To understand this, suppose there is a portfolio of n different calls on the same underlying stock. The portfolio contains n_i units of the i^{th} call, which has value C_i and delta Δ_i. Let $\omega_i = n_i C_i / \sum_{j=1}^{n} n_j C_j$ be the fraction of the portfolio invested in the ith call. The portfolio value is then $\sum_{i=1}^{n} n_i C_i$. For a \$1 change in the stock price, the change in the portfolio value is the sum of the deltas

$$\sum_{i=1}^{n} n_i \Delta_i \tag{13}$$

The elasticity of the portfolio is the percentage change in the portfolio divided by the percentage change in the stock, or

$$\Omega_{\text{portfolio}} = \frac{\frac{\sum_{i=1}^{n} n_i \Delta_i}{\sum_{j=1}^{n} n_j C_j}}{\frac{1}{S}} = \sum_{i=1}^{n} \left(\frac{n_i C_i}{\sum_{j=1}^{n} n_j C_j} \right) \frac{S \Delta_i}{C_i} = \sum_{i=1}^{n} \omega_i \Omega_i \tag{14}$$

Using equation (**??**), the risk premium of the portfolio, $\gamma - r$, is just the portfolio elasticity times the risk premium on the stock, $\alpha - r$:

$$\gamma - r = \Omega_{\text{portfolio}} (\alpha - r) \tag{15}$$