Preface

This thesis studies the prospects and challenges of the introduction of weather derivatives in India. It specifically focuses on the weather-related risk mitigation methods which farmers in a developing country, like India, could use. Keeping in mind the fact that in the agricultural sector, the dependence of yield patterns on rainfall is very high, weather derivatives have been shown to be a way for farmers to hedge their weather related risks.

The study of literature reveals that a large number of attempts have been made, especially by the government, to provide crop insurance in some form or other, to farmers. However, these have met with limited success. This thesis brings out the feasibility and the advantages of introducing weather derivatives as a means of hedging yield risk in the agricultural sector.

A theoretical analysis of willingness to pay, in order to hedge weather-related risk, has been done based on the expected utility for a farmer growing a crop. An empirical study on this model has been done using data of soyabean growing farmers in Jhalawar district, in order to determine a theoretical figure for willingness to pay to hedge yield risk.

Basis risk is an important element, especially in the case of rainfall related weather derivative products. The intensity of basis risk and the pattern of this risk has been brought out in the thesis through a study of rainfall data in a 30 year period at two closely located weather recording stations.

A major component of the thesis is based on an extensive questionnaire based survey done in six villages in two districts in the state of Rajasthan. The survey not only brings out awareness levels of weather risk issues amongst farmers, but also their willingness to pay for weather derivatives. The method adopted and the results obtained would be a pre-cursor to other such surveys, which could be done in various locations prior to introduction of weather derivatives.

The willingness to pay for weather derivatives has been determined through contingent valuation, using probit and logit models. The value determined would give an indication to the kind of pricing and structuring that could be done when weather derivatives are introduced in India.

The thesis also goes into the regulatory issues linked to derivatives trading, and how these could be extrapolated to the weather derivative market.
Finally, pricing issues are looked at from a social-benefit point of view, and a method of valuation based on stabilization of farmers' income is brought out. The thesis brings out the feasibility of valuing weather derivatives such that they are within the derived willingness-to-pay figures, as well are financially viable instruments for the market.