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It is well known that purely structural models of default cannot explain short term credit spreads, while purely intensity based models of default lead to completely unpredictable default events. Neither of these features is realistic. Furthermore, investor preference may play an important role in introducing correlation of defaults as well as setting spreads themselves. Leung, Sircar and Zariphopoulou(2008) recently introduced a structural model, in which default of the reference entity is triggered by a credit worthiness index correlated to its stock price and utilized indifference pricing to value defaultable bonds. We take this base structural model and add a new regime which allows for unpredictable defaults, thus creating a hybrid model of default. Furthermore, in an unrelated paper, Uppal and Wang(2003) study portfolio optimization when model parameters are unknown. By combining the hybrid default model with the uncertain parameter portfolio optimization problem, we succeed in determining corporate bond spreads and CDS spreads using indifference valuation. Our framework therefore allows for risk aversion, parameter uncertainty and both structural and intensity default features. (Received September 15, 2008)