Questions about LVMH - Gucci - PPR case

Please read the "Settlement and Stock Purchase Agreement" that the three parties signed in September 2001 (See the file `PPR_GUCCI_LVMH.pdf`.) Also have a look at the background articles from the press on Compass from 2003.

We will examine this case from the standpoint of March 15, 2003, when the closing price of Gucci stock was $94.50. The riskless rate was about 1.25%, and Gucci could be expected to continue its policy of paying a dividend of $0.50 per share annually, (with the ex date being around July 1).

Prepare a report analyzing the opportunities available to an investor who is thinking about trading Gucci stock at the time. In particular, address the main issues below.

- **Question 1.** Let G_t be the actual market price of Gucci stock and let g_t be the value per share *without* the put. Although g is not observable, we may be able to deduce it if we can figure out the market's implied valuation of the put option that Gucci share holders have.

  From a Black-Scholes standpoint (perfect markets, etc), can you find pairs of implied values (g_t, σ_g) that would make the $g_t + put = 94.50$? What is the lower no-arbitrage value of the put? Are there arbitrage opportunities here for investors?

- **Question 2.** Can you think of a verion of the Black-Scholes formula that we can apply in this situation? What valuation conclusions does it imply for g_t? (Make whatever assumptions you feel are necessary to do this analysis, but be sure to explain what they are.)

- **Question 3.** Suppose PPR has outstanding bonds (in U.S. dollars) maturing at T that have a yield-to-maturity of 5% that can be bought or sold short. Are there any arbitrage opportunities available? What are they? Explain.