From the village fair to Wall Street. The Italian reception of Minsky's economic thought

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FROM THE VILLAGE FAIR TO WALL STREET: THE ITALIAN RECEPTION OF MINSKY'S ECONOMIC THOUGHT[1]

Abstract. The scientific, and human, relationship of Hyman P. Minsky with Italy and its scholars has been very close since the mid-1970s. Minsky's economic thought has influenced three generations of Italian economists, and it keeps on affecting young scholars who do not settle for mainstream economics narration. Outlines of Minsky's thought can be found not only in the works of Italian post-Keynesians, but also in the reflections of other heterodox economists and even in a number of contributions by 'border' authors. This paper aims to provide an overview of the Italian reception of Minsky's analysis of financial fragility and economic instability. More precisely, we will show that this reception has been characterized by the attempt to renew and improve Minsky's thought by cross-breeding it with more powerful analytical tools, as well as with inputs from other theoretical approaches: the 'New Keynesian' theory of information asymmetry and the Marxian theory of money and crisis; the Franco-Italian theory of monetary circuit and the New Cambridge 'stock-flow consistent' modeling; Goodwin's theory of business cycle and the 'agent-based modeling' of financial instability. All these attempts share the stress on the dynamic and unstable nature of capitalism, regarded as a 'financially sophisticated' monetary economy of production – in the wake of Minsky's well-known 'Wall Street paradigm'.

Keywords: Current Heterodox Approaches, Minsky's economic thought, Italian economists.

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INTRODUCTION

The scientific, and human, relationship of Hyman P. Minsky (1919-1996) with Italy and its scholars has been very close since the mid-1970s. Minsky's economic thought has influenced three generations of Italian economists, and it keeps on affecting young scholars who do not settle for mainstream economics narration. Outlines of Minsky's thought can be found not only in the works of Italian post-Keynesians, but also in the reflections of other heterodox economists, and even in a number of contributions by 'dissenters' among orthodox authors (see Figure 1). This paper aims to provide an overview of the Italian reception of Minsky's analysis of the financial fragility and economic instability which characterize modern capitalist economies. More precisely, we will address a number of questions regarding the relationship between the father of

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the so-called 'financial instability hypothesis' (FIH hereafter) and the Italian academic world. For this purpose, we will use some interviews made with some of the Italian scholars who had direct contact with Minsky and/or who keep on referring to Minsky's work. Basic queries are: how (and to what extent) has Minsky's economic thought influenced Italian economists? Has there been an 'Italian specificity' in this reception? Are there Italian scholars who still refer to Minsky's analysis now? What are the current approaches which, either directly or indirectly, draw on Minsky's work?

In order to answer these questions, the paper is organized as follows. Section 1 provides both some biographical notes and a short comparison between Minsky's analysis of the causes of instability (within a 'financially sophisticated' monetary economy of production) and the state of the Italian debate in the 1970s. Section 2 deals with those Italian authors who – in the wake of Minsky – have delved into the nexus between economic-financial instability and the presence of institutional 'ceilings and floors' which constrain the dynamic forces of capitalist economies. In this section, it is also shown that, to some extent, the 'new Keynesian' approach of asymmetric information is more consistent with Minsky's view than with mainstream macroeconomics. Section 3 deals mainly with a new research field in economics that is linked to the increase in the availability of computational power and which is known as 'agent-based modeling'. The reason is that this approach, which can be used in order to analyze the process of diffusion of financial fragility from one economic unit to another, is supported by a number of Minsky's Italian pupils (and young colleagues). Finally, Sections 4 and 5 deal with the other current approaches (the Franco-Italian theory of monetary circuit, the 'New Cambridge' formal modeling and the Marxian theory of money and crisis, among others) with which Minsky's thought has been cross-bred by Italian heterodox economists. Concluding remarks are provided in the last section of the paper.

1. MINSKY AND THE ITALIAN ECONOMISTS

Minsky came to Italy, for the first time, at the invitation of the Italian economist Paolo Savona. Minsky was on sabbatical from the University of St. Louis and Savona asked him to enter the *Centro Studi* of *Confindustria* (i.e. the research center of the main association of Italian industrialists, where Savona was the general director between 1976 and 1980)[2]. That was in 1978, and Minsky had already published a number of works, including *John Maynard Keynes* (1975), in which the outline of his FIH was clearly delineated[3]. It should not be surprising that the 'early' contact of Minsky with Italy was with the world of 'high-level practitioners' (i.e. industrialists and

[2] This point is confirmed by Pietro Ferri and Jan Kregel. Notice that, from 1965 until his retirement in 1990, Minsky was Professor of Economics at *Washington University* in St. Louis. Afterwards, Minsky was a distinguished scholar at the *Levy Institute of Bard College* of New York (until his death in 1996).

[3] See Minsky (1954, 1957, 1959, 1964).

bankers), rather than with 'theoretical' economists. Minsky himself had a direct, and deep, knowledge of the working of the banking system. The point is that, in a period in which the majority of Italian (heterodox) economists were dealing with concepts such as 'long-run equilibrium', 'reproduction conditions', 'normal prices', 'balanced growth', and so on, Minsky's 'Wall Street paradigm' had to seem very far from the 'sidereal' level of abstraction of both Classical-Marxian and Cambridge (post-Keynesian) approaches. That level of abstraction was more appropriate for the analysis of the Classicals' 'natural economy' (if not for the neoclassical 'village fair' paradigm), rather than for the analysis of a 'financially sophisticated' monetary economy of production in which money, credit and finance really matter.

In spite of these radical (both *epistemological* and *linguistic*) differences, the intellectual and human relationship of Minsky with Italian economists has been very close since his arrival in Italy. Indeed, he was very impressed with the freedom which characterized economics research in Italy during the 1970s. Italian economists seemed to him to be less 'embedded' in the system (and more interested in historical and institutional aspects) than U.S. authors[4]. More precisely, Minsky had a very close relationship with the University of Siena and then with the University of Bergamo. Even the *Scuola di Studi Economici Avanzati* (Advanced Economics School) of Trieste – organized by Sergio Parrinello, in harness with Jan Kregel and Pierangelo Garegnani, during the period 1979-1990 – became one of the international spreading points of Minsky's thought. Nowadays, we can assert that there has not been a complete intellectual exchange between Minsky and the coeval generation of Italian scholars (Federico Caffé, Giorgio Fuà, Pierangelo Garegnani, Augusto Graziani, Siro Lombardini, Luigi L. Pasinetti, and Paolo Sylos Labini, among others). In Gallegati's words 'they were like *monads*', who regarded each other very highly (and recognized Minsky's 'exceptionality'), but who maintained their own theoretical autonomy. Nevertheless, it is usually acknowledged that the founding fathers of Italian heterodox thought concurred to spread Minsky's theory indirectly, by spurring younger scholars to confront Minsky's revolutionary ideas[5]. In some cases, such as the case of Pietro E. Ferri and Alessandro Vercelli, Minsky had a very fruitful intellectual relationship since the first meeting. It is interesting to note that, according to the second generation of Italian economists who met Minsky – i.e. those who are the heirs of the leading scholars of the 1970s – the distinctive feature of Minsky's methodological approach was his constant attention to 'what is going on' in real world economies[6]. His main contribution

[4] Notice that, as has been asserted by Domenico Delli Gatti, during the 1970s 'the Italian mainstream was heterodox'. It is not trivial to remember that the current Italian academic situation is very far from the pluralist context of the 1970s (see Pasinetti 2007).

[5] This has been the case, for instance, of Domenico Delli Gatti (who followed Pasinetti's suggestion to improve his training at the University of St. Louis, where Minsky worked).

[6] As he wrote in an article for the Italian journal *Moneta e Credito*, 'theoretical abstractions are necessary in order to focus the analysis; however, […] abstract theory is only the beginning of the economic analysis, and not its final outcome' (Minsky 1982, p. 192, *my translation*). According to Vercelli, Minsky regarded models as 'blinkers, which enlighten on a specific direction, but obscure all

to economics can be traced – Vercelli argues – not only to the emphasis on the role of endogenous financial factors (and of institutional architecture) in both the burst and the propagation of the crisis, but also to the 'sensitivity to concrete economic issues'[7].

With reference to Minsky's reception, there is also another point that is worth some comment. Among Minsky's forerunners and/or references (in addition to John M. Keynes) economists interviewed include Irving Fisher (the father of the so-called 'debt-deflation theory', who is better known for his contribution to the neoclassical approach) as well as Henry C. Simons and the American institutionalists (from whom Minsky drew his sensitivity for the historical and institutional context)[8]. More controversial, for Italian authors, is Minsky's relationship with Michał Kalecki and Karl Marx. Kalecki's macroeconomic profit equation was explicitly used by Minsky after 1975, but – according to some Italian authors at least – it has never been completely assimilated and integrated within Minsky's theoretical structure. Similarly, despite Minsky's well-known sympathy for the socialist movement, his relationship with Marxian theory is greatly disputed. The reason is that Minsky, like Marx, regarded capitalism as a system of production of (more) money by means of money. Furthermore, he was very influenced by both Joseph A. Schumpeter's theory of capitalist development (his 'main reference', according to Bellofiore) and Oskar Lange's socialist view – and hence by their relative, specific, reception of Marx's thought. Nonetheless, Minsky never spoke up for the Marxian idea that exploitation of 'living labor' within the 'sphere of production' is the 'arcane' of capital accumulation[9]. In general, every economist interviewed has underlined the difficulty in labeling Minsky's thought, because of the presence of several elements of originality. The same label of '(American) post-Keynesian', which is often used to define his position, must be regarded as just a first-

the rest'. This explains why Minsky did not settle for abstract models, but also why he never refused them.

[7] In fact, this is the reason why Minsky is more popular among 'high-level practitioners' than among academic economists. Furthermore, Minsky's methodological position explains both why his work sometimes seems to be theoretically 'ambiguous', and why he constantly tried to update his theory.

[8] As Minky admitted, 'Simons had almost as much influence on my ideas as Lange' (Minsky 1982, p. 200, *my translation*). On the influence of Simons' banking approach on Minsky's theory, see Toporowski 2010.

[9] According to Delli Gatti, Minsky also took a critical look at what he considered an *excess* of aggregation of the Marxian approach. Notice that there is some evidence that Minsky had direct knowledge of Marx's main works. However, he did not have an orthodox communist vision: 'the important thing – he wrote – is not that private property exists and yields incomes; what matters is that the society is democratic and human' (Minsky 1982, p. 203, *my translation*). On the relationship between Minsky and Kalecki, we refer the reader to Bellofiore and Ferri (2001); see also section 2 of Passarella (2010). Among the few works trying to integrate Minsky's analysis of financial instability within Marx's theory of money and crisis, see Bellofiore and Halevi (2010). On the difficult relationship between today's heterodox authors and Marx's labor theory of value, see, among others, Reati (2010).

approximation definition[10]. Such a definition is unable to disclose the deep differences between Minsky's conceptual structure and the thinking of the other 'giants' of post-Keynesian economics, such as Paul Davidson, Nicholas Kaldor, Luigi L. Pasinetti and Joan V. Robinson.

Maybe this is one of the reasons why – as we are going to argue – the work of the second and third generation of 'Minskian' Italian economists has been mainly focused on the attempt to improve Minsky's insights with more powerful analytical tools. Notice that, on the one hand, there is evidence that in the 1980s the name of Minsky appeared on the bookshelf of every scholar who was interested in 'finance', be him/her heterodox or mainstream; on the other hand, Minsky's pioneer contribution has seldom been recognized by mainstream economists[11]. Outwardly, he was more popular among economic analysts and financial market operators than among his mainstream colleagues – a 'curse' which is still continuing[12]. Minsky was aware of this point and, although he thought of himself as an 'anti-neoclassical' author, he wished that his work was (if not *joined*, at least) *understood* by a share of the academic mainstream too[13]. More precisely, Minsky was of the opinion that his relative isolation depended, in some degree, on the lack of rigorous models, inspired by his FIH, which could also be grasped by mainstream economists[14]. This is the second, important, motive why Minsky's theoretical relationship with Italian (and the other European) economists has been marked by the effort to develop a formal model of a monetary economy prone to endogenous financial instability. Here comes an apparent paradox: on the one hand, the 'mature' Minsky seemed to be less and less interested in the mathematical aspects of economics, compared to institutional and economic policy aspects; on the other hand, he was convinced of the necessity to (try to) communicate with the rest of the community of economists, by using a language that they were able to understand[15].

[10] This 'tag' can be useful in order to distinguish Minsky from mainstream authors who refer to Keynes (both the old 'neoclassical Keynesians' and today's 'new Keynesians'). In this regard, also notice that, according to Pasinetti, 'the American post-Keynesians, such as Minsky […], represent a group of their own, springing up of that part of Keynes's analysis that dealt with uncertainty, money and financial instability'. Consequently, 'there has always appeared to be enormous difficulty in communication between the American post-Keynesians and the Cambridge post-Keynesians' (Pasinetti 2007, p. 35). In a sense, a similar difficulty also concerned the relationship between Minsky and the other founding father of the American post-Keynesian approach, Paul Davidson.

[11] Cites to Minsky's work in dominant literature are very rare. Among few exceptions, see Bernanke et al. (1999). On this point, see Fazzari (1999).

[12] On the strange fate of Minsky's thought, see also Foley (2010).

[13] Regarding this, notice that Minsky's concept of 'mainstream' was straightforward and coincided with *neoclassical* economics (i.e. both 'neo-Keynesian synthesis' and 'monetarism').

[14] This point is underlined, for instance, by Delli Gatti.

[15] According to Bellofiore, on the one hand, Minsky was interested in making his work 'palatable' (also) for the mainstream; on the other hand, he was not inclined 'to renounce the substance'. In Duncan Foley's words, 'Minsky, in pursuing seriously the project of understanding the dynamic of contemporary capitalist society, ran into fundamental limitations of contemporary economic modeling technique' (Foley 2010, p. 169).

2. SAFETY NET, CYCLICAL FLUCTUATIONS AND ASYMMETRIC INFORMATION

As mentioned, one of the Italian economists with whom Minsky had the most fruitful intellectual relationship is Pietro Ferri, who became the Rector of the University of Bergamo in 1990. 'The analytical link between Minsky and I – Ferri says – is that Minsky dealt with cash-flows, whereas I dealt with income distribution, that is the other side of cash-flows'. The collaboration of the two authors resulted in three articles (see Minsky and Ferri 1984; Ferri and Minsky 1989; Ferri and Minsky 1992) whose aim was to continue the work started in Minsky (1957, 1959). More precisely, the basic idea was to improve John Hicks' (and Richard Goodwin's) seminal insight that modern economies are dynamic systems whose instability is thwarted or cushioned by 'ceilings and floors' (see Hicks 1950). The latter, according to Minsky, are of *institutional* nature, depending on both the size and kind of intervention by the government and central bank. In the authors' words, 'the path through time of a capitalist economy is best described as the result of the interaction between the system's endogenous dynamics, which if unconstrained would lead to […] economic instability, and the impact of institutions and interventions which, if apt, constrain the outcomes of capitalistic market to viable or acceptable outcomes' (Ferri and Minsky 1992, p. 79). This point emphasizes the Minskian innovative synthesis between the formal-analytical approach of Harvard (where the 'young' Minsky studied under the supervision of Schumpeter and Leontief) and the empirical sensitivity of the institutionalist authors of Chicago, both combined within a 'financial-cyclical' re-reading of Keynes' *General Theory*.

The emphasis on the cyclical nature of capitalist economies – marked by stages of recession and growth, which are separated by turning points and which arise from the interaction between real (investment) and financial (cash-flow) aspects – is the main feature of the class of Keynesian-Minskian macro-dynamic models developed by Ferri with Steven Fazzari and Edward Greenberg (see Fazzari, Ferri and Greenberg 1998, 2001, 2008; see also Ferri 2010). More precisely, in their latest work, the three authors present a non-linear dynamic model in which cycles arise from the financing of investment (through firms' internal cash-flows and external debt) and where 'the impact of debt on investment causes endogenous business cycles'. In this model, 'the amplitude and frequency of the cycles depend critically on how nominal interest rates [and, hence, the debt-service, which rises in the boom and falls in the downturn] respond to stages of the business cycle'. Consequently, it is possible to detect a causality which goes from the nominal interest rate to the internal financing of firms, and from the latter to the real investment decisions. The distinctive traits of the model are: (i) that business cycles 'are driven by demand side'; (ii) that these cycles 'do not rely on stochastic shocks' (Fazzari, Ferri and Greeberg 2008, pp. 555-56). Notice that, once again, the necessity of formalizing Minsky's ideas – in contrast to the descriptive approach that the 'mature' Minsky adopted – is one of the explicit aims of the authors. Although they recognize that important aspects of descriptive accounts 'may be lost in a mathematical model', they are convinced that 'a formal model, however, can illuminate the dynamic implications of interactions between variables more rigorously than it is possible in purely descriptive models' (*ibidem*).

During the late 1980s - early 1990s, Minsky had a privileged relationship with the scholars of the Department of Economics of the University of Bergamo. He was Visiting Professor for a long time and, since 1998, the department is entitled to his name. Besides Ferri, among Bergamo's economists who have been deeply influenced by Minsky, we must mention Anna M. Variato and Riccardo Bellofiore. We are going to discuss Bellofiore's work in Section 5. As for Variato, she has worked along two different directions. On the one hand, along with Steven Fazzari, she has examined 'how differences in the information available to firms and providers of external finance may give rise to financial constraints' (Fazzari and Variato 1994, p. 351) which limit firms' investment [16]. More precisely, it has been argued that, in a sense, 'new Keynesian' models of asymmetric information in capital market are more consistent with Keynesian-Minskian view than with 'new classical' (or 'real business cycle') mainstream macroeconomics. Information asymmetries must be regarded as market imperfections which 'are pervasive in decentralized market economies and […] give rise to fundamentally Keynesian results: financial relations matter for real economic activity' (Fazzari and Variato 1994, p. 366) [17]. The outcome is that information asymmetries lead to 'a preference for internal funds over external finance' (*ibidem*). Notice that this conclusion entails a causality-chain from internal funds to real investment, and from real investment to business cycle. Such view is 'unmistakably' Keynesian-Minskian, not only for its empirical implications, but also for it to clearly show the economic *irrelevance* of the Modigliani-Miller theorem[18]. On the other hand, along with Ferri (see Ferri and Variato 2007, 2010a, 2010b), Variato has dealt with formal macroeconomic models which emphasize the relationship between financial fragility and economic dynamics, in the wake of Fazzari, Ferri and Greenberg (1998, 2001, 2008).

3. AGENT-BASED MODELS AND FURTHER NON-LINEAR DYNAMIC MODELS

In today's high-tech age – Duncan Foley and J. Doyne Farmer wrote – one naturally assumes that our government leaders 'are using sophisticated quantitative computer models to guide us out of the current economic crisis. They are not. The best models they have are of two types [i.e. econometric models and dynamic stochastic general equilibrium (DSGE) models], both with fatal flaws' (Foley and Farmer 2009, p. 685).

[16] On the same subject, see also Fazzari and Variato (1996).

[17] It has been noted elsewhere that 'starting from different cultural and methodological premises, this literature [dealing with capital market imperfections and relying on the so-called *financial accelerator*] yields predictions which are in line with some of the insights one can get from Minsky's conceptual framework' (Assenza et al. 2010, p. 183).

[18] As is well known, the Modigliani-Miller theorem states that, given some restrictive assumptions, the value of a firm is unaffected by *how* that firm is financed. Consequently, internal funds and external finance can be regarded as perfect substitutes.

Unfortunately, this means that 'the leaders of the world are flying the economy by the seat of their pants' (*ibidem*). So a question arises: is there a better way to analyze the working of a sophisticated monetary economy? Yes, 'agent-based models' – is Foley and Farmer's answer. Agent-based models (ABMs hereafter) are computerized simulations 'of a number of decision-makers (agents) and institutions, which interact through prescribed rules. The agents can be as diverse as needed […] and the institutional structure can include everything from banks to the government' (*ibidem*). The mainstream *representative agent* is replaced by *heterogeneous economic units* which are characterized by different, dynamic and interdependent behavior. Against this context, economic instability is the result of non-linear responses of the economy to (even) small changes in agents' behavior. The strong point of ABMs is that they do not rely on the arbitrary hypothesis that the economic system will move towards a predetermined equilibrium state, as standard DSGE models do.

Given these premises, it should not be surprising that, in Italy, applications of ABMs to the analysis of economic complexity and financial instability have been mainly developed by scholars who were very close to Minsky. We refer to Domenico Delli Gatti and Mauro Gallegati (see, among others, Delli Gatti and Gallegati 2001, 2006; Delli Gatti et al. 2007a; Delli Gatti et al. 2007b; Russo et al. 2009; and Assenza et al. 2010), as well as to a number of economists at the University of Siena (see, for instance, Chiarella et al. 2010; and Chiarella et al. 2011). Minsky had a strong quantitative background and – although he could not see recent developments in ABMs – he realized that both physics of complex systems and chaos theory could provide analytical tools for a rigorous alternative to mainstream modeling[19]. Notice that during the 1990s Delli Gatti and Gallegati dealt mainly with Keynesian-Minskian macro-dynamic aggregative models (see, for instance, Delli Gatti and Gallegati 1990)[20], in the wake of the pioneer article by Taylor and O'Connel (1985). This set of models assimilates Minsky's firm-specific (financial) theory of investment decisions to a macroeconomic theory of aggregate investment. By doing so, it is possible to explore the emergence of instability within a financially sophisticated monetary economy of production. However, Keynesian-Minskian purely aggregative models do not take interaction among heterogeneous agents (according to the well-known Minskian taxonomy) into account.

It has been the very need for models in which agents' heterogeneity plays a crucial role that has led some small, but not marginal, Italian research groups to experiment the possibility of employing ABMs to analyze the impact of financial fragility on economic stability[21]. We will label this new class of models 'Financial Instability Agent-Based

[19] 'Given Minsky's strong quantitative training and the nature of his early work in economics, – Foley noted – his refusal, often remarked upon, to develop a rigorous mathematical model to express his ideas about financial instability is a sharp reminder of the limits of our current methods' (Foley 2010, p. 169) and hence of the need to experiment with new methods.

[20] See also Delli Gatti and Gallegati (1997); Delli Gatti et al. (1993); and Delli Gatti et al. (1996).

[21] Other Italian scholars who apply ABMs to economic issues refers to the Universities of Pisa and Trento.

Models' (FIABMs hereafter). For FIABMs' authors the role of heterogeneous financial conditions 'is the specific piece of Minsky's intellectual heritage that […] may be the cornerstone of a new research agenda' (Assenza et al. 2010, p. 195). The main feature of FIABMs is the presence of heterogeneous financial conditions at the agent level[22]. In particular, each agent (firm, bank or other unit) is characterized by a certain, different, degree of financial soundness, which is described by a number of ratios – for instance, by the equity (or net worth) to capital ratio. The evolution of these ratios and of the other (both micro and macro) variables of the model over time is analyzed by means of computer simulations. The main result of FIABMs – compared to both the new Keynesian 'imperfectionist' literature (which relies on the representative agent) and the old-fashioned Keynesian-Minskian aggregative modeling – is that 'heterogeneity plays the role of a dampening factor in business fluctuations' (Assenza et al. 2010, p. 203), as happens in Minsky's original analysis. The most important advantages of FIABMs concern the possibility to reproduce cross-sectional evidence (i.e. the change in agents' structure over time) and to analyze the qualitative features of a dynamic economic system without need of resorting to aggregative external shocks. Yet, according to Delli Gatti, 'it is a long way to go' before ABMs achieve a stage of development which could be comparable with mainstream (DSGE) models. In fact, there are still three open problems with FIABMs: (i) the output of computerized simulations is very sensitive to the choice of initial conditions and parameter value; (ii) it is not an easy task to make FIABMs respect the condition of macroeconomic stock-flow consistency; (iii) at the present time, FIABMs still cannot be used for forecasting aims[23].

As we have already mentioned, since the late 1970s Minsky's analysis has been the centre of attention of a number of scholars at the University of Siena. We refer, for instance, to Ester Fano, Serena Sordi, Mario Tonveronachi and Alessandro Vercelli[24]. In this section, we will focus on Vercelli's work. Vercelli joins together Minsky's concept of financial instability, interpreted as 'structural' (and not as 'dynamic') instability[25], with Goodwin's path-breaking contribution to economic dynamics. In his

[22] In this regard, notice that 'true heterogeneity occurs when agents are different within the same group […] so that we cannot rely upon the representative agent device even to describe the behavior of a class of agents'. This also entails that 'we need an aggregation procedure to build the model from the bottom up' (Assenza et al. 2010, p. 190).

[23] Notice that problems (i) and (ii) are shared by the majority of mainstream models. For instance, standard *IS-LM* model is not stock-flow consistent, whereas 'real business cycle' simulation models need a process of *calibration* which is very similar to that adopted by FIABMs' authors.

[24] Some of these authors participated in an inter-university research project on finance, directed by Giangiacomo Nardozzi, which was inspired by Minsky's insights.

[25] The concept of *dynamic* instability 'focuses exclusively on the dynamic properties of the object to which it refers'. Hence, a certain equilibrium is dynamically unstable if 'whenever a certain system is displaced from equilibrium, it will diverge progressively from it'. By contrast, the concept of *structural* instability 'focuses mainly on the structural properties of the object to which it refers'. A certain object, and hence a certain economy, is structurally unstable if 'it is liable to change very rapidly the qualitative characteristics of its structure'. More precisely, 'the smaller the size of the

most recent works Vercelli states he aims to 'bridge the gap between the stylized facts on so-called "Minsky moments" and existing theory by revisiting Minsky's "financial instability hypothesis"' (Vercelli 2011, p. 49; see also Vercelli 2010). To this purpose, Vercelli considers two different indexes, one measuring the current *illiquidity* of the single economic unit (i.e. the ratio between its current outflows and its current inflows) and the other measuring its expected degree of *insolvency* (i.e. its capitalized expected excess outflows)[26]. This allows Vercelli to redefine Minsky's usual taxonomy, by including other financial postures (such as 'distressed' units, i.e. units which are virtually insolvent, but which may be rescued by either a bail-out or other extreme measures), in order to make it analytically tractable. If one regards the two indexes as the *state variables* of a Lotka-Volterra model, it is possible to pick out an interaction between the liquidity and solvency conditions of financial units which 'brings about persistent fluctuations that do not have an intrinsic tendency to change through time' (Vercelli 2011, p. 59)[27]. Furthermore, if units are supposed to be characterized by heard behavior, it is possible to extend the model to the whole economy, which shows the same tendency to persistent fluctuations of each single unit. Against this context, structural financial instability is the result of the shifting of the margin of safety of units, which is, in turn, the outcome of the increasing euphoria during the boom. The increase in the financial fragility of units (corresponding to the so-called 'Minsky moment') entails that an external shock, however small, can lead most speculative units either to become virtually insolvent or even to bankruptcy (so giving rise to the chain-reaction which is known as 'Minsky meltdown')[28]. Finally, notice that, in the last few years, a number of FIABMs have been developed, in which each unit behaves (and interacts) according to the model developed by Vercelli (see, most of all, Chiarella et al. 2011). This makes it possible to overcome the main difficulty with Minskian aggregative models, i.e. the impossibility to analyze the process of financial 'contagion'.

perturbation ε sufficient to change the crucial qualitative features of the economic system the larger is its degree of structural instability' (Vercelli 2001, pp. 35-36) On this point, see also Tropeano (2010).

[26] Vercelli calls the first index 'current financial ratio' and the second index 'intertemporal financial ratio'.

[27] On the same subject, see also Vercelli (2000, 2009), and Sordi and Vercelli (2006, 2010). For a different attempt to model Minsky's FIH by using the Lotka-Volterra equations, see Passarella (2010).

[28] Notice that Vercelli's approach makes it possible to provide a rigorous reformulation of the concepts of 'Minsky moment' and 'Minsky meltdown". In a recent, unpublished, working paper, Vercelli has also stressed an interesting correspondence between nuclear instability analyzed in particle physics and financial instability analyzed by economists. In this regard, notice that the model of fission chain-reactions can also be used in order to describe the spreading of financial fragility from one economic unit (or agent) to another, as in fact happens in FIABMs. When a neutron collides with the atomic nucleus, the latter, in turn, fissions into a number of new atoms, releasing a number of new neutrons (in addition to an amount of binding energy) which, in turn, collide with other atoms, and so on. This chain-reaction seems to be very similar to the process of bankruptcy diffusion among economic units, via reciprocal debt-credit relationships, which characterizes today's financially sophisticated economies.

4. Financial instability and the monetary circuit

Among Italian authors active during the 1970s, the one who stressed, more than anyone else, the need to regard capitalism as a 'monetary circuit', is Augusto Graziani[29]. During the twenty-year period 1970-80s, Graziani's research group on money called into question the basic pre-analytical foundations of mainstream economics. More precisely, Graziani and the other Italian 'circuitistes' criticized the 'neoclassical' view of a world where money does nothing other than facilitate exchanges between identical, sovereign, completely rational individual agents with perfect foresight. Within that unreal world, money is none other than a 'veil' which has been exogenously laid by monetary authorities on the real magnitudes. Such a description is very far from the reality of today's *financialized* capitalist economies. In its stead, Graziani and his pupils proposed a macro-social, monetary, view of the economic system, where the use of money as a means of payment (and, in particular, as *initial finance* for current production) marks the whole economic dynamics. Against this context, the neoclassical convivial village fair gives way to a monetary economy of production characterized by a condition of permanent monetary imbalances and social conflict. Incidentally, Graziani's monetary theory of production, which relies on an original re-reading of Keynes's *Treatise on Money* (1930) and post-1936 writings, shows a certain resemblance to Minsky's 'financial' re-reading of the *General Theory* (1936). Graziani was, indeed, very interested in Minsky's work, although he seemed not to completely integrate the FIH in his model. According to Graziani (1984), the main goal of Minsky's analysis was to provide a reconstruction of the monetary nature of capitalism, in which money acts both as *store of value* and as *means of finance*. The former is the function which has been acknowledged (also) by the 'neo-Keynesian synthesis', while the latter has been rediscovered, in Europe, by the Franco-Italian circulation approach and, in the US, by the American post-Keynesians. For Graziani, the very stress on the 'finance motive' has allowed Minsky (and the other American post-Keynesians) to recover Keynes' view of the capitalist system as a crossroads of (present and future) cash flows and payment commitments. However, unlike Minsky, Graziani was not interested in the link between the taxonomy of firms' 'positions' and the spreading of financial fragility within the economy[30].

In more recent years, an interesting synthesis between the circulation approach and Minsky's FIH, within a wider project of *critique* of (current) political economy, has been proposed by Riccardo Bellofiore. Bellofiore (like Alessandro Vercelli) was one of the participants in Graziani's research group on money, but he has also been very

[29] Among the required references of the Italian Circulation approach, we also have to mention Bruno Trezza and his pioneer work, *Economia e moneta* [Economy and money], published in 1975.

[30] An interesting attempt to modify the standard, single-period, monetary circuit framework in order to analyze the long-run financial sustainability of firms' debt with banks can be found in Messori and Zazzaro (2004, 2007).

influenced by both Claudio Napoleoni's reading of Marx and Marcello Messori's interpretation of Schumpeter. Among his main references we can number Marxist authors such as Henryk Grossman and, most of all, Rosa Luxemburg, regarded as a clear forerunner of the Circulation approach (see Bellofiore 2004). Unlike the majority of the other authors cited, Bellofiore has not worked on formal aspects of Minsky's theory. Rather, he is interested in the possibility of using Minsky's insight in order to analyze the new features of the 'money-manager capitalism'. To this aim, not only has Bellofiore shown that it is possible to discover a clear description of the 'monetary circuit' within Minsky's analytical core, but he has also tried to integrate the FIH (regarded as a 'set of open problems, and not as a set of already-made answers') within the Marxian theory of money and crisis. The result is a new financial-monetary circuit framework which accounts for today's, paradoxical, 'privatized financial Keynesianism'. Such a system relies on politically managed financial bubbles, i.e. on an active monetary policy of central banks aiming to sustain the price of assets in the financial market.

For Bellofiore, Minsky's FIH needs to be updated. The point is that today's macroeconomic key-variable is households' 'autonomous' consumption (sustained by *wealth-effects*, fueled by *asset inflation*, and made possible by *consumer credit*), and not 'productive' investment (as in the original Minskian formulation). This change has gone along with a process of 'real subsumption of labor by finance' which has affected the conditions pertaining to the valorization of production (see Bellofiore and Halevi 2010). In fact, during the last three decades, wage-earners have become more and more embedded in the financial market, and this inclusion has retroacted 'on firms' corporate governance and on working conditions within the immediate production process' (Bellofiore et al. 2010, p. 94)[31]. This is the hidden side of the 'new capitalism' of the 1990s (and 2000s) in which wage deflation went along with asset inflation, and flat private 'productive' investment (coupled with decreasing government social spending) went along with the increasing debt of households. Of course, that was an explosive mix which was doomed to lead to a deep crisis. If this is the diagnosis, what are the policy prescriptions? On the 'normative' ground, the starting point of Bellofiore's work is Minsky's criticism of the 'realized' Keynesism of the 1950s-1960s[32], and the linked proposal of a renewed New Deal dealing with the basic issues of *how*, *what*, and *how much* to produce. Bellofiore, in the wake of Minsky, asks for the State to be the provider for 'direct' creation of employment. The perspective is that of a 'socialization of investment', coupled with a 'socialization of employment' and a 'socialization of banking' (see Bellofiore 2011).

[31] For an attempt to provide a formal framework of the monetary-financial circuit in 'new capitalism', we refer the reader to Passarella (2011b).

[32] The realized Keynesianism has been 'criticized by Minsky from the bottom up. It was a system in which taxation and transfers govern consumption, monetary policy rules investments, government spending is either waste or military expenditure, rent-positions and finance are nurtured. He calls this a strategy of high profits, high investment, leading to artificial consumption, and putting the biological and social environment at risk. A "socialism for the rich"' (Bellofiore 2011, p. 9).

5. Minsky and the other current monetary approaches

The (Franco-)Italian circulation approach is not the only heterodox monetary approach which has been affected by Minsky's thought. We have to mention, first and foremost, current post-Keynesian 'stock-flow consistent modeling' (SFCM)[33]. It seems no coincidence that one of the authors who have given the major contribution to the development of SFCMs is an Italian scholar, i.e. Gennaro Zezza[34]. Zezza worked with both Graziani and Godley, and, in recent years, he has tried to join together the contributions of his two 'mentors' (see Zezza 2004, 2011). Although there has not been a *direct* influence of the FIH on Zezza's work, there has undoubtedly been an *indirect* influence, since Minsky was very close to Godley and the other scholars at the *Levy Institute*[35]. Notice that, not only does the SFCM approach share the emphasis on the monetary nature of capitalism with Minsky's analysis, but it also allows its authors to develop the Minskian notion of the 'firm' as a balance-sheet of assets and liabilities (as opposed to the traditional notion of the firm as an individual agent who 'merely' combines the factors of production) [36]. Strong points of SFCMs are, on theoretical ground, its actual stress on the need for macro-accounting stock-flow consistency of the model, and, on empirical ground, the possibility to provide accurate medium-run forecasts. Yet, the combination of Minsky's view with the SFCM approach also excites the skepticism of a number of heterodox authors. The main reason for this skepticism is methodological: Minsky's FIH relies on the assumption that financial instability is the endogenous outcome of the 'normal' working of the economy, whereas SFCMs rely on the definition of a steady state for the economy on which the economist imposes exogenous shocks.

Before we close this overview, we must cite those Italian authors who, even though they cannot easily be included in a specific 'school', have clearly been affected by Minsky's thought. In our opinion, a noteworthy theoretical contribution to Minskian economics has been provided by Gennaro Corbisiero. Corbisiero showed that it is possible to restate and generalize Minsky's FIH by considering: (i) the impact of the change in the term-structure of debt during the boom; (ii) the effect of the change in

[33] The definition refers to a specific set of macroeconomic models mainly developed by Wynne Godley (with whom Minsky had formed a close friendship) and the scholars of the *Levy Institute*. The method adopted by these authors is 'to write down the system of [difference] equations and accounting identities, attribute initial values to all stocks and all flows as well as to behavioural parameters'. Numerical simulations are then used in order to 'check the accounting and obtain a steady state for the economy'. Finally, the system is shocked 'with a variety of alternative assumptions about exogenous variables and parameters' (Godley and Lavoie 2007, p. 9).

[34] See, for instance, Zezza and Dos Santos (2008).

[35] We refer the reader to note 2.

[36] For an attempt to re-define Minsky's FIH within a (simplified) stock-flow consistent model, see Passarella (2011a).

profit expectations upon aggregate leverage ratio[37]. This allowed Corbisiero to soften the most recurring criticism to Minsky's theory – i.e. the criticism that is based on the so-called "paradox of debt"[38]. Furthermore, we cannot neglect the contributions of Giancarlo Bertocco, Elisabetta De Antoni and Domenica Tropeano. Although Bertocco has not provided a 'Minskian' contribution in the strict sense, in his Keynesian-Schumpeterian analysis of the features of a monetary economy (and hence of money non-neutrality) the reference to Minsky's work is constant (see, for instance, Bertocco 2005, 2007). De Antoni has shed new light on Keynes' and Minsky's different conceptions of the business cycle. The point is that the 'first cause' of the crisis is *financial* in Minsky and *real* in Keynes: it is 'financial fragility that threatens Minsky's boom', whereas 'in Keynes's stagnant economy, the problem is not over-indebtedness but the excess of the expected over the actual yield on investment due to the optimism of the boom' (De Antoni 2010, p. 16). In a sense, Minsky believes in the recovery; Keynes doesn't. For Minsky capitalism is always able to approach a new growth phase; for Keynes capitalism is prone to stagnation. The basic question is: is the crisis a temporary phase or is it the result of a chronic stagnationist tendency of capitalism? In this regard, De Antoni seems to be closer to Keynes' pessimism, rather than to Minsky's optimism. However, she acknowledges the fundamental importance of Minsky's financial re-reading of Keynes. Finally, Tropeano has used Vercelli's redefinition of Minsky's concept of financial instability (interpreted as 'structural' instability) in order to analyze the 'subprime-loan crisis'. On this basis, she has shown that 'the reading by Minsky of the roles of the central bank in the presence of sophisticated markets and securitization is helpful for understanding both the failure of the Federal Reserve in preventing the crisis and the relative success in mitigating its effects' (Tropeano 2010, p. 56).

Before we conclude, we also have to mention the group of scholars who gravitate around the Italian journal *Moneta and Credito*. While that group seems to be closer to Kindleberger's historical analysis of the crisis than to Minsky's theory of financial instability, it is not hard to trace Minskian influences in it[39]. This is further evidence of the deep (although sometimes 'underground') influence Minsky has exerted on the Italian academic community[40].

[37] On this point, see also Passarella (2010).

[38] The 'paradox of debt' states that, even if rising investment entails rising debt, it also entails rising profits (and hence rising internal funds) for firms as a whole. Consequently, Minsky's idea that firms' debt to internal funds ratio needs to increase during the boom (because of the increase in investment) must be considered a *non sequitur*.

[39] See, for instance, Ciocca (2010), Cozzi (2011), Roncaglia (2009) and Tonveronachi (2010). Minsky himself contributed to the journal (see Minsky 1982).

[40] Among recent Italian works which refer explicitly to Minsky's thought, we also have to mention Beretta (2010), Corsi and Guarini (2010), Degasperi (1999), Sau (2006) and Silipo (1987, 2009). Other Italian sholars who had contact with Minsky are: Giacomo Becattini, Salvatore Bussu, Anna Carabelli, Nicola Dimitri, Giovanni Dosi, Ester Fano, Eugenio Gaiotto, Claudio Gnesutta, Riccardo Leoni, Sergio Lungaresi, Massimo Egidi, Beniamino Moro, Fabio Neri, Fabio Petri, Massimo Pivetti, Franco Lionello Punzo, Carlo Sdralevich, Andrea Terzi, Gianni Toniolo and Marco Vitale. Finally,

FINAL REMARKS

In this paper it has been argued that Minsky's economic thought has influenced several Italian economists and approaches, either directly or indirectly. Outlines of Minsky's thought can be found not only in the works of Italian scholars who refer to post-Keynesian economics (or to other heterodox traditions), but even in a number of contributions by 'dissenters' among orthodox authors. Both the analysis of the Italian economic literature dealing with 'Minskian' topics and the interviews given by some of the Italian authors who had contact with Minsky have allowed us to answer the initial questions we raised. How has Minsky's economic thought influenced Italian economists? Has there been an Italian specificity in this reception? Are there Italian scholars who still refer to Minsky's analysis now? What are the current approaches which draw on Minsky's work? The answer to the first question is that Minsky's innovative approach – along with the financialization of western economies since the late 1970s – forced young Italian heterodox scholars of the 1970-80s to confront the *financial* nature of capitalist economies. In a period in which the majority of the major Italian (heterodox) economists were still mainly interested in the real side of the economy, apart from the monetary-financial side, Minsky's ground-breaking analysis had a 'shocking' effect on young scholars' training[41]. As for the second question, it is possible to trace the Italian specificity back to the need for improving and refining Minsky's vision by means of new, more powerful, analytical tools (i.e. non-linear dynamic models, stock-flow consistent models, and agent-based models) and/or theoretical cross-breedings (mainly with the Franco-Italian theory of monetary circuit). In some cases, the price paid for this 'specialization' has been the loss of both the most radical aspects of Minsky's thought and his systematic view of capitalism as a historically (and institutionally) determined system. But this is a more general phenomenon, linked to the long-run transformation in the economics discipline. Finally, it has answered the last two questions by showing that, on the one hand, there is still a small, but case-hardened, number of Italian scholars who refer explicitly to Minsky's approach. On the other hand, it is not possible to talk about an out-and-out 'Minskian school', because Minsky's pupils and young colleagues have followed different theoretical paths[42]. Furthermore, Minsky's lesson cannot be reduced to a single specific

among young Italian researchers dealing with Minsky's analysis, we can number Tiziana Assenza, Simone Giansante, Corrado Di Guilmi, Marco Passarella and Alberto Russo.

[41] As we have argued, a noteworthy exception is the monetary circuit theory developed, by Graziani and his group, in Italy. Notice, however, that within the standard monetary circuit framework, the security market just plays a passive role in channeling households' saving towards industrial firms. Hence, we are very far from the central role Minsky assigned to the financial market, as well as from Minsky's microeconomic emphasis on firms' 'financial positions'.

[42] Notice, however, that – as Vercelli has argued – all these authors shared a dissatisfaction not only with the standard (i.e. neoclassical) reception of Keynes, but also with the alternative interpretation provided by the Cambridge post-Keynesian School in the early 1970s.

model, because, for Minsky, theory must never be separated from real issues. However, Minsky's vision is spreading beyond its original academic borders and, over the next few years, it could also be acknowledged by the new generations of Italian economists who – in a moment in which it seems as if all Minsky's prophecies are being fulfilled – do not settle for the 'reassuring' mainstream narration.

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INTERVIEWS

BELLOFIORE R., 9th September 2011, University of Bergamo (Italy).
DELLI GATTI D., July 20th 2011, Università Cattolica del Sacro Cuore, Milan (Italy).
FERRI P., June 6th 2011, University of Bergamo, Bergamo (Italy).
KREGEL J., June 25th 2011, Levy Economics Institute of Bard College, Annandale-on Hudson, NY (USA).
VERCELLI A., September 15th 2011, University of Siena (Italy).

FIGURE 1. The Italian scholars who refer to Minsky's thought: main theoretical influences and cross-breeding (dotted lines sho
'underground' links)