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The effect of Fed monetary policy regimes on the US interest rate swap spreads

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Abstract

This paper analyzes the asymmetric impacts of various economic shocks on swap spreads under distinct Fed monetary policy regimes. The results indicate that (a) during periods of aggressive interest rate reductions, slope of the Treasury term structure accounts for a sizeable share of the swap spread variance although default shock is also a major player. (b) On the other hand, liquidity premium is the only contributor to the 2-year swap spread variance in monetary tightening cycles. (c) The impact of default risk varies across both monetary cycles and swap maturities. (d) The effect of interest rate volatility is generally more evident in loosening monetary regimes.

JEL classification: G12; E32; E43
Keywords: Swap spread; Economic shocks; Fed policies; Impulse response; Variance decomposition

1. Introduction

This study documents the asymmetric impacts of financial market shocks on the US interest rate swap spreads over different monetary policy regimes. Analyzing swap spreads is an interesting and important research agenda as swap spreads measure the price of interest rate swaps, which have experienced exponential growth over the past decade due to the widespread use by corporations and financial institutions for risk management. Increasingly municipal governments are embracing swaps too. For

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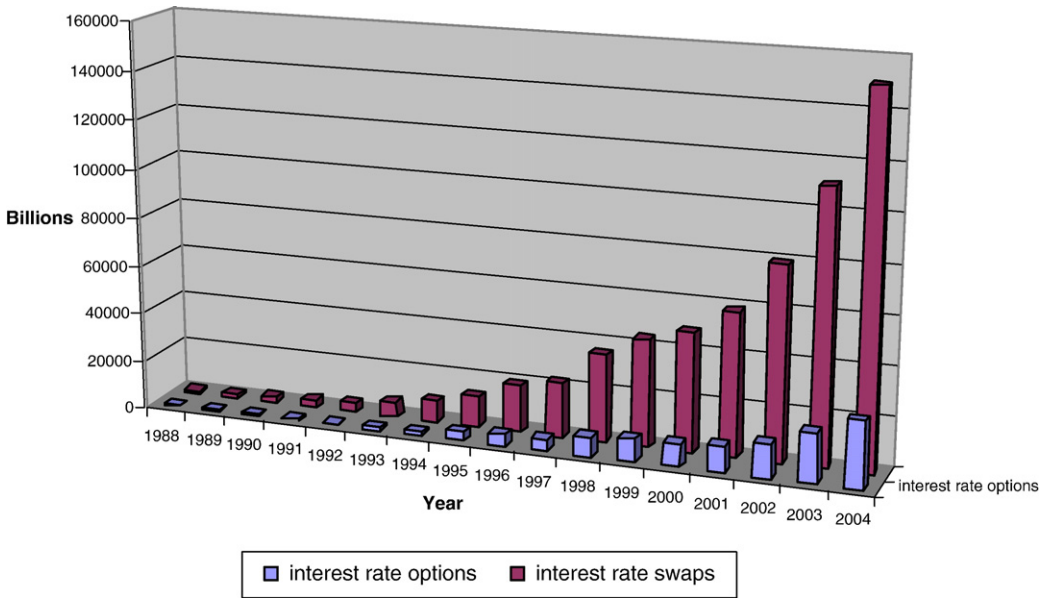

Fig. 1. Amount of interest rate derivatives outstanding.

example, city council members in Durham, North Carolina voted on April 4, 2005 on whether to proceed with an interest rate swap arranged by Rice Financial Products. A similar swap deal was adopted by the city of Houston last year.[1] Fig. 1 shows the growth of interest rate derivatives from 1988 to 2004. Interest rate options increased from $316 billion to $27.1 trillion, while interest rate swaps soared from slightly over one trillion to $150 trillion.[2] The explosive growth in interest rate swaps speaks for the importance of understanding the key drivers in the swap pricing mechanism. In addition to the unprecedented popularity enjoyed by interest rate swaps for risk management, the financial market has increasingly used the swap curve for bond and derivative securities pricing due to the dwindling liquidity in the Treasury market.[3]

A plain vanilla interest rate swap is a contractual agreement between two counterparties to exchange periodic interest payments based upon a certain amount of notion principal. Typically, the swap buyer makes a fixed interest payment in exchange for a variable cash flow based upon a floating London Interbank Offered Rate (LIBOR). The interest rate that determines the fixed payment is the swap rate. The swap spread is thus measured by the difference between the swap rate and the Treasury rate of similar maturity. In a complete financial market, arbitrage will ensure a zero swap spread. However, when the financial market is less than complete, and counterparty default risk exists, we observe a positive swap spread. Since the swap spread is the effective price of an interest rate swap and it changes over time, it is essential that we understand what sways its stochastic nature.

There is a growing body of scholarship that addresses the changes in swap spreads. Treating a swap as an option to receive (pay) fixed and long an option to pay (receive) floating cash flows, Sorensen and Bollier (1994) argue that the value of a swap depends on the value of the option to default, which in turn is

[1] WSJ, April 4, 2005, p.C3.
[2] Data are obtained from International Swaps and Derivatives Association and Bank for International Settlements.
[3] One-year T-bills were phased out in 2000, while the issuance of 30-year T-bonds was stopped in 2001.