In our model, the insurer is allowed to buy reinsurance and invest in a risk-free asset and a risky asset. The claim process is assumed to follow a Brownian motion with drift, while the price process of the risky asset is described by the constant elasticity of variance (CEV) model. The Hamilton–Jacobi–Bellman (HJB) equation associated with the optimal reinsurance and investment strategies is established, and solutions are found for insurers with CRRA or CARRA utility.