Schumpeter, Minsky and the financial instability hypothesis

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Abstract:

Hyman Minsky pioneered the idea of the financial instability hypothesis to explain how swings between robustness and fragility in financial markets generate business cycles in the economic system. Yet few economists have recognized that this elemental idea originates not only from the financial theory of investment and investment theory of business cycles put forward by John Maynard Keynes, but also in the credit view of money and finance advocated by Joseph Schumpeter. At the same time Minsky described Schumpeter’s business cycle theory as ‘banal’ because it relied on the real economy as Walras represents. The reason was that money was endogenous in Schumpeter’s earlier view, as it emerged out of the credit system, which allowed for a discussion of the relationship between production and finance. This essay will focus on how Minsky related some ideas from Schumpeter’s Theory of Economic Development with those in Keynes’ General Theory. Money and finance provide a link between Keynes’ view of the investment decision as a determinant of output and employment with Schumpeter’s view of the investment decision as a determinant of innovation and economic growth.

Key Words: economic evolution, financial instability, business cycles, technological revolutions, innovation, effective demand, Schumpeter, Keynes, Minsky.

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1. Introduction

The financial instability hypothesis, pioneered by Hyman Minsky, explains how swings between robustness and fragility in financial markets generate business cycles in the economic system. Yet few economists have recognized that the basic idea originates not only from the financial theory of investment put forward by John Maynard Keynes, but also from the credit view of money and finance advocated by Joseph Schumpeter. In an essay written to celebrate the centenary of both Keynes and Schumpeter, Minsky (1986b: 121) affirmed his desire “to integrate Schumpeter’s vision of a resilient intertemporal capitalist process with Keynes’ hard insights into the fragility introduced into the capitalist accumulation process by some inescapable properties of capitalist financial structures.” Minsky (1993a: 106) further maintained that, “To understand the short-term dynamics of the business cycle and the longer-term evolution of economies it is necessary to understand then financing relations that rule, and how the profit-seeking activities of businessmen, bankers, and portfolio managers lead to the evolution of financial structures.” For this reason, the financial instability hypothesis is just as much about evolutionary economics as it is about effective demand in a monetary economy and the institutional arrangements underlying the financial system. This paper will focus on how Minsky related some ideas from Schumpeter’s *Theory of Economic Development* with those in Keynes’ *General Theory*.

Born in Chicago on 23 September 1919, Hyman Philip Minsky studied mathematics at the University of Chicago from 1937 to 1941. After graduation, he began the study economics at the graduate level at the same university. This interest came mainly from his social and political views on social democracy. Oscar Lange and Henry Simons had an important influence in the direction of his studies at this time and one year later Lange recommended that he join a post-war planning research project under the direction of Wassily Leontief at Harvard University. Minsky would have likely met Schumpeter at this time. After serving in the U.S. Army for almost three years plus a few additional months as a civilian employee in the U.S. Military government for Germany, he decided to return to Harvard University in 1946 to resume his graduate studies, where he completed a Master of Public Administration (MPA) in 1947 and Doctorate in 1954.
Minsky began his doctoral dissertation research under Schumpeter, but finished it in 1954 under the supervision of Leontief after Schumpeter’s untimely death in January 1950. The reason that Minsky (1992: 354) gave for studying under Schumpeter is that his “vision of the capitalist process required an integration of financial markets and investment behaviour” that was similar to the approach taught at Chicago. His thesis, published in 2004 as *Induced Investment and Business Cycles*, explored how market structure, financial institutions, the determinants of effective demand, and business cycle performance related to each other. After three relatively short appointments, Minsky was appointed Professor of Economics at Washington University in St Louis in 1965, where he remained until his retirement in 1990. He was a Senior Scholar at the Levy Economics Institute of Bard College at the time of his death on 24 October 1996.

The following section summarizes the financial instability hypothesis, which stands at the centre of Minsky’s many contributions to economics and provides a crucial link between Schumpeter and Keynes. Minsky learned about the role of banks in financing investment from Schumpeter, but he followed an approach similar to that of Keynes. Section three considers some important similarities and differences between the theoretical analyses put forward by Schumpeter that have direct relevance to the ideas advanced by Minsky. It also contains a short discussion of the Walrasian foundation of Schumpeter’s thought, and how he extended this theory to include changing technology and the role of money and finance in this process. The fourth section contrasts Schumpeter’s theory of innovation with Keynes’ theory of effective demand and employment, with a focus on the role that the investment decision plays in each theory. Section five considers the important role that Keynes’ theory of effective demand and the investment decision plays in the financial instability hypothesis. The sixth section explores some issues related to Schumpeter’s business cycle theory and financial fragility and financial regulation, including the suggestion by Perez (2002) that this nexus is also important for long-term “Kondratiev” waves or what were later described as technological revolutions and techno-economic paradigms. Section seven explores some fundamental differences between Minsky and Schumpeter on the instability of capitalism. A final section will provide some concluding comments on the intellectual relationship between Minsky, Keynes and Schumpeter and what this means for evolutionary theory.

2. The financial instability hypothesis

Hyman Minsky made many important contributions to financial theory, but he was best known for the financial instability hypothesis, or what was sometimes called the “Minsky moment” during the recent subprime mortgage crisis. His main contribution was to link financial market fragility with speculative investment finance. The main idea of the theory is that “the internal dynamics of capitalist economies leads, over a period dominated by the
successful operation of a capitalist economy, to the emergence of financial structures which are conducive to debt deflations, the collapse of asset values and deep depressions” (Minsky, 1992b). Two price systems coexist in the capitalist economy according to Minsky: one based on the value of capital assets, which is determined by the present value of expected profits, and the other on the level of current output. Capitalist economies that accumulate capital and knowledge also should have a complex, sophisticated financial system that evolves in real calendar time.

Instability underlies the appearance of stability of the financial markets. During periods of stability, when stock prices are rising higher than the interest rate, investors are lured into taking more risk, which leads them to borrow more and to overpay for assets. Minsky (1980: 215) identified three types of financial postures that contribute to the accumulation of insolvent debt: (1) hedge finance, in which borrowers can meet all debt payments (interest and principle) from their cash flows from investment; (2) speculative finance, in which borrowers can meet their interest payments from investment, but must roll over their debt over to pay back the original loan; and (3) ponzi finance, when borrowers can neither repay the interest nor the original debt from the original investment, and rely entirely on rising asset prices to allow them continually to refinance their debt.

The mix of financial postures determines the overall robustness or fragility of an economy’s financial structure, ranging from hedge finance providing more robustness and ponzi finance providing more fragility. The longer the period of economic stability lasts; ponzi finance tends to become increasingly more prevalent, often resulting in the collapse of some financial institutions. If the use of ponzi finance is general enough in the financial system, as might have been the case in the 2008 subprime mortgage crisis, then the collapse of ponzi finance can also bring down even hedge borrowers, who are unable to find loans despite the apparent soundness of the underlying investments. Financial institutions often devise ways of getting around regulations and norms to be able to take on greater risk during periods of stable growth. These observations lead Minsky (2002) to define two theorems of the financial stability hypothesis: (1) “the economy has financing regimes under which it is stable, and financing regimes in which it is unstable”, and (2) “over periods of prolonged prosperity, the economy transits from financial relations that make for a stable system to financial relations that make for an unstable system.”

Periodic shifts stability and instability generate endogenous business cycles. Minsky (1992) maintained that “is that the financial system swings between robustness and fragility and these swings are an integral part of the process that generates business cycles.” These business cycles are endogenous to the economic system, and generated, as Minsky (1993b) points out, through “the internal dynamics of capitalist economies, and the system of
interventions and regulations that are designed to keep the economy operating within reasonable bounds.” The weight of speculative and Ponzi finance will have a certain barring on the extent of the recession. Both Schumpeter and Keynes were concerned with business cycles, but had very different views on how they were generated. Minsky understood these different visions as two aspects of the same phenomena.

3. Schumpeter and Minsky

Although Minsky was a graduate student of Schumpeter at Harvard University, he later became known as a devoted proponent of Keynes. At the beginning of the 20th century, Schumpeter was a student of Eugen von Böhm-Bawerk and Friedrich von Wieser at the University of Vienna when the “pure logic of choice” and the “temporal nature of production” where the main issues at the time.² Schumpeter (1954) considered Wieser (1889) to have had the most important influence on this thought, mainly because the prominence he placed on the entrepreneur as an agent of change. Many of his ideas that can be traced to Marx, the German Historical School and the theory of monopolistic competition, but Schumpeter (1954: 795) believed that the theory of value and distribution provided by Leon Walras was ‘the best theoretical work of our time’.

Schumpeter’s admiration for Walras appears in his early writings where he claimed that classical theory lacked a ‘solid theory of price’ and that Walras had provided this theory, and continues through to his History of Economic Analysis, where he praised him for being the ‘greatest of all economists’ (Knell, 2012). Schumpeter (1912) began The Theory of Economic Development by describing the data or independent variables from which Walras (1873) started with: (1) the initial endowments; (2) the preferences of consumers; and (3) the technical alternatives from which cost-minimizing producers can choose. He then described how equilibrium prices of all factors of production and their distribution across different industries are determined simultaneously and symmetrically when marginal revenue equals marginal costs when there is free competition. Profits are maximized in equilibrium, since there would be no economic profits remaining in the economic system. Schumpeter (1912: 62) believed that equilibrium prices, including uniform rates of remuneration for each particular kind of input (including labour and other material inputs) in the production process, results from the actions of competitive profit-seeking producers concerned with minimizing production costs. This process of search and selection by profit-seeking producers explains how capital and labour moves between enterprises in the absence of significant barriers to

² Böhm-Bawerk (1884, 1889) introduced the idea intertemporal equilibrium, in which production became a process whereby capital goods are produced and then used to produce the desired consumer goods.
entry and exit. Spontaneous changes to the technical alternatives available to the enterprise (production function) were the result of the innovation process.

To explain economic development and the business cycle, Schumpeter (1912, 1928, 1939) essentially outlined the “pure theory of production” from a Walrasian point of view, but assumes that the technical alternatives available to the enterprise change, while the initial endowments and the preferences of consumers remain constant. He also assigns the Walrasian entrepreneur with a new function, one that is to carry out ‘new combinations’ of resources available to the enterprise, or what is more aptly called innovation. Schumpeter does not consider the entrepreneur as an individual person, but as an agent or instrument of change assigned with the function of carrying out new combinations of resources available to the enterprise. These agents of change can earn “entrepreneurial” profits above the normal rate of return for bringing novelty to the market. Schumpeter considered innovation to be part of the economic process itself with the actions of cost-minimizing capitalists generating a tendency toward equilibrium through the search for ‘global’ investment opportunities, and the actions of profit-seeking entrepreneurs engendering disequilibrium behaviour through the introduction of new products, markets, methods of products, and new organizational forms.

Schumpeter (1939: 82) considers innovation as an endogenous process “because it is not implied in, nor a mere consequence of, any other” process. Innovation made it possible for economic agents to obtain a surplus over costs, or entrepreneurial profit. Schumpeter, 1934: 64) claimed the resulting disequilibrium behaviour “forever alters and displaces the equilibrium state previously existing.” Enterprises compete with one another to gain market share and improve their ability to increase profit through the use of new technology. Schumpeter (1934: 59) views on economic dynamics “nearly parallels that of Marx” and his idea that competition for capital across industries created a tendency toward equilibrium, whereas competition for capital within an industry created a tendency toward disequilibrium. One important difference, however, is that he adopts the Walrasian theory of capital formation under free competition to explain the tendency toward equilibrium, and then introduces the entrepreneur as innovator to explain the tendency toward disequilibrium.

Minsky was very critical of Schumpeter’s adherence to Walrasian theory in several papers written around the time of his retirement. In the first paper, written for the Keynes and Schumpeter centenary, Minsky (1986b: 112) claimed that “the crisis of capitalism evoked a magnificent theoretical performance from Keynes; [whereas] Schumpeter’s response was banal.” He was referring to Schumpeter’s Business Cycles, which included a mechanical three-cycle explanation of economic development in which investment behaviour depended the innovative reactions of entrepreneurs or secondary waves. Minsky (1986b: 121) also believed that when writing this book “Schumpeter got enmeshed in a Walrasian trap that
assumed only real things mattered, whereas in his original version [Economic Development] money mattered". Still, Schumpeter remained Walrasian throughout his life, including in his early writings on economic development, but Minsky was concerned with Schumpeter’s theory of finance, money, and credit. He believed that Economic Development was more compatible with Keynes’ monetary theory than Business Cycles because it considered the innovation in the context of the monetary production economy.

The point raised by Minsky is important because it relies on chapters in Economic Development that were often overlooked by other economists. Schumpeter considered money, credit and finance as essential to the innovation process. He began the first edition of Economic Development, by describing the circulation of money and real goods and services in terms of a ‘Kreislauf’ or monetary circuit, but alludes to the importance of credit money at the end of the first chapter. Walrasian equilibrium implies that money is neutral in a simple monetary circuit without capital, but Walras (1874) also considered money to be analogous to capital, where its value is determined by the demand for various services of capital (rents, wages, and interest), or what he termed encaisse désirée. Money produces utility by acting as an intertemporal reallocation mechanism; an idea that Marget (1931) considered to be similar to the Cambridge cash-balance approach and Keynes’s theory of liquidity preference. While this theory appears to contradict Walrasian equilibrium, Walras did not expound on the theory money until after sketched his theory of capital and credit, which Currie and Steedman (1990) suggest was part of his goal of providing an analysis of a progressive economy. Schumpeter understood Walras’ vision better than Minsky believed, introducing credit money into the analysis only after he introduced innovation and economic dynamics in the second chapter. From Schumpeter’s point of view, there was more to Walras than general equilibrium.

Like Walras, Schumpeter (1912) considered money to be analogous to capital, as bank deposits allow them to give credit to producers for their purchases of circulating capital goods. However, Schumpeter (1912: 107) took this idea one step further claiming “credit is essentially the creation of purchasing power for the purpose of transferring it to the entrepreneur.” The availability of credit creates allows entrepreneurs to gain access to investment goods necessary for innovation “before they have acquired the normal claim to it.” Schumpeter (1912) reasoned that money was credit-driven and determined endogenously by the demand for bank loans by entrepreneurs engaged in innovative activities.3 Entrepreneurs not only had an insatiable desire to gain profit through innovation, but the could finance new innovations through endogenous money creation (Binswanger, 1996).

3 Bank credit was the driving force of cyclical growth in Schumpeter (1912). His argument followed the standard loanable-funds approach insofar as he derived the existence of interest rates from temporary different monopoly rents on innovations, a disequilibrium phenomenon.
Minsky (1957a) had a similar view of money, with “profit-seeking activities” driving “evolutionary changes in financial institutions”, which then leads to the endogenous creation of money.\(^4\) In this paper he claimed that it was almost impossible to control monetary aggregates because financial innovations, or new financial instruments, could create problems for the measurement of these aggregates. Later, Minsky (1986b: 120) recapped the origin of this idea:

The Schumpeterian vision of the experimenting entrepreneur who innovates need but be extended to financial firms and their clients to explain why portfolios migrate to a brink at which a shortfall of cash flows or a rise in financing terms may lead to a market revision of asset values and therefore of investment programmes.

Minsky essentially adopted Schumpeter’s idea of the innovating entrepreneur to the idea of financial innovations produced by financial institutions. In Minsky’s context, however, financial innovations are the source of financial fragility and hence financial crisis and instability. This is in sharp contrast to Schumpeter who suggested that innovation was the main source of stability. As Minsky (1990: 52) put it, “new combinations, which result from the outcomes of negotiations among entrepreneurial business men and financiers, lead to process and product innovations as well as new financing relations and new financial institutions.” Minsky (1993a) concluded, “Nowhere is evolution, change and Schumpeterian entrepreneurship more evident than in banking and finance and nowhere is the drive for profits more clearly a factor in making for change.”

Financial institutions were essential to Schumpeter’s theory and in the development of Minsky’s thought. The institutional arrangements of the advanced market economy provide the setting within which entrepreneurs use credit to finance innovation and hence claim resources needed to create ‘new combinations’. Minsky (1986) understood the main function of the central bank was to provide stability, but its regulatory requirements and the incessant creation of new financial instruments were also part of the financial structure. The financial structure of the American economy, Minsky and Whalen (1996) observed, had experienced significant evolution since it’s founding. For example, the institutional innovations contained in the Glass-Steagall act 1933 created stability following the complete breakdown of the financial system, but as the century progressed debt was increasingly used to acquire existing assets rather than as internal finance, and firms relied more heavily on banking system short-term finance. The Glass–Steagall Act was repealed through the Gramm-Leach-Bliley Act in 1999, but federal banking regulators had already allowed commercial banks to...

\(^4\) Lavoie (1997) maintains that Minsky’s (1957b) idea that an endogenous rise in interest rates is linked to a lack-of-saving approach. During the expansion, euphoria takes over and the acceptable degree of leverage increases, so much that banks encourage under-levered firms to go into debt and conform to the emerging more relaxed standards (Minsky 1980: 517).

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engage in some securities activities as far back as the 1960s (Carpenter and Murphy, 2010). Whalen (2009) believes that unconventional mortgages, hedge funds, securitization of contractual debt and the globalization of finance markets are the main innovations behind the current global economic crisis.

4. A short digression on Schumpeter and Keynes

In his review of the General Theory, Schumpeter (1936) criticized Keynes for not taking into account 'the financing of changes in the production function', or innovation, in the formation of expectations under uncertainty, and relates to the marginal propensity to consume, marginal efficiency of capital, and liquidity preference. Schumpeter (1946) later acknowledged that Keynes confined his analysis to short-run phenomena, but he continued to maintain that because of this, Keynes excluded 'phenomena that dominate the capitalist processes.' Keynes excluded these phenomena because he believed that the capital stock did not reflect the investment patterns in the short run, which meant that uncertainty, expectations and financial frugality became the central issues and not innovation.

Keynes was fully aware that technology was essential for economic growth. In Economic Possibilities for our Grandchildren, Keynes (1931: 19-20) pointed out that “the accumulation of capital which began in the sixteenth century”, and that “the growth of capital has been on a scale which is far beyond a hundredfold of what any previous age had known.” Keynes (1930: 85-86) also wrote in the second volume of A Treatise on Money that Schumpeter’s theory of innovation is the most important explanation for why the rate of investment fluctuates over time.

Entrepreneurs are induced to embark on the production of fixed capital or deterred from doing so by their expectations of the profit to be made. Apart from the many minor reasons why these should fluctuate in a changing world, Professor Schumpeter’s explanation of the major movements may be unreservedly accepted.

A Treatise on Money contains many of the ideas developed in the General Theory, but presented from a more dynamic, long-period perspective. Keynes demonstrated in the Treatise how an initial investment decision normally gives rise to a set of expectations that may trigger further changes in investment over several periods. Seccareccia (2004) points out that expectations were endogenous to the wavelike pattern of behaviour inherent to the logic of the credit cycle in the Treatise, however, the book failed to provide a theory of the determination of output and employment as a whole. The General Theory provided the theory, but this book was basically concerned with Marshallian short-period static analysis,
with expectations based on the idea of the marginal efficiency of capital. The independent role of demand in determining growth and cycles was the central message in this book, not long-term expectations and innovation. This message encouraged the development of consumption function models and the IS-LM framework (Minsky, 1975).

Keynes developed his theory of employment and output from the Marshallian short-run and long-run perspectives, which is very different from Schumpeter reliance on the Walrasian equilibrium perspective and his subsequent development of capitalist dynamics from the point of view of the innovative entrepreneur. Yet, Keynes originally described the principle of effective demand as an “entrepreneurial economy” in early drafts of the General Theory, but later reserved the term entrepreneur to symbolize the decision to produce and invest. His idea of “animal spirits” or the “spontaneous urge to action rather than inaction” gives the appearance that Keynes’ entrepreneur is similar to Schumpeter’s, as the entrepreneur is internalized into firm’s behaviour much like Schumpeter’s profit seeking entrepreneur. But, the main function of the Keynesian entrepreneur is the decision to invest, irrespective of the drive to innovate.

An important similarity between Keynes and Schumpeter is that they both considered money and financial aggregates not to be neutral (non-neutrality principle), highlighting the fundamental role of the credit market and of the banks. Minsky (1993) emphasized that both Keynes and Schumpeter considered the institutional arrangements of the financial system as essential for the capitalist economy. Banks had the important function of financing innovation in Schumpeter’s theory as innovating entrepreneurs need capital to start new production processes and to develop new products, which results in an expansion in credit and economic growth. Schumpeter’s credit theory of money is similar to Keynes’s theory of ‘bank money’ described in the Treatise, but his criticism of money neutrality hinges on money being a means of payment and the desire to obtain cash (l’encaisse désirée), rather than as a store of value (Messori, 2004). Coming from the Marshallian perspective, Keynes (1937) emphasized that money was an asset, and that the demand for liquidity (liquidity preference) depended on the transactions, precautionary, and speculative motives for holding money. Fundamental uncertainty became central to the argument, as it did for Minsky.

5. Minsky and Keynes

In his thesis, Induced Investment and Business Cycles, Minsky (1954) has already moved away from Schumpeter’s (1939) view that the business cycle is either a purely statistical phenomenon or caused by innovation, and toward the Keynesian vision of the business cycle

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5 Expectations also appear arbitrary in the Treatise on Money.
that connects investment together with the financial conditions of firms and the possibility of coordination failures (Papadimitriou, 2004). His main contribution in the thesis was to extend Keynes' theory of the inducement to invest, which he later defended in his biography of Keynes, published in 1975. The thesis provided a rudimentary exposition of the financial instability hypothesis in the thesis, also published in Minsky (1957b), where interest rates rise because of the over-indebted of enterprises, which need to borrow credit-money to finance their investments. Later Minsky (1978, 1992a) integrated a more Keynesian view that integrates asset values with liquidity preference, investment decisions to profits and the relation between asset values and current prices, and debt valuations to profits, which may lead to financial crisis.

In the biography of Keynes, Minsky (1975) defended his views on money and finance against the neoclassical synthesis, which interprets the General Theory as a mechanical equilibrium model as similar to the theory of Marshall (1890) where money has little relevance. One ironic twist to the story is that Minsky (1992c) chose not study with Alvin Hanson while at Harvard because his reading of Keynes was “strangely mechanical” and that he completely neglected the significance of money, finance and uncertainty in the dynamics of the capitalist economy. Much of Minsky’s research aimed at extending the principle of effective demand to include more complex financial relations, markets, and institutions (Papadimitriou and Wray, 1998). From this point of view Minsky might be described as a post-Keynesian, but he preferred to be regarded as a financial-Keynesian to single out his debt to Keynes, as well as to recognize the centrality of the institutional arrangements underlying the monetary economy. Paradoxically, Minsky did not consider Keynes’ (1936) theory of effective demand as a ‘general theory’, much in the same way that Schumpeter (1936; 1946) claimed in his writings on Keynes.

Minsky (1975) was highly critical of the consumption function models and the IS-LM framework in his biography of Keynes and reasserted the centrality of the decision to invest when there is pervasive uncertainty. Keynes first developed the idea of uncertainty and decision-making under uncertainty in A Treatise on Probability, but it became central to The General Theory and also to Minsky’s (1975) financial instability hypothesis. Probability cannot, in general, be measured when uncertainty is present (Dow, 1995). But Keynes (1936) suggested that not all decisions were subject to fundamental uncertainty, with unknown or un-measurable probabilities, but rather consisted of varying degrees of uncertainty, some with limited knowledge of probabilities. The importance of uncertainty, Minsky (1975: 64) maintains, is that it “intervenes and attenuates the significance of the production functions and stable preference functions of conventional theory as determinants of system behaviour” through “the portfolio decisions of households, firms, and financial
institutions, and in views held by firms, by the owners of capital assets, and by the bankers to firms as to the prospective yields of capital assets.” Uncertainty propels financial instability.

The decision to invest becomes the link between finance and the real economy in Keynes and it becomes the crucial link between Keynes and Schumpeter in Minsky’s vision of the capitalist economy. In developed vision, Minsky extends Keynes’ determination of the decision to invest, which was essential to the principle of effective demand. In Keynes the volume of investment, determines output and employment, which can be volatile, and through the multiplier this will cause fluctuations throughout the economy. Minsky (1978, 1986) argued that the financial markets can exacerbate these cycles, making instability endemic since financial fragility tends to grow during boom periods. The basic conclusion of Minsky was that markets are too unstable to function properly, an idea shared with both Keynes and Schumpeter.

Long-term expectation of future profitability determines the amount of investment in new plant and equipment. These expectations can give rise to speculative behaviours related to the psychology of the market, but are usually dominated by the enterprise’s desire to know the prospective yield of assets over their whole life. Minsky (1975) claimed that the decision to invest in equity markets would inevitably lead to speculative behaviours. In chapter 12, where the valuation of the stock of capital assets is considered, Keynes (1936: 159) argued:

Speculators may do no harm as bubbles on a steady stream of enterprise. But the position is serious when enterprise becomes the bubble on a whirlpool of speculation. When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done.

The price of capital assets relative to the price of current output is essential to Minsky’s financial instability hypothesis. During the upward swings of the business cycle, the speculative demand form money decreases, as firms shift their portfolios toward a more debt-financed position. As firms become more indebted, they become more reliant on ponzi finance, which appear much like the activities of a casino.

Market instability could also come from “animal spirits” in addition to speculative activities. Keynes used the term “animal spirits” to describe the emotions or “spontaneous optimism” that motivates human behaviour. It is behaviour that is generally perceived as non-economic and is often associated with ambiguity and uncertainty (Akerlof and Shiller, 2009). Such optimism “contains the potential for runaway expansion, powered by an investment boom” as Minsky (1975: 11) put it. But it can also “trigger serious financial difficulties” as consumers spend more and save less and firms rely more on speculative behavior to finance their debts. This is the main point of the financial instability hypothesis.
6. Financial instability, business cycles and technological revolutions

Financial fragility makes the most sense when it is placed in the context of macroeconomic dynamics and the business cycle. Minsky’s business cycle theory is essentially a Keynesian demand-driven theory that links the price level of current output with the price level of financial and real assets. Fluctuations are associated with volatility in the decision to invest, which not only affects aggregate demand and employment as Keynes (1936) suggests, but also the introduction of new products, processes and new management methods as Schumpeter (1911) suggests. Schumpeter (1939) describes these fluctuations in more detail in his Business Cycles, introducing three synchronized cycles, a short-term “Kitchin” inventory cycle of about 40 months duration that are also related to information asymmetries, a medium-term investment or “Juglar” cycle involving both the monetary or financial markets, and a long-term “Kondratiev” cycle capturing the rise and decline of the use of major technological innovations. Still, Schumpeter (1939: 177) considered the three-cycle schema as a “convenient descriptive device,” with its main purpose to explain cyclical behaviour over time. By contrast, Minsky (1954) claimed that ‘induced’ expenditures, driven mainly by the consumption function (behavioural) and the decision to invest (expectations), were essential to the explanation of short and medium term fluctuations. In other words, Keynes’ principle of effective demand was necessary for a theory of the business cycle based on Schumpeter.

Schumpeter (1954: 1089) considered Juglar to be “among the greatest economists of all times.” Nevertheless, Juglar’s (1862) analysis of business cycles based on easy credit and speculative behaviour was different from Schumpeter’s so-called Juglar cycle, which was driven mainly by investment and technological innovation (Legrand and Hagemann, 2007). Schumpeter shares with Juglar the idea that the demand for capital and credit would generate cyclical fluctuations, but Juglar understood them to be a consequence of excessive speculative behaviour rather than innovative behaviour. It is somewhat surprising that Minsky writes little about Juglar cycles except for a joint paper with Gatti et al. (1996). This paper integrates the intertemporal behaviour of consumers and producers with a multiplier-accelerator model that also includes the institutional arrangements supporting the financial system. In the model, profit-seeking agents, together with the fragility of the financial system, develop innovative ways to finance investment, with the consequence of generating easy credit and speculative behaviour. Gatti et al. (1996) adds complexity to Schumpeter’s cycle theory, but also returns to some of the issues initially raised by Juglar.

Minsky’s ideas about financial instability and financial regulation may also have important implications for the long-term “Kondratiev” cycle. Carlotta Perez (2002) describes how certain relationships within the technologically driven long-waves can bring about financial instability and result in new financial regulations. In Business Cycles, Schumpeter
(1939) described how the bunching of major or radical innovations initiate a fundamental change in the way things are produced, the types of products being produced, how a firm is organized, and the way people transport things and communicate. Similar to Schumpeter, Freeman and Perez (1988), Freeman and Louçã (2001) and Perez (2002) describe five such cycles that have appeared since the 1770s, each occurring in intervals of roughly 50 to 70 years. These authors consider each cycle or long wave to represent not only a technological revolution but also a change in the techno-economic paradigm, much like a paradigm shift as described by Kuhn (1962). Perez (2002: 8) defines each cycle or technological revolution as “a powerful and highly visible cluster of new and dynamic technologies, products and industries, capable of bringing about an upheaval in the whole fabric of the economy.” In Schumpeter’s (1912) theory, bank credit is a necessary requirement for the introduction of the new radical innovations and subsequent developments within each technological revolution. This could have the consequence of the financial system having regular intervals of financial deregulation, followed by instability, and then by a response of reregulation as Perez suggests.

Financial capital is essential to the first two phases of the technological revolution. Every long wave contains at least one core product, or “general purpose technology”, as Lipsey, et al. (2005) put it, that forms a major cluster of interdependent technologies and interrelated radical breakthroughs in each long wave, all of which require finance. Finance is an enabling agent for Schumpeter, (Kregel, 2009) cutting a path of creative destruction as the new technologies displace old and mature ones, fostering the movement of finance capital from less profitable enterprises and industries to more profitable ones. Perez (2002) identifies four distinct phases in each techno-economic paradigm: (1) irruption, when the new technology is introduced; (2) frenzy, or the period of intense exploration; (3) synergy, when the technology is diffused throughout the economy; and (4) maturity, as the diffusion process becomes complete. Both stagnation and dynamic growth appear in the irruption stage, as old technologies mature and new technologies have not diffused through the economy. During the frenzy stage, many new opportunities to apply the new technology open up, leading to the creation of new markets and the revival of old industries. Financial fragility becomes particularly acute problem during this phase of the cycle. Dynamic expansion, economies of scale, and diffusion are most common during the synergy phase, when producers tend to dominate and economic growth is balanced. In the last phase complacency appears as the technology reaches maturity and diffuses through the economy.

Schumpeter maintained that Juglar and Kitchin cycles could engender financial crisis and economic recessions at regular intervals during a long-term “Kondratiev” cycle, suggesting that the periodic crisis could be much worse at the low end of the long wave. Perez (2002) maintains that finance capital is the main enabling agent during the first two
phases of the techno-economic paradigm, by overpowering old ideas and creating new ones, but as the new paradigm moves in the frenzy stage, new speculative financial instruments are created to make money from money. This is when financial fragility becomes an especially important issue. Asset values expand far beyond the real values of new enterprises, encouraging speculation and ponzi finance, culminating in a bubble or casino economy, much like Keynes and Minsky envisaged. Periodic financial crises occur often, but ultimately the frenzy period will end in financial collapse and to government re-regulation of the banking and financial system, and investors engage in less risky behaviour. Still, investors will not give up this speculative behaviour easily and will resist re-regulation as long as there is money to be made in the financial markets. After the collapse, production capital will become as the paradigm enters the deployment period.\textsuperscript{6}

Perez (2009: 780) suggested that financial bubbles and crashes caused by the way debt markets work were different from those caused by the way that the market economy absorbs successive technological revolutions. She contended that they are “the result of opportunity pull rather than of easy credit push”. Minsky, however, considered speculative investment bubbles as endogenous to the financial markets, which in turn depend on the institutional arrangements supporting these markets. In an earlier paper, Minsky (1964: 324) maintained that systematic changes in the financial structure occur during the expansion phase of the long swing and cited the period of 1922 to 1929 as an example (see also Galbraith, 1955). And while he did not acknowledge each successive long-wave as an endogenous, systemic event, he did recognize that financial crisis and financial fragility were cyclical phenomenon that resembled Schumpeter’s Juglar cycle, but also followed the long-term “Kondratiev” cycle through the evolution of the financial structure. Minsky (1975: 11) emphasized,

Even if policy succeeds in eliminating the waste of great depressions, the fundamental financial attributes of capitalism mean that periodic difficulties in constraining and then sustaining demand will ensue.

7. Schumpeter and Minsky on the instability of capitalism

Both Schumpeter and Minsky considered the capitalist system to be inherently unstable, with the prospect of its eventual collapse if something is not done about it. Yet, Schumpeter’s (1928, 1934) vision was very different from that of Minsky, as he believed that different forms of innovation, such as the introduction of a new product, new method of production, or new

\textsuperscript{6} The difference between finance capital and production capital resembles the difference between the entrepreneur and financier as two independent agents that drive the innovation process. Both co-exist, but dominate over each other during different periods of the long wave.
form of organization, would reduce this instability. Schumpeter (1942: 83) conceives the term ‘creative destruction’ to captured the way industries mutate by “incessantly revolutioniz[ing] the economic structure from within, incessantly destroying the old one, incessantly creating a new one.” Innovation may appear destabilizing as it generates disequilibria and intensifies economic fluctuations, but it also fulfils a kind of "cleansing" operation of the productive structure, making it possible for everyone to enjoy higher real incomes. Instability is thus unavoidable and an essential aspect of capitalism. Schumpeter, (1928: 383-384) stressed,

The instabilities, which arise from the process of innovation, tend to right themselves, and do not go on accumulating. And we may phrase the result we reach in our terminology by saying that there is, though instability of the System, no economic instability of the Order.

Schumpeter did not write much about financial instability, but as Leathers and Raines (2004) point out, in Business Cycles he cited historical examples of ‘reckless finance’ and speculative excesses, and made the point that a poker game may be preferable to playing in the equity markets. He also praised legislation aimed at reducing these excesses. Moreover, he also made some references to innovation in the banking and finance industries, but he did not see them as the direct cause of instability and financial crisis. Schumpeter explained instability as the normal consequence of ‘real’ entrepreneurial activity and the accumulation of capital, without any reference to liquidity preference or effective demand.

By contrast, Minsky followed Keynes and focused on the financial markets as they had an innate tendency to excess, and believed that the only way to break the pattern of boom and bust was through public policy, regulation of the financial system, and central bank action. He maintained that "the financial system swings between robustness and fragility and these swings are an integral part of the process that generates business cycles." Swings in the credit cycle went through five stages: displacement, boom, euphoria, profit taking, and panic. The accumulation of debt was the main dynamic that pushed an economy toward crisis, and the use of more speculative financial postures. Minsky (1986b: 121) clearly believed that there is a “need to integrate Schumpeter’s vision of a resilient intertemporal capitalist process with Keynes’ hard insights into the fragility introduced into the capitalist accumulation process by some inescapable properties of capitalist financial structures.”

8. Schumpeter’s influence on Minsky’s vision

Minsky’s vision of money and finance provides the key link between Keynes’ view of the investment decision as a determinant of output and employment and Schumpeter’s view of the investment decision as a determinant of innovation and economic growth. Both
economists described the process of investment as an entrepreneurial decision, but they grounded the decision invest in different theoretical apparatus. Keynes believed that long-term expectations and liquidity preference can be highly volatile as expected profitability depends on the uncertainty of operating costs and sales over the lifetime of the plant and equipment, and liquidity preference and the decision to invest depend on highly volatile asset prices. By contrast, Schumpeter believed this volatility to be the normal consequence of ‘real’ entrepreneurial activity and the accumulation of capital, without any reference to liquidity preference.

The theory of business cycles also provides an important connection between Minsky, Keynes and Schumpeter, but in ways that may not be appear obvious. Minsky was highly critical of Schumpeter’s (1939) Business Cycles and subsequent writings because his argument appeared to have moved away from his credit view of money and finance and toward a real economy based on the Walrasian theory of value and distribution. Schumpeter admired Léon Walras throughout his writings, basing his analysis of development and business cycles on his theory, but he made some important extensions to this theory by including changing technology, which he called innovation. Endogenously created money finances the innovation process, which then generations cycles as it diffuses through the economy. Minsky (1992) also emphasized that his analysis of financial fragility is placed in historical time in the same way that Keynes’s (1936) theory of investment and the investment theory of business cycles is “best treated as an analysis of the outcomes of processes that operate in time.”

Minsky made few references to Schumpeter neither in his thesis, nor in his subsequent writings until the centennial year of the Keynes and Schumpeter of their birth. Despite these few references Minsky (1992c) himself wrote that Schumpeter’s vision of the financial markets and investment behaviour in the capitalist process were similar to his own view learned while studying in Chicago. Keynes provided a theory of effective demand and accompanying monetary theory, which Schumpeter required to explain why finance could be the source of instability, but Keynes needed the dynamics that Schumpeter so aptly described. Yet, Minsky went out of his way to distance himself from the Walrasian foundations of Schumpeter, and any implications of market efficiency, by considering uncertainty and expectations and the resulting overconfidence and panics as an integral part of the market economy.

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7 Schumpeter began writing on a book on money in the late 1920s originally entitled Geld und Währung (Money and Currency). The main goal was to develop a new theory of money based on the credit view of money in the Theory of Economic Development. According to Swedberg (1991), he attempted to rewrite parts of the book in the ladder years of his life, but never got it in a form to his satisfaction. There is no evidence that Minsky had ever seen the manuscript.
Bibliography


