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Conceptual lessons on financial strategy following the US sub-prime crisis

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Abstract

Purpose – On September 18, 2007, the Federal Reserve Open Market Committee took a major step by cutting the federal funds rate by one-half a percent (50 basis points). The only time this had happened in the USA was immediately after the September 11, 2001 attacks. Then the sub-prime derivatives market threatened to engulf the US economy under a dark cloud of uncertainty. The purpose of this paper is an attempt to draw lessons relevant to international financial strategy from the US sub-prime crisis.

Design/methodology/approach – This paper presents reflections upon the sub-prime derivatives market that had begun to evolve since 1993. Reviewing the situation from then until as late as of October 18, 2007, five key lessons are conceptualized. Where possible, insights on the major lessons to be drawn are rendered through simple diagrams.

Findings – Five major lessons may be drawn from the sub-prime turmoil. For easy citation, these are presented as idioms: "Do not put all bad eggs in one basket," "Excessive demand outbalances risk and return," "Robustness of actions for resolving a crisis," "Banks to stay respectable as banks," "Outcome of innovation, greed, and politics." In conclusion, all these lessons are integrated through an overview.

Practical implications – These lessons are explained in a manner so as to render them useful for both practitioners in the financial industry globally and a broader audience of interested readers. In particular, a thinking approach to learning is emphasized. Financial innovators are reminded of the wisdom of the ancients (eggs in a basket), and the applications of artificially intelligent forecasts of financial futures; specifically, US$ exchange rates are brought into the discussion.

Originality/value – This is an original piece of thinking on what lessons may be drawn from a major highly turbulent event: the sub-prime crisis. It is an event that is a direct consequence of innovation in the financial markets.

Keywords Financial risk, Return on investment, International finance, Financial management, Artificial intelligence, United States of America

Paper type Viewpoint

Introduction

As a result of technology that integrates global financial markets, many believe finance to be no longer a national but a world phenomenon. For simply at the press of a button, billions of dollars may "e-cross" national boundaries. This concept is reinforced, for

This paper was developed out of reflections by Dr Foo Check-Teck following his *Channel News Asia* interview on Tuesday, September 18, 2007 in Singapore – the day of FOMC met to set the Federal funds rate.

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example, by the 1997 Asian financial meltdown. One of the probable causes of the Asian crisis was the upsurge of interest by US investors in diverting their funds to the emerging dot.com industry back home. That resulted in sudden, massive outflows of US$ deposits from Asian-Pacific markets, beginning with Thailand, a member of ASEAN group of nations. In an interview with the *Australian Times* (Hiscock, 2007), the present author explained the genesis of the spiral. The downward spiral was due to a deeply rooted belief in Asia of the viability of investing in housing. More recently, in his interview with *Channel News Asia*, the author provided essentially the same picture in the USA with the sub-prime crisis: the over-confidence in housing as investments. Having lived through the financial meltdown in Singapore and through hindsight, it seems clear to the author where the root causes are, and why there is urgency for professionals in the globally interconnected financial industry to have deeper conceptual grasps of the underlying causes of financial crises. The fact that both crises, one in Asia and the other in the USA, are rooted in people's simple desires to own better homes suggests there may be deep wisdom to be shared across frontiers.

Recently, the Federal Reserve Chairman, Dr Ben Bernanke, argued that the Federal Reserve, other regulators, and Congress "… *must evaluate what we have learned from the recent episode* [sub-prime turmoil] … " He drew out of the experiences four major lessons for protecting consumers from the sub-prime mortgage crisis in the future[1]. These are:

(1) disclosures by lenders for consumers to make informed decisions;

(2) prohibition of abusive practices by rules;

(3) offering of principles-based guidance together with supervisory oversight; and

(4) taking less formal steps, as in working with industry participants to establish and encourage best practices or supporting counseling and financial education for potential borrowers.

Clearly, this is a correct, positive, and pro-active step to take. However, what is equally necessary is to see this financial turmoil from a much broader context. For this reason, the author seeks to provide some conceptual lessons for international financial strategy based upon the events embedded in the sub-prime phenomenon.

Few people seem truly to have learned from the Asian financial crisis (see for example, *The Economist*, July 28, 2007[2]). The core lessons from Asia seem at times to have been lost upon professionals within the US finance industry. Only a decade ago, we saw so clearly the pains and dangers of an overly inflated housing industry. Recall that even robust South Korea, one of the major export economies of the world, had to call upon the International Monetary Fund for assistance. Ironically, Greenspan (2007), the Fed chief for many years, chose to crown his retirement (January 2006) with a book on *The Age of Turbulence* (September 2007). Surely, his key responsibility at the Federal Reserve was to rein in the chaos. In hindsight, however, it was Greenspan's extraordinarily low interest-rate policy at the Federal Reserve that provided the extra fuel for heating up the housing sector of the US economy. The party-goers were different, yet analytically, it was exactly the same root cause that had propelled the Asian financial crisis: Thai nationals had over-borrowed US$ to fund their seemingly insatiable appetite for land-based investments. (At that time, the exodus of hot US$ was due in part to Greenspan's doing precisely the opposite: raising US interest rates to curb domestic inflation.) What is most disappointing is that despite the abundance of expertise, tools, and techniques, nobody saw the Asian crisis coming: not even the professional foreign-exchange forecasters (Foo and Foo, 2003).

Can it really be a case of "turbulence" when both the Asian financial crisis and US sub-prime turmoil arose out of a common, even fundamental, cause of inflated housing prices? With these two "turbulences" behind us, can we not all draw deeper strategic lessons from them? Policy makers must do everything possible to prevent the unfolding of yet another crisis. Surely, this is a case of one is enough, two is just too many. Also, whilst the sub-prime crisis has spawned many articles, papers, speeches, and interviews, many of these are responses based on specific events: for example, the collapse of New Century Financial Corporation. There are far too few pieces that have focused on exploring and thus discovering the underlying concepts that may be the basis for formulating future international financial strategy. With such an abundance of literature, it is most timely and fitting for us to try to extract what may be relevant concepts arising out of the US-originated sub-prime crisis for a wider global audience.

Lesson one: "Do not put all bad eggs in one basket"

One of the most enduring concepts in finance lies in the traditional concept of having a well-diversified portfolio (Maggin *et al.*, 2007). Or as stated in a well-known idiom reflecting the age-old wisdom of humanity: "Do not put all your eggs in one basket." This phrase was supposedly to have been translated into English from *Don Quixote* (see the discussion at riskythinking.com on "eggs and baskets" (www.riskythinking.com/articles/article13.php)). Now what the "inventors" or innovators of the sub-prime mortgages had done is exactly the opposite. It was the process of bundling (see the simplified process in Figure 1) that eventually led to catastrophic blunders. Bookstaber (2007) recently captured this idea quite eloquently in the title of his book, *A Demon of Our Own Design: Markets, Hedge Funds and the Perils of Financial Innovation*.

Beginning with less than otherwise fully qualified loan applicants, the individual mortgages came from ordinary US folks (whom we will call "Peter, Paul, and Mary"). These individual mortgages were then sold as a bundle. The final purchasers then

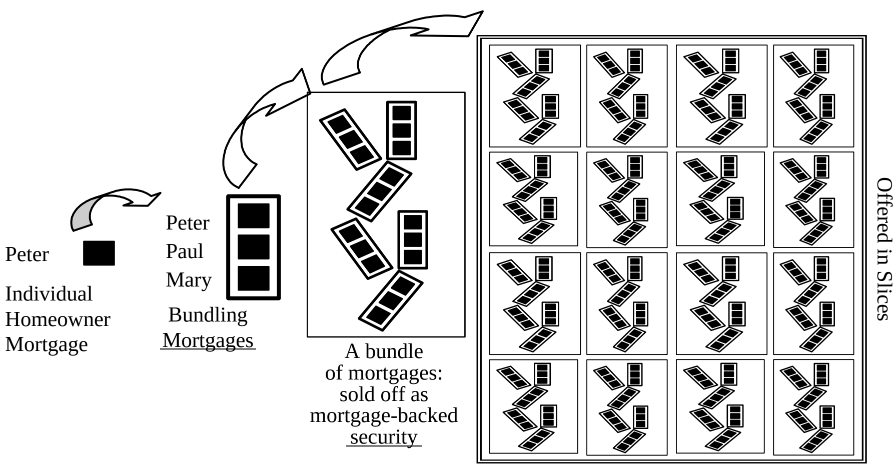


Figure 1.
Innovation of sub-prime derivatives

aggregated these bundles into a package with graded slices. The innovative breakthrough lay in converting what were still baskets of bad eggs into triple-A (AAA), investment-grade, mortgage-backed securities. Clearly, one major lesson from the sub-prime phenomenon is how enduring such ancient, many-centuries-old wisdom remains. Perhaps, post sub-prime, it should be rephrased for industry players as follows: "Do not let others put all the *bad* eggs into one basket." That is, if you want to prevent more future crises arising from these kinds of innovations.

Intriguingly, it was American author Mark Twain who prescribed precisely what the sub-prime innovators had done. In Chapter 15 of his novel, *Pudd'nhead Wilson*, he wrote:

> Behold, the fool saith, "Put not all thine eggs in the one basket" – which is but a manner of saying, "Scatter your money and your attention"; but the wise man saith, "Put all your eggs in the one basket and – watch that basket!" (www.cs.cofc.edu/ ~ manaris/books/Mark-Twain-The-Tragedy-of-Puddnhead-Wilson.txt)

The real crux of the problem is that, despite available technology, there is no methodology yet devised for a close "watching" of a basket of diverse types of asset-backed (by duly secured mortgages) securities (ABS). Perhaps, the problem may be resolved by actions taken in the near future; say, for example, through re-examinations by industry professionals of the risk-financing aspects of these mortgages (perhaps by redefining or refining the terms of mortgages by using more or less agreed-upon standard clauses). If so, new technologies are likely to be developed out of necessity for tighter monitoring by software houses; for example, with capabilities embedded for rapid drill-downs to a very specific borrower's "egg" (mortgage) within a "basket."

Lesson two: "Excessive demand outbalances risk and return"

Clearly, what the structure in the financing of sub-prime derivatives had demonstrated is the veiled nature of their true underlying risks. Just as in economics there are two dominant strategic variables, of demand and supply, in finance there are risk and return. One of the major problems that investors have with sub-prime derivatives is their perception of the inherent risks and returns. Even seasoned investors, including bankers, have failed to appreciate the very essence of the risk and return for this newly introduced (relative to stocks) financial product. Authors of finance textbooks or guides to investing in such securities (Hayre, 2001) have tended to treat sub-prime derivatives as ABS, with their fallbacks to the mortgages granted on the underlying properties as securities. Professionals in the finance industry still conceptualize sub-prime derivatives within the classical framework (Sharpe, 1964; Lintner, 1965) as shown in Figure 2.

One of the most telling signs of the hidden, underlying dangers is how the sub-prime industry within the USA had ballooned. This suggests that the true nature of the risk-financing tradeoffs in this new class of financial assets had yet to be fully appreciated, understood, and responded to by the industry itself. In less than a decade and a half, it shot up 30 times from a base of only US$20 billion in 1993 to US$600 billion by 2007. It is interesting here to quote what the then-newly appointed Federal Reserve Chief, Ben Bernanke, stated in an official speech in June 2006. On "Modern Risk Management and Banking Supervision," he said:

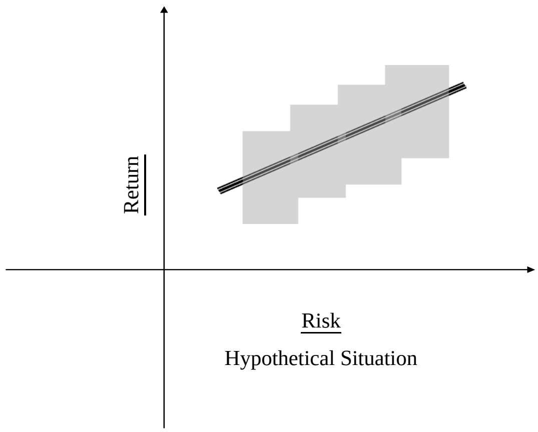


Figure 2.
Classical return – risk concept

> [. . .] [L]ending to individuals once relied mainly on the personal judgments of loan officers and was thus highly labor-intensive and subjective. Today, retail lending has become more routinized as banks have become increasingly adept at predicting default risk by applying statistical models to data, such as credit scores [. . .]

At that time, even he as Fed Chief probably did not perceive the inherent dangers that an exploding market for sub-prime derivatives might bring. Indeed, he was rather confident of how banks had so far been managing the risk aspects of their trade. To reinforce this argument, consider an earlier portion of the same speech:

> [. . .] From the perspective of bank management and stockholders, the availability of advanced methods for managing interest-rate risk leads to a more favorable risk-return tradeoff [. . .]

Indeed, in his capacity as Chairman of the US Federal Reserve, Dr Ben Bernanke even expressed confidence in "advanced methods" for giving the banks much better tradeoffs. Or, to put it simply, US banks were to enjoy a higher return for the same level of risk. This could not be the case, at least for those heavily involved in sub-prime derivatives. The major lesson is that because of the higher returns wrought through the innovative use of the "AAA" sub-prime derivatives, demand had mushroomed and grossly outstripped supply (Figure 3).

In particular, we would argue specifically that the professional investors in sub-prime derivatives had failed to grasp this peculiarly bounded nature of the risk-return relationship; that is, that the risk-return relationship is contextually bounded. Whilst the borrowers of the earlier offers of sub-prime bundles were less than perfect borrowers, the latter bundles were composed of many more fringe cases. These bundles were thus far riskier. However, blinded by demand that had far outstripped available supply, the agents went in a wild hunt for mortgages, in ways that were later condemned. In short, they behaved more like "predators" (www.henrythornton.com/article.asp?article_id = 4588). So long as housing prices were on an upward climb, there remained equity to be extracted from mortgages by the buyers; but not when the prices began to flatten and then headed downwards. That led eventually to the collapse of the housing market as shown in Figure 3.

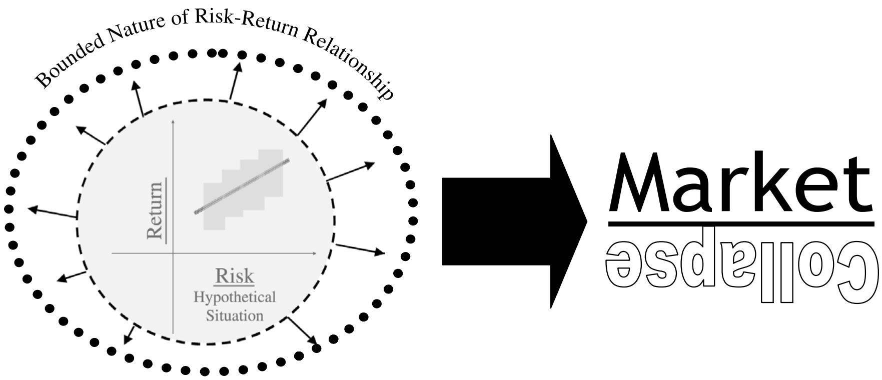


Figure 3. Impacts of excessive demand for high yields of sub-prime derivatives

Lesson three: "Robustness of actions for resolving a crisis"

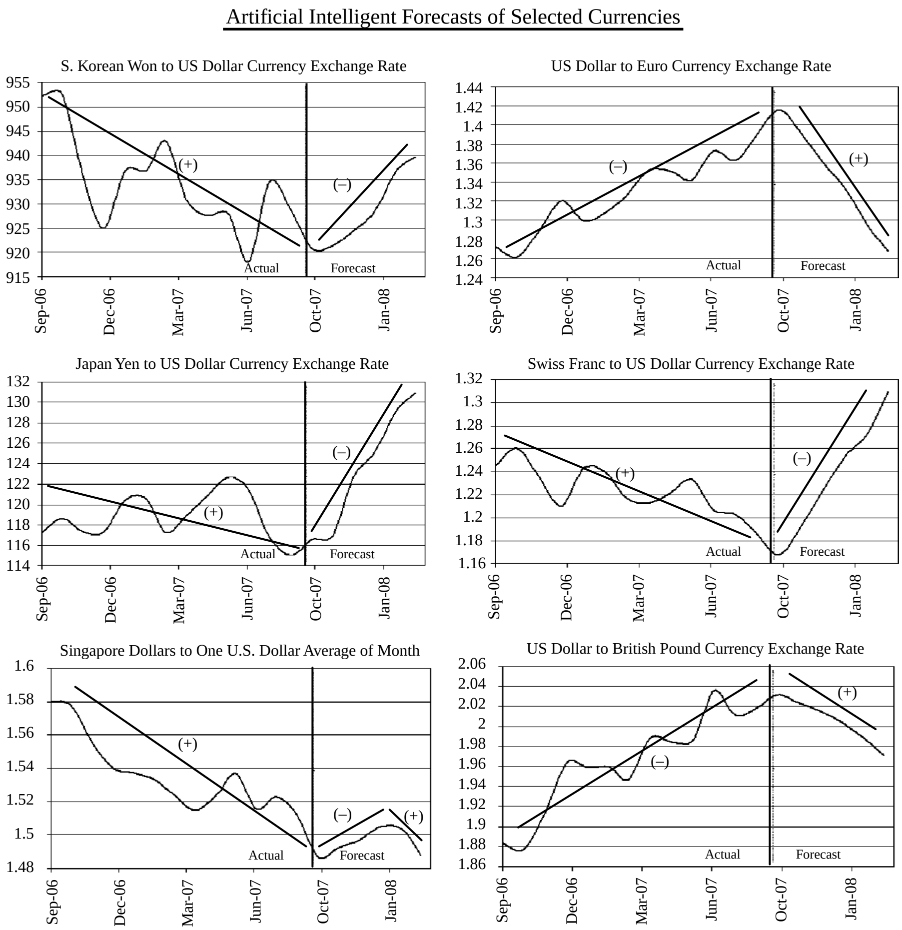
The author was interviewed on the sub-prime crisis by CNAsia on September 18, 2007, at 8.50 a.m. (Singapore time). Since Singapore's time-zone is a clear 12 hours ahead of the USA (New York or Washington), everybody was still eagerly waiting for the Fed's decision on the funds rate. The Federal Open Market Committee (FOMC) decided to lower the rate by 50 basis points or 0.5 percent. The size of the cut was exactly one-half of what Steve Forbes had urged the FOMC to do. As part of a discursive monologue, he said rather emphatically:

> Get it over and done with. Go the full 100 (www.discursivemonologue.com/2007/09/12/with-the-market-only-pricing-in-a-25-basis- point-fed-funds-rate-cut-steve- forbes-says-not-to-bother-with-small- steps-just-cut-a-full-percent/).

It was already substantial: exactly the same as the amount used by Fed on September 13, 2001 in the even more threatening 9/11 crisis. What were the psychological impacts of the FOMC's action on investors globally? It would be difficult to quantify this on any numerical scale. There was, however, an alternative.

In the onslaught of technology in managing risks and finance, we may look at what artificially intelligent (AI) models would predict. We must be aware that even the proponents of artificial intelligence have qualified their uses as being of "moderately *stupid* assistance" (Partridge, 1998, p. 220). In this paper, we assess the impacts of the September 18 Fed decision, which was double the 0.25 percent that most economists had then anticipated (www.bloomberg.com/apps/news?pid = 20601087& refer = home&sid = aRz0DSGX_3jk). Taking the cue that a picture tells the whole story, *Business Week* presented, via investing insights, the immediate impacts of the FOMC decision (www.businessweek.com/investing/insights/blog/archives/2007/09/investors_lap_u.html). Here, we focus instead on a different perspective: the "behavior" in the pattern of forecasts produced intelligently (that is, using AI) on US$ exchange rates (Figure 4). While it is outside the scope of this paper to argue for or against the theory of market efficiency, we wish to note that one reviewer suggested that by quoting these AI forecasts we "… refut[e] the weak form of market efficiency [hypothesis] (EMH)… " We therefore acknowledge that the collapse of the Asian financial markets is highly persuasive evidence against EMH.

Clearly, the results presented by the models underlying the forecasts, made on October 17, 2007 by the AI driven Financial Forecast Center, are interesting (note the



Source: www.forecasts.org

Figure 4.
Artificial intelligent forecasts of selected currencies

dividing line between actual and forecast figures). Almost all the currencies shown are predicted to strengthen *vis-à-vis* the US$ in the forecast horizon. Across the Korean Won, Japanese Yen, Euro, Pound, and Swiss Franc the forecast trends all bend sharply around October. The direction is unidirectional towards a weakening of the US$. Even for Singapore, the trend is envisaged to be similar until the beginning of 2008. Our interest here is not in predicting future trends of the US$. Rather, we are keen to demonstrate how FOMC intervention may be seen logically (i.e. from AI sources) to have certain impacts on the US$. The forecasts are especially interesting because they are rendered objectively through machine intelligence. In the real world, however, perceptions of the future strengths or weaknesses of a currency are rarely objectively determined. No model can factor in the critical element of human emotions and sentiments. As such, US regulators, despite their adherence to free-market principles, ought to realize the human dimension.

At this juncture it is instructive to bring in a culturally very different, perhaps even contrasting, attitude toward approaching risks. The Chinese word for crisis is *Wei Ji* (see Figure 5, in both traditional (1) and simplified Chinese (2)).

In the Chinese-English edition of *The Contemporary Chinese Dictionary* (2002, p. 1986), one finds that the term *Wei-Ji* possesses the conceptual meaning "beset with crisis; danger lurks everywhere." Yet, in this Chinese terminology for crisis is embedded the idea of opportunity. Thus, even in a deepening crisis, an opportunity may be lurking somewhere to be discovered by the sharp, astute, yet robustly minded financial strategist. In the next section, we present yet another lesson emerging from this crisis.

Lesson four: "Banks to stay respectable as banks"

The critical importance of taking quick, immediate, forestalling actions is clearly demonstrated by the case of Northern Rock (NR). The fault lines of the US sub-prime crisis had extended its reach across the Atlantic Ocean only days before September 18. As one of the fastest growing and largest of British mortgage lenders, the "Rock" was under a severe threat of being pulled under by the enveloping US sub-prime turbulence. However, the comments of Warren Buffet (to Market Watch, Dow Jones) reveal that even he did not anticipate this happening:

> [. . .] [S]ub-prime shakeout probably isn't going to cause big trouble for the [US] economy [. . .] (www.marketwatch.com/news/story/buffett-says-subprime-crisis-not/story.aspx?guid = per cent7B075F9A09 per cent2D6B32 per cent2D484Cper cent2D8B57 per cent 2DD9811F351B05 per cent7D).

The problem was not that NR's operations were unprofitable, but that it faced a liquidity crunch. NR found itself to be in difficult waters because other banks simply were no longer willing to extend their credit lines. Just a day before September 18, photographs began to appear in newspapers flashed all over the world of NR depositors in a panic to withdraw their savings (http://skynews5.typepad.com/my_weblog/2007/09/northern-wreck.html). What was the implicit message to readers globally? A substantial and fast-growing bank in the well-regulated British financial industry could be very near the edge. Fortunately, the Bank of England acted speedily to ensure the necessary liquidity. What would have happened if the Chancellor of the Exchequer had stuck to his moral high ground? (www.isnare.com/?aid = 189958&ca = Finances) in other words, if he had decided that the UK Central Bank should intervene only when:

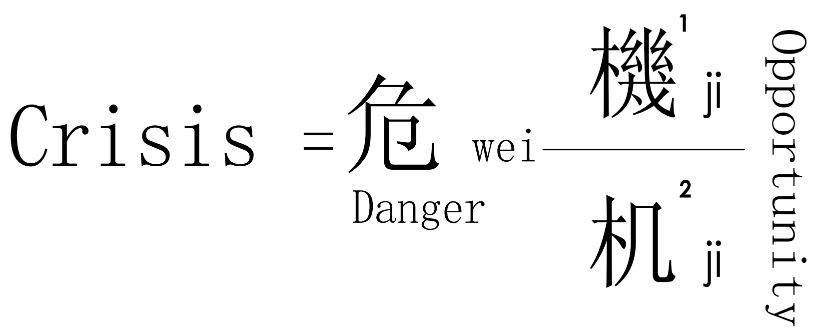


Figure 5.

[. . .] [E]conomic costs [are] on a scale sufficient to ignore the moral hazard of the future [. . .]?

During the author's interview, the NR event was hot news. Consequently, in the style of the ancient author Sun Tzu (*Art of War*), I drew an analogy of the sub-prime crisis with the avian flu epidemic. In metaphorical terms, during financial crises, banks ought to perform the roles of "hospitals." To fight the epidemic of the flu virus, the public looks towards the hospitals to stay healthy. If banks are by themselves badly "infected," as in the case of NR, then public confidence will be deeply shaken. Imagine the downward spiraling effects: banks become endangered species as runs escalate into a pandemic when people become gripped with blind fear. Thus, the intervention by central banks or the Federal Reserve in the USA is clearly warranted. More than just to provide liquidity, it is to enable "banks to stay respectable as banks."

Lesson five: "Outcome of innovation, greed, and politics"

The last lesson we may draw from the sub-prime crisis comes from taking a gestalt perspective and focusing on the underlying drivers of innovation, greed, and politics. Just as with the Asian financial crisis, many future studies utilizing a variety of frameworks will be needed to understand the dynamics underlying the phenomenon (Morecroft, 2007). Here, we take a complex, systemic view of what happened to the sub-prime from 1993 to mid-2007, and present a pattern of different facets (Figure 6).

The right side of the figure illustrates the common scenario. It begins on the extreme right with the American dream of home ownership. Arising out of this, there is then the question of how the buyer of a house may be access the necessary funds. Typically, the bank evaluates the main sources of the buyer's income in formalizing the loan decision (e.g. loan/value and interest rate – fixed, variable, or a hybrid), in addition to taking the house purchased as security through a mortgage. In a rising home market coupled with extraordinarily low-interest rates, investors' appetites are whetted. The focus turns to demanding ever more of the "AAA" sub-prime slices. The bigger and faster-growing the institutional investors, the greater their insatiable demands.

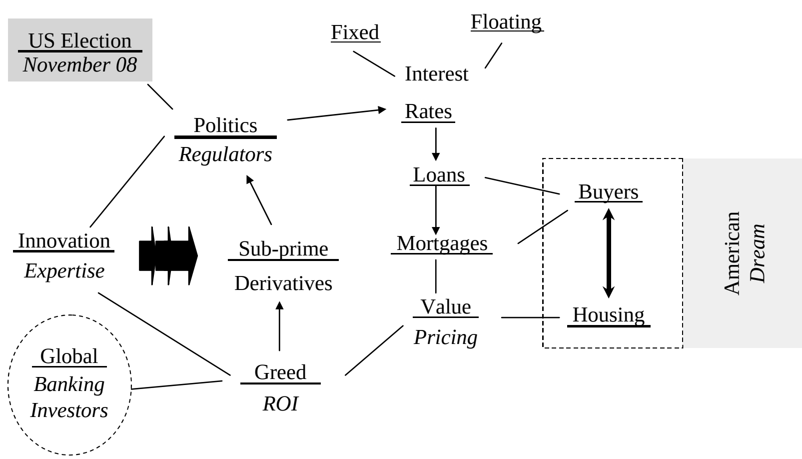


Figure 6.
Thinking in complex, systemic pattern

If this is not greed, then what is it?
Classical financial theory tends to explain away such investor behavior as hedging, diversification, and keeping to strategic plans for meeting investment targets. Then there is undeniably the role of arbitrageurs as well. What is clear, however, is that the primary cause was not the inherently cyclic nature of the housing industry *per se*, but the American innovative enterprise itself. For in an age that esteems innovation, especially of the get-rich variety, the spotlight was on sub-prime derivative products. Unlike other kinds of products that may be tested for reliability in laboratories, it simply was not possible to construct social laboratories to test the sub-prime derivatives. Not surprisingly, even the Federal Reserve the regulators were taken by surprise at the wider social impacts of the sub-prime turmoil. Yes, this is true even though the Federal Reserve regulates the open-market rate of interest. With the US election on the horizon, the sub-prime became a prime topic for aspiring politicians. One notable speech was made by Hillary Clinton, potentially the first female US President (www.clinton.senate.gov/news/statements/details.cfm?id = 270717&&). On March 15, 2007 she had urged for Federal Housing Administration intervention. Three months later, this was implemented by President Bush himself (www.vindy.com/content/national_world/318607038810313.php). Having painted a systemic, holistic picture of the sub-prime crisis, we now present our conclusions.

Concluding remarks

In this paper, we have reviewed five major conceptual lessons and their possible interrelations. "Do not put all bad eggs in one basket" extends the traditional wisdom to sum up the root cause of the sub-prime turbulence. Should we ban altogether any such "innovative" products in the future? At least, we have learned from this event a bigger lesson: to think more deeply and critically about new product innovations in the finance industry. "Excessive demand outbalances risk and return" provides the insight of the inherently bounded nature of the risk-return profile of sub-prime mortgages bundled into ABS. When the load of demand turns excessive, the risk-return platform begins to give way and eventually collapses. This is a special breed of financial assets – one very little understood despite its pervasive popularity. Even so long-established a bank as the Hong Kong and Shanghai Bank faltered on the platform of sub-prime derivatives (www.financialsense.com/editorials/au/2007/0227.html). Putting it differently, there were so many heavyweights looking for sub-primers that the market simply had to collapse!

Clearly, it was most fortunate that Dr Ben Bernanke acted in a timely fashion to bring some order to the possible chaos. That resulted in our drawing another useful lesson: "Robustness of actions in resolving a crisis." This is tied to our other lesson for avoiding public panic and thus social turmoil;, i.e. "Banks to stay respectable as banks." For market liquidity in any society, money must flow like water among banks. However, that will come to a halt if banks no longer trust one another. Finally, the lesson from the big picture of the sub-prime turmoil is the "Outcome of innovation, greed, and politics." These elements are integral to any modern, striving human society's innovation (especially in the USA).

Despite our attempts to draw lessons from these events, we can anticipate there to be yet another new crisis in the near future; even possibly, one engendered by sub-prime fears. At the time of completing this writing, concerns over Citicorp (www.telegraph.co.uk/money/main.jhtml?xml = /money/2007/11/01/bcnciti101.xml), the largest US bank, were reported to result in widespread fears. Manifestations of these fears may be measurably reflected in stocks markets' being driven downwards. Yet that, in essence, is US free-market capitalism, now so global: "Losers, you do not bail out. Winners take all." In the East, we had the Asian financial crisis; and now in West, the sub-prime turbulence. Investors are on their toes, with many concerned about financial risks. They question not so much the why, what, or how, but are much more concerned about: "Who will be next – China?"

Notes

1. "The subprime mortgage market", May 17, 2007; the speech was delivered in Chicago at the Federal Reserve Bank of Chicago's 43rd Annual Conference on Bank Structure and Competition, Chicago, IL.
2. The question was raised as a subtitle: "Or are economic mistakes being repeated?"

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