**Appendix A. Complete DSGE Model Equations**

This appendix collects, in compact notation, all equilibrium conditions of the two-sector New-Keynesian DSGE model described in Sections 3.2–3.7. Time subscripts are omitted when not ambiguous; all real variables are expressed in per-capita terms; nominal rigidities are abstracted away.

**A.1 Households**

Representative household maximises

(A1)

subject to the budget constraint and capital accumulation:

(A2)

(A3)

First-order conditions give

* **Euler equation**

(A4)

* **Labour–leisure condition**

(A5)

**A.2 Firms**

Two competitive sectors share a common TFP level . Cobb–Douglas technologies:

(A6)

With flexible factors, marginal-value conditions are identical across sectors:

(A7)

**A.3 Carbon-intensity constraint**

Total emissions (normalised emission factor = 1):

(A8)

Economy-wide carbon intensity

(A9)

must satisfy the policy rule

(A10)

Operationally, firms perceive an output-loss wedge:

(A11)

where denotes hypothetical output without policy, and ***τ***>0 controls abatement cost curvature.

**A.4 Resource constraints and market clearing**

* **Goods**

(A12)

where captures net external demand (can be set to 0 in a closed-economy version).

* **Factors**

(A13)

* **Capital accumulation**

(A14)

**A.5 Exogenous processes**

* **Total-factor productivity**

(A15)

* **External demand**

(A16)

**A.6 Equilibrium definition**

A competitive equilibrium is a sequence

**A.7 Calibration baseline (for reference)**

Steady-state ratios replicate Chinese macro data for 2024 (see Table 3).

*This appendix provides the complete set of structural equations that underlie the simulations in Sections 4–5. Dynare/Matlab implementation is supplied in Supplementary Materials (SM\_A).*