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A study on the effective role of derivatives in controlling risk in Project Finance

Shaik Mahaboob Basha

ABSTRACT: *In an age of industrialization electricity plays a very important role in the economy of any country. It is however a very capital intensive industry that requires huge funds for its set up or restructuring. Thus, its resort to project finance for funding. There are several risks involved in power projects by virtue of its nature. These risks need to be properly managed in order to attract investors to the sector. Derivatives are finance risk management tools that have been used over time in the energy sector generally. However, there have been certain setbacks in its application in the electricity sector. The paper aims to consider its effectiveness in financial risk management in this sector, and whether the fear over its use in recent times is justifiable.*

KEYWORDS: *CEPMLP: Centre for Energy, Petroleum and Mineral Law and Policy*

I. INTRODUCTION

Project finance is usually applied in large scale long term projects which are susceptible to huge risks. It is important that these risks be identified and understood. Where the risks of a project are not properly identified, lenders become wary as to the viability of the project. The success of the project would depend on the allocation of these risks to the parties best suited to bear them and the tools put in place to mitigate the risk. Identification, allocation and mitigation of risks in Project Finance are necessary due to its non-recourse or limited recourse nature.

Derivatives make up some of the major means of managing risks in a project finance transaction. The question that naturally comes up is what they offer in their application as risk management tools in power projects.

Although derivatives have been extensively used in the field of finance, there are still some criticisms concerning its usage. These are complex tools, which if not properly understood could be wrongly used. Just as they could bring about gains, so can they also cause losses? Considering the unique nature of the power industry, an understanding of what these tools offer and how they should be applied is important.
This paper aims to consider the above issues by way of analytical reasoning. The unique nature of the power industry shall be evaluated and the risks inherent therein. The use of derivatives in the industry shall be examined. Its function as a means of mitigating risks shall be analyzed. The paper shall conclude by analyzing whether the tools themselves pose some form of risk.

II. KEY RISKS IN POWER PROJECT

Completion Risk

This is a threat that the project may not be completed within the scheduled time or completed at all. This risk is usually as a result of cost overruns, failure of technology used, force majeure situations or some necessary variations to the project structure. Delays in completion would involve additional interest payments and the extension of repayment time. Also, as electricity is an essential utility, the host Government may impose penalties for delays.

To mitigate this risk, lenders usually require a completion guarantee from the project sponsors18. This is a guarantee from the project sponsor to complete the project where the project company fails to complete same at the scheduled time. Performance bonds could also be obtained from the contractors; and insurance policies could be taken for losses caused by delay.

Operation Risk

This is the possibility that the project may fail to meet the required standard of performance. This can be mitigated by means of an Operation and Maintenance (O&M) contract. The O&M contract allocates the responsibility for standard performance of the project to the operator.

Political Risk

This is the exposure of the project to political issues. Such issues could be: (i) breakdown of existing political order; (ii) imposition of new taxes; (iii) restrictions on repatriation of profits; (iv) risk of expropriation or (v) a change in law not favorable to the project. These risks are dealt with by obtaining specific guarantees and assurances against the risks from the host government. Also, the involvement of multilateral agencies, like the World Bank, can act as a safeguard against political risks. Another way out may be to obtain finance from a syndicate of lenders from several countries. The risk of jeopardizing trade and relations with their home countries may deter the host government from taking certain actions detrimental to the interests of the lenders or project.

Environmental Risk

The risk that a project will be disrupted by environmental issues, has been a growing concern for lenders in recent times. This is due to the upsurge in the making of environmental legislation by countries. Emissions from power plants during the construction and operating phases may constitute environmental hazards. In the short-term, compliance with environmental protection legislation would involve substantial costs to the project. However, in the long term, it would lead to greater efficiency. The cost of failing to comply with environmental legislation can be quite significant.

Market Risk

The market risk faced by power projects is in threefold: (i) the possibility that there may not be an existing or sufficient market for the product; (ii) the likelihood of competition by new investors; and (iii) the possibility that the price at which power is sold would not cover the debt.

These can be mitigated by some form of forward sale. A "take or pay clause" could be included in the PPA, by which the buyer is obligated to pay for the product even when he does not want it, and sometimes even when the project cannot deliver. The buyer pays a price that covers both the operating costs and the debt servicing requirements. This is usually referred to as a capacity charge or availability charge in the PPA.

Financial Risk

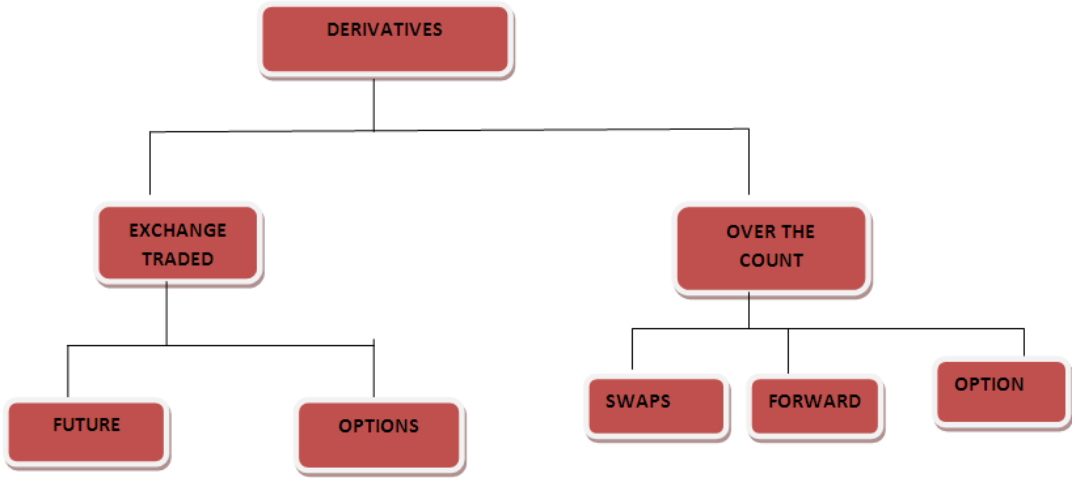
This is the possibility of incurring losses as a result of fluctuations in prices or rates. Financial risk is the danger of incurring losses as a result of movements in interest rate, exchange rate, stock price, index level or other commodity prices. The PPA allocates risks related to foreign exchange rates to the power purchaser. The pricing formula in the availability charge payment provisions of the PPA is structured to increase the amount payable by the purchaser in local currency. Generally, however, derivative tools are used to mitigate financial risks. The various types of derivative tools are discussed below.

III. WHAT ARE DERIVATIVES?

A derivative is a financial tool where value is based on the value of an underlying Instrument. Its performance is dependent on the performance of another financial instrument. It works as an efficient and effective tool used to mitigate financial risks and to reduce exposure or lower the cost of the project. Derivatives can be based on real assets (physical assets), including metals, sources of energy, agricultural commodities, or on financial assets, including currencies, loans, stocks or bonds. In the power industry, the commonly used derivative instruments (contracts) are forward contracts, futures contracts, options and swaps. Futures and options are actively traded on many exchanges. While forwards, swaps and different categories of options are traded by financial institutions and corporate individuals in what is called over-the-counter (OTC) markets.

IV. STRUCTURE OF DERIVATIVE TRANSACTIONS

Figure below illustrates the structure of these derivatives



This is a contract between a buyer and seller for the delivery of a commodity to the buyer in the future at a specified price and at the end of a designated period of time. In the electricity industry, forward contracts between independent power producers and large industrial customers are common. An inherent problem of the forward contract is that the buyer and seller (counterparty) have to find each other and settle on a price. Finding counterparties and settling on a price far into the future can be quite challenging. For example, it is reported that in 2008, after the fall of the INDIAN power market in the INDIA, the INDIAN Independent System Operator (IISO) went through a rigorous task trying to discover the price for electricity delivered in the future. This was done through lengthy, expensive negotiation, since there was no market price for future electricity deliveries at the time. Also, since forwards are OTC instruments, each party bears the risk that the other may default on the commitment.

Futures

The future contract is a contract between the buyer/seller, and an exchange, whereby, the buyer/seller agrees to take/deliver a commodity at a particular price which the parties have agreed to at a chosen date in the future. The specified price is referred to as the future price, while the designated date is referred to as the settlement or delivery date. Unlike the forward contract, the buyers and sellers of the futures contracts transact exclusively through an established exchange, and not directly with each other. There are several future exchanges globally. The major ones are the INDIAN Mercantile Exchange (IMEX), the International Petroleum Exchange, and the Singapore International Monetary Exchange.

Forwards versus Futures:

There are several differences between the forwards and the futures. They are listed
In table below:

FORWARDS	FUTURES
Non-standardized, as the terms of each contract are negotiated individually between the buyer and seller	Standardized as to delivery date and quality of the deliverable
Non-existence of exchanges or secondary markets. OTC traded instrument	Traded on established exchanges
Any decision to mark the forward contract to the market at the end of each trading day has to be done by agreement between the two parties at the onset of the transaction	Automatically marked to market at the end of each trading day; they are therefore subject to interim cash flows
Parties are exposed to credit risk or counterparty risk as either party may default on obligation.	Credit risk is minimal as clearing house associated with the exchange guarantees the other side of the transaction
More frequently used to mitigate existing or anticipated currency related risks	Transfers price risk from hedgers to spectators, i.e. those willing to pay to avoid the risk, to those wanting to assume the risk in the hope of gain

Option

An option gives the owner of same the right to buy or sell a commodity at a fixed price within a period of time or at a particular date. The writer of an option grants the buyer of the option, the right but not the obligation, to purchase from or sell to the writer, the commodity at the specified price within the specified period of time or a specified date. The right is in exchange for a particular amount of money, known as the option price or option premium. The strike or exercise price is the price at which the option may be bought or sold, while the expiration is the date the option becomes void and unenforceable. When it is a right to purchase, it is a call option or a call, on the other hand, when it is a right to sell, it is a put option or a put. The maximum amount that the buyer can lose, and which the writer can gain is the option price.

Swap

As the name implies, it is the exchange of one interest rate for another. In a swap agreement, the parties agree to exchange cash flows. The contracts are entered into between the two parties outside any established exchange and are therefore characterized as OTC derivatives. As swaps do not involve the actual transfer of any assets or principal amounts, a base must be established in order to determine the amounts that will periodically be swapped. This base is known as the "notional amount" of the contract. Many of the benefits associated with swap contracts are similar to those associated with futures or options contracts. Swaps allow users to manage price exposure risk without having to take possession of the commodity.

V. RISKS MITIGATED BY DERIVATIVES

The key risks mitigated by derivative instruments are those related to fluctuations in currency exchange rate and interest rates.

Exchange rate risks – These are present in most across the border transactions. They are more significant in project finance transactions because of the long term nature of the projects. Foreign exchange risk arises as a result of the possibility that there will be differences in the currency earned as revenue and the currency in which the debt and other expenses may have been incurred. In a PPA for instance, the revenue earned may be paid in the host country's local currency, while the debt and other expenses for the project may have been incurred in another currency. Derivatives are widely used to mitigate such risks, thus: (i) forward contracts - payment is made in the future in a chosen currency in exchange for another currency delivered at the date, irrespective of the rate of exchange at that future date; or (ii) currency options – one party is given the right to buy or sell a particular amount of currency at a particular rate of exchange, on or before a certain date;(iii) currency swaps - parties agree to sell currencies to each other on the basis of repurchasing same in the same amount and at the same exchange rate at a date in the future.Interest rate risk – this is the possibility that the interest rates may be higher than what was envisaged. There could be an increase as a result of market movements. This risk can be mitigated by the use of an interest rate swap agreement.

VI. DERIVATIVES AND FINANCIAL RISK MANAGEMENT IN POWER INDUSTRY

Proper management of risks in a power project is important as failure to do so would result in huge losses and returns on investment being lower than expected. The function of derivatives in a power project is to manage risks properly so as to prevent losses and ensure high returns. They are a means of managing and transferring risks. This should make it appealing to any large scale project which would have otherwise seemed difficult to undertake. Projects that would have made losses or negligible returns in the absence of derivatives have made huge gains with its application. Derivatives in the power industry have not been so widely used though. The rise in

restructuring and privatization activities having exposed investors to higher financial risks should have made derivatives more attractive. In INDIA, for instance, by the fall of 2008, trading in electricity futures and options contracts had almost ceased. The INDIAN Board of Trade suspended trading in electricity futures.

The technical and complex nature of the electricity industry may account for this. Electricity would seem unique as a result of its physical attributes. Unlike other commodities, electricity cannot be stored. It is consumed within a tenth of a second once it is produced. This makes it impossible to be stored, as excess would be wasted. This makes it difficult to store the commodity for the future or settle on a price far into the future as was the dilemma of the CISO in 2009.This characteristic of electricity would result in its marginal cost of production and delivery cost fluctuating all the time. This would make it risky for derivative trading purposes. As a result of this its use has been narrowed in power projects.

Although, derivatives are effective in controlling risks, they are prone to certain risks themselves. For instance there is the risk that the counterparty may fail to perform in a forwards contract. There could also be a legal risk in the sense that either party may lack capacity to perform, thus making the contract unenforceable. A derivative would generally make a gain for one party, and a matching loss for the counterparty. Lack of understanding or wrong usage can therefore lead to unbelievable losses causing irreparable damages sometimes. Note that the problems faced with the use of derivatives are not as a result of the Instruments themselves, but as a result of lack of understanding and improper use. The key to proper use of derivatives is effective supervision of derivative transactions and accurate management of risks inherent in the transaction.

VII. CONCLUSION

Over time, derivatives have played a major role in the energy sector, including the electricity industry, despite its setbacks. Its use is often limited as its presence in a company's balance sheet may cause discomfort to the investors.

Note that the failure to effectively understand the risks to be mitigated may result in detrimental consequences to parties to the derivative contract, especially where there is an outright financial failure involved. Since failure to accurately identify and measure risks when dealing with derivatives can lead financial institutions to erroneously attribute risk to a given transaction, which may ultimately lead to an unwise credit decision, there is a strong need, to ensure that some framework exists by which some instruments can be examined and their risks analyzed.

It has been said that derivatives have been the cause of large losses for some corporations and even individuals. The question is, are the derivatives really at fault when misused. According to Chance, "Is electricity to be faulted when someone with little knowledge of it mishandles it?" Derivatives basically have a high level of control; therefore, a small price change can lead to large gains or losses. This would make derivatives seem unattractive. It becomes rather risky for any company, when derivatives are used without adequate knowledge of its application and the extent it can be used.

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