THE EFFECTS OF THE FEDERAL RESERVE'S TAPERING ANNOUNCEMENTS ON THE US REAL ESTATE MARKET

Adrian Cantemir CĂLIN, PhD*

Abstract

In May 2013, the Federal Reserve revealed its intentions to gradually reduce its quantitative easing programs, and at some point end them. The announcement of what became in the meantime known as tapering triggered significant reactions from international financial markets. Using an event – study approach, this paper tries to determine the impact of tapering news on the US real estate market. The results indicate the fact that the tapering announcements had a dim influence on the above mentioned market.

Keywords: tapering, Federal Reserve, real estate market, monetary policy

JEL Classification: E58, R30, G14.

1. Introduction

After the global economic recession of 2008, the main central banks were forced to use a series of unconventional initiatives in order to reestablish the balance of the economic system, promote credit operations and underpin economic growth. These measures are known as quantitative easing (QE) and have been intensively debated by academics, policy makers and the general public. The academic interest resulted in a strong and extensive literature that focused on the QE efforts of the four major central banks: European Central Bank, Federal Reserve, Bank of England and Bank of Japan.

Key studies on the topic of quantitative easing and its effects on various financial assets have been put forward by: Gagnon et al. (2011) D'Amico et al (2012), Kapetanios et al. (2012), Szczerbowicz (2012), Lupu and Călin (2014a), Joyce et al (2014) or Lupu and Călin (2014b), while Criste and Lupu (2014) emphasizes the changing role of the central bank in the post-crisis era.

* *Senior Researcher, Institute for Economic Forecasting, Romanian Academy.*

The involvement of The Federal Reserve in quantitative easing was extremely visible and thorough. The large scale asset purchase programs consisting in acquisitions of mortgage backed securities, agency bonds or treasuries greatly expanded the Fed's balance sheet. However, on May 22 2013 Chairman Bernanke announced the intention of gradually reducing asset purchases. This phenomenon, called "tapering" caused a major surprise for the financial markets generating a serious rise in volatility. Tapering has become the subject of recent literature that in general deals with its impact on the assets of emerging markets.

After years of extraordinary expansion, that had its peak in the 2003 – 2005 period, the U.S. real estate market was faced with a robust contraction. The fall of house prices led to what was called the sub – prime mortgage crisis, which generated a series of shocks for the financial system, resulting in famous defaults or bailouts (Belingher and Călin, 2013). This represented a major factor for the global financial crisis. Given its relevance, it was naturally targeted by Federal Reserve policies that aimed to restore functionality to the economic system.

This paper contributes to the academic literature by investigating the existence of a potential influence of Federal Reserve's tapering on the US real estate market. To the author's knowledge, this is the first analysis that aims in this direction.

The remainder of this paper is organized as following. Section II deals with the related literature, especially focusing on the research that considers the effects of tapering. Section III covers the topic of data and methodology, while section IV presents the results.

2. Literature review

This paper relates to the existing literature from two perspectives. Firstly it follows in the footsteps of the research that considers the effects of tapering on various financial assets or markets.

The first investigation of the Fed tapering is present in Eichengreen and Gupta (2013). The authors report that the most significant tapering impact was observed for the countries that permitted a serious appreciation of the exchange rates in the moments when the quantitative easing was thought to continue.

Aizenman et al. (2014) try to assess the impact of tapering announcements on the financial markets of emerging markets. The authors use announcements that relate to both quantitative easing and tapering and an investigation window that ranges between 27 November 2012 and 3 October 2013. From a methodologic point of view, Aizenman et al employ a fixed effects panel model and report that the assets of the emerging markets are more sensitive to Bernanke's speeches than to the communications of other Fed representatives.

In a similar way, Dahlhaus and Vasishtha (2014) focus on the impact of American monetary policy on the transmission of portfolios towards major emerging countries. Employing a vector autoregressive model, the authors show that the impact of what they call "policy normalization shock" on portfolio flows as a fraction of the GDP is not significant. In addition to this, Dahlhaus and Vasishtha (2014) assert the fact that this effect is in concordance with the reality observed in the summer of 2013.

Mishra et al (2014) explore the same area of QE and tapering impact on emerging market fundamentals through an event study analysis. Using daily data for bonds and equity they find that countries with more consolidated macroeconomic fundamentals and more developed financial markets are less sensitive to the above mentioned initiatives.

Matheson and Stavrev (2014) use a VAR model based on equity prices and 10 year bond yields in order to study long-term interest rates relative to the speech conducted by Chairman Bernanke on the 22nd of May 2013. The authors report that the significant rise in 10-year Treasury bond yields that followed May 2013 can be attributed to shocks in monetary policy. The authors also highlight the relevance of central bank communication and transparency.

Meinusch and Tillmann (2015) study the way in which popular beliefs about the tapering process influence asset prices. They also use a VAR model, but inovate through the use of social media in order to have an image about beliefs on the timing of the tapering process. Meinusch and Tillmann (2015) report that these beliefs tend to have a contradictory influence on asset prices. One interesting result is the fact that social media messages can be relevant for market sentiment and thus for the dynamics of asset prices.

Ogawa and Wang (2015) set out to observe the way in which variations in the interest rates in the US alter the evolution of interest rates, capital, and exchange rates in a series of East Asian countries. In addition to this, the authors forecast the future effects of tapering on the above mentioned countries. The conclusions of the study indicate that the raise of interest rates in the US will lead to a similar effect in the East Asian countries. Besides this effect, the emerging markets will face a significant reduction in capital inflows.

In an investigation that focuses on the effects of speeches belonging to officials of central banks, Călin (2015) shows that currency markets are considerably affected in terms of volatility by the official communications that deal with quantitative easing or tapering.

Secondly, this paper relates to the research that focuses on the relation between monetary policy initiatives and the real estate market. Far from being a large block of literature, these initiatives cover certain interconnections between the above mentioned elements.

Vargas-Silva (2007) studies the effects of monetary policy shocks on the American housing markets extending the methodology introduced by Uhlig (2005). The study concludes that residential investments react negatively to contractionary monetary policy initiatives.

Iacoviello and Minetti (2007) focus on the credit channel of monetary policy in relation to the housing market for four states: UK, Germany, Norway and Finland. In VAR setup, the authors demonstrate the presence of this channel that influences the development of the real estate market.

Jarocinski and Smets (2008) conduct an industrious investigation that uses a BVAR approach in order to study the US housing market. One of the objectives of the research is to determine how the US monetary policy influenced the housing market. The authors observe that this policy triggers relevant effects on house prices and housing investments. In addition to this, the authors argue that the anti-deflationary monetary policy specific to the 2002 – 2004 interval had an important role in the real estate boom of 2004 and 2005.

Calza, Monacelli and Stracca (2013) target the way in which the structure of housing finance influences the transmission of monetary policy shocks. Using a DSGE model, the authors show that

house prices and investments are more sensitive to monetary policy shocks for the countries with mature mortgage markets.

Luciani (2015) focuses on the polies carried out by Federal Reserve and their role in the dynamics of the US housing market and its contraction. The author concludes that the Fed's expansionary policy had an insignificant impact on the housing cycle. Moreover, the author points out the fact that a restrictive policy would not prevent the housing market recession.

Chiang, Sa-Aadu and Shilling (2015) focus on the potential influence of Fed's quantitative easing initiatives on the abnormal evolution of housing starts in the US. The authors construct four aggregate liquidity measures in order to capture the QE impact and observe that housing starts are connected over time with the dynamics of these aggregate factors.

3. Data and methodology

The analysis uses on one hand a series of 14 tapering and quantitative easing announcements. These cover the 22.05.2013 - 29.10.2014 period and have been gathered from the press releases issued by the Federal Reserve. The methodology also involves daily prices for a series of nine stocks belonging to US real estate companies. The data have been collected from the DataStream platform and cover the 31.12.2010 – 8.06.2015 interval. The nine companies have been chosen so as to be representative for all the fields and subfields of real estate activity, ranging from commercial, residential and hospitality real estate to virtually any kind of land or home acquisition, exploitation or development. Therefore, the following companies have been included in the present analysis: American Leisure Holdings Inc., Biloxi Marsh Lands Corporation, Bresler & Reiner Inc., Asia Properties Inc., Princeton Capital, Eagle Exploration Company, HomeFed Corporation, Kaanapali Land, Pramerica Real Estate Investors. Figure 1 bellow shows the dynamics of the prices of the nine stocks.

From a methodological point of view, the paper builds on the specifications of Albu et al. (2014 a) and Albu et al. (2014 b) bringing forth an econometric event study approach. The corner stone of the event study is the ARMA (1, 1) – GARCH (1, 1) calibrated for 100 days. The model is depicted by the following equations:

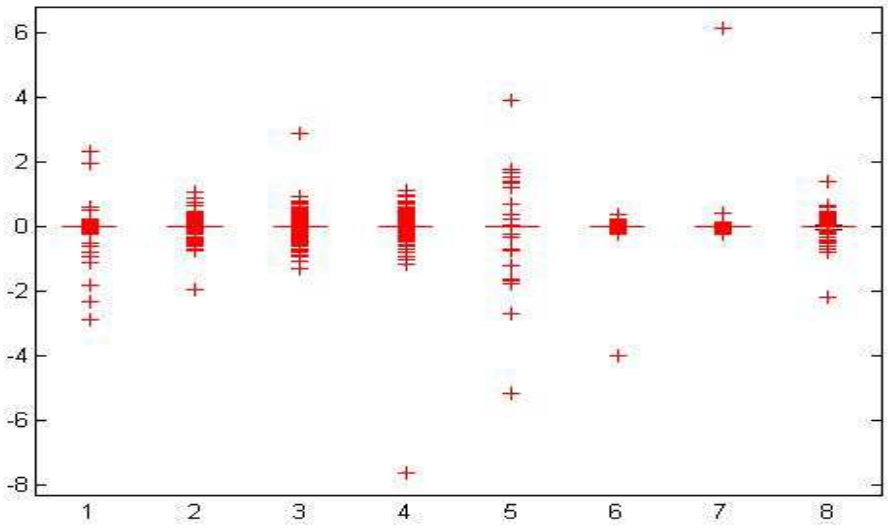
$$R_{t+1} = pR_t + q\varepsilon_t + \varepsilon_{t+1},\ \varepsilon_{t+1} \sim N(0, \sigma_{t+1})$$

$$\sigma^2_{t+1} = \omega + \sum_{i=1}^{p} \alpha_i R^2_{t+1-i} + \sum_{j=1}^{q} \beta_j \sigma^2_{t+1-j}$$

Where $\alpha + \beta < 1$

Figure 1

Boxplot for the input data



Source: Author's computation

For each tapering announcement, the methodological construction isolates an event window of 41 days, basically allowing a time frame of 20 days before and after the launch date. Using the GARCH – predicted variances for this interval and comparing them with the squared returns of the date, the model extracts the abnormal returns.

Therefore, the abnormal returns stand for the differences between the real values and the estimated values of the returns for the event window (from -20 to +20). This analysis extends the approach of the above mentioned references and computes also cumulative abnormal returns. These values represent the cumulated

values of the abnormal returns for the same period around the events (from -20 to +20).

In order to have a clear image of the statistical significance of the results t-stats are computed for the two types of results mentioned above.

4. Results

Figures 2 and 3 summarize the results found in terms of abnormal and cumulative abnormal returns relative to the data set.

On an aggregate level, the announcements of tapering initiatives issued by the Federal Reserve had a fragile influence on the dynamics of the analyzed instruments.

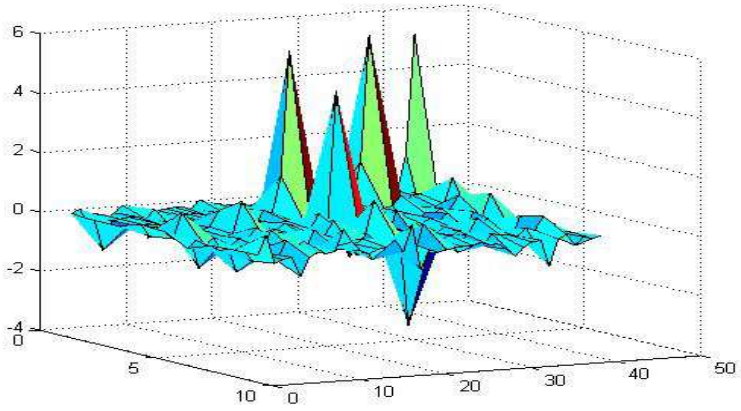
The returns of *American Leisure Holdings Inc*. show a vague influence from the above mentioned announcements towards the end of the event window. Though statistically significant, and important in magnitude, this is the only reaction found in this case. *Biloxi Marsh Lands Corporation* follows a similar pattern, the results reporting an impact around the second half of the (0 - +20 interval).

A more significant impact is found in the case of *Asia Properties* and *Princeton Capital*. On average, the news related to tapering announcements tend to lead to abnormal returns on the launch date of a certain event (day zero).

The financial assets of *HomeFed Corporation* also tend to react to tapering news. The results show a clear statistical effect on the first 3 days following day zero.

Figure 2

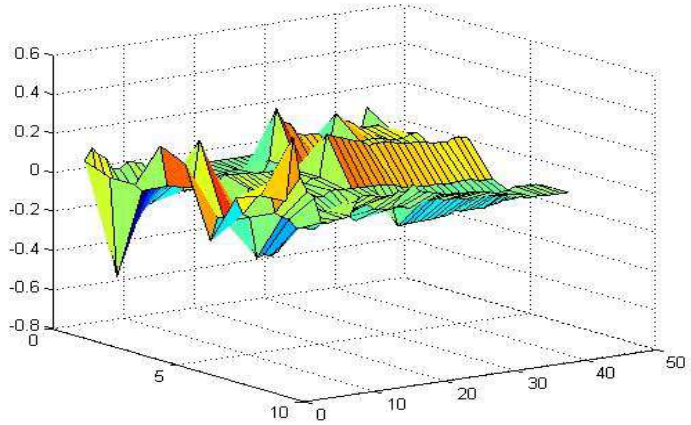
Abnormal returns



Source: Author's computation

Figure 3

Cumulative abnormal returns



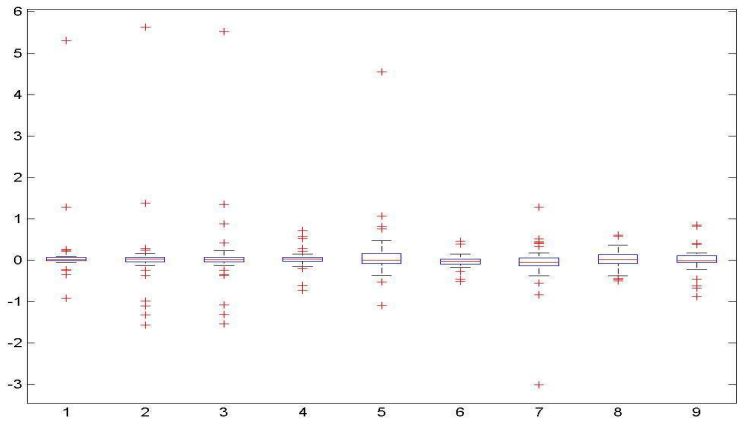
Source: Author's computation

The other four stocks included in this analysis do not react to tapering – talk in a statistically significant way.

The study of the cumulative abnormal returns is not any more revealing. The results again do not exhibit any type of influence that could be attributed to Federal Reserve's tapering activity.

Figure 4

Boxplot of abnormal returns



Source: Author's computation

Figure 4 presents the boxplot characterization of the abnormal returns found in the study. It shows the average distributions of the abnormal returns for each asset included in the analysis. It can be noticed that the abnormal returns have the tendency to be placed around the same average. Only a few of them are placed far from the mean, which means that there is a low tendency towards significant reaction of real estate equity markets generated by the tapering announcements.

5. Conclusions

The purpose of this paper is to investigate the effects of the Federal Reserve's tapering on the dynamics of the US real estate market. For this purpose the methodology is built on a series of 14 tapering announcements and a set of stock quotes belonging to real estate companies and uses an event study approach.

Our results point out the fact that the tapering initiatives have a feeble effect on the development of the real estate market. We find traces of response only for five of the companies included in the study. The reaction is weak both in terms of abnormal returns and

cumulated abnormal returns. In general, the impact is observed either for the announcement day of the events or for the interval that follows.

Acknowledgement

This work was supported by the project "Excellence academic routes in doctoral and postdoctoral research - READ" co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007-2013, contract no. POSDRU/159/1.5/S/137926.

References

1. Aizenman J., Binici M., Hutchison M.M. (2014). „The Transmission of Federal Reserve Tapering News to Emerging Financial Markets", NBER Working Paper No. 19980.
2. Albu L. L., Lupu R., Calin A. C., Popovici O. C. (2014a). "Estimating the Impact of Quantitative Easing on Credit Risk through an ARMA-GARCH Model", Romanian Journal of Economic Forecasting, Issue 3, pp. 39-50.
3. Albu L. L., Lupu R., Calin A. C., Popovici O. C. (2014b). "The effect of ECB's Quantitative Easing on Credit Default Swap Instruments in Central and Eastern Europe", Procedia Economics and Finance, Volume 8, pp. 122–128.
4. Belingher D.S., Călin A.C. (2013). "The Economic Crisis: The Result of Reducing the Systemic Links", in Technology and Financial Crisis: Economical and Analytical Views, eds. Koyuncugil A.S., Ozgulbas N., IGI Global.
5. Călin A.C. (2015). "Eloquence is The Key – the Impact of Monetary Policy Speeches on Exchange Rate Volatility", The Romanian Economic Journal, Issue 56, p. 3 – 18.
6. Calza A., Monacelli T., Stracca L. (2013). "Housing Finance and Monetary Policy", Journal of the European Economic Association, Volume 11, Issue Supplement s1, pages 101–122.
7. Chiang Y.M., Sa-Aadu J., Shilling J.D. (2015). "Unconventional Monetary Policy and U.S. Housing Markets Dynamics", Available at SSRN: http://ssrn.com/abstract=2587120 orhttp://dx.doi.org/10.2139/ssrn.2587120.

8. Criste A., Lupu I. (2014). “The Central Bank Policy between the Price Stability Objective and Promoting Financial Stability”, Procedia Economics and Finance 8, Elsevier. pp. 219–225.
9. D’Amico S., English W. B., Lopez-Salido D., Nelson E. (2012). “The Federal Reserve’s Large-Scale Asset Purchase Programs: Rationale and Effects”, Working Paper, Federal Reserve Board, pp. 1-58.
10. Dahlhaus T., Vasishtha G. (2014). "The impact of U.S. monetary policy normalization on capital ows to emerging-market economies", Working Paper No. 2014-53, Bank of Canada.
11. Eichengreen B. Gupta P. (2013). "Tapering talk: the impact of expectations of Reduced Federal Reserve security purchases on emerging markets", unpublished, University of Berkeley.
12. Gagnon J., Raskin M., Remache J., Sack, B. (2011). “The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases”. International Journal of Central Banking, 7, 3-43.
13. Iacoviello M., Minetti R. (2007). “The credit channel of monetary policy: Evidence from the housing market”, Journal of Macroeconomics, doi:10.1016/j.jmacro.2006.12.001.
14. Jarocinski M., Smets F.R. (2008). “House Prices and the Stance of Monetary Policy”, Federal Reserve Bank of St. Louis Review, July/August 2008, 90(4), pp. 339-65.
15. Joyc, M.A.S., Liu Z., Tonks I. (2014). “Institutional investor portfolio allocation, quantitative easing and the global financial crisis”, Bank of England Working Paper No. 510.
16. Kapetanios G., Mumtaz H., Stevens I. Theodoridis K. (2012). “Assessing the Economy-wide Effects of Quantitative Easing”, The Economic Journal, pp 316-347.
17. Luciani M. (2015). “Monetary Policy and the Housing Market: A Structural Factor Analysis”, Journal of Applied Econometrics, Volume 30, Issue 2, pp. 199–218.
18. Lupu R., Calin. A.C. (2014a). ”To QE or not to QE. The Japanese Experience”. *Hyperion Economic Journal*, Vol 2. Issue 2**.** pp. 3-10.
19. Lupu R., Calin A.C. (2014b). ”Co-movements of Regime Shifts in GBP currency pairs around BOE Quantitative Easing Announcements”. *Financial Studies,* Volume 18, issue 3, pp. 89 – 101.

20. Matheson T., Stavrev E. (2014). "News and monetary shocks at a high frequency: a simple approach", Economics Letters 125, 282-286.
21. Meinusch A., Tillmann P. (2015). ”Quantitative Easing and Tapering Uncertainty: Evidence from Twitter”, MAGKS Working paper No. 09-2015 Joint Discussion Paper Series in Economics, ISSN 1867-3678.
22. Mishra P., Moriyama K., N'Diaye P., Nguyen L. (2014). ”Impact of Fed Tapering Announcements on Emerging Markets”, IMF Working Paper.
23. Nechio F. (2014). "Fed tapering news and emerging markets", Economic Letter 2014-06, Federal Reserve Bank of San Francisco.
24. Ogawa E., Wang Z. (2015). ”Effects of a Quantitative Easing Monetary Policy Exit Strategy on East Asian Currencies”, RIETI Discussion Paper Series 15-E-037.
25. Stein J. C. (2014). "Challenges for monetary policy communication", Speech at the Money Marketeers of New York University, New York City, 6 May 2014.
26. Szczerbowicz U. (2012). “The ECB unconventional monetary policies: have they lowered market borrowing costs for banks and governments?” Document Du Travail, Centre D’Etudes Prospectiveset D’informations Internationales.
27. Vargas-Silva C. (2007). “Monetary policy and the U.S. housing market: A VAR analysis imposing sign restrictions”, SHSU Economics & Intl. Business Working Paper No. SHSU_ECO_WP07-05.