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Analysis of Currency Derivatives in Law and Economics

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Abstract

The importance of currency derivative contracts, entered into in order to hedge foreign exchange related risks, cannot be exaggerated. As a global trade regime is emerging, those who engage in international trade are affected by fluctuations in the forex markets more than ever before. Currency risk hedging is also closely related to the process of hedging risks in the commodity market. The market of currency hedging today runs into tens of trillions of dollars. While currency derivative contracts have steadily become a very important component of the process of globalisation of trade, these instruments are looked upon with suspicion as well. Though derivatives seem to be unavoidable, there have been legal and socio-political controversies over these contracts. A whole lot of currency derivative contracts around the world, and specifically in India, have been challenged as wagering contracts. If a derivative contract is entered into with a speculative purpose, it will be a wagering contract. What is the boundary that distinguishes hedging of genuine risk from speculation? It is proposed that the discipline of Law and Economics can provide useful insights and develop a test that can tell apart hedging from speculation. For creating a legal certainty that can facilitate a growth of the currency derivative market which is acceptable socially and in financial quarters, one must also address the possibility of elimination of risk post contract, but before the derivative contract materialises. Behavioural economics can be used to predict the actions of counterparties in a currency derivative contract in the face of possibility of risk elimination post contract. Should such elimination render a derivative contract into a wagering contract, very interesting behavioural patterns may emerge in the currency derivative markets, which will considerably influence international trade. Application of the game theory in this respect provides significant insight into the law making process.

Hedging enables those with expertise in a certain business activity to engage in that activity without having to bear more risk than what he is able to handle.

The extra corpus of risk can be passed on to a counterparty who is willing to bear such risk through a derivative arrangement. The concept of specialisation would explain that such a person is better equipped to deal with the said risk. On the other hand, through forward or options contract, one determines otherwise unknown costs to be incurred in future. Uncertainty as to value always negatively affects bargaining. It also makes searching for a counterparty for entering into a contract difficult. Removing the uncertainty reduces these transaction costs substantially. We propose that this rationale can be used to come up with better law and policy regarding currency derivative contracts, especially to deal with the derivatives or wager dilemma. This argument also has a far reaching effect on the valuation of a derivative contract. Is the arbitrage, i.e. the difference between the contract price and the market price, (known in financial jargon as asset price) be understood to be the only value of the contract, or should one also take into account the costs that could be avoided by entering into the contract in the first place as well? An attempt to answer this question from a Law and Economics perspective will involve an analysis of the current market practices. The market conditions in which currency derivatives are traded, especially in India, is to be examined and tested from the angle of economic efficiency.

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INTRODUCTION

“By far the most significant event in finance during the past decade has been the extraordinary development and expansion of financial derivatives...These instruments enhance the ability to differentiate risk and allocate it to those investors most able and willing to take it - a process that has undoubtedly improved national productivity growth and standards of living.” (Greenspan, 1999)

The increased volatility of exchange rates is one of the main economic developments of the recent past. Under the current system of partly floating and partly fixed exchange rates, the earnings of multinational firms, banks, and individual investors have been subjected to significant real and paper fluctuations as a result of changes in relative exchange rates. Volatile exchange rates increase risk many folds. (Jacque, 1999) This risk creates a necessity for firms and investors to develop an exchange risk management. Historically, this need has grown stronger over the years. Before the First World War, exchange rates were fixed with respect to gold, and in that system there was no requirement of risk management as no exchange risk existed. Volatility in foreign exchange market did not exist in the Bretton Woods system that replaced the Gold Standard. (Schwartz, 1999) However, with the fall of the Bretton Woods system, the international foreign currency market saw a lot of volatility. In this changed circumstance, it was but natural that the prime objective for a market dealing with currency derivatives was to develop as one managing foreign currency risk to those who regularly bought and sold foreign currency.

Derivative contract is an important tool of management of price-volatility related risks. Commonly defined as being those financial instruments which derive their value from another financial product, derivatives are bilateral contractual arrangements which serve various requirements of the parties, across different asset classes like equity, currency (foreign exchange), debt, etc. (Treasury of the United States, 1997) It enables a party to limit his risks by passing on the rest of risk on to someone else who is more willing to bear such a risk. This enables those having expertise and requisite information to carry out an activity but unable to bear the associated risk, to engage in that activity by hedging the risk. (Treasury of the United States, 2008)

Currency derivatives protect one from having to suffer losses due to unforeseen fluctuations in the price of foreign currency. With the multiple growths of international trade and finance all over the world, trading in foreign currencies has grown tremendously over the past several decades. Since the exchange rates are continuously changing, the firms are exposed to the risk of exchange rate movements. As a result the

assets or liabilities or cash flows of a firm which are denominated in foreign currencies undergo a change in value over a period of time due to variation in exchange rates. This variability in the value of assets or liabilities or cash flows is referred to as exchange rate risk. Currency derivative contracts can be used to hedge this risk. (Ludger and Smith, 1994)

It is remarkable that different countries impose strong regulations in the foreign currency market as the speculation and volatility that it causes is seen as detrimental to the interest of the currency, and indirectly the economy of the country in general. (United States Futures Trading Commission, 2008) It is a major premise of Common Law that anything that is not illegal, is legal. Therefore, one may come up with innovative ways of legally bypassing restrictions that are imposed. This has led to the development of various kinds of currency derivatives. For example, to avoid restrictions on trading of foreign exchange in certain jurisdictions, swap was invented. This enables one to raise debt in one jurisdiction in local currency and then swap it with another debt in a foreign currency in another jurisdiction. (Giddy, 2008)

Today, derivatives are integral to the business and the economy. Entering into derivative contracts has become both a necessity and a profitable venture. In fact, in the context of international trade it is imperative to enter into currency derivative in order to have a meaningful, profitable trade. If one is hedging his risk against fluctuation in commodity prices, and for that reason, enters into a forward transaction with respect to that commodity, he also needs a simultaneous hedging against currency fluctuation risk. Taking an example, if an Indian airlines company wants to hedge their risk against price fluctuations in the international oil market, they will enter into a contract by which they will be assured of a price on a future date in dollar. However, as the airlines has to pay in dollars, and their local currency is rupee, they have to buy the dollars. As the price of dollar itself fluctuates, if the airlines want to be certain about how much the oil would cost them in rupee terms, they must enter into a currency derivative with respect to the dollar as well. Thus, in the international market, commodity hedging and currency hedging go hand in hand.

Due to the level of technicality and complexity attached to currency derivatives, law makers have found it difficult to come up with effective legislations. In fact, in most jurisdictions including India, there are no direct legislations that address this concern.¹ However, the volume of the derivative market as well as the importance that it enjoys in international trade demands that there be certainty regarding the position of law with respect to derivatives. Scholars like Stout (2001) and Partnoy (2001) have time and again pointed out that while the market can handle risk very well, it does very badly when it comes to uncertainty. (Paredes, 2003) They also emphasize on the necessity of developing a systematic body of law and regulations for the derivatives market. In this context, a few legal questions that have come up in the Indian derivative market needs to be looked into.

¹ Currency derivatives are governed by Foreign Exchange Management Act of 1999 in India. It has no specific sections on currency derivatives, but rules and regulations made under this act made as delegated legislations by RBI and SEBI.

A very large number of cases with respect to currency derivatives contracts were filed in Indian courts challenging these contracts on various grounds. (The Hindu Business Line, 2008) In this paper, an effort will be made to understand whether there are any gaps in the present legal regime with respect to the contemporary challenges that have surfaced, and whether such gaps create uncertainty in the market and how law and regulations can be used to handle such uncertainty.

To achieve these objectives, this paper will be divided into three parts. In Part I the relevant modalities of derivative contracts will be discussed to set out the grounds on which the economic analysis will be based. In Part II an economic analysis of derivatives contract to answer some legal dilemmas will be done. The discussion will be concluded in Part III with some observations and suggestions.

Part I

UNDERSTANDING EXCHANGE RATE RISK IN ECONOMICS AND THE ROLE OF CURRENCY DERIVATIVES

In totality, there are only three forms of the derivative product—the swap, the forward and the option, where each of them differ according to the rights enjoyed by the party and the counterparty vis-à-vis each other. In the foreign exchange market, the introduction of these instruments were rather recent compared to commodity markets for reasons already discussed, but the growth of ‘forex derivative’ or currency derivative market has been phenomenal in all senses. It is pertinent to ask what makes derivatives, especially currency derivatives so special to the financial world.

Why derivative contracts

For a long time the legal system perceived derivative contracts as speculative instruments only. Lord Templeman, in *Hazell v. Hammersmith and Fulham*,² misguidedly observed that derivative contracts were observed for no other interest than to seek profit from interest rate fluctuations. His Lordship overlooked the extremely critical area of hedging, which is at the core of today’s business requirements, especially for those with overseas interests. Hedging is an activity that allows for the offsetting of the possibility of risk that comes along with exposure to exchange-rate fluctuations. Shielding the party against market movements, it is a risk management contract that entitles the right-holder to be paid a certain amount upon a contingent event that generates a loss. Another notably recent offshoot from the trader’s desk is the concept of arbitrage, which allows the parties to take pecuniary advantage of the variance of price and market conditions of the underlying asset. Due to the time lag across global markets, arbitrage affords participants the opportunity to acquire assets or cash settlement at favourable terms, which might also arise thanks to better tax-treatment or amenable legal regimes, in that case known as regulatory arbitrage. (Bank of International Settlements, 2004)

² [1992] 2 AC 1

According to Partnoy there are three possible motives for entering into a derivative contract. These three motives are hedging, speculation and gaining from arbitrage. In the present legal regime, a derivative contract will be valid only if it is done for the purpose of hedging genuine exchange rate risks. Wagering contracts, on the other hand, are not enforceable in law.³ If speculation will amount to wagering, then the derivative contract is not enforceable. The issue of wager has been at the center of legal battles in India in recently filed cases.⁴ (Rajshree Sugars and Chemicals Ltd. v. Axis Bank Ltd.) As far as arbitrage is concerned, it is expected that a government will not want to offer scope for legal arbitrage to be earned to attract more business to the country. These legal issues will be taken up in the next part in detail.

Functioning of the currency derivative market

Spot and Forward transaction: There are mainly two types of transactions with respect to foreign currency. The market where currencies are bought and sold at the market rate then and there is known as the Spot Market. The term spot exchange refers to the class of foreign exchange transactions which requires the immediate delivery or exchange of currencies, on the spot. The rate of exchange effective for the spot transaction is known as the spot rate. (www.cambridgefx.com, 2007) On the contrary, forward transaction is an agreement between two parties, requiring the delivery at some specified future date of a specified amount of foreign currency by one of the parties, against payment in domestic currency by the other party, at the price agreed upon in the contract. The rate of exchange applicable to the forward contract is called the forward exchange rate and the market for forward transactions is known as the forward market. (Cherunilam, 2004)

The foreign exchange regulations of various countries generally regulate the forward exchange transactions with a view to curbing speculation in the foreign exchanges market. In India, for example, commercial banks are permitted to offer forward cover only with respect to genuine export and import transactions. Forward exchange facilities, are of immense help to exporters and importers as they can cover the risks arising out of exchange rate fluctuations by entering into an appropriate forward exchange contract. With reference to its relationship with spot rate, the forward rate may be at par, discount or premium.

A futures contract is very similar to that of a forward contract, except that future contracts are standardized contracts traded 'Over The Counter' (OTC). Unlike forward contracts, they are not tailor-made for a client by a bank or financial institution. Apart from that, to participate in the futures market, which is always an organized market, one needs to deposit an initial margin in a collateral account to establish a futures position. (Braeckevelt, 2006)

³ S. 30, Indian Contract Act of 1872

⁴ Rajshree Sugars and Chemicals Ltd. v. Axis Bank Ltd., MANU/TN/0893/2008.

Options: An option is a contract or financial instrument that the holder the right, but does not create any obligation, to sell or buy a given quantity of an asset at a specified price on a specified future date. An option to buy the underlying asset is known as a call option and an option to sell the underlying asset is known as a put option. (Firth, 2005) It entails that the person having the option will exercise it only when the price under the option contracts is more advantageous to him compared to the market price at the time when the option matures. If it is not advantageous, he will chose not to exercise the option, but buy or sell the asset from the market instead. The option is made available for a price, and the price is known as premium. (Firth, 2005) If an option can be exercised at any point of time during the contract period, then it is called an American Option. If it is to be exercised only on a maturity date, it is called a European option.

Swaps: The term swap means simultaneous sale of spot currency for the forward purchase of the same currency or the purchase of spot for the forward sale of the same currency. The spot is swapped against forward. (Forex Trading Glossary, 2007)

Currency derivatives in India

During the early 1990s, India embarked on a series of structural reforms in the foreign exchange market. The exchange rate regime, that was earlier pegged, was partially floated in March 1992 and fully floated in March 1993. (Reserve Bank of India and the Securities and Exchange Board of India, 2008) The unification of the exchange rate was instrumental in developing a market-determined exchange rate of the rupee and was an important step in the progress towards total current account convertibility.

Although liberalization helped the Indian forex market in various ways, it led to extensive fluctuations of exchange rate. This issue has attracted a great deal of concern from policy-makers and investors. While some flexibility in foreign exchange markets and exchange rate determination is desirable, excessive volatility can have an adverse impact on price discovery, export performance, sustainability of current account balance, and balance sheets. In the context of upgrading Indian foreign exchange market to international standards, a well- developed foreign exchange derivative market (both OTC as well as Exchange-traded) is imperative.

Economic implications of fluctuation:

Excessive fluctuations in currency value make it difficult for one to calculate future payments one has to make, or the value of receivables that one expects to get in future when the payment or the receivable is in foreign currency. This has significant bearings on the negotiation of contracts, especially those international in nature. Whenever a person enters into a contract, he incurs some transaction cost. Three major heads of transaction cost in this context is search cost, bargain cost and enforcement cost. (Luigi, 2001) Uncertainty as to the price of the relevant foreign currency entails that one would not be certain about how much he would pay or receive in local currency when in a contract, values are stipulated in another currency. This uncertainty increases search cost and bargaining costs significantly. When there are random possibilities that the value of a currency will change either favourably or adversely,

most people, especially the risk averse ones, would want to settle for a price that protects them even in case of an adverse change in the price of the foreign currency. While in many cases the price of the currency would remain the same or change favourably, one would always assume that it will change adversely and settle for a higher price. This makes search for and bargain with a counter-party difficult. This difficulty increases transaction cost. (Luigi, 2001) Using the same example quoted earlier, if the airlines do not know at what price they are going to buy fuel for their aircrafts 3 months later, they will find it difficult to determine the price at which they would sell tickets to those passengers who want to buy the ticket right now in advance. If the airlines enter into a hedging contract keeping in mind its quantity requirements then it can replace its unknown costs by a certain acceptable cost, thus reducing its transaction costs. They can determine the costs of running the flights and thus calculate the cost of a ticket.

Another major implication of exchange rate fluctuation is fluctuation in the value of assets that one holds in a foreign country in local currency terms. Having a hedging contract that counter-weighs such changes will make the net worth of such property neutral to foreign exchange risk. Without a suitable hedging contract, holding a property abroad would entail heavy information cost on the parties who want to find out the net worth or creditworthiness of the property holder. This in turn increases search cost and bargaining cost for the property holder. (Rohinton and Fanelli, 2005) For example, if an Indian, holds a real estate property in New York, he has to convert the dollar price into rupees while accounting for the same. If the price of dollar falls with respect to rupee, his net worth in rupee terms will go down. However, if he enters into a currency derivative that has equivalent value of that of the property, then the gain from the derivative contract will balance out the loss in the value of property. If the price of the dollar goes up with respect to the rupee, the gain from the property will negate his gains in the derivative contract, thus keeping his net worth in a stable state.

These implications are of paramount importance to those who engage in export, import, or provide or buy cross-border remunerative services or enter into long term contracts or function on an international level. With a view to enable such entities to manage volatility in the currency market, RBI on April 20, 2007 issued comprehensive guidelines on the usage of foreign currency forwards, swaps and options in the OTC market. At the same time, RBI also set up an Internal Working Group to explore the advantages of introducing currency futures. The Report of the Internal Working Group of RBI submitted in April 2008, recommended the introduction of Exchange Traded Currency Futures. Subsequently, RBI and SEBI jointly constituted a Standing Technical Committee to analyze the Currency Forward and Future market around the world and lay down the guidelines to introduce Exchange Traded Currency Futures in the Indian market. The Committee submitted its report on May 29, 2008. (Firth, 2005) Further RBI and SEBI also issued circulars in this regard on August 06, 2008. Currently, India is a USD 34 billion OTC market, where all the major currencies like USD, EURO, YEN, Pound, Swiss Franc etc. are traded. (Reserve Bank of India, 2008) With the help of electronic trading and efficient risk management systems, Exchange Traded Currency Futures will bring in more transparency and efficiency in price discovery, eliminate

counter-party credit risk, provide access to all types of market participants, offer standardized products and provide transparent trading platform. Banks are also allowed to become members of this segment on the Exchange, thereby providing them with a new opportunity.

Deadweight loss due to Adverse Selection in absence of currency derivatives:

Adverse selection refers to a market process in which bad results occur when buyers and sellers have asymmetric information⁵ (i.e. differential access to information): the bad products or customers are more likely to be selected. If currency derivatives did not exist, the rule of adverse selection predicts that those who do not have information or those who have less information about short term price changes of the foreign currency they need to hold, would prefer an alternative course of action which does not require them to hold that currency. To simplify, when one a person is exposed to foreign exchange rate fluctuations, two possibilities exist. In some cases, the change in price of the currency will be favourable, and in some other cases it will be unfavourable. Adverse selection theory suggests that people who do not have enough information to predict which way the currency price will swing, or those who think that they do not have enough information, will prefer to stay out of the currency market. This will lead to a deadweight loss⁶ to the market of that particular currency. It also logically follows that some parties who would have otherwise engaged in trades or businesses that require holding the currency would not engage in that trade or business at all as they will be discouraged sufficiently by the exchange rate fluctuation risk to not participate. This loss of business will represent the deadweight loss caused to the entire economy. Presence of currency derivatives contract prevents both these deadweight losses.

From the above discussion, it is safe to conclude that currency derivative contracts play a very major role in facilitating international transactions. It is in interest of export and import growth as well as bringing certainty in energy resources spending (as India depends on foreign countries for energy inputs which have to be bought with foreign currency) that currency derivatives have to be carefully regulated.

Part II

AN ECONOMIC ANALYSIS OF CURRENCY DERIVATIVES AND SOME CONTEMPORARY LEGAL ISSUES

While in many countries, such as the United States, anyone can have any sort of currency derivative suiting their purpose, be it speculative or otherwise, in India, the

⁵ A situation in which one party in a transaction has more or superior information compared to another. This often happens in transactions where the seller knows more than the buyer, although the reverse can happen as well.

⁶ Deadweight loss is the inefficiency caused by, for example, a tax or monopoly pricing. It refers to any deficiency due to an inefficient allocation of resources. It occurs when the equilibrium for a good or service is not Pareto Optimal.

purpose must be hedging. If the contract is entered into for other purposes, they would be in contradiction of SEBI and RBI rules made under Foreign Exchange Management Act of 1999⁷ and therefore void. Apart from that, S. 30⁸ of the Indian Contract Act of 1872 will render any wagering contract, in other words, any speculative contract as non enforceable in law. In 2008, following the sharp increase in dollar price a very large number of petitions have been filed in Indian courts to declare currency derivative contracts as wagering contracts and therefore legally unenforceable. (Desai, 2008) It turned out to be a strong challenge as courts are still struggling to find out an objective way of differentiating speculation from genuine hedging.

In this part, an effort will be made to develop an economic understanding of hedging and wagering, and the underlying economic rationale of differential legal treatments. Eventually, based on this understanding, an objective test to differentiate wagering from genuine hedging will be made.

Understanding the terminology of derivatives in economics

Hedging: Hedging is an efficient way of allocating risks. By hedging, one can disassociate oneself from unwanted risk. The risk is passed on to another person who is more willing to bear such risk for a premium or some other benefit. It can be assumed that due to specialization, this person understands the risk he undertakes better or can handle it better. Hedging allows one to take up an activity which is profitable but risky. If one has necessary skills and ability to carry out a transaction, but is unwilling or unable to bear the risk associated, then he can still carry out that activity by passing on the risk to another person through hedging. This helps in optimum exploitation of available resources such as knowledge and expertise as well as of opportunity, and the risk being borne by those who are best able to bear it. (Desai, 2008; Stout, 2001)

Wagering: Wagering refers to redistributing money or something of material value on the happening of an event with an uncertain outcome. The redistribution depends on the outcome. In case of a wager, or gambling, parties will have no interest in the subject matter and the purpose is purely speculative. (Sauer, 1998)

Economic rationale of differential legal treatment of wagering and hedging

While hedging contracts are enforced and protected by law, wagering contracts are unenforceable. It is to be noticed that S. 30 of the Indian Contract Act does not

⁷ S. 3, Foreign Exchange Management Act, 1999

⁸ Section 30. Agreements by way of wager void –
Agreements by way of wager are void; and no suit shall be brought for recovering anything alleged to won on any wager, or entrusted to any person to abide the result of any game or other uncertain event on which any wager is made.

declare wagering contracts as void,⁹ or illegal for that matter – but only unenforceable. An explanation of this differential treatment can be the following:

A wagering contract is not productive, it is just a simple redistributive contract. It is true that many non-productive and redistributive contracts are made enforceable in law, such as promissory estoppel, but that is done only as an exception to the general rule when public policy or public morality requires that such contracts be made enforceable. For instance, it is considered that if a promise of subscription is made and relied upon by others, then the promisor can not go back on the promise later on. Though payment of a subscription here is only a redistribution, but public morality and public policy justifies the enforcement of these contracts. In case of wagers and gambling, there is no such support of public morality or public policy. Therefore, it is denied the status of a legally enforceable contract. The time of the court is a scarce and valuable resource. It is desirable that this resource is spent to enforce contracts that create wealth (co-operative surplus) rather than those which can not. Hence, it is primarily the contracts that create co-operative surplus that the courts will enforce, because if contracts that cannot do so are also made enforceable, that will open a flood gate of cases. Allowing non-productive redistributive contracts to be enforced by court of law has high opportunity cost.

On the contrary, hedging is not a redistributive contract. The primary gain that the parties make from hedging is not from the redistribution precipitated by the contract, but it is in the limitation of risks and ascertaining costs, which cuts the transaction costs of the parties with respect to other transactions. A co-operative surplus is thus produced by efficient allocation of risk and creation of certainty.

Applying the economic rationale to legal dilemmas

Uncertain position of the law on the issue of wagering has led to a wave of cases being filed in Indian Courts. The most difficult task in this respect is to differentiate wager from hedging. The rationale discussed above can be used to effectively resolve some legal dilemmas.

- *Is any sort of legal line drawing possible in order to differentiate wagers from hedging objectively?*

The economic insight of wager and hedging can be of help in deciding this question. A person who is entering into a currency derivative contract for the purpose of pure speculation has no real interest in the exchange rate, by definition of wager. (www.lectlaw.com, 2009) In a wager, he believes or expects that the value of the contract will increase in future, while the person selling it to him as a opposing view. This is how shares are bought and sold in the stock market, and this is hall mark of speculation. Hedging is not done in this way. Economic understanding of hedging says that it is done to reduce transaction costs elsewhere. It follows that the hedging

⁹ Though in effect, the section has equivalent influence on wagering contracts. Void contracts are as unenforceable as wagering contracts.

requirements of a person will be quantifiable. This will be the extent of his exposure to foreign exchange risk which can be identifiable as earnings in foreign currency, payment liabilities in foreign currency including debts in foreign currency and value of property interests held in foreign countries. It will be easy to establish such requirements through evidence in a court of law and courts are well equipped to determine the extent of such risk. Clearly, any currency derivative contract that is entered into excess of this exposure, is not entered for the purpose of hedging. Such contracts cannot be enforceable.

Another objective test could be checking whether entering into the contract reduced transaction cost by ascertaining unknown or uncertain costs that the parties were going to incur in future. Again, this would be easy to prove for a person who really entered into a currency derivative contract to reduce his transaction costs by showing the uncertain costs that existed as well as how they were actually ascertained. Unless a person originally attempted to reduce transaction costs, the purpose of entering into a contract could not be hedging, and therefore the contract would not be enforceable.

- *What would be the legal position when hedging interest and intent to speculate co-exist?*

It is actually the case that reduction of transaction cost is not the only possible gain from a currency derivative contract. One stands to gain from it from the difference in contract price and the market price of the underlying asset. It is highly likely that while entering into a contract, even those who have genuine hedging interest will be influenced by speculative instincts or depend on speculative information. If the counter party can establish that although hedging interest existed but there were speculative motive as well, can they ask for the contract to be declared as a wagering contract and therefore unenforceable? If the answer is positive, there will be several practical problems. Firstly, it will be very difficult to find a counter-party for entering into currency derivative contracts. While it is possible to find out if someone has hedging interest, it is very difficult to tell whether they have co-existing speculative interest. In other words, the transaction cost to enter into a contract, specifically search cost, will be very high. Even bargaining cost will go up due to lack of trust between parties. As a result, many parties with genuine hedging interest will not be able to manage their exchange rate risk. Apart from imposing excessively high cost on the possible parties to a contract, this will also increase the transaction costs in a court of law by making the job of a judge more difficult.

On the other hand, making such contracts legal does not have much additional cost apart from the cost which is justified for the protection of the hedging interest, which is a productive interest. Therefore, it can be easily predicted that courts of law would not, and should not declare a contract unenforceable due to co-existing speculation as long as there has been genuine hedging interest. However, this logic would not be applicable to contracts which exceed such interest, and any such contract which is entered into beyond hedging necessity will fall prey to s. 30 of the Indian Contract Act and other regulations as may be applicable from time to time with respect to wagering.

- *If there is a genuine hedging risk before entering into the contract, but post contract such risk is eliminated before the contract matures, therefore removing the ground of hedging, will the contract become a wagering contract?*

It will be possible in some cases to eliminate the exposure or the risk that formed the basis and justification of the currency derivative contract in the first place before the contract becomes enforceable on maturity. Will such elimination of risk render the contract unenforceable as a wagering contract thereafter? Although there is no clear law in this regard, economic analysis can be used to predict the legal solution to this dilemma. If there are two parties to a derivative contract, A the exporter and B the importer, it can be said that they have entered into the contract so that they can have the currency they need to carry on their business at a price in future which is acceptable to both of them, and not subject to vagaries of the currency exchange market. However, if due to ongoing recession, both the parties go out of business as there is no demand in either the export or import market, we can say that their initial risk that justified their entering into a currency derivative contract does not exist anymore. By circumstance, the risk has been eliminated. In this situation, the only gain the parties may make here is from the difference in price of the underlying in the contract and in the market. Is this a wagering contract at this stage?

Parties enter into a contract, essentially, to reduce risk. If that risk can be completely eliminated, we can assume that they would not be interested in the currency derivative anymore unless they have speculative interest, which is not protected by law. Therefore, if possible, the parties will always try to eliminate the risk. Lets say A could reduce his transaction cost by Rs. 10 by entering into the contract, and B could reduce Rs. 8. If they can eliminate the risk that caused the transaction cost, they will be able to save all of this transaction cost in any circumstance. If only A can eliminate, and B can not, and the contract becomes unenforceable, then B will not gain anything from the contract, and lose any transaction cost that he incurred in finding A and bargaining with him, but A will get everything that he expected to get from the contract and reduce uncertainty regarding \tilde{a} , which he may gain or lose if the contract is enforced depending on the market price (this is contract-market arbitrage, $\tilde{a} = \text{Market price} - \text{Contract Price}$). If B can eliminate his initial risk and A can not, the exact opposite will take place and A will sustain losses. Where both the parties can remove their risk, or none of them can, there would be no problem. However, where both the parties could not remove their risk is not an equilibrium, as both the parties will be interested in removing the initial risk if doing so entitles them to render the contract unenforceable.

		Party A	
		Eliminated	Not Eliminated
Party B	Eliminated	10, 8	10, 0
	Not Eliminated	0, 8	$10 - \tilde{a}, 8 \pm \tilde{a}$

However, the position in the first square, where both the parties could eliminate their risk is in equilibrium as none of them have any interest in moving from that square. Therefore, the parties will always try to move to that square if the law renders a contract unenforceable on removal of initial risk by one party unilaterally. However, in many cases only one party will be able to eliminate the risk, thereby causing damage to the other party. Thus, an uncertainty regarding enforceability of these contracts will be created, and entering into a currency derivative contract would not serve the purpose of limiting uncertain and unknown costs, thereby failing the primary objective of a derivative contract. As a result, the whole currency derivative market will suffer severely and hedging will become very difficult. To protect the market, law therefore has to prevent the parties from trying to go to the natural equilibrium by removing the incentive to do so. In other words, law will make the contract enforceable as long as genuine risk exists before the contract is entered into, and any subsequent extinction of risk after the contract comes into being will be irrelevant for the purpose of determining enforceability. If the contract remains enforceable on the removal of risk, the parties would not be anymore interested in removing the risk thus ensuring stability in currency derivatives market. However, this may not be always economically efficient. A study of this aspect nevertheless will be outside the scope of this project.

Differentiating Insurance Contracts from Currency Derivatives

To analyze the fact that a financial derivative could be classified as a contract of insurance, the purposes and roots of derivatives need to be understood. For example, an entity pays a certain amount to acquire a position in the foreign exchange hedging contract, where the jurisdiction be taken as a constant for both parties, the object of which is the payment of money, in any liquid financial security, upon the fruition of the risk. It can be said that the hedge constitutes a kind of insurance against financial risk, and if it is to be officially called so, the seller of the derivatives contracts must be authorized by law to sell insurance. In India, it entails that a seller of currency derivatives will be listed as an insurer, therefore will have be subjected to the authority of Insurance regulatory and

Development Authority.¹⁰ As a matter of practice in industry, no one does so. Are all those who are engaging in selling currency derivatives contract violating law of insurance as applicable? The question then arises as to whether the definition of insurance applies to derivative contracts of a hedging nature. As a thumb rule, it is critical to establish the true nature of the transaction, than go by the label attached to the same.

It is clear, at the outset that the underlying purpose of the derivative contract is to mitigate the buyer against the loss that might result from the obligation in reference, that is, to “*meet the loss or detriment which will or may be suffered upon.*”¹¹ However, the crux of the polar opposite argument, stating that derivative contracts are distinct from insurance dole-outs is that in swap contracts, it is not the happening of the event that forces the pay-out, but rather the fluctuation in the applicable prices. The major difference is that derivative contract will also mitigate any profit that may accrue from a favourable change in currency exchange rates while an insurance benefit is accrued only to mitigate damage.

There is a manner by which derivative contractual terms can be structured in order to circumvent the possibility of it being construed as an insurance agreement. When the terms and pricing are made regardless of whether the loss has been incurred or not, but with reference to some other factor, and if the payments are not simply in compensation for loss, then it strengthens the argument that derivatives are not insurance agreements.(Hudson, 2006) The law does not treat derivative contracts, particularly the foreign currency derivatives as insurance contracts because of the floodgates argument, which entails that if derivatives were held to be insurance agreements primarily because they obliged a party to offset the risks of the buyer’s exposure to certain contingencies, then even hedging agreements, for genuine purposes, would be qualified as insurance. Hudson observes that the best argument for the disqualification of derivatives agreements as insurance contracts is that there was no intention to provide a service of indemnity. In this way of differentiating insurance from derivatives, much depends upon the intent of the parties in the contract, and interpretative stance of the judicial body during resolution of the dispute. (Hudson, 2006) However, as finding out the initial intention after breach of the contract by a court will be difficult; and in economic terminology, costly. It will be better if an alternative test implying lesser cost can be found.

The distinguishing feature of a derivative contract, as we have conclude in part II, is its transaction cost reducing effect on other contracts by limiting uncertain costs, at least in case of currency derivatives. Is this a common feature of an insurance contract too? In a typical insurance contract, one pays a premium to buy a right to indemnity if damage occurs. The performance of the contract is contingent on the occurring of damage. As damage does not happen to all the insured people, but to only a few, the insurer can pay them off from the premium he receives from others to whom he need not make any payment because they do not suffer any damage. Therefore, while insurance contract is entered into in order to do away with future uncertainty, it does not reduce

¹⁰ S. 14, Insurance Regulatory and Development Authority Act, 1999;

¹¹ See *Prudential Insurance Company v. IRC* [1904] 2 K.B. 658

transaction costs for purpose of other contracts. It is admitted that the difference between removal of uncertainty and reduction of uncertainty cost can be hazy in some cases.

It seems the clearest test is that in derivatives contract, there will be possibility of making a net profit from the transaction¹² when it is made while in an insurance contract no profit can be made in any circumstance. In fact, law stipulates that if anyone is paid any amount more than the damage that was insured, they are liable to pay back such amount to the insurer.

Part III

DEALING WITH INFORMATION COST IN THE DERIVATIVES MARKET

The relation of derivative contract with transaction cost is not only in its genesis. A major aspect of administering and regulating derivatives market is the goal of keeping information cost under leash. It is, in fact, predictable that the next big step in effective legal regulation of the derivative market is understanding the matter of information cost in operating the derivative market. Much of these costs demonstrably arise from the legal regime that governs these contracts. While it is desirable that a wholesome study of the effects that different regulatory measures have on information cost be studied, in this paper we shall limit our objective in examining the effect on aspects of finding genuine hedging partners. The two most prominent features of this exercise of looking for a hedging counterparty is the organized mechanism where such contracts are traded and accounting standards applicable to derivatives contract.

Information cost of trading in derivatives

Law imposes the liability on a party wanting to hedge its currency risks to find a counterparty that has genuine hedging risk as otherwise the contract will not be binding.¹³ This search cost therefore is an inevitable part of entering into any fruitful currency derivative contract. In reality, this information cost is very high and would deter many parties from entering into such contracts. For example, before entering into a hedging contract with a company one would need to discover whether a company has a genuine hedging risk, and risk to what extent, and how much of that risk they have already hedged.¹⁴ This may require going through account books of the company and involvement of professional accountants. This kind of effort or transaction cost is bearable by only those with very big hedging necessities for the purpose of entering into big contracts. This is an inefficient way of entering into contracts for a majority of those

¹² In case of options, only one party has a possibility of profit. The other party has a possibility of loss, which is not compensated, at least never in the same transaction. In other derivatives, both parties stand a chance of making a profit. This profit is what generates the speculative interest of parties.

¹³ S. 30, Indian Contract Act, 1872

¹⁴ Since any hedge in excess of their real hedging necessity may be declared as speculation and therefore wager. Please refer to part II of this paper for detailed explanation.

having real hedging necessities. This explains the popularity of Over The Counter and exchange trade contracts compared to privately entered derivatives contracts.

Over-The-Counter contracts: in this case, a bank or a financial institution sells derivative contracts to anyone who approaches them with a need in mind. In this case, it is easy for the person who comes to the counter as buying such a contract reduces his information cost, to a possible nil with respect to finding a counterparty with genuine risk. On the other hand, the person selling it from the counter is not at a very good position to obtain relevant information from the person who comes to the counter. He would have to ask for certain standard documents for an overall assessment of hedging risk of the person seeking to buy a contract. However, specific information, which maybe crucial for the eventual enforceability of the contract may not be provided. This is a problem arising out of **asymmetric information** associated with OTC contracts.¹⁵ (Sarkar, 2006) Another flaw is that the distribution of information cost is lopsided. While the buyer of the contract benefits from a steep reduction of information cost, apparently the seller has no such benefit. Here, regulators may pitch in to make the business of OTC contracts viable by creating declaratory obligations on part of the contract buyer.

Suggested legal measure: A possible effective legal measure here, as used in insurance contracts to deal with asymmetric information and related problem of adverse selection, is the doctrine of good faith. In insurance contracts, unless all relevant disclosures are made, the contract may be unenforceable at the option of the insurer. (Kontautas, 2002) A similar law would eliminate the incentives and impose cost on the buyer for dishonest withholding of information. Another effective measure will be applying the rule of estoppel¹⁶ (Cook, 2000) against the buyer who falsely discloses his risk and extent of existing exposure.

Exchange traded contracts: the idea of trading in an exchange is that a contract was sold can be further sold to anyone for a higher or a lower price and will circulate amongst buyers and sellers who value the contract differently. (Philipose, 2008) This valuation is nothing but speculation. However, if the buyers and sellers have hedging necessities, co-existence of speculative intent would not matter legally, as we have already proved in part II. Therefore under current Indian laws that apply to derivative contracts, currency derivatives can be traded in an exchange as long as the participants have genuine hedging risk and the contracts they buy does not exceed their risk limits.

Suggested model for exchange trading: To reduce information cost, it is possible in this kind of system to have a centralized registering system. Only those who register

¹⁵ In India, many companies that had bought OTC contracts, later on reneged the contract saying that the contracts were wagers as they were speculative in nature.

¹⁶ This common law rule prevents one from going back on representations once made for the purpose that others may rely on it. "When one person has by his declaration, act or omission, intentionally caused or permitted another person to believe a thing to be true and to act upon such belief, neither he nor his representative shall be allowed, in any suit or proceeding between himself and such person or his representative, to deny the truth of that thing." See S. 115, Indian Evidence Act, 1872

under the system would be able to participate in the exchange to trade in currency derivatives. The information regarding their risk and existing exposure can be found out by one registrar who will maintain a database for the public to view. Anybody interested in the information can obtain the same from the registrar. This is an efficient system because by undertaking the cost to discover and maintain the records of risks of registered participators, the registrar is eliminating the cost that individuals would have had to take up repeatedly. Instead, individuals can rely on the information with the register and rely on the same. Even if a dispute arises and reaches the court of law, it would not have to undertake the cost of discovering the information, and will be able to rely on the information with the registrar.

Private listing service: Further, it is not necessary that such a system of recognizing and authenticating risks be formed under government aegis, it is possible to have private initiatives in this matter. As such mechanism will reduce information cost substantially for every participant, they can charge a fee from any party whom they would include in their database. This would work as parties will be eager to provide information to possible counterparties through a credible and acknowledged listing service as it will reduce their own information and search cost too. Thus, if a credible listing for parties with genuine hedging risk exists, it will be a viable commercial business for the listing service too.

Accounting Standards

It is not only that a party incurs cost in searching for counterparty; it also incurs some cost in an effort to provide information. There are mainly two reasons why a party would incur cost in providing information to others: firstly, because it is interested in providing information about itself to counterparties, and secondly, because regulations stipulate that it has to do so.

As derivative contracts are valuable, they have to be accounted for various reasons. Government will be interested in knowing the accounts for taxation and regulatory purposes. If a company enters into derivative contracts, shareholders and other people who have a stake in performance and financial status of the company will be interested in that information. Sometimes, law recognizes such interests as right of those persons, in which case it becomes an obligation on part of the person who enters into the derivatives contract to provide the information. In economic understanding, this is allocation of information cost on the party having the information. (Stigler, 1961) To ensure that the information provided is understandable and meaningful to an audience, accounting standards have to be followed. The cost in following this standard is a part of the information cost that the information provider will incur.

However, the 'information cost' involved here is two-fold; the party who receives the information also incurs a cost in processing and comprehending the information. He may have to incur significant additional transaction cost for understanding the nitty-gritty of the accounting system followed by the information provider if he is not familiar with the system. That is why regulators compel parties to follow a particular accounting

standard when the accounting information is for the general public or the government. This saves information receivers from having to bear additional transaction costs for understanding various accounting systems by following only one. In this logical environment, because if different countries follow different accounting standards, there is a cost that is involved in understanding the other country's system before one can invest there, one would expect a universal accounting standard to be followed everywhere. So far, that has not happened.

While the above rationale of one general accounting standard being prevalent holds true in national scenarios, internationally presence of many kind of accounting standards is bewildering. However, it is understandable that as international trade is becoming more important to every country in a globalised world, and legion of international investors and those seeking cross-border investment is increasing, there is an attempt to come up with globally uniform accounting standards. The current move by Institute of Chartered Accountants of India, governing body of chartered accountant professionals, perfectly fits into this pattern. The Accounting Standards Board of the Institute of Chartered Accountants of India, which sets the standard for the country, has formulated two new standards on Financial Instruments – AS 30 (Financial Instrument: Recognition and Measurement) and AS 31 (Financial Instruments: Presentation). AS 30 is the equivalent of the International Accounting Standard IAS 39 and AS 31 corresponds to IAS 32. With specific reference to derivatives, they recognise and measure the financial instruments required to standardise hedge accounting. (Souza, 2006)

One of the conditions for being able to apply hedge accounting is that the hedge instrument should not have features that make it very exotic or speculative. If the hedge instrument is speculative, accounting standards require that the mark to market (accounting methodology of assigning a value to a position held in a financial instrument based on the current market price for the instrument or similar instruments) gains/losses have to be compulsorily recognised in the income statement. As per these standards, derivatives are not treated as off-balance sheet items but as marked to market. The consequent gain or loss is recognised in the income statement. Alternatively, the gain or loss may be applied for purposes of hedge accounting. This can of course, be explained as an effort to create certainty regarding value of the derivative, thus reducing cost of information receivers in comprehending the information provided.

A problem that arises is that these accounting standards are mandatory only from 2011. In this absence, derivative transactions are usually camouflaged under heads like loan exposures and contingent liabilities. This leads to the inability of obtaining a complete picture of a company's total investment, its loan portfolio, the hedges it has taken for both its loans and derivatives deals.

There is also the problem of identifying the real motive behind the derivative transaction – hedging or speculation, as discussed in Part II. Many Indian corporates had taken positions in forex derivatives with low yielding currencies like Swiss (CHF) and Japanese Yen (JPY) as the underlying. These currencies were not only chosen because of their low yields, but also due to their perceived stability against the dollar, a phenomenon

the corporates hoped to profit through participation in barrier options. However, the significant appreciation of these currencies against the dollar exposed the corporates to heavy losses. Such exoticness in derivatives is expected to have a major negative impact on the results of Indian corporates. Further as the instruments used are generally speculative, the conditions of hedge accounting are often not met, consequently, the unrealised gain/loss on the derivative position cannot be deferred to future periods to be offset against the underlying hedge item. Corporates also list derivatives with no market value against their respective balance sheets, showing profits, thereby inflating their portfolio. This kind of behaviour significantly increases information cost for everyone involved – including shareholders, market observers, potential investors and hedgers and creditors of the company. Therefore regulatory measures are required in these areas.

Valuation of derivatives, particularly long-term derivative products, many of which could be proprietary products of banks, may be difficult to value, as they are highly illiquid instruments. The standard requires them to be marked to market. Viable markets have to be identified for these. Critics suggest that marked to model practice should be used. This model advocates that pricing a position or portfolio should be at prices determined by a financial model in contrast to allowing the market to determine the price. The shortcoming of this model is that it gives an artificial illusion of liquidity, and the actual price of the product depends on the accuracy of the financial models used to estimate the price. Hence, an appropriate measure to address this concern must be developed.

CONCLUSION

In this paper, we have followed development of currency derivatives and tried to put the same in context of necessity and organic growth of the financial and trading world; from emergence of derivatives as expedient economic tools to manage forex risk after Gold Standard and the Bretton Woods system broke down, the need for these instruments, the nature and market, especially in India, the economic implications of fluctuations in the financial market and the important role that currency derivatives play in mitigating the ensuing losses amongst other issues have been addressed. This is followed by the construction of a hypothetical situation in which currency derivatives do not exist and the problem of adverse selection arises. The core of the paper addresses the kind of legal issues that the currency derivatives raise and it shows how the economic rationale can be utilized to answer these questions. Simple tests to differentiate hedging concerns from speculative interests have also been devised. The economic rationalization grid, formulated to picturise the interests of parties involved, helps in providing a clearer insight into their motives and gains. In the final section, information costs, existing accounting standards and suggestions to make transactions in derivatives easy have been made.

In conclusion it can be observed that an economic analysis of law relating to derivatives contract can provide important insights towards developing effective regulations in this extremely technical and complex turf. It can effectively solve the problem of wagering and speculation in derivatives market by differentiating speculation

from hedging and providing important cues towards future course of law. However, the strength of this approach needs to be further tested by applying to other legal dilemmas that exist in this field. Though an effort to distinguish insurance contracts from derivatives has been made, the authors believe that a wider approach in understanding the issue of insurable interest, involving a detailed analysis of specific nature of insurance contract is necessary before a final position can be reached on this matter. It is very well possible that some derivative contracts double up as insurance contracts, and our approach, so far can not exclude such possibility. Another issue that should be a target of economic analysis armed with analysis of primary data is the issue of exchange-traded derivatives versus Over-The-Counter derivatives. The economic efficiency and otherwise desirability of these kind of derivatives should be inquired into and explained by economic analysis.

In our analysis, we have taken some common features of currency derivatives and proceeded accordingly. While our analysis serves a general purpose, it is possible and may be rewarding also to analyse separately the cases of swap, futures and options with the same questions in mind that these researchers tried to answer.

Finally, it can now be safely stated that economic analysis may be used as a pragmatic and useful tool to explore the thicket of regulating financial derivatives.

In this fast-paced financial world, capital flows have become an essential part of economic globalization. Currency derivatives, if utilized judiciously are vital tools that ease capital flows and bring economic prosperity to individuals, institutions, firms and nation-states. Warren Buffet, the second-richest man in the world, remarked that derivatives are financial weapons of mass destruction. (Buffet, 2009) An approach through Law and Economics suggests that derivatives are but purely logical and rational tools which when used judiciously can help promote the basic economic principle of allocating scarce resources, maximising utility and increasing one's wealth.

References

Amarchand & Mangaldas & Suresh A Shroff & Co., "India: Emerging Judicial Perspectives" (2008) sourced from <http://www.iflr.com/Article/2072922/Emerging-judicial-perspectives.html> <<Last visited on 2.2.2009>>

Giddy, Ian H., "Understanding and Using Hybrid Financial Instruments" (2008). Sourced from <http://giddy.org/dbs/structured/gfmch17.htm> <<Last visited on 10.02.2009>>

Hentschel, Ludger and Clifford W. Smith, "Risk and Regulation in Derivatives Markets", 1994 Sourced from <http://www.simon.rochester.edu/fac/hentschel/PDFs.pdf> <<Last visited on 11.02.2009>>

Medhora, Rohinton and José María Fanelli, “The Emerging International Financial Architecture and Its Implications for Domestic Financial Architecture” (2005) pp.245 – 302. Sourced from <http://www.worldbank.org/mdf/mdf4/papers/rohinton.pdf> <<Last visited 4.02.2009>>

Schwartz, Anna J., “Lessons of the Gold Standard Era and the Bretton Woods System for the Prospects of an International Monetary System Constitution” (2006) at pp. 391-394 Sourced from <http://www.nber.org/chapters/c7512.pdf> <<Last visited on at 12.02.2009>>

BBC News, Buffett warns on investment 'time bomb', March 4, 2003, available at <http://news.bbc.co.uk/2/hi/business/2817995.stm> , <<last viewed on June 25, 2009>>.

Braeckvelt, Francis, “Clearing, Settlement and Depository Issues” (2006). Sourced from <http://www.bis.org/publ/bppdf/bispap30z.pdf> <<Last visited on 10.12.2009>>

Byrns, Ralph, “Test Bank for Corporate Finance and Financial Markets”. Sourced from www.unc.edu/depts/econ/byrns_web/EC423/FM_TB/31_Derivatives.doc <<Last visited on at 3.1.2009>>

Cherunilam, Francis, *International Business: Text and Cases* 3rd edn. (Prentice-Hall of India Pvt.Ltd: New Delhi, 2004)

Cook, Elizabeth, *The Modern Law of Estoppel*, 2000, Oxford University Press, London

Currency exchange, “Spot Transactions” (2007) Sourced at www.cambridgefx.com/currency-exchange/currency_exchange.html. <<Last visited on 4.02.2009>>

Desai, Berjis, *Why Derivative Contracts Could be Void Anyway*, 2008 sourced from <http://in.rediff.com/money/2008/mar/29guest2.htm> <<Last visited on 2.2.2009>>

Firth, Simon, *Derivatives Law & Practice*, 2005, Sweet & Maxwell, London

Forex Trading Glossary. Sourced from www.forexdirectory.net/fxgloss.html <<Last visited on 3.1.3009>>

Greenspan, Alan, Former Chairman, US Federal Reserve Bank (1999) Sourced from <http://www.federalreserve.gov/boarddocs/speeches/1999/19990319.htm> <<Last visited on 18.02.2009>>

Hudson, Alistair, *The Law of Financial Derivatives*, 2006, Sweet and Maxwell, London

Jacque, Laurent L., *Management and Control of Foreign Exchange Risk* (Massachusetts: Kluwer Academic Publishers. 1999

Kontautas, Tomas, Duty of Disclosure in Insurance Law, (Erasmus University: Rotterdam, 2002) available at www.dbr.lt/uploads/ensimaz.pdf

Paredes, Troy A. "Blinded by the Light: Information Overload and its Consequences for Securities Regulation" Washington University School of Law, 2003 . Available at SSRN: <http://ssrn.com/abstract=413180> or DOI: 10.2139/ssrn.413180 <<Last visited on 6.2.2009>>

Partnoy, Frank, Shifting Contours of Global Derivatives Contracts, University of Pennsylvania Journal of International Economic Law 421, Volume 22, 2001. Sourced from SSRN: <http://ssrn.com/abstract=413180> or DOI: 10.2139/ssrn.413180. <<Last visited on 12.03.2009>>

Philipose, Mobis, Exchange Traded Products and Derivatives sourced from <http://www.livemint.com/2008/05/27000322/Exchangetraded-products-and-d.html> <<last visited on 12.2.009>>

Report of the RBI-SEBI Standing Technical Committee on Exchange Traded Currency Futures, Reserve Bank of India and Securities and Exchange Board of India (2008). Sourced from www.fimmda.org/download/rbisebi.pdf <<Last visited 5.02.2009>>

Reserve Bank of India, Report of the Internal Working Group on Currency Futures (2008) available at <http://www.rbi.org.in/SCRIPTS/PublicationReportDetails.aspx?FromDate=11/16/2007&SECID=22&SUBSECID=0> <<Last viewed 6.02.2009>>

Sarkar, Asani, "Indian Deivative Markets" in ed. Kaushik Basu, Oxford Companion to Economics in India, 2006, Oxford University Press, New Delhi

Sauer, R.D., "The Economics of Wagering Markets", 1998 at pp. 2-7. Sourced from <http://www.e-jel.org/archive/dec1998/Sauer.pdf> <<last visited on 11.2.09>>

Souza, Dolphy D., "Accounting of Derivative Losses" The Hindu Business Online, April 17, 2008 Sourced from <http://www.thehindubusinessline.com/2008/04/17/stories/2008041751020900.htm> <<Last visited on 15.02.2009>>

Stigler, George J., "The Economics of Information," Journal of Political Economy, 1961, Volume 69, pp. 213-225

Stout, L.A., Betting the Bank: How Derivatives Trading Under Conditions of Uncertainty Can Increase Risks and Erode Returns In Financial Markets, Iowa Journal of Corporate Law, Volume 21, 2001, p. 55

The Hindu, Companies Willing to Settle Currency Derivative Cases out of Court, Hindu Business Line, April 18, 2008

The Llectic Law Library, “Legal Definition of Wager” sourced from
<http://www.lectlaw.com/def2/w034.html> <<last visited on 2.2.2009>>

The Treasury of United States, “Principles and Best Practices for Hedge Fund Investors: Report of The Investors’ Committee to the President’s Working Group on Financial Markets”(2008) Sourced from
<http://www.ustreas.gov/press/releases/reports/investors'committeereportapril152008.pdf>
<<Last visited on 13.02.2009>>

The Treasury of United States, Risk Management of Financial Derivatives:: A Comptroller’s Handbook ,1997 Sourced from
<http://www.occ.treas.gov/handbook/deriv.pdf> <<Last visited on 13.02.2009>>

U.S Commodity Futures Trading Commission, Foreign Currency Trading, 2008. Sourced from
<http://www.cftc.gov/customerprotection/fraudawarenessandprevention/forex/index.htm>.
<<Last visited on 13.01.2009>>

Wagers and Gambling Transactions, sourced from
<http://chestofbooks.com/business/law/Handbook-Law-Of-Contracts/Wagers-And-Gambling-Transactions.html> <<Last visited on 1.02.2009>>

Woods, M. and Dew Marginson, “Accounting for derivatives: An evaluation of reporting practice by UK banks” European Accounting Review, 2004. Sourced at
www.informaworld.com <<Last visited 13.02.2009>>

Zingales, Luigi, “The Costs and Benefits of Financial Market Regulation” 2001 Sourced from SSRN:
<http://ssrn.com/abstract=536682> or DOI: 10.2139/ssrn.536682. <<Last visited 4.02.2003>>

List of Legislations

Foreign Exchange Management Act, 1999

Insurance Regulatory and Development Authority Act, 1999