Liquidity and price discovery in real estate assets

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This dissertation studied three important research questions related to liquidity of and price discovery in the housing market. Although we have limited ourselves here to the housing market, the findings might be relevant for other sectors of the real estate market or any other market that is characterized by illiquidity, indivisibility of goods and a high level of heterogeneity between goods.

Chapter 2 tests the empirical predictions from Taylor (1999) and Coles and Smith (1998). Taylor (1999) describes a model for the selling process of the housing market where potential buyers view the length of time a house has been for sale as a signal of inferior quality. The consequences are that the probability that a house will be sold declines with the time the house has already spent on the market. Furthermore, the probability that the seller will decide to withdraw the house from the market increases with time on the market. Coles and Smith (1998) describe a stock-flow matching model. The model predicts a sharp drop in the probability that a house will sell after the current stock of potential buyers has rejected to purchase the house and the house can only be matched to the flow of new potential buyers entering the market.

We have tested the empirical prediction from Taylor (1999) and Coles and Smith (1998) using duration analysis. This is the first study to take into account that the hazard rate of sale and the hazard rate of withdrawal are simultaneously determined. Therefore, we modelled the hazard rate of sale and the hazard rate of withdrawal simultaneously in a competing risks duration model with dependent unobserved heterogeneity. We find negative duration dependence in the hazard of sale and positive duration dependence in the hazard of withdrawal consistent with the theory in Taylor (1999). Consistent with Coles and Smith (1998), we also find the hazard of sale to be
constant for a short period followed by a sharp drop.

Chapter 3 tests for asymmetric information in the housing market by recognizing that list prices should be obsolete in a housing market with symmetric information between sellers and buyers. We have tested for the effect of list price reductions on the time at which a house is on the market. Our model is a timing-of-events model as described in Abbring and Van den Berg (2003). We take into account that some houses are not sold but withdrawn from the market. Furthermore, we explicitly allow for selectivity in list-price reductions.

The empirical results show that list-price reductions significantly increase the hazard of sale, but also increase the hazard at which the house is taken off the market. The effects are very substantial. A list-price reduction raises the selling rate by 83%, and the rate of withdrawing by 44%. Since list prices do not have any formal legal role in the Dutch housing market, list prices can only be used by the seller to provide signals to the market. In a market with symmetric information, signals do not add any information. Therefore, we interpret the substantial and significant effect of the list-price reductions as evidence in favor of the presence of asymmetric information in the housing market.

We have stressed the importance of allowing for selectivity in list-price reductions and taking withdrawals from the market into account. Our results confirm the argument made by Caplin and Leahy (1996) that self selection-effects matter in markets with frictions. Finally, we have investigated the effect of list-price reductions on the transaction price. List-price reductions reduce the expected transaction price, which is the direct effect. However, also the time on the market before selling the house has a negative effect on the transaction price. The indirect effect of a list-price reduction is thus that it reduced the time on the market which again increases the expected transaction price.

The parameter estimates show positive duration dependence in the hazard rate of the repricing hazard. This study is actually the first finding empirical evidence in favor of positive duration dependence in the hazard of repricing, which is consistent with Lazear (1986). Also the finding that higher list prices increase the likelihood of list-price reductions is consistent with Lazear (1986), although our estimate for the latter is merely an association rather than a causal effect.

Chapter 4 investigates the price-volume correlation in the Dutch housing market. Several studies have found a positive price-volume correlation in the housing market (e.g. Miller and Sklarz (1986), Stein (1995), and Berkovec and Goodman (1996)). We document this correlation for the Dutch housing market and intend to identify the mechanism giving rise to this correlation using a Vector Error Correction Model. This is the first price-volume study to include information on list prices and the flow of houses entering the market. We also include information on transaction prices, the number of houses sold per month, mortgage rates, and unemployment in our Vector
Error Correction Model. According to the estimated model, shocks to market fundamentals (the mortgage rate) have an immediate and significant impact on the rate of sale, little impact on the rate of entry of new houses for sale, and a gradual impact on house prices. This pattern is consistent with a search model where buyers and sellers gradually learn about change in market conditions.

The three essays in this dissertation contribute to our understanding of the selling process in the housing market. However, there is still a lot to learn. The studies in this dissertation were conducted on seller information. Information on buyers is not available in our dataset. If buyer information ever becomes available, future studies could make a large contribution to the literature by studying the bidding behavior of potential buyers or the negotiation process between buyers and sellers.