

Index sets

$$HH = \{1, 2\}$$

$$SEC = \{A, B, C\}$$

1 CONSUMER $h \in HH$

1.1 Optimisation problem

$$\max_{(D^{(s,h)})_{s \in SEC}} U^{(h)} = \left(\sum_{s \in SEC} \alpha^{(s,h)} D^{(s,h)} \omega^{-1(-1+\omega)} \right)^{\omega(-1+\omega)^{-1}} \quad (1.1)$$

s.t. :

$$INC^{(h)} + \Pi^{(h)} = \sum_{s \in SEC} p^{(s)} D^{(s,h)} \quad \left(\lambda^{\text{CONSUMER}^1(h)} \right) \quad (1.2)$$

1.2 Identities

$$INC^{(h)} = L^{(h)} + p^k K^{(h)} \quad (1.3)$$

$$K^{(h)} = k^{\text{data}(h)} \quad (1.4)$$

$$L^{(h)} = l^{\text{data}(h)} \quad (1.5)$$

1.3 First order conditions

$$s \in SEC: \quad \lambda^{\text{CONSUMER}^1(h)} p^{(s)} + \alpha^{(s,h)} D^{(s,h)^{-1+\omega^{-1}(-1+\omega)}} \left(\sum_{s \in SEC} \alpha^{(s,h)} D^{(s,h)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad \left(D^{(s,h)} \right) \quad (1.6)$$

2 FIRM $s \in SEC$

2.1 Optimisation problem

$$\max_{Y^{(s)}, K^{(s)}, L^{(s)}, (X^{(si,s)})_{si \in SEC}} \pi^{(s)} = -L^{(s)} - p^k K^{(s)} + p^{(s)} Y^{(s)} - \sum_{si \in SEC} p^{(si)} X^{(si,s)} \quad (2.1)$$

s.t. :

$$Y^{(s)} = \gamma^{(s)} K^{(s)\beta^k(s)} L^{(s)\beta^l(s)} \left(\prod_{si \in SEC} X^{(si,s)\beta^x(si,s)} \right) \left(\lambda^{\text{FIRM}^1(s)} \right) \quad (2.2)$$

2.2 First order conditions

$$-\lambda^{\text{FIRM}^1(s)} + p^{(s)} = 0 \quad \left(Y^{(s)} \right) \quad (2.3)$$

$$-p^k + \beta^k(s) \gamma^{(s)} \lambda^{\text{FIRM}^1(s)} K^{(s)-1+\beta^k(s)} L^{(s)\beta^l(s)} \left(\prod_{si \in SEC} X^{(si,s)\beta^x(si,s)} \right) = 0 \quad \left(K^{(s)} \right) \quad (2.4)$$

$$-1 + \beta^l(s) \gamma^{(s)} \lambda^{\text{FIRM}^1(s)} K^{(s)\beta^k(s)} L^{(s)-1+\beta^l(s)} \left(\prod_{si \in SEC} X^{(si,s)\beta^x(si,s)} \right) = 0 \quad \left(L^{(s)} \right) \quad (2.5)$$

$$si \in SEC: \quad -p^{(si)} + \beta^x(si,s) \gamma^{(s)} \lambda^{\text{FIRM}^1(s)} X^{(si,s)-1} K^{(s)\beta^k(s)} L^{(s)\beta^l(s)} \left(\prod_{si' \in SEC} X^{(si',s)\beta^x(si',s)} \right) = 0 \quad \left(X^{(si,s)} \right) \quad (2.6)$$

2.3 First order conditions after reduction

$$-p^k + \beta^k(s) \gamma^{(s)} p^{(s)} K^{(s)-1+\beta^k(s)} L^{(s)\beta^l(s)} \left(\prod_{si \in SEC} X^{(si,s)\beta^x(si,s)} \right) = 0 \quad \left(K^{(s)} \right) \quad (2.7)$$

$$-1 + \beta^l(s) \gamma^{(s)} p^{(s)} K^{(s)\beta^k(s)} L^{(s)-1+\beta^l(s)} \left(\prod_{si \in SEC} X^{(si,s)\beta^x(si,s)} \right) = 0 \quad \left(L^{(s)} \right) \quad (2.8)$$

$$si \in SEC: \quad -p^{(si)} + \beta^x(si,s) \gamma^{(s)} p^{(s)} X^{(si,s)-1} K^{(s)\beta^k(s)} L^{(s)\beta^l(s)} \left(\prod_{si' \in SEC} X^{(si',s)\beta^x(si',s)} \right) = 0 \quad \left(\left(X^{(si,s)} \right)_{si \in SEC} \right) \quad (2.9)$$

3 EQUILIBRIUM

3.1 Identities

$$\sum_{h \in HH} K^{(h)} = \sum_{s \in SEC} K^{(s)} \quad (3.1)$$

$$s \in SEC: \quad p^{(s)} = 1 \quad (3.2)$$

$$h \in HH: \quad \Pi^{(h)} = \pi^{h^{(h)}} \left(\sum_{s \in SEC} \pi^{(s)} \right) \quad (3.3)$$

4 Equilibrium relationships (before expansion and reduction)

$$- \sum_{h \in HH} K^{(h)} + \sum_{s \in SEC} K^{(s)} = 0 \quad (4.1)$$

$$h \in HH: \quad ks^{\text{data}^{(h)}} - K^{(h)} = 0 \quad (4.2)$$

$$h \in HH: \quad ls^{\text{data}^{(h)}} - L^{(h)} = 0 \quad (4.3)$$

$$h \in HH: \quad -\Pi^{(h)} + \pi^{h^{(h)}} \left(\sum_{s \in SEC} \pi^{(s)} \right) = 0 \quad (4.4)$$

$$h \in HH: \quad U^{(h)} - \left(\sum_{s \in SEC} \alpha^{(s,h)} D^{(s,h)} \omega^{-1(-1+\omega)} \right)^{\omega(-1+\omega)^{-1}} = 0 \quad (4.5)$$

$$h \in HH: \quad -INC^{(h)} + L^{(h)} + p^k K^{(h)} = 0 \quad (4.6)$$

$$h \in HH: \quad -INC^{(h)} - \Pi^{(h)} + \sum_{s \in SEC} p^{(s)} D^{(s,h)} = 0 \quad (4.7)$$

$$h \in HH: \quad s \in SEC: \quad \lambda^{\text{CONSUMER}^1^{(h)}} p^{(s)} + \alpha^{(s,h)} D^{(s,h)} \omega^{-1(-1+\omega)} \left(\sum_{s \in SEC} \alpha^{(s,h)} D^{(s,h)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (4.8)$$

$$s \in SEC: \quad -1 + \beta^{1^{(s)}} \gamma^{(s)} p^{(s)} K^{(s)} \beta^{k^{(s)}} L^{(s)} \omega^{-1+\beta^{1^{(s)}}} \left(\prod_{si \in SEC} X^{(si,s)} \beta^{x^{(si,s)}} \right) = 0 \quad (4.9)$$

$$s \in SEC: \quad 1 - p^{(s)} = 0 \quad (4.10)$$

$$s \in SEC: \quad -p^k + \beta^{k(s)} \gamma^{(s)} p^{(s)} K^{(s)-1+\beta^{k(s)}} L^{(s)\beta^{1(s)}} \left(\prod_{\dot{s}i \in SEC} X^{(\dot{s}i, s)} \beta^{x(\dot{s}i, s)} \right) = 0 \quad (4.11)$$

$$s \in SEC: \quad -Y^{(s)} + \gamma^{(s)} K^{(s)\beta^{k(s)}} L^{(s)\beta^{1(s)}} \left(\prod_{\dot{s}i \in SEC} X^{(\dot{s}i, s)} \beta^{x(\dot{s}i, s)} \right) = 0 \quad (4.12)$$

$$s \in SEC: \quad \pi^{(s)} + L^{(s)} + p^k K^{(s)} - p^{(s)} Y^{(s)} + \sum_{\dot{s}i \in SEC} p^{(\dot{s}i)} X^{(\dot{s}i, s)} = 0 \quad (4.13)$$

$$s \in SEC: \quad \dot{s}i \in SEC: \quad -p^{(\dot{s}i)} + \beta^{x(\dot{s}i, s)} \gamma^{(s)} p^{(s)} X^{(\dot{s}i, s)-1} K^{(s)\beta^{k(s)}} L^{(s)\beta^{1(s)}} \left(\prod_{\dot{s}i' \in SEC} X^{(\dot{s}i', s)} \beta^{x(\dot{s}i', s)} \right) = 0 \quad (4.14)$$

5 Equilibrium relationships (after expansion and reduction)

$$-1 + \beta^{1(A)} \gamma^{(A)} p^{(A)} K^{(A)\beta^{k(A)}} L^{(A)-1+\beta^{1(A)}} X^{(A,A)\beta^{x(A,A)}} X^{(B,A)\beta^{x(B,A)}} X^{(C,A)\beta^{x(C,A)}} = 0 \quad (5.1)$$

$$-1 + \beta^{1(B)} \gamma^{(B)} p^{(B)} K^{(B)\beta^{k(B)}} L^{(B)-1+\beta^{1(B)}} X^{(A,B)\beta^{x(A,B)}} X^{(B,B)\beta^{x(B,B)}} X^{(C,B)\beta^{x(C,B)}} = 0 \quad (5.2)$$

$$-1 + \beta^{1(C)} \gamma^{(C)} p^{(C)} K^{(C)\beta^{k(C)}} L^{(C)-1+\beta^{1(C)}} X^{(A,C)\beta^{x(A,C)}} X^{(B,C)\beta^{x(B,C)}} X^{(C,C)\beta^{x(C,C)}} = 0 \quad (5.3)$$

$$1 - p^{(A)} = 0 \quad (5.4)$$

$$1 - p^{(B)} = 0 \quad (5.5)$$

$$1 - p^{(C)} = 0 \quad (5.6)$$

$$k_S^{\text{data}(1)} - K^{(1)} = 0 \quad (5.7)$$

$$k_S^{\text{data}(2)} - K^{(2)} = 0 \quad (5.8)$$

$$l_S^{\text{data}(1)} - L^{(1)} = 0 \quad (5.9)$$

$$l_s^{\text{data}^{(2)}} - L^{(2)} = 0 \quad (5.10)$$

$$-p^k + \beta^{k(A)} \gamma^{(A)} p^{(A)} K^{(A)-1+\beta^{k(A)}} L^{(A)\beta^{1(A)}} X^{(A,A)\beta^{x(A,A)}} X^{(B,A)\beta^{x(B,A)}} X^{(C,A)\beta^{x(C,A)}} = 0 \quad (5.11)$$

$$-p^k + \beta^{k(B)} \gamma^{(B)} p^{(B)} K^{(B)-1+\beta^{k(B)}} L^{(B)\beta^{1(B)}} X^{(A,B)\beta^{x(A,B)}} X^{(B,B)\beta^{x(B,B)}} X^{(C,B)\beta^{x(C,B)}} = 0 \quad (5.12)$$

$$-p^k + \beta^{k(C)} \gamma^{(C)} p^{(C)} K^{(C)-1+\beta^{k(C)}} L^{(C)\beta^{1(C)}} X^{(A,C)\beta^{x(A,C)}} X^{(B,C)\beta^{x(B,C)}} X^{(C,C)\beta^{x(C,C)}} = 0 \quad (5.13)$$

$$-p^{(A)} + \beta^{x(A,A)} \gamma^{(A)} p^{(A)} X^{(A,A)-1} K^{(A)\beta^{k(A)}} L^{(A)\beta^{1(A)}} X^{(A,A)\beta^{x(A,A)}} X^{(B,A)\beta^{x(B,A)}} X^{(C,A)\beta^{x(C,A)}} = 0 \quad (5.14)$$

$$-p^{(A)} + \beta^{x(A,B)} \gamma^{(B)} p^{(B)} X^{(A,B)-1} K^{(B)\beta^{k(B)}} L^{(B)\beta^{1(B)}} X^{(A,B)\beta^{x(A,B)}} X^{(B,B)\beta^{x(B,B)}} X^{(C,B)\beta^{x(C,B)}} = 0 \quad (5.15)$$

$$-p^{(A)} + \beta^{x(A,C)} \gamma^{(C)} p^{(C)} X^{(A,C)-1} K^{(C)\beta^{k(C)}} L^{(C)\beta^{1(C)}} X^{(A,C)\beta^{x(A,C)}} X^{(B,C)\beta^{x(B,C)}} X^{(C,C)\beta^{x(C,C)}} = 0 \quad (5.16)$$

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$$-p^{(B)} + \beta^{x(B,A)} \gamma^{(A)} p^{(A)} X^{(B,A)-1} K^{(A)\beta^{k(A)}} L^{(A)\beta^{1(A)}} X^{(A,A)\beta^{x(A,A)}} X^{(B,A)\beta^{x(B,A)}} X^{(C,A)\beta^{x(C,A)}} = 0 \quad (5.17)$$

$$-p^{(B)} + \beta^{x(B,B)} \gamma^{(B)} p^{(B)} X^{(B,B)-1} K^{(B)\beta^{k(B)}} L^{(B)\beta^{1(B)}} X^{(A,B)\beta^{x(A,B)}} X^{(B,B)\beta^{x(B,B)}} X^{(C,B)\beta^{x(C,B)}} = 0 \quad (5.18)$$

$$-p^{(B)} + \beta^{x(B,C)} \gamma^{(C)} p^{(C)} X^{(B,C)-1} K^{(C)\beta^{k(C)}} L^{(C)\beta^{1(C)}} X^{(A,C)\beta^{x(A,C)}} X^{(B,C)\beta^{x(B,C)}} X^{(C,C)\beta^{x(C,C)}} = 0 \quad (5.19)$$

$$-p^{(C)} + \beta^{x(C,A)} \gamma^{(A)} p^{(A)} X^{(C,A)-1} K^{(A)\beta^{k(A)}} L^{(A)\beta^{1(A)}} X^{(A,A)\beta^{x(A,A)}} X^{(B,A)\beta^{x(B,A)}} X^{(C,A)\beta^{x(C,A)}} = 0 \quad (5.20)$$

$$-p^{(C)} + \beta^{x(C,B)} \gamma^{(B)} p^{(B)} X^{(C,B)-1} K^{(B)\beta^{k(B)}} L^{(B)\beta^{1(B)}} X^{(A,B)\beta^{x(A,B)}} X^{(B,B)\beta^{x(B,B)}} X^{(C,B)\beta^{x(C,B)}} = 0 \quad (5.21)$$

$$-p^{(C)} + \beta^{x(C,C)} \gamma^{(C)} p^{(C)} X^{(C,C)-1} K^{(C)\beta^{k(C)}} L^{(C)\beta^{1(C)}} X^{(A,C)\beta^{x(A,C)}} X^{(B,C)\beta^{x(B,C)}} X^{(C,C)\beta^{x(C,C)}} = 0 \quad (5.22)$$

$$-\Pi^{(1)} + \pi^h{}^{(1)} \left(\pi^{(A)} + \pi^{(B)} + \pi^{(C)} \right) = 0 \quad (5.23)$$

$$-\Pi^{(2)} + \pi^h{}^{(2)} \left(\pi^{(A)} + \pi^{(B)} + \pi^{(C)} \right) = 0 \quad (5.24)$$

$$U^{(1)} - \left(\alpha^{(A,1)} D^{(A,1)} \omega^{-1(-1+\omega)} + \alpha^{(B,1)} D^{(B,1)} \omega^{-1(-1+\omega)} + \alpha^{(C,1)} D^{(C,1)} \omega^{-1(-1+\omega)} \right)^{\omega(-1+\omega)^{-1}} = 0 \quad (5.25)$$

$$U^{(2)} - \left(\alpha^{(A,2)} D^{(A,2)} \omega^{-1(-1+\omega)} + \alpha^{(B,2)} D^{(B,2)} \omega^{-1(-1+\omega)} + \alpha^{(C,2)} D^{(C,2)} \omega^{-1(-1+\omega)} \right)^{\omega(-1+\omega)^{-1}} = 0 \quad (5.26)$$

$$-Y^{(A)} + \gamma^{(A)} K^{(A)} \beta^{k(A)} L^{(A)} \beta^{l(A)} X^{(A,A)} \beta^{x(A,A)} X^{(B,A)} \beta^{x(B,A)} X^{(C,A)} \beta^{x(C,A)} = 0 \quad (5.27)$$

$$-Y^{(B)} + \gamma^{(B)} K^{(B)} \beta^{k(B)} L^{(B)} \beta^{l(B)} X^{(A,B)} \beta^{x(A,B)} X^{(B,B)} \beta^{x(B,B)} X^{(C,B)} \beta^{x(C,B)} = 0 \quad (5.28)$$

$$-Y^{(C)} + \gamma^{(C)} K^{(C)} \beta^{k(C)} L^{(C)} \beta^{l(C)} X^{(A,C)} \beta^{x(A,C)} X^{(B,C)} \beta^{x(B,C)} X^{(C,C)} \beta^{x(C,C)} = 0 \quad (5.29)$$

$$\lambda^{\text{CONSUMER}^1(1)} p^{(A)} + \alpha^{(A,1)} D^{(A,1)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,1)} D^{(A,1)} \omega^{-1(-1+\omega)} + \alpha^{(B,1)} D^{(B,1)} \omega^{-1(-1+\omega)} + \alpha^{(C,1)} D^{(C,1)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.30)$$

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$$\lambda^{\text{CONSUMER}^1(1)} p^{(B)} + \alpha^{(B,1)} D^{(B,1)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,1)} D^{(A,1)} \omega^{-1(-1+\omega)} + \alpha^{(B,1)} D^{(B,1)} \omega^{-1(-1+\omega)} + \alpha^{(C,1)} D^{(C,1)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.31)$$

$$\lambda^{\text{CONSUMER}^1(1)} p^{(C)} + \alpha^{(C,1)} D^{(C,1)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,1)} D^{(A,1)} \omega^{-1(-1+\omega)} + \alpha^{(B,1)} D^{(B,1)} \omega^{-1(-1+\omega)} + \alpha^{(C,1)} D^{(C,1)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.32)$$

$$\lambda^{\text{CONSUMER}^1(2)} p^{(A)} + \alpha^{(A,2)} D^{(A,2)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,2)} D^{(A,2)} \omega^{-1(-1+\omega)} + \alpha^{(B,2)} D^{(B,2)} \omega^{-1(-1+\omega)} + \alpha^{(C,2)} D^{(C,2)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.33)$$

$$\lambda^{\text{CONSUMER}^1(2)} p^{(B)} + \alpha^{(B,2)} D^{(B,2)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,2)} D^{(A,2)} \omega^{-1(-1+\omega)} + \alpha^{(B,2)} D^{(B,2)} \omega^{-1(-1+\omega)} + \alpha^{(C,2)} D^{(C,2)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.34)$$

$$\lambda^{\text{CONSUMER}^1(2)} p^{(C)} + \alpha^{(C,2)} D^{(C,2)} \omega^{-1(-1+\omega)} \left(\alpha^{(A,2)} D^{(A,2)} \omega^{-1(-1+\omega)} + \alpha^{(B,2)} D^{(B,2)} \omega^{-1(-1+\omega)} + \alpha^{(C,2)} D^{(C,2)} \omega^{-1(-1+\omega)} \right)^{-1+\omega(-1+\omega)^{-1}} = 0 \quad (5.35)$$

$$-INC^{(1)} + L^{(1)} + p^k K^{(1)} = 0 \quad (5.36)$$

$$-INC^{(2)} + L^{(2)} + p^k K^{(2)} = 0 \quad (5.37)$$

$$-INC^{(1)} - \Pi^{(1)} + p^{(A)} D^{(A,1)} + p^{(B)} D^{(B,1)} + p^{(C)} D^{(C,1)} = 0 \quad (5.38)$$

$$-INC^{(2)} - \Pi^{(2)} + p^{(A)} D^{(A,2)} + p^{(B)} D^{(B,2)} + p^{(C)} D^{(C,2)} = 0 \quad (5.39)$$

$$-K^{(1)} - K^{(2)} + K^{(A)} + K^{(B)} + K^{(C)} = 0 \quad (5.40)$$

$$\pi^{(A)} + L^{(A)} + p^k K^{(A)} + p^{(A)} X^{(A,A)} - p^{(A)} Y^{(A)} + p^{(B)} X^{(B,A)} + p^{(C)} X^{(C,A)} = 0 \quad (5.41)$$

$$\pi^{(B)} + L^{(B)} + p^k K^{(B)} + p^{(A)} X^{(A,B)} + p^{(B)} X^{(B,B)} - p^{(B)} Y^{(B)} + p^{(C)} X^{(C,B)} = 0 \quad (5.42)$$

$$\pi^{(C)} + L^{(C)} + p^k K^{(C)} + p^{(A)} X^{(A,C)} + p^{(B)} X^{(B,C)} + p^{(C)} X^{(C,C)} - p^{(C)} Y^{(C)} = 0 \quad (5.43)$$

6 Calibrating equations

$$-d^{\text{data}(B,1)} + D^{(B,1)} = 0 \quad (6.1)$$

$$-d^{\text{data}(B,2)} + D^{(B,2)} = 0 \quad (6.2)$$

$$-d^{\text{data}(C,1)} + D^{(C,1)} = 0 \quad (6.3)$$

$$-d^{\text{data}(C,2)} + D^{(C,2)} = 0 \quad (6.4)$$

$$-l^{\text{data}(A)} + L^{(A)} = 0 \quad (6.5)$$

$$-l^{\text{data}(B)} + L^{(B)} = 0 \quad (6.6)$$

$$-l^{\text{data}(C)} + L^{(C)} = 0 \quad (6.7)$$

$$-x^{\text{data}(A,A)} + X^{(A,A)} = 0 \quad (6.8)$$

$$-x^{\text{data}(A,B)} + X^{(A,B)} = 0 \quad (6.9)$$

$$-x^{\text{data}(A,C)} + X^{(A,C)} = 0 \quad (6.10)$$

$$-x^{\text{data}\langle B,A \rangle} + X^{\langle B,A \rangle} = 0 \quad (6.11)$$

$$-x^{\text{data}\langle B,B \rangle} + X^{\langle B,B \rangle} = 0 \quad (6.12)$$

$$-x^{\text{data}\langle B,C \rangle} + X^{\langle B,C \rangle} = 0 \quad (6.13)$$

$$-x^{\text{data}\langle C,A \rangle} + X^{\langle C,A \rangle} = 0 \quad (6.14)$$

$$-x^{\text{data}\langle C,B \rangle} + X^{\langle C,B \rangle} = 0 \quad (6.15)$$

$$-x^{\text{data}\langle C,C \rangle} + X^{\langle C,C \rangle} = 0 \quad (6.16)$$

$$-y^{\text{data}\langle A \rangle} + Y^{\langle A \rangle} = 0 \quad (6.17)$$

$$-y^{\text{data}\langle B \rangle} + Y^{\langle B \rangle} = 0 \quad (6.18)$$

$$-y^{\text{data}\langle C \rangle} + Y^{\langle C \rangle} = 0 \quad (6.19)$$

$$-1 + \pi^{\text{h}\langle 1 \rangle} + \pi^{\text{h}\langle 2 \rangle} = 0 \quad (6.20)$$

$$-1 + \alpha^{\langle A,1 \rangle \omega} + \alpha^{\langle B,1 \rangle \omega} + \alpha^{\langle C,1 \rangle \omega} = 0 \quad (6.21)$$

$$-1 + \alpha^{\langle A,2 \rangle \omega} + \alpha^{\langle B,2 \rangle \omega} + \alpha^{\langle C,2 \rangle \omega} = 0 \quad (6.22)$$

$$-1 + \beta^{\text{k}\langle A \rangle} + \beta^{\text{l}\langle A \rangle} + \beta^{\text{x}\langle A,A \rangle} + \beta^{\text{x}\langle B,A \rangle} + \beta^{\text{x}\langle C,A \rangle} = 0 \quad (6.23)$$

$$-1 + \beta^{\text{k}\langle B \rangle} + \beta^{\text{l}\langle B \rangle} + \beta^{\text{x}\langle A,B \rangle} + \beta^{\text{x}\langle B,B \rangle} + \beta^{\text{x}\langle C,B \rangle} = 0 \quad (6.24)$$

$$-1 + \beta^{\text{k}\langle C \rangle} + \beta^{\text{l}\langle C \rangle} + \beta^{\text{x}\langle A,C \rangle} + \beta^{\text{x}\langle B,C \rangle} + \beta^{\text{x}\langle C,C \rangle} = 0 \quad (6.25)$$

7 Equilibrium values

	Equilibrium value
p^k	1
$\lambda^{\text{CONSUMER}^{1(1)}}$	-1
$\lambda^{\text{CONSUMER}^{1(2)}}$	-1
$p^{(A)}$	1
$p^{(B)}$	1
$p^{(C)}$	1
$\pi^{(A)}$	0
$\pi^{(B)}$	0
$\pi^{(C)}$	0
$D^{(A,1)}$	52.94
$D^{(A,2)}$	64.45
$D^{(B,1)}$	11.7
$D^{(B,2)}$	30.79
$D^{(C,1)}$	18.6
$D^{(C,2)}$	43.6
$INC^{(1)}$	83.24
$INC^{(2)}$	138.84
$K^{(1)}$	65.07
$K^{(2)}$	68.77
$K^{(A)}$	38.1
$K^{(B)}$	35.01
$K^{(C)}$	60.73
$L^{(1)}$	18.17
$L^{(2)}$	70.07
$L^{(A)}$	9.44
$L^{(B)}$	31.6
$L^{(C)}$	47.2
$\Pi^{(1)}$	0
$\Pi^{(2)}$	0
$U^{(1)}$	83.24
$U^{(2)}$	138.84
$X^{(A,A)}$	68.4
$X^{(A,B)}$	131.01
$X^{(A,C)}$	28.28
$X^{(B,A)}$	111.91
$X^{(B,B)}$	92.3
$X^{(B,C)}$	86.92
$X^{(C,A)}$	117.23
$X^{(C,B)}$	43.7
$X^{(C,C)}$	111.65
$Y^{(A)}$	345.08
$Y^{(B)}$	333.62
$Y^{(C)}$	334.78

8 Model parameters

	Value
$\alpha^{(A,1)}$	0.7975
$\alpha^{(A,2)}$	0.6813
$\alpha^{(B,1)}$	0.3749
$\alpha^{(B,2)}$	0.4709
$\alpha^{(C,1)}$	0.4727
$\alpha^{(C,2)}$	0.5604
$\beta^k{}^{(A)}$	0.1104
$\beta^k{}^{(B)}$	0.1049
$\beta^k{}^{(C)}$	0.1814
$\beta^l{}^{(A)}$	0.0274
$\beta^l{}^{(B)}$	0.0947
$\beta^l{}^{(C)}$	0.141
$\beta^x{}^{(A,A)}$	0.1982
$\beta^x{}^{(A,B)}$	0.3927
$\beta^x{}^{(A,C)}$	0.0845
$\beta^x{}^{(B,A)}$	0.3243
$\beta^x{}^{(B,B)}$	0.2767
$\beta^x{}^{(B,C)}$	0.2596
$\beta^x{}^{(C,A)}$	0.3397
$\beta^x{}^{(C,B)}$	0.131
$\beta^x{}^{(C,C)}$	0.3335
$\gamma^{(A)}$	4.0329
$\gamma^{(B)}$	4.2572
$\gamma^{(C)}$	4.5311
$\pi^h{}^{(1)}$	0.5