

## 1 AGENT A

### 1.1 Optimisation problem

$$\max_{C^{A1}, C^{A2}} U^A = \log C^{A1} + \psi^A \log C^{A2} \quad (1.1)$$

s.t. :

$$p^1 C^{A1} + p^2 C^{A2} = e^{A1} p^1 + e^{A2} p^2 \quad (\lambda^{\text{AGENT}^{A1}}) \quad (1.2)$$

### 1.2 Identities

$$e^{A1} = e^{A1^{\text{calibr}}} \quad (1.3)$$

$$e^{A2} = e^{A2^{\text{calibr}}} \quad (1.4)$$

### 1.3 First order conditions

$$C^{A1-1} - \lambda^{\text{AGENT}^{A1}} p^1 = 0 \quad (C^{A1}) \quad (1.5)$$

$$\psi^A C^{A2-1} - \lambda^{\text{AGENT}^{A1}} p^2 = 0 \quad (C^{A2}) \quad (1.6)$$

## 2 AGENT B

### 2.1 Optimisation problem

$$\max_{C^{B1}, C^{B2}} U^B = \log C^{B1} + \psi^B \log C^{B2} \quad (2.1)$$

s.t. :

$$p^1 C^{B1} + p^2 C^{B2} = e^{B1} p^1 + e^{B2} p^2 \quad (\lambda^{\text{AGENT}^{B1}}) \quad (2.2)$$

### 2.2 Identities

$$e^{B1} = e^{B1^{\text{calibr}}} \quad (2.3)$$

$$e^{B2} = e^{B2^{\text{calibr}}} \quad (2.4)$$

### 2.3 First order conditions

$$C^{B1-1} - \lambda^{\text{AGENT}^{B1}} p^1 = 0 \quad (C^{B1}) \quad (2.5)$$

$$\psi^B C^{B2-1} - \lambda^{\text{AGENT}^{B1}} p^2 = 0 \quad (C^{B2}) \quad (2.6)$$

## 3 EQUILIBRIUM

### 3.1 Identities

$$p^1 = 1 \quad (3.1)$$

$$C^{A1} + C^{B1} = e^{B1} + e^{A1} \quad (3.2)$$

## 4 Equilibrium relationships (after reduction)

$$\psi^A C^{A2-1} - p^2 \left( e^{A1^{\text{calibr}}} + e^{B1^{\text{calibr}}} - C^{B1} \right)^{-1} = 0 \quad (4.1)$$

$$\psi^B C^{B2-1} - p^2 C^{B1-1} = 0 \quad (4.2)$$

$$U^A - \log \left( e^{A1^{\text{calibr}}} + e^{B1^{\text{calibr}}} - C^{B1} \right) - \psi^A \log C^{A2} = 0 \quad (4.3)$$

$$U^B - \log C^{B1} - \psi^B \log C^{B2} = 0 \quad (4.4)$$

$$-e^{B1^{\text{calibr}}} + C^{B1} + e^{A2^{\text{calibr}}} p^2 - p^2 C^{A2} = 0 \quad (4.5)$$

$$e^{B1^{\text{calibr}}} - C^{B1} + e^{B2^{\text{calibr}}} p^2 - p^2 C^{B2} = 0 \quad (4.6)$$

## 5 Parameter settings

$$\psi^A = 1.72 \quad (5.1)$$

$$\psi^B = 2.22 \quad (5.2)$$

## 6 Equilibrium values

|          | Equilibrium value |
|----------|-------------------|
| $p^2$    | 2.0362            |
| $C^{A2}$ | 0.6211            |
| $C^{B1}$ | 1.2647            |
| $C^{B2}$ | 1.3789            |
| $U^A$    | -1.1266           |
| $U^B$    | 0.9481            |