

## Continuous-Time Convertible Lease Pricing and Firm Value

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**Abstract :** Along with the increase in the use of leasing contracts in corporate finance, multiple studies aim to model the credit risk of the lease in order to cover the losses of the lessor of the asset if the lessee goes bankrupt. In the current research paper, a convertible lease contract is elaborated in a continuous time stochastic universe aiming to ensure the financial stability of the firm and quickly recover the losses of the counterparties to the lease in case of default. This work examines the term structure of the lease rates taking into account the credit default risk and the capital structure of the firm. The interaction between the lessee's capital structure and the equilibrium lease rate has been assessed by applying the competitive lease market argument developed by Grenadier (1996) and the endogenous structural default model set forward by Leland and Toft (1996). The cumulative probability of default was calculated by referring to Leland and Toft (1996) and Yildirim and Huan (2006). Additionally, the link between lessee credit risk and lease rate was addressed so as to explore the impact of convertible lease financing on the term structure of the lease rate, the optimal leverage ratio, the cumulative default probability, and the optimal firm value by applying an endogenous conversion threshold. The numerical analysis is suggestive that the duration structure of lease rates increases with the increase in the degree of the market price of risk. The maximal value of the firm decreases with the effect of the optimal leverage ratio. The results are indicative that the cumulative probability of default increases with the maturity of the lease contract if the volatility of the asset service flows is significant. Introducing the convertible lease contract will increase the optimal value of the firm as a function of asset volatility for a high initial service flow level and a conversion ratio close to 1.

**Keywords :** convertible lease contract, lease rate, credit-risk, capital structure, default probability

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