



SECTION - 7

COMPREHENSIVE ILLUSTRATION ON RISK MANAGEMENT THROUGH DERIVATIVE PRODUCTS

This Section includes

- **Comprehensive illustration on risk management through derivative products**

- Daniel, the production director of UK based Hebrew & Co, is very pleased to hear that the company could receive a large order from one of its US customers.
- They are not absolutely sure of getting the order. But there is a good chance for this order which is worth Dollar 2.5 million.
- The UK supplier has to take the currency risk
- If the UK company gets the order, the company will be paid in the middle of August
- The question is what will be the spot rate then? The current rate is \$1.677/1 pound and it is realistic to expect an upper rate of \$1.75/1 pound in August and a lower rate of \$1.60/1 pound.
- Where will the company be if it gets the order and where it will be if it doesn't get the order
- The forward rate is \$1.6539/1 and currency call option price for an exercise price of 1.675 is 2.03 cents
- The following table summarizes the consequences of various alternatives, under various assumptions of the spot rate

Order value		2.5 million			
		If we get the order		If we do not get the order	
Spot rate in August		1.75	1.6	1.75	1.6
		000	000	000	000
No hedge taken		1429	1563	0	0
Forward sale	1.6539	1512	1512	83	-51
Option bought	1.675 at 2.03 C	1475	1545	46	-18
Cost of call option	18				

- If no hedge is taken and the rate is 1.75, then the company would get $2500000 / 1.75 = 1429000$
- If no hedge is taken and the rate is 1.60, then the company would get $2500000 / 1.60 = 1563000$
- If no hedge is taken and if the company doesn't get the order, there is no risk under this strategy
- If the company uses forward at a rate of 1.6539, the company will get $2500000 / 1.6539 = 1512000$, whatever the spot rate is
- If the company doesn't get the order, it has to buy the dollars from the market and deliver in which case if the rate is 1.75, the company will gain 83000 and if the spot rate is 1.60, the company will lose 51000
- The third strategy is to buy call option with an exercise price of 1.675 at 2.03 cents. This would mean $2500000 / 1.675 = 1492537$.
- The cost of the option is $1492537 / (1.677) = 18000$
- If the company gets the contract, the company will sell the dollars in the open market and if the spot rate is below 1.675/1, the call option lapses and we get the receipts less the initial cost of 18000.
- If the spot rate is above 1.675/1, then after the initial cost of 1475, regardless of the then spot rate, since the loss in the receipt due to the higher spot rate is exactly matched by the gain on the call option
- If the company doesn't get the order, the maximum it can lose is only the option premium, which is 18000.

- One can note that the maximum loss is 51000 under the forward contract and under the options approach, it is 18000
- The final decision, whether to go for forward or option, depends on the probability of getting the order. If this probability is very high, forward would be a better option and if there is very low probability of getting the order, it is better to go for option.

Futures trading - why the panel may be flummoxed



The futures platforms offered not only a firm and timely indication of the prices to expect at harvest but also an ironclad assurance that farmers will be able to collect the payment.

Sharad Joshi

Business Line, 23.04.2008

At the end of the discussion on the price situation in the Rajya Sabha on April 17, as the Minister for Agriculture, Mr Sharad Pawar, came to the end of his reply, a question was raised from the Left benches about the Government's position on the forward markets. In reply, Mr Pawar mentioned that an expert committee appointed under the Chairmanship of Prof Abhijit Sen had been deliberating the issue for 14 months and was yet to submit its report, though it was to have done so in its report in the stipulated two-three months.

The Minister said that if the report was not submitted within the next 10 days, he would call for a meeting of experts on the subject and take a final decision on the future of futures trading, in the light of the severe opposition to these markets reflected during the discussions in the Rajya Sabha and in the recommendations of the Standing Committee on Agriculture on the subject. Coming from a politician and statesman of Mr Pawar's vintage, this was an unusual statement.

Even presuming that Prof Sen's panel had failed to show the necessary alacrity in respecting the time schedule, it would be unfair to decide the issue outside the Committee and punish the innocent market and the farmers for no fault of theirs.



Further, one wonders why the Minister took the trouble of appointing a Committee if he knew knowledgeable people who could be called for consultation.

Little innovation

Throughout the discussion in the Rajya Sabha, the Minister dealt at length on the efforts the government was making to ensure food security, by restricting exports and facilitating imports, and the mechanisms of CACP (Minimum Support Prices), Food Corporation of India (FCI) and the Public Distribution System (PDS). This, by itself, suggested that the government was thinking more of the traditional means of ensuring food security rather than experimenting with innovative and little understood mechanisms.

The statement by the Minister of Agriculture seems to have made Prof Sen's position even more difficult. Last year, at about the same time, the matter of the utility, or otherwise, of the futures markets was brought to him for examination. Even though the terms of reference of the Committee did not so suggest, it was obvious that the government was apprehensive about what the futures market could bring in.

It was quite clear that the futures market was an unwanted baby — of a different gender from the licence-permits-quota type of market systems that the government had carefully nourished till then. Prof Sen's problem was that the baby was indeed of a different gender but, despite the crude attempts at getting rid of it, was alive and kicking and threatened the basic structure of the traditional agricultural marketing policies based on CACP-FCI-PDS.

Terms of reference

The terms of reference of the Abhijit Sen Committee, as distinct from the unwritten agenda of the Government, were benign. The Committee was appointed in March 2007 to

- i) study the impact of the operation of futures markets on commodity prices;
- ii) suggest methods to minimise such impact, and
- iii) recommend ways in which the farmer's participation in the futures markets can be increased.

It was not the case that the futures market possibly had an inflationary effect. The problem was that forward trading and the futures markets resurrected by the NDA government go against the Central Government's policies since Independence in respect of commodity markets based on Minimum Support Prices, procurement from Food Corporation of India and the Public Distribution System in the name of the weaker sections.

The opposition of the Left parties to the futures markets came essentially from the conviction that it belonged to the wrong — liberal — gender. It was hoped that the Sen Committee would give them the authority to abort it.

The mandate of the Sen Committee is simple enough. It is intriguing why the Committee is



taking such a long time to submit a report which, it had been thought, could be submitted in just 90 days. The problem seems to be as follows. The Committee found little evidence to suggest any links between market price hike and volatility that could be directly linked to the operations of the futures markets.

Under these circumstances, all that the Committee had to do was to make recommendations about how the performance of the futures markets could be further improved by sanitising the spot markets, improving finance to the commodity markets and promoting farmers' response by facilitating it.

Uncomfortable facts?

It is not that the panel was to study the desirability or otherwise of lifting/continuing the ban on the futures trade. The futures trade was resurrected in 1993 and, at least, three multi-commodity exchanges are doing pretty well with geometrical expansion of the volume of transactions.

Further, it shook up established notions that the commodity market should be eternally based on three pillars of CACP, FCI and PDS.

The Commission for Agricultural Costs and Prices (CACP) that would help determine the Minimum Support Prices; Statutory Minimum Prices are also, by corollary, the procurement prices;

The Food Corporation of India (FCI) that manages procurement of foodgrains and their conduit to different States; and

The Public Distribution System (PDS) that would ensure retail distribution according to decisions taken by the Government.

If the Committee submitted its honest findings the government would be forced to permit the normal delivery of the futures market infant. The problem for the Committee, probably, is that that would raise a number of very inconvenient questions that would make the candid recommendations unpalatable to the Government.

What purpose would the CACP serve in a situation where the futures market platforms offered not only a firm and timely indication of the prices to expect at the harvest but also provided an ironclad assurance, as also insurance, that farmers would be able to collect the prices? Further, since the commodity markets in India provide warehousing facilities, banking and finance, insurance as also negotiable warehousing receipts, what function would be left to justify the existence of Food Corporation of India, which had become notoriously unpopular with the farmers, most of whom see it as both inefficient and expensive? Lastly, with the procurement of the foodgrains decentralised, was it really necessary to create a separate PDS network for the benefit of the weaker sections of the population? Would that purpose not be better served by simply mailing the targeted people food stamps or smart-cards, which would also obviate the substantial diversion of foodgrains from the PDS system?



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Derivatives are like race cars'

A derivative needs to be used by professionals. It is like a race car, part of the performance comes from the machine and part from the experience and capability of the driver.

In finance, derivatives are financial instruments whose value changes according to the changes in fundamental variables. Just like the Americans have heard about the term 'sub-prime' for the last 12 months, Indians too have heard a lot about derivatives for the last month or so. Futures, forwards, options, swaps and what not? Financial products based on such complicated mechanisms will require more transparency.

But while transparency is certainly an issue as is understanding, the onus is also on the taker, that is, the company or the bank on its behalf. Systems and processes then become even more crucial. "It is like a race car, part of the performance comes from the machine and part from the experience and capability of the driver," tells Mr Omer Hevlin, Sales Director (Asia), SuperDerivatives (www.superderivatives.com). SuperDerivatives is the benchmark for derivatives pricing and the leading provider of multi-asset front-office systems, risk management, revaluation and online options trading solutions.

Indian banks such as Centurion Bank of Punjab have leveraged their expertise to manage multi-asset portfolios of exotic options and structured products and calculate exposure in real time. But that's not enough. "Because they are still running their risk using TV (terminal values), rather than real time rates and volumes," Mr Hevlin told Business Line in course of an e-mail interaction from Singapore.

Excerpts from the interview:

Derivatives market is often shrouded in conscious secrecy or veiled transparency. Right from plain vanilla to exotic derivatives, what has been your experience?

The market participants clearly require the right tools to arrive at the right price and fully understand the risks involved. Our goal is to lift the veil of secrecy and bring transparency to derivative pricing and valuation by empowering any market participant to obtain prices that reflect the fair market value for any derivative instrument, for any asset class.

What would be your take on the understanding of financial risks taken aboard by Indian companies?

We believe that the position taken by a corporate needs to be well analysed and risks have to be clearly anticipated.

How can a product meant to serve as an insurance against fluctuating currency backfire?



The product needs to be used by professionals. It is like a race car, part of the performance comes from the machine and part from the experience and capability of the driver.

SuperDerivatives is said to have its own pricing model. What makes it so special and unique?

Prior to the advent of SuperDerivatives, options practitioners faced two major obstacles. The first one was price opacity. Practitioners could use the ubiquitous Black-Scholes formula to price vanilla options and with the same framework price all exotic options, although it was well known that the Black-Scholes approach produced prices significantly different than the actual market prices.

The leading traders from the top investment banks were able to compensate for Black-Scholes deficiencies by leveraging their experience in the market together with their vast computational resources to accurately price options - and those prices were closely guarded.

Closely guarded prices, isn't that dangerous?

Thousands of less experienced professionals who traded options regularly - mostly from the buy-side (corporations and investment funds) - lacked the tools and expertise to price them accurately. As a result, the buy-side was dependent on the sell-side (banks) for trade design, price fairness and post-trade revaluation for complying with accounting standards in their P&L reporting. The inability to price options accurately made many people on the buy-side less active in options and severely limited the benefits that options could provide them and the world economy as a whole.

You were talking about the second challenge.

The second challenge faced by options market practitioners was a lack of systems and infrastructure to support options business activity. Missing were effective solutions for pricing, analysis, market data feed, risk management and more. Only a few of the world's largest investment banks have the internal resources to tackle those challenges in-house.

According to you, what would be the total exposure of companies from Asian countries in the forex derivatives market?

The marked-to-market losses in India are estimated to be between Rs 12,000 to 20,000 crore and the total market size is Rs 1,27,86,000 crore.

What are the gaps in skills and competencies that you find among the fresh crop of talent entering the derivatives sphere?

The participants need to have a complete understanding of the extent of risk/losses that they would be exposed to when they enter into a structure.



More specialised courses need to be introduced by the educational institutions / organisations. Professional and well-trained staff needs to be handling the treasury functions in small and medium enterprises (SME) which is currently not the case. For example: A person handling finance and accounts generally ends up taking care of treasury.

Do banks too need courses in risk management?

Because they are still running their risk using TV values, rather than real time rates and volumes, same goes for their Greeks and credit exposure. (The Greeks are a collection of statistical values expressed as percentages that give the investor an overall view of how a underlying asset has been performing. These statistical values can be helpful in deciding what options strategies are best to use.)

Training, of course, would help as derivatives is an evolving market with products being introduced in the market on a regular basis. Hence, staying on top of the situation would help containing risks.

They need to be aware of issues like the volume input they are using to evaluate their risks is based on ATM volumes (an option is At-The-Money if the strike price is the same as the current price of the underlying security on which the option is written) volumes which are not enough for deep OTM options (Out-of-The-Money are those that would be worthless if they expired today).

What are the 'must checks' that companies should ensure before entering into derivatives contracts?

Do have the capability to assess future exposure of each deal and compare it to valid credit client before signing the deal.

Do get the market Greeks and understand them before you sign a deal.

Do follow the RBI guidelines and do not be tempted into transactions which don't address clients underlining exposure and financial hedging needs.

Do invest in sales-force education.

Do equip the sales-force with advanced sales tools and real time pricing platforms which are based on bank rates so that traders can control prices/volumes/spread on a real time basis.

Do be able to provide your client with a clear Term Sheet of any transaction in real time.

Do know what the maximum losses are that could be incurred while entering into a deal.

Do take proactive measures to cut down on losses when the view goes against you.

D. MURALI

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The financial system

What went wrong

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From The Economist print edition



In our special briefing, we look at how near Wall Street came to systemic collapse this week—and how the financial system will change as a result. We start with how financiers—and their critics—have laboured under a delusion

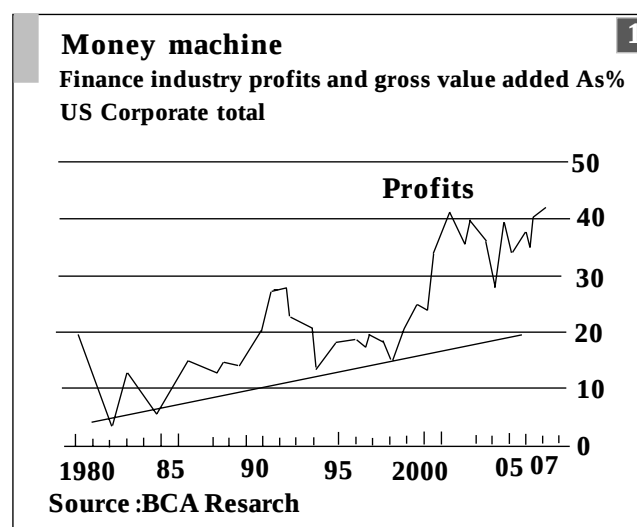
“A COMPANY for carrying out an undertaking of great advantage, but nobody to know what it is.” This lure for the South Sea Company, published in 1720, has a whiff of the 21st century about it. Modern finance has promised miracles, seduced the brilliant and the greedy—and wrought destruction. Alan Greenspan, formerly chairman of the Federal Reserve, said in 2005 that “increasingly complex financial instruments have contributed to the development of a far more flexible, efficient, and hence resilient financial system than the

one that existed just a quarter-century ago.” Tell that to Bear Stearns, Wall Street’s fifth-largest investment bank, the most spectacular corporate casualty so far of the credit crisis.

For the critics of modern finance, Bear’s swift end on March 16th was the inevitable consequence of the laissez-faire philosophy that allowed financial services to innovate and spread almost unchecked. This has created a complex, interdependent system prone to conflicts of interest. Fraud has been rampant in the sale of subprime mortgages. Spurred by pay that was geared to short-term gains, bankers and fund managers stand accused of pocketing bonuses with no thought for the longer-term consequences of what they were doing. Their gambling has been fed by the knowledge that, if disaster struck, someone else—borrowers, investors, taxpayers—would end up bearing at least some of the losses.

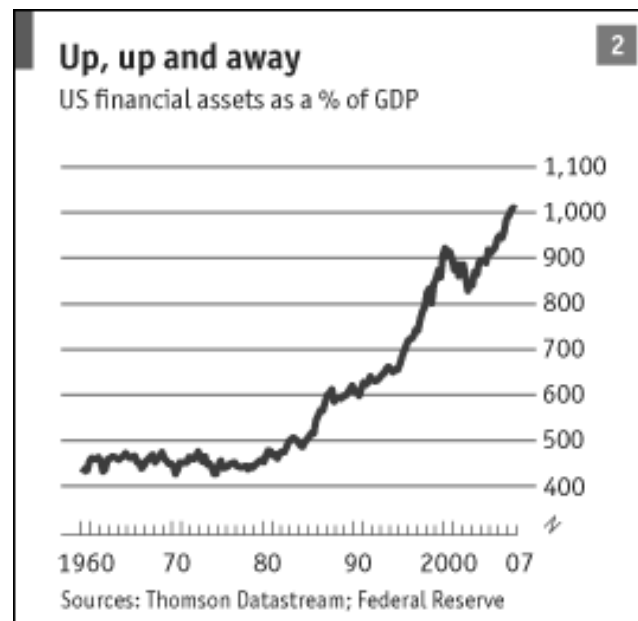
Since the era of frock coats and buckled shoes, finance has been knocked back by booms and busts every ten years or so. But the past decade has been plagued by them. It has been pocked by the Asian crisis, the debacle at Long-Term Capital Management, a super-brainy hedge fund, the dotcom crash and now what you might call the first crisis of securitisation. If the critics are right and something in finance is broken, then there will be pressure to reregulate, to return to what Alistair Darling, Britain’s chancellor of the exchequer, calls “good old-fashioned banking”. But are the critics right? What really went wrong with finance? And how can it be fixed?

Happy days



The seeds of today’s disaster were sown in the 1980s, when financial services began a pattern of growth that may only now have come to an end. In a recent study Martin Barnes of BCA Research, a Canadian economic-research firm, traces the rise of the American financial-services industry’s share of total corporate profits, from 10% in the early 1980s to 40% at its peak last year (see chart 1). Its share of stockmarket value grew from 6% to 19%. These proportions look all the more striking—even unsustainable—when you note that financial services account for only 15% of corporate America’s gross value added and a mere 5% of private-sector jobs.

At first this growth was built on the solid foundations of rising asset prices. The 18 years to 2000 witnessed an unparalleled bull market for shares and bonds. As the world's central banks tamed inflation, interest rates fell and asset prices rose (see chart 2). Corporate restructuring, wage competition and a revolution in information technology boosted profits. A typical portfolio of shares, bonds and cash gave real annual yields of over 14%, calculates Mr Barnes, almost four times the norm of earlier decades. Financial-service firms made hay. The number of equity mutual funds in America rose more than fourfold.



But something changed in 2001, when the dotcom bubble burst. America's GDP growth since then has been weaker than in any cycle since the 1950s, barring the double-dip recovery in 1980-81. Stephen King and Ian Morris of HSBC point out that growth in consumer spending, total investment and exports in this cycle has been correspondingly feeble.

Yet, like Wile E. Coyote running over the edge of a cliff, financial services kept on going. A service industry that, in effect, exists to help people write, trade and manage financial claims on future cashflows raced ahead of the real economy, even as the ground beneath it fell away.

The industry has defied gravity by using debt, securitisation and proprietary trading to boost fee income and profits. Investors hungry for yield have willingly gone along. Since 2000, according to BCA, the value of assets held in hedge funds, with their high fees and higher leverage, has quintupled. In addition, the industry has combined computing power and leverage to create a burst of innovation. The value of outstanding credit-default swaps, for instance, has climbed to a staggering \$45 trillion. In 1980 financial-sector debt was only a



tenth of the size of non-financial debt. Now it is half as big.

This process has turned investment banks into debt machines that trade heavily on their own accounts. Goldman Sachs is using about \$40 billion of equity as the foundation for \$1.1 trillion of assets. At Merrill Lynch, the most leveraged, \$1 trillion of assets is teetering on around \$30 billion of equity. In rising markets, gearing like that creates stellar returns on equity. When markets are in peril, a small fall in asset values can wipe shareholders out.

The banks' course was made possible by cheap money, facilitated in turn by low consumer-price inflation. In more regulated times, credit controls or the gold standard restricted the creation of credit. But recently central banks have in effect conspired with the banks' urge to earn fees and use leverage. The resulting glut of liquidity and financial firms' thirst for yield led eventually to the ill-starred boom in American subprime mortgages.

The dance of debt

The tendency for financial services to run right over the cliff is accentuated by financial assets' habit of growing during booms. By lodging their extra assets as collateral, the intermediaries can put them to work and borrow more. Tobias Adrian, of the Federal Reserve Bank of New York, and Hyun Song Shin, of Princeton University, have shown that since the 1970s, debts have grown faster than assets during booms. This pro-cyclical leverage can feed on itself. If financial groups use the borrowed money to buy more of the sorts of securities they lodged as collateral, then the prices of those securities will go up. That, in turn, enables them to raise more debt and buy more securities.

Indeed, their shareholders would punish them if they sat out the next round—as Chuck Prince let slip only weeks before the crisis struck, when he said that Citigroup, the bank he then headed, was “still dancing”. Mr Prince has been ridiculed for his lack of foresight. In fact, he was guilty of blurting out finance's embarrassing secret: that he was trapped in a dance he could not quit. As, in fact, was everyone else.

Sooner or later, though, the music stops. And when it does, the very mechanisms that create abundant credit will also destroy it. Most things attract buyers when the price falls. But not necessarily securities. Because financial intermediaries need to limit their leverage in a falling market, they sell assets (again, the system is pro-cyclical). That lowers the prices of securities, which puts further strain on balance sheets leading to further sales. And so the screw turns until those without leverage will buy.

You do not need bankers to be poorly monitored or over-incentivised for such cycles to work: finance knew booms and manias long before deposit insurance, bank rescues or bonuses. And, human nature being what it is, Jérôme Kerviel, who lost Société Générale a fortune, and the staff of various loss-making, state-owned, German Landesbanks did not need huge pay to lose huge sums. The desire to show that you are a match for the star trader next door, or the bank in the next town, will do.



Yet pay—or at least bad management—probably made this crisis worse. Trades determine bonuses at the end of the year, even though their real value may not become clear until later. Earlier this month a group of financial supervisors reported how managers at the banks worst hit by the crisis had failed to oversee traders or take a broad view of risk across their firms. Perhaps, with proper incentives, managers would have done better.

Alan Johnson, a consultant who designs pay packages for Wall Street, predicts that in future senior executives will face the prospect of some of their bonuses being contingent on the bank's performance over several years. Yet to the extent that many senior bankers are paid in shares they cannot immediately sell, they already are. And to the extent that Bear Stearns's employees owned one-third of the firm, they already looked to the longer term.

If altering pay cannot stop manias, can regulation? The criticism that this crisis is the product of the deregulation of finance misses an important point. The worst excesses in the securitisation mess are encrusted precisely where regulation sought to protect banks and investors from the dangers of untrammelled credit growth. That is because regulations offer not just protection, but also clever ways to make money by getting around them.

Existing rules on capital adequacy require banks to put some capital aside for each asset. If the market leads to losses, the chances are they will have enough capital to cope. Yet this rule sets up a perverse incentive to create structures free of the capital burden—such as credits that last 364 days, and hence do not count as “permanent”. The hundreds of billions of dollars in the shadow banking system—the notorious SIVs and conduits that have caused the banks so much pain—have been warehoused there to get round the rules. Spain's banking regulator prudently said that such vehicles could be created, but only if the banks put capital aside. So far the country has escaped the damage seen elsewhere. When reformed capital-adequacy rules are introduced, this is an area that will need to be monitored rigorously.

It is the same with rating agencies, the whipping boys of the crisis. Most bonds used to be issued by companies, and to judge something AAA was straightforward. Perhaps back then it made sense for some investors, such as pension funds, to be obliged to buy top-rated bonds. But this rule created a boundary between AAA and other bonds that was ripe for gaming. Clever people, abetted by the rating agencies, set out to pass off poor credit as AAA, because they stood to make a lot of money. And they did. For a while.

The financial industry is likely to stagnate or shrink in the next few years. That is partly because the last phase of its growth was founded on unsustainable leverage, and partly because the value of the underlying equities and bonds is unlikely to grow as it did in the 1980s and 1990s. If finance is foolishly reregulated, it will fare even worse.

And what of all the clever and misused wizardry of modern finance? Mr Greenspan was half right. Financial engineering can indeed spread risk and help the system work better. Like junk bonds, reviled at the end of 1980s, securitisation will rebound, tamed and better understood—and smaller. That is financial progress. It is a pity that it comes at such a cost.