

Ludwig Van Den Hauwe*

Understanding Financial Instability: Minsky Versus the Austrians

DOI 10.1515/jeeh-2016-0008

Abstract: Although Minsky's interpretation of Keynes's macroeconomics and essential message clashes with authoritative alternative interpretations, it has become increasingly influential during the years following the Global Financial Crisis, even in mainstream circles. This paper offers a critical evaluation of Minsky's Financial Instability Hypothesis from the perspective of the alternative Austro-Wicksellian paradigm. Although some of the similarities and/or analogies between Minsky's approach and that of the Austrian School suggest a more than merely superficial affinity between the two theoretical frameworks and although some scope for cross-fertilization between both approaches can be found, both theoretically and empirically, at a fundamental conceptual level both theories remain incompatible and difficult if not impossible to reconcile, in particular in terms of fundamental causality and in terms of policy conclusions and prescriptions. Despite the fact that Minsky's policy conclusions are multifaceted and somewhat eclectic, they manifest a lack of familiarity with the conclusions of the Austrian analysis of the problems of central planning by Big Players such as Big Bank and Big Government. Both approaches also offer contrasting interpretations of the historical experience of the Global Financial Crisis.

Keywords: Austrian School, Minsky, Keynes, Global Financial Crisis, Financial Fragility, Financial Instability, Heterodox Macroeconomics, Financial Reform, Business Cycle

1 Introduction: The Global Financial Crisis and Heterodox Macroeconomics

In the wake of the Global Financial Crisis (hereafter GFC) and the subsequent Great Recession a widespread perception has prevailed that orthodox economics proved useless in predicting, tackling or even imagining the biggest financial debacle in the world's most advanced economies for eighty years and that this

*Corresponding author: Ludwig Van Den Hauwe, Independent Scholar, Ph.D. Université Paris Dauphine, E-mail: ludwigvandenhouwe@gmail.com

fact constitutes clear evidence of a systemic failure of the economics profession (Colander et al. 2011; Kates 2010, 2011; Rodriguez, Turmo, and Vara 2014; Wolf 2014).¹

According to Minsky, economics should include the possibility of severe crises, not as the result of external shocks, but as events that emerge from within the system. Crises, according to Minsky, have proved a persistent feature of capitalist economies. Minsky's financial instability hypothesis (hereafter FIH) is a model of a capitalist economy which does not rely upon exogenous shocks to generate business cycles of varying severity: the hypothesis contends that historical business cycles are compounded out of the internal dynamics of capitalist economies as well as out of the system of interventions and regulations designed to keep the economy operating within reasonable bounds (Minsky 1994 [2012] 547).²

No less pertinent has been the approach of economists of the Austrian School in explaining and understanding the events leading up to the GFC and the following economic recession (Cachanosky and Salter 2013). It has not always been clearly perceived, however, whether the post-Keynesian and Austrian accounts are complementary, partly complementary and partly incompatible, or entirely incompatible.³

1 The GFC is now treated in most orthodox macroeconomics textbooks from the perspective of the conventional IS-LM and AD-AS frameworks and the information contained therein is often useful. See e.g. Blanchard, Amighini, and Giavazzi (2010); Gordon (2012); Mishkin (2013), Sorensen and Whitta-Jacobsen (2010). In this paper I will consider two heterodox approaches to interpreting the GFC, its causes, consequences and policy implications. In particular the heterodox approach of the late Hyman Minsky had become prominent in terms of influence and prestige among interpreters of the GFC that began in 2007–8. I will here adopt a critical perspective with respect to Minsky's approach from the standpoint of Austrian economics. It is not difficult to document the growing influence of Minsky's economics since the Global Financial Crisis. Clearly the mainstream has discovered Minsky (Wray 2016, 8 ff.). See also: Bhattacharya et al. (2011); D'Apice and Ferri (2010); Eggertsson and Krugman (2012); Flanders (2015); Rosser, Rosser, and Gallegati (2012). Richard C. Koo, in his much acclaimed (2015), cites Minsky as one among very few economists who have seriously addressed the problem of asset bubbles. Since most readers of this journal will be familiar with the Austrian theory of the business cycle, I will not present an elaborate account of its basic features. Reference can be made to, among others, Garrison (2001; 2005) and Huerta de Soto (2012). The relevant works of Mises and Hayek, as explained and discussed in Huerta de Soto (2012), remain required reading.

2 In very general terms Minsky followed Marx but, as explained further, it is not a realization crisis that is the outcome of this process but rather a validation crisis in which the commitments on financial liabilities can no longer be met from current income (also Kregel 2013).

3 See e.g. Vikram Mansharamani who writes that "(t)he Austrian business cycle theory is similar in many respects to Minsky's financial instability hypothesis" (2011, 36).

At least one author has suggested that both approaches are complementary rather than incompatible. Writing about the financial crisis, Leijonhufvud (2009, 742) indeed observes:

Operating an interest targeting regime keying on the consumer price index (CPI), the Fed was lured into keeping interest rates far too low for far too long. The result was inflation of asset prices combined with a general deterioration of credit quality (....). This, of course, does not make a Keynesian story. Rather, it is a variation on the Austrian overinvestment (or malinvestment) theme. But Mises and Hayek had very little to say about the financial side of an overinvestment boom that is of interest to us 80 years later. For a thorough analysis of that subject one has to turn to Human Minsky.

Resolving this issue in greater detail requires taking a closer look at the specifics of the respective theories. A critical attempt will therefore here be made not only to analyze apparent analogies as well as divergences between both approaches, but also to suggest a few lines of possible future research by indicating areas where some cross-fertilization between both approaches or even a partial theoretical integration of both theories seems possible.⁴

2 Setting the Scene: Keynes, Minsky, and the Austrian School

2.1 Keynes versus the Austrian School

The Hayek/Keynes debate, which is conventionally dated to have begun with Hayek's two-part review of Keynes' *Treatise on Money*, was at least in part a continuation of 19th controversies concerning the role of saving, public spending, private investment, and budget deficits (Hayek 1931–2; Keynes 1930 [2011]; O'Driscoll 2011). Although there is little evidence from contemporary debates on these issues that the monetary debates of the nineteenth and twentieth centuries ever took place (O'Driscoll 2011, 36), and although most of the recently emerging models have come from a more or less "Keynesian" perspective, it has been argued that an alternative "Hayekian" path might be taken and that Austrian approaches to macroeconomics are now more likely to resonate with

⁴ The motivation or rationale for such an exercise may seem weak but this impression is mistaken. Austrian economists may remember how Hayek finally regretted never having reviewed Keynes' *General Theory*; they should not now neglect paying due attention to Minsky's increasingly influential work. On Hayek versus Keynes, see also Backhouse (2014).

mainstream economists than in years past (Koppl and Luther 2012; Cachanosky and Salter 2013).

Recently attempts have been made to link Austrian and Keynesian economics by integrating the time structure of production and the Hayekian triangles with the Keynesian consumption function as drawn from the Samuelsonian “neo-classical synthesis” (Garrison 1978; Skousen 2015). Although this approach has become a recurring theme in part of the Austrian literature, this construction can be questioned on the ground that, as is well known, several interpretations of Keynes’ *General Theory* exist as well as major differences between interpreters about the meaning of the book and its central message. Since the GFC it has become increasingly doubtful whether the “neo-classical synthesis” adequately captures the essence of Keynes’ intended message. From this perspective the Skousen-Garrison construction is perhaps more a Hayek-Samuelson synthesis than a Hayek-Keynes synthesis!

A more fertile conceptual framework for studying dynamically unsustainable processes is provided by Wicksell’s (1936 [1965]) model of cumulative expansions and contractions, which was taken over by a large number of economists in the early twentieth century; both Hayek, in his business cycle model, and Keynes, in his *Treatise on Money* are to be mentioned in this context. Indeed the so-called Wicksell Connection – or Austro-Wicksellian Connection – has been held responsible for a fundamental convergence of the respective theories of Hayek and Keynes about money, capital, and the business cycle during the course of the 1930s. This affinity effectively ended thereafter, however, and the Wicksell Connection is largely absent from modern mainstream macro (Goodspeed 2012).⁵

⁵ Generally, the Wicksellian connection consists of three primary and tightly interrelated themes. The *first* is that money matters. The core of the Wicksell Connection, in contrast to all approaches of Walrasian descent, consists in the integration of real with monetary analysis. This ingredient is intimately related to the *second* element of the Wicksell Connection, namely, the identification of intertemporal coordination as the central problem in macroeconomics. The Wicksellian economy is one that gives full scope to potential coordination failures, with the “dark forces of time and ignorance”, poised always to disrupt the coincidence of saving and investment. The *third* and final theme constituting the Wicksell Connection relates to the fact that the problem of intertemporal coordination of economic activity is inextricably bound up with questions concerning the dispersion, acquisition, and distribution of information and knowledge. See also Leijonhufvud (1981a, 131–202). Leijonhufvud (1981b, 133) had proposed a grouping of macroeconomic theorists along two separate traditions labeled “Saving-Investment Theories” and “Quantity Theory.” Keynes is categorized by Leijonhufvud as a Wicksellian. This categorization had been questioned and rejected by Garrison (1992, 144). Minsky’s own interpretation of Keynes differs markedly both from that of Garrison and from that of Leijonhufvud.

2.2 Keynes versus Minsky

Post-Keynesian economists distinguish themselves by two characteristics: among interpreters of Keynes' work they are the most active group emphasizing expectations and uncertainty as the driving force in the *General Theory*, and they combine this emphasis with intense concentration on their own choice of a favorite chapter, Chapter 17 – “The Essential Properties of Interest and Money” – and on the role of money in “finance” (Meltzer 1988, 285). Minsky is no exception. Minsky believes, however, that Keynes' discussion in Chapter 17, though perceptive, is flawed because Keynes does not explicitly introduce liability structures and the payment commitments they entail (Minsky 1975 [2008]). Therefore Minsky describes his task as follows:

In order to bring out the power of the ideas involved, we will undertake to adjust the argument of chapter 17 by explicitly considering liability structures and by setting the argument in a cyclical and speculative framework. As modified by these considerations, the argument of chapter 17 gives us the ingredients for an explanation of a speculative investment boom and of why such a boom contains, in the development of a crisis-prone setup, the seeds of its own destruction. (1975 [2008], 77)

It has been argued that Minsky was not the interpreter of Keynes that he supposed himself to be and that his FIH must be considered as an extension or a reformulation, and not an “interpretation”, of Keynes. Much like the Austrian theory, Minsky's theory is indeed a theory of the upper turning point. Keynes' perplexities instead focus on the lower turning point. Minsky “combats” the upswing, Keynes the downswing (De Antoni 2010). Although Minsky's cyclical rereading of *The General Theory* clashes with authoritative alternative interpretations, he seems to have believed that his own interpretation is most faithful to the true vision and message of Keynes.

2.3 Minsky versus the Austrian School

The idea of a boom containing “the seeds of its own undoing (or destruction)” is indeed also very characteristic of typical formulations of the Austrian theory of boom and bust. The impression that Minsky's interpretation of the *General Theory* thus yields a variant of Keynesian business cycle theorizing not unlike and in some respects even analogous to the Austrian theory is not entirely mistaken. Nevertheless this observation is subject to some qualifications and reservations. In fact, despite certain similarities and analogies, especially concerning the role of money and banking institutions in the context of the business

cycle, and despite Minsky's providing what is clearly a cyclical reading of the *General Theory*, his work does not fit very well into the framework of the *Wicksell Connection*.

A central element of the *Wicksell Connection* relates to the identification of inter-temporal coordination and the role of the interest-rate mechanism in this respect as the most important problem in macroeconomics. Although Minsky's analysis confirms the standard negative relationship between investment and the interest rate, in his scheme interest rates play a secondary role. Dominating the scene are the other determinants of investment, in particular profit expectations and confidence. Austrians do not reject theorizing about the role of confidence or "animal spirits" *per se* but argue that we need to look more carefully at the way in which Big Players in the economic system can affect confidence as a result of their dominance (Koppl 2014, 130–1). The view that will be held here is thus that Minsky's Wicksellian pedigree is somewhat doubtful.⁶

Minsky took inspiration from Fisher's debt-deflation theory which clearly influenced his own debt-deflation theory (Fisher 1933; Minsky 1986 [2008], 192). Minsky's debt-deflation theory emphasizes the role of the asset market. As in Fisher's explanation, distress selling can be self-defeating, as when the asset market and distress selling feedback on each other. The fall in asset prices reinforces deflation via a *negative wealth effect*. This process can result in a recursive debt-deflation process. The Austrian theory to the contrary is not a theory of depression *per se* but rather a theory of the unsustainable boom. Austrians recognize that self-reversing changes in the capital structure may give way to a self-aggravating downward spiral in both income and spending, which was described by Hayek as the "secondary depression (or deflation)" – in recognition of the fact that the primary problem was something else: the inter-temporal misallocation of resources (Hayek 1979, 40–41; Garrison 2001, 75). While Austrians acknowledge the fact that a bad situation can get worse, they would generally argue that the self-aggravating downward spiral leading into deep depression is to be explained by significant government intervention on several levels thwarting market adjustment by constraining exchange opportunities.

In order to facilitate a critical evaluation of Minsky's model, in the next section a stylized account of Minsky's FIH will be presented.

⁶ The reader will look in vain for a single reference to Wicksell in Minsky's three books. Detzer and Herr (2015, 115) argue, in contrast, that Minsky followed the Wicksellian approach.

3 Minsky's FIH versus Austrian Business Cycle Theory: Contrasting Explanations of Dynamic Unsustainability and the Upper Turning Point in Business Cycles

The two cornerstones of Minsky's analysis are his "financial theory of investment" which considers the ways in which investment is financed, and the cumulative processes.⁷ The core of Minsky's analysis is a financial theory of investment according to which investment is essentially driven by: (i) the difference between the market price of capital goods in place and the current price of investment goods; (ii) the volume of internal finance. The expansion of the firm depends on its accumulation of capital out of current profits (also Kalecki 1965 [2009], 92). As to the first factor, "(p)rices of capital assets depend upon current views of future profit (quasi-rent) flows and the current subjective value placed upon the insurance against uncertainty embodied in money or quick cash: these current views depend upon expectations that are held about the longer run development of the economy. The prices of current output are based upon current views of near term demand conditions and current knowledge of money wage rates. Thus the prices of current output (...) depend upon shorter run expectations. Capital-asset and current output prices are based upon expectations over quite different time horizons: capital output prices reflect long run expectations and current output prices reflect short term expectations" (Minsky 1982, 94–5). As to the second factor, Minsky notes that the investment which can be debt financed today depends on the cash flows expected by both borrowers (firms) and lenders (banks) tomorrow. The higher the realized cash flow relative to debt commitments, the higher the rate of fulfillment of contracts, which positively affects the state of confidence of both bankers and business people and leads to a higher volume of investment being financed and carried out.

Minsky's theory of investment determination can be illustrated with the help of Figure 1. The quantity of capital is measured on the x-axis and the "prices" of capital on the y-axis. Minsky draws a distinction between the supply price of investment goods – which we assume for simplicity to be equal to the average

⁷ In this section I will provide a summary statement of Minsky's analysis of financial fragility and instability. The post-Keynesian literature contains several excellent summaries which I have used freely, besides Minsky's three books. See in particular: Assenza, Delli Gatti, and Gallegati 2010; Bellofiore and Ferri 2001a, 2001c; De Antoni 2010; Fazzari and Papadimitriou 1992; Kregel 2013; Mehrling 1999; Papadimitriou and Wray 2010; Wray 2016; among others.

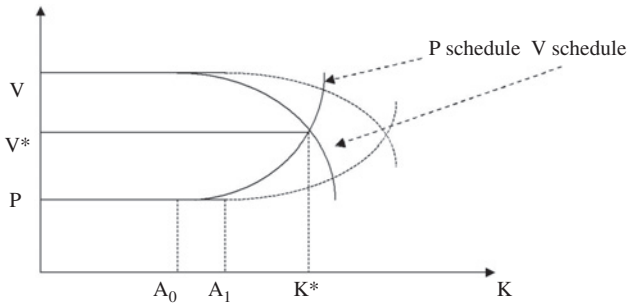


Figure 1: Minsky's Two-Price Theory of Investment.

price level (P) – and the market price of capital assets (V), which can be thought of as the present value of the stream of expected quasi rent per unit of capital. By assumption the latter coincides with the stock price. Investment can be financed in part by means of internally generated funds, which coincide with net worth (A) and in part by external finance. For a given price of newly produced capital goods (say P_0) and a given level of internal finance (say A_0) we can determine the maximum volume of investment which can be financed by means of internal funds $K_0 = A_0$. By assumption, the quasi rent is increasing with the volume of net worth. Hence we can compute the market price V_0 as an increasing function of A_0 (Assenza, Delli Gatti, and Gallegati 2010, 185). If the firm chooses a level of investment greater than K_0 , it has to raise funds on the credit market. In this case banks have to be remunerated for the risk they assume (lender's risk), so that the actual supply price of investment goods for the borrowing firm is higher than the price of newly produced capital goods P_0 . The schedule of the actual price of investment goods (P schedule), therefore, is flat at P_0 until the maximum volume of internally financed investment K_0 is reached and is increasing thereafter. Symmetrically, if the firm chooses a level of investment greater than K_0 , the risk of bankruptcy for the firm (borrower's risk) increases and the expected quasi rent decreases so that the actual stock price is lower than the original one V_0 . The schedule of the actual market price of investment goods (V schedule), therefore, is flat at V_0 until the maximum volume of internally financed investment K_0 is reached and is decreasing thereafter.

The equilibrium volume of investment (K^*) and the equilibrium price of investment goods (V^*) are determined at the intersection of the upward sloping schedule representing the supply price of investment augmented by lender's risk and the downward sloping schedule which describes the market price of capital goods augmented by borrower's risk. Equilibrium investment depends upon the

volume of internal finance and on the degree of borrower's and lender's risk which affect the slopes of the V and P schedules: $K^* = K(A_0)$. An increase in the availability of internal funds from A_0 to A_1 brings about an outward shift of both the V and P schedules and an increase of investment as shown in Figure 1.

The FIH is based on the distinction between hedge, speculative and Ponzi units; “(f)or hedge financing units, the cash flows from participation in income production are expected to exceed the contractual payments on outstanding debts in every period. For speculative financing units, the total expected cash flows from participation in income production when totaled over the foreseeable future exceed the total cash payments on outstanding debt, but the near term payment commitments exceed the near term cash flows from participation in income production, even though the net income portion of the near term cash flows (...) exceeds the near term interest payments on debt. A Ponzi finance unit is a speculative financing unit for which the income component of the near term cash flows falls short of the near term interest payments on debt so that for some time in the future the outstanding debt will grow due to interest on existing debt. Both speculative and Ponzi units can fulfill their payment commitments on debts only by borrowing (or disposing of assets)” (Minsky 1982, 22–3). In a “tranquil era” both borrowers and lenders expect future cash flows to be more than enough to validate debt. Asset prices, which incorporate these expectations, increase relative to the price of current output, stimulating investments which in turn drive up output, profits and employment. Minsky's cumulative processes, based on the interdependence between investment and profits, come into play. The interdependence between investment and profits becomes the basis of an upward spiral involving all the variables, with the exception of borrower and lender risks, which fall with expansionary effects on investment. The increasing debt is thus associated with decreasing safety margins. As the real sector grows, the financial system becomes more and more fragile. Banks are less cautious in extending credit and firms are less cautious in borrowing. As a consequence hedge units, that is, borrowers who are able to service debt in each and every period of the time horizon of their financial contracts, become speculative units. Borrowers who were speculative units, in turn, become Ponzi units, that is, they have to borrow in order to service outstanding debt. As the proportion of hedge units in the population of borrowers decreases, financial fragility increases. In this heterogeneous agents' setting, the increase of aggregate financial fragility during the expansion is due to the change of the structure of the economy, the weight of hedge units shrinking over time. When the perception spreads that in the aggregate cash flows do not validate debt any more, the network of financial relations collapses and a financial crisis sets in

(Assenza, Delli Gatti, and Gallegati 2010, 189). When cash commitments on debt cannot be met, financial fragility becomes financial instability (also Kregel 2013).

Minsky thus points to two drawbacks to the investment boom. First is its increasingly speculative nature. In the general euphoria, firms' debt commitments increase faster than profits and eventually exceed them. Expecting a future bonanza, firms start financing their principal by resort to debt (speculative financing) and then even interest payments (ultra-speculative or Ponzi financing). Thus an initially robust financial system becomes fragile. In fact, an endogenous evolutionary process leads to a reduction of margins of safety, without any necessity for euphoria or excessive optimism: increasingly optimistic expectations of the ability to meet cash commitments in a cyclical expansion represent a rational reaction to the evaluation of past events, as expressed in higher probabilities of success (Kregel 2008). Second is that the persistence of the boom inevitably creates either bottlenecks in the financial system or inflationary pressures in the goods market that end up requiring a monetary restriction. In either case, the result is a rise in the rate of interest (De Antoni 2010, 468–9). The higher interest rate ends the boom, and the investment-profit-investment chain reverts to a downward spiral. More generally the inevitability of the upper turning point is explained in Minsky's theory by pointing out that a crisis can occur if finance costs rise, if liquidity preference rises, or if income flows turn out to be less than expected. Endogenous processes tend to ensure that one of these (or all three) will, in fact, occur (also Wray 1992, 167–8).

Minsky's preoccupation with the upswing constitutes an important point of analogy between his theory of the business cycle and the Austrian theory. The assumptions from which both theories proceed and the particular elements that have to be put together in order to allow for an explanation of the upper turning point are clearly different in both approaches, however. In particular, while any explicit reference to the Wicksellian framework is absent from Minsky's conceptual approach, the Austrians clearly descend from the *Wicksell Connection*. As hinted at already, Leijonhufvud had made the simple but fundamental point that "the theory of the interest rate mechanism is the center of the confusion in modern macroeconomics" (1981b, 131). In Wicksell's theory of the cumulative process, the maladjustment of the interest rate – the discrepancy between the market rate and the natural rate – is the central idea. Use of the saving-investment approach to income fluctuations is predicated on the hypothesis that the interest rate mechanism fails to coordinate saving and investment decisions appropriately (Leijonhufvud 1981b, 132). The Austrian theory of the business cycle clearly shows how a lowering of the market rate of interest below the natural rate will set the economy on an unsustainable growth path. In

particular the Austrian theory of the business cycle emerges from a straightforward comparison of savings-induced growth which is sustainable, with a credit-induced boom, which is not sustainable. Whereas saving entails genuine growth, credit expansion leads to boom and bust. The focus of the theory is the intertemporal discoordination – a general mismatch between intertemporal consumption and saving preferences and intertemporal production plans – and hence the inevitable crisis and downturn. The market is capable of allocating resources in conformity with intertemporal preferences on the basis of a market-determined (natural) rate of interest. It follows that an interest rate substantially influenced by extra-market forces will lead to an intertemporal misallocation of resources. Special attention is thus given to the extra-market forces that initiate the boom and the market's own self-correcting forces that turn boom into bust. Whereas increased saving lowers the rate of interest and gives rise to a genuine boom, by contrast a falsified interest rate that mimics the loan market conditions of a genuine boom but is not accompanied by the requisite savings gives rise to an artificial boom, one whose artificiality is eventually revealed by the market's reaction to excessively future-oriented production activities in conditions of insufficient saving. Misallocations are followed by reallocations (Garrison 2001, 2005).

4 Further Discussion: Analogies and Divergences

4.1 Disaggregating the Business Cycle and Providing Macroeconomics with Adequate Micro-Foundations

There are both macroeconomic and microeconomic aspects to financial fragility (Tymoigne and Wray 2014, 21–2). Both Minsky and the Austrians are sensitive to the requirement that macroeconomic theories should be provided with adequate micro-foundations. In his doctoral dissertation Minsky had already emphasized “the need to relate aggregate analysis to the behavior of economic units” (Minsky 2004, 17). In particular, the relation between investment and the behavior of individual firms is investigated. Without any doubt he thus intended to embrace a disaggregated approach to the study of business cycles. Minsky considered his approach in the dissertation to lay the micro-foundation for determining macro performance. The dissertation is a microeconomic analysis of firm behavior encompassing the various decision-making processes regarding entry, market structure, expansion, vulnerability and survival (Papadimitriou 2004, x).

In Minsky's theory of investment determination, all the determinants of investment can be firm-specific. Moreover, although Minsky's theory of investment determination can be formulated without explicit reference to heterogeneity, at a deeper and more significant level Minsky's ideas can be properly expressed only in an heterogeneous agents' setting considering the distinction among hedge, speculative and Ponzi units on which the FIH is based. Assenza, Delli Gatti, and Gallegati (2010) provide an example of a macroeconomic model in which firms are characterized by heterogeneous financial conditions at the firm level, thus implementing a disaggregated approach to the study of business cycles by looking at how the structure of the economy evolves over the course of the cycle. The role of heterogeneous financial conditions is the part of Minsky's legacy that is thus becoming the cornerstone of a new research agenda.

Austrian theorizing has also been very sensitive to issues of excessive aggregation. Austrian economists have generally been critical of conventional macroeconomists' primary focus on aggregate magnitudes and their abstracting from individual market participants and their interactions. The fundamental method of Austrian economic theory has been characterized as "methodological individualism". Economic events can only be explained in terms of individual human actions, which means that the phenomena of the trade cycle are to be explained in terms of the responses of individuals in the system to price signals (Hayek 1933 [2008]). Minsky, however, does not seem to consistently embrace methodological individualism. Although micro-founded, Minsky's analysis must be interpreted more as a macro-foundation of microeconomics than vice versa. This means that his route has been macro-micro-macro: he starts from the determination of aggregate demand and total gross profits in the period, together with the liability structure inherited from the past; then he looks at the micro consequences of the current ratio of gross capital income and cash-payment commitments on individual choices about financing and investment; and finally he reconstructs the macro effects on the system's evolutionary dynamics (Bellofiore and Ferri 2001a, 24). Nor has Minsky's approach been exempt from critique. Minsky implicitly assumes that the actual investment gearing ratio between external and internal financing aligns itself with the desired, thus rising pro-cyclically in the upswing and falling in the downswing. As investment increases, external financing grows faster than internal. As a consequence, the incidence of debt commitments on profits rises: finance becomes less hedge and more speculative. Minsky's line of reasoning here is questionable, however. The good performance of the real sector (profits included) might strengthen rather than weaken the financial sector (De Antoni 2010, 465). Minsky's analysis apparently presents a missing link here since it does not provide any rationale to justify his rising leverage thesis at the macroeconomic level (Lavoie and Seccareccia 2001, 84).

The attempts by post-Keynesian economists to disaggregate the business cycle along lines suggested by Minsky undeniably reflect a certain analogy with the Austrian approach. However, whereas Minsky develops the linkage of business investment with finance in the microeconomic sphere by extending the conventional neoclassical theory of the firm, Austrians base their unique macroeconomics on the concept of an inter-temporal structure of production and disaggregate the macro-economy by according a central role to the capital structure of the economy in the tradition of Menger (1871 [1994]) and Böhm-Bawerk (1959).

To the extent both models relate to the same macroeconomic reality, however, it seems plausible to assume that some scope for integration of both disaggregation schemes may be found, both theoretically and empirically. Thus it seems plausible to suppose that the shift towards increased macroeconomic fragility over the course of the boom according to Minsky's scheme will not occur "evenly" throughout the economy but rather "differentially" in ways that reflect the different stages of production according to the Austrian disaggregation scheme. This is one area where future research may prove some fertile cross-fertilization or even partial theoretical integration between both approaches to be possible.

4.2 Critique of Mainstream Equilibrium Theorizing and the Use of Equilibrium Concepts

Both Minsky and the Austrians have criticized variants of mainstream equilibrium theorizing. Austrians are methodologically at odds with neoclassical equilibrium theory. They eschew mathematical formalism, especially of the mechanistic type, preferring a historical narrative of events, reflecting their perception that events form part of dynamic processes that more often than not are out of equilibrium (Simpson 2013, 135). The traditional Austrian theory of the cycle has also been characterized as profoundly deterministic: the arrival situation is a stationary equilibrium determined in a univocal manner on the basis of real variables (preferences, techniques and initial endowments of agents) and the ultimate cause of the cycle is purely monetary (bank policy) (Gloria-Palermo 1999, 74).

However, while Minsky's rejection of the "crutch" of equilibrium is total and uncompromising, the Austrian theory retains an equilibrium concept in an essential way. A tendency towards equilibrium is a key feature of the Austrian cycle. From the Austrian viewpoint, a proper but limited use of an equilibrium concept as a benchmark leads to a dynamic disequilibrium theory of a cycle

(Cochran and Glahe 1992, 1999). Hayek's early work reflects a subtle tension between the perceived necessity of stating his case in a theoretically acceptable fashion, i. e., equilibrium theory, and a sense of that theory's limitations (Butos 1985). In Minsky's view, to the contrary, the traditional re-equilibrating price mechanism is replaced by quantity mechanisms that exert cumulative effects on one another. After reaching their maximum development, the resulting tendencies wane and reverse. Advanced capitalist economies thus cyclically fluctuate in a permanent disequilibrium (De Antoni 2010, 466).

4.3 Price-Theoretic Aspects

Both Minsky and the Austrians have made attempts to provide their respective theories of the business cycle with price-theoretic foundations. The Austrian theory of the business cycle has a sound basis in price theory. The interest rate is a price; it is the price that strikes a balance between people's eagerness to consume now and their willingness to save for the future (Van den Hauwe 2009a).

Minsky is one of a small group of post-Keynesian economists who have insisted on the importance of the price-theoretic aspects of Keynes' work, and who continued to try to develop this aspect of the Keynesian system. As has been explained, according to Minsky's theory there are really two systems of prices in a capitalist economy – one for current output and the other for capital assets. When the price level of capital assets is high relative to the price level of current output, conditions are favorable for investment; when the price level of capital assets is low relative to the price level of current output, then conditions are not favorable for investment, and a recession – or a depression – is indicated (Minsky 1986 [2008]; also Kregel 1992, 87). The fundamental relative price in a capitalist economy is thus the relation between the price of capital assets and the price of current output. This two-price model is the analytical tool by which Minsky integrates his theory of money and finance into his theory of investment.

While Minsky's approach is thus still framed in terms of "price levels", the logic of the Austrian theory is firmly anchored in the notion that the price system is a communications network. A miscommunication in the form of an interest rate held below its market or "natural" level by central-bank policy sets the economy off on a growth path that is inherently unsustainable. In a famous paper on "The use of knowledge in society" (Hayek 1945) Hayek summarized his view of the role of prices in market processes. Knowledge is not universally available. The great economic question is how to make the greatest social use of knowledge that is not universally available but exists only in dispersed form

across the entire population. The “market” is a decentralized solution to the fundamental problem of making use of widely dispersed knowledge. Thus the prices of resource inputs convey in a highly condensed form just enough information to make sure that the inputs are appropriately allocated, without any need for market participants to possess any detailed information about why certain price changes are occurring. Every market participant knows something, nobody knows everything. Institutions such as the price system, but also money and traditional rules of conduct, facilitate the coordination and effective use of this dispersed knowledge. In analogy with the famous incompleteness theorems of the mathematician and logician Kurt Gödel, any monocentric, top-down attempt to solve this coordination problem must necessarily remain incomplete and is doomed to fail (van den Hauwe 2011b). These insights are no part of Minsky’s perspective.

4.4 Monetary Aspects

Minsky’s work is best understood as a contribution to the general theory of money.

In particular his work represents the most significant American contribution of his generation to the Banking School tradition of monetary thought that sees money arising as the natural byproduct of business finance (Mehrling 1999, 150). The Austrian theory of boom and bust, despite its explicit focus on saving, investment, consumption, and production time, is equally, root and branch, a monetary theory (Garrison 2001, 52).

4.4.1 Inter-Dependence of Real and Monetary Aspects

Economists commonly distinguish between monetary and non-monetary theories or explanations of the business cycle. Both Minsky’s theory and the Austrian theory can be characterized as belonging to the monetary approach to the explanation of business cycles in the sense that Minsky and the Austrians would agree that any adequate explanation of the business cycle will highlight *both* the monetary and the real factors involved.⁸

⁸ In contrast money has no role in, e. g., real business cycle theory (RBC). According to the RBC theory, exogenous fluctuations in the level of total factor productivity make steady reallocations of the factors of production necessary in order to maintain an efficient economic allocation. Observed business fluctuations are explained as the efficient outcome of the interaction

According to Minsky business cycles are both monetary and real phenomena (2004, xiv). The artificial separation between monetary and real phenomena is inconsistent with the hypothesis that the analysis of the determinants of investment is necessary for business cycle theory. On the Austrian side, according to Machlup's well-known statement, "(t)he fundamental thesis of Hayek's theory of the business cycle was that *monetary* factors *cause* the cycle but *real* phenomena *constitute* it" (Machlup 1976, 23; also Hayek 1969 [1978]).

4.4.2 The Endogeneity of Money

At the most general level, money endogeneity implies that the supply of money is not independent of demand. Often, however, the exogeneity-endogeneity distinction has referred to the ability of the central bank to control the money supply. Post-Keynesians do not accept money exogeneity, even in the control (or weak exogeneity) sense. Minsky's approach to money implies an upward-sloping money supply curve and thus the acceptance of an endogenously determined interest rate, in contrast to the "horizontalists" who argue that interest rates are exogenously set by the central bank. Generally Minsky's approach emphasizes uncertainty, liquidity preference, profit-seeking behavior, and innovations in addition to central bank behavior (also Wray 1992). Post-Keynesians have in particular emphasized the ability of financial institutions to economize on reserves and to innovate to escape attempts by the central bank to use quantity controls. These activities play a central role in Minsky's FIH for they contribute to the transition from a robust financial system to a fragile one in which liquidity has become stretched. Innovations allow an existing quantity of high-powered money to support greater expenditures. This can be linked to an upward-sloping velocity function: as interest rates rise, banks will expand credit in response to profit opportunities. Thus, any given quantity of money, narrowly defined, could permit more spending as credit is created. Furthermore, innovations can shift the velocity-interest rate function so that velocity might increase even without rising interest rates.

To recognize the endogeneity of money resurrects the Keynesian concept of liquidity preference as a central cause of the volatility of macroeconomic activity. According to Minsky, there exists a functional relation between the price of a particular or a representative capital or financial asset and the

between agents' maximizing behavior (Arnold 2002). Real business cycle theory is thus an example of a non-monetary theory of the business cycle. The theory attributes business cycles to real or supply shocks, such as changes in technology (Rabin 2004).

quantity of money. Normally the price of a capital asset is a rising function of the quantity of money, for as the quantity increases the value of the insurance in money decreases. As the price of money is always one, this implies that the price level of income-yielding capital assets increases (Minsky 1986 [2008], 203).

In Minsky's two-price-level model in the short run current output and capital-asset prices depend upon different market processes. Whereas wages and the current costs of producing output, and thus the offer prices of current output, move sluggishly, the prices of units in the stock of capital assets and, more directly, the price of equity shares traded on the exchanges can move rapidly. Thus the relation between the two price levels can change quite quickly: on the one hand a price level of current output which is in principle sluggish, on the other a price level of capital assets which is in principle volatile (also Kregel 1992).

Austrians have in general been critical both of liquidity preference theory and of the monetary theory of the interest rate. Austrian economists question both the central place of liquidity preference in Keynes's account of the business cycle and the legitimacy of the liquidity preference theory itself. According to Garrison, "(l)iquidity preference, which is sometimes seen as the sine qua non of Keynesianism, plays a secondary role – in terms of both causation and chronology – in Keynes's account of the business cycle" (2001, 150). According to Rothbard, the Keynesian doctrine of liquidity preference suffers from the mathematical-economic sin of "mutual determination" (Rothbard 1962 [2004], 785–92). Following Lachmann (1937 [1994]), Rothbard also points out that in the presence of an organized forward or *futures* market for securities, speculative bearishness would indeed cause at least a temporary rise in the rate of interest, but accompanied by *no* increase in the demand for cash. He concludes that "any attempted connection between liquidity preference, or demand for cash, and the rate of interest, falls to the ground" (1962 [2004], 792).

On the other hand Austrians and Keynesians seem to by and large agree on the endogeneity of money issue. According to Cochran and Glahe (1999, 75 fn) "Hayek's view of the money supply process expressed in his discussion of endogenous versus exogenous theories is compatible with the Post-Keynesian theory of money." Godley and Lavoie (2012, 127) write that "(t)here is a school of thought that has long been arguing in favour of endogenous money. This line of thought goes back to the writings of Thomas Tooke and the Banking School, and has been present in the history of economic thought ever since. It can be associated with the Swedish economist Knut Wicksell as well as several economists of the Austrian tradition, such as von Mises and Friedrich Hayek in the 1920s and 1930s."

Hayek had criticized von Mises's theory, however, as being exogenous. The von Mises cycle starts with a monetary injection initiated by the banking system; the market rate is decreased below the natural rate as banks extend additional loans. The cycle results from an active intervention into the market process. In the Hayekian model the cycle may start in this manner, but it may also start if banks fail to increase the market rate when the natural rate increases, in particular when investment demand increases and banks are confronted with an increased demand for funds (Hayek 1933 [2008], 76; also Cochran and Glahe 1999, 75).

4.4.3 The Non-Neutrality of Money

Minsky points out that the dominant microeconomic paradigm is an equilibrium construct in which initial endowments of agents, preference systems, and production relations, along with maximizing behavior, determine relative prices, outputs, and an allocation of outputs to agents. Money and financial interrelations are not relevant to the determination of these equilibrium variables. An implication of these constructs in the dominant microeconomics and the core of the dominant macroeconomics is that money and finance are neutral. In these dominant models money is a veil (Minsky 1993, 77). Minsky disputes Friedman's proposition that, although money and other institutions complicate the analysis, all the important characteristics of a modern capitalist economy are supposed to be contained in the simple model of the barter economy (Minsky 1986 [2008], 129).

In the real financial capitalist world money is the key institution. It is endogenous, created during normal economic processes. Minsky emphasizes that, most importantly, money is created in the process of financing positions in assets. Banks increase the money supply whenever they share the belief of the borrower that positions in assets or financed activity will generate sufficient cash flows. If the future turns out to be worse than expected, it may be impossible to meet commitments. So money and nominal financial commitments matter. The conventional economic paradigm is thus not the only way economic interrelations can be modeled. Every capitalist economy can be described in terms of sets of interrelated balance sheets. At every reading of the balance sheet the financial instruments can be interpreted as generating two sets of time series: the liabilities generate payment commitments, and the assets generate expected cash receipts. Balance sheets relations link yesterdays, todays, and tomorrows: payment commitments entered in the past lead to

cash payments that need to be executed now as well as future cash payments, even as liabilities are taken on now that commit future cash flows. In this structure the real and the financial dimensions of the economy are not separated: there is no so-called real economy whose behavior can be studied by abstracting from financial considerations. This system, linking yesterdays, todays, and tomorrows both financially and in terms of the demand for and supply of goods and services, is not a well-behaved linear system. Furthermore, the presumption that this system has an equilibrium cannot be sustained. This modeling of the economy leads to a process in time that generates a path that can fly off to deep depressions and open-ended inflations, even in the absence of exogenous shocks or strange displacements. In this model obviously money is never neutral (Minsky 1993, 78).

Austrian insights concerning the non-neutrality of money derive from an entirely different strand of literature. Austrians are inclined to emphasize “Cantillon effects” of changes in the money supply, so called after Richard Cantillon (1755 [2001]) When new money enters the economy, perhaps as the result of gold discoveries under a gold standard, perhaps as the result of credit expansion under a fiduciary system, the new money does not penetrate all sectors of the economy at a uniform pace. The process does not work uniformly. Changes in the money supply distort, at least transitionally, the pattern of relative prices and incomes and consequently distort the patterns of resource allocation and production. Such distortions form one reason why Austrians take a micro approach to theory and disdain theorizing in terms of aggregates and averages (also Yeager 1988, 95).

The Austrian viewpoint differs not only from the Post-Keynesian position but also from that of the monetarists who held the view, as the classics had done, that money is both neutral and super-neutral in the long run (Smithin 2013, 47). As regards the impact of monetary stimulus, Austrians in this respect hold the position that money is non-neutral even in the long run (Ravier 2013). In a recent contribution Bilo and Wagner (2015) argue, however, that it is not necessary to reject the classical equilibrium condition; they set forth an alternative though not contradictory analytical framework whereby monetary processes can in the long run exert real economic effects. By redistributing resources, monetary processes influence the mix of entrepreneurial experiments that are injected into society. The two frameworks are non-commensurable rather than inconsistent. Whereas long-run non-neutrality is a feature of movement through time – it is a historical fact – long-run neutrality is a necessary condition for systemic equilibrium outside of time – it is an analytical artifact.

4.5 Capital-theoretic Aspects and the Role of the Credit Expansion Process

In Minsky's theoretical construction considerations relating to time and capital clearly play an important and essential role. He concluded his *Stabilizing an Unstable Economy* with the consideration that "(t)he essential Keynesian result, that capitalism is flawed mainly because it handles capital poorly, nowhere enlightens current policy actions (...)" and that "Keynes recognized the flaws in capitalism because he, more than his predecessors, contemporaries, and successors, understood the financial and time-related aspects of a capitalism that uses capital" (Minsky 1986 [2008], 369).

In the Austrian theory the critical time element manifests itself as an inter-temporal capital structure or structure of production which is unique to Austrian macroeconomics: as envisioned early on by Menger (1871 [1994], 80–87) the economy's production process is disaggregated into a number of temporally sequenced stages of production in order to allow for the output of the investment-goods sector and of the consumer-goods sector to move relative to one another and even to allow for differential movements within the investment-goods sector. Replacing the single investment aggregate with temporally sequenced stages that make up the economy's capital structure is what provides a basis for a substantive distinction between sustainable growth and unsustainable boom.

In Minsky's construction the essential feature of capitalism – capital accumulation – is intimately tied to money creation. Money cannot be neutral precisely because its creation is "tied up with the process of creating and controlling capital assets..." (Minsky 1986 [2008], 223). And the quantity of money cannot be exogenously determined as it is created as a result of private profit-seeking behavior. Money is created in the process of financing investment and forces the surplus which is necessary to allow capital formation. More fundamentally, credit creation is the means by which society ensures that the workers cannot purchase the total product. Credit creation gives purchasing power to entrepreneurs so they may finance capital accumulation. As Minsky argues, the markup in the consumption goods industry guarantees that workers in the investment goods industry can obtain consumption goods, while spending on investment goods generates a surplus over labor income (Minsky 1986 [2008], Chapter 7). The money thus created fulfills two other important functions: it serves as a medium of exchange, and it can be held as insurance against an uncertain future.

Summarizing, in Minsky's construction three elements seem essentially linked: taking positions in assets; accepting liability structures; and money

creation. It is important to note how this analysis differs essentially from the Austrian analysis. Money and credit created in the process of capital formation is what in the Austrian theory is designated as credit expansion. However, the Austrian analysis is built around the fundamental conceptual and theoretical distinction between capital accumulation, in the sense of making possible sustainable growth which presupposes and derives from *genuine saving*, and unsustainable growth, that is, boom and bust, which derive from credit expansion and which involve *forced saving*. This conceptual distinction is absent from Minsky's theoretical framework.⁹

Actually Minsky seems to be arguing that capital accumulation necessarily, or at least usually and regularly, involves money and credit creation and thus what in the Austrian framework is characterized as forced saving. Austrians obviously object to the proposition that capital accumulation as the essential feature of capitalist economies is essentially and necessarily tied to credit expansion and money creation involving forced saving. Capital formation requires genuine saving. In this context Mises made the useful distinction between *commodity credit* and *circulation credit*. Commodity credit cannot be expanded (Mises 1949 [1966], 433–4). As Mises argues, the boom actually generates *capital consumption*. As he wrote: "...it is very questionable whether forced saving can ever achieve more than to counterbalance a part of the capital consumption generated by the boom" (1949 [1966], 575–6). Moreover Austrian theory emphasizes aspects of capital that are neglected by other macroeconomic approaches, allowing for deeper insight and added explanatory power. Capital goods are non-homogenous, non-permanent, and either specific or non-specific; in particular capital goods are complementary (Hayek 1937 [1939]; Lachmann 1956 [1978]; also Cochran and Glahe 1999, Chapter 8).

Summarizing, Minsky's analysis and the Austrian analysis of the business cycle are superficially similar in that they both derive from an attempt to integrate monetary theory with capital theory. The introduction of a theory of heterogeneous capital and of a disaggregated intertemporal capital structure into the theoretical analysis of business cycle phenomena is unique to the Austrian approach, however. From the Austrian viewpoint, Minsky's analysis, by neglecting the crucial distinction between capital investment backed by (an increase in) genuine saving and capital investment financed by money creation and credit expansion, ultimately misidentifies the fundamental cause of financial instability.

⁹ It will be remembered here that early on Austrians had been confronted with Sraffa's critique of this very distinction. See Sraffa (1932 [1995]).

4.6 Uncertainty, Animal Spirits, and the Role of the Institutional Context

Minsky acknowledges the role and importance of Knightian uncertainty in explaining economic instability. According to Minsky the essential difference between Keynesian and both classical and neoclassical economics is the importance attached to uncertainty (Minsky 1982, 128). Minsky agrees with Keynes that the future is essentially unknowable and beliefs regarding the future are highly subjective, and that in particular in abnormal times the economy will be driven up and down by baseless sentiments and waves of investor sentiment.

Austrians generally recognize that whereas risk analysis, whether objective or subjective, is essentially a weighting of possibilities already known, genuine uncertainty allows for the unpredictable growth of these possibilities and thus for “gaps” in agents’ probability distributions. The source of uncertainty is endogenous in a world in real time (O’Driscoll and Rizzo 1996, 64 ff. and Ch. 5). At first sight the views of post-Keynesians and Austrians about the meaning and role of uncertainty thus seem to converge. At a fundamental theoretical level, Ludwig von Mises’s views on probability were already closer to the spirit of Keynes’s philosophy of probability than to the frequency interpretation of his brother Richard von Mises (Van den Hauwe 2011a).

Both post-Keynesians and Austrians also stress the role and nature of institutions, in particular of bank and financial institutions, in economic processes. Minsky highlights the significance of banks and financial institutions as profit-seeking agents which react to perceived profit opportunities with financial innovations (and, so, stresses the endogeneity of the “effective” quantity of money *and* of the rate of interest) (Bellofiore and Ferri 2001b, 21). From the beginning, Minsky extended profit-seeking behavior from entrepreneurs and businessmen to bankers and financiers. On the Austrian side, Horwitz contends that “(w)hat the textbook model of the Classical economists misses is how money and the banking system work to ensure the valid insight behind Say’s Law (...)” (Horwitz 2000, 86) and that “Austrian analyses of competition as a discovery process, the Hayekian emphasis on prices and knowledge, and the focus on the central role played by institutions, have all affected the way economists outside the Austrian tradition are doing their work” (2000, 237).

As is explained further, however, a complete disagreement prevails between the two approaches as to the type or kind of institutions that would actually eliminate or at least mitigate the business cycle and macroeconomic instability. Whereas Austrians have made a case in favor of complete freedom of choice in currency and of a system of free banking, and have thus advocated the abolition

of central banks, Minsky believes that Big Players can effectively stabilize the economy and has argued in favor of interventionism by in particular Big Bank and Big Government. Moreover this divergence can be explained by the fact that Minsky and the Austrians conceptualize in entirely different ways the relationship between the institutional context or environment and expectations and thus also between institutions and “the state of confidence” and fluctuations therein. In fact diametrically opposed positions are taken as regards the role of particular institutional contexts in generating (variations in) real-world uncertainty and the state of confidence.

There is a sense in which uncertainty is a universal aspect of human action to the extent that it is essentially inherent in action itself (Mises 1949 [1966], 105). However, it is conceivable and in fact true that at least part of the uncertainties economic actors in the economy face do not have this necessary and universal character but can be related to the particular institutional context that is present. A certain level of uncertainty is then of a *contingent* character in the sense that it could conceivably be removed or reduced through institutional reform. Considerations of this sort apparently underlie Keynes’s well-known proposal for “a somewhat comprehensive socialization of investment” (Keynes 1936 [1997], 378). At the end of *John Maynard Keynes* (Minsky 1975 [2008]) Minsky reminds us that Keynes “believed that both measures to raise the consumption function and the socialization of investment were necessary to sustain full employment and were desirable as social goals” (1975 [2008], 157). The decentralized decision making, which is the heart and soul of the market economy, adds a layer of uncertainty which restricts the economy to a level of performance that Keynes finds wanting and which therefore must be eliminated or at least severely restricted through centralization which alone can pave the way toward full employment. In this sense the central message of the *General Theory* too derives from comparative institutions analysis and not from the analysis of cyclical fluctuations (also Garrison 2001, 180 ff).

Contemporary research in behavioral macroeconomics identifies animal spirits, defined by Keynes (1936 [1997]) as waves of optimism and pessimism of investors that have a self-fulfilling property, as an important independent and essentially unpredictable factor driving the movements of investment and output and shaping business cycle fluctuations. These waves of optimism and pessimism can be understood to be learning mechanisms of agents who do not fully understand the underlying model but are continually searching for the truth (De Grauwe 2012). As is explained further, the theory of Big Players goes beyond this way of modeling the role of uncertainty by recognizing that an appeal to swings in investor optimism/pessimism or “animal spirits” is not wrong, but that it merely pushes the question back one stage: What explains

the swings in investor enthusiasm? (White 2015, 110) From this perspective the explanatory strength of confidence theories – such as Minsky’s--is weak.

Austrians have acknowledged the link between institutional context and the nature of expectations but their conclusions are virtually opposite to those of post-Keynesians. Big Players (Koppl 2002; Prychitko 2010) and the related concept of regime uncertainty (Higgs 1997) – or uncertainty about the rules of the game – both artificially reduce the state of confidence by corrupting the expectations of financial intermediaries and businesses in the real economy. As long as Big Player influence and regime uncertainty persist confidence will be low; both have the potential to create a permanent slump. The low state of confidence they create is not self-correcting (Koppl 2014).

The process by which individual knowledge is changed is influenced by institutions and in this sense expectations depend on institutions (Koppl 2002). Expectations will be more prescient in some institutional environments than in others. Adopting a Hayekian evolutionary stance, Butos and Koppl (1993) draw our attention to the filtering conditions of stability and atomicity. The failure of either condition creates a loose “system constraint” and thus a loose link between environment and expectations. If the market includes actors who are more or less immune from the competitive pressures of profit and loss, then the natural selection of rules will be inoperative with regard to these actors and the system constraint facing them will be loose. In such cases the privileged actors are free to act idiosyncratically (Butos and Koppl 1993, 321). Lack of stability or atomism produces ignorance and uncertainty. In the presence of Big Players economic expectations tend to become less reliable. A stable economic environment with atomistic competition, to the contrary, tends to produce rational outcomes and prescient expectations. Minsky is an advocate *par excellence* of an eminent role for Big Players in the economy.¹⁰

Summarizing, Austrians point out that Keynesian policies, and in particular the interventions of Big Players, tend to create and enhance the irregular ups and downs that Keynes attributed to modern capitalism as such. In this sense, Keynesian policies tend to create a Keynesian economy. This conclusion is also compatible with long-established conclusions of the so-called Socialist Calculation Debate (Huerta de Soto 2010). In the domain of money and banking Austrians have generally advocated the abolition of central banks and a move

10 A Big Player has three defining characteristics. The player is big in the sense that its actions influence the market under study; it is insensitive to the discipline of profit and loss; and it is arbitrary in the sense that its actions are based on discretion rather than any set of rules (Koppl 2014, 97). An activist central bank is a representative Big Player – it can be large, it is protected and its actions will be unpredictable.

towards free (or decentralized) banking, despite some ongoing debates about how exactly free banking is to be defined.

5 Interpreting Recent Historical Evidence: Minsky and the Austrians on the Global Financial Crisis

A case can be made that the global financial crisis was foreseeable and avoidable. It did not “just happen” (FCIC 2011).¹¹ Tymoigne and Wray (2014) argue that Minsky’s framework helps us to understand what has happened over the past half century instead of merely explaining the recent boom and crisis. They explain how capitalism in developed countries progressively moved from a more stable form of capitalism that Minsky called Managerial Capitalism to a more unstable form called Money Manager Capitalism. The 1980s S&L crisis put the final nail in the coffin of Managerial Capitalism as the system moved to Money Manager Capitalism (MMC). MMC is characterized by the rise of a predatory state, the disengagement of the government, the return of a pro-market mentality, and a growing role of financial markets in determining economic outcomes. Two main factors contributed to the Great Recession: pro-market policies and the decline in underwriting standards on loans and securities. Both contributed to the growth of indebtedness in the private sector and to the change in the quality of this indebtedness for the worse. This change in quality manifested itself primarily through a move toward collateral-based lending, i. e., lending based on growing asset prices instead of income. These authors conclude that the two main lessons we should have learned (but probably did not) from the GFC is that the Great Recession did not happen by accident and that the GFC was not a “liquidity crisis” but a solvency crisis.

While Austrians might agree with certain descriptive elements contained in this narrative, they would certainly sharply dispute the thesis that the Great Recession was a consequence of pro-market policies. Indeed the Austrians, in general agreement with their pro-free-market philosophy, have in particular emphasized and highlighted (1) the role of the Fed in engineering excessive

11 Post-Keynesians working in the tradition of Minsky as well as Austrians have actively participated in debates relating to the historical context provided by the GFC and subsequent Great Recession. Several collections of papers have been published. Reference can be made to, among others, Dejuán, Febrero, and Marcuzzo (2011), Kates (2010, 2011), and some of the papers in Page West III and Whaples (2013). Mention should also be made of Beckworth (2012); Booth (2009); Friedman (2011); Hein, Detzer, and Dodig (2015); Wolfson and Epstein (2013). Howden (2011) offers a European perspective.

money and credit creation (Fillieule 2010, 179–80; Huerta de Soto 2011; Posner 2011; Salin 2010; Taylor 2009, 2011) and (2) the perverse incentive effects of disastrous regulations (Friedman and Kraus 2011).

Concerning the first point, experimental evidence seems to provide some corroboration regarding the role of liquidity in asset bubbles. Gjerstad and Smith (2014) do not explicitly refer to the Austrian theory of the business cycle but several of their findings seem compatible with an interpretation in such terms. Experimental research demonstrates the key proposition that not all markets are created equal: whereas commodity-flow markets tend to converge quickly, prices in asset-trading markets typically deviate substantially from those predicted by the rational expectations market model (also Smith, Suchanek, and Williams 1988). People in laboratory asset-market experiments, as well as their “sophisticated” counterparts in economies today, become entangled in self-sustaining expectations of escalating prices. One of the important parallels in behavior between experimental price bubbles and those in the housing market is that, as in the laboratory, money matters: the availability and aggressive marketing of mortgage credit supported the housing bubble until credit started to be withdrawn (Smith, Suchanek, and Williams 1988, 269–70). The observation that prices can be sustained longer and more vigorously if momentum investors have more liquidity is consistent with experimental findings. More money makes for bigger bubbles. A significant and sustained change in monetary policy beginning in 2001 is potentially implicated in strengthening and imparting longer life to the mortgage market growth that fueled the housing price bubble (Smith, Suchanek, and Williams 1988, 166–7).

Concerning the second point, the historical situation that has resulted from regulatory issues, financial innovation and their interaction is in fact extremely complex. Kregel (2008) analyzes the cushion of safety in asset securitization and in collateralized subprime mortgage obligations, also considering the role of “special purpose entities” (SPEs), and concludes that the crisis was not the result of a traditional endogenous Minsky process in which narrowing margins of safety lead to fragility, but rather a structural result of how creditworthiness is assessed in the new “originate and distribute” financial system sanctioned by the modernization of financial services.

On the one hand a tendency has prevailed to demonize structured finance and to consider its use as a scapegoat and as the culprit of problems in the financial markets (see e.g. Greenberger 2013). On the other hand a closer examination of the role of incentives resulting from a particular set of regulations suggests that while structured finance itself is not bad, it was certainly possible to use it badly (Murphy 2009, 221). From this perspective structured finance is merely a tool, an instrument that can make credit cheaper by

allocating it more efficiently. Rather it is the role of incentives that encouraged banks to move risk to insurance companies, ABCP investors, and other investors that caused the problems.

The role of incentives is explicitly considered in Friedman and Kraus (2011); these authors embrace the regulatory failure thesis. In particular they debunk various elements of the conventional wisdom about what caused the financial crisis and argue that the crisis was a regulatory failure in which the prime culprit was the set of regulations governing banks' capital levels known as the Basel rules. Theirs is an "incentives story" but it is not a moral-hazard story. They stress the role of radical ignorance on all sides. The triple-A ratings on MBS were conferred by three bond-rating corporations that had been protected from competition by Securities and Exchange Commission regulation dating back to 1975. Not only bankers but investors of all kinds were either unaware that these three corporations were protected, or they were unaware of the implications of this protection for the accuracy of their ratings. This lack of awareness was apparently shared by the banking regulators, who had incorporated the three companies' ratings into the Recourse Rule and Basel II. The financial crisis was transmitted into the nonfinancial or "real" economy through a lending contraction that began in mid-2007, as banks were required to "mark to market" their holdings of mortgage-backed securities in line with market fears about the value of these securities, due to rising rates of subprime mortgage delinquencies.¹²

Both sides have thus produced a number of analyses but no comprehensive synthesis seems to be available at this time. This is another area where some scope for cross-fertilization between both approaches may exist and will possibly be exploited by future research.

6 Policy Implications

To Keynes's argument that the two outstanding faults of capitalism are its arbitrary and inequitable distribution of income and unemployment – and for which he proposed an employer-of-last-resort (ELR) policy as a solution – Minsky added a third: a financially complex capitalist economy will tend to generate instability (Wray 2013).

¹² On the role of bank-capital regulations (or so-called "Basel accords") see in particular also V. V. Acharya and M. Richardson (2011) and J. Jablecki and M. Machaj (2001). Also, but in a different sense, Sinn (2010). On the controversial role of credit-default swaps in the crisis, see P. J. Wallison (2011). On the role of the credit-rating agencies, see L. J. White (2011). Minsky (1987) was a prescient piece about securitization.

Minsky's reform proposals are multifaceted and somewhat eclectic. In the financial sphere he was in favor of smaller banks; in order to support decentralization and a return to more relationship-oriented banking he proposed the creation of a system of community development banks. He also favored measures to improve underwriting, direct credit controls, enhancing bank evaluations through greater use of the discount window, and macroprudential regulation. He rejected the old mainstream view that the central bank can constrain bank activity by rationing reserves. He wanted to favor small firms over big corporations and advocated elimination of the corporate profits tax. As a student at Chicago he had been exposed to the 100 percent money proposal and he was favorably disposed toward these ideas.

His views about the role of Big Players in the economy remain most incongruent with the Austrian vision, however.

Minsky's theory of money supply endogeneity leads clearly to the conclusion that monetary growth policies are not effective at controlling financial market forces and are particularly inefficient in controlling the thrust toward speculative finance. Minsky argues that two other policy instruments--federal government deficit spending and lender-of-last-resort interventions by the Federal Reserve--are extremely effective, if not at achieving full employment, at least in limiting the downside variability of incomes and liquidity during economic downturns, particularly in periods of incipient financial crisis.

It is important to see that in Minsky's "two price" view of the world, two stabilizers are indeed needed: Big Government (BG) and a Big Bank (BB). Drawing from Kalecki's well-known accounting identity that, in a closed economy, profits equal investment plus the government deficit, Minsky argues that the effect of deficit spending during a downturn is to establish a floor for profits (Minsky 1986 [2008], 1982). Big Government spending can thus partially offset the fall in profit flows which results from a fall-off in investment or overoptimistic expectations, and in this way, provides support for consumption goods prices. But it cannot directly support the fall in the value of a bank's assets which results from a fall in capital goods prices. This is why Big Government, by itself, is not enough to counter instability. A Big Bank must come in to stabilize the prices of capital assets by counteracting the liquidity shortages of distressed financial firms. Because of the powerful effects of these policies, Minsky believed firmly that another large-scale debt deflation and depression, such as occurred in the 1930s, could, at least in principle, be prevented from happening again.

In this scenario, deficit spending and lender-of-last-resort interventions, and the potential costs associated with risky financial practices are, to a considerable extent, socialized since government rather than firms absorbs these costs. The

socialization of financial market risk promotes fragility since, as Minsky acknowledged, once borrowers and lenders recognize that the downside instability of profits has decreased, there will be an increase in the willingness and ability of business and bankers to debt finance. If the cash flows to validate debt are virtually guaranteed by the profit implications of big government, then debt-financing of positions in capital assets is encouraged (Minsky 1986 [2008]).

From the Austrian viewpoint, cyclical and financial instability are not inherent in purely capitalist free-market economies but are essentially phenomena of mixed economies (Ikeda 1997). Austrians can question the adequacy of Minsky's identification of the relevant institutional context. The instability of capitalist economies that has been observed in history is actually and invariably the instability of a mixed system. At the theoretical level this circumstance may still seem to leave open the answer to the question of whether financial instability is conceivably inherent in free market economies or whether it is actually a consequence of government intervention. Austrians generally argue, however, that the business cycle is actually generated by public authorities' interventions in market processes (Hayek 1979). In particular the observed instability in current-day banking regimes is not *prima facie* evidence for the hypothesis that a banking system makes itself fragile. Current-day systems are characterized by central banks and other government agencies with power to disrupt the system (White 2015, 110).

Austrians therefore have generally deplored the movement towards command and control which they believe is a mistake that threatens the wealth and welfare of the people. Instead we need to restore the rule of law and economic liberalism (Koppl 2014). In other words, in order to significantly reduce regime uncertainty and Big Player influence we need to take the "constitutional turn".¹³ Such an economic constitution would have to comprise: (a) Fiscal discipline since when government revenues are big enough, uncertainty over the tax bill becomes destructive regime uncertainty and a drag on output¹⁴; (b) A monetary constitution since only if current austerity is combined with sensible reforms to create a sound monetary constitution will the likelihood of future debt crises be reduced¹⁵; (c) A regulatory constitution since without real regulatory reform there is little hope to escape crony capitalism that increases the role of Big Players; we should regulate the regulators in the same way that markets regulate private firms (Koppl 2014).

13 On constitutional economics in general, see Van den Hauwe (2005).

14 For a concrete proposal, see Buchanan and Wagner (1977 [2000]).

15 On reforming government's role in the monetary system, see White, Vanberg, and Köhler (2015). See also T. Polleit and M. von Prollius (2010) and the papers in P. Altmiks (Hg.) (2010).

As regards the monetary dimension, in the context of a central banking regime, Selgin (1997) has advocated the productivity norm as the alternative to zero (or positive) inflation.¹⁶ Huerta de Soto (2012, 736) goes beyond a proposal for an alternative monetary rule for central bank behavior and argues that in order to establish a truly stable financial and monetary system for the twenty-first century, a system which protects our economies as far as possible from crisis and recessions, the following will be necessary: (1) complete freedom of choice in currency; (2) a system of free banking, and the abolition of the central bank; and most importantly, (3) obligatory observance of traditional legal rules and principles by all agents involved in the free banking system, particularly the important principle according to which no one may enjoy the privilege of loaning something entrusted to him on demand deposit. In short it is necessary to maintain at all times a banking system which includes a 100-percent reserve requirement. Huerta de Soto's definition of free banking is not shared, however, by authors who advocate a fractional-reserve free banking system as an alternative to central banking (Selgin 1988). Although the proposal for fractional-reserve free banking is fraught with conceptual problems (Van den Hauwe 2009b), the debate between the two factions can be expected to go on.

7 Conclusions

Although Minsky's interpretation of Keynes's macroeconomics and essential message clashes with authoritative alternative interpretations, it has become increasingly influential in the years following the GFC and further research along the lines suggested by Minsky can be expected to be forthcoming in coming years. Some of the analogies and/or similarities of his theoretical analysis with the analysis provided by the Austrian School suggest a more than merely superficial affinity between both theoretical approaches and some scope for cross-fertilization between or even partial theoretical integration of both research traditions can be found that may be further evidenced by forthcoming work relating to business cycle theory and to the role of financial innovation and regulation. Nevertheless, both in terms of fundamental causality and in terms of

¹⁶ Under a productivity norm, changes in velocity would be prevented (as under zero inflation) from influencing the price level through offsetting adjustments in the supply of money. But adverse "supply shocks" like wars and harvest failures would be allowed to manifest themselves in higher output prices, while permanent improvements in productivity would be allowed to lower prices permanently (Selgin 1997, 10).

policy conclusions and prescriptions, both approaches remain incompatible at a fundamental level and difficult if not impossible to reconcile.

Much of the disagreement on policy issues between post-Keynesians and Austrians hinges on the answer to the underlying question of whether the actions and interventions of Big Players in mixed economies are stabilizing or destabilizing. Post-Keynesians believe they can and, if conducted appropriately, often will indeed be stabilizing; Austrians to the contrary believe that mostly they will tend to be destabilizing. Minsky's policy conclusions manifest a lack of familiarity with the conclusions of the Austrian analysis of the problems of central planning by Big Players such as Big Bank and Big Government.

Even if the two theoretical frameworks do not directly contradict each other since they are actually non-commensurable, the Austro-Wicksellian paradigm arguably provides superior insights that can complement and correct Minskyan analyses of the historical experience of the GFC and Great Recession.

References

- Acharya, V. V., and M. Richardson. 2011. "How Securitization Concentrated Risk in the Financial Sector", in: Friedman. 2011: Chapter 7, 183–99.
- Altmiks, P., Hg. 2010. *Im Schatten Der Finanzkrise—Muss Das Staatliche Zentralbankwesen Abgeschafft Werden?*. München: Olzog Verlag.
- Arnold, L. G. 2002. *Business Cycle Theory*. New York: Oxford University Press.
- Assenza, T., D. Delli Gatti, and M. Gallegati. 2010. "Financial Instability and Agents' Heterogeneity: A Post Minskyan Research Agenda", in: Papadimitriou D.B. and Wray L.R. 2010: 182–205.
- Backhaus, J. 2005. *The Elgar Companion to Law and Economics*. Cheltenham: Edward Elgar.
- Backhouse, R. E. 2014. "Hayek and Keynes", in: R. Garrison and N. Barry. 2014: 94–115.
- Beckworth, D. 2012. *Boom and Bust Banking—the Causes and Cures of the Great Recession*. Oakland, CA: The Independent Institute.
- Bellofiore, R., and P. Ferri. 2001a. *Financial Keynesianism and Market Instability—the Economic Legacy of Hyman Minsky. Volume I*. Cheltenham: Edward Elgar.
- Bellofiore, R., and P. Ferri. 2001b. "Introduction: 'Things Fall Apart, the Centre Cannot Hold'", in: Bellofiore and Ferri. 2001a: 1–29 and in: Bellofiore and Ferri. 2001c: 1–29.
- Bellofiore, R., and P. Ferri. 2001c. *Financial Fragility and Investment in the Capitalist Economy—the Economic Legacy of Hyman Minsky. Volume II*. Cheltenham: Edward Elgar.
- Bhattacharya, S., C. A. E. Goodhart, D. Tsomocos, and A. Vardoulakis. 2011. "Minsky's Financial Instability Hypothesis and the Leverage Cycle", LSE Financial Markets Group Paper Series, Special paper 202.
- Bilo, S., and R. E. Wagner. 2015. "Neutral Money: Historical Fact or Analytical Artifact?". *Review of Austrian Economics* 28:139–50.
- Blanchard, O., A. Amighini, and F. Giavazzi. 2010. *Macroeconomics—a European Perspective*. Essex: Pearson.
- Bohm-Bawerk, Ev. on. 1959. *Capital and Interest*. South Holland, IL: Libertarian Press.

- Booth, P., ed. 2009. *Verdict on the Crash: Causes and Policy Implications*. London: The Institute of Economic Affairs.
- Buchanan, J. M., and R. E. Wagner. 1977 [2000]. *Democracy in Deficit—the Political Legacy of Lord Keynes*. Indianapolis, IN: Liberty Fund.
- Butos, W. N. 1985. “Hayek and General Equilibrium Analysis.” *Southern Economic Journal* 52 (2):332–43.
- Butos, W. N., and R. Koppl. 1993. “Hayekian Expectations: Theory and Empirical Expectations.” *Constitutional Political Economy* 4 (3):303–29.
- Cachanosky, N., and A. W. Salter 2013. “The View from Vienna: An Analysis of the Renewed Interest in the Mises-Hayek Theory of the Business Cycle.” Available at SSRN:<http://ssrn.com/abstract=2363560> or <http://dx.doi.org/10.2139/ssrn.2363560>
- Caldwell, B. 1995. *Contra Keynes and Cambridge, the Collected Works of F.A. Hayek Volume 9*. Chicago: The University of Chicago Press.
- Cantillon, R. 1755 [2001]. *Essay on the Nature of Commerce in General*. London: Transaction Publishers.
- Cochran, J. P., and F. R. Glahe. 1992. “The Use and Abuse of Equilibrium in Business Cycle Theory—a Praxeological Approach.” *Cultural Dynamics* 5:356–70.
- Cochran, J. P., and F. R. Glahe. 1999. *The Hayek-Keynes Debate—Lessons for Current Business Cycle Research*. Lewiston: The Edwin Mellen Press.
- Colander, D., M. Goldberg, A. Haas, K. Juselius, A. Kirman, T. Lux, and B. Sloth. 2011. “The Financial Crisis and the Systemic Failure of the Economics Profession”, in: J. Friedman 2011: Chapter 12, 262–78.
- D’Apice, V., and G. Ferri. 2010. *Financial Instability*. New York: Palgrave.
- De Antoni, E. 2010. “Minsky’s ‘Financial Instability Hypothesis’: The Not-Too-Keynesian Optimism of a Financial Cassandra”, in: Zambelli. 2010: 462–84.
- De Grauwe, P. 2012. *Lectures in Behavioral Macroeconomics*. Princeton, NJ: Princeton University Press.
- Dejuán, Ó., E. Febrero, and M. C. Marcuzzo. 2011. *The First Great Recession of the 21st Century*. Cheltenham: Edward Elgar.
- Detzer, D., and H. Herr 2015. “Theories of Financial Crises as Cumulative Processes”, in: Hein et al. 2015, Chapter 3: 115–61.
- Eggertsson, G. B., and P. Krugman. 2012. “Debt, Deleveraging, and the Liquidity Trap: A Fisher-Minsky-Koo Approach.” *The Quarterly Journal of Economics* 127 (3):1469–513.
- Fazzari, S., and D. B. Papadimitriou, eds. 1992. *Financial Conditions and Macroeconomic Performance*. New York: Sharpe.
- Fillieule, R. 2010. *L’école Autrichienne D’économie—Une Autre Hétérodoxie*. France: Septentrion.
- Financial Crisis Inquiry Commission. 2011. *Final Report of the National Commission on the Causes of the Financial and Economic Crises in the United States*. New York: PublicAffairs.
- Fisher, I. Oct. 1933. “[The Debt-Deflation Theory of Great Depressions.](#)” *Econometrica* 1:337–57.
- Flanders, J. 2015. “It’s Not a Minsky Moment, It’s a Minsky Era, or: Inevitable Instability”. *Econ Journal Watch* 12 (1):84–105.
- Friedman J., ed. 2011. *What Caused the Financial Crisis?*. Oxford: University of Pennsylvania Press.
- Friedman, J., and W. Kraus. 2011. *Engineering the Financial Crisis—Systemic Risk and the Failure of Regulation*. Philadelphia, PA: University of Pennsylvania Press.
- Garrison, R. W. 1978. “Austrian Macroeconomics: A Diagrammatical Exposition”, in: Spadaro L.M. (ed.). 1978.

- Garrison, R. W. 1992. "Is Milton Friedman a Keynesian?", in: Skousen. 1992: 131–47.
- Garrison, R. W. 2001. *Time and Money—the Macroeconomics of Capital Structure*. London: Routledge.
- Garrison, R. W. 2005. "The Austrian School", in: Snowdon B. and Vane H.R. 2005: 474–516.
- Garrison, R. W., and N. Barry. 2014. *Elgar Companion to Hayekian Economics*. Cheltenham: Edward Elgar.
- Gjerstad, S. D., and V. L. Smith. 2014. *Rethinking Housing Bubbles—the Role of Household and Bank Balance Sheets in Modeling Economic Cycles*. New York: Cambridge University Press.
- Gloria-Palermo, S. 1999. *The Evolution of Austrian Economics*. London: Routledge.
- Godley, W., and M. Lavoie. 2012. *Monetary Economics—an Integrated Approach to Credit, Money, Income, Production and Wealth*. New York: Palgrave Macmillan.
- Goodspeed, T. B. 2012. *Rethinking the Keynesian Revolution*. New York: Oxford University Press.
- Gordon, R. J. 2012. *Macroeconomics*. New York: Pearson.
- Greenberger, M. 2013. "Derivatives in the Crisis and Financial Reform", Chapter 23 in: Wolfson and Epstein. 2013: 467–90.
- Hayek, F. A. 1931–2. "Reflections on the Pure Theory of Money of Mr. J. M. Keynes", in: Caldwell. 1995: 121–46 and 174–97.
- Hayek, F. A. 1933 [2008]. *Monetary Theory and the Trade Cycle*, in: Salerno J. T.. *Prices and Production and Other Works F. A. Hayek On Money, the Business Cycle, and the Gold Standard*. Auburn: Ludwig von Mises Institute.
- Hayek, F. A. 1937 [1939]. "Investment that Raises the Demand for Capital", in: Hayek. 1939: 73–82.
- Hayek, F. A. 1939. *Profits, Interest and Investment*. London: Routledge & Kegan Paul.
- Hayek, F. A. 1945. "The Use of Knowledge in Society." *American Economic Review* 35 (4):519–30, reprinted in: Hayek F.A. 1948 [1980]: 77–91.
- Hayek, F. A. 1948 [1980]. *Individualism and Economic Order*. Chicago: University of Chicago Press.
- Hayek, F. A. 1969 [1978]. "Three Elucidations of the Ricardo Effect", in: Hayek. 1978: 165–78.
- Hayek, F. A. 1978. *New Studies in Philosophy, Politics, Economics and the History of Ideas*. London: Routledge and Kegan Paul.
- Hayek, F. A. 1979. *Unemployment and Monetary Policy—Government as Generator of the "Business Cycle"*. Cato Paper N° 3. San Francisco, CA: Cato Institute.
- Hein, E., D. Detzer, and N. Dodig, eds. 2015. *The Demise of Finance-Dominated Capitalism—Explaining the Financial and Economic Crises*. Cheltenham: Edward Elgar.
- Higgs, R. 1997. "Regime Uncertainty: Why the Great Depression Lasted so Long and Why Prosperity Resumed After the War". *Independent Review* 1 (4):561–90.
- Horwitz, S. 2000. *Microfoundations and Macroeconomics—an Austrian Perspective*. London: Routledge.
- Howden, D. 2011. *Institutions in Crisis—European Perspectives on the Recession*. Cheltenham: Edward Elgar.
- Huerta de Soto, J. 2010. *Socialism, Economic Calculation and Entrepreneurship*. Cheltenham: Edward Elgar.
- Huerta de Soto, J. 2011. "A Brief Note on Economic Recessions, Banking Reform, and the Future of Capitalism", in: Dejuán et al. 2011: 33–41.
- Huerta de Soto, J. 2012. *Money, Bank Credit and Economic Cycles*. Auburn: Ludwig von Mises Institute.
- Ikeda, S. 1997. *Dynamics of the Mixed Economy*. London: Routledge.

- Jablecki, J., and M. Machaj. 2001. "A Regulated Meltdown: The Basel Rules and Banks' Leverage", in: Friedman. 2011: Chapter 8, 200–27.
- Kates, S., ed. 2010. *Macroeconomic Theory and Its Failings*. Cheltenham: Edward Elgar.
- Kates, S., ed. 2011. *The Global Financial Crisis—What Have We Learnt?*. Cheltenham: Edward Elgar.
- Kalecki. 1965 [2009]. *Theory of Economic Dynamics*. New York: George Allen & Unwin.
- Keynes, J. M. 1930 [2011]. *A Treatise on Money*. Mansfield: Martino Publishing.
- Keynes, J. M. 1936 [1997]. *The General Theory of Employment, Interest, and Money*. New York: Prometheus Books.
- Koo, R. C. 2015. *The Escape From Balance Sheet Recession and the QE Trap*. Singapore: Wiley.
- Koppl, R. 2002. *Big Players and the Economic Theory of Expectations*. New York: Palgrave.
- Koppl, R. 2014. *From Crisis to Confidence: Macroeconomics After the Crash*. London: IEA.
- Koppl, R., and W. J. Luther. 2012. "Hayek, Keynes and Modern Macroeconomics." *Review of Austrian Economics* 25:223–41.
- Kregel, J. A. 1992. "Minsky's "Two-Price" Theory of Financial Instability and Monetary Policy: Discounting versus Open Market Intervention," in: Fazzari and Papadimitriou. 1992: 85–103.
- Kregel, J. A. 2008. "Using Minsky's Cushions of Safety to Analyze the Crisis in the U.S. Subprime Mortgage Market". *International Journal of Political Economy* 37 (1):3–23.
- Kregel, J. A. 2013. "Political Economy Approaches to Financial Crisis: Hyman Minsky's Financial Fragility Hypothesis", Chapter 8 in: Wolfson and Epstein. 2013: 159–71.
- Lachmann, L. 1937 [1994]. "Uncertainty and Liquidity-Preference," in: Lavoie (ed.). 1994: 29–41.
- Lachmann, L. 1956 [1978]. *Capital and Its Structure*. Menlo Park: Institute for Humane Studies.
- Lavoie, D., ed. 1994. *Expectations and the Meaning of Institutions*. London: Routledge.
- Lavoie, M., and M. Seccareccia. 2001. "Minsky's Financial Fragility Hypothesis: A Missing Macroeconomic Link?", in: R. Bellofiore and P. Ferri. 2001b: 76–96.
- Leijonhufvud, A. 1981a. *Information and Coordination—Essays in Macroeconomic Theory*. New York: Oxford University Press.
- Leijonhufvud, A. 1981b. "The Wicksell Connection: Variations on a Theme", in: Leijonhufvud. 1981a: 131–202.
- Leijonhufvud, A. 2009. "Out Of the Corridor: Keynes and the Crisis." *Cambridge Journal of Economics* 33:741–57.
- Machlup, F. 1976. "Hayek's Contribution to Economics", in: Machlup. (ed.). *Essays on Hayek*, Hillsdale, MI: Hillsdale College Press: 13–59.
- Mansharamani, V. 2011. *Boombustology—Spotting Financial Bubbles Before They Burst*. Hoboken, NJ: Wiley.
- Mehrling, P. 1999. "The Vision of Hyman P. Minsky." *Journal of Economic Behavior & Organization* 39:129–58.
- Meltzer, A. H. 1988. *Keynes's Monetary Theory—a Different Interpretation*. New York: Cambridge University Press.
- Menger, C. 1871 [1994]. *Principles of Economics*. Grove City: Libertarian Press.
- Minsky, H. P. 1975 [2008]. *John Maynard Keynes*. New York: McGraw Hill.
- Minsky, H. P. 1982. *Can "It" Happen Again—Essays on Instability and Finance*. New York: Sharpe.
- Minsky, H. P. 1986 [2008]. *Stabilizing an Unstable Economy*. New York: McGraw Hill.
- Minsky, H. P. 1987. "Securitization". *Policy Note 2008/2*. Downloaded from Website The Levy Economics Institute of Bard College.

- Minsky, H. P. 1993. "On the Non-Neutrality of Money." *FRBNY Quarterly Review* Spring: 77–82.
- Minsky, H. P. 1994 [2012]. "Financial Instability Hypothesis", in: Wray. 2012: 543–48.
- Minsky, H. P. 2004. *Induced Investment and Business Cycles*. Cheltenham: Edward Elgar.
- Mises, Lv. on. 1949 [1966]. *Human Action—a Treatise on Economics*, 4th revised edn. New York: FEE.
- Mishkin, F. S. 2013. *The Economics of Money, Banking, and Financial Markets*. New York: Pearson.
- Murphy, D. 2009. *Unravelling the Credit Crunch*. London: CRC Press.
- O'Driscoll, G. P. 2011. "Hayek and Keynes: What Have We Learned?". *The Journal of Private Enterprise* 27 (1):29–38.
- O'Driscoll, G. P., and M. J. Rizzo. 1996. *The Economics of Time and Ignorance*. London: Routledge.
- Page West, G. III, and R. M. Whaples, eds. 2013. *The Economic Crisis in Retrospect—Explanations by Great Economists*. Cheltenham: Edward Elgar.
- Papadimitriou, D. B. 2004. "Introduction", in: Minsky. 2004: ix–xvi.
- Papadimitriou, D. B., and L. Randall Wray. 2010. *The Elgar Companion to Hyman Minsky*. Cheltenham: Edward Elgar.
- Polleit, T., and M. von Prollius. 2010. *Geldreform—Vom Schlechten Staatsgeld Zum Guten Marktgeld*. Grevenbroich: Lichtschlag Medien.
- Posner, R. A. 2011. "The Causes of the Financial Crisis", in: Friedman. 2011: 279–94.
- Prychitko, D. L. 2010. "Competing Explanations of the Minsky Moment: The Financial Instability Hypothesis in Light of Austrian Theory". *Review of Austrian Economics* 23:199–221.
- Rabin, A. A. 2004. *Monetary Theory*. Cheltenham: Edward Elgar.
- Ravier, A. O. 2013. "Dynamic Monetary Theory and the Phillips Curve with a Positive Slope." *Quarterly Journal of Austrian Economics* 16 (2):165–86.
- Rodriguez, A., J. Turmo, and O. Vara. 2014. *Financial Crisis and the Failure of Economic Theory*. London: Pickering & Chatto..
- Rosser, J. B., M. V. Rosser, and M. Gallegati. 2012. "A Minsky-Kindleberger Perspective on the Financial Crisis." *Journal of Economic Issues* XLVI (2):449–58.
- Rothbard, M. N. 1962 [2004]. *Man, Economy, State*. Auburn: Ludwig von Mises Institute.
- Salin, P. 2010. *Revenir Au Capitalisme—Pour Éviter Les Crises*. Paris: Odile Jacob.
- Selgin, G. A. 1988. *The Theory of Free Banking—Money Supply Under Competitive Note Issue*. Lanham, MD: Rowman & Littlefield.
- Selgin, G. 1997. *Less Than Zero—the Case for a Falling Price Level in a Growing Economy*. London: IEA.
- Simpson, D. 2013. *The Rediscovery of Classical Economics*. Cheltenham: Edward Elgar.
- Sinn, H.-W. 2010. *Casino Capitalism*. New York: Oxford University Press.
- Skousen, M., ed. 1992. *Dissent on Keynes—a Critical Appraisal of Keynesian Economics*. New York: Praeger.
- Skousen, M. 2015. "Linking Austrian and Keynesian Economics: A Variation on a Theme". *The Journal of Private Enterprise* 30 (4):97–112.
- Smith, V. L. 1991. *Papers in Experimental Economics*. New York: Cambridge University Press.
- Smith, V. L., G. L. Suchanek, and A. W. Williams. 1988. "Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets", in: Smith, V.L. 1991: 339–71.
- Smithin, J. 2013. *Essays in the Fundamental Theory of Monetary Economics and Macroeconomics*. Singapore: World Scientific.

- Snowdon, B., and H. R. Vane. 2005. *Modern Macroeconomics—Its Origins, Development and Current State*. Cheltenham: Edward Elgar.
- Sorensen, P. B., and H. J. Whitta-Jacobsen. 2010. *Introducing Advanced Macroeconomics—Growth and Business Cycles*. London: McGraw-Hill.
- Spadaro, L. M. 1978. *New Directions in Austrian Economics*. San Francisco, CA: Institute for Humane Studies.
- Sraffa, P. 1932 [1995]. “Dr. Hayek on Money and Capital”, in: Caldwell. 1995: 198–209.
- Taylor, J. B. 2009. *Getting Off Track—How Government Actions and Interventions Caused, Prolonged, and Worsened the Financial Crisis*. Stanford, CA: Hoover Institution Press.
- Taylor, J. B. 2011. “Monetary Policy, Economic Policy and the Financial Crisis: An Empirical Analysis of What Went Wrong”, in: Friedman. 2011: 150–71.
- Tymoigne, E., and L. Randall Wray. 2014. *The Rise and Fall of Money Manager Capitalism*. London: Routledge.
- Van den Hauwe, L. 2005. “Constitutional Economics II”, in: Backhaus. 2005: 223–38.
- Van den Hauwe, L. 2009a. *Foundations of Business Cycle Research Volume I*. Saarbrücken: VDM Verlag.
- Van den Hauwe, L. 2009b. *Three Essays in Monetary Theory*. Norderstedt: BoD.
- Van den Hauwe, L. 2011a. “John Maynard Keynes and Ludwig Von Mises on Probability.” *Journal of Libertarian Studies* 22 (1):471–507.
- Van den Hauwe, L. 2011b. “Hayek, Gödel, and the Case for Methodological Dualism.” *Journal of Economic Methodology* 18 (4):387–407.
- Wallison, P. J. 2011. “Credit-Default Swaps and the Crisis”, in: Friedman. 2011: Chapter 10, 238–48.
- White, L. H. 2011. “The Credit-Rating Agencies and the Subprime Debacle”, in: Friedman. 2011: Chapter 9, 228–37.
- White, L. H. 2015. “Skepticism About Minsky’s Financial Instability Hypothesis: A Comment on Flanders”. *Econ Journal Watch* 12 (1):106–13.
- White, L. H., V. Vanberg, and E. Köhler. 2015. *Renewing the Search for a Monetary Constitution—Reforming Government’s Role in the Monetary System*. Washington, DC: The Cato Institute.
- Wicksell, K. 1936 [1965]. *Interest and Prices*. New York: Augustus M. Kelley.
- Wolf, M. 2014. *The Shifts and the Shocks*. London: Allen Lane.
- Wolfson, M. H., and G. A. Epstein. 2013. *The Handbook of the Political Economy of Financial Crises*. Oxford: Oxford University Press.
- Wray, L. R. 1992. “Minsky’s Financial Instability Hypothesis and the Endogeneity of Money”, in: Fazzari and Papadimitriou. 1992: 161–80.
- Wray, L. R. 2012. *Theories of Money and Banking Volume II*. Cheltenham: Elgar Research Collection.
- Wray, L. R. 2013. “A Minskyan Road to Financial Reform”, Chapter 35 in: Wolfson and Epstein. 2013: 696–710.
- Wray, L. R. 2016. *Why Minsky Matters—an Introduction to the Work of a Maverick Economist*. Princeton, NJ: Princeton University Press.
- Yeager, L. 1988. “The Austrian School on Money and Gold.” *Journal of Economic Studies* 15 (3/4):92–105.
- Zambelli, S., ed. 2010. *Computable, Constructive and Behavioural Economic Dynamics*. London: Routledge.