

MEAN VARIANCE – *Risk and Asset Allocation* - Springer – *symmys.com*

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www.symmys.com

Formulas and figures in this presentation refer to the book **Risk and Asset Allocation**, Springer.

The notation, say, (5.24) refers to Formula 24 in Chapter 5 of the book

The notation, say, (T4.12) refers to Formula 12 in the Technical Appendices for Chapter 4, which can be downloaded from www.symmys.com

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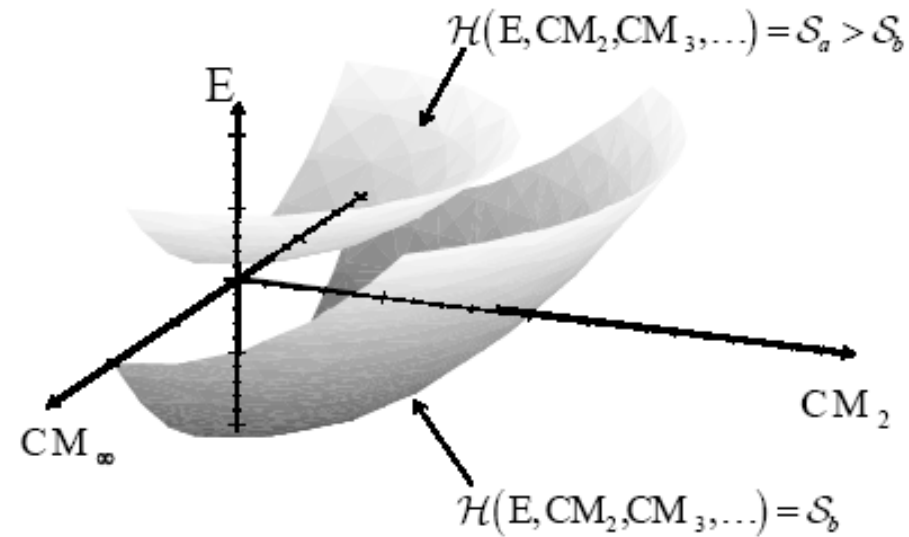
$$\alpha^* \equiv \operatorname{argmax}_{\alpha \in \mathcal{C}} \mathcal{S}(\alpha) \quad (6.62)$$

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$$\mathcal{S}(\alpha) \equiv \mathcal{H}(\mathbb{E}\{\Psi_\alpha\}, \text{CM}_2\{\Psi_\alpha\}, \text{CM}_3\{\Psi_\alpha\}, \dots) \quad (6.63)$$

Fig. 6.4. Iso-satisfaction surfaces in the space of moments of the investor's objective



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$$\mathcal{G}: \alpha \mapsto (\mathbb{E}\{\Psi_\alpha\}, \text{CM}_2\{\Psi_\alpha\}, \text{CM}_3\{\Psi_\alpha\}, \dots) \quad (6.66)$$

Fig. 6.4. Iso-satisfaction surfaces in the space of moments of the investor's objective

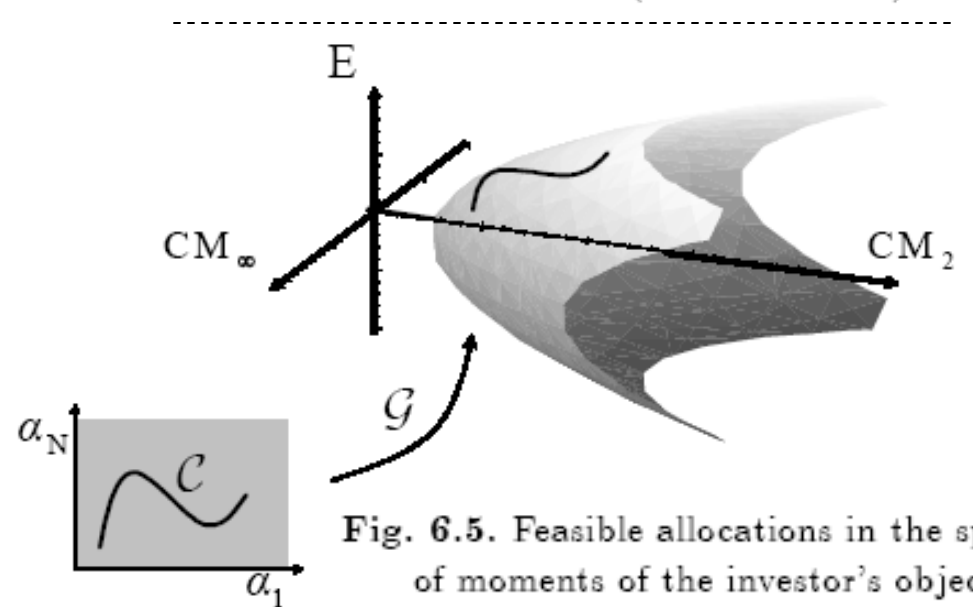
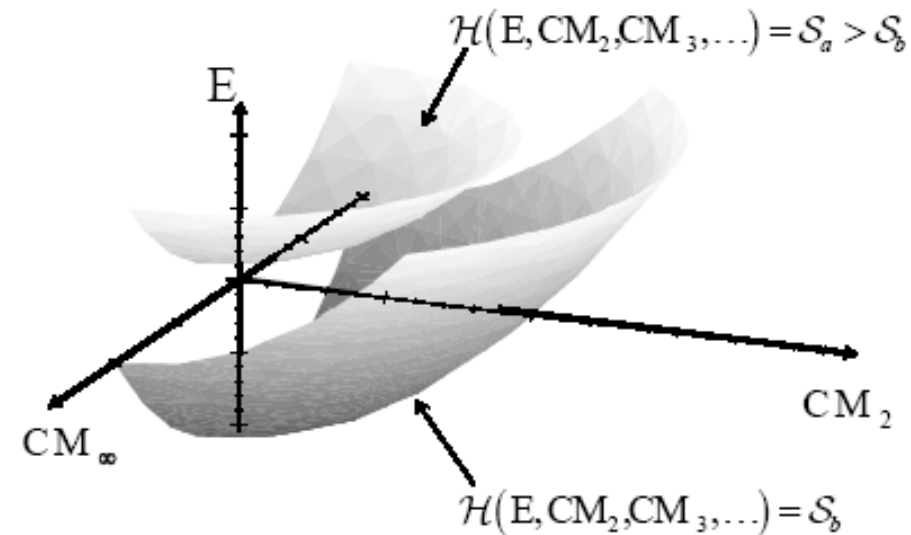


Fig. 6.5. Feasible allocations in the space of moments of the investor's objective

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step 1

$$\alpha(v) \equiv \operatorname{argmax}_{\substack{\alpha \in \mathcal{C} \\ \text{Var}\{\Psi_\alpha\}=v}} \mathbb{E}\{\Psi_\alpha\} \quad (6.68)$$

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step 1

$$\alpha(v) \equiv \operatorname{argmax}_{\substack{\alpha \in \mathcal{C} \\ \alpha' \operatorname{Cov}\{M\} \alpha = v}} \alpha' \mathbb{E}\{M\} \quad (6.74)$$



$$\alpha(v) \equiv \operatorname{argmax}_{\substack{\alpha \in \mathcal{C} \\ \operatorname{Var}\{\Psi_\alpha\} = v}} \mathbb{E}\{\Psi_\alpha\} \quad (6.68)$$

$$\mathbb{E}\{\Psi_\alpha\} = \alpha' \mathbb{E}\{M\} \quad (6.72)$$

$$\operatorname{Var}\{\Psi_\alpha\} = \alpha' \operatorname{Cov}\{M\} \alpha. \quad (6.73)$$

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step 2

$$\alpha^* \equiv \alpha(v^*) \equiv \operatorname{argmax}_{v \geq 0} \mathcal{S}(\alpha(v)) \quad (6.69)$$