A Keynes moment in the Global Financial Collapse

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Abstract

This paper presents an analysis of the international financial crisis of 2007-2009 and demonstrates that behavioural (non-rational) expectations were all pervasive during the housing and the financial cycle. It concludes that this behavioural explanation is distinct from accounts of market fundamentalism, which tend to emphasize only forces such as financial regulation, financialization and monetary policy. Moreover, it concludes that the impact of conventional and pseudo-diagnostic evaluations that were inherent in rational models of risk-management during the crisis is reminiscent of Keynes's notion of conventional expectations. This implies that the crisis was marked also by a "Keynes moment" that stands as a distinct process within the so-called "Minsky moment".

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1. Introduction

The current international economic and financial crisis has stirred a great interest into revisiting the causalities inherent in the conceptual apparatus of the monetary theory of production. A fundamental aspect of this crisis is associated with the impact of financialization and the process of securitization. The latter takes place through financial engineering and structuring that stresses liquidity, something financial institutions generally seek to do to increase profits during stable, prosperous times. Securitization through financial engineering and, as a consequence, financialization has raised substantive concerns among scholars for various reasons. One is the claim that financial engineering creates bad assets since often purely and complex financial transactions are not supported by real underlying assets or by expected profitability streams (on financialization, see Epstein (2005); Palley (2008)).

Often, the process of securitization of assets of lower quality is exorcised. To do so overlooks the fact that securitization of variable quality assets and expected profitability streams (such as junk corporate bonds, distressed sovereign emerging market bonds, start-up high tech bonds) has been witnessed extensively in global capital markets for quite a while since the eighties. This approach fails to incorporate the important role that behavioural (as opposed to rational) expectations play in endogenously causing strikingly divergent valuations in low quality assets across prosperous and recession times. The main conclusion of the present paper is that in fact it is behavioural expectations that transform financial engineering to toxic finance.

This paper takes the view that the striking realities of the current international financial crisis associated with the collapse of the market for collateralized debt obligations (CDOs) and the underlying real estate market provide an extraordinary once-in-a lifetime opportunity to teach the economics profession at large very valuable (and, sometimes painful lessons) and to push it to reconsider carefully some of its assumptions. What follows is a Post-Keynesian inspired exploration of how the realities of the international financial crisis test the most fundamental assumptions of our theories.

The analysis covers different fundamental aspects of the economic reality associated with the current crisis. These include shifts from traditional banking to financialization, miscalculations in monetary policy, institutional failures of market players, regulation

inefficiencies, errors in derivative structuring of low quality assets in the process of securitization, reliance on complex quantitative models, etc. Furthermore, it looks at the credit sector and the alluring low adjustable mortgage rates offered to unsuspecting home buyers.

The evidence to be presented suggests that although all those above-mentioned economic mechanics that could fit in an analytical framework of market fundamentalism are more or less highly relevant, the all-encompassing force that causes the severe (and, often catastrophic) divergences in market evaluations is the role of behavioural expectations in the presence of aforementioned inefficiencies.

This evidence is presented through an extensive analysis of various aspects of the real world woes of the major investment banks. For example, there is a discussion of Lehman Brothers' collapse and of Merrill Lynch's strategy of taking the top tranches of CDOs onto its own balance sheet at a critical moment in the expectation that the credit market turmoil would ease and the bonds would once again be easy to sell. The variability of valuations during the crisis that led eventually to the adoption of the more conservative end of the range and to the report of huge losses for Citibank and Merrill Lynch is examined. Finally, the fact that the rating agencies enormously underestimated the chance of default in subprime mortgages is also discussed.

This paper explores the reversal in actual human expectations as opposed to rational expectations. It uses a set behavioural concepts, including overconfidence, illusions of control, availability heuristic, framing, feedback and conformity effects, non-traditional time discounting and agency costs.

It is shown that despite the labelling of the current crisis as a "Minsky Moment", the behavioural evidence is linked more closely with Keynes' analysis of asset speculation in the *Treatise* and of variable liquidity-premium demands across different classes in the *General Theory.* In the latter, these portfolio choice demands were associated with the state of confidence of investors and the impact of conventional expectations. A key force is that, unlike asset prices, actual profits cannot increase at an increasing rate in the course of an expansion. Thus, the rise in profits increasingly lags behind the upward movement in asset prices. As demand and economic performance begins to fall short of the level of expectations that are capitalized in asset values, the view that asset prices are excessive begins to take hold in financial markets and the bear position gains strength. This bear position is asymmetric across assets of variable quality. In this context, pessimistic expectations and higher uncertainty is more prevalent for assets of low quality such as CDOs. In this environment, the assets financialized through derivative structuring transform into toxic finance.

As we will see, the analysis of the role of behavioural expectations in transforming financial engineering into toxic finance in the current international financial crisis highlights certain challenges with respect to well-known assumptions utilized in Post-Keynesian economics. Several important insights are drawn with important implications for future research. It is shown that in an environment of a sharp reversal of behavioural expectations, the capacities of banks as money-makers, big-institution comforters and unlimited liquidity providers at the going rates set by monetary authorities are severely constrained.

The paper develops as follows. It opens with a review of the main questions arising regarding the role of expectations in the 2007-2009 international financial crisis. There follows an overview of the stages of the 2007-2009 international financial crisis. Then there is a detailed description of the role of expectations during different stages of the housing cycle, the financial cycle and the policy response cycle. The results of this survey are then gathered into a concluding discussion.

2. The 2007-2009 International Financial Crisis and the importance of expectations

Since the subprime crisis broke in August 2007, several papers within the mainstream attempted to examine how lending behaviour of banks was affected during the lending boom (see Dell'Ariccia et al. (2008), Bhardwaj and Sengupta (2008) and Keys et al. (2008)). The notion that the price and performance of the securities sold in the secondary market are heavily dependent on house prices is in line with the views of Gordon (2008) (see also Fabozzi (2008), Demyanyk and Van Hemert (2008)). The boom in house prices, both in terms of its size and duration, as well as in terms of its lack of relation to underlying costs (Shiller (2007)) have also sparked considerable interest. There have been claims that this boom was due to alternative mechanics including a bubble in the housing market (Shiller (2005)) and some pricing irrationality (Julliard (2008)) but there is also considerable counterargument on this issue (e.g. see Himmelberg et al. (2005)). Moreover, research by Mian and Sufi (2008) and Mayer and Pence (2008) provided empirical evidence that the expansion of mortgage credit in areas with a high underlying demand was associated with fundamental house price appreciation. Overall, despite the variety of approaches, the mainstream literature features prominently the role of expectations in the 2007-2009 international financial crisis since it emphasizes excessive psychological reactions (Shiller, 2009) and the role of animal spirits (Akerloff and Shiller, 2009).

On the other hand, although there are diverse responses among notable Post-Keynesians with respect to the origins and the processes underlying the subprime crisis, they appear to focus on the endogenous "financial instability hypothesis". Wray (2007) and Whalen (2008) suggested that there is a "Minsky moment" in the subprime crisis (a term coined by Magnus (2007))) while others like Davidson (2008) claim that the subprime crisis appears to be not a "Minsky moment." For Kregel (2007), the current crisis differs in important respects from the traditional endogenous analysis of a Minsky crisis although it involves both non-traditional Ponzi finance schemes and decreasing margins of safety. In those frameworks above, there are certain other important issues that arise also such as the conditions of risk repricing (Kregel, 2007) and the market-making activities of banking conglomerates (Davidson, 2008).

One important feature of this line of Post-Keynesian research is that psychological considerations are acknowledged but are undermined. For example, Wray (2007) argues that excessive psychological reaction is the end result of a Minsky's financial instability hypothesis in which policy-validated, financial innovations become predominant in influencing excessively asset prices while Minskian psychological concepts such as the "radical suspension of disbelief" are not elaborated further in connection to the crisis. In addition, Kregel (2008) claims that the subprime boom was not developed on euphoria or excessive optimism since positive economic fundamentals during a cyclical expansion improved the confidence and optimism of agents in a manner that constituted a rational reaction to the past events. This seems surprising in terms of a pure Keynesian framework in view of the emphasis of Keynes

(1936) in the *General Theory* on psychological propensities in capital markets and elsewhere and of the subsequent development of a Post-Keynesian theory of strong uncertainty, in which factors affecting expectations such as the state of confidence of investors and conventional valuations become predominant. It appears therefore that the role of psychological expectations in the crisis has to be reconsidered more closely.

3. Overview of the stages of the 2007-2009 crisis

There are several stages in terms of which the international financial crisis can be described. A list of stages representing Minskian transformation of the financial structure has been identified by Wolf (2007) (as quoted by Wray (2007)). First, there was a long period of stability characterized by positive economic fundamentals and an improvement in people's perceptions. This period was characterized also by a favourable monetary policy of low interest rates introduced in the last years in the U.S. market (expansionary monetary policy), which helped stimulate aggressive growth of the credit industry (mortgage lending) and sustain a steady growth of the real estate industry and housing asset prices. This was accompanied by the increasing levels of leverage of U.S. citizens (consumer credit/mortgage lending).

The second stage, which corresponds to increasing levels of leverage for financial institutions was the utilization of securitization (through innovative financial engineering of products such as derivatives placed on external vehicles – like special purpose vehicles (SPVs)) on the basis of which mortgaged assets got repackaged by issuers of securities as collateralised debt obligations (CDOs) which are asset based securities (ABSs) or Mortgage backed securities sold to investment banks while the latter re-sold these asset based securities to other financial institutions (money-managers, hedge funds etc.). Financial innovation eased further credit to the housing sector causing much higher price appreciation, in particular in the subprime housing segment. On the other hand, market prices of these structured finance assets determined the returns to the investor.

The third stage was the culmination of euphoria for all involved agents such as borrowers, developers, mortgage lenders, issuers of structured finance, institutional and private investors that led to overtrading in the sector with a "fresh supply of 'greater fools'." In this euphoric environment, the profitability incentives/objectives of the financial sector management stirred up even more speculative behaviours by bankers, shareholders and investors to pursue more aggressively short-term financial benefits. In such an environment, short-termism evidently reigned. At the end of this euphoric period, there were warnings about the possibility of an asset bubble but they were often undermined and ridiculed. Some insider profit-taking took place but the agents (i.e., investment banks, hedge funds, etc.) involved still supported heavily the sector's development.

The outbreak of the subprime mortgage crisis became obvious in August 2007 with the default of a large portion of subprime loans, mainly those which were the latest in terms of loan origination. This failure to service debt led to foreclosures of mortgage deals and to heavy losses for ABS issuers and investment banks. Sentiment reversed sharply as those who stayed too long panicked and sold ABS causing sharp declines in the market and losses for other financial institutions which held such assets. The realization of the explosion of credit risk under the new circumstances led to panic, heavy selling and the outbreak of liquidity crisis highlighted by the run on Bear Stearns, with the spread of contagion effects on other

investment banks with similar portfolio characteristics (most notably, Lehman Brothers and Merrill Lynch) or exposed to such portfolios (most notably, AIG). The absence or insufficiency of lending of last resort led to massive flight to liquidity by investors (Orlowski, 2008) and to the ultimate crash of financial markets around March 2009.

4. The role of market expectations

4.1 Expectations during the housing cycle

Dymski (2007) argues that one of the two roots of the subprime crisis was the optimistic assumptions that had been made regarding the growth of the price of housing, in the sense that everybody was expecting it. Borrowers' expectations remained high during the housing boom. Many rational-sounding arguments were used by the experts - chiefly analysts and economists from realtors and mortgage associations - to make economic sense and to convince Americans that a reversal could never happen. The housing myths included one or more of the following presumptions. First, as long as job growth is strong, prices can't go down. Second, builders learned their lesson in the last downturn and they won't swamp the market with new houses when the market turns. Another argument was that low interest rates will keep values rising or, at the very least, put a floor under prices. Finally, restriction on development in the suburbs will ensure low supply and guarantee rising prices.

This line of arguments discounted the possibility of a *future* oversupply of houses and encouraged prospective buyers. These arguments were advanced despite the presence of other fundamental economic warnings. The most important was that prices had risen far more than could ever be justified by declining mortgage rates and that affordability could not be maintained in the future just because home price gains over the past years outpaced wage growth. Furthermore, hard economic facts started to become evident. When the peak was reached by August 2007, a record 3.85 million homes were up for sale, and buyers were becoming scarce.

The housing boom was also based on the expectation of a "soft landing," where, for example, a three-bedroom colonial in a suburb would not only hold onto its huge price gains, but also keep appreciating indefinitely at a "normal," "sustainable" rate of 6 percent or so. The extrapolation of the recent boom in the housing sector to the future and the reliance on certain seemingly positive economic indicators with simultaneous discounting of other plausible adverse possibilities was not a rational reaction. Americans wanted to believe, and they did by focusing on and inflating the positives and ignoring the negatives. The contrarian view, the so-called bubble believers, were ridiculed as the ”Chicken Littles”.

The series of events has been much reported. Quite suddenly the housing market turned downward in August 2007 and it became apparent that it had switched from a seller's market to a buyer's market. Defaults by subprime borrowers, those with poor credit histories or high levels of debt, were the highest in a decade and starting to drag down the value of homes and of bonds that contained subprime mortgages.

According to DataQuick (2007), most of the loans that went into default in the third quarter of 2007 originated between July 2005 and August 2006. The median age was 16 months. Loan originations peaked in August 2005. The use of adjustable-rate mortgages for

primary purchase home loans peaked at 77.8% in May 2005 and has since fallen. Over 75 percent of loans originated in August 2005 were adjustable-rate mortgages.

4.2 Expectations during the financial cycle

4.2.1 Expectations during the financial boom

House price appreciation has been often linked to optimism in the financial sector. Mian and Sufi (2008) suggested that greater securitized subprime usage leads normally to house price appreciation. Mayer and Sinai (2007) found a correlation between subprime lending and higher price-rent ratios. How were collateralized debt obligations (CDOs) able to offer premium yields on their bonds? Most of them did it by purchasing the riskiest, lowest-rated mortgage-backed bonds - the ones built on loans to borrowers with spotty credit and dubious *ɾsumɪs*. Such bonds paid what were considered in 2006 as super-high rates of 9% to 11%. Although the low-quality loans that appeared during the last stage of the boom obviously carried a high risk of default, during the early years of the housing boom, default rates on all mortgages were unusually low. That led bankers - and more important, rating agencies - to build unrealistic assumptions about future default rates into their valuations by overweighting historical default rates. The question for many is why supposedly clever financial professionals failed to ask obvious questions.

Short-termist euphoria and greed blinded those who should have known better to what could occur. And it is obvious that they knew. The highest-paid executives on the planet, the so-called best minds in business backed by their teams of math and computer experts looked elsewhere. The fee engine became eventually so huge that these products took on a life of their own. This engine affected not only those at the highest echelons but also those much further down the chain, even the individual lenders. Everyone (pseudo)-rationalized that it was safe to invest in the subprime market because they were making so much money. But it was far from safe. The fee engine led to insufficient attention to the risk management aspects of mortgages loans and derivatives and to limited auditing and supervisory controls. Doubt vanished because as a mindset it was short-termism that dominated. But, in the short-term, the only sure and safe thing was the rapid portfolio growth that certainly strongly contributed to the salaries and bonuses of financial executives and shareholder gains. In this context, competition among management groups and financial institutions became more intense. The bonus culture rewards people for making things happen - not stopping them. They were paid for quantity, not quality. As the fees rolled in, one firm after another abandoned itself to the lure of easy money.

Again, as in the case of warnings in the housing market, there were also signs in the financial sector of a possible trend reversal. The market for CDO debt changed starting as early in 2006. Reports began to appear in the newspapers with information that in the Mid-West and in Florida borrowers faced occasional difficulties to pay a down-page item on their higher-rate mortgages. Those reports did nothing to lower the euphoria in New York and London. There was still euphoria with regard to trade in CDOs; the ratings agencies were still highly approving; and property prices were rising, as if nothing had taken place to justify second thoughts.

However, in February 2006, international bank HSBC, which owned Household, a US sub-prime lender, suffered big losses on its subprime portfolio. Yet, instead of rising, rates on

subprime mortgage bonds remained abnormally low until the summer of 2007 and in some months even dropped below 2006 levels. The feeling, though, was that this was a correction, that in their exuberance, the US lenders had overexerted themselves. It wasn't serious and it wasn't "coming here". Ben Bernanke, Greenspan's successor at the Federal Reserve, said as much, saying sub-prime would have little bearing on the overall US economy.

So it was obvious that the financial industry knew about a near future trend reversal. But, instead of making those worries public and backing away from subprime paper, Merrill Lynch and other big players prepared for a soft-landing by gobbling all they could, because they needed to maintain the CDO market stable enough to minimize wealth loss and to be able to take profits gradually in the future. But by August 2008 things escalated with negative news about BNP-Paribas (regarding heavy losses of two of its funds that were holding large amounts of American low-income mortgages), Northern Rock, Royal Bank of Scotland and Bear Stearns, escalating fears and uncertainty over other major players such as Lehman Brothers. The moment arrived when markets froze.

4.2.3 Expectations during the financial bust

Perhaps no aspect of this downturn would have been a major problem for big players, such as Merrill, if they hadn't gone from simply manufacturing CDOs and reaping fees to becoming huge investors in the CDOs they created. Merrill was willing, even eager, to speculate with its own balance sheet because of a dramatic change in culture. Until 1997 Merrill did not engage in a lot of speculative trading for its own account; its trading unit concentrated on making markets for clients. Merrill made its money from relatively safe, fee-generating business, courtesy of its army of brokers and a thriving underwriting operation for assets. But, with financial engineering and structured finance growth, Merrill and other major players became venture capitalists in new exotic financial markets.

As venture capitalists in the midst of the crisis, Merrill apparently made a pivotal - and reckless - decision. It bought big portions of the AAA paper itself, loading the debt onto its own books. Merrill and other major players took the top tranches onto their own balance sheet. The question is why Merrill would purchase bonds its customers were rejecting. Merrill has not given a detailed explanation of how it came to own such a large volume of subprime bonds. Merrill executives apparently believed that the credit market turmoil would ease and the bonds would once again be easy to sell. That, of course, turned out to be far too optimistic. But the most persuasive explanation is probably that Merrill became addicted to the fees that flowed from financing CDOs, which reached $700 million in 2006 and sought to keep the CDOs market afloat. In doing so, top management had their eyes on returns coming overall from the fees and not the risk. Other big players followed the same script. That turned out to be one of the worst miscalculations in contemporary financial history.

It has been suggested by Davidson (2008) that the buy-back and accumulation of tranches of mortgage-backed assets of major financial institutions in the subprime market after its reversal was due to liquidity "puts" obligations and/or because they attempted to function as market makers. A "market maker" is a third-party institution that claims to guarantee holders of assets that the market for resale of these assets always will be well organized and orderly so that, by buying sufficient quantity and maintaining an inventory, a transaction is made at some orderly price change in case there was a possibility of sharp decline in price.

However, the “market-maker” explanation of the buy-back of exotic assets does not consider constraints that exist in the activities of the market maker as evidenced in the standard research literature on initial public offering (IPO) situations, limit order books and adverse selection. First, it is generally assumed that the typical market maker posits simultaneous buy and sell orders, and one implicit assumption of this process is that the risk of the market maker is similar for both buy and sell orders (i.e., the direct transactions costs as well as the information uncertainty). This was not the case with major buy-back transactions of tranches of asset-backed securities (ABS). Furthermore, although the lead underwriter engages in stabilization activity for less successful IPOs, she is always concerned to reduce her inventory risk (Ellis, Michaely and O’ Hara, 2000). In this type of research, although for stocks trading below their offer price the underwriter as a market maker accumulates substantial inventory positions, this inventory accumulation appears to continue normally for twenty-one days, suggesting a particular limited time dimension for her stabilization activities in order to minimize inventory risk. This process means that large inventory exposure is not good for a market maker because he can go broke as a consequence of sour trades. The *risk of market maker* losses is determined by the loss limit at the current market prices minus the market maker's net balance from previous transactions. In the case of a non-typical market maker the returns one earns (i.e., from across the board fees and asset appreciation) need to be demonstrably higher to compensate the risk of market maker collapse. Typically, market makers charge a higher price for larger trades because they face adverse selection risk (Sandas, 2001). On the other hand, the limit order book is a good basis for the study of adverse selection risk that the market makers and traders assume (Hedvall, Niemeyer, Rosenqvist, 1997; Rosu, 2009).

In this context, an alternative explanation for the buy-back behaviour of major financial institutions during the subprime crisis is offered from the literature of public offerings of venture capital projects. To the extent that the exotic financial products produced by financial engineering were a new venture in which the major players in the financial industry were involved, the latter acted more as venture capitalists whose public offering was distressed and who have an interest to minimize wealth loss. Enterpreneurial owners have incentives to minimize total wealth losses and under-pricing and to promote their public offering (Habib, and Ljungqvist, 2001) and this, in periods of pressure, can be done by overspending in inventory holdings.

Furthermore, sentiment plays a role in the development of a new market for assets (Ljungqvist, Nanda, and Singh, 2005). As the optimism of sentiment investors increases, there is a greater incentive for public offerings as it was the case with the massive supply of subprime exotic financial products. However, as the difference in opinion between rational and sentiment investors increases, long-run performance of the new asset class worsens. To avoid this adverse outcome institutional investors choose to reverse their strategies towards unloading their past portfolio holdings.

4.2.4 Expectations and systemic risk

This was catastrophic also for the reason that the subprime asset class became over time too big, adding to the financial fragility of the system. The size of the financial innovation products that were created in an environment of rising assets prices and narrowing credit spreads and risk premiums at extraordinarily low historical levels became just too big. Many

of these securities and products were held in leveraged money or capital market vehicles, and financed with substantial liquidity risk. And yet, by historical standards, the overall level of risk premiums in financial markets remained extraordinarily low over this period. The non-bank financial system grew to be very large, particularly in money and funding markets. In early 2007, asset-backed commercial paper conduits, in structured investment vehicles, in auction-rate preferred securities, tender option bonds and variable rate demand notes, had a combined asset size of roughly $2.2 trillion. The combined balance sheets of the then five major investment banks totalled $4 trillion. By then $6 trillion of CODs and other mortgage bonds had been issued. In the US, they became bigger even than the hallowed US Treasury bonds. It is in this connection that the issue of systemic risk is raised. Credit markets became "disintermediated" - instead of banks acting as intermediaries between savers and borrowers, the markets took over. Investment banks, such as Lehman Brothers, Merrill Lynch and Goldman Sachs, are (or were) at the centre of this process, taking on massive amounts of debt relative to their capital base (that is, becoming highly leveraged) in order to deal profitably in the complex web of markets. Guiding their operations are their risk models. The firms claimed they could manage risky markets, and the regulators swallowed that claim. Faith in transparency, disclosure, and risk management by firms became the mantra of the financial regulation. However, systemic risks, like a global credit crunch and a financial crisis, were not and are not controlled. Such risks are externalities; their cost to the economy as a whole is greater than the cost to a firm whose actions are creating the risk and best practice is required if risk pricing is to be correct. However, because overall risk is mispriced, the appearance of systemic market failures means that the market is inefficient (Eatwell, 2008).

The recognition of intra-bank systemic correlations for market risk (BIS, 1996) and for credit risk (BIS, 1999) has however not been extended from within the banks to the economy at large, where a similar consideration arises due to inter-bank correlations. Here, the fee engine machine and excessive sentiment becomes relevant again. The most relevant application seems to be in delegated portfolio management (Gai, Kapadia, Milard, Perez, 2008). The bonus schemes of traders in banks are often implicitly based on group performance, which is influenced by excessive optimism. Losses to a single desk could generate lower compensation for all other traders. This is a negative externality of the failure of one trader on the profitability of others. Given their limited liability, the traders have an incentive to undertake trading strategies such that they survive together and fail together rather than see their profits subsidize the failure of others.

Overall, the system became vulnerable to a self-reinforcing cycle of forced and very fast liquidation of assets, which further increased volatility and lowered prices across a variety of asset classes. Investors' loss of confidence was not restricted to securities related to subprime mortgages but extended to other key asset classes. Notably, the secondary market for private-label securities backed by prime jumbo mortgages also contracted, and issuance of such securities dwindled. Even though default rates on prime jumbo mortgages have remained very low, the experience with subprime mortgages has evidently made investors more sensitive to the risks associated with other housing-related assets as well. In response, margin requirements were increased, or financing was withdrawn altogether from some customers, forcing more de-leveraging. Capital cushions eroded as assets were sold into distressed markets. Confidence eroded in a greater spectrum of markets and assets. The funding and balance sheet pressures on banks were intensified by the rapid breakdown of securitization and structured finance markets. Banks lost the capacity to move riskier assets off their balance sheets and at the same time they had to fund, or to prepare to fund, a range of contingent commitments over an uncertain time horizon.

4.2.5 Expectations during the global financial distress

The crisis of confidence exploded beyond the subprime market to Wall Street and global financial markets driving the dollar to record lows and helping send the prices of commodities, especially oil, soaring to historic highs. How was it that bonds, which were rated AAA, took the kind of hit you would expect on junk bonds? One reason is that the rating agencies enormously underestimated the chance of default in subprime mortgages. Perhaps, they never deserved to be AAA. After the subprime meltdown more conservative valuation assumptions resulted in larger realized losses for investment banks. One particular factor that accelerated share declines of financial conglomerates was lack of access to immediate liquidity to cover the losses. This sounds astonishing given the overall market capitalization of those big investment banks and validates, as we will see below, strong concerns about the applicability of the too-big-to-fail doctrine. For example, in the wake of the crisis, Merrill's $41 billion exposure to subprime paper was more than its entire shareholders' equity of $38 billion. That this huge position went unhedged astonishes everyone on Wall Street. The $7.9 billion write-down meant that Merrill lost 19% on its bonds. At the end of 2003, Lehman had $11.9 billion of tangible equity and $308.5 billion of tangible assets on its balance sheet. The ratio: just under 26 to 1. As of the first quarter of 2008, it showed $782 billion of tangible assets and $20 billion of equity. The new ratio was around 39 to 1, leaving relatively little cushion to absorb losses, and forcing the company to shed assets and raise capital in the second quarter. However, when big investment banks desperately sought fresh capital, the liquidity-preference of institutional and private investors caused sharp declines in their share price. This turned out to be a major turning point, as major players lacked the time that was sufficient to raise capital and became exposed to bankruptcy or takeovers. Global markets lost confidence and became disillusioned since there was continuous (cycle of) hope leading to disappointment. The crisis spread to the real economy. Hundreds of thousands of jobs were lost. Even some positive news, including some better-than-expected retail sales and factory orders, was not enough to restore investor confidence.

What surprised the practitioners and the markets was the fragility of the too big to fail doctrine (on the impact of the doctrine on financialization, see Parenteau, 2005). In the Asian crisis, large conglomerates took excessive risks in the knowledge that they were too big to fail because the government would come to save them (Chang, 2000). But the recent crisis in US and Europe showed that no bank was too big to fail and that the FED was constrained in controlling failures in the equity markets. Even so, this brought forth the issue of the insufficiency of the FED as lender of last resort and the relevance of the Treasury to attempt to bail out partially or fully the distressed financial institutions (on this issue, see Davidson, 1996; 2008; Minsky, 1982; 1986).

4.3 Expectations, Monetary and Fiscal Policy

To fight the crisis, the Federal Reserve's response has followed two tracks: efforts to support market liquidity and functioning, and the pursuit of macroeconomic objectives through monetary policy. To help address the significant strains in short-term money markets, the Federal Reserve has taken a range of steps with respect to cutting the discount rate, narrowing the spread between the federal funds rate and the discount rate, facilitating the provision of discount window financing and providing enhanced financing responding to dysfunctional inter-bank market conditions. Central banks in a number of industrialised economies, including the United States, the euro area, Japan, the United Kingdom, Canada,

Switzerland and Australia, adjusted their operations to ensure that they continued to implement their monetary policy effectively, retaining control over the relevant short-term rates, and to promote orderly conditions in the term market segment (Borio, 2004). Ultimately, unconventional measures by the standards of orthodox theory were often used. One class of such measures is associated with asset-intervention in the bond and stock market to combat "bad" deflation – as it happened earlier in Japan's case. Theoretically, such intervention reflects a "portfolio rebalancing effect" and "quantitative easing", which stems from the imperfect substitutability of financial assets (see Tobin, 1969; 1982; and, earlier, 1961). The outcome of such interventions remains still unclear as long-term interest rates remained high in 2009. In the case of Japan, intervention was ineffective because the capital positions of the private-sector financial intermediaries had already been impaired by an accumulation of nonperforming loans following the fall in asset prices in a prolonged recession (Fukui, 2003). Therefore, bailout practices by the Treasury standing outside the realm of monetary policy become more necessary.

By December 2008, taxpayers had provided about $1 trillion for rescues of private companies, which Paulson, the Treasury Secretary in Bush administration has called "terribly objectionable" to his belief in free markets. For celebrated advocates of free markets, government activism has become a "necessary evil" to help pull the global economy out of recession. Even Bush, who had run for the U.S. presidency espousing smaller government, told a CNN interviewer that he has "abandoned free-market principles to save the free-market system." While bigger government is the unavoidable result of dealing with the turmoil, this outcome still remains an overlooked point. It is the lender or the bailout investor of last resort that it is the ultimate gatekeeper for market confidence. This comes as a major surprise to orthodox accounts in which monetary policy is predominant and in safer times plays this role.

The limitations of monetary policy become more profound in the case of central bank reaction to various asset movements. There was considerable discussion in the past years that the central bank should react to all asset price misalignments (Cecchetti et al., 2000). In line with earlier contributions, Gruen, Plumb and Stone (2003) demonstrated that the containment of the bubble is possible only under certain circumstances, such as when the bubble has become already very big, but not in other situations (i.e., when it is developing). According to Goodhart (2005), the overall evidence stands against the effectiveness of an asymmetric approach of monetary policy to the equity market (the so-called "Greenspan Put"), in the sense that severe asset price corrections cause policy responses, whereas equity bubbles do not (see Rudebusch and Wu (2007)).

This becomes more obvious when one considers the impact of the liquidity-preference of financial institutions, since they have different degrees of liquidity preference in different circumstances (Chick and Dow, 2002). Liquidity preference is obviously relevant when it is considered a shorthand way of referring to the complex behavioural functions of households, firms, banks, and the central bank (Wray, 1995). The current financial crisis provides support for the structuralist view of endogenous money (for developments of this account see non-exhaustively, Chick and Dow (2002); Arestis and Sawyer (2006)) in which behavioural expectations play a major role. On the contrary, it makes apparent that some presumptions of the accommodationist view (Moore (1988) of endogenous money do not hold in situations of financial distress. Despite its role as a lender of last resort, the central bank cannot accommodate the demand for reserves of banks in response to changes in firms' demand for capital. Banks can not *fully* accommodate, at a given interest rate, the demand for additional funds.

5. Discussion

The above analysis demonstrated that behavioural (non-rational) expectations were all pervasive during the housing and financial cycle. The role of expectations in housing price appreciation and in the implicit conception of financial affordability provides a modern link of the impact of the relation of finance-impacted money wages to the monetary production economy. On the other hand, during the financial cycle, the role of agent motivation on the basis of the fee structure was important in an all-or-nothing mindset. Excessive sentiment and behavioural expectations (animal spirits) led to self-denial in financial choices and conventional evaluations (in the form of pseudo-risk assessments stimulated by the fee engine and short-termism). Some illustrative points of the Turner Review (2009) of the crisis indicate that all liquid markets are inherently susceptible to periodic swings in sentiment which produce significant divergence from rational equilibrium prices. Accordingly, individual behaviour can not be considered entirely rational. There are moreover insights from behavioural economics, cognitive psychology and neuroscience, which reveal that people often do not make decisions in the rational front-of-brain way assumed in neoclassical economics, but make decisions which are rooted in the instinctive part of the brain, and which at the collective level are bound to produce herd effects and thus irrational momentum swings. Mathematical sophistication ended up not containing risk, but providing false assurances that other prima facie indicators of increasing risk (e.g. rapid credit extension and balance sheet growth) could be safely ignored. In this sense, historical valuations of risk were actually utilized as ad hoc, conventional, pseudo-evaluations.

The wealth loss minimization attempts that subsequently took place (as opposed to typical market making) explain the high inventory risk undertaken by the major financial institutions who essentially acted as venture capitalists in a market for financial engineering products. This led to the failure of the too-big-to-fail myth and the underlying belief of ultimate policy efficiency. The fast financial distress and fast share collapse contributed to high liquidity-preference of financial institutions after the financial trend reversal. With respect to the policy response cycle, it was shown that not only the prolonged policy of very low interest rates but also the inadequacy of monetary authorities as asset bubble busters and lenders of last resort were key factors in the failure to contain the crisis despite late non-orthodox approaches of portfolio rebalancing. The divergence of actual market expectations from market reaction convergence to monetary policy targets points towards a post-Keyesian structuralist view of endogenous money. On the other hand, the state established itself as a systemic investor of last resort through its actions of fiscal intervention. In this vein, the state acted as the ultimate gatekeeper of market confidence.

One important feature of the crisis is that its determinants are visibly heterogeneous. They are not influenced only by economic fundamentals, because behavioural/psychological forces are also involved. More or less and sooner or later economists appear to have an inclination to attribute the crisis to a framework of market fundamentalism with its emphasis on financial regulation, loose competition, financial engineering and innovation, monetary policy characterized by low interest rates and high liquidity and wealth effects with flows from China, Russia, etc.. However, the impact of human psychology expectations (animal spirits) as opposed to rational expectations in the crisis is autonomous and appears justified . As it was mentioned above, the Turner Review (2009) identified the impact of periodic swings of sentiment which cause divergences from rational equilibrium prices. In the presence of sentiment, the focus turns asymmetrically on return rather than on risk. Thus, in subprime markets the standard return-risk ratio was increasing for almost 15 years. In financial markets,

returns from fees from structuring, issuing, developing, distributing and trading in the housing ABS market became explosive over time. As a result, financial executives focused more on returns (inclusive fees) and less on risk in line with a behavioural (non-rational) process.

The existence of this process demonstrates that euphoric ignorance (rather than forced misguidance) was one of the most important causes of the crisis. Accounts of monetary policy and financial architecture appear to imply that financial practitioners were forced or were "misguided" to mispricing. But, in reality, those executives knew the facts and they chose to ignore them, caught up in euphoria for as long as the bull market went on (even till tomorrow as an indication of short-termism). This is the culture of contentment and privilege that is reminiscent of Galbraith's and Veblen's political economy.

Therefore, there is substantive justification to move away from accounts of fundamentalism and develop enhanced theoretical frameworks inclusive of behavioural considerations. An important mechanic of such theoretical accounts may be that the euphoric sentiment and contentment influences the forward-looking scenario choices. The 10 million dollars-a-year high finance executives in their Seville Row suits long accustomed to the dark multiplicities of idiosyncratic non-systemic inefficiencies of the markets were not ignorant. They knew that mixed packages of mortgage backed assets were of underlying low quality despite positive credit ratings. They also knew that inventory exposures to mortgage backed assets after the market collapsed were too high and that the market has grown too much relative to other markets. As a consequence, they knew that there was increasing risk in deteriorating ratios of tangible assets to equity (i.e., for Lehman it reached 39 to 1) leaving relatively little cushion to absorb losses. They were aware that counterparties in mortgage backed asset markets were trading heavily for speculative reasons underlying weak thin low-quality markets. Finally, they new that there was a conservative end in their forward-looking scenarios, yet escalated sentiment led them to choose scenarios near the optimistic end.

The most important finding is that conventional valuations were used in a non-optimal pseudo-diagnostic manner on the basis of rational models of risk perception and management. The role of conventional evaluations was a distinctive element of Keynes's (1936) *General Theory* regarding interest rate expectations and, consequently, asset price expectations. In the contemporary context of behavioural economics, this idea implies that although there are rational models of risk, expectations still rely on discrete scenario choice and the choice and conformity towards an optimistic scenario (Merrill, Lehman etc.) is essentially a conventional sub-optimal pseudo-diagnostic evaluation influenced by excessive optimism. The same process applies in other bubble markets such as the one involving the debate between housing bulls and housing "little chicken" bubble believers.

As a consequence, *the main proposition of the present paper is that there is a "Keynes moment"* which is decisive within the longer cyclical "Minsky moment." The former moment refers to human psychology conventional evaluations and it provides a sound behavioural foundation for Minsky's central notion of "radical suspension of disbelief." Overall, expectations cannot always be tamed. This constitutes a substantive methodological issue for macroeconomics with consequences for the development of new theoretical approaches of behavioural nature. For example, with respect to conventional evaluations, Shiller (2009) and Akerloff and Shiller (2009) link clearly the crisis to "excessive psychological reaction". Koutsobinas (2008) suggested the existence of human psychology origins of conventional expectations inherent in Keynes's (1936) theory and linked it to modern behavioral approaches of non-optimal pseudo-diagnosis in inferential judgment (Lieberman

et. al. 2002; see also, Gilbert (2002)) as well as to social psychology evidence regarding conformity, herding and habit and highlighted their favorable implications for Post-Keynesian economics.

With respect to the share collapse of global financial institutions, it comes as a shock that financial giants like Merrill and Lehman collapsed in view of their massive market capitalization. The decisive point is that, in the absence of government intervention, they lacked the time that was sufficient to raise fresh capital and they eventually became immediately exposed to bankruptcy or takeovers. The liquidity-preference of institutional investors caused sharp and, without government bailouts, ultimately fatal declines in the share prices of the giants. It is time to restore clearly in macroeconomic modelling the liquidity-premium component of the portfolio-choice in the structural endogenous money approach. Other findings imply that excessive optimism and the fee structure explains the large buy-back behaviour of ABS by giant banks and self-denial of negative reports. With large buy-backs, banks ignored inventory risk and limit-order strategies that are typical of market makers and acted as wealth holders of venture capital projects of financial engineering product development.

6. Concluding remarks

Although a substantive part of the Post-Keynesian literature focuses on the connection between the 2007-2009 international financial crisis and the so-called "Minsky moment," the discussion conducted in the present paper highlighted the fact that the role of psychological expectations was encompassing and very important. There are several aspects that so far have been in the Post-Keynesian literature and merit greater attention. These include the role of expectations in housing price appreciation and in the implicit conception of financial affordability, the role of agent motivation on the basis of the fee structure, the role of excessive sentiment and animal spirits that led to self-denial and allowed reflective knowledge and conventional evaluations to be presented in the form of pseudo-risk assessments which stimulated the fee engine and short-termism, the wealth loss minimization attempts of major financial institutions as venture capitalists of financial engineering products, the failure of the too-big-to-fail myth, the fast financial distress and share collapse attributed to liquidity-preference, the insufficiency of monetary authorities as lenders of last resort, the divergence of market expectations from market expectations of monetary policy in favour of a structuralist view of endogenous money and the establishment of the state through its fiscal policy as an investor of last resort and as the ultimate gatekeeper of market confidence. These phenomena appear intriguing and need further and careful investigation before embarking on regulation recommendations. Finally, if one has to discern the one distinctive feature that was unfolded in terms of the bottom-to-top approach of this paper is that a decisive force through the boom and the bust was the conventional valuations that were using in a pseudo-diagnostic manner rational models of risk perception and management. Conventional evaluations were a distinct observation of Keynes (1936) in the *General Theory* regarding interest rate expectations and, consequently, asset price expectations. When the focus is on the role of expectations in the 2007-2009 international financial crisis, the role of conventional evaluations becomes so prevalent that one should wonder why it has not been labelled yet as a "Keynes moment". Overall, explanations of the crisis cannot be reduced solely to mechanics of market fundamentalism. Behavioural and, more precisely, human psychology considerations were independent, important determinants and their role must be reflected fully in economic analysis.

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