The Effect of Refinancing Costs and Market Imperfections on the Optimal Call Strategy and the Pricing of Debt Contracts

Kenneth B. Dunn, Chester S. Spatt

Abstract

This article, which was originally written in 1986, develops a methodology for valuing mortgage-backed securities with refinancing costs. We solve simultaneously for the valuation of the mortgage-backed security (loan) and the borrower's refinancing strategy, pricing all coupon levels simultaneously. Because the borrower may refinance his or her loan and incur costs at many times in the future, the optimal refinancing decisions arise from an optimal dynamic strategy that reflects the costs of all potential future refinancings. Though the borrower faces multiple rounds of refinancing costs, the market value of the loan cannot exceed the call price plus a single round of refinancing costs.

References

Bennett, P., R. Peach and S. Peristiani. 2001. Structural Change in the Mortgage Market and the Propensity to Refinance. *Journal of Money, Credit and Banking* **33**: 955–975.

Google Scholar

Brennan, M. and E. Schwartz. 1977. Convertible Bonds: Valuation and Optimal Strategies for Call and Conversion. *The Journal of Finance* **32**: 1699–1715.

Web of Science® **Google Scholar**

Cox, J., J. Ingersoll and S. Ross. 1985. A Theory of the Term Structure of Interest Rates. *Econometrica* **53**: 385–407.

Web of Science® **Google Scholar**

Dammon, R. and C. Spatt. 1996. The Optimal Trading and Pricing of Securities with Asymmetric Capital Gains Taxes and Transaction Costs. *Review of Financial Studies* **9**: 921–952.

Web of Science® **Google Scholar**

Dunn, K. and J. McConnell. 1981a. A Comparison of Alternative Models for Pricing GNMA Mortgage-Backed Securities. *The Journal of Finance* **36**: 471–484.

| | **Web of Science®** | **Google Scholar** |

Dunn, K. and J. McConnell. 1981b. Valuation of GNMA Mortgage-Backed Securities. *The Journal of Finance* **36**: 599–616.

| | **Web of Science®** | **Google Scholar** |

Dunn, K. and C. Spatt. 1985. An Analysis of Mortgage Contracting: Prepayment Penalties and the Due-on-Sale Clause. *The Journal of Finance* **40**: 293–308.

| | **Web of Science®** | **Google Scholar** |

Dunn, K. and C. Spatt. 1988. Private Information and Incentives: Implications for Mortgage Contract Terms and Pricing. *The Journal of Real Estate Finance and Economics* **1**: 47–60.

| | **Google Scholar** |

Dunn, K. and C. Spatt. 1999. Call Options, Points and Dominance Restrictions on Debt Contracts. *The Journal of Finance* **54**: 2317–2337.

| | **Web of Science®** | **Google Scholar** |

Elton, E. and M. Gruber. 1971. Dynamic Programming Models in Finance. *The Journal of Finance* **26**: 473–505.

| | **Web of Science®** | **Google Scholar** |

Elton, E. and M. Gruber. 1972. The Economic Value of the Call Option. *The Journal of Finance* **27**: 891–901.

| | **Web of Science®** | **Google Scholar** |

Elton, E. and M. Gruber. 1975. *Finance as a Dynamic Process*. Prentice-Hall: Englewood Cliffs , NJ .

| | **Google Scholar** |

Hendershott, P., S. Hu and K. Villani. 1983. The Economics of Mortgage Terminations: Implications for Mortgage Lenders and Mortgage Terms. *Housing Finance Review* **2**: 127–142.

| | **Web of Science®** | **Google Scholar** |

Ingersoll, J. 1977a. A Contingent-Claims Valuation of Convertible Securities. *Journal of Financial Economics* **4**: 289–321.

| | **Web of Science®** | **Google Scholar** |

Ingersoll, J. 1977b. An Examination of Corporate Call Policies on Convertible Securities. *The Journal of Finance* **32**: 463–478.

Web of Science® | Google Scholar

Kalyman, B. 1971. The Bond Refunding Problem with Stochastic Interest Rates. *Management Science* **18**: 171–184.

Web of Science® | Google Scholar

Kraus, A. 1973. The Bond Refunding Decision in an Efficient Market. *Journal of Financial and Quantitative Analysis* **8**: 793–806.

Web of Science® | Google Scholar

Kraus, A. 1983. An Analysis of Call Provisions and the Corporate Refunding Decision. *Midland Corporate Finance Journal* **1**: 46–60.

Google Scholar

Richard, S. and R. Roll. 1989. Prepayments on Fixed-Rate Mortgage-Backed Securities. *Journal of Portfolio Management* **15**: 73–82.

Web of Science® | Google Scholar

Stanton, R. 1995. Rational Prepayment and the Valuation of Mortgage-Backed Securities. *Review of Financial Studies* **8**: 677–708.

Web of Science® | Google Scholar

Stanton, R. and N. Wallace. 1998. Mortgage Choice: What is the Point? *Real Estate Economics* **26**: 173–205.

Web of Science® | Google Scholar

Timmis, G.C. 1985. Valuation of GNMA Mortgage-Backed Securities with Transaction Costs, Heterogeneous Households, and Endogenously Generated Prepayment Rates. Working Paper. Carnegie Mellon University , Pittsburgh , PA .

Google Scholar

Vu, J. 1986. An Examination of Corporate Call Behavior of Nonconvertible Bonds. *Journal of Financial Economics* **16**: 235–265.

Web of Science® | Google Scholar

Weingarten, H.M. 1967. Optimal Timing of Bond Refunding. *Management Science* **13**: 511–524.

Citing Literature

Download PDF