

# Pricing Eurodollar Futures Options with the Heath—Jarrow—Morton Model

Nusret Cakici , Jintao Zhu

First published: 17 May 2001

<https://doi.org/10.1002/fut.1703>



## Abstract

This article uses the algorithm developed by Ritchken and Sankarasubramanian (1995) to make comparisons among the Heath—Jarrow—Morton (HJM) models (Heath, Jarrow, & Morton, 1992) with different volatility structures in pricing the Eurodollar futures options. We show that the differences among the HJM models as well as the difference between the HJM models and Black's model can be insignificant when the volatility of the forward rate is relatively small. Moreover, our findings imply that the difference between the American-style and European-style options is insignificant for options with a life of less than 1 year. However, the difference can be significant for options with a 1-year maturity, the difference depending on the exercise price. Finally, our tests indicate that the difference between the forward price and the futures price is insignificant if the volatility parameter is low enough and when the volatility of the spot rate is proportional to the spot rate. A higher volatility parameter can lead to a significant difference between the forward price and the futures price, although its impact on the price of the options will still be trivial. © 2001 John Wiley & Sons, Inc. *Jrl Fut Mark* 21: 655–680, 2001

## BIBLIOGRAPHY

Amin, K. I., & Morton, A. J. (1994). Implied volatility functions in arbitrage-free term structure models. *Journal of Financial Economics*, 35, 141–180.

[Web of Science®](#) 

[Google Scholar](#) 

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

---

Cox, J. C., Ingersoll, J. E., & Ross, S. A. (1985). A theory of term structure of interest rates. *Econometrica*, 53, 385–407.

[Web of Science®](#) | [Google Scholar](#)

---

Flesaker, B. (1993a). Arbitrage free pricing of interest rate futures and forward rates. *Journal of Futures Markets*, 13, 77–91.

[Web of Science®](#) | [Google Scholar](#)

---

Flesaker, B. (1993b). Testing the Heath—Jarrow—Morton/Ho—Lee model of interest rate contingent claims pricing. *Journal of Financial and Quantitative Analysis*, 25, 483–495.

[Web of Science®](#) | [Google Scholar](#)

---

Heath, D., Jarrow, R., & Morton, A. (1990). Bond pricing and the term structure of interest rates: The Binomial Approximation. *Journal of Financial and Quantitative Analysis*, 25, 419–440.

[Web of Science®](#) | [Google Scholar](#)

---

Heath, D., Jarrow, R., & Morton, A. (1992). Bond pricing and the term structure of interest rates: A new methodology for contingent claims valuation. *Econometrica*, 60, 77–105.

[Web of Science®](#) | [Google Scholar](#)

---

Ho, T. S. Y., & Lee, S.-B. (1986). Term structure movements and pricing interest rate contingent claims. *Journal of Finance*, 41, 1011–1029.

[Web of Science®](#) | [Google Scholar](#)

---

Li, A., Ritchken, P., & Sankarasubramanian, L. (1995). Lattice models for pricing American interest rate claims. *Journal of Finance*, 50, 719–737.

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)

Manage Preferences

Accept All

Reject Non-Essential

Nelson, D., & Ramaswamy, K. (1990). Simple binomial processes as diffusion approximations in financial models. *Review of Financial Studies*, 3, 393-430.

[CAS](#) | [PubMed](#) | [Web of Science®](#) | [Google Scholar](#)

Rendleman, R., & Bartter, B. (1980). The pricing of options on debt securities. *Journal of Financial and Quantitative Analysis*, 15, 11-24.

[Web of Science®](#) | [Google Scholar](#)

Ritchken, P., & Sankarasubramanian, L. (1995). Volatility structures of forward rates and the dynamics of the term structures. *Mathematical Finance*, 5, 55-72.

[Google Scholar](#)

Vasicek, O. A. (1977). An equilibrium characterization of the term structure. *Journal of Financial Economics*, 5, 177-188.

[Web of Science®](#) | [Google Scholar](#)

## Citing Literature



[Download PDF](#)

### ABOUT WILEY ONLINE LIBRARY

[Privacy Policy](#)

[Terms of Use](#)

[About Cookies](#)

[Manage Cookies](#)

[Accessibility](#)

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



[Manage Preferences](#)

[Accept All](#)

[Reject Non-Essential](#)

Subscription Agents  
Advertisers & Corporate Partners

**CONNECT WITH WILEY**

The Wiley Network  
Wiley Press Room

Copyright © 1999-2026 John Wiley & Sons, Inc or related companies. All rights reserved, including rights for text and data mining and training of artificial intelligence technologies or similar technologies.

**WILEY**

This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising. You may change your settings at any time or accept the default settings. You may close this banner to continue with only essential cookies. [Privacy Policy](#)



**Manage Preferences**

**Accept All**

**Reject Non-Essential**