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Interest-rate stickiness and optimal monetary policy: A survey

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Abstract

Modern central banks use short-term (overnight) interest rates as a policy instrument. However, little attention has been paid in the optimal monetary policy literature to the correlation between the policy rate and the retail interest rates that are directly related to the decision-making of firms and households. Recently, a lot of empirical studies report that the pass-through from money market rates to retail lending rates is far from complete in some industrialized countries, especially the Euro area. This paper provides a brief survey of recent studies on incomplete interest rate pass-through and a perspective on future research.

1. Review of the literature

In formal models of monetary policy, the relationship between the policy rate and retail interest rates has received little attention. This is rather surprising given that it is widely agreed that the behaviors of firms and households are more closely related to retail interest rates, especially long-term interest rates and loan rates, than the policy rate. In the literature on optimal monetary policy originated by Woodford (2003), a short-term (3-month) interest rate is typically treated as the sole interest rate existing in the economy. It is implicitly assumed that a central bank can directly control the interest rate that affects the behavior of firms and households. This

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implies that the central bank can also control aggregate output and thereby inflation through the intertemporal substitution channel.

Recently, Christiano et al. (2005) and Ravenna and Walsh (2006) have introduced a cost channel into the new Keynesian framework, in addition to the traditional intertemporal substitution channel, assuming that firms have to borrow funds from commercial banks in order to compensate for wages that must be paid in advance. However, they also regard firms' loan rates as being equivalent to the central bank's policy rate as the previous studies did.

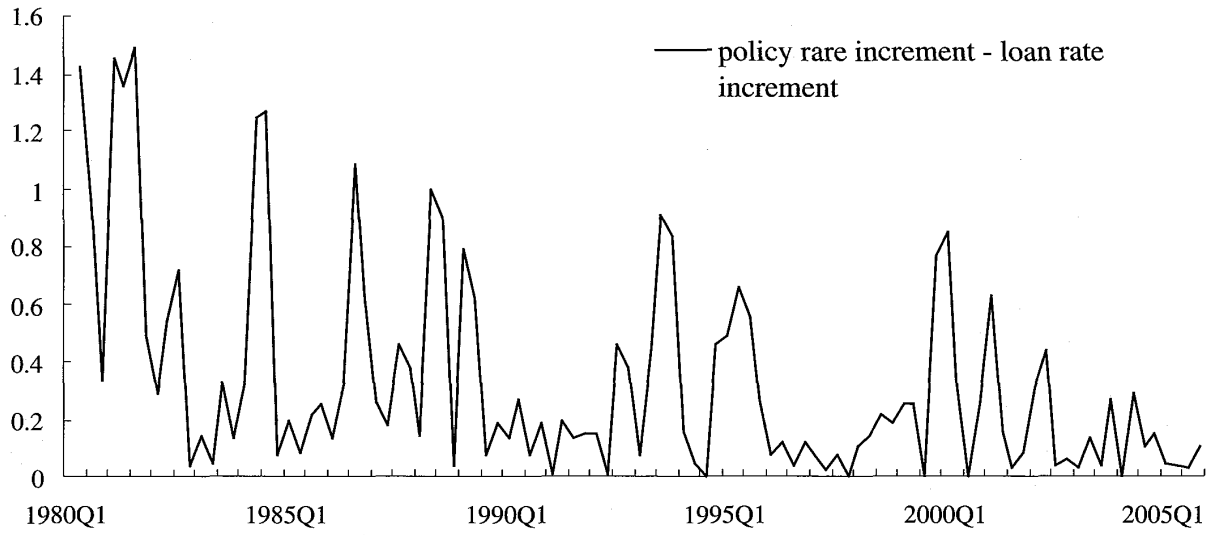

Figure 1. Stickiness in loan rates in the U.K.
Source: IMF International Financial Statistics.

In recent years, a concept of "interest rate pass-through" receives some attention in the monetary policy literature. By interest pass-through, I mean the extent to which a change in the policy rate is passed through to retail interest rates. There are a lot of empirical studies that insists on the role of retail rates. For example, Tillmann (2006) reports that the Phillips curve derived by Ravenna and Walsh (2006) can better explain the U.S. and the U.K. inflation if the policy rate is replaced with a loan rate. He argues that it is crucial to distinguish between the policy rate and retail lending rates in explaining actual inflation dynamics. Figure 1 illustrates the difference between increments in the policy rate and increments in an average loan rate (in absolute value). This figure implies that a shift in the policy rate has not been fully passed through to lending rates in the U.K. at least during the past 25 years. Regarding the Euro area, numerous empirical studies have thus far reported that shifts in money market rates are not completely passed

through to retail lending rates (e.g., Mojon, 2000, Toolsema et al., 2002, Angeloni et al., 2003, and Gambacorta, 2004).

2. Source of interest-rate stickiness

Roughly speaking, interest-rate stickiness arises both from (a) the existence of adjustment costs of changing loan rates and (b) the presence of overlapping multiperiod contracts.[1] As to item (a), there are a lot of theoretical works that attempt to explain the reason for interest-rate stickiness. Actually, the existence of some loan-rate (or bank-rate) stickiness has been recognized and discussed since the early 90's. Examples of rationale for such loan-rate rigidity are the following: the presence of a highly regulated or less-competitive financial sector (Hannan and Berger, 1991, Neumark and Sharpe, 1992); administrative/menu costs in changing loan rates (Mester and Saunders, 1991); customer's costs of changing banks (Neumark and Sharpe, 1992), etc. However, since the main objective of these studies is to provide a microfoundation for the observed loan-rate stickiness, they paid little attention to the macroeconomic consequence of loan-rate stickiness.

On the other hand, monetary policy literature has almost ignored the existence of multiperiod interest contracts. This seems rather surprising given the fact that the role of multiperiod price and wage contracts has been widely discussed thus far (e.g., Taylor 1980, Fuhrer and Moore, 1995, Chari et al. 2000). In the real world, like price and wage contracts, a large fraction of bank lending is implemented based on long-term contracts. Thus, while the literature has not seriously addressed this issue, it seems important to consider how the presence of multiperiod loan-rate contracts affects macroeconomic dynamics and the desirable monetary policy.

Although some studies formally treat long-term interest rates, they typically *assumed* the expectations theory of the term structure to hold (e.g., Ellingsen and Söderström, 2001, 2004, and Gürkaynak et al., 2003). That is, long-term interest rates are defined exogenously rather than derived endogenously within the model. Since loan rates are determined by commercial banks, to

[1] Besides these two reasons, the presence of some interest rate regulation would also make retail interest rates sticky. However, it does not seem unreasonable to ignore such a possibility in considering modern monetary policy.

what extent a shift in a money market rate will affect loan rates and thereby the behavior of firms depends on how commercial banks will react to the change in the money market rate. If not all of the commercial banks promptly respond to a change in the money market rate, then a policy shift will not affect the whole economy equally. Constructing a formal model that can treat long-term interest rates in an endogenous manner will be necessary for a better understanding of desirable monetary policy.

3. A perspective on future research

Loan-rate stickiness necessarily implies the presence of loan-rate dispersion, for only a fraction of all the loan rates are adjusted after a policy shift. As price dispersion across firms requires zero-inflation policy, as Woodford (2003) suggested, the presence of loan-rate dispersion might require a zero-loan-rate-growth policy. In an economy with loan-rate stickiness, a central bank would have to care about the possibility of inefficient loan-rate dispersion across borrowers that would occur after a shift in the policy rate. Such loan-rate dispersion would not occur if the growth rate of the average loan rate is kept at zero. The central bank will have to take into account the influence of a policy shift on the determination of retail loan rates when interest rates are sticky. Arguably, this possibility might provide a rationale for central bank's interest rate smoothing that has been observed in the real world.

Besides the presence of overlapping contracts, there is another possibility that will make the behavior of retail loan rates less flexible. Some authors argue that the possibility of incomplete interest rate pass-through does not disappear even after controlling the length maturities (e.g., Sørensen and Werner, 2006). This implies that commercial banks face some kinds of adjustment costs in determining and assigning new loan rates. If this is the case, loan-rate dispersion may occur even in the case of one-period contracts as long as financial markets are not complete, where there is no room for arbitrage.

In the monetary policy literature, it has been widely recognized that policy-rate setting should be history-dependent (or inertial) so as to exploit private sector's expectations. However, the optimality of history-dependence relies on the implicit assumption that a central bank can perfectly control retail interest rates as well as short-term rates. It is unclear whether or not the

conventional wisdom still holds true once the assumption is relaxed. On the contrary, it may be that the policy rate should be moved in a drastic manner when loan rates respond to policy-rate shifts only gradually. Since there is considerable evidence on incomplete interest pass-through, a formal analysis regarding issue will be meaningful.

References:

Angeloni, I., Kashyap, A. K., Mojon, B. (eds.) (2003), *Monetary transmission in the Euro area*, Cambridge University Press.

Chari, V.V. Kehoe, P., McGrattan, E. (2000), Sticky price models of the business cycle: can the contract multiplier solve the persistence problem? Econometrica 68, 1151-79.

Christiano, L. J., Eichenbaum, M., Evans, C. (2005), Nominal rigidities and the dynamic effects of a shock to monetary policy, *Journal of Political Economy* 113, 1-45.

Ellingsen, T. and Söderström, U. (2001), Monetary policy and market interest rates. *American Economic Review* 91, 1594-1607.

Ellingsen, T. and Söderström, U. (2004), Why are long rates sensitive to monetary policy? IGIER Working Paper no. 256.

Fuhrer, J. and Moore, G. (1995), Inflation persistence, Quarterly Journal of Economics 110, 127-60.

Gambacorta, L. (2004), How do banks set interest rates? NBER Working Paper no.10295.

Gürkaynak, R. S., Sack, B. and Swanson, E. (2003), The excess sensitivity of long-term rates: Evidence and implications for macroeconomic models. Board of Governors of the Federal Reserve System.

Hannan, T. H., Berger, A. N. (1991), The rigidity of prices: Evidence from the banking industry, *American Economic Review* 81, 938-45.

Mester, L., Saunders, A. (1991), When does the prime rate change? Federal Reserve Bank of Philadelphia.

Mojon, B. (2000), Financial structure and the interest rate channel of ECB monetary policy, ECB Working Paper Series no. 40.

Neumark, D., Sharpe, S. (1992), Market structure and the nature of price rigidity: Evidence from the market for consumer deposits, *Quarterly Journal of Economics*.

Ravenna, F., Walsh, C. E. (2006), Optimal monetary policy with the cost channel, Journal of *Monetary Economics* 53, 199-216.

Sørensen, C.K. and Werner, T. (2006), Bank interest rate pass-through in the Euro area: a cross country comparison, *Journal of International Money and Finance, forthcoming*.

Taylor. J.B. (1980), Aggregate dynamics and staggered contracts, *Journal of Political Economy* 88, 1-23.

Tillmann, P. (2006) Does the Cost Channel of Monetary Transmission Explain Inflation Dynamics?, University of Bonn.

Toolsema, L.A, Sturm, J.E., de Haan, J. (2002), Convergence of pass-through from money market to lending rates in EMU countries: new evidence, University of Groningen.

Woodford, M. (2003), *Interest and Prices: Foundations of a Theory of Monetary Policy*. Princeton University Press: Princeton, NJ.