

## **Essays on liquidity risk and firm value maximization in the context of hedging**

### **Abstract**

Market imperfections such as corporate taxation, costs of financial distress, various types of agency costs and information asymmetries account for the widespread use of risk management measures by corporations. Investment positions or hedges are constructed using a variety of financial instruments such as stocks, options, swaps, forward contracts, futures contracts and other derivative products in order to manage financial risk. A comprehensive literature review conducted in this thesis summarizes the incentives to incorporate financial risk management measures, discusses various hedging methodologies and also the relevance of including the liquidity risk component in risk management tools.

According to existing research, hedging with derivatives allows firms to increase their debt ratio which results in a higher level of leverage leading to higher firm value from tax shields. Empirically analyzing the relationship between hedging and leverage using the foreign currency derivative holdings of a representative set of Indian firms is the first objective of this study. Indian firms were traditionally not allowed to use derivatives; however, the economic liberalization of the early 1990s facilitated the rapid growth of foreign exchange market in India. In this context, the Indian firm data in the period 2002-2013 is a unique dataset as it would provide useful insights on how the introduction of foreign currency derivatives (hedging) has affected the value-maximizing behavior of Indian firms (through leverage). The analysis is carried out using a two-stage instrumental variable regression framework. The results are broadly consistent with prior literature and show that a positive relationship exists between hedging and leverage for moderately leveraged firms which reverses for highly leveraged firms.

The second objective of this study is to formulate a portfolio-level Liquidity Adjusted Value at Risk model by using the adapted approach based on the Cornish-Fisher expansion technique to account for non-normality in liquidity risk. The financial crisis and the subsequent global recession of 2008-2012 have demonstrated how large and random security price movements during financial crises cause liquidity gaps and many hedging strategies tend to fail when these crises occur. The last decade has seen considerable amount of research work directed towards managing liquidity risk. Prior studies have analyzed the importance of liquidity risk using a comprehensive liquidity measure in a Value at Risk framework. However, most models ignore the fact that liquidity costs which measure market liquidity are non-normally distributed and this leads to a severe underestimation of the total risk. The empirical evidence obtained in this study using the modified approach shows that accounting for non-normality at portfolio level produces much more accurate results than alternative risk estimation methodologies. The model is tested using emerging markets' data as research on liquidity that primarily focuses on emerging markets yield particularly powerful tests and useful independent evidence since liquidity premium is an important feature of these data.

**KEYWORDS:** Risk Management Corporate Hedging, Leverage, Liquidity Costs, Value at