



$$\min \sum_{i,k} c_{ik} x_{ik}(p_k) + \sum_{k,j} r_{kj} y_{kj}(p_k) + \sum_{i,j} w_{ij} z_{ij} + \sum_k m_k p_k$$

s.t.

$$\sum_k x_{ik}(p_k) + \sum_j z_{ij} \leq s_i, \text{ for all } i$$

$$\sum_k y_{kj}(p_k) + \sum_i z_{ij} \geq d_j, \text{ for all } j$$

$$\sum_k p_k \leq 1$$

$$\sum_i x_{ik}(p_k) \leq e_k, \text{ for all } k$$

$$\sum_i x_{ik}(p_k) \geq \sum_j y_{kj}(p_k)$$

$$x_{ik}, y_{kj}, z_{ij} \geq 0$$

$$p_k \in (0,1)$$