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**Marco Avellaneda\*** (avellaneda@courant.nyu.edu), 251 Mercer Street, New York, NY 10012,  
and **Stanley Jian Zhang**. *Path-Dependence of Leveraged ETF Returns*.

It is well-known that leveraged exchange-traded funds (LETFs) don't reproduce the corresponding multiple of index returns over extended (quarterly or annual) investment horizons. In 2008, most leveraged ETFs underperformed the corresponding static strategies. In this paper, we study this phenomenon in detail. We give an exact formula linking the return of a leveraged fund with the corresponding multiple of the return of the unleveraged fund and its realized variance. This formula is tested empirically over quarterly horizons for 56 leveraged funds (44 double-leveraged, 12 triple-leveraged) using daily prices since January 2008 or since inception, according to the fund considered. The results indicate excellent agreement between the formula and the empirical data. The study also shows that leveraged funds can be used to replicate the returns of the underlying index, provided we use a dynamic rebalancing strategy. Empirically, we find that rebalancing frequencies required to achieve this goal are moderate, on the order of one week between rebalancings. Nevertheless, this need for dynamic rebalancing leads to the conclusion that leveraged ETFs as currently designed may be unsuitable for buy-and-hold investors. (Received August 07, 2009)