

[Home](#) > [Review of Derivatives Research](#) > Article

A Model of the Convenience Yields in On-the-Run Treasuries

| Published: August 2004

| Volume 7, pages 79–97, (2004) [Cite this article](#)

[Review of Derivatives Research](#)

[Aims and scope](#) →[Submit manuscript](#) →[Joseph A. Cherian¹](#), [Eric Jacquier²](#) & [Robert A. Jarrow²](#) **198** Accesses  **26** Citations [Explore all metrics](#) →

Abstract

The convenience yield differential between on- and off-the-run Treasury securities with identical maturities has two components. A non-cyclical component may arise due to the higher illiquidity of off-the-run bonds. Also, trading in the market for the next issue often causes cyclical shortages of the on-the-runs. When this occurs, owners of the on-the-run bond can earn riskless profits by borrowing at a special repo rate while lending at the prevailing risk free market rate. This second component of the convenience yield, induced by the auction, is cyclical. We first show that special repo rates and the convenience yield are jointly cyclical over the auction cycle. The patterns are statistically significant and pervasive. Repo specials are highest around the announcement day and disappear by the issue day. The off- minus on-the-run yield spread is highest at the beginning of the cycle and collapses near its end, consistent with a decreasing present value of profits over a decreasing horizon. Second, we develop a first no-arbitrage continuous-time

model, with both interest and special repo rates stochastic, that prices the on-the-run bonds that command this convenience yield. A simple implementation of the model can generate yields consistent with the evidence.



This is a preview of subscription content, [log in via an institution](#) to check access.

Access this article

Log in via an institution →

Buy article PDF 39,95 €

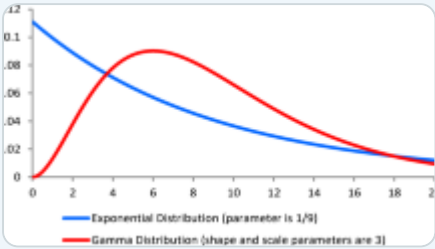
Price includes VAT (Poland)

Instant access to the full article PDF.

Rent this article via [DeepDyve](#)

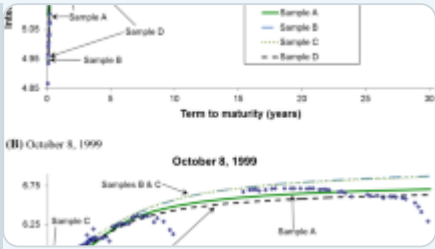
[Institutional subscriptions](#) →

Similar content being viewed by others



A term structure interest rate model with the Brownian bridge lower bound

Article | 02 April 2024



Yield curves from different bond data sets

Article | 05 July 2019



Interest rate uncertainty and the shape of the yield curve of U.S. treasury bonds

Article | Open access
25 June 2024

References

Brennan, M. and E. Schwartz. (1985). "Evaluating Natural Resource Investment," *Journal of Business* 58, 135-157.

[Google Scholar](#)

Cammack, E. (1991). "Evidence on Bidding Strategies and the Information in Treasury Bill Auctions," *Journal of Political Economy* 99, 100-130.

[Google Scholar](#)

Chatterjea, A. and R. Jarrow. (1998). "Market Manipulation, Price Bubbles, and a Model of the United States Treasury Securities Auction Market," *Journal of Financial and Quantitative Analysis* 33(2).

Cherian, J., E. Jacquier, R. Jarrow, and H. Ma. (1997). "Pricing the Convenience Yield in Treasury Securities: Theory and Evidence," Working Paper, Boston University.

Cherian, J., E. Jacquier, and R. Jarrow. (2002). "Convenience Yields in On-the-Run Treasuries: Theory and Evidence," Working Paper, Boston College.

Cherian, J. and R. Jarrow. (1995). "Market Manipulation." In R. Jarrow, V. Maksimovic, and W. Ziemba (eds.) *Finance: Handbooks in Operations Research and Management Science*, Vol. 9, Chapter 20. Amsterdam: North Holland, pp. 611-630.

[Google Scholar](#)

Cornell, B. and A. Shapiro. (1989). "The Mispricing of US Treasury Bonds: A Case Study," *The Review of Financial Studies* 2, 297-310.

[Google Scholar](#)

Corrigan, D., C. Georgiou, and J. Gollow. (2000). *Repo The Ultimate Guide*. London, UK: Pearls of Wisdom Publishing.

[Google Scholar](#)

Duffee, G. (1996). "Idiosyncratic Variations of Treasury Bills," *Journal of Finance* 51, 527-551.

[Google Scholar](#)

Duffie, D. (1996a). "Special Repo Rates," *Journal of Finance* 51, 493-526.

[Google Scholar](#)

Duffie, D. (1996b). *Dynamic Asset Pricing Theory*. Princeton, NJ: Princeton University Press.

[Google Scholar](#)

Duffie, D., C. Skiadas, and M. Schroder. (1996). "Recursive Valuation of Defaultable Securities and the Timing of the Resolution of Uncertainty," *Annals of Applied Probability* 6, 1075-1090.

[Google Scholar](#)

Fisher, M. and C. Gilles. (1996). "The Term Structure of Repo Spreads," Working Paper, Board of Governors Federal Reserve System.

Fleming, M. (2000). "Financial Implications of the Federal Debt Paydown," *Brookings Papers on Economic Activity* 2, 221-251.

[Google Scholar](#)

Gibson, R. and E.S. Schwartz. (1990). "Stochastic Convenience Yield and the Pricing of Oil Contingent Claims," *Journal of Finance* 45, 959-976.

Grinblatt, M. (2001). "An Analytic Solution for Interest Rate Swap Spreads," *International Review of International Finance* 2(3), 113-149.

[Google Scholar](#)

Grinblatt, M. and F. Longstaff. (2000). "Financial Innovation and the Role of Derivative Securities: An Analysis of the Treasury STRIPS Program," *Journal of Finance* 55(3), 1415-1436.

[Google Scholar](#)

Harrison, J. and D. Kreps. (1979). "Martingales and Arbitrage in Multiperiod Securities Markets," *Journal of Economic Theory* 20, 391-408.

[Google Scholar](#)

Heath, D., R. Jarrow, and A. Morton. (1992). "Bond Pricing and the Term Structure of Interest Rates," *Econometrica* 60, 77-105.

[Google Scholar](#)

Hull, J. (2000). *Options, Futures, and Other Derivative Securities*, 4th ed. Englewood Cliffs, NJ: Prentice Hall.

[Google Scholar](#)

Hull, J. and A. White. (1990). "Pricing Interest Rate Derivative Securities," *The Review of Financial Studies* 3, 573-592.

[Google Scholar](#)

Hull, J. and A. White. (1994). "Numerical Procedures for Implementing Term Structure Models I: Single Factor Models," *Journal of Derivatives* 2, 7-16.

Hull, J. and A. White. (1996). "Using Hull-White Interest Rate Trees," *Journal of Derivatives*, 26-36.

Jarrow, R. and S. Turnbull. (1997). "An Integrated Approach to the Hedging and Pricing of Eurodollar Derivatives," *Journal of Risk and Insurance* 64(2), 481-523.

[Google Scholar](#)

Jegadeesh, S. (1993). "Treasury Auction Bids and the Salomon Squeeze," *Journal of Finance* 48(4), 1403-1419.

[Google Scholar](#)

Jordan, B. and S. Jordan. (1997). "An Empirical Investigation of the Repo Special Rate," *Journal of Finance* 52, 2051-2072.

[Google Scholar](#)

Keane, F. (1996). "Repo Rate Patterns for New Treasury Notes," *New York Fed Newsletter: Current Issues in Economics and Finance* 2(10), 2-6.

[Google Scholar](#)

Krishnamurty, A. (2001). "The Bond/Old-Bond Spread," Kellogg Working Paper, Northwestern.

Lowenstein, R. (2000). *The Rise and Fall of Long-Term Capital Management*. New York: Random House.

[Google Scholar](#)

Malvey, P.F. and C.M. Archibald. (1998). "Uniform-Price Auctions: Update of the

Treasury Experience,” U.S. Treasury Domestic Finance Report.

Short S. and I. Schneider. (1994). “Repo/Securities Lending,” *Euromoney*, 81-84.

Stigum, M. (1989). *The Repo and Reverse Markets*. Homewood, IL: Dow Jones-Irwin Publishers.

[Google Scholar](#)

Sundaresan, S. (1994). “An Empirical Analysis of U.S. Treasury Auctions: Implications for Auction and Term Structure Theories,” *Journal of Fixed Income* 4, 35-50.

[Google Scholar](#)

Vasicek, O. (1977). “An Equilibrium Characterization of the Term Structure,” *Journal of Financial Economics* 5, 177-188.

[Google Scholar](#)

Warga, A. (1992). “Bond Returns, Liquidity, and Missing Data,” *Journal of Financial and Quantitative Analysis* 27, 605-617.

[Google Scholar](#)

Author information

Authors and Affiliations

Banc of America Capital Management, USA

Joseph A. Cherian

HEC Montréal, Canada

Eric Jacquier & Robert A. Jarrow

Rights and permissions

[Reprints and permissions](#)

About this article

Cite this article

Cherian, J.A., Jacquier, E. & Jarrow, R.A. A Model of the Convenience Yields in On-the-Run Treasuries. *Review of Derivatives Research* **7**, 79–97 (2004). <https://doi.org/10.1023/B:REDR.0000031174.07795.51>

Issue Date

August 2004

DOI

<https://doi.org/10.1023/B:REDR.0000031174.07795.51>

[term structure of interest rates](#)

[repurchase agreements](#)

[HJM model](#)

[bond pricing](#)

[convenience yield.](#)

Search

Search by keyword or author



Navigation

Find a journal

Publish with us

