FINANCE INDIA © Indian Institute of Finance Vol. XXXV No. 3, September 2021 Pages – 689 - 712

Housing Markets Response to Foreign Funds and Monetary Policy in India – An Empirical Study

TARAL PATHAK*

Abstract

Globalisation; integration of the financial markets and increased Global Capital Flows (GCF's) towards Emerging Market Economies has impacted the asset prices and often led to its irrational built-up known as "asset bubbles". To ensure financial stability, Central banks manage GCF, which causes misalignments in asset prices-housing and equity.Set in India, the current paper investigates and establishes the causality between GCF's (FDI and FII combined) to India and Housing Price Index (HCPI) with a lag of 8 months by applying a bivariate Granger Causality model. Change in the repo rate impacts the HCPI after a lag of 25 months indicating a sluggish transmission channel and the effectiveness of Central bank to intervene in the market using interest rate as a tool. Study's concludes through the analysis of the housing market-asset price channel that this channel should not be relied upon during a bubble-like episode to control falling housing prices since a Repo rate change has a delayed impact on the Housing index.

I. Introduction

ASSET BUBBLES HAVE been a frequently occurring phenomenon in the current past and there is historical evidence to prove their presence in dated times as well. Most valued commodities in their contemporary era have been a reason for causing bubbles. Instances, of asset bubbles have increased in the last two decades. The last big crash occurred in the real estate markets in The United States (US) during 2007-08. The excess liquidity in the US markets due to the lending boom in the real estate sector had resulted into a continuous built up in prices. The US markets crashed during 2007 and it also pushed the major economies of the world to the brink of recession. Prior to the US real estate bubble, the Asian currency crisis and the Dotcom Crash were reported in 1997 and 2001. 20thcentury experienced the "Florida Real Estate Craze", "The Great Depression" of 1929 and the "Market Crash" of 1987.

Submitted January 2019; Accepted July 2020

^{*} Assistant Professor, MICA-The School of Ideas, (formerly Mudra Institute of Communications) Telav-Ghuma Road, Shela, Ahmedabad, Gujrat 380058, INDIA

other economies in the housing cycle over all time periods indicating significant spill overs from the US economy to the rest of the world. Therefore, an initial housing market boom in the US resulted into a lagged response in the Indian housing market. The higher FDI inflows to India can be attributed to several *push* and *pull* factors as discussed in literature.

VI. Conclusions

The results and analysis indicates that if RBI decides to use monetary policy for asset price misalignment in the housing market then it needs to be sure of the fact that the transmission mechanism is fast. I conclude through the analysis of the housing market-asset price channel that this channel should not be relied upon during a bubble-like episode to control falling housing prices since a Repo rate change has a delayed impact on the Housing index.

6.1 *Implications of the Study*

The research output of the work carried out has the following implications:

- The housing market findings are important for policy makers since the impact of FII and FDI flows on the Housing index is clearly visible. The possibility of excess liquidity entering into this market and therefore leading to an asset price misalignment or an asset price bubble cannot be ruled out.
- The sluggishness with which the monetary policy affects the Housing Index is also an important finding for the policy makers. Clearly, monetary policy alone will not be sufficient to rectify prices in the Housing sector, especially during an asset bubble burst.

References

Abelson, P., R. Joyeux, G. Milunovich and D. Chung, (2005), "*House Prices in Australia: 1970 to 2003: Facts and Explanations*", Economic Record, Vol. 81, No. 1, pp. 96-103

Acharya, V. and H. Naqvi, (2012), "The Seeds of a crisis: A theory of Bank liquidity and risk taking over business cycles", *Journal of Financial Economics*, Vol. 106, pp. 349-366

Akhtar, M. and E. Harris, (1987), "Monetary Policy Influence on the Economy-An Empirical Analysis", *FRBNY Quarterly Review*, Vol. 11, No. 4, Winter 1987, pp. 19-34

Allen, F. and D. Gale, (2000a), "Financial Contagion", Journal of Political Economy, Vol. 108, pp. 1-33

Ando, A. and F. Modigliani, (1963), "The "Life Cycle" Hypothesis of Saving: Aggregate Implications", *The American Economic Review*, Vol. 53, No. 1, Part 1 March, 1963, pp. 55-84

Apergis, N. and A. Rezitis, (2004), "Housing Price and Macro Economic Factors in Greece: Prospects within the EMU", *Applied Economic Letters*, Vol. 10, No. 12, pp. 561–565

Bansal. A. and J. Pasricha. (2009), "Foreign institutional investor's impact on stock prices in India", *Journal of Academic Research in Economics*, Vol. 1, No. 2, pp. 181-189

Banxico, (2015), "The Effects of Monetary Policy on the Economy" Banco de Mexico, 2015

Barlevy, G., (2007), "Economic Theory and Asset Bubbles", *Economic Perspectives- Federal Reserve Bank of Chicago*, Third Quarter, Vol. 31, No. 3, pp. 44-59

Bekaert T., and R. Harvey, (1998), "*Capital Flows and the Behavior of Emerging Market Equity Returns*', in S. Edwards, (Ed.)", Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies (pp. 159–97), University of Chicago Press, Chicago

Belke, A. and W. Orth, (2008), "*Global Excess Liquidity and House Prices*", Ruhr Economic Papers, No. 37, Ruhr-Universität Bochum

Bernanke, B. and A. Blinder, (1992), "The federal funds rate and the channels of monetary transmission", *American Economic Review*, Vol. 82, pp.901-921

Bernanke, B. and M. Gertler, (1999), "Monetary policy and asset price volatility", *Economic Review, Federal Reserve Bank of Kansas City, Economic Review*, Quarter IV, Vol. 84, No. 4, pp. 17-51

Blanchard, O., and D. Quah, (1989), "The Dynamic Effects of Aggregate Demand and Supply Disturbances", *American Economic Review*, Vol. 79, pp. 655–673

Bohn, H., and L. Tesar, (1996), "US Equity Investment in Foreign Markets: Portfolio Rebalancing or Return Chasing?", *American Economic Review*, Vol. 86, pp. 77–81

Bordo, M. and O. Jeanne, (2002), "Boom-busts in asset prices, economic instability, and monetary policy", NEBR Working Paper No. w8966, National Bureau of Economic Research

Borio, C., C. Furfine and P. Lowe, (1994), "Procyclicality of the financial system and financial stability: issues and policy options", BIS Paper No. 1

Brennan, M. and H. Cao, (1997), "International Portfolio Investment Flows", *Journal of Finance*, Vol. LII, No. 5, pp. 1851–1880

Caballero, R. and A. Krishnamurthy, (2001), "International and Domestic Collateral Constraints in a Model of Emerging Market Crises", *Journal of Monetary Economics*, Vol. 48, pp. 513-548

Caballero, R. and A. Krishnamurthy, (2005), "A Model of Flight to Quality and Central Bank Interventions in Extreme Events", MIT mimeo

Calvo, G., (1998), "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops", *Journal of Applied Economics*, Vol. 1, No. 1, pp. 35-54

Calvo, G., L. Leiderman, and C. Reinhart, (1996), "Inflows of Capital to Developing Countries in 1990's", *Journal of Economic Perspective*, Vol. 10, No. 2, pp. 123-139

Carkovic, M. and R. Levine, (2002), "Does foreign direct investment accelerate economic growth?", Department of Finance Working Paper; University of Minnesota; Minnesota

Cecchetti, S., H. Genberg and S. Wadhwani, (2000), "Asset Prices and Central Bank Policy", Geneva Reports on the World Economy, No. 2

© Indian Institute of Finance

708

Chakraborty, C. and P. Nunnenkamp, (2006), "Economic reforms, foreign direct investment and its economic effects in India", The Kiel Institute for the World Economy, Working Paper No. 1272

709

Chang, R. and A. Velasco, (2001), "A Model of Financial Crises in Emerging Markets", *Quarterly Journal of Economics*, Vol. 116, No. 2, pp. 489-517

Cogley, T. (1999), "Should the Fed take deliberate steps to deflate asset price bubbles?", *Federal Reserve Bank of San Francisco, Economic Review*, Vol. 1, pp. 42-52

Collyns, C. and A. Senhadji, (2002), "Lending Booms, Real Estate Bubbles and the Asian Crisis", In Hunter, W., Kaufman, G., and Pomerleano, M. (Eds.), Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies, (pp. 128-152) MIT Press, Cambridge, Massachusetts, London,

Cuthbertson, K., and D. Nitzsche, (2000), "Quantitative Financial Economics: Stocks, Bonds and Foreign Exchange", 2 ed., John Wiley & Sons, New York

Dickey, D. and W. Fuller, (1979), "Distribution of estimators for autoregressive time series with a unitroot", *Journal of American Statistical Association*, Vol. 74, No. 366, pp. 427–431

Englund, P., Quigley, J. and C. Redfearn, (1998), "Improved price indexes for real estate: measuring the course of Swedish housing prices", *Journal of Urban Economics*, Vol. 44, No. 2, pp. 171-196

Errunza, V., (2001), "Foreign Portfolio Equity Investments, Financial Liberalization, and Economic Development", *Review of International Economics*, Vol. 9, No. 4, pp. 703-726

Fernandez-Arias, E., (1994), "The New Wave of Private Capital Inflows Push or Pull?", PRE Working paper 1312, World Bank

Furman, J. and J. Stiglitz, (1998), "Economic Crises: Evidence and Insights from East Asia", *Brookings Papers of Economic Activity*, Vol. 2, pp. 1-114

Genesove, D. and C. Mayer, (1997), "Equity and Time to Sale in the Real Estate Market", *American Economic Review*, Vol. 87, No. 3, pp. 255-269

Glaeser, E., J. Gyourko and A. Saiz, (2008), "Housing supply and housing bubbles", *Journal of Urban Economics*, Vol. 64, No. 2, pp. 198-217

Goodfriend, M., (2002), "Interest Rate Policy Should Not React Directly to Asset Prices", In Hunter, W., Kaufman,G., and Pomerleano, M. (Eds.), Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies, (pp. 472-484). MIT Press, Cambridge, Massachusetts, London

Goudarzi, H., and C. Ramanarayanam, (2010), "Empirical Analysis of the Impact of Foreign Institutional Investment on the Indian Stock Market Volatility during World Financial Crisis 2008-09", *International Journal of Economics and Finance*, Vol. 3, No. 3, pp. 214-226

Granger, C. and P. Newbold, (1974), "Spurious regressions in econometrics", *Journal of Econometrics*, Vol. 2, No. 2, pp. 111-120

Granger, C., (1969), "Investigating Causal Relationships by Econometrics Models and Cross Spectral Methods", *Econometrica*, Vol. 37, No. 3, pp. 425–35

Granger, C., (1986), "Developments in the study of co-integrated economic variables", Oxford Bulletin of Economics and Statistics, Vol. 48, No. 3, pp. 213-228

Granger, C.W.J., (1988), "Causality, Cointegration, and Control", Journal of Economic Dynamics and Control, Vol. 12, pp. 551-559

Greenspan, A., (1997), "Rules vs. discretionary monetary policy. Remarks at the 15th Anniversary Conference of the Center for Economic Policy Research", Stanford University, California, September 1997, Vol. 5

Greenspan, A., (1999), "Untitled Remarks in New Challenges to Monetary Policy", Federal Reserve Bank of Kansas City, Kansas, City, MO

Guillermo, A., L. Leiderman, and C. Reinhart (1996), "Inflows of Capital to Developing Countries in the 1990s", *The Journal of Economic Perspectives*, Vol. 10, No. 2, Spring, pp. 123–39

Gujarati, D., D. Porter and S. Gunasekar, (2012), "Basic Econometrics (5th ed)", Tata McGraw-Hill, New York

Henry, P., (2000), "Do stock market liberalizations cause investment booms?", *Journal of Financial Economics*, Vol. 58, pp. 301-334

Herrera, S. and G. Perry, (2002), "*Tropical Bubbles: Asset Prices in Latin America*, 1998-2001", In Hunter, W., Kaufman, G., and Pomerleano, M. (Eds.), Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies, (pp.154-190) MIT Press, Cambridge, Massachusetts, London

Hicks, J., (1937), "Mr. Keynes and the 'Classics': A Suggested Interpretation", *Econometrica*, Vol. 5, No. 2, pp. 147–159

Igan, D., A. Kabundi, N.D. Simone, M. Pinheiro and N.T. Tamirisa, (2009), "Three Cycles: Housing, Credit, and Real Activity", IMF Working Papers, pp. 1-32

Ivanov, V. and L. Kilian, (2001), "A Practitioners Guide to Lag-order Selection for Vector Autoregressions", CEPR Discussion paper no, 2685, London, Centre for Economic Policy

Jo, G., (2002), "Foreign Equity Investment in Korea", Association of Korean Economic Studies, Seoul

Joshi, H., (2006), "Identifying Asset Price Bubbles in the Housing Market in India - Preliminary Evidence", *Reserve Bank of India Occasional Papers*, Vol. 27, No. 1-2, Summer and Monsoon

Keynes. J., (1936), "The General Theory of Employment, Interest, and Money", Macmillan London

Kim, S. and D. Yang, (2009), "Do Capital Inflows Matter to Asset Prices? The Case of Korea", *Asian Economic Journal*, Vol. 23, No. 3, pp. 323–348

Kindleberger C., (1996), "Manias, Panics, and Crashes: A History of Financial Crises, (3rd ed.)", John Wiley & Sons, New York

Kohli, R., (2003), "Capital Flows and Domestic Financial Sector in India", *Economic and Political Weekly*, XLV, No. 46, pp. 38

Kumar, R., and P. Vashisht, (2012), "The Global Economic Crisis: Impact on India and Policy Responses", *The Global Financial Crisis and Asia: Implications and Challenges*, Vol. 162

Kuttner, K. and P. Mosser (2002), "The Monetary Transmission Mechanism: Some Answers and Further Questions", *Federal Reserve Bank of New York Economic Policy Review*, Vol.8, No. 1, May 2002, pp. 15-26

Labonte, M., (2016), "Monetary Policy and the Federal Reserve: Current Policy and Conditions", Congressional Research Service, Library of Congress

Levin, R. and S. Zervos, (1998), "Capital Control Liberalization and Stock Market Development", *World Development*, Vol. 26, No. 7, pp. 1169-1183

Luik, M., and Wesselbaum, D. (2016), "Did the FED React to Asset Price Bubbles?", University of Otago Economics Discussion Papers, No. 1602, pp. 1-22

MacKinnon, J., A. Haug and L. Michelis, (1999), "Numerical distribution functions of likelihood ratio tests for cointegration", *Journal of Applied Econometrics*, Vol. 14, pp. 563–577

McCarthy, J. and R. Peach, (2002), "Monetary policy transmission to residential investment", *Economic Policy Review*, Vol. 8, pp. 139-158

Meltzer, A., (1995), "Monetary, Credit and (Other) Transmission Processes: A Monetarist Perspective", *Journal of Economic Perspectives*, Vol. 9, No. 4, pp. 49-12

Mishkin, F. and E. White, (2002), "U.S. Stock Market Crashes and Their Aftermath: Implications for Monetary Policy", In W. Hunter, G. Kaufman & M. Pomerleano, (Eds.), Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies, (PP. 80-106) MIT Press, Cambridge, Massachusetts, London

Mishkin, F., (1996), "The Channels of Monetary Transmission: Lessons for Monetary Policy".NBER Working Paper, No. 5464, National Bureau for Economic Research, Cambridge, MA

Mishkin, F., (2001), "The Transmission Mechanism and the Role of Asset Prices in Monetary Policy", National Bureau of Economic Research, Working paper, pp. 8617

Morsink, J. and T. Bayoumi, (2001), "A Peek Inside the Black Box: The Monetary Transmission Mechanism in Japan", *IMF Staff Papers*, Vol. 48, No. 1, pp. 22-47

Mukherjee, P., S. Bose and D. Coondoo, (2002), "Foreign institutional investment in the Indian equity market an analysis of daily flows during January 1999-May 2002",

Mussa, M., (2002), "Asset Prices and Monetary Policy, In Hunter, W., Kaufman, G., and Pomerleano, M. (Eds.)", Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies, MIT Press, Cambridge, Massachusetts, London, pp. 68-77

Okina, K. and S. Shiratsuka, (2002), "Japans Experience with Asset Price Bubbles: Is it a case for Inflation Targeting? In Hunter, W., Kaufman, G., and Pomerleano, M. (Eds.)", "Asset Price Bubbles- The Implications for Monetary, Regulatory, and International Policies", MIT Press, Cambridge, Massachusetts, London, pp. 108-126

Olaberría, E., (2012), "Capital inflows and booms in assets prices: Evidence from a panel of countries", Central Bank of Chile, Working Paper No. 675

Phillips, P. and P. Perron, (1988), "Testing for a unit root in time series regression", *Biometrika*, Vol. 75, No. 2, pp. 335-346

Rai K. and N. Bhanumurthy, (2003), "Determinants of Foreign Institutional Investments in India: The role of Return, Risk and Inflation", *The Developing Economies*, Vol. XLII, No. 4, pp. 479–493

Ramey, V., (1993), "How important is the credit channel in the transmission of monetary policy?", Carnegie-Rochester Conference Series on Public Policy, Vol. 39, pp. 1-45

Reinhart, C. and K. Rogoff, (2009), "This Time is Different: Eight Centuries of Financial Folly", Princeton University Press, Princeton

Romer and Romer, (1990), "New Evidence On The Impact Of Financial Crises In Advanced Countries", Working Paper No. 21021, National Bureau of Economic Research, Cambridge, MA

Sá, F., T. Pascal and W. Tomasz, (2011), "Low Interest Rates and Housing Booms: The Role of Capital Inflows, Monetary Policy and Financial Innovation", Bank of England, Working Paper, No. 411

Samantaraya, A. (2011), "An Empirical Analysis of Pro-cyclicality of Bank Credit in India: Role of Basel Prudential Norms", 43rd Annual Conference of the Indian Econometric Society, IIT, Mumbai

Samuelson, P., (1958), "An Exact Consumption Loan Model of Interest, with or without the Social Contrivance of Money", *Journal of Political Economy*, Vol. 66, No. 5, pp. 467-482

Sethi, N. (2008), "Economic Reforms, Capital Flows and Macro Economic Impact on India. Rethinking India's Growth Strategy Services Vs. Manufacturing", Concept Publishing Company, New Delhi

Sethi, N., (2013), "Causal Relationship between Foreign Capital Inflows and Economic Growth: Empirical Evidence from India", *International Journal of Economics, Finance and Management*, Vol. 2, No. 1

Singh, C., (2013), "Housing market in India: A Comparison with the US and Spain", IIM-Bangalore Research Paper, pp. 406

Singh, S., L. Tripathi and A. Pardesi, (2014), "FII Flow and Indian Stock Market: A Causal Study", Asian Journal of Research in Business Economics and Management, Vol. 4, No. 1, pp. 202-209

Srikanth, M. and B. Kishore, (2012), "Net FII Flows into India: A Cause and Effect Study", *ASCI Journal of Management*, Vol. 41, No. 2, pp. 107-120

Taylor, J. (1995), "The Monetary Transmission Mechanism: An Empirical Framework", *Journal of Economic Perspectives*, Vol. 9, No. 4, 11–26

Tewari, R. and T. Pathak, (2013), "Framing India- Pre-post Globalization", *Journal of Media Studies*, Vol. 28, No. 1, pp. 40-58

Tirole, J., (1985), "Asset Bubbles and Overlapping Generations", *Econometrica*, Vol. 53, No. 6, pp. 1499-1528

Watson P. and S. Teelucksing, (2002), "Econometric methods: classical and modern", India, University of the West Indies press

White W., (2009), "Should Monetary Policy "Lean or Clean"?' Federal Reserve Bank of Dallas", Globalization and Monetary Policy Institute Working Paper, No. 34

Yellen, J., (2013), "No Equity Bubble, No Real Estate Bubble and No QE Taper Yet", Speech delivered at Senate Banking Committee, Washington, The United States of America, November 14, 2013