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# Interest rate pass through and asymmetries in adjustable rate mortgages

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## Abstract

This study extends the recent work on interest rate pass through from the federal funds rate to mortgage rates. The Enders-Siklos (2001) momentum threshold autoregressive (MTAR) model is used to examine the pass through of interest rate changes to adjustable rate mortgages. The results show that the pass through is incomplete and asymmetric. The rate of pass through is higher for increases in the federal funds rate than for decreases. The results also show that the pass through is higher for adjustable rate mortgages with a higher loan-to-value ratio. The results have implications for the design of adjustable rate mortgages and for the regulation of the mortgage market.

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<sup>1</sup> Hadjimichalakis ([1981](#)), Arak et al . ([1983](#)),Goldberger ([1984](#)), Forbes and Mayne ([1989](#)), Levine and Loeb ([1989](#)), Mester and Saunders ([1995](#)), Dueker ([2000](#)), Thacz ([2001](#)), Atesoglu ([2003](#)), Thompson ([2006](#)), and Payne and Waters ([2006](#)) examine the US prime rate. Cook and Hahn ([1989](#)), Moazzami ([1999](#)), and Sarno and Thornton ([2003](#)) analyse treasury rates. Diebold and Sharpe ([1990](#)), Hannan and Berger ([1991](#)), Neumark and Sharpe ([1992](#)), and Hutchison ([1995](#)) investigate deposit rates. Atesoglu ([2004](#)) focuses on long-term corporate bond rates and treasury securities. On the international front, the issue of interest rate pass through has been explored by Scholnick ([1996](#), [1999](#)), Heffernan ([1997](#)), Frost and Bowden ([1999](#)), Moazzami ([1999](#)), Winker ([1999](#)), Lim ([2001](#)), Sander and Kleimeier ([2002](#), [2004](#)), Hofmann and Mizen ([2004](#)), de Bondt ([2005](#)), and Humala ([2005](#)).

<sup>2</sup> Sellon ([2002](#)) provides an excellent description of the evolution of the financial services sector and the transmission of monetary policy.

<sup>3</sup> These points are mentioned in Payne ([2006a](#), [b](#)).

<sup>4</sup> Stiglitz and Weiss ([1981](#)) discuss the role of information asymmetries in credit rationing. Adjustment costs can be attributed to information search costs, menu costs of adjusting rates, adverse selection and moral hazard, not to mention consumer inertia and switching costs.

<sup>5</sup> Scholnick ([1999](#) and citations therein) provides a survey of the various explanations for interest rate rigidity and the adjustment processes of lending and deposit rates. These explanations have been reiterated by Payne ([2006a](#), [b](#)) and Payne and Waters ([2006](#)).

<sup>6</sup> The me and Waters ([2006](#)) for

<sup>7</sup> In addition to the PP unit root tests, the ADF test uses a nonparametric

<sup>8</sup> Perron' rates and ADF test series exhibited a break (adjustable rate on newly built homes, 1994 : 2; adjustable rate on

previously owned homes, 1995 : 12; and federal funds rate, 1993 : 11), each series still contained a unit root. The test statistics associated with the null hypothesis of a unit root were  $-4.29$  for the adjustable rate on newly built homes,  $-4.07$  for the adjustable rate on previously owned homes and  $-4.25$  for the federal funds rate, each  $<10\%$  critical value of  $-4.82$  (Perron, [1997](#), Table 1, p. 362).

<sup>9</sup> Given the power of the standard ADF cointegration test of the residuals from the cointegrating regression decreases in the presence of a structural break, the Gregory and Hansen ([1996](#)) cointegration procedure was estimated. The Gregory and Hansen ([1996](#)) procedure, which allows for an endogenously determined break in the intercept, slope, and both the intercept and slope of the cointegrating equation, did not reveal any statistically significant breaks. The results are available upon request.

<sup>10</sup> Enders and Siklos ([2001](#)) note that the MTAR model exhibits greater power than the Engle-Granger test. Also, the TAR model has lower power when compared to the Engle-Granger test.

<sup>11</sup> In the case of the adjustable rate mortgage on newly built homes, there is evidence of serial correlation at the 10% level.

<sup>12</sup> 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 adjustable rate. For further discussion of the various forms of exogeneity see Engle et al . ([1983](#)).



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