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**Maxim Bichuch\*** (mbichuch@jhu.edu) and **Ronnie Sircar** (sircar@princeton.edu). *Optimal Investment with Transaction Costs and Stochastic Volatility.*

Two major financial market complexities are transaction costs and uncertain volatility, and we analyze their joint impact on the problem of portfolio optimization. When volatility is constant, the transaction costs optimal investment problem has a long history, especially in the use of asymptotic approximations when the cost is small. Under stochastic volatility, but with no transaction costs, the Merton problem under general utility functions can also be analyzed with asymptotic methods. Here, we look at the final time optimal investment and consumption problem, when both complexities are present, using separation of time scales approximations. We find the first term in the asymptotic expansion in the time scale parameter, of the optimal value function, consumption, and of the optimal strategy, for fixed small transaction costs. We give a proof of accuracy in the case of fast mean-reverting stochastic volatility. Additionally, we derive the long-term growth rate. (Received August 18, 2015)