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Interest rate pass through and asymmetric adjustment: evidence from the federal funds rate operating target period

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Abstract

This study examines the long-run interest rate pass through of the federal funds rate to the prime rate and whether there is asymmetric adjustment in the prime rate using the Enders–Siklos (2001) momentum threshold autoregressive model over the period February 1987 to October 2005. Once allowance is made for the endogenously determined structural break in the cointegrating relationship in April 1996, the adjustment of the prime rate to changes in the federal funds rate appears asymmetric with upward rigidity, a result contrary to previous studies which found that the prime rate exhibits downward rigidity. The finding of upward rigidity in the prime rate lends support for the customer reaction and adverse selection hypotheses. Moreover, the empirical evidence seems to support the observation of increased pass through as a

result of heightened competition in the banking industry as well as the Federal Reserve's enhanced transparency in monetary policy during the 1990s.

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Notes

[1] Sellon (2002) makes this point and provides a nice overview of the impact of the changing US financial system on the interest rate channel for monetary policy transmission.

[2] The issue of interest rate pass through along with the adjustment process has been undertaken for a number of countries, for example, Singapore and Malaysia by Scholnick (1996); United Kingdom by Heffernan (1997) as well as Hofmann and Mizen (2004); Germany by Winker (1999); and Australia by Lim (2001). Frost and Bowden (1999) examine an asymmetric error correction model in the adjustment of mortgage rates in New Zealand.

[3] Cook and Hahn (1989) analyse US Treasury securities. Diebold and Sharpe (1990), Hannan and Berger (1991), Neumark and Sharpe (1992) and Hutchison (1995) examine various deposit rates. Scholnick (1999) and Payne (2006) investigate mortgage rates while Moazzami (1999) as well as Sarno and Thornton (2003) focus on the 3-month US Treasury bill rate. Atesoglu (2004) analyses long-term rates. More specifically to this study, Atesoglu (2003) finds an increase in interest rate pass through from the federal funds rate to the prime rate in the post-1994 period. However, Atesoglu (2003) does not endogenously determine a structural break in the relationship between the federal funds rate and the prime rate as well as incorporate the possibility of asymmetric adjustment.

[4] Scholnick (1999) provides a survey of the various explanations for interest rate rigidity and the adjustment processes of lending and deposit rates.

[5] 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. In a related literature, Ewing et al . (1998), Ewing and Kruse (2005) and Thompson (2006) examine the relationship between the prime rate and CD rates.

[6] Perron's (1997, pp. 358–359) endogenous unit root test was performed on the prime 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 (prime rate July 1996 and federal funds rate September 1995), both 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 −4.04 for the prime rate and −3.72 for the federal funds rate, both less than the 10% critical value of −4.82 (Perron, 1997, Table 1, p. 362).

[7] The Riegle-Neal Interstate Banking and Branching Efficiency Act eliminated the prohibition of interstate banking and permitted branching across state lines. In 1999, the Gramm–Leach–Bliley Financial Services Modernization Act permitted security firms and insurance companies to purchase banks as well as enabled banks to underwrite securities, insurance and real estate.

[8] DOLS is the dynamic ordinary least squares regression of P_t on a constant, D, FFR_t , ΔFFR_t , ΔFFR_{t-1}, ΔFFR_{t-2}, ΔFFR_{t+1} and ΔFFR_{t+2}. As pointed out by Stock and Watson (1993, p. 784), the DOLS estimator is asymptotically equivalent to the Johansen/Ahn-Reinsel estimator.

[9] Bohl and Siklos (2004) use the MTAR model to examine the asymmetric behaviour exhibited by the Bundesbank's inflationary policy. In particular, it is possible to examine whether banks attempt to smooth out changes in market interest rates using the MTAR model. 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.

[10] As pointed out by Bohl and Siklos (2004, footnote 10, p. 508), the MTAR model captures the possibility of asymmetrically sharp adjustments toward the long-run equilibrium, in this case the long-run equilibrium between the prime rate and federal funds rate.

[11] The Chan (1993) method arranges the values for the MTAR 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%.

[12] In this case, weak exogeneity occurs when changes in the federal funds rate do not react to the disequilibrium error terms but may still be influenced by lagged changes in the prime rate (Lim, 2001, p. 2001). For further discussion of the various forms of exogeneity see Engle et al . (1983).

[13] The McFadden Act of 1927 prohibited banks from branching across state lines while the Glass–Steagall Act of 1933 separated commercial banking activities from the securities industry along with placing interest-rate ceilings on deposits.