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Institute of Finance



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2005 11

1
2
3
4
5
6

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1 _____

On/Off-the-Run

MBS

1980

1989

Swartz and

Winkler (1989)

1

1

2
(1989)

Torres

1980

1980

90

1990

1994

1994

2000 71 72

1998

LTCM

3

LTCM

2000

IT

30

2001

2001

MBS

2005 11

2000 4,000

2003 2004

2005 6

2 _____

8 10 9

2 10 5

1990

2 "Two-Plus" 90

Chang and Naik (2002) Kocic (2002)

$$dx = \alpha(m_x - x)dt + \sigma_x dw_x \quad 1$$

$$dy = \beta(m_y - y)dt + \sigma_y dw_y \quad 2$$

$$dr = \lambda(x + y - r)dt + \sigma_z dw_z \quad 3$$

$$E[dw_x dw_y] = \rho dt, \quad E[dw_x dw_z] = E[dw_y dw_z] = 0$$

$$\begin{matrix}
 & x & & & & & y & & & & \\
 & & & & & & & & & & r & & & & dw_x \\
 dw_y, dw_z & & & & & & \alpha & \beta & & & x & y & & & \alpha < \beta \\
 m_x & m_y & & & & & \sigma_x & \sigma_y & & & x & y & & & \\
 r & & \lambda & x+y & & & & & & & & 2 & & & 2
 \end{matrix}$$

$$\begin{matrix}
 3 & & & & & & & & & & & & & & \\
 3 & & & & & & & & & & & & & & x+y \\
 r & & & & & & & & & & & & & & \\
 & & r & & \ln 2 / \lambda & & x & y & & & & & & &
 \end{matrix}$$

hump-shaped Dai and Singleton (2003) 3

$$r = x + y \quad 3A$$

r Vasicek (1977) 2
Tuckman (2002) Chapter 13 V2

30 Fleming and Remolona (1999) 5

2
CPI PPI

1 x

8

y

3

x+y

Taylor (1993)

Clarida, Gali and Gertler (2000)

x

y

GDP

3 _____

$T_B \quad T_C \quad T_A < T_B < T_C$

A B C

T_A
B

A C

B

A C

3

$i \quad i = A, B, C$

R_i

BSP

BSP

$$BSP \equiv R_B - (w_A R_A + w_C R_C)$$

4

$w_A \quad w_C$

A C

DV01

B

B

DV01

1bp

B DV01 $(1 - w_A - w_C)$

a $w_A + w_C = 1$

2

b $w_A = w_C = 0.5$

c $\Delta R_B = w_A \Delta R_A + w_C \Delta R_C + \varepsilon$ Δ

d

a	b	c	d
$w_A + w_C$	1	a	c

Grieves (1999) Martellini, Priaulet and Priaulet (2002)

d

V2 Vasicek 2

x

y

x

y

4

$$BSP(x, y) = R_B(x, y) - [w_A R_A(x, y) + w_C R_C(x, y)]$$

2

$$\frac{\partial BSP}{\partial x} = \frac{\partial R_B}{\partial x} - \left[w_A \frac{\partial R_A}{\partial x} + w_C \frac{\partial R_C}{\partial x} \right] = 0$$

5

$$\frac{\partial BSP}{\partial y} = \frac{\partial R_B}{\partial y} - \left[w_A \frac{\partial R_A}{\partial y} + w_C \frac{\partial R_C}{\partial y} \right] = 0$$

w_A w_C

$$\begin{aligned}
 P \ \& \ L \approx DV01_B \times \Delta BSP \\
 &= DV01_B \times [\Delta R_B - (w_A \Delta R_A + w_C \Delta R_C)]
 \end{aligned}
 \tag{6}$$

$$\Delta BSP > 0$$

ΔBSP

BSP

Jones (1991) *BSP*

Litterman, Scheinkman and Weiss (1991)

1980

7

Christiansen and Lund (2005)

Tuckman (2003) 1993 2003

β

2-5-10

2003 3

4bp

Tuckman

(2003)

2001

4 _____

3

3

2

2

3

3

2

10

30

20

8

20 2 10 30

4 5 3

N N

N+1 K N+K

2 OAS

2000 50 57

V2

Duarte, Longstaff and Yu (2005)

2 1 10 2 3 5 7

1 10 1988 2004

4 2

8 0.44% 0.63%

5.3% 7.6% 0.52

0.76

5 _____

MBS

2003

MBS

MBS

MBS

MBS

MBS

MBS

MBS

2005 11

MBS

MBS

4.1 2005 6

MBS 5.8

MBS 3.6 MBS
 2003 7
 FRB 7
 6 FOMC
 5 1 95bp 115bp
 MBS
 2 5
 6 7 2 6
 5 7
 2003 7 1 10 30 17bp
 2 7
 38bp 3 2 7 30
 5 7
 5 MBS
 7 MBS

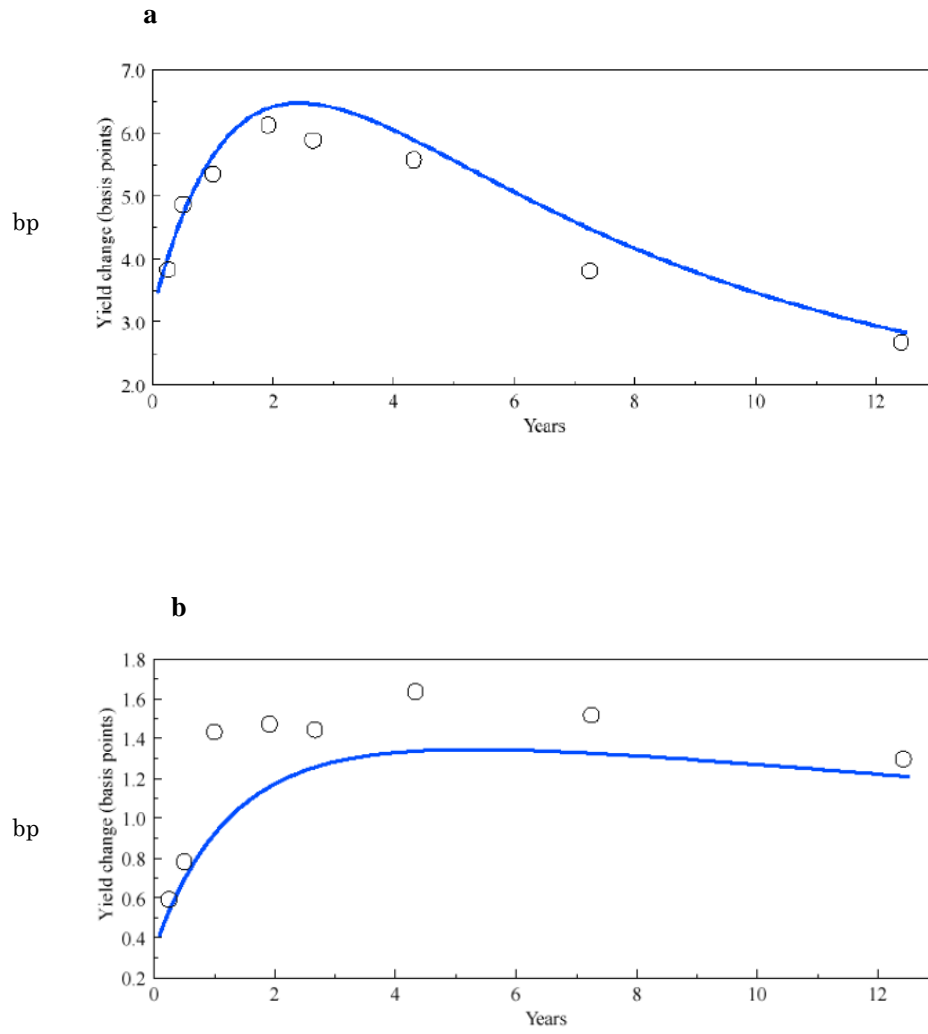
MBS

MBS

VAR

6 _____

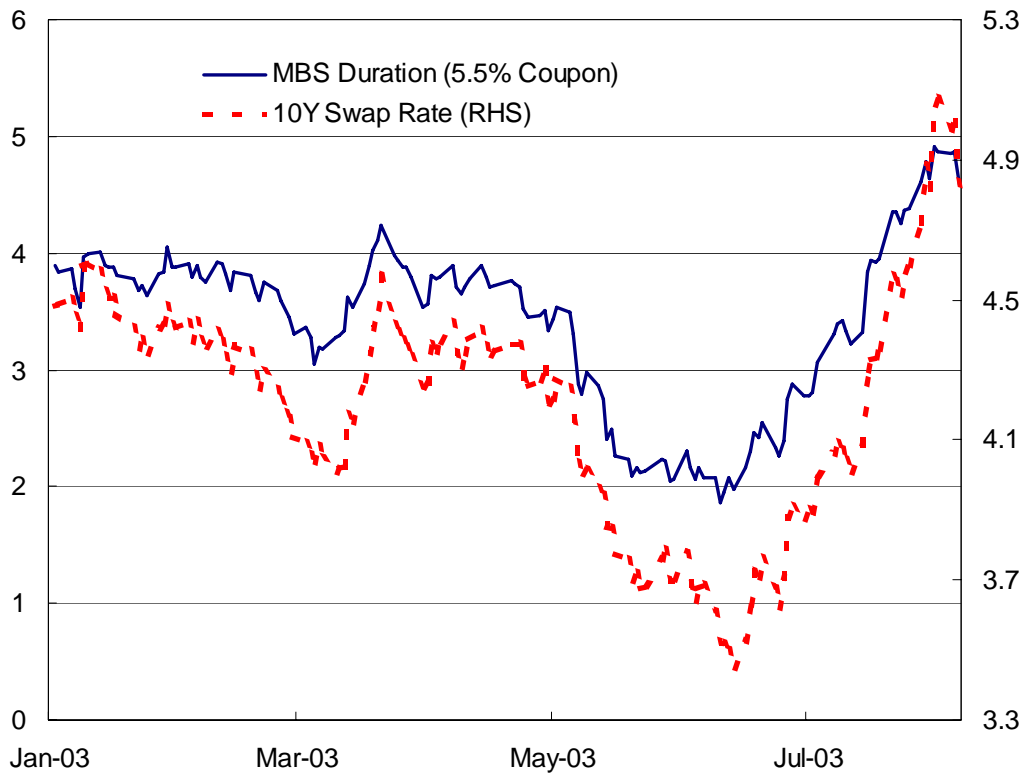
MBS



Fleming and Remolona (1999) Fig. 3

MBS

2003

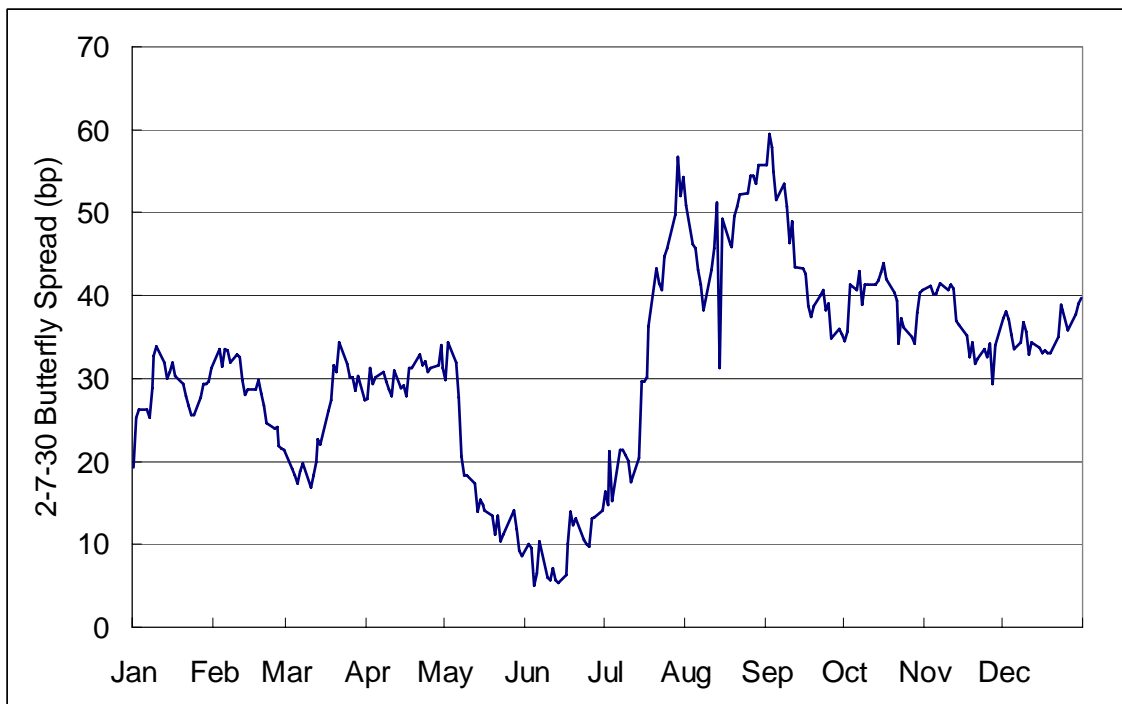


10

MBS

2 7 30

2003



$$BSP \equiv SwapRate(7y) - \frac{1}{2}[SwapRate(2y) + SwapRate(30y)]$$

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- Chang, G, and V. Naik (2002), “A Model of the Yield Curve with Time-varying Interest Rate Targets”, Lehman Brothers.
 - Christiansen, C., and J. Lund (2005), “Revisiting the Shape of the Yield Curve: The Effect of Interest Rate Volatility”, Working Paper, Aarhus School of Business.
 - Clarida, R., J. Galí, and M. Gertler (2000), “Monetary Policy Rules and Macroeconomic Stability: Evidence and Some Theory,” *Quarterly Journal of Economics* 115, pp. 147-180.
 - Dai, Q., and K. Singleton (2003), “Term Structure Dynamics in Theory and Reality”, *Review of Financial Studies*, Vol. 16, No. 3, pp. 631-678.
 - Duarte, J., F. Longstaff and F. Yu (2005), “Risk and Return in Fixed Income Arbitrage”, Working Paper, UCLA.
 - Fleming, M., and E. M. Remolona (1999), “The Term Structure of Announcement Effects”, BIS Working Paper, No. 71.
 - Grieves, R. (1999), “Butterfly Trades”, *Journal of Portfolio Management*, Fall, pp. 87-95.
 - Jones, F. (1991), “Yield Curve Strategies”, *Journal of Fixed Income*, September, pp.43-49.
 - Kocic, A. (2002), “Time Varying Risk Premia: Their origin, estimation and applications in the multifactor affine models”, Deutsche Bank.
 - Litterman, R., J. Scheinkman, and L. Weiss (1991), “Volatility and the Yield Curve”, *Journal of Fixed Income*, June.
 - Martellini, L., P. Priaulet, and S. Priaulet (2002), “Understanding the Butterfly Strategy”, *Journal of Bond Trading & Management*, Vol. 1, No. 1, pp. 9-19.
 - Swartz, S., and M. Winkler (1989), “Salomon Takes Hit on Trades”, *Wall Street Journal*, March 23.
 - Taylor, J. B. (1993), “Discretion versus Policy Rules in Practice”, Carnegie-Rochester Conference Series on Public Policy 39, 195-214.
 - Torres, C. (1989), “‘Yield-Curve Arbitrage’ Rewards the Skillful”, *Wall Street Journal*, July 27.
 - Tuckman, B. (2002), *Fixed Income Securities*, Second Edition, Wiley.
 - Tuckman, B. (2003), “Macro-Awareness in Relative Value Trading”, Lehman Brothers.
 - Vasicek, O. (1977), “An Equilibrium Characterization of the Tem Structure”, *Journal of Financial Economics*, 5, 177-188.
 - 2000