ENDOGENOUS CURRENT COUPONS

Abstract: We consider the problem of identifying endogenous current coupons for To-Be-Announced (TBA) agency mortgage pass through securities. Current coupons play a crucial role in the mortgage backed securities. The current coupon is said to be endogenous if it gives rise to a fairly, or par valued, TBA. Since prepayments both affect the value of the mortgage and depend heavily upon the coupon, the identification of current coupons involves solving a highly non-trivial fixed point problem. In a doubly stochastic reduced form model which allows for prepayment intensities to depend upon both current and origination mortgage rates, as well as underlying investment factors, we identify the current coupon with solutions to a degenerate elliptic, non-linear fixed point problem. Using Schaefer’s theorem we prove existence of current coupons. We also provide an explicit approximation to the fixed point, valid for compact perturbations off a baseline facto-based intensity model. Numerical examples are provided which show the approximation performs well in estimating the current coupon.

*This is a joint work with Zhe Cheng, Morgan Stanley