International Review of Financial Analysis 44 (2016) 111–122

Contents lists available at ScienceDirect

International Review of Financial Analysis

Dynamic interdependencies among the housing market, stock market, policy uncertainty and the macroeconomy in the United Kingdom

Nikolaos Antonakakis [a,b,*], Christos Floros [c,d]

[a] Department of Business & Management, Webster Vienna University, Praterstrasse 23, 1020 Vienna, Austria
[b] Department of Economics and Finance, Portsmouth Business School, University of Portsmouth, Portland Street, Portsmouth PO1 3DE, United Kingdom
[c] Department of Accounting and Finance, Technological Educational Institute of Crete, 71004 Crete, Greece
[d] School of Social Sciences, Hellenic Open University, Greece

ARTICLE INFO

Article history:
Received 17 November 2015
Accepted 20 January 2016
Available online 2 February 2016

JEL classification:
C32
E40
E50
G10
G20

Keywords:
Housing market
Stock market
Economic policy uncertainty
Spillover
Vector autoregression
Impulse response

ABSTRACT

In this study, we examine the dynamic interdependencies among the housing market, stock market, policy uncertainty and the macroeconomy in the United Kingdom, over the period 1997 M1–2015 M02. The findings of this study suggest the following empirical regularities. First, the transmission of various types of shocks contributes significantly to economic fluctuations in the United Kingdom. Second, spillovers show large variations over time. Third, in the wake of the global financial crisis, spillovers have reached unprecedented levels. Specifically, we find large spillovers of shocks from the housing market, stock market and economic policy uncertainty to inflation, economic growth and monetary policy stance. These results illustrate the contagion from the housing and financial crisis to the real economy and the policy reaction to stabilize the economy.

1. Introduction

Following the recent global financial crisis (GFC), financial markets around the globe have undergone a period of unprecedented turmoil. In turn, this has contributed to increased uncertainty in global economic conditions and policy responses, and heightened the uncertainty of investment markets including real estate.

Despite such developments, there exist no study, according to our knowledge, that examines the interdependencies among housing markets, stock markets, policy uncertainty and responses, and the real economy in a unified framework.

The literature suggests the existence of a feedback mechanism between housing and macroeconomic variables. On the one hand, housing markets follow changes in the economic variables (see, e.g. Hwang & Quigley, 2006). On the other hand, house prices also play a powerful role and affect macroeconomic variables (Beltratti & Morana, 2010). According to Nneji, Brooks, and Ward (2013), an increase in the interest rate is expected to drive borrowing rates up, thus decreasing the demand for properties and diminishing their prices. Rising interest rates could also lead to a fall in property prices. Further, inflation growth is expected to have a negative effect on the housing market, while the opposite happens for disposable income.[1]

It is obvious that real estate market behaviour is important for investors and households. The 2008 subprime mortgage crisis that originated in the United States had a negative impact on real estate prices in most countries; therefore, the examination of real estate prices is still of great interest to economists, policy makers and others around the world.

In order to explain the recent financial crisis of 2008, many researchers have focused on the housing market as a possible source of macroeconomic fluctuations. Following the Lehman default in 2008, the global financial crisis opened new discussions on the monetary, macroeconomic and regulatory policies; these also include fluctuations of the housing markets, i.e. booms and busts in real estate prices.

* Corresponding author at: Department of Business & Management, Webster Vienna University, Praterstrasse 23, 1020 Vienna, Austria. Tel.: +43 126990934373.
E-mail addresses: nikolaos.antonakakis@webster.ac.at, nikolaos.antonakakis@port.ac.uk (N. Antonakakis), cfloros@staff.teicrete.gr (C. Floros).

[1] For a more detailed description of the theoretical relationship between housing and the macroeconomy, see Davis and Nieuwerburgh (2015).

http://dx.doi.org/10.1016/j.irfa.2016.01.006
1057-5219/

Although many theoretical models published before 2008 sought to explain the linkages between house prices and real economic activity (e.g. Bernanke, Boivin, & Eliasz, 2005; Iacoviello, 2005, among others), some post-2008 empirical studies examine the housing cycles and their impact on the global economy (see for example Cesa-Bianchi, 2013; Agnello & Schuknecht, 2011).

A detailed review of the literature on the link between macroeconomics and housing markets is given by Leung (2004). He reports that the plain response in housing is a large share of the overall macroeconomy. In other words, housing constitutes a significant share of household expenditure and total wealth, thus significant fluctuations in housing prices imply significant fluctuations in wealth Leung (2004).

Many empirical papers examine the macroeconomic determinants of house prices, i.e. the dynamic relationship between key economic variables and the dynamics of real estate prices (such as interest rates, inflation, unemployment and economic growth). For example, Iacoviello and Minetti (2003) find that UK house prices are sensitive to interest rate changes. Further, Himmelberg, Mayer, and Sinai (2005) confirm that interest rates are the most important explanatory variable. They argue that house prices are more sensitive to long-term interest rates. Moreover, Adams and Füss (2010) report that short-term interest rates adversely affect demand for houses because of the effect on mortgage rates and the cost of financing for construction firms (see also Nneji et al., 2013; Bouchouicha & Ftiti, 2012; McQuinn & O'Reilly, 2008). Furthermore, a study by Brunnermeier and Julliard (2008) confirms that inflation influences the price-rent ratio for houses. Ling and Naranjo (1999) find that unexpected inflation, yield spread and Treasury bill rate explain changes in real estate market; similarly with Brooks and Tsolacos (1999) for UK and Englund and Ioannides (1997) for 15 OECD countries. Recently, Nneji et al. (2013) provided a detailed explanation of the impact of macroeconomic (inflation, disposable income growth, short rate and the term structure of interest rates) fluctuations on the US housing market. They find that the sensitivity of the real estate market to economic changes is regime-dependent. Specifically, they report that changes in macroeconomic variables significantly affect the dynamics of house prices in the steady-state and boom regimes only.

The interlinkages between monetary variables, house prices and the macroeconomy are multi-faced (e.g. see Goodhart & Hofmann, 2008). Specifically, Goodhart and Hofmann (2008) find a significant multidirectional link between house prices and the macroeconomy for 17 industrialized countries over the period 1970–2006. They report that shocks to GDP, the CPI and the interest rate have significant effects on house prices. Calza, Monacelli, and Stracca (2013) report that house prices are more responsive to policy shocks in countries with more developed/flexible mortgage markets. In addition, Agnello and Schuknecht (2011) report that interest rates have a significant influence on the probability of booms and busts in housing markets over the period 1980–2007. Further, Beltratti and Morana (2010) examine the linkages between macroeconomic fluctuations and G-7 international house prices. They report a bidirectional linkage. They find that house price shocks produce large effects on the macroeconomy (the links take place through supply shocks and interest rates). Beltratti and Morana (2010) show that 40 of the variation in G-7 house prices are caused by macroeconomic shocks. Recently, Cesa-Bianchi (2013) examines the international spillovers of housing demand shocks on real economic activity using a Global VAR. The results confirm the existence of strong international spillovers to advanced economies; however, this is not true for emerging economies.

Furthermore, real estate and stocks are important assets for investors, and both are influenced by economic conditions (see, e.g. Lin & Lin, 2011). Many studies relate the real estate and stock markets, and support the notion that these markets are segmented (see, for example Miles, Cole, & Guilkey, 1990; Liu, Hartzell, Greig, & Grissom, 1990). More specifically, Liu et al. (1990) provide evidence of a relationship between stock returns and real estate assets returns. They conclude that segmentation does exist as a result of indirect barriers such as the cost, amount and quality of information for real estate. Lizieri and Satchell (1997) examine the relationships between real estate and the rest of the economy. They conclude that the UK economy leads the real estate market in the short-term. However, with a longer lag structure, they find that positive real estate returns show negative future returns in the rest of the economy. Further, Quan and Titman (1999) report a non-significant contemporaneous relationship between yearly real estate price changes and stock returns. Tse (2001) shows that the Hong Kong property prices and stock market (Hang Seng index) are cointegrated. Okunev, Wilson, and Zurbruegg (2002) find strong unidirectional causality from the Australian stock market to the Australian real estate market. They report that stock market movements lead real estate movements. Apergis and Lambrinidis (2011) show that stock and real estate markets from UK and US are integrated over the period 1985–2006, implying the absence of gains for portfolio holders that include both assets in those portfolios. Recently, Chan, Treepongkaruna, Brooks, and Gray (2011) report contagion between stock, oil and real estate markets.

Recent literature has recognized the need to understand dynamic interdependencies among housing market and key economic variables. In other words, it is apparent from the above discussion that it is not clear whether, and in what magnitude, the current economic uncertainty interacts with housing prices.

Against this backdrop, this is the first study that provides a detailed examination on the dynamic interdependencies among housing market, stock market, policy uncertainty and key macroeconomic variables for the UK over the period January 1997 to February 2015. Our goal is to help policy makers to select tools for reducing economic uncertainty and make the UK housing market[2] more healthy (see also Cesa-Bianchi, 2013). The reasons behind the choices of the UK market in this study are straightforward. First, the UK housing market has been the one with the highest price decline since the global financial crisis (Schindler, 2014). According to Tse, Rodgers, and Niklewski (2014), the recent financial crisis produced major shocks in the UK housing market. Higgins (2007) argues that real estate forms an important asset class for mutual funds both locally and globally accounting for around 10 of the UK's portfolio investments (see also Heaney & Sriananthakumar, 2012). Further, the UK housing market plays an important role in UK economic activity due to a high owner-occupation rate. However, the dynamics of the UK housing market are complex (Tse et al., 2014). Tse et al. (2014) report that the UK market faced a problem related to the supply of finance, known as the credit crunch, and therefore real prices across the UK began to fall from the middle of 2007.

The methodology considered in this paper enables us to estimate the spillover indices as given by Diebold and Yilmaz (2012), and trace their magnitude and evolution in a time-varying fashion. To our knowledge, this is the first study that applies the spillover index approach introduced by Diebold and Yilmaz (2012) in the context of the dynamic interdependencies among the aforementioned variables in the UK. Further, this is the first research that examines the interdependencies of housing markets and economic policy uncertainty, as well as stock markets, output growth, inflation and monetary policy stance, which are chosen to provide a fairly comprehensive view of the UK economy, while keeping the model tractable.

To be more specific, our work contributes to the existing empirical literature in several ways. First, we analyse in greater detail the UK housing market using recent data. Second, we extend the existing research focused on the linkages between housing prices and other

[2] We consider monthly data of UK house prices (average prices); UK house prices reflect the interaction of the demand and supply sides of the market. Statistics show that average house prices rose dramatically in UK regions in the early 2000s, peaking in 2007 £251,857 from £118,061 in 2000 (detached house), £178,051 from £74,453 (semi-detached house), £141,191 from £61,641 (at), and £153,460 from £61,357 (terraced house). The average prices for the period 2008–2014 are £232,979 (detached house), £162,843 (semi-detached house), £130,000 (at), and £138,499 (terraced house).