A NEWSLETTER OF THE FINANCE LAB

Contents

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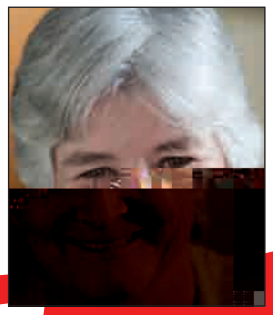
Contributors



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Robert Shiller's recent book, **Finance and the Good Society** (Princeton University Press, 2012) which served as the inspiration to the theme of the current anniversary issue of Arth, probed into issues such as these. Shiller captured the popular perception on finance in the following statement of President Nicholas Sarkozy of France, who went on the say:

> "Purely financial capitalism has perverted the logic of capitalism. Financial Capitalism is a system of irresponsibility and is …amoral. It is a system where the logic of the market excuses everything."[2]

There are a number of symptoms of financial capitalism that has been despised by the people. Increasing income inequality, popular perception of sleaziness in finance, presence of perverse incentives in the finance industry and the "swing door" syndrome among the regulators (whereby regulators tend to come from the market participants and hence, by and large, are sympathetic to the causes of the market players) reveal the ugly faces of finance.

But in the current context, is it correct to blame the finance professionals on all excesses in the financial sector that led to the American

Money and Finance in Good Times and Bad

Anup K Sinha

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product like a camera or a television set, we may be sure of the price, but we do not know for certain the quality of the product. Imagine the difficulty of predicting the future price of a stock that we may wish to buy today hoping to make capital gains of a certain amount within a certain specified period of time. There are so many things that might affect the outcome. Incomplete information about the present (and the past) along with a fundamental uncertainty about knowing future outcomes, makes financial transactions fraught with unpredictable consequences. Frank Knight, a famous economist, referred to this aspect of decision-making as uncertainty as distinct from risk. In situations of risk, Knight argued, probabilities could be (however difficult to do so) actually calculated, whereas under uncertainty the computation was an impossibility. Most of the consequences of financial transactions are uncertain in this sense.

Financial capital and labour are resources that are essential for any economic activity to take place. But unlike labour, finance is perfectly fungible. Finance as such is not valuable in itself. It only helps create and store value. It is a universal intermediate good, required in all economic activities. Hence the property of finance being perfectly substitutable when moved from one activity to another and its universal need makes it special. If anything happened to perturb financial flows in one sector of the economy, it is more likely than not, that other sectors of the economy would get affected in the same way. This is clearly not so for most other goods and services. For instance,s is clearly nn(or s64.v6.)1ts . ameyo troy nn(or s64.v666kes

and some kinds of benchmarks are adopted for financial institutions and markets to follow. For instance, there could be a requirement that banks keep adequate (as determined by the regulatory authorities) reserves, so that if their investments (the amounts they lend to borrowers) turn sour and repayments suffer, then there would be something to fall back on. However, this regulation does not to address the fact that investments may go sour; they merely attempt to minimize the negative consequences of many investments going sour for the lenders.

The second way that society has attempted to keep the consequences of inherent uncertainties to a minimum is through the creation of innovative transactions and approaches to financial management. The joint stock company is an excellent example of how individuals can take small risks yet large amount of resources can be pooled together from a large number of individuals. In the event of a failure of the company, or the price of the stock falling sharply, the individual small stock owner's loss is small. A particular stock holder may be thus induced not to put all eggs in one basket, but rather diversify holdings over a set of possibly dissimilar companies. It would be unlikely that all the companies would do badly simultaneously.

Another type of transaction that helps people to reduce uncertainty is futures trading in commodities or forward markets in currencies. The most traditional form of business risk that can be thought of would be the uncertainty faced by a farmer regarding the final price of his crop post-harvest. However, one way to mitigate the uncertainty would be if the farmer found a person who was willing to pay him an agreed upon price for his harvest at a pre-specified future date. If he knew what price he was going to get his worries would be reduced to a large extent.

Many of these instruments of hedging like the more recent ones called financial derivatives have gradually evolved in society over long periods of time, indicating that human beings have always be aware of the factor of uncertainty and on the lookout for solutions that would address this particular problem.

Two Things to Ponder On

Two issues warrant some discussion at this point. The first is the assumption made in economics and finance that people behave rationally when they take decisions regarding a financial transaction. This implies that a person is fully aware and informed of the consequences and tries to maximize his returns subject to the risk he is willing to take (usually referred to as his risk appetite). He is supposed to do this consistently, every time he takes a decision. This assumption does give us some neat results about the behaviour of financial markets. The intuition is the following: if all economic agents take rational decisions and maximize their returns and manage their perceived risks, then the market would be reasonably well-behaved. The only uncertainty would be a pure random disturbance that would be hard to predict, but it would be known that there remained an element of randomness in aggregate outcomes in the market that might have adverse effects.

Most recent research, however, seem to indicate that people do behave irrationally. They do not behave irrationally in the extreme sense of aberrant behaviour, but irrationally to the extent of being imperfectly rational. Moreover, they almost invariably have incomplete information about possible contingencies that may arise in the future. Hence observed variations in outcomes in financial markets may not be pure random disturbances but the result of imperfectly rational human behaviour – something that is currently popular in terms of the research agenda in finance and goes under the broad heading of 'behavioral finance'.

The second issue worth discussion is the growing understanding, particularly after the great financial crisis of 2008 from which the world has yet to fully recover that even if every economic agent tried to hedge against risk, and even if the purely random disturbance did not prove to be serious in terms of magnitude, the system's overall risk could increase. The issue of systemic uncertainty has to be treated as something distinct from the patterns of

individual risks that might emerge. In fact, one important lesson of the sub-prime crisis that originated in the housing-finance market was the unintended rise in systemic risk. This was not random, and this emerged despite everybody involved trying to hedge through diversification (through structured financial instruments like collateralized debt obligations) and hedging (through credit default swaps). Each thought that his own risk was covered adequately. Yet the system crashed with a vengeance. The regulators, the risk rating agencies, the insurers; they were all caught unawares to an embarrassing degree.

A big question that has emerged from all this is that however hard we may try to be strict in terms of regulations and compliance with regulations, can we remove systemic risk altogether? We may try to plug risks in a particular segment or from a particular new instrument, but the inherent uncertainty would remain. Alongside this, if we agree that people can be (and indeed are) on many occasions imperfectly rational, the complexity of financial market outcomes can increase sharply.

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of the government's debt and the extent of the budgetary deficit.

Would it mean then that if all had access to finance, and all had productive employment, financial institutions were well regulated, and the state was fiscally sound and well managed, there would be no possibility of financial troubles? The answer is clearly in the negative. We will never be free from systemic risks, mistakes made by ill-informed people and unanticipated shocks. The challenge before a good society must be in finding institutions and instruments that are able to minimize the human costs of such events - whether it is from an individual's perspective, or from that of the community as a whole. In many ways life's uncertainties make living a challenge and a charm. Sound finance helps us with a bit of courage to face the challenge and a bit of assurance to enjoy the charm.

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Best products and practices in finance Some examples from Development and Consumer Finance[1]

Suresh Sundaresan

[1] *This article was written to illustrate how some products and services in the field of finance has improved*

of the individual, his/her credit history or prior indebtedness, etc. are not necessarily known.

2. Development Finance

In delivering financial services and products, the industry has to deliver a) ease of access, b) timeliness and reliability in delivery, c) attractive price that is at once viable to both sellers and buyers, d) protecting the privacy of transactions, and e) minimizing the risk of the theft of consumer's identity.

To this date, the branch of modern finance that has embraced technological innovations represents the best that finance has had to offer the society. I will dwell on the following illustrative innovations to make my point, and to keep the article short: Each innovation that I discuss below has two pillars: a technology platform and a theory of finance and economics.

❖ Credit Bureaus/Credit Scores

Credit Bureaus are institutions that collect information about the credit history of individual consumers, tabulate and score the credit history

Financial Innovation and Risk Management

B. B. Chakrabarti

rate due to the anti-inflation monetary policy of the Fed under Paul Volcker. IBRD sought a lower rate to reduce its lending rate to non-affluent countries. How could that be done? The interest rate in Switzerland was 8 percent but IBRD could not borrow from there as the Swiss

were discussing a $5 billion line of credit for Exxon to cover potential damages resulting from the 1989 Exxon Valdez oil spill. The executives were reluctant to sanction the line but Exxon was a major client whose demand could not be ignored. J P Morgan's hesitation was on account of the 8 percent reserve cash requirement against such loan as per the Basel rules which could result in a substantial reduction of profits. The solution could be in the separation of the credit risk from the funding so that the loan could be risk-free without any requirement for reserve cash. Blythe Masters, a member of the J. P. Morgan swaps team, approached the European Bank for Reconstruction and Development, London to sell the credit risk. The idea was that if Exxon defaulted, the EBRD would pay the default amount to J P Morgan and in return J P Morgan would pay a regular fee to the EBRD during the agreement period. J. P. Morgan could thus honor its client relationship with Exxon. The deal was so new that it did not even have a name for some time. The althe in the separati[Exxon)1(dwas a majord nobornf)20( )nnov31 Tw /2$aFe-tnld/

The notional outstanding amounts of the interest rate contracts in the global OTC derivative market grew from $291.6 trillion in 2006 to $449.8 trillion in 2009 to $489.7 trillion in 2012. These contracts made up 77% of the total OTC market in 2012. The major interest rate contract has been the interest rate swaps with notional outstanding amount in excess of 58% of the total OTC market in 2012. The forex contracts also grew rapidly from $40.3 trillion in 2006 to $49.2 trillion in 2009 to $67.4 trillion in 2012. The CDS contracts used for managing credit risks grew rapidly till 2007, then slowed down as expected but still has a sizeable volume. Table 1 below presents the notional outstanding amounts of major categories of OTC contracts in the global market while Figure 1 depicts the same graphically.

What causes Financial Innovation?

The development of the Eurodollar market is probably the most important financial innovation in the post second world war period. Regulation Q in the US that placed a ceiling on the rate of interest that the US commercial banks could offer on time deposits, relatively higher interest rates in London, self-regulation by banks and changes in access to the forward exchange market were primarily responsible for the origin of the Eurocurrency market in London (Schenk, 1998). The Eurobond market was set off by a tax change in the US that charged 30% withholding tax on interest payments on bonds sold in the US to overseas investors. The dollar-denominated bond market thus grew outside the US and when the withholding tax was repealed, the market still remained in London

Table 1 Notional Outstanding Amounts of Global OTC Derivative Market (Figures as of Dec-end in $ trillion)

and the continental Europe to bypass the cumbersome guidelines for new issues imposed by the Securities and Exchange Commission on public issues of securities in the US.

The financial futures market started in 1972 in the International Money Market (IMM) (Melamed, 1996) in Chicago which permitted short selling, reduced costs of transacting in securities, experimented with many new kinds of contracts for hedging and had no premium on knowing one's counterparty.

Interest rate swaps developed in 1981 when interest rates skyrocketed in the US as discussed earlier. Credit default swap was the outcome of defaults in the corporate bond market in the US in 2002 after the recession began in 2001, which affected the United States and the European Union with huge job losses. Total return swaps are used to convert dividends into capital gains to reduce taxes as capital gains are taxed at a lower rate.

Some innovations are the result of the discovery of mathematical models. Take the example of options. The option market could start and then explode only after the development of the famous pricing model by Fischer Black, Myron Scholes and Robert C. Merton in 1973. The collateralized debt obligations (CDO) could be developed in early 2000 only when it became known that dependence modeling with copula functions can be applied for financial risk assessment and actuarial analysis for pricing CDOs (Li, 2000).

Technology played a very significant role in the development of ATMs, debit and credit cards and online payment systems by making cash transfers more wide spread and efficient with reduced transaction costs. Online banking and e-commerce for the same reason are becoming more popular with households.

Financial Innovation and Risk Management

Financial innovations are driving the global financial system towards the goal of greater economic efficiency (Merton, 1995). Derivatives have been particularly useful in risk management through hedging. Forwards, futures, options and swaps – both exchange-traded and over-the-counter products – can lower transaction costs and expand opportunities for risk sharing. Hedging can be a very efficient substitute of capital, the traditional instrument for risk management. While equity capital acts as a cushion for absorbing risks in financial and other institutions, hedging can dissipate risks to other market participants thus reducing the probability of unanticipated losses and the need for equity capital. While equity capital can absorb any unanticipated loss arising from any source of uncertainty, hedging is used to control targeted risks. Hedging, however, can be much less expensive while equity capital is a costly source of money due to agency costs, taxation, floatation costs, inadequate supply and other reasons (Grossman and Hart, 1982 and Jensen, 1986).

How do I interpret risk? I define risk as a measurable uncertainty different from unmeasurable ones. Risk, for example, will thus be the probability that an actual return on an investment will be lower than the expected return. Managing risk will hence encompass all such actions that can be taken to transfer such risks or reduce the unfavorable impact on costs and / or prices.

Let us take an international bank, say Deutsche Bank (DB) to understand the role of financial innovation in business and risk management. The primary risk categories identified by DB[5] include credit risk, market risk and operational risk. The bank has to manage the identification, assessment and mitigation of all these risks and maintain economic capital to absorb unanticipated losses. The credit risk is on account of traditional lending activities as well as direct trading activities with clients using OTC derivatives, FX forwards and Forward rate agreements. All these direct trading instruments are the result of financial innovation over the last few decades

[5] *Deutsche Bank Annual Report 2012*

been a matter of rent-seeking, rather than true productivity".

Warren Buffet in a letter to the shareholders[9] of Berkshire Hathaway in 2002 described derivatives as time bombs and financial weapons of mass destruction. He wondered that firms book profits on derivative positions on positive swing of the market even though nothing has changed hands. However, it is observed from the Form 10-Q[10] filing by Berkshire Hathaway with the US SEC for the quarter 1 of 2013 that Warren Buffet collected premiums of $1.246 billion by selling put options on S&P 500, FTSE 100, Euro Stoxx 50, and the Nikkei 225.

I would like to conclude that risk management is actually a part of social sciences, where the object of study changes continuously and such changes are also brought about by financial innovation. Academicians, researchers and practitioners develop new products, models, methods, markets and institutions with the idea of gains for households, firms and society in general, and financial innovations have contributed very significantly in management and transfer of risks. However, understanding the negative impact of financial innovation on the risks of doing business not only during the normal times but also when markets could tumble under great uncertainty is highly desirable.

[9] Warren Buffet on Derivatives, http://www.þntools.com/docs/Warren%20Buffet%20on%20Derivatives.pdf accessed on 4 July 2013.

[10] Berkshire Hathaway Q1 2013 Form 10-Q þling with SEC, http://www.sec.gov/Archives/edgar/data/1067983/000119312513199397/d508175d10q.htm accessed on 4 July 2013.

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Finance for Societal Good

A. Vasudevan

This question should fall ideally in the realm of the old fashioned area of 'welfare economics' but most of the discussions on it since the 1970s are based on empirical analyses of financial sector and real growth of a country or a panel of countries. These discussions generally point out the beneficial effect of financial sector growth

Challenges in Treasury Management Post 2008 Crisis

Nirakar Pradhan

Detroit, once the hub of America's automobile industry, filed for bankruptcy on Thursday, 18th July to become the largest American city to take such a step. This happened more than 5 years after the Global Financial Crisis in 2008 which started with the subprime crisis and led to collapse of Lehman Brothers; acquisition of Bear Sterns and Merrill Lynch; Govt. bail-out of AIG, Freddie Mac, Fannie Mae and a number of other companies. While a coordinated move by central banks by infusing liquidity into the system saved the day temporarily, new cracks appeared in the form of Euro Zone debt crisis by late 2010 requiring sovereign bailouts for Ireland, Portugal, Greece, Spain and Cyprus. This sequence of events completely changed the way world looks at risk management strategy in treasury.

How Investment Return Scenario Changed

Global crisis in 2008 followed a 5 year bull run in risky asset classes between 2002 and 2007. During this period equity markets across the globe posted one of the best returns on the back of higher growth rate in emerging economies, lower interest rates and a commodity super-cycle. Sensex gave a 43% CAGR return between 2002 and 2007 which is one of the highest returns for any 5 year period. Most of the major equity indices like Dow Jones (US), Dax (Germany), FTSE (UK) hit their all time highs during this period.

The following 5 year period post crisis (2007-12) presented the investors with one of the worst return performances across risky assets

Equity	2002-07	2007-12
Sensex	43.13%	-0.86%
Dow Jones (US)	9.72%	-0.24%
Dax (Germany)	22.76%	-1.15%
FTSE (UK)	10.38%	-1.79%
Shanghai Composite (China)	31.11%	-15.48%
Bovespa (Brazil)	41.49%	-0.94%
Micex (Russia)	42.72%	-4.83%

(equity market returns are in local currency and are calculated between (1) Dec 31, 2002 & Dec 31, 2007; (2) Dec 31, 2007 & Dec 31, 2012)
(returns for Fixed Income = Avg. yield on 10 year Govt. Sec.)

especially in emerging countries. Below data gives a comparative picture of 5 year CAGR return during each of the period between 2002-07 and 2007-12 across asset classes.

Fixed Income	2002-07	2007-12
India	6.76%	7.85%
USA	4.39%	2.93%
Germany	3.91%	2.85%
UK	4.66%	3.30%
China	3.59%	3.63%
South Africa	8.67%	8.50%

Commodity	2002-07	2007-12
Gold	19.10%	14.97%
Silver	25.35%	15.45%
Crude Oil	26.77%	3.43%
Copper	33.74%	3.51%
Aluminum	12.28%	-2.96%

Source: Bloomberg

As can be seen from the tables above, all the risky assets (equities, base metals) have given worse performance during 2007-12 compared to 2002-07 while precious commodities (Gold, Silver) and bonds have posted relatively better-off.

How Regulations Changed Post Crisis

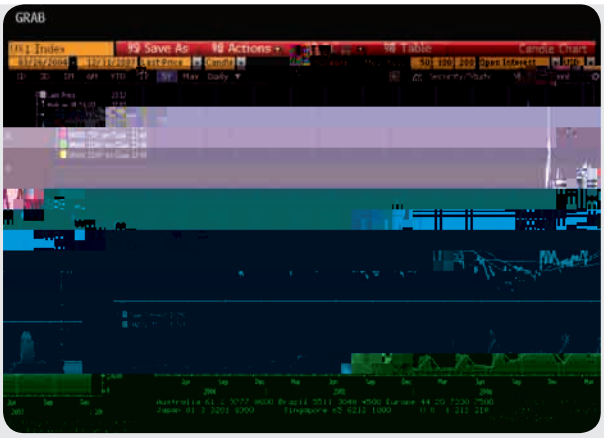
The Global Financial Crisis saw an unprecedented amount of money being pumped in by Central Banks in terms of bailouts of private and government companies and bond buying from secondary market through Quantitative Easing (QE) which is still underway. The credit derivatives market which was on the rise with lot of insurers like AIG selling Credit Default Swap (CDS) protection to buyers dried up post the crisis. The financial crisis also evoked response by various governments through regulatory changes to have more oversight over banking and financial sectors. Dodd-Frank Act which became a law in USA in 2010 calls for new oversight council to evaluate systemic risk, increased transparency of derivative instruments, consumer protection reforms, increasing international standards and cooperation including proposals related to improved accounting and tightened regulations of credit rating agencies. This act also includes Volcker Rule which aims at restricting US banks from making certain kinds of speculative investments that do not benefit their customers. Also, BASEL III, a global voluntary regulatory standard on bank capital adequacy, leverage and liquidity requirements were introduced in 2010-11 and is expected to be fully implemented by 2019.

In India, RBI responded to crisis by giving enough liquidity in the system through cuts in policy rates and Cash Reserve Ratio (CRR). To manage forex liquidity, the norms for External Commercial Borrowing (ECB) were relaxed for corporate and NBFCs and Housing Finance Companies were allowed access to foreign borrowing. Securitization guidelines were strengthened; additional disclosure norms were introduced for NBFCs with exposure to real estate sector, interest rate and currency futures were introduced to manage interest rate/currency risks better, introduction of Credit default Swaps (CDS) was slowed down in the wake of role of credit derivatives in global financial crisis, cap on bonus to top officials of private banks was introduced, Financial Stability Unit (FSU) was set up within Reserve Bank for conducting macro-prudential surveillance and stress tests.

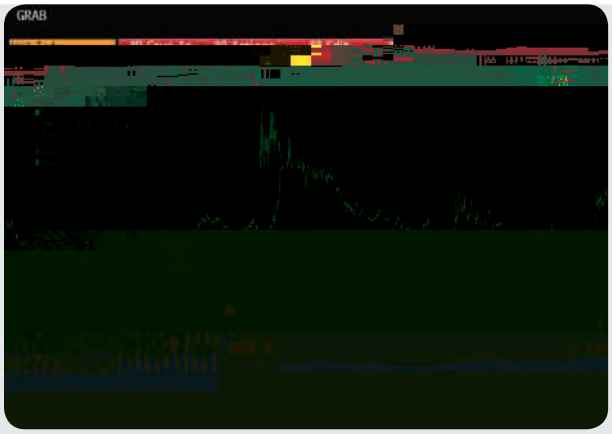
Challenges Post Crisis

Volatility

The volatility has increased manifold across asset classes post global financial crisis. The below chart shows CBOE Volatility Index, a key measure of market expectations of near term volatility, in pre-crisis and post-crisis scenarios.



2004-07)



2007-12)

Avg. value of CBOE volatility i ndex during 2007-12 was 26.13 while the same for previous 3 years was 15.03)
Source: bloomberg

Because of increased volatility across asset classes, the risk adjusted returns across risky asset classes have decreased substantially post financial crisis.

The currency of emerging markets including India has seen unprecedented volatility making hedging of foreign currency exposure a must for corporate treasury managers. The table below shows the percentage depreciation of various emerging market currencies against Dollar during last one year (Jul'12 to Jun'13).

Country	Percentage Depreciation
India	6.74%
Brazil	10.95%
Indonesia	6.05%
Russia	1.30%
South Africa	21.08%

Source: Bloomberg

Inflation

On the back of an easy monetary policy post 2008 crisis, most of the emerging countries including India witnessed higher inflation. This is also fuelled by higher imported inflation due to a depreciating rupee amidst a strong Dollar and weak Current Account Deficit (CAD) (almost 35% of our imports is crude oil). A higher interest rate regime suppresses corporate profits leading to lower earnings growth. Posting good return on investment amidst lower corporate profit growth and higher bond yield makes the task of investment manager much more difficult.

Regulatory Intervention

With a depreciating currency and an elevated Current Account Deficit (CAD), the need of foreign capital inflow is more than ever. This has made regulatory intervention across Indian capital markets more frequent thus making overnight positions of investment managers riskier. One of the most recent examples of such regulatory intervention being the 200 bps

measures, bad governance. While Cyprus imposed a tax on savers with deposits over 100,000 euros at the country's largest bank, the investors in Greek sovereign bonds had to take a write off up to 75% of their holding. Recently Japanese Prime Minister was elected based on his promise of liquidity easing (to bring the country out of deflation) and Yen depreciation (to