments.¹⁶ It is this latter choice that Bernanke believes gave rise to the flows of capital from emerging economies to the financial markets of the US, fueling first the dot.com bubble and then the housing bubble.

The presence of markets in which financial assets are traded constitutes the second element necessary to explain the phenomenon of speculation, the housing bubble and the crisis. Bernanke and the mainstream theory do not give any explanation of the presence of these markets. In the following pages it will be shown that the mainstream theory is unable to provide a meaningful explanation of the phenomenon of speculation and that a satisfactory explanation of this phenomenon can be elaborated on the basis of what we learn from Keynes and Schumpeter.

2.2 Money, wealth and uncertainty.

The phenomenon of speculation becomes significant in a world in which the concepts of wealth and uncertainty have greater weight. Following the theories of Keynes and Schumpeter we can show that the presence of a money that has the characteristics of bank money is a necessary condition to explain the concepts of wealth, uncertainty and therefore the phenomenon of speculation.

This relation characterises a world in which several goods are produced. In the world described by the mainstream theory in which just one good is produced, as in the case of corn, it is not possible to define the concept of wealth since the presence of agents willing to accumulate unlimited amounts of corn, year after year, is an improbable hypothesis; indeed we can reasonably assume that there is a limit to the amount of corn that an individual would wish to own and consume. This does not apply in a multi-good world where money is used; as has been recalled in the previous pages, the presence of money makes it possible to consider savers as wealth holders, that is to hypothesise the presence of individuals willing to accumulate an unlimited amount of purchasing power. In other words, the presence of money allows us to assume that the corn producer, who would not

¹⁶ “The psychological time-preferences of an individual require two distinct sets of decisions... The first... determines for each individual how much of his income he will consume and how much he will reserve in *some* form of command over future consumption. But this decision having been made, there is a further decision which awaits him, namely in *what form* he will hold the command over future consumption which he have reserved... Does he want to hold it in the form of immediate, liquid command (i.e. money or its equivalent)? Or is he prepared to part with immediate command for a specified or indefinite period, leaving it to future market conditions to determine on what terms he can, if necessary, convert deferred command over specific goods into immediate command over goods in general?” (Keynes 1936, p.166)

be willing to accumulate wealth in the form of corn, would be willing to accumulate wealth in the form of money in a world in which he can use his own wealth at any future time to purchase any good.¹⁷

A fundamental point common to the theories of Keynes and Schumpeter is the emphasis on the fact that the presence of a money such as bank money constitutes the necessary condition to explain the production of multiple goods and the dimension of uncertainty. This relation can be defined by specifying the characteristics of investment decisions and the relation between investment decisions and money.

Keynes accuses the classical theory of having overlooked uncertainty and claims that this theory is able to describe only a world without uncertainty, that is an economy in which consumption decisions prevail and decisions on investment and wealth accumulation, whose results – not predictable in probabilistic terms - are seen in a more or less distant future, are absent.¹⁸ Naturally it would be excessive to claim that the classical theory describes an economic system based only on consumption decisions; instead, what divides the classical theory from the keynesian theory is the specification of the characteristics of investment decisions. In the economy described by the classical theory and by the mainstream theory, investments, which correspond to the amount of corn or fish allocated for the production of capital goods, are not made in conditions of uncertainty since the profitability of the investment coincides with the physical productivity of the investment. For example, the cost of the boat corresponds to the quantity of fish required to

¹⁷ Keynes distinguishes between two categories of goods: those that are used to satisfy absolute needs and those that satisfy relative needs: "... 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 are all of us aware of, when these needs are satisfied in the sense that we prefer to devote our further energies to non-economic purposes." (Keynes 1931, p. 327)

¹⁸ "The whole object of the accumulation of wealth is to produce results, or potential results, at a comparatively distant, and sometimes at an *indefinitely* distant, date. Thus the fact that our knowledge of the future is fluctuating, vague and uncertain, renders wealth a peculiarly unsuitable subject for the methods of the classical economic theory. This theory might work very well in a world in which economic goods were necessarily consumed within a short interval of their being produced. But it requires, I suggest, considerable amendment if it is to be applied to a world in which the accumulation of wealth for an indefinitely postponed future is an important factor; and the greater the proportionate part played by such wealth accumulation the more essential does such amendment become." Keynes (1937a, p. 113).

pay the workers who build the boat while the proceeds correspond to the greater number of fish that can be caught with the boat; the profits coincide with the surplus, i.e. the difference between the quantity of the commodity produced and the quantity of the same commodity used as an input, and the boat will be built if the surplus is positive.

What distinguishes the investments that characterise the economy described by Keynes is the fact that they are closely associated with the dimension of uncertainty. This relationship can be understood if we consider the examples of investment decisions used by Keynes:

“Our knowledge of the factors which will govern the yield of an investment some year 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, 149-50)

The future yield of a railway, a copper mine or an Atlantic liner are not easily foreseeable because they do not coincide with the productivity of some specific productive factor such as land or plough in the case of the Smith’s *corn economy*, or the boat in the case of Böhm-Bawerk’s *fishermen’s economy*. The investments considered by Keynes have the same characteristics as the innovations that are at the centre of Schumpeter’s analysis. As is well known, Schumpeter holds that innovations constitute the first endogenous factor that brings about the process of change characterising a capitalist economy. The phenomenon of innovation regards the sphere of production and it may consist of the realization of a new product, the introduction of a new productive method or the opening of new markets.

We can consider the investments of the Keynesian entrepreneur as the tool through which firms launch new products on the market, or modify the productive process through which the existing goods are realized, or even open new markets; so the Keynesian entrepreneur who takes the investment decisions coincides with the Schumpeterian entrepreneur who introduces innovations. The presence of investments and innovations gives prominence to the uncertainty dimension. In an economy in which just one good is produced, the economic activity coincides and ends with the production of the sole good and an entrepreneur makes a new investment, that is he uses part of the corn produced to build a new plough, if the marginal productivity of the plough is superior to the quantity of corn or fish used to make the investment.

This does not hold when we consider innovations that give rise to the production of new goods: in this case the corn producer is not interested in accumulating tons of unsold corn in his warehouse, but to obtain a monetary profit from the sale of the corn. In a world in which multiple goods are produced the economic activity does not end with the production of goods, but with the sale of what was produced in exchange for money; the sale phase is clearly separated from the production phase. This separation allows us to explain the relevance of the dimension of uncertainty since the entrepreneur who produces the new good is not at all sure that he will be able to sell all of the production and make a satisfactory profit because the innovation alters the existing world, making it very difficult to predict the reaction of the consumers to the new proposal (Schumpeter 1912, p. 65).

In order to explain the fact that the presence of bank money constitutes the necessary condition to highlight the dimension of uncertainty we can observe that both the Keynesian entrepreneur and the Schumpeterian innovator-entrepreneur must have the resources available to them to carry out their investments; bank money is the tool that enables them to obtain these resources. The importance of bank money can be explained by recalling that the investments that characterize a *monetary economy* are very different from those that are found, for example, in Smith's *corn economy*. In a *corn economy* to invest means to decide not to consume a part of the corn crop in order to produce more corn, while in a *monetary economy* to invest means, for example, to decide to build a railway; building a railway would be very difficult without bank money.

Indeed, let us suppose that in our *corn economy* an entrepreneur emerges who, following his *animal spirits*, plans to build a railway the construction of which requires the employment of a certain number of workers for ten years. Let us further suppose that the existing production techniques make it possible to produce a quantity of corn sufficient to guarantee the survival of the farm workers and those that might be employed in the construction of the railway. We can observe that the railway, at least theoretically, could be built also in a *corn economy*; in this case the construction of the railway is financed by the corn producers who give to our entrepreneur the corn necessary to pay the workers involved in building the railway. In return, they receive debt claims that will give them, when the railway is built, the right to obtain a quantity of corn equal to the amount lent during construction plus a premium consisting of the interest.

There are at least two elements that impede the realization of this credit contract. The first is the fact that it is very difficult for corn producers to assess whether the entrepreneur who plans to construct the railway will be able to return the loaned capital because the

credit contract necessary to finance the construction of the railway is very different from the one that is usually made in a *corn economy* under which the corn producer gives the excess corn over the amount he intends to consume to another producer who will use it to produce corn. In this case, given the production technique, it is easy for the creditor to calculate the yield of the loaned corn and thus to define the rate of interest to apply to the debtor;¹⁹ in the case of the railway this evaluation is much more difficult because there is no physical law that makes it possible to calculate how much corn will be obtained by the sale of train tickets starting from the amount of corn used to build the railway. The second difficulty concerns the duration of the loan; our entrepreneur will have to find corn producers who are willing to wait ten years before obtaining repayment of the loan.

The construction of the railway becomes easier in a world in which bank money is used. In this case our entrepreneur will have to convince the banks, not the corn producers, of the profitability of his project. The banks will finance the construction of the railway by creating new money with which our entrepreneur will pay the workers who will then be able to buy corn. The corn producers will not have any difficulty in exchanging corn for bank money, which is a perfectly liquid debt claim that can be used as a means of payment at any time. Although they do sell corn to the workers involved in building the railway, the corn producers are not creditors of our entrepreneur who is instead in debt to the bank, which is in turn in debt to those who own bank money.

These agents may be the corn producers if we assume that the latter decide to accumulate the money obtained by selling the corn; they can be considered creditors of the banks who, in turn, are creditors of the firms that made the investments. This, however, does not mean that the savers, i.e. the producers of corn, who accumulate money, are the real creditors of the firms and that the banks are only intermediaries who lend the money they raise, as the mainstream theory holds. This is for two reasons. In the first place, the corn producers become savers after having sold the corn to the firms that, in turn, can purchase the corn after having got credit from the banks. In a world in which, as Wicksell (1898) notes, capital goods are not exchanged directly but are bought and sold using money, saving decisions are a consequence of investment decisions. Secondly, the corn producers are not the real creditors of firms since they do not loan anything, but they accumulate bank money by selling corn to firms; they would only be creditors if they had loaned corn to the firms directly or through the intermediation of the banks.

¹⁹ We can recall the example of Stiglitz e Weiss (1990) referred to in footnote 11.

Banks therefore carry out a key role, they share with the entrepreneurs the responsibility of deciding which investments are carried out; with their decisions they influence the development of the economic system; it is a very different role from that of mere intermediary that they could perform in a *corn economy* by facilitating the transfer of corn saved to the producers who intend to expand their grain production. Thus, we can maintain that the presence of bank money, and a well-developed credit market, constitutes the necessary condition for the development of an economy in which many goods are produced, investment decisions become relevant and in which the presence of uncertainty becomes an essential factor. Uncertainty is not merely an exogenous dimension, but it becomes a factor whose presence is explained by the spread of bank money. Ultimately, it is an economic system in which the presence of money allows us to consider savers as accumulators of wealth.

2.3 Money and speculation.

Once the concepts of wealth and uncertainty are defined, it is possible to describe the phenomenon of speculation. In a world in which investments that have the characteristics described by Keynes are made, we can justify the presence of markets in which long term bonds²⁰ and shares are traded. Keynes uses the presence of long term bonds to explain an important aspect of the phenomenon of speculation, i.e. speculative demand for money; wealth owners become speculators in that they choose the composition of their wealth depending on their forecasts, formulated in conditions of uncertainty, about prospective gains to be made from bonds which depends on the future value of the rate of interest.²¹

The second type of asset that can be accumulated by savers as an alternative to money is shares. Keynes (1936, chapter 12) notes that the spread of shares characterises a phase in the development of the modern economy in which the ownership of the firm is divided up among many owners who do not directly manage the firm. In this phase markets develop in which shares and long term bonds are continuously traded and the figure of the speculator

²⁰ “The entrepreneur when he decides to invest has to be satisfied on two points: firstly, that he can obtain sufficient short-term finance during the period of producing the investment; and secondly, that he can eventually fund his short-term obligations by a long-term issue on satisfactory conditions.” (Keynes 1937b, p. 217)

²¹ “There is ...a necessary condition failing which the existence of a liquidity-preference for money as a means of holding wealth could not exist. This necessary condition is the existence of *uncertainty* as to the future of the rate of interest, i.e. as to the complex of rates of interest for varying maturities which will rule at future dates.” (Keynes, 1936, p. 168)

emerges alongside that of the entrepreneur. Keynes distinguishes between speculation and enterprise by proposing to use: "... the term *speculation* for the activity of forecasting the psychology of the market, and the term *enterprise* for the activity of forecasting the perspective yield of assets over their whole life..." (Keynes 1936, 158). The objective of the speculator is to make a capital gain on the basis of his forecasts about the value that the market will assign in the future to the shares and bonds that are continuously traded on the financial markets.²²

Thus, the phenomenon of speculation is closely linked to the presence of a money such as bank money that, as we have seen, makes it possible to highlight the concepts of wealth, investment decisions, innovation, uncertainty, an economic system that Keynes defines as a *monetary economy*.²³ In the absence of these elements it is not possible to justify the existence of markets in which speculative bubbles, and therefore financial crises such as that of the subprime mortgages, occur.

These considerations allow us to underline the weakness of the explanations of the phenomenon of speculative bubbles based on the mainstream theory; an important example of these explanations is found in the work of Caballero, Farhi and Gourinchas (2008), who elaborated a model that attributes trade imbalances of the US (U) and the emerging economies (R) to the failure of the emerging economies (R) to produce financial instruments that meet savers' preferences. According to this view, the cause of the trade

²² "Decisions to invest in private business of the old-fashioned type were, however, decisions largely irrevocable, not only for the community as a whole, but also for the individual. With the separation between ownership and management which prevails to-day and with the development of organized investment markets, a new factor of great importance has entered in... In the absence of security markets, there is no object in frequently attempting to revalue an investment to which we are committed. But the Stock Exchange revalues many investments every day and the revaluations give a frequent opportunity to the individual (though not to the community as a whole) to revise his commitments. It is as though a farmer, having tapped his barometer after breakfast, could decide to remove his capital from the farming business between 10 and 11 in the morning and reconsider whether he should return to it later in the week." (Keynes 1936, p. 150-151)

²³ Keynes defines a *monetary economy* in this way: : "An economy which uses money but uses it merely as a neutral link between transactions in real things and real assets and does not allow it to enter into motives or decisions, might be called.. a *real-exchange economy*. The theory which I desiderate would deal, in contradistinction to this, with an economy in which money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behaviour of money between the first state and the last. And it is this which we ought to mean when we speak of a *monetary economy*." (Keynes 1933, 408-9)

imbalance between U and R is the deterioration in the financial system in R that the authors describe:

“... as the realization that local financial instruments are less sound than they were once perceived to be. This could result from, inter alia, a crash in a bubble; the realization that corporate governance is less benign than once thought; a significant loss of informed and intermediation capital; the sudden perception –justified or not- of ‘crony capitalism’; or a sharp decline in property rights protection.” (Caballero, Farhi and Gourinchas 2008, p. 367)

Bernanke (2011) points out that this work is coherent with his analysis and constitutes the basis for elaborating a more refined version of the GSG hypothesis.²⁴ The presence of an underdeveloped financial system led emerging markets not to use the accumulated liquidity to finance internal investments, but to use it to purchase lower risk financial assets offered by the more developed financial system. This flow of liquidity caused a decline in the interest rates on the less risky assets and led the financial system to address this demand with the offer of new financial instruments created by expanding the supply of highly rated securities.²⁵

The weak point in the work of Caballero, Farhi and Gourinchas is to assume as a given the presence of financial markets developed in a single-good world.²⁶ If in U and in R the same good is produced, for example corn, then the financial instruments that can be traded are those that represent the loan of corn or the ownership of capital goods such as ploughs or tractors. It is difficult to imagine that these financial instruments can have different characteristics depending on whether they are issued in one country or in another since in a single-good world there is no uncertainty about the future results of the use of corn or of ploughs and tractors.

²⁴ “... whereas the GSC hypothesis is based on a simple framework in which global saving and investment decisions determined the return of a single asset, we now consider how demands for a range of assets interacted with supplies of those assets to help produce declines in certain key interest rates.” (Bernanke 2011, p. 14).

²⁵ “Given the strength of demand for safe US assets, it would have been surprising had there not been a corresponding increase in their supply... the desire to accommodate the demand for safe assets by global investors was a prominent factor in a process that transformed risky loans into highly rated securities.” (Bernanke 2011, p. 22)

²⁶ Caballero, Fahri and Gourinchas (2008) elaborate their analysis by presenting a model in which a single good is produced: “The only saving vehicles are identical ‘trees’ producing an aggregate dividend of δX_t per unit of time... whose value at time t is V_t .” (Caballero, Fahri and Gourinchas (2008), p. 362). The same criticism can be levelled at the work of Martin and Ventura (2011).

3. Speculative bubbles and financial crises.

The lesson of Wicksell, Schumpeter and Keynes allows us to underline that an economy that uses a money such as bank money has the characteristics that makes it possible to elaborate a satisfactory explanation of the speculative bubbles and the financial crises. In the first place, the explicit consideration of the presence of a bank money makes it possible to easily define a process of liquidity creation, independent from saving decisions, which enables us to show that savings decisions are a consequence of investment decisions. Secondly, as we have seen, the presence of a money such as bank money allows us to explain the phenomenon of speculation and the existence of markets in which financial assets are traded.

The housing bubble did not arise out of the excess of saving but as a result of a series of factors that triggered a strong increase in the demand for housing: i) the expansionary monetary policy adopted by the Federal Reserve after the 9/11 terrorist attacks and adopted by many other industrialised countries; ii) the behaviour of the financial system and in particular of the banking system; iii) the expectations of speculators. Many analyses other than that of Taylor (2007, 2009) point out that the policy of low interest rates adopted from 2001 contributed significantly to drive up the demand for housing, causing prices to rise and facilitating the spread of speculative expectations of further rises; often these analyses consider the monetary policy and the GSG as complementary factors.²⁷ Also Bernanke in more recent papers recognised that the origin of the crisis must be attributed to a series of factors including, in addition to the GSG: "... the originate-to-distribute-model for mortgage loans, deteriorating lending standard, deficiencies in risk management, conflicting incentives for government-sponsored enterprises... and shortcomings of

²⁷ "By supporting domestic demand, the expansionary US monetary (and fiscal) stance contributed to an unsustainable widening of the US external deficit, matched by growing surpluses in major emerging economies.... A significant build-up of official reserves occurred in a context of relatively sluggish growth in domestic demand and, especially in China, of saving rates even higher than the elevated rates of fixed investment. Oil-producing countries also recorded surging trade surpluses, as oil prices were driven up by the expansion of global demand. ... A number of Asian and oil-exporting countries that pegged their countries to the dollar accumulated very substantial official reserves.... Low interest rates triggered a search for yield, which squeezed risk premia as long-term rates declined significantly more than the expected future profile of short-term rates. This tended to make financial conditions even more favourable for a broad range of borrowers. Low perceived risk, abundant liquidity and credit expansion, as well as regulatory failures in some markets, helped feed the house price bubble." (Catte, Cova; Pagano and Visco 2010, pp. 11-13; see also: Bracke and Fidora 2008; Mizen 2008; Obstfeld and Rogoff 2009; Mayer-Foulkes 2009)

supervision and regulation were the primary sources of the US housing boom and bust and the associated financial crisis.” (Bernanke 2011, p.13) This list, understandably, excludes US monetary policy, but it includes a series of relevant factors. In particular, it is significant that Bernanke attributes to the banking system the responsibility for having increased the supply of subprime mortgages and he links the expansion in the supply of credit from the banking system with the spread of the originate-to-distribute model.²⁸

These considerations about the responsibility of the banking system become important only if we consider a *monetary economy* in which the credit supply is independent of saving decisions; it is a profoundly different economy from the one described by the mainstream theory to which it is possible to apply the concept of saving and the causal relation between saving decisions and investment decisions with the GSG hypothesis and with the classical theory of the interest rate. Bernanke tries to overcome this contradiction by distinguishing between the real long term interest rate which he believes is determined by saving and investment decisions and the short term rate which instead is controlled by the monetary authorities.²⁹ This distinction recalls that between the natural rate of interest and the rate of interest on money formulated by Wicksell, who considered the rate of interest on money as the price of money in a world in which a bank money is used. By introducing this distinction Wicksell intends to underline that the use of a bank money does not change the structure of the economic system which remains that which characterises a world in which the capital market coincides with the credit markets and capital was lent in kind, since the only consequence of a discrepancy between the two rates of interest concerns the rate of inflation.

In contrast to Wicksell, Keynes and Schumpeter maintain that the use of a money that has the characteristics of a bank money changes radically the structure of the economic system; as we have seen, the presence of bank money allows us to highlight concepts of wealth, investment decisions, innovation and uncertainty that have no meaning in a world in which only one good is produced and the rate of interest is determined by investment decisions and saving decisions. For this reason Keynes and Schumpeter underline the

²⁸ According to the empirical analysis elaborated by Mian and Sufi (2009), the principal factor that explains the growth in subprime mortgages is the large increase in the credit supply from the banking system.

²⁹ The same approach seems to have been followed in works in which monetary policy and the global saving glut are considered as complimentary factors in explaining the bubble; see for example: Obstfeld and Rogoff 2009.

monetary nature of the rate of interest and they abandon the concept of the natural rate of interest.³⁰

Many economists have maintained that the banks were driven-pushed into expanding the supply of credit as they underestimated the risk³¹ or overestimated the effects of financial innovation: “...many banks illuded themselves into thinking that they had insulated themselves from risk while in actual fact they remained exposed.” (Alesina and Giavazzi, 2008, p. 40). These observations, found in many analyses, seem reasonable; but in actual fact, they are difficult to reconcile with the mainstream theory and with the GSG hypothesis. If, as the mainstream theory holds, the task of the banks is to allocate in an optimal way the saved resources, and hence, to use the example of Stiglitz and Weiss (quoted in footnote 11), to ensure that the saved corn is used by whoever owns the most fertile land, then it would be difficult to think of an underestimation of the risk by the banks and of crises triggered by their errors of evaluation.

To interpret the statements of Tabellini (2009), Alesina and Giavazzi (2008), we must use a fundamental element of Keynes’s analysis: the dimension of uncertainty that characterises a world in which several goods are produced, in which the link between investment decisions and innovations and the phenomenon of speculation is relevant. In

³⁰ “In my *Treatise on Money* I defined what purported to be a unique rate of interest, which I called the *natural rate* of interest – namely, the rate of interest which, in the terminology of my *Treatise* preserved equality between the rate of saving (as there defined) and the rate of investment. I believed this to be a development and clarification of Wicksell’s ‘natural rate of interest’... I am now no longer of the opinion that the concept of a ‘natural’ rate of interest, which previously seemed to me a most promising idea, has anything very useful or significant to contribute to our analysis.” (Keynes 1936, pp. 242-3) likewise, Schumpeter states that: “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.” (Schumpeter 1939, p.101)

³¹ “Without doubt the crisis revealed a serious failure of the most sophisticated markets in the world, the modern financial markets. A crucial task of financial markets is the allocation of risk. The financial sector failed utterly to do this. The risk was underestimated and many intermediaries took on an excessive amount of it.” (Tabellini, 7/05/2009)

this case also the banks act in conditions of uncertainty when they evaluate whether or not they should finance, for instance, the construction of a railway, or when they finance speculators. The presence of uncertainty leads us to consider the crises as an endogenous phenomenon and, paradoxically, that is exactly the conclusion of Alesina and Giavazzi: "... crises are an endogenous characteristic of capitalism...capitalism means taking risks; rules that make impossible, or too costly, the taking of risks would be the negation of capitalism..." (Alesina and Giavazzi,2008, pp. 52-55). As explained in the previous pages, this is a conclusion that can be justified only if we abandon the mainstream approach that the function of finance is to invest the saved resources in the most productive ways in a single-good world

Conclusions

The first result of this paper is to show that the GSG hypothesis elaborated by Bernanke does not satisfactorily explain the financial crises arising out of housing bubble. In fact, we have seen that the GSG hypothesis can only be applied to a world in which the conditions necessary for the creation of speculative bubbles do not exist.

The second result is to show on the basis of the lessons of Wicksell, Schumpeter and Keynes that the necessary conditions for the formation of speculative bubbles are present in what Keynes defines as a *monetary economy* characterised by the presence of a bank money. The presence of bank money allows us, first, to define a process of liquidity creation independent of saving decisions and, second, it allows us to explain the phenomenon of speculation and the existence of markets in which financial assets are traded.

The analysis presented in these pages enables us to highlight that: i) the accumulation of financial resources by emerging countries and the consequent trade balance surplus are not the cause of the housing bubble, but the consequence of the decision of the US financial system to expand credit to households and firms; ii) the responsibility of the financial system for the crisis was not that it was not able to 'recycle' savings in an orderly way, but rather that it financed, by creating new money and mobilising the existing money, economic operations made by agents who did not obtain sufficient yields to repay the loans, whether these were firms that intended to make productive investments, or individuals who asked for financing to buy real estate or speculators who gambled on the continuous rise in housing prices.

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