CFA Society
United Kingdom

FINANCIAL AMNESIA

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Supported by CFA UK's Market Integrity and Professionalism Committee

Position paper
Dec 2011

FINANCIAL AMNESIA

As part of the community that imposes market discipline, CFA UK members have a responsibility to ensure that we learn and apply the lessons of the past. It is up to us to make finance the 'rational engine that supplies money to the rest of the economy in the most efficient and functional way possible'.

By acknowledging the danger of financial amnesia and working hard to prevent it, we can play our role as a source of market discipline.

When financial market participants forget (or behave as if they have forgotten) the lessons of the past, they experience financial amnesia. Financial amnesia disarms individuals, the market and the regulator. It causes risk to be mispriced, bubbles to develop and crises to break. Financial amnesia damages market integrity and impedes the efficient allocation of capital.

Financial market participants are composed of two main groups, financial firms (buyside and sell-side firms) and regulators. Evidence from financial and corporate history demonstrates that agents and markets do not behave according to standard finance theory and despite the history of bitter experience, financial crises occur with alarming regularity enabled by financial amnesia. The three key factors that lead to or characterise periods of financial amnesia are:

Lesson 1: "Innovation", the illusion of safety and "this time it's different":
"The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version" (Galbraith). The expansion of credit plays a key role in fuelling "innovation" while the creation of an illusion of safety results in a "this time it's different" approach that enables the continuation of unsustainable activity and risk taking. Sadly, each time it is always the same and never different.

Lesson 2: Financial institutions are prone to failure:
Financial services firms (buyside and sellside), by acting in their own self interest and in the interests of their shareholders are supposed to impose market discipline. History demonstrates that they commonly fail to act as expected either because of poor information, poor governance or flawed incentives. Operational failures, too, are common. As a consequence, an over-reliance on market forces is unwarranted.

Lesson 3: Ineffective regulation:
The frequency of market failure places a greater onus on the regulator to be more effective in encouraging and imposing market discipline. Sadly, regulators focus on the symptoms of the market's failure to impose discipline rather than the root causes. Furthermore, Regulators often ignore or forget the root cause of their own inability to act promptly and, thereby, contribute to the risk of systemic governance failure.

WHAT IS FINANCIAL AMNESIA?

"It's like déjà vu all over again," (Yogi Berra)

» Financial amnesia is when financial market participants forget (or behave as if they have forgotten) the lessons from financial history. Market participants are composed of two main groups, regulators and financial institutions (buy-side and sell-side firms). Financial institutions impose market discipline when they allocate/invest capital and price risk. Evidence from history demonstrates that market participants do not behave according to standard finance theory and despite the history of bitter experience; the same mistakes are made with alarming regularity.

HISTORY

"There can be few fields of human endeavour in which history counts for so little as in the world of finance." (Galbraith).

Based on the circumstances surrounding the events from the last thirty years one might conclude financial amnesia is getting worse; mistakes are certainly occurring with increasing frequency. As Appendix 1 shows, the tendency of the financial system to overextend itself is not a recent development. The red flags from the past thirty years have indicated that practices and systemic governance failures have been ignored and as a result culminated in the most recent crisis . Rather than seeing the recent crisis[1] as a black swan[2], it is more a case of a white swan made black and blue from frequent systemic governance collapses in the past.

Financial history is littered with prominent examples of financial crises. Kindleberger[3] records at least 46 from the time of the Holy Roman Empire. The aftermath of the 1929 Crash did suggest that the system was willing to learn the harsh lessons of unfettered capitalism.

Following the Crash of 1929, it was acknowledged that unfettered capitalism should be replaced with a more effective regulatory environment. However, by the 1970s as people who bore the scars of the 1920s and 1930s retired; the 'market knows best' mantra took hold and the lessons that were learned from the Great Crash and the Great Depression were soon forgotten. As Alkire and Ritchie state[4], **"it was not until the 1970s that free market economics gained political traction, for example with economic deregulation under (President) Carter. Hayek's Nobel Prize in 1974 and Friedman's in 1976 signalled the change that was beginning, and that accelerated rapidly under Reagan and Thatcher in the 1980s."**

To understand why financial amnesia takes place, it is important to review the three key lessons that have been overlooked in the last thirty years. These lessons emphasise that **our focus must always be on the root causes rather than the symptoms of financial crises.**

THE THREE FACTORS THAT SIGNAL FINANCIAL AMNESIA

Factor 1: A trigger – innovation, credit and the illusion of safety

"The world of finance hails the invention of the wheel over and over again, often in a slightly more unstable version." (Galbraith)

There are three elements that support a greed phase of the market cycle; Bernstein[5] identifies the first two, Howard Marks[6] the third –

a) **Innovation or "displacement"** – this is usually a new technology such as the internet; a fascination with real assets (residential property, railroads, canals, commodities etc), a novel commercial venture such as the South Sea Company or a repackaging of credit.

b) **Credit** – The fuel to drive the "innovation" is provided by the availability of credit.

c) **Creating an illusion of safety** – this provides the reassurance to continue with unsustainable activities. Examples of illusions of safety are the presence of firms willing to write almost limitless amounts of Credit Default Swaps to guard against credit default of sub-prime loans. This supply of comfort does not factor in the ability of the writer of protection to meet these obligations. The "Goldilocks" economy that plays down macroeconomic risks and was widely used to describe the US economy in the late 1990s. The illusion of safety underpins a "this time it's different" view when the reality is the complete opposite.

1"Applied Behavioral Finance: White Swans, Revulsion, and Value", James Montier, CFA Institute Conference Proceedings Quarterly, March 2009, Vol. 26, No. 1: 40-52.
2 Black Swan is an event with the following three attributes. First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme impact. Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.
3"Manias, Panics and Crashes" Charles Kindleberger; fourth edition, published by Wiley, 2000.
4"Winning Ideas: Lessons from Free-Market Economics," Sabina Alkire, Angus Ritchie, Working Paper no.6, Oxford Poverty & Human Development Initiative (2007).
5"Of Laws, Lending, and Limbic Systems" William J. Bernstein Financial Analysts Journal, January/February 2010, Vol. 66, No. 1:17-22.
6"Volatility + Leverage = Dynamite", Howard Marks, CFA ,Research Foundation Publications, Insights into the Global Financial Crisis, (December 2009): 76-87.

Figure 1: Household debt as a percentage of net worth 1917-2009[7]

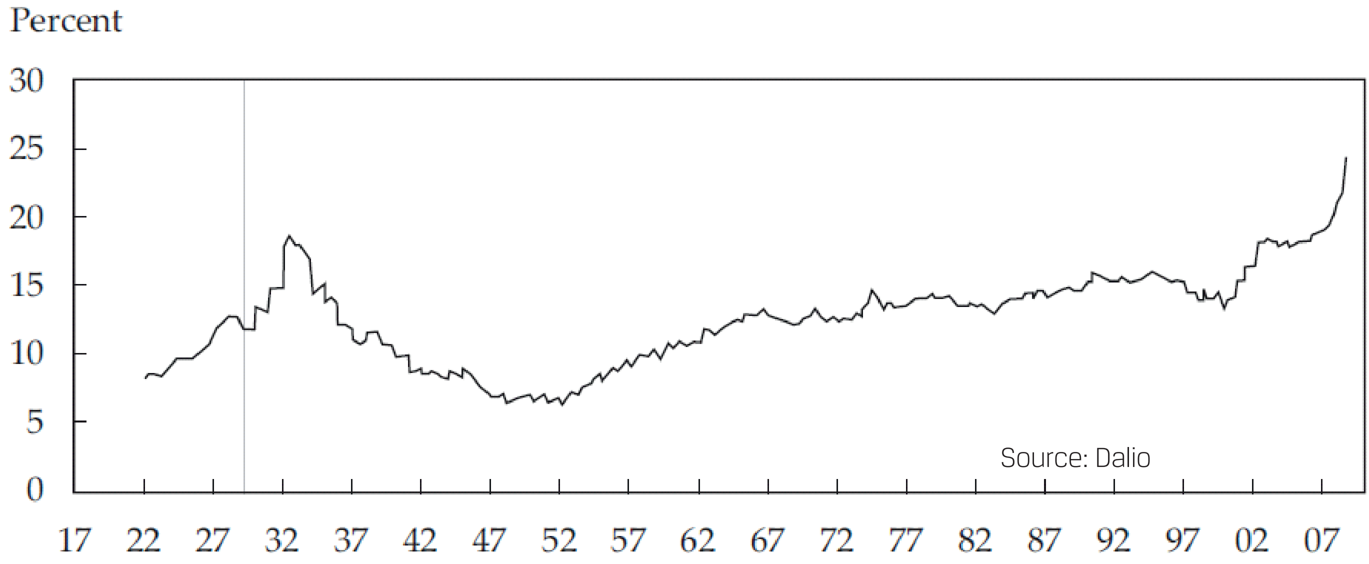

Figure 1 provides a useful historical perspective on household debt as a percentage of net worth in the US from 1917 to 2009. The percentage of debt was already rising ahead of 1929 and then spiked as net worth declined during the post Crash period and the onset of the Great Depression. After declining to about 5%, household debt rose moderately from 1952-2002 after which it spiked sharply to new highs prior to the onset of the most recent crisis.

To understand why explosive credit growth takes place, it is useful to categorise the types of lending set out in Hyman Minsky's[8] instability hypothesis. According to Minsky, credit operations can be divided into three categories –

a) Hedging operations – these are activities that are expected to pay interest and principal

b) Speculative operations – these are activities where the interest will only be paid and the debt will be rolled.

c) Ponzi type operations – these cannot pay interest or principal from existing cashflows. Instead debt is repaid either by selling assets or by hoping for excessive profits at some undefined point in the future or on the continuous availability of credit. As long as asset prices rise and credit is available, Ponzi operations will be able to borrow.

In a world populated by rational market participants only hedging operations should receive capital. Any

capital extended to speculative operations would be at rates that reflect the risk of the operation. In addition, lenders would be vigilant to ensure that hedging operations were constrained such that they could not transform into speculative operations. Providing capital to a Ponzi type operation would not be considered.

Events from the last thirty years demonstrate that in practice investors and lenders are willing to provide capital to speculative and Ponzi type operations. The willingness to do so was demonstrated in the build up to the recent crisis by generous loan to value ratios and the growth of covenant-light loans. While lending to Ponzi type schemes was evident from the willingness to provide sub-prime mortgages[9] and invest in securities that were supported by these types of low quality cashflows. These innovations were considered by market participants and prominent policymakers as making the financial system safer. Complacency and comfort provided by triple-A ratings ensured that the compounding of leverage across the financial system was disregarded[10].

7"A Template for understanding what is going on," Ray Dalio (Founder, President and CIO of Bridgewater Associates), Insights into the Global Financial Crisis, Research Foundation publications (CFA Institute) December 2009: 94-109 8For more on the application of Minsky's hypothesis to the recent crisis see "The Shadow Banking System and Hyman Minsky's Economic Journey," Paul McCulley Managing Director, PIMCO, Insights into the Global Financial Crisis, Research Foundation publications (CFA Institute) December 2009: 257-268
9 Sub-prime mortgages were taken out by those with low credit worthiness and relied on the increasing value of their homes
10"What's Next for Financial Markets?", Gillian Tett, CFA Institute Conference Proceedings Quarterly, March 2009, Vol. 26, No. 1: 7-15.

THE THREE FACTORS THAT SIGNAL FINANCIAL AMNESIA

Factor2: A failure of corporate governance and over-reliance on financial firms to impose market discipline

"I don't want any yes-men around me. I want everybody to tell me the truth even if it costs them their jobs." (Samuel Goldwyn)

By investing capital and pricing risk, buy-side and sell-side institutions are supposed to impose market discipline. These institutions are a key component in the interdependent set of checks and balances that form the governance system within the economy[11]. In theory, when companies are unable to rely on their internal sets of checks and balances, financial institutions should step in and impose market discipline. However, as shown in Appendix 1, which charts the increased frequency of systemic events, **"market failure is not uncommon. Not only does this imply that financial firms' internal checks and balances are less effective than they should be; it also suggests that financial institutions are a major source of systemic governance failure[12]."**

Instead of financial institutions acting in a manner as suggested by The Wealth of Nations (1776), these organisations are more prone to allowing the 'passions' to win over the 'impartial spectator' as set out in Smith's earlier work, The Theory of Moral Sentiments (1759). Paul McCulley's remarks about the recent crisis are also pertinent, **"the longer people make money by taking risk, the more imprudent they become in risk taking. While they are doing that, the expectation of a reward to risk taking is self-fulfilling on the way up. If everybody is simultaneously becoming more risk seeking, risk premiums shrink, the value of collateral goes up, the ability to lever increases, and the game keeps going. Human nature is inherently procyclical."**

The direct and indirect consequences of engaging in speculative and Ponzi type operations can be seen from the examples provided by Chairman of Oaktree Capital Management Howard Marks set out below[13]. All of these scenarios, and many others, are connected by a common thread, the combination of leverage and the illusion of safety, which allowed institutions to take on too much risk for the amount of capital they had while being unaware of the instability of the financial system as a whole through these practices.

Example 1
Bank X (with capital of $10B) sells Hedge Fund G $10 billion of credit default swaps (CDS) on the bonds of Company A, and it buys $10 billion of the same credit protection from Investment Bank H. Company A goes bankrupt, and Bank X pays Hedge Fund G $10 billion. But Investment Bank H goes bankrupt, too, so Bank X cannot collect the $10 billion it is due. Its capital is gone.

Example 2
Bank X lends $50 billion to Hedge Fund P with equity of $10 billion, which then buys $60 billion of securities. The value of the fund's portfolio falls to $50 billion; the bank sends a margin call; no additional collateral can be posted; so the bank seizes and sells out the portfolio. But in the downward-spiralling market, the bank only realizes $40 billion. Its capital is gone.

Let's not forget other writers of credit protection such as the monolines and AIG which used their high credit ratings to create the illusion of safety for low quality securities:

Example 3
Insurance company Z's financial products division (ZFP) uses Z's high credit rating by writing CDS on underlying exposures that was three times Z's $1tln balance sheet. The underlying assets are of low quality but Z's high credit rating lowers the perceived risk of these instruments. However, as the underlying assets start to lose value ZFP is asked to post collateral and this places its own balance sheet under pressure. As the downward spiral continues Z's own viability is called into question resulting in a government bailout to prevent Z imploding and creating a black hole for the entire financial system.

Even in the wake of the recent crisis the lessons of the dot.com bust appear to have been forgotten. In 1998 and 1999 companies that changed their name to XYZ.com saw an average rise in their share price of 53%. Based on Klement's analysis[14], from 2002 to 2010 90 companies from U.S, UK, Australia and Germany that added China to their name saw their share prices rally

[11] Radia, Sheetal, "From corporate governance to metagovernance, a holistic framework" (May 2007) available at the Social Scienced Research Network
[12] Coffee Jr., John C., "Understanding Enron: It's About the Gatekeepers, Stupid" (July 30, 2002). Columbia Law & Economics Working Paper No. 207. Available at SSRN: http://ssrn.com/abstract=325240 or DOI: 10.2139/ssrn.325240
[13] "Volatility + Leverage = Dynamite", Howard Marks, CFA , Research Foundation Publications, Insights into the Global Financial Crisis, (December 2009): 76-87.
[14] "The Flaws of Our Financial Memory" (Digest Summary), Joachim Klement, CFA, Journal of Financial Planning, Vol. 23, No. 8 (August 2010): 54-60. Summarised by Natalie Schoon, CFA, CFA Digest, November 2010, Vol. 40, No. 4: 11–12 (doi: 10.2469/dig.v40.n4.16)"

by an average of 324% during the 4 months around the name change. These market reactions to name changes indicate a strong behavioural trait known as the framing effect.

MARKET FAILURE AS DESCRIBED ABOVE CAN ITSELF BE ATTRIBUTED TO THREE FACTORS:

a) **Incentive contracts** – incentive structures for senior management in buy-side and sell-side firms encourage activity that may eventually prove unsustainable and detrimental. On the sell-side such activity can be demonstrated by the originate and distribute model. On the buy-side, where assets under management become the key driver, trying to sustain asset inflows may come at the expense of performance. As funds under management grow too large, it becomes more difficult to exploit opportunities that smaller more nimble funds may be able to achieve. Fund management companies may create new funds to latch onto the latest investment fad or best selling investment strategy/asset class; such practices will also be detrimental if the managers of these new funds lack the necessary expertise. Conversely, poorly performing managers could try to take more risks in trying to attract fund inflows; activity which also increases the costs of investing for investors, which might further undermine the success of these funds.

   Underlying the incentive structures is the concern that accountability may be insufficient. Senior employees could not be around long enough to take responsibility for unsustainable activity. Instead the current incumbent carries the risk of facing the consequences of their predecessors. Conversely, new senior management in the hope of demonstrating change may undermine the good foundations set by their predecessors.

b) **Moral hazard** – One of the disturbing aspects of the recent crisis was the realisation of moral hazard. Excessive risk taking in the financial sector meant that it was the wider economy that carried the costs and the risks while the sector benefited from the gains. The moral hazard problem is not a new one. The Latin American debt crisis, the Savings and Loans debacle and the collapse of Long Term Capital Management (LTCM) demonstrated that collective action would be taken to prevent the collapse of financial institutions. Financial institutions took on more risk than they should have done because of their belief that the taxpayer would be willing to step in should the situation become unsustainable.

c) **Behavioural traits** – The two points above combined with a host of behavioural factors to enable the assumption of risk prior to the financial crisis. In combination, these skewed incentives and behavioural factors prevented financial institutions from exercising restraint. The key behavioural factors can be identified as follows:

   - **Cognitive dissonance** – dismissing evidence or views that refuted the viability of imprudent activity. For instance, the concerns raised by Paul Moore, Halifax Bank of Scotland's chief risk officer, about sales and lending practices were ignored. As Moore stated: **"I realised the bank was moving too fast and I raised those challenges very strongly at board level. I also raised issues of cultural indisposition to challenge and inappropriate behaviours, and ultimately I was sacked.... I raised and reported all of this whistle-blowing claim that I had with the FSA but they did nothing either."[15]**

   - **Herding and "Groupthink"** – everyone else is doing it so we should also. As Chuck Prince, former CEO of Citigroup stated - **"when the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing[16]."** Furthermore, the pressure to conform to the group, limits the availability of views that contrast with the consensus. Even if it is the rational course of action to take, breaking with the herd or going against consensus is challenging to implement.

   - **Illusion of control/overconfidence** – most people are overconfident and this results in people thinking they have more control over events than they actually do. Several months before AIG had to be bailed out in August 2007, AIG's Chief Risk Officer Joseph Cassano stated that he could not see any reason why the CDS transactions AIG had undertaken (close to $500 billion of notional

[15] http://news.bbc.co.uk/1/hi/uk_politics/7882119.stm
[16] Interview with Financial Times, 9 July 2007

exposures) would result in even $1 of losses[17]. Cassano would have been better informed had he learned the lessons of Orange County's treasurer Robert Citron. In the early 1990s, Citron created an elaborate complex portfolio of debt securities that was leveraged using derivatives; the objective being to profit from steady or declining interest rates. Citron did not factor in any rise in interest rates. Citron was successful until 1994, when the US Federal Reserve raised interest rates six times. Consequently, the compounding of risks via leverage saw Orange County file for bankruptcy. Prior to 1994, Citron was hailed as a financial genius for following a highly leveraged strategy of borrowing short and lending long.

- **The disposition effect** – rather than take losses from ceasing an unsustainable activity, market participants prefer not to realise loss-making positions even though this can mean taking greater and greater risks in the hope that a position will return to profitability in due course.

- **Narrow framing and recency** – we are prone to pay more attention to recent activity and trends and to place greater emphasis on recent analysis. Narrow framing – under which market participants choose to review investment decisions against a relatively small number of factors – runs it close. Together these behaviours allowed the overemphasis on recent data to substantiate the models validating the extension of credit to speculative and Ponzi type operations. In addition, those that were also willing to underwrite the risks of sub-prime loans embedded in complex securities also underestimated the risks of property prices falling. It appears that the property crashes of the mid-1970s and early 1990s (the latter creating the Savings and Loans crisis) had been forgotten. Concerns about the US real estate market were already being published by prominent commentators; Shiller's 2006 article about the irrational exuberance in the US real estate market provided further disconfirming evidence18. Even Nobel laureates are prone to narrow framing and LTCM's inability to factor in periods of investor panic (crashes of 1929, 1974, and 1987) was one of the reasons for its downfall.

  LTCM's 25 to 1 leverage ratio also contributed to the speed of its failure; although one has to question why its lenders were willing to forego standard collateral requirements for a hedge fund; even one headed by a leading Wall Street trader and two Nobel laureates. As Galbraith states **'financial genius comes before the fall'.**

The potential for financial institutions to be a source of failure is supported by the events cited in Appendix 1. Further research also highlights that relying on the tenets of good corporate governance within financial firms will not be sufficient (Erkens et al)[19] . As Asness states **"good advice and accurate pricing are too important to be left to Bubble Logic.[20]"** Given the importance of financial institutions, why is market failure allowed to take place in light of the systemic threat it poses?

THE THREE FACTORS THAT SIGNAL FINANCIAL AMNESIA

"I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such as that they were best capable of protecting their own shareholders and their equity in the firms... you know, that's precisely the reason I was shocked, because I have been going for 40 years or more with very considerable evidence that it (free market theory) was working exceptionally well." (Alan Greenspan).

Market failure occurs frequently, stimulated by excess credit and accelerated by skewed incentives, our behavioural flaws and a readiness to believe that 'it's different this time'. Given the frequency of market failure, much then depends on regulators. Sadly, the last thirty years have shown that regulators, too, are prone to failure.

THE REASONS FOR REGULATORY FAILURE CAN BE IDENTIFIED AS FOLLOWS:

» **Organisational constraints** – insufficient resources, bureaucratic weaknesses and/or an ineffective mandate.

» **Poor management and policy-maker focus** – regulators and policy-makers appear to respond to market failure by issuing new rules (which would suggest a structural failure in regulatory activity) rather than by reviewing the regulator's failure to

[17] *"AIG's downward spiral: A Timeline", Paul Kiel, ProPepublica, 14 November 2008*
[18] *Shiller, "Irrational Exuberance revisited", CFA Conference Proceedings Quarterly, vol 23, no.3 (September 2006)*
[19] *Schumpter, "Corporate constitutions", The Economist, October 30th 2010*
[20] *"Rubble Logic: What Did We Learn from the Great Stock Market Bubble?" Clifford S. Asness Financial Analysts Journal, November/December 2005, Vol. 61, No. 6:36-54.*

supervise and enforce within the existing structure (which would require acknowledging management or operational failure).

- **Capture** – Regulatory bodies are vulnerable to lobbying and capture by those they should be supervising. The relationship between the market and its regulator is close. The regulator can come to depend on the market for resources and information and regulators may become reluctant to rock the boat – a fear that is heightened if individuals working for the regulator consider that they may be employed in future within the market.
- **Behavioural factors** – halo effect (overawed by those that are being regulated) regulatory myopia, groupthink, status quo bias.

Regulators are the last line of defence and need to ensure that they can act in the manner that maintains trust and confidence while having the courage to hold failing financial market participants to account. Regulators must also not fall into the trap of choosing approaches based purely on paternalism or libertarianism as has been the case since the Great Crash. For regulators to be more effective they need to learn from their own mistakes and become more courageous in their actions by supervising and enforcing the rules that already exist. There are signs that the UK regulator is starting to exhibit this learning in its new approach to Product Intervention[21], although it remains to be seen if this change in philosophy does not succumb to status quo bias given the consideration to write even more rules.

La Porta et al note 'when the legal system does not protect outside investors, corporate governance and external finance do not work well.' On occasion, it may be more beneficial to enforce existing laws and regulations than devise new policies or as La Porta et al state 'the strategy for reform is not to create an ideal set of rules and then see how well they can be enforced, but rather to enact the rules that can be enforced within the existing structure.' The regulatory approach should also be aligned with the aim of "regulating markets: protecting us from ourselves and others." 22 By doing so, we avoid the binary choice of market mechanism and command and control; instead "we create an environment where we have "market command with effective control mechanisms." (Radia).

THE WAY FORWARD

CFA UK has identified some of the causes and characteristics of financial amnesia. The impact of financial amnesia is widely observed. The onus is on us all to protect market integrity by working to reduce the frequency and duration of periods of financial amnesia. So what are we to do?

Solution 1, we need to educate investment professionals to maintain and apply their financial memory. It took 50 years – equivalent to a working lifetime – for the regulatory frameworks applied in the aftermath of the crash of 1929 to be repealed. We need to ensure that the memory of the recent market failure (and its costs) is maintained as long. We should consider incorporating material about the practical history of financial markets, designed to remind us about the effects of liquidity, psychology and regulatory failure, into entry-level qualifications for investment professionals and might also look at the opportunity to extend the coverage in the CFA Program as well as recommending the study of financial market history to members as continuing education.

Solution 2, in order to alert investment professionals if the circumstances for the resumption of financial amnesia are in place, we should consider the development of an 'index' to monitor credit growth and financial innovation. The red light should flare on the instance of the first claim that 'this time it's different'.

Solution 3, we should either encourage Boards of financial institutions to undertake an annual amnesia check or should consider commissioning research on the apparent levels of amnesia affecting a range of leading financial institutions. The check (or research) could consider the institutions' risk assessments and the degree of probability they assign to those. The extent to which the determinants of management compensation have shifted in terms of their location across time could also be reviewed.

21CFA UK response on Product Intervention can be found at https://secure.cfauk.org/assets/2126/CFAUKresponseProductIntervention.pdf
22"Regulating Financial Markets: Protecting Us from Ourselves and Others", Meir Statman Financial Analysts Journal, May/June 2009, Vol. 65, No. 3: 22-31.

Solution 4, we should encourage the regulator to:

- emphasize supervision rather than regulation;
- establish and operate supervisory processes that mitigate adverse behaviours; and
- aim for informed independence from market influence.

We should also support the regulator as a critical provider of market discipline and a vital component in the maintenance of market integrity.

CALL TO MEMBERS

Financial amnesia is an embarrassment to our profession. We should do what we can to prevent it. CFA UK would welcome member feedback on the issue of financial amnesia and how as a profession we can keep it at bay. Education is the first step, implementing the learning so that the memory is maintained is the greater challenge. It is upon us to meet Gillian Tett's call to make finance the "rational engine that supplies money to the rest of the economy in the most efficient and functional way possible."

Appendix 1 – Prominent events of systemic governance failure from the last thirty years

Crises in the 1970s, 1980s and 1990s	Governance failure	Market failure	Regulatory failure
Latin American debt crisis of the 1970s and 1980s	US and UK banks excessive lending to developing economies.	Market discipline failed to account for the impact on balance sheets of banks excessive risk taking.	Regulators noticed the potential for systemic risk although did not act until it was too late.
The property market busts of the late 1980s and early 1990s. U.S Savings and Loans Crisis of the late 1980s following the property bust.	As property prices increased, lending became more lax and dependent on the future price appreciation. Little account was taken of what would happen to borrowers if interest rates rose.	In a deregulated environment for S&L institutions, there was little to prevent these institutions extending ever more risky loans.	Post deregulation there was little oversight on S&Ls until it was too late. Congress had to take action with taxpayers providing 80% of the $153B clean-up costs.
Japan - bursting of the real estate and stock price bubbles in 1990.	Banks failed to take into account the risks generated by lending that relied on future rises in equity and real estate prices into the future.	The interdependence of property and equity markets meant that financial institutions had a vested interest in unsustainable activities.	Regulators were unwilling or unaware of the risks being built up in their financial system as a result of speculative and Ponzi type lending.
The bankruptcy of "titan" investment bank Drexel Burnham Lambert in 1990. Drexel was the most profitable firm on Wall Street in the 1980s. Prior to its bankruptcy, Drexel paid the largest fine at the time under the Great Depression securities laws for mail and securities fraud.	Pioneer of high yield or junk bonds. Drexel was able to provide credit to companies that were unable to access it elsewhere. Over reliance on "junk bond" financing exposed the bank to many risks and inappropriate practices. Drexel is reported to have issued the first Collateralised Debt Obligation (CDO).	Yield chasing financial institutions were attracted by the high yield on offer enabling Drexel to become a major source of funding for Leveraged Buyouts (LBOs). Drexel and "junk bond" pioneer Michael Milken became the "junk bond" market.	Regulators did act decisively only after being tipped off by one of Drexel's competitors. The investigation revealed a major insider trading network. Drexel was unable to recover and was allowed to fold. However, despite holding Drexel to account and the indictment of "junk bond king" Michael Milken; regulators could have done more to ensure that the types of practices uncovered by the Drexel investigations became less attractive for firms to undertake in the future.
Russia's domestic debt default in 1998 which started a chain of events that resulted in the fall of Long Term Capital Management (LTCM).	Shock events such as Russia's default were outside the realm of LTCM's models. When risk was being taken off the table, highly leveraged funds like LTCM suffered a double whammy as its long positions declined in value and its short positions rose in value.	LTCM was able to generate high levels of leverage on very loose terms because of the stature of the partners of the firm. The risks associated with LTCM and other funds following similar trading strategies in markets where liquidity was low was also not factored in.	Regulators were unwilling/unaware of the consequences of investor panic on banks that provided lax borrowing terms for LTCM's leverage. With fears of a potential systemic meltdown, the New York Federal Reserve orchestrated an injection of private capital into LTCM to prevent further market disruption. This not only averted further panic in the market but may have also increased moral hazard for the future.

21st Century crises so far	21st Century crises so far	Market failure	Regulatory failure
The dot.com bust in 2000/2001.	Capital was allocated to companies that would deliver profits at some unspecified date in the future. The arrival of the internet coincided with thoughts of the New Economy where Macroeconomic risks would be less also prevailed.	As the dot.com boom took hold, the general level of equity prices also rose which resulted in inflated equities being used as currency to fund merger and acquisition activity; WorldCom being a notable example, AOL/ Time Warner being another.	Regulators did not understand that the inflation of the dot.com bubble indicated inappropriate practices that were detrimental to clients' interests that affected the equity and non-equity markets. Regulators singled out symptoms of the problem such as conflicted sell-side equity research rather the root cause of why capital was being misallocated.
Argentina's debt default in 2001 (the largest in history at that time).	Argentina's attempt to control inflation by fixing the exchange rate to the US dollar imposed an economic stranglehold. In order to maintain monetary credibility successive governments faced fiscal and political difficulties that were insurmountable, even with conditional IMF/ World Bank support. Eventually, the government was forced to devalue its currency and create the largest default (£133Bln) in history.	Conditional IMF/World Bank support was seen as supportive and this may have played down the default risks associated with Argentina. However, in time market participants factored in the prospect that default was inevitable. Perhaps, market discipline could have been more effective sooner and may have reduced the severity of the measures Argentina eventually had to take.	The regulator failure was more government failure. Political instability and the desire to maintain monetary credibility at all costs being the key causes of Argentina's financial crisis, which resulted in currency devaluation and debt default.
2001-2006 Major corporate governance scandals e.g. Adelphia, Enron, Royal Dutch Shell, Parmalat, Livedoor.	The checks and balances within companies were called into question following the revelations at Enron, Royal Dutch Shell and Parmalat. It was found that these companies' senior management were engaged in inappropriate activities to portray themselves in the best light.	The collapse of Enron was especially alarming as it resulted in the downfall of its auditor Arthur Andersen and in multi-billion dollar settlements by some banks without admitting any liability.	Regulators were caught unawares of the type of practices that took place in companies like Enron. In addressing the problem the US regulators focussed on the symptoms rather than the root cause. The Sarbanes Oxley Act was the result and the jury is out about its effectiveness.
Banking crises 2007-2009	The internal checks and balances within major banks that enabled them to engage in the expansion of credit that relied on cashflows of ever deteriorating quality.	The financial system relied on an illusion of comfort created by risk transfer. Risk was being under priced and as a result market discipline was not being imposed.	Regulators were unaware of the risks that were being built up and mistakenly relying on market discipline to provide the appropriate checks and balance.
Periphery Eurozone sovereign debt crisis 2010.	Periphery Eurozone economies had cosmetic fiscal health that was enhanced by economic growth and easy access to finance, One country also engaged in budget data management to ensure it would meet the fiscal criteria	The illusion of monetary credibility provided by Eurozone membership and risk transfer it implied; enabled market participants to downplay the economic and fiscal risks inherent in these economies. Convergence trades trumped fiscal scepticism.	Faced with no credible threat of the Maastricht Treaty being enforced, periphery Eurozone governments were unaware or overlooked the economic risks they could face. Regulators overlooked the impact of these nations' fiscal difficulties on the balance sheets of banks that were holding periphery Eurozone debt.

APPENDIX

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