

# Estimation of the Option Prime: Microsimulation of Backward Stochastic Differential Equations

Héctor Allende<sup>1,2</sup>, Carlos Elías<sup>2</sup> and Soledad Torres<sup>3</sup>

<sup>1</sup> *Department of Informatics, Federico Santa María Technical University, Valparaíso, Chile*

<sup>2</sup> *Faculty of Science and Technology, Adolfo Ibañez University, Viña del Mar, Chile*

<sup>3</sup> *Department of Statistics, University of Valparaíso, Valparaíso, Chile*

## Summary

**A mathematical statistical model is needed to obtain an option prime and create a hedging strategy. With formulas derived from stochastic differential equations, the primes for US Dollar/Chilean Pesos currency options using a prime calculator are obtained. Furthermore, a backward simulation of the option prime trajectory is used with a numerical method created for backward stochastic differential equations. The use of statistics in finance is highly important in order to develop complex products.**

*Key words:* Black–Scholes model; Stochastic differential equations; Options prime; Hedging strategy.