

Revised model (Feb 12)

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$$\min_{\chi} \sum_m \sum_t c_1^{\text{gen}} \times q_{1,m,t} + \sum_{e'} \sum_m \sum_t c_{e'}^{\text{gen}} \times q_{e',m,t} + \sum_{e'} \sum_t c_{e'}^{\text{main}} \times \bar{q}_{e',t} + \sum_t c_t^{\text{stock}} \times q_t^{\text{stock, stored}}$$

$$\text{s. t. : } q_{e, M1, t}^{\text{del}} + q_{e, M2, t}^{\text{arb}} - q_{e, M1, t} = 0 : \forall e, t \quad (\lambda_{e,t}^1)$$

$$q_{e, M2, t}^{\text{del}} + q_{e, M1, t}^{\text{arb}} - q_{e, M2, t} = 0 : \forall e, t \quad (\lambda_{e,t}^2)$$

$$\left\{ \sum_e q_{e, M1, t}^{\text{del}} \right\} + \left\{ \sum_e q_{e, M2, t}^{\text{arb}} \right\} + q_t^{\text{stock, in/out}} - d_{M1, t} = 0 : \forall t \quad (\lambda_t^3)$$

$$\left\{ \sum_e q_{e, M2, t}^{\text{del}} \right\} + \left\{ \sum_e q_{e, M1, t}^{\text{arb}} \right\} - d_{M2, t} = 0 : \forall t \quad (\lambda_t^4)$$

$$q_{e, M1, t}^{\text{del}} + q_{e, M2, t}^{\text{arb}} - \alpha \times d_{M1, t} \leq 0 : \forall e, t \quad (\mu_{e,t}^1)$$

$$q_t^{\text{stock, stored}} = 0 : \forall t = t_{\text{start}} \quad (\mu^2)$$

$$q_t^{\text{stock, stored}} - q_{t-1}^{\text{stock, stored}} + q_{t-1}^{\text{stock, in/out}} = 0 : \forall t' \quad (\lambda_{t'}^5)$$

$$\sum_m \sum_t q_{e,m,t} - Q_e \leq 0 : \forall e \quad (\mu_e^3)$$

$$\left\{ \sum_m q_{e',m,t} \right\} - \bar{q}_{e',t} \leq 0 : \forall e', t \quad (\mu_{e',t}^4)$$

$$\left\{ \sum_m q_{1,m,t} \right\} - \bar{q}_{1,t} \leq 0 : \forall t \quad (\mu_t^5)$$

$$q_{e',t}^{\text{diff}} - \bar{q}_{e',t} + \sum_m q_{e',m,t} = 0 : \forall e', t \quad (\lambda_{e',t}^6)$$

$$q_{e',t}^{\text{add}} - \beta \times \{ \bar{q}_{e',t} - q_{e',t}^{\text{diff}} \} \leq 0 : \forall e', t \quad (\mu_{e',t}^6)$$

$$\bar{q}_{e',t'} - \bar{q}_{e',t'-1} - q_{e',t'-1}^{\text{add}} + q_{e',t'-1}^{\text{rehire}} = 0 : \forall e', t' \quad (\lambda_{e',t'}^7)$$

$$q_t^{\text{stock, stored}} - q_t^{\text{stock, in/out}} = 0 : \forall t = t_{\text{end}} \quad (\lambda^8)$$

$$\bar{q}_{e',t} - \bar{q}_{e'}^{\text{int}} = 0 : \forall t = t_{\text{start}}, e' \quad (\lambda_{e'}^9)$$

rehire : : : ,

$$q_{e',t} - q_{e'}^{inc} = 0 \quad : \forall t = t_{start,e'} (\lambda_{e'})$$

$$q_{e',t}^{reire} - \beta^{reire} \times \bar{q}_{e'}^{init} \leq 0 \quad : \forall e',t (\mu_{e',t}^{\bar{q}})$$