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The response of the conventional mortgage rate to the federal funds rate: symmetric or asymmetric adjustment?

James E. Payne

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Abstract

The momentum threshold autoregressive (MTAR) model of Enders and Siklos (2001) is utilized to examine the response of the 30-year conventional mortgage rate to changes in the federal funds rate in the USA over the period 1971:4 to 2005:10. The results indicate incomplete interest rate pass-through; however, the long-run adjustment process appears to be symmetric rather than asymmetric.

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Notes

[1] Of the countries studied, Heffernan (1997) as well as Hofmann and Mizen (2004) examine the mortgage market in the United Kingdom while Frost and Bowden (1999) examine the mortgage market in the case of New Zealand.

[2] The issue of interest rate pass through in the deposit and lending markets along with the adjustment process has been undertaken for a number of countries in published studies by Scholnick (1996) for Singapore and Malaysia; Heffernan (1997) as well as Hofmann and Mizen (2004) for the United Kingdom; Moazzami (1999) for Canada and the USA; Winker (1999) for Germany; Lim (2001) for Australia; Sander and Kleimeier (2002, 2004) and deBondt (2005s) for the Euro area; and Humala (2005) for Argentina.

[3]Berger and Hannan (1989) find that banks in more concentrated markets pay less in terms of deposit rates. Hannan and Berger (1991) as well as Neumark and Sharpe (1992) discuss the collusive pricing and customer reaction hypotheses. According to Stiglitz and Weiss (1981) asymmetric information may create an adverse selection problem in lending markets with higher interest rates attracting riskier borrowers. Thus, banks will not increase lending rates, but instead ration credit in an attempt to avoid the loan defaults of riskier borrowers. Scholnick (1999 and citations therein), provides a survey of the various explanations for interest rate rigidity.

[4]Perron's (1997) endogenous unit root test was performed on the mortgage rate and federal funds rate. The break date selected was based on the minimum ADF test statistic for testing the null hypothesis of a unit root. Though each series exhibited a break (mortgage rate 1990:6 and federal funds rate 1978:3), each time series still contained a unit root (i.e. integrated of order one). The test statistics associated with the null hypothesis of a unit root were −3.98 for the mortgage rate and −4.18 for the federal funds rate with each test statistic less than the 10% critical value of −4.82 (Perron, 1997, Table 1, p. 362).

[5] Both the maximum eigenvalue and trace tests of the Johansen--Juselius (1990) cointegration procedure supports the Engle--Granger cointegration results. However, according to Gregory and Hansen (1996) the power of the standard ADF cointegration tests of the residuals from a cointegrating regression decreases in the presence of a structural break. Allowing for an endogenously determined break in the cointegrating relationship, the Gregory and Hansen (1996) procedure did not indicate a significant break. Results are available upon request.

[6]Bohl and Siklos (2004) use the MTAR model to examine the asymmetric behaviour exhibited by the Bundesbank's inflationary policy. While Enders and Siklos (2001) examine the threshold autoregressive (TAR) model, the TAR model has lower power when compared to the standard Engle--Granger test. On the other hand, the MTAR model exhibits greater power than the Engle--Granger test.

[7] The Chan (1993) method arranges the values for the MTAR model in ascending order and excludes the smallest and largest 15%. The consistent estimate of the threshold is the parameter which yields the smallest residual sum of squares over the remaining 70%.

[8] In this case, weak exogeneity occurs when changes in the federal funds rate do not react to the disequilibrium error term but may still be influenced by lagged changes in the mortgage rate (see Lim, 2001, p. 2001 in the context of interest rate pass-through and Engle et al. (1983) for a more detailed discussion of the various forms of exogeneity).

[9]Scholnick (1999) did not find asymmetry in the adjustment of the 30-year conventional mortgage rate with respect to the 30-year constant maturity US Treasury rate.

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