In this paper we investigate the consequences of the choice of the model to partial hedging in incomplete markets in finance. In fact we consider two models for the stock price process. The first model is a geometric Levy process in which the small jumps might have infinite activity. The second model is a geometric Levy process where the small jumps are truncated or replaced by a Brownian motion which is appropriately scaled. To prove the robustness of the quadratic hedging strategies we use pricing and hedging formulas based on Fourier transform techniques. We compute convergence rates and motivate the applicability of our results with examples.