



Ripple effect in house prices and trading volume in the UK housing market: New viewpoint and evidence



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ABSTRACT

This study adopts the data of house prices and trading volume in the overall UK housing market and in the housing markets in the 10 major regions in the UK to estimate the ripple effect in the trading activities in the housing markets. First, this study details why the ripple effect occurs in the housing market price and volume using static and cobweb dynamic models. The results of the panel-based unit root tests indicate that the relative price and volume ratios show constancy, signifying that long-run equilibrium relationships exist between the regional and national housing markets in the UK. The frequency of the transaction volume convergence behavior is higher than that of the overall house prices.

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1. Introduction

Leamer (2007) proposes that housing in the United States undergoes a business cycle because developments in the housing sector actually lead to economic activity. In addition, Clayton et al. (2010) claim that changes in the house prices and trading volume exert significant economic effects on the builders, brokers, lenders, and appraisers. These changes also affect furniture consumption as well as the local property tax collections and related local government budgets, in addition to their effect on the local economy and wealth. Therefore, housing market transactions crucially influence the welfare or the overall economy of the region or the nation. Scholars have consistently conducted housing market observations. However, in contrast to the research on other financial markets that focused on the price and volume related-variables when evaluating transactions,¹ previous real estate or housing field studies have shown a greater number of house price studies than transaction volume studies.

Many studies focused on the house price behavior, fluctuation, and adjustment, as well as on the correlations of the house price fluctuation

with other variables. These concepts were employed to determine whether a bubble exists in the housing market. Measurements of the various effects on the housing market primarily consider house prices as a proxy variable for examination, for example, the wealth effect (Green, 2002; Quan and Titman, 1999), contagion effect (Kallberg et al., 2002), and ripple effect (Cook and Thomas, 2003; Drake, 1995; Meen, 1999; Peterson et al., 2002).

Studies have discussed the relationship between the house price and volume in the housing market. For example, Clayton et al. (2010) analyze the housing markets in 114 metropolitan statistical areas in the United States from 1990 to 2002, treat both prices and volume as endogenous variables, and study whether and how exogenous shocks cause co-movements in prices and volume. They find that in markets with inelastic supply, trading volume could Granger cause the house prices.

Studies on price–volume relationship have shown that volume can provide more information than price in certain situations. For example, Oikarinen (2012) finds that house price response lagged. Oikarinen (2012) examines the reactions of sales and prices to an income, interest rate and debt shocks. The empirical results show that the response of prices to demand shocks is substantially slower than that of sales. Because the speed at which house prices respond to information may differ from the speed at which it responds to trading volume, positive price–volume relations have been observed in numerous markets. Ortalo-Magné and Rady (2004, 2006) propose a property ladder by using the mobility model, which predicts increased housing wealth triggers housing mobility of households. The mobility models also predict the positive price–volume relation by expecting the effects of price changes from one segment to another segment in the housing market.

Other studies have also shown that using the house price is inefficient (Barkham and Geltner, 1996; Case and Shiller, 1989; Shiller,

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¹ Many previous studies support that trading volume is a useful variable in examining the trading activity. For example, Pan and Potesman (2006) propose that informed traders trade in the options markets using trading volume as the proxy variable. The authors find that option volume is predictive of stock prices. Mei et al. (2009) use trading volume as a measure of speculative trading to examine how speculative trading affects the stock prices in the Chinese stock markets. Roll et al. (2010) introduce the option-to-stock volume ratio to examine the determinants of the relative trading activity in options and stock. They find that the volume ratio is a significant predictor. In addition, some studies (Blume et al., 1989; Chordia and Subrahmanyam, 2004) claim that another variable calculated by volume, namely, order imbalance, can signal an excessive investor interest in stocks; if the interest is autocorrelated, it can also be associated with future returns.

1993, 2005). Tsai (2013) also finds that houses are not always priced in accordance with the housing market, since house prices cannot easily reflect a tight monetary policy. Tsai first uses the loss aversion behavior of traders to assess the viability of housing price rigidity in the housing market and to deduce further that if downward housing price rigidity actually existed, then the impact of monetary policy on housing prices should be asymmetric.

Traditionally, measurement of the various effects in the housing market and evaluation of the housing market equilibriums primarily employed house price as a proxy variable in housing market transaction. Nevertheless, in the transaction behavior, both the price and volume variables represent the transaction behavior and, thus, may contain information related to the transactions.

The present study discusses the ripple effect, a continuous key issue in the housing market. However, previous research on this effect focused only on measurements using the transaction price (for example, Alexander and Barrow, 1994; Ashworth and Parker, 1997; Cook, 2003, 2005; Cook and Thomas, 2003; Drake, 1995; Holmes and Grimes, 2008; MacDonald and Taylor, 1993; Meen, 1999; Peterson et al., 2002). Meen (1999) provides convincing economic explanations of the ripple effect. He proposes that shocks to regional house prices could ripple out across the economy through several factors such as migration, equity transfer, spatial arbitrage, and spatial patterns in the determinants of the house prices. The current study asserts that, irrespective of the cause of the ripple effect, this effect may change the information or actual housing activities in the overall regional housing markets and subsequently cause adjustment or correction behavior in housing market prices and volume.

Hence, the goal of this study is to use the data of the house prices and trading volume in the overall UK housing market and the housing markets in the 10 major regions in the UK to estimate the ripple effect in the trading activities in the housing markets. First, this study explains why ripple effect occurs in the housing market price and volume using static and dynamic models. Then, in the empirical test, this study adopts the regional–national house price ratios and regional–national trading volume ratios to test the convergence of the regional house price and the trading volume differential. This study uses both the individual unit root tests and the panel-based unit root tests to examine whether the relative price and volume ratios show constancy to verify the existence of the ripple effect.

Finally, this study establishes separate diverging indexes of the house price and the housing market transaction volume, which range in value from zero to one. When the regional house prices (transaction volume) and overall house prices (overall transaction volume) are cointegrated, the index is equal to zero. A higher divergence between the regional house prices (transaction volume) and the overall house prices (overall transaction volume) produces a higher index value. By

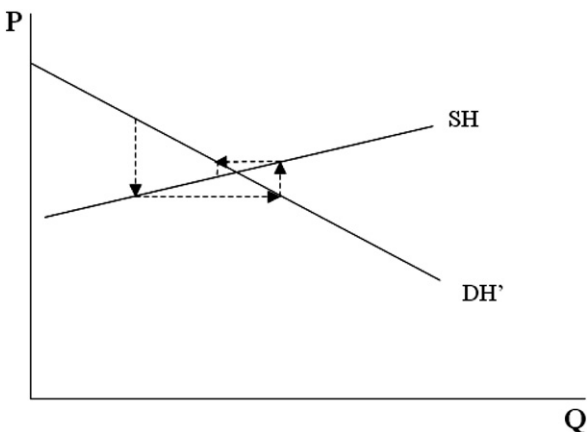


Fig. 1. The Marshallian adjustment process.

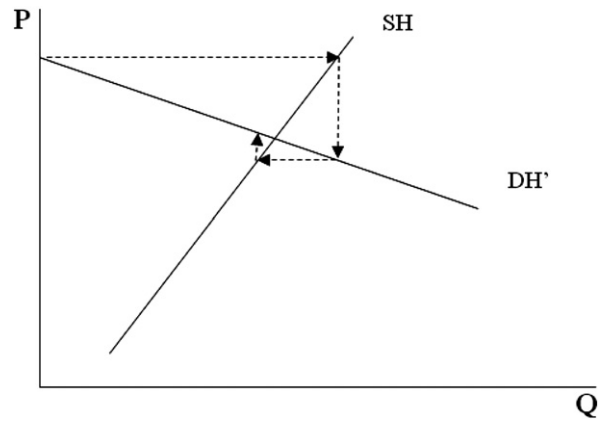


Fig. 2. The Walrasian adjustment process.

comparing the diverging indexes of the house prices and transaction volume, this study observes when the ripple effect occurs in the UK housing market and determines which transaction variable to primarily adjust or correct. The conclusion provides a more detailed explanation and measurements of the ripple effect in the housing market.

The remainder of this paper is presented as follows: Section 2 builds the theoretical framework, Section 3 provides a brief explanation of the empirical models, Section 4 illustrates the data and reports the estimation results, and Section 5 summarizes the main conclusions of this paper.

2. Theoretical framework for empirical analysis

Many research activities contributed to the analysis of the ripple effect in the house prices; in particular, many of them focused on the ripple effect in the UK housing market. For example, Drake (1995) find a ripple effect related to the changes in the house prices that occur earlier and more extensively in South East England than in the other regions in the UK. Meen (1996) suggests that the house prices in the main economic region, that is, in South East England, influence the prices in the other UK regions. Meen (1999) find that in UK, house prices exhibit a distinct spatial pattern over time, rising first in a cyclical upswing in South East England and spreading out over the rest of the country.

To provide convincing economic explanations of the ripple effect, Meen (1999) proposes four possible explanations for the interactions that lead to the observed pattern of the spillover.

The first is migration, which means that if house prices in one area are high relative to the other regions, then house dwellers might migrate to the other regions, leading to equalization in the house prices, which causes a ripple effect in the regional house prices. The second is equity transfer, which means that purchasers in the area where the house prices are high will have a greater buying power, forcing the prices in the other regions up. The third is spatial arbitrage, which takes place over space to eliminate the differences in the house price returns. The fourth is the spatial patterns in the determinants of the house prices, which proposes that a pattern of house prices similar to the observed ripple effect can occur even if no spatial link exists between the housing markets if the determinants of the house prices follow similar patterns.

Regardless of which of the four enumerated reasons causes the ripple effect, this effect changes the transaction in the regional housing market. Therefore, ripple effect exists in the house price and transaction volume. The following discussion explains the difference between price and volume adjustments by employing the conventional housing market supply and demand model.

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