

Determine the minimum risk portfolio.  $r_{SG} = 0.5$

**Solution**

$$X_S = \frac{\sigma_G^2 - r_{SG}\sigma_S\sigma_G}{\sigma_S^2\sigma_G^2 + 2r_{SG}\sigma_S\sigma_G}$$

$$X_S = \frac{(25)^2 - 0.5 \times 30 \times 25}{(25)^2 + (30)^2 - 2 \times 0.5 \times 30 \times 25}$$
$$= \frac{625 - 375}{625 + 900 - 750} = \frac{250}{775}$$

$$X_S = 0.3226 = 32.26\%$$

$$X_G = 1 - 0.3226 = 0.6774 = 67.74\%$$

### Case: Dark Clouds on the Horizon

In light of the global recession and the threat of war in the Middle East, the market analyst predicts that the chance of having a booming stock market is 25 per cent. The strong fundamentals in the economy offer hopes of normal market performance for 50 per cent of the time. But there is always a 25 per cent possibility of a downtrend. Mr Anand has bought Hightech and Rapid Info stocks in the IT sector. He has also bought the stocks of Comfo Life which operates in the consumer goods sector. The rate of return in the worst case scenario of a recession is 9 per cent for Comfo Life, 10 per cent for Hightech, and 14 per cent for Rapid Info. In the case of normal performance, the anticipated return will be CL—13 per cent, HT—14 per cent, and RI—12 per cent. If boom condition prevails in the market CL will earn 18 per cent, Hightech 16 per cent, and RI 10 per cent. Apply mean variance criterion to the individual stocks. If Mr Anand invests one-third of his resources in each stock what will be his portfolio return and risk be?