DE GRUYTER OPEN

Scientific Annals of Economics and Business
63 (SI), 2016, 71-87
DOI: 10.1515/saeb-2016-0136

FROM ORTHODOXY TO HETERODOXY: FINANCIAL CRISIS LITERATURE COMPARED

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Abstract

In this paper we'll attempt to explain the connection between interventionism in financial markets, financial crises and economic downturns, as the main cause of the financial crisis mainstream models; As well as the connection between the theories of Austrian and Minsky's economic cycle as branches of heterodox economic theory. In order to achieve this target, we'll begin with a brief introduction of mainstream financial crises models in the orthodox economic literature, then we'll examine the statements of the Austrian Business Cycle Theory and the Financial Instability Hypothesis, and evaluate whether a connection between the two. We conclude that Financial Instability Hypothesis can be studied as a particular case of the Austrian Business Cycle Theory.

Keywords: financial crisis, boom-bust cycles, Hyman Minsky, Austrian School, Knut Wiksell

JEL classification: B53, E12, E14, E58, G01

1. INTRODUCTION

The financial crisis started in 2007 has shown the fragility of the financial system, also the feebleness of almost a decade of continuous economic growth. Mainstream economists faced the impossibility of their models to prevent the crisis, or even to offer a plausible explanation, that's why they have resorted to heterodox economic theory looking for answers.

In section 2 we present a brief review of the mainstream financial crisis models and highlight their weakness; in section 3 we expose the Austrian Business Cycle Theory and Financial Instability Hypothesis, as most representative tendencies in heterodox study of financial crisis; in section 4 we face the heterodox theories looking for commonalities and differences; finally, in section 5 we present our conclusions.

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Goals and methodology

Our aim in this paper it's to face the Austrian Business Cycle Theory and Financial Instability Hypothesis as representative branches in the heterodox economy and highlight their main elements in their analysis on business fluctuations. As secondary goals we will present a literature review on *mainstream* financial crises models and point out their main weaknesses.

In order to achieve our targets, we base our scope in a causal chain analysis which allow us to disaggregate the main components from those different theories and find out *how* and *why* these components are connected.

2. MAINSTREAM FINANCIAL CRISIS MODELS.

Following Laeven and Valencia (2008), a financial crisis could be defined as: "a country's corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. As a result, non-performing loans increase sharply and all or most of the aggregate banking system capital is exhausted. This situation may be accompanied by depressed asset prices sharp increases in real interest rates, and a slowdown or reversal in capital flows. In some cases, the crisis is triggered by depositor runs on banks, though in most cases it is a general realization that systematically important financial institutions are in distress." (Laeven and Valencia, 2008, p. 5).

We also can find a close definition in Bordo *et al.* (2001), who define a banking crisis as a period of "financial stress resulting in the erosion of most or all of aggregate banking system capital", and by Reinhart and Rogoff (2008), who define a crisis to be "one of two types of events: 1) bank runs that lead to closure, merger or takeover by the public sector of one or more financial institutions; 2) in the absence of runs, closure, merger, takeover or large scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions".

2.1 First-generation or fundamentalist models

First-generation or *fundamentalist* models are based on the "incompatible trinity" (Mundell, 1963) the theoretical incompatibility between fixed exchange rate systems, perfect capital mobility and the independence of monetary policies. The development thereof didn't attempt to clarify what factors that led to a monetary crisis, rather the attempt was to study the impact by the stabilisation plans of the prices of various exhaustible commodities[1].In essence, these models try to determine the point of foreign currency loss that would force a central bank to re-align the parity of its currency. In brief, the models can be expressed through the following equations (Prati and Sbracia, 2010, pp. 18-19):

$$m_t - p_t = a + by_t - ci_t$$
$$p_t - p_t^* = e_t$$
$$E_t(e_{t+1}) = e_t + i_t - i_t^*$$
$$m_t = \ln(R_t + D_t)$$

where y_t, m_t and p_t represent the logarithms of national income, monetary supply and price level; a, b and c will be positive constants; e_t will be the nominal exchange rate; i_t will represent the national interest rates; and finally, R_t and D_t will be, respectively, the stock of

domestic credit and of foreign currency in the hands of the central bank. The main limitations of these models are the following (Alonso Neira, 2004, pp. 86-89):

- The pre-eminent role of the volume of international reserves in detriment to the role played by interest rates.
- The assumption that political and monetary authorities are static agents, such that they would establish an unsustainable economic policy for their fixed exchange rate and wouldn't change.
- They foresee a secular behaviour in the deterioration of foreign currency reserves.

2.2 Second-generation models or models of self-fulfilling speculative attacks

Second-generation models arose in response to the monetary turbulence experienced by the international economy, and especially by Europe with the failure of the EMS, in the first third of the 90s. The non-existence of *deteriorated fundamentals*[2] left the first-generation models without analytical value.

Second-generation models are based on assuming the existence of an authority (either governmental or a central bank) that periodically conducts a cost-benefit analysis of maintaining the parity of the exchange rate, wherefore the government or central bank will establish their priorities around internal and external targets and, based on the incompatibility between them both, will try to minimise their loss function, which is defined as:

$$L_t = (\varphi - \bar{\varphi})^2 + \beta(s_t - s_{t-1})^2 + C(s_t - s_{t-1})$$

where $(\varphi - \bar{\varphi})$ would be the divergence of the target variable with respect to its potential or optimum; $(s_t - s_{t-1})$ would indicate the devaluation rate of the domestic currency; β would represent the priority of maintaining the external target (exchange rate) over the internal target; and finally, $C(s_t - s_{t-1})$ would tell us the median cost in terms of credibility of the devaluation.

2.3 Third-generation or "twin crises" models

The Asian crisis at the end of the 90s refocused the idea that monetary crises were the result of the governments' inability to be disciplined with their economic policies and/or that they showed fundamental disequilibriums, thus not allowing governments to back the parity of their currencies. This is the context within which von Hagen and Ho (2003) refer to "*twin crises*" as the mutual relationship that exists between banking crises and monetary crises. But there are other definitions in this regard, such as those by Glick and Hutchinson (1999) or by Kaminsky and Reinhart (1999). Using the models of monetary crises prior to the Asian crises as a reference (prior to 1997-98), twin crises models could be classified as follows[3]:

2.3.1 Models of moral hazard

These models follow the guidelines of the previously explained first-generation models of monetary crises, but in this case, banks will be ones to adopt an inconsistent policy in their activities.

The process of asset creation[4] by the banking system, thereby mismatching maturities and risk levels [5] would explain how bank runs (and the subsequent bankruptcies due to not being able to repay sight deposits to customers) would cause internal credit to collapse,

would cast doubts about the sustainability of the fixed exchange rate and would incentivise a speculative attack, thereby turning a bank crisis into a monetary crisis. The mechanism according to which a bank liquidity crisis is transferred to a monetary crisis would be the existence (explicit or implicit) of a government guarantee of bank deposits. This endorsement in turn provides feedback to the mismatch of bank maturities by generating moral risk, given that, if the necessary liquidity is not available to handle withdrawals by depositors, it would be the state (or central bank) that would cover the liquidity needs of the banking system. Thus, whether by injecting newly minted money or by selling foreign currencies, keeping the exchange rate fixed will be impossible.

2.3.2 Random withdrawal models

Random withdrawal models are based on the events that we posed as characteristic of the second-generation models. They are models of multiple equilibriums based on self-fulfilling expectations about the viability of the banking system, whose fate will ultimately depend on the *herd behaviours* of depositors. A banking crisis will turn into an economic recession through a credit crunch process.

If we use the random withdrawal model in an open economy developed by Chang and Velasco (1998), and starting with banking that mismatches maturities as in the models of the preceding section, this model is based on four initial assumptions:

1) Domestic banking is financed in the domestic market through sight deposits and in the international market through short-term foreign loans.

2) Multiple equilibriums are derived, which are linked to self-fulfilling changes in expectations about the solvency of banks, by both domestic depositors and by international lenders.

3) The vulnerability of a country would be explained by the relative short-term exposure to foreign debt.

4) There is a central bank that has a dual mandate: it must maintain the parity of the fixed exchange rate, while at the same time acting as the ultimate lender of a banking system that operates with a fractional reserve.

These models pose a context in which the very uncertainty about the solvency of banks is what can precipitate the bankruptcy of these entities. Unfortunately, these models are not capable of explaining the trigger of the change in expectations, thus the origin of their name as *random withdrawal* models.

To this group of models, which are based on the aforementioned first- and second-generation models, two new categories are added:

2.3.3 "Exogenous shock" models

In response to the lack of a "trigger" in the random withdrawal models, Goldfajn and Valdés (1997) attribute such a trigger to the variability of international capital flows and to the actual role played by financial intermediaries.

Based on an exogenous shock to the fundamentals, which deteriorate the net value of financial entities, creditors (both domestic and foreign) cannot determine the degree of individual exposure by the various banks to said shock, wherefore the uncertainty about the solvency of the financial system becomes generalized, which deteriorates the liquidity[6] of the system as a whole. This deterioration of liquidity materializes in a process of capital flight

resulting from the uncertainty[7], and it accelerates and aggravates the adjustment process that the initial shock would have required in the absence of a fragile financial system.

2.3.4 "Balance sheet effects" models

The "balance sheet" models, or crisis at the end of the nineties, which occurred due to the existence of imperfections in the financial markets. This point of view highlights that the origin of financial and monetary crises is due to four factors:

1) *Transference problems*. External perturbations can require strong, real devaluations of the domestic currency.

2) *Liability dollarization*. If the debts of banks and businesses are denominated in a currency other than that of income, these entities will be especially vulnerable to exchange rate fluctuations.

3) *Balance sheets and risk premiums*. Related to the preceding, if a strong devaluation of the domestic currency deteriorates the solvency of domestic entities, it will cause an increase in the risk premium of that country.

4) *Restrictions on the borrowing by banks and businesses*. The creditworthiness of banks and businesses is restricted to the net value of their assets as collateral for loans.

These factors of weakness of the domestic economy would act as accelerators and amplifiers of the effects of exogenous shocks.

3. HETERODOX FINANCIAL CRISIS THEORIES

3.1 Austrian Business Cycle Theory

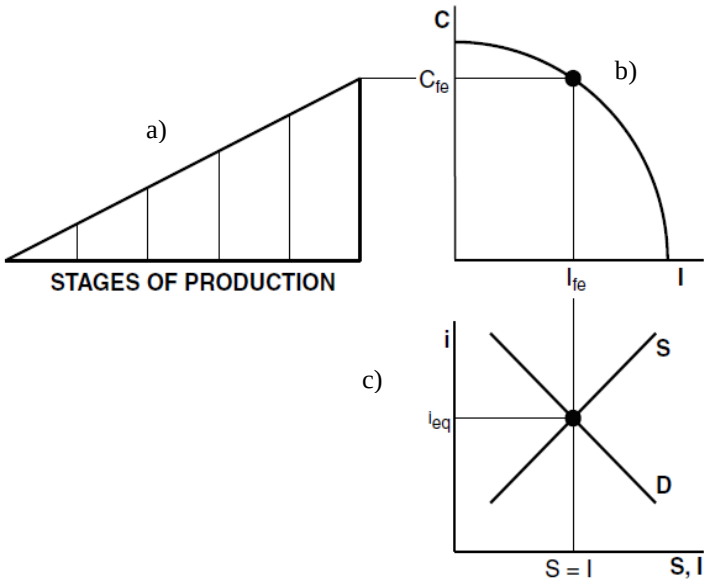
Early enunciated as the circular credit business cycle in Mises (1912), combining elements from Böhm-Bawerk's capital theory and Wicksell's monetary analysis, the Austrian Business Cycle Theory (ABCT) began as a theory of exogenous cycle caused by central bank monetary expansions but soon became a cycle theory endogenously induced by fractional reserve banking. It was not until Hayek (1931) when the Austrian theory appeared in the international arena thanks to the debates between Hayek and Keynes during the 30s. Successive generations of economists of the Austrian school have contributed to ABCT to bring it to its current state, nevertheless we will focus on Huerta de Soto (1998) theoretical analysis and Garrison (2001) capital based macroeconomics framework.

Table no. 1 – Main elements of the Austrian Business Theory

Element	Description
Entrepreneurship	Drive individual behaviour
Assets supply	Equities, liabilities, bonds, etc.
	Money and deposits
Monetary supply	Endogenus, elasticity based on profit-seeking behaviour of the financial intermediaries and fractional reserve banking
Capital nature	Heterogeneus
Representative agent behaviour	Entrepreneurship

Source: prepared by the author

We shall start with basic notions in capital based macroeconomics, Figure no. 1 shows an initial equilibrium situation where: a) is a Hayekian triangle which represents the economies capital structure, divided in production stages; b) is the production possibilities frontier (PPF), which shows the combinations between consumption and investment for a given technology level; c) represents the loanable funds market, where the interest rate shall be determined.



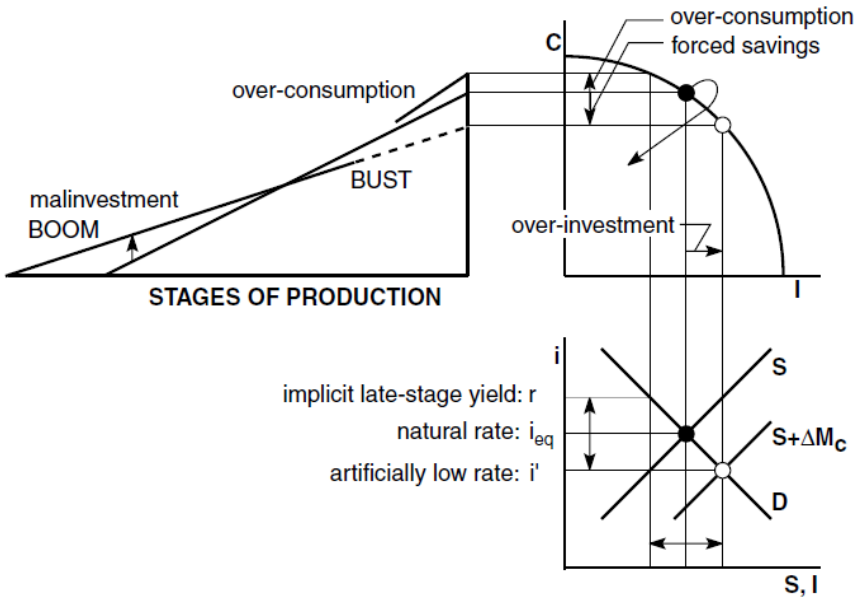
Source: Garrison (2001, p. 50)

Figure no. 1 – Steady state in Capital based macroeconomics

The diagrammatic exposition of the ABCT developed in Garrison (2001, pp. 57-83) was initially planned to explain an exogenously induced business cycle drove by a Central Banking monetary injection.

$$\begin{matrix} C_0^S = S_0 \\ C_0^D = I_0 \end{matrix} \quad \Big| \quad C_1^{S'} = S_0 + \Delta M_1 \quad \Big| \quad \begin{matrix} C_0^S < C_1^{S'} \rightarrow \downarrow i \\ i_1' < i_{eq} \end{matrix} \tag{I}$$

As we can see in (I), the monetary injection (ΔM_1) increases credit supply and puts downward pressure below their natural rate. Padding the supply of loanable funds with newly created money drives a wedge between saving and investment, further reducing interest rates. This environment of low interest rates sends the signal to entrepreneurs to undertake investment projects with later maturities and, finally, results in a change to productive structures, as we can see in Figure no. 2.



Source: Garrison (2001, p. 69)

Figure no. 2 – Unsustainable growth in capital based macroeconomics

With no change in intertemporal preferences, the current amount of saving decreases as the interest rate falls, while the amount of investment, financed in part by the newly created funds, increases. This behavior it's incompatible with the actual PPF so the struggles for the real resources saved appear, initially this results in sectorial inflation. In Figure no. 2 those struggles are pointed as *over-investment*, *over-consumption* and *forced savings*. The bust could be explained as: "[…], entrepreneurs encounter resource scarcities that are more constraining than was implied by the pattern of wages, prices, and interest rates that characterized the early phase of the boom. Here, changing expectations are clearly endogenous to the process. The bidding for increasingly scarce resources and the accompanying increased demands for credit put upward pressure on the interest rate. Inevitably, the unsustainability of the production process manifests itself as the abandonment or curtailment of some production projects. The consequent unemployment of labor and other resources impinge directly and negatively on incomes and expenditures. The period of unsustainably high level of output comes to an end as the economy falls back in the direction of the PPF. Significantly, the economy does not simply retrace its path back to its original location on the frontier. During the period of over-production, investment decisions were biased by an artificially low rate of interest in the direction of long-term undertakings. Hence, the path crosses the frontier at a point that involves more investment and less consumption than the original mix." (Garrison, 2001, pp. 72-73).

Now we'll turn capital based macroeconomics endogenous by the introduction of fractional reserve banking exposed in Huerta de Soto (1998, pp. 200-231). In a banking system which operates under fractional reserve banking, an exogenous monetary injection is not necessary for the proper conditions for an investment boom. As soon as Banks doesn't need to maintain the total amount of their deposits, credit supply is no longer equal to

savings, tends to be systematically higher. That's why we'll go to substitute credit supply shows in (II) by:

$$C_1^{s'} = M_1 + \frac{d(1-c)}{1+k(c-1)} \qquad \text{(II)}$$

where:

d: the money originally deposited in the bank's vault;

c: the cash or reserves ratio maintained by the bank, in keeping with the banker's experience and his careful judgment on how much money he needs to honour his commitments;

k: the proportion of loans granted which, on average, remain unused by borrowers at any given time.

This contribution allows us to explain the business cycle in endogenous terms and also has an implication on the extent of the economic cycle. Since it's the fractional reserve banking who drives the credit expansion we can expect an increase not just in firm's debts also in households one's, because during the previous stages till the boom collapses, households tries to maintain their purchasing power financing their purchases with newly created credits. As we'll see below, this point has important analytical implications.

3.2 Financial Instability Hypothesis.

Hyman Minsky is probably one of the most important economists in the post-Keynesian economics tide, not only due to his contributions in the field of economic theory or analysis but by his role as economic advisor for different international institutions and Governments. During the 60s and 70s, Minsky developed a new approach to study the business cycle, maintaining the essential elements of Keynesian thinking, allowed to go beyond the classical explanation of a sudden stop in investment plans caused by the famous *animal spirits*, in words of Minsky: "As economic theory, the financial instability hypothesis is an interpretation of the substance of Keynes's *General Theory*. This interpretation places the General Theory in history*."* (Minsky, 1992b, p. 1). Following van den Hauwe (2014, p. 2): "Minsky's financial instability hypothesis 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*"*. But maybe the most clarify summary of the Financial Hypothesis (FIH) is shown in Minsky (1992a, pp. 7-8): "A main theorem of the financial instability hypothesis 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".

As we saw earlier in the ABCT, under the FIH the investment boom will starts exogenously, caused by tax cuts or a wrong designed monetary policy, or endogenously, with a change in expected gross profits after taxes drives by *animal spirits*. We'll focus in the second one. The main elements of the FIH collected in Minsky (1974) are presented in Table no. 2.

Table no. 2 – Main elements of the Financial Instability Hypothesis

Element	**Description**	
Animal spirits	Drives investment descisions	
Financial assets supply	Inside assets (private)	Real capital, equities, etc.
	Outside assets (public)	Public debt and money
Portfolio composition	$\alpha(inside\ assets) + (1-\alpha)(outside\ assets)$	
Monetary supply	Endogenus, elasticity based on profit-seeking behaviour of the financial intermediaries.	
Capital nature	Homogeneus fund	
Representative agent behaviour	Profit-seeking, inconsistency in their intertemporal yield maximization.	
Agent types	Hedge	Expected cash flows exceed liability payments
	Speculative	Expected cash flows allow interest payments but not the principal return
	Ponzi	Expected cash flows may not cover interest payments neither repayment of principal

Source: prepared by the author

We can find a deeper description for assets and their role in Minsky (1991, pp. 13-14): "Capital assets generate cash as compensation for their participation in the production process; financial assets generate cash as the maker is able to fulfil commitments. In addition capital assets, as wel as financial assets, can yield cash by being sold or pledged. For pledging or selling to be an option either a broker or a dealer market in assets needs to exist."

The basic assumptions of the FIH[8] involve: (1) a disconnection between the bid price and the assets inside their production costs; (2) inside assets demand price component is a function of their price, based in their expected yield; (3) inside assets supply price component is a function of the current consumption goods price and the financial costs of producing new assets; and (4) the current consumption goods price it's a function of the investment rate and total spends in consumption goods.

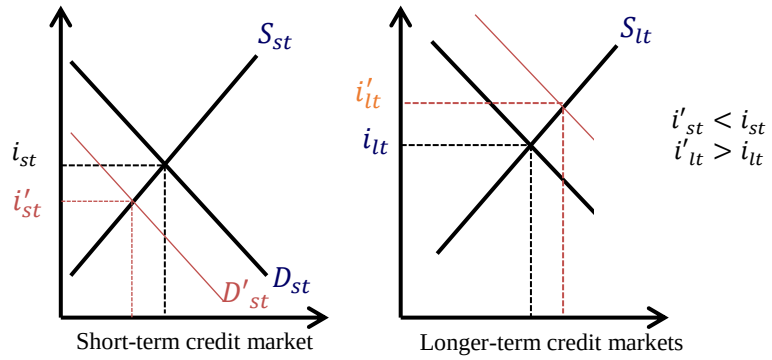
$$P^A \neq C^A \quad (1)$$
$$P^{dA} = f(P^A(R^e)) \quad (2)$$
$$P^{sA} = f(P^Y, FC(i)) \quad (3)$$
$$P^Y = f(I, G) \quad (4)$$

There are also two auxiliary assumptions to explain the investment boom:

$$P^{dA} > P^{sA} \rightarrow \uparrow I \quad (5)$$
$$\uparrow I \rightarrow \uparrow P^{sA}(P^Y, \uparrow FC(i)) \quad (6)$$

When there's a change in the expected yield of business, assumption (2) implies a growth in demand prices of inside assets which combine with (5) drives to a growth in the investment rate. At this point everything looks like a classic investment boom drive by *animal spirits* but Minsky introduce here a characteristic feature of the economy system, at this stage in the business cycle hedge agents are predominant.

This investment *euphoria* pushes firms to sue longer-term loans, and then financial intermediaries (especially banks) begin to take riskier positions in the credit markets, as we can see in Figure no. 3.



Source: prepared by author

Figure no. 3 – Changes in credit markets during the investment boom

The differential in interest rates between short-term and long-terms loans increase the expected yield of long-term loans, combined with profit-seeking behaviour that we have pointed out earlier drives the financial system balance sheets, and the economy as well, to illiquidity positions. At this point, the speculative units behaviour become as representative agent. As soon as the total debt starts to grow up, and then the liability payments, speculative units need higher capital gains from their assets to maintain their profitability and cancel their loans. This saturation process continues till speculative agents become Ponzi schemes and their financial survival depends on a continuous increase of their assets prices, which as far as we know it's impossible.

The journey from a financially strong economy toward instability would be due to these three behaviours, produced during the boom: "(1) the growth of financial—balance sheet and portfolio--payments relative to income payments; (2) the decrease in the relative weight of outside and guaranteed assets in the totality of financial asset values; and (3) the building into the financial structure of asset prices that reflect boom or euphoric expectations. The triggering device in financial instability may be the financial distress of a particular unit." (Minsky, 1974, p. 61)

Then we have arrived to the "Minsky moment" or the bust. Face to the impossibility to afford their liability payments and running out of cash, Ponzi units to selling their assets to avoid the bankruptcy. This sells reverse the process described in (5) and the financial crisis becomes an economic depression.

To stabilize the economy and bring the growth back, Minsky (1986, pp. 330-370) claims for Big Governments which should be able to stimulate the aggregate demand and a Central Bank which can prevent the fragility of the financial markets by means of an optimal management of banking system lending exposure through their reserve ratios and their assets quality.

4. HETERODOX THEORIES FACE TO FACE

4.1 Shared origins

There is an indissoluble nexus between the ABCT and the developments on financial markets carried out by Post-Keynesian economists (Minsky in particular), and this nexus is none other than the Swedish economist, Knut Wicksell.

Wicksell's intertemporal monetary imbalance model

In Wicksell (1898) we can find a distinction that would be key for subsequent theoretical developments: this is none other than differentiating between the interest rate of money and the natural interest rate of the market. Based on this difference, he provided a truly elegant description of the growth process based on credit expansion when the bank interest rate is below the natural interest rate. Hyman Minsky presents a model of growth of financial bubbles based on current production prices (P^Y) and asset market prices (P^A), joined by the transmission belt represented by interest rates where this difference is based in the expected yield of the firms. For the Austrians this process it's a bit more complex cause, close to Wicksell's exposition, this process its drive by the banking system so as long as the credit market interest rate didn't come back to the natural interest rate, we'll find a cumulative process of *malinvestment*.

The non-neutrality of money

In both branches, the Austrians and Minsky, the role played by monetary injections and financial markets its central in their analysis. We can find the special emphasis shown by the post-Keynesian author about the endogenous nature of money in Minsky (1993) where its pointed how banks increase the money [credit] supply whenever they share the belief of the borrower that positions in assets or financed different projects. In fact, this discretionary behaviour of the financial sector should be determinant in the evolution of the stock [assets] prices.

The Austrian version of the non-neutrality its focussed in the evolution of the relative prices during a credit expansion, or the "Cantillon effect": "It enters in particular sectors and in particular ways. Some prices and incomes are bid up first. The early recipients of the new money tend to enjoy increased buying power. Gradually the new money circulates around and penetrates all sectors of the economy, but it reaches some sectors quite late. Selling prices and nominal incomes in those sectors do not keep pace with the general inflation, and their real incomes and purchasing powers suffer." (van den Hauwe 2014, p. 34).

4.2 Institutions, structure and dynamics of the market

Minsky describes a business sector characterised by three types of agents: hedge investors, speculative investors and Ponzi schemes (Minsky, 1992a). The relative weight of each type of agent will be determined by what moment of the cycle we are in: hedge agents would hold relative weight in the initial phases; as the bubble takes off, speculative agents would hold relative weight; and at the climax, it would be held by Ponzi schemes. So the question is, are these dynamics due to a failure of institutional design? Or conversely, are they inherent in the system?

Even if we accept this taxonomy of agents for illustrative purposes, we encounter an important failure in the analysis at a technical level. Insofar as the expected cash flows from an investment project are assessed with a forward approach according to the interest rate of the loan market, it would be nearly impossible for an agent to determine both the cause of a change in the interest rate and the real value of their balance sheet and expected cash flows.

It seems evident that it would be more consistent to understand this inherent problem, which the Post-Keynesian author identifies with capitalism, as a failure of institutional design, due to both the existence of a central bank with the ability to manipulate interest rates and due to the lack of a definition of the ownership rights over sight deposits of fractional reserve banking (Huerta de Soto, 1998, pp. 1-36, 115-165).

4.3 Boom-bust cycle and sustainable growth.

Boom-bust cycles

Hyman Minsky presents a model of growth of financial bubbles based on current production prices (P^Y) and asset market prices (P^A), joined by the transmission belt represented by interest rates. In summary:

$$\uparrow R^e \rightarrow \uparrow P^{dA} \rightarrow P^{dA} > P^{sA} \rightarrow \uparrow I \quad (7)$$

$$D'_{st} < S_{st} \; ; \; D'_{lt} > S_{lt} \quad (8)$$

The Austrian school, in turn, puts it down to the privilege obtained by fractional reserve banking (Huerta de Soto, 1998, pp. 347-385), such that credit expansion in the banking system would be what endogenously applies downward pressure on interest rates:

$$M + C^{s\prime} > M + C^{s} \rightarrow \downarrow i \quad (9)$$

$$i' < i^{eq} \rightarrow \uparrow I \quad (10)$$

Even though historically the origin of a large part of asset bubbles can be deemed to reside in the ability of a central bank to manipulate interest rates, this entity's path of impact on the economic system takes place through fractional reserve banking, and this is what ultimately and decidedly generates credit expansion.

We are now at the climax of the bubble, where investments would mainly be Ponzi games. In view of this panorama, Minsky offers an endogenous explanation based on a process of debt saturation is presented. Thus, the increase in the weight of interest on the balance sheets of businesses generates problems of illiquidity:

$$\uparrow iD \rightarrow \downarrow R^e \rightarrow \downarrow P^{dA} \quad (11)$$

$$P^A \leq P^Y \rightarrow \downarrow I \rightarrow \downarrow Y, \downarrow C \quad (12)$$

At the same time, and in an attempt to balance their books, businesses begin to sell their assets at an increasingly accelerated pace, thereby exceeding, by far, the market's capacity to absorb this supply of over-valued products:

$$\uparrow P^{sA}, \downarrow P^{dA} \rightarrow P^{dA} < P^{sA} \rightarrow \downarrow I \rightarrow \downarrow Y, \downarrow C \quad (13)$$

$$\downarrow P^A \rightarrow \uparrow i \rightarrow \uparrow iD \rightarrow \downarrow R^e \rightarrow \downarrow P^{dA} \rightarrow P^A \leq P^Y \rightarrow \downarrow I \rightarrow \downarrow Y, \downarrow C \quad (14)$$

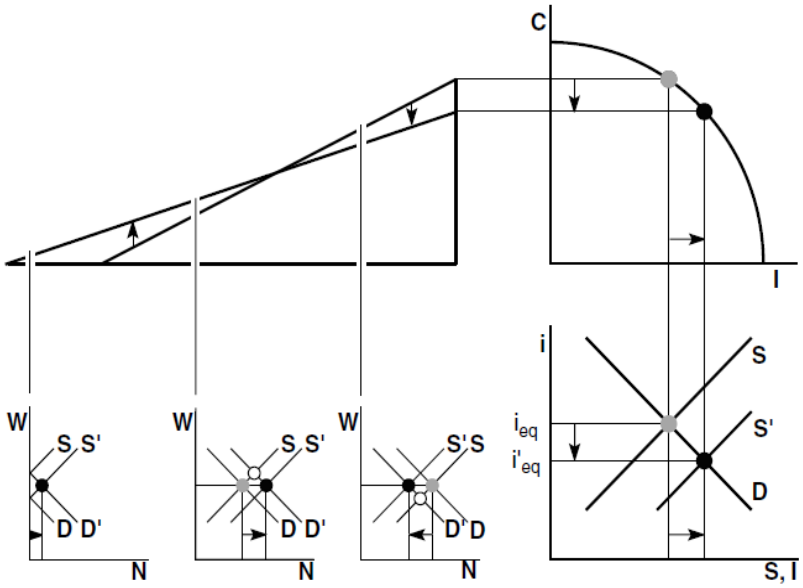
This process would be entirely consistent with the ABCT, given that when agents revise their expectations and comprehend that the production structure is unsustainable, they begin massive divestments in an attempt to save their business projects, giving rise to generalized bankruptcies:

$$\uparrow I, \uparrow C \rightarrow \uparrow \pi \rightarrow \uparrow i \quad (15)$$

$$\uparrow i + \uparrow \pi \rightarrow M, \downarrow C^s \rightarrow \uparrow\uparrow i \quad (16)$$

Sustainable growth

In Minsky's FIH, the tendency to fragility of the financial system is inherent to capitalism, so that sustainable growth is only possible through public intervention carried out by the Big Players, the Government and the Central Bank. To prevent this natural transition toward financial fragility during the investment boom, the Government should apply its fiscal tools (spending cuts and raising taxes) to curb the investment euphoria. Meanwhile the Central Bank ought to manage the liquidity and the solidity of the financial markets.



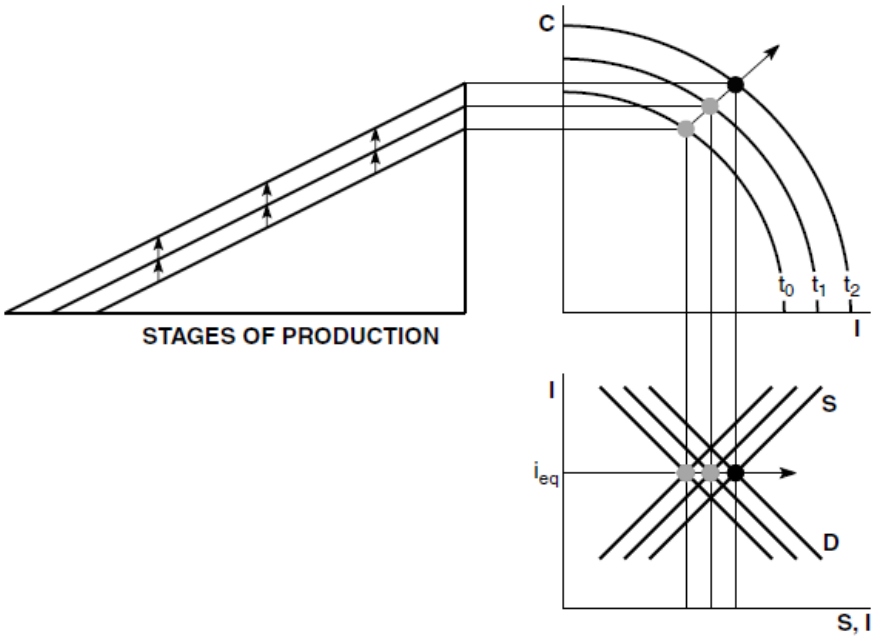
Source: Garrison (2001, p. 65)

Figure no. 4 – Sustainable growth in capital based macroeconomics

Under the ABCT as we can see in Figure no. 4, sustainable growth should be preceded by an increase in social savings to finance new investments. If we continue with our capital based macroeconomics and compare Figures no. 2 and no. 3, we can find two essential differences:

(1) there is a movement *along* the PPF rather than *off* the PPF.

(2) there is no significant income effect on the supply of loanable funds.



Source: Garrison (2001, p. 65)

Figure no. 5 – Secular growth in capital based macroeconomics

The triangle depicts relative changes in spending patterns attributable to increased savings; it does not show the ultimate increase in output of consumption goods made possible by increased investment. To visualize the intertemporal pattern of consumption that follows an increase in thrift, we must superimpose the relative changes depicted in Figure no. 3 onto the secular growth depicted in Figure no. 5.

4.4 Minsky and the ABCT

This therefore leads to the question: is the *Financial Instability Hypothesis* compatible with the *Austrian Business Cycle Theory*? To be able to answer, first we must qualify the Minskyan analysis regarding a few points

1) Vision of the financial markets. From Hyman Minsky's analysis, a vision of a fully banked financial sector is deduced. If we apply Ricardo's law of association (Mises, 1966, pp. 160-164) to the financial sector, it is easy to glimpse how, in the absence of state privileges, the tendency would be towards specialisation, thereby minimising the costs (Diamond and Rajan, 1999) of management, administration and valuation of investment projects.

2) Beyond the S-C-P paradigm. The described sequence of events suffers from the sector paradigm of the Harvard School on market dynamics. Is this really the only possible result?

3) Central banking and new agents in the market. Since the appearance of the FIH approach, a series of financial agents and innovations tending to limit the role of central banks as the providers of liquidity have emerged. By these agents, we are referring to the integration, globally, of the inter-bank market and to "*shadow banking*".

4) The absence of capital theory. Minsky does not include capital theory as a tool in its analysis; it's shown especially in his implicit conception of capital as a homogeneous fund.

5) Temporal horizon. Time is the central element in the analysis. For Minsky the timeline it's a succession of short-rum equilibriums, where the derived demand effects prevail, while Austrians focus the scope in the long-run, where discount effect prevail.

Having made these qualifications, if we re-phrase the preceding question, the FIH can be conceived of as a very particular case of the Austrian Business Cycle Theory, induced by a combination of *animal spirits* (unexpected change in investment behaviour) and weak institutions, especially in commercial law.

5. CONCLUSIONS

To conclude this work, we believe that it is important to highlight the main ideas. Thus:

1) The disequilibrium caused by different interventions in the market can cause business owners, when implementing their business function, to make the wrong decisions and invest in projects in which they otherwise would not have invested due to being unviable.

2) Generally, the behaviour of the players during cycles tends to be fairly similar: first there is a period of emphasis and optimism, which is followed by a necessary adjustment and depression or fear. The periods of optimism and expansion lead to making bad investments, subsequently causing the recession processes to once again adjust to the same.

This leads to periods of debt overhang, caused by the ease of access to credit (given that interest rates are artificially low due to intervention in the money market and to the use of a fractional reserve by banks), and it leads to the necessary periods of deleveraging to once again correct those business errors.

3) By studying heterodox theories about financial crises, it is possible to clearly see a connection between these theories (the Austrian Business Cycle Theory and the Financial Instability Hypothesis of H. Minsky) as branches of heterodox economic theory.

4) Even though the origin of heterodox theories on financial crises could be similar, the major difference between them both lies in their concept of impact on interest rates, on market structure and dynamics and even on recession periods (for Minsky, it would be an exogenous factor, but for the Austrian School, it would be an endogenous factor).

5) The FIH can be conceived of as a very particular case of the Austrian Business Cycle Theory, induced by a combination of *animal spirits* (unexpected change in investment behaviour) and weak institutions, especially in commercial law.

Acknowledgements

We thank our colleague Pedro Arellano Villanueva for his invaluable help in the development of this paper.

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ANNEX I

Main differences between first- and second-generation models

	First-generation models	*Second-generation models*
Characterisation of investors	Rational expectations + perfect forecast	Self-fulfilling expectations and *animal spirits* + herd behaviours + uncertainty
The government's position	Passive. It does not react to speculative attacks, thereby modifying its economic policy and increasing its interest rates	*Active.* It minimises a loss function, therefore determining the suitability or not of keeping an exchange rate fixed
Characterisation of economic policies	Exogenous: unchanging and prior to a crisis	Endogenous and contingent: they depend on the evolution of a crisis
Rules of behaviour by agents	Linear	Non-linear
No. of equilibriums and characterisation	Single (crisis) and foreseeable	Multiple (crisis *versus* no crisis) and unforeseeable
Cause of a crisis	*Ex-ante* inconsistency between demand policies and the fixed exchange rate + rational expectations (which speed up the beginning of a crisis). Depletion of reserves	Incompatibility between the internal and external targets of the economic policy. Leads to: self-fulfilling expectations + *ex-post* inconsistency of economic policies. Difficulties for raising interest rates
Identification of a crisis	Predictable and unavoidable. The exchange rate is doomed to collapse..	Unpredictable and possible, but not certain. The exchange rate would be viable in the absence of an attack.
Characterisation of the financial markets	Fundamental for the development of a crisis. Private agents perform "rational" arbitrage operations between the fixed exchange rate and the shadow exchange rate.	Irrelevant. Their role in the development of a crisis is described very vaguely. The entire emphasis is placed on the incompatibility of the government's policy targets.
Characterisation of speculation	Stabilising. Points out inconsistencies in the economic policies of governments. It should not be penalised or prevented.	De-stabilising. The exchange rate would be viable in the absence of an attack. It should be penalised or prevented.

Source: Alonso Neira (2004, p. 97)

Notes

[1] We must be aware of the period in which they were developed: after the end of the dollar-gold standard and the global price re-adjustment or, as it is usually called, the 70s oil crisis

[2] There were some relatively high levels of foreign currencies and relatively small budget deficits, and the growth rates of the money supply and of the general price level were within normal parameters.

[3] We find the Barro and Gordon (1983) in one of the most recognizable formulations:

$$Min\ (x) \qquad L_t = (y - \bar{y})^2 + \beta\pi_t^2 \qquad \text{s.a.} \quad y_t = \bar{y} + \alpha(\pi_t - E_{t-1}\pi_t) + u_t$$

where the central bank would try to minimize its loss function between the production *gap* $(y - \bar{y})$ and its inflation target (π).

[4] Banks take short-term loans and even call loans and grant credit for different terms.

[5] We mustn't forget that there are incompatible causes between the loan and the deposit: while the depositor seeks full availability and the absence of risk, the loan is based on the loss of availability for a period of time (explicit or implicit) and the assumption of a certain level of risk. See Huerta de Soto (1998, pp. 17-23)

[6] We must keep in mind that uncertainty not only affects depositors and international lenders: distrust also filters into the inter-bank market, such that not even the actual participants in the financial system are capable of assessing the exposure to the shock.

[7] We could analyze it as a problem of adverse selection: by not being able to determine the individual solvency position of each entity, they are all considered to be potentially insolvent

[8] See Minsky (1974, pp. 36-40), we summarize it excluding the case of an exogenous monetary shock.