My Home's Market Value: An Active Market Pricing Model

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Abstract

The current US residential real estate market is recovering although price growth remains stagnant. The non-linear pricing model examined represents a first investigation in the area of a single variable, polynomial correlation model. Using data from Easton, Connecticut demonstrated that when sellers set initial prices outside of a computed 95% confidence interval for similar properties no offers are forthcoming prior to asking price reductions and offered properties remain on the market longer.

Perspective

Between 2005 and 2008 owner occupancy flattened and then declined following the Great Recession of 2008 (Census, 2010). The immediate effect of the 2008 financial crisis on residential real estate was to lower market valuations from 10% to 50% depending on the geographic location (Census, 2010). Sellers either withdrew from the market or rented their properties to avoid realizing a loss on sale and buyers stayed out of the market not wanting to overpay for a property that could continue to lose value (National Association of Realtors [NAR], 2014).

Although the residential real estate market has stabilized in the five years following the financial crisis of 2008 the market remains generally depressed with price growth stagnant (NAR, 2014). Sellers remain reluctant to accept this market change as structural while buyers want to embrace the change and agents for the parties lack a pricing model to reduce the time gap as measured in Days on Market [DOM]. This results in increasing costs for sellers and agents while reducing the opportunity risk of waiting for buyers as properties remain active for longer periods versus the pre-2008 market.

In turn forecasting an initial asking price using traditional hedonic pricing models is problematic: buyers have lost confidence in the market's future demand to offset a buyer purchase premium. It is timely to develop a residential real estate pricing model that can offer guidance to sellers on the initial listing price and concurrently provide buyers with a measure of the potential premium they may pay.

Doing Real Estate

Starting around 1965 national home ownership and occupancy rates grew on a positive basis (United States Census Bureau [Census], 2010). Paying a premium on purchase was acceptable as the probability was high that the market would eventually 'catch up' to their pre-purchase valuation. Sellers' and buyers' agents had a high level of confidence that listings would continue to sell in a reasonable time frame. Linear models for residential real estate valuations were widely acceptable to all parties.

Active Market Modeling

The objective of the model is to improve the efficiency of the residential real estate market by providing all parties with non-technical visual tools based on readily available sales data. This model entails using recent residential sales data to determine a ratio of closing price to square footage sold.

Hedonic Pricing Models

The prevailing approach to developing an initial asking price for a residential sales offering is to apply some variation of a hedonic pricing model (Sirmans, Macpherson, & Zietz, 2005). Hedonic pricing models are based on the premise that the price of an item can be decomposed into its elements—internal or relating to the property and external relating to things such as the quality of the school or the air quality

3rd Degree Polynomial Regression

A 3rd degree polynomial model with a 95% confidence interval regress' closing prices/sq. ft. on the total Sq. Ft. of homes sold. Pricing above this limit generates no offers. This model allows sellers to view an active market and determine where their initial asking price will place them relative to closing prices of houses of similar size. This provides the seller with control of the DOM versus any premium that they may want to seek. Concurrently, buyers may view any market activity and measure the premium being asked for by sellers versus other active listings.

Price/Sq. Ft. = Constant - 0.05412 Sq. Ft. - 7.615e-06 Sq. Ft.^{2} + 1.745e-09 Sq. Ft.^{3}