EATON – KORTUM

TEXTBOOK MODEL

STATIC MODEL

2 GOODS → CONSUMPTION (C)
→ CAPITAL (k)

2 INPUTS → k
→ L

2 COUNTRIES → N
→ S

ICEBERG COSTS: $d^C > 1$
$d^K > 1$

UNITS THAT NEED TO BE SHIPPED FOR 1 UNIT TO ARRIVE

TECHNOLOGY: $i = N, S$

(1) $$Q^K_i = A_i \; F(K_i^K, L_i^K)$$

(2) $$Q^C_i = F(K_i^C, L_i^C)$$

F HAS CRS, ASSUME $A_N > A_S$
(i.e NORTH HAS A CA IN THE PROD. OF K-GOODS)

F: SAME ACROSS COUNTRIES & SECTORS

EQUILIBRIUM/FEASIBILITY $i = N, S$

$$L_i = L_i^K + L_i^C$$

$$K_i = K_i^K + K_i^C$$

P. COMPETITION –

ASSUME PARAMETERS ARE SUCH THAT:

N : PRODUCES BOTH C AND K

S : SPECIALIZES IN C

PRICES

NUMERAIRE : ASSUME $P_S^C = 1$

SINCE C IS IMPORTED FROM THE SOUTH

$\Longrightarrow$

(3) $$\boxed{P_N^C = d^C}$$

SINCE F( ) HAS CRS $\Longrightarrow$

$$\frac{\partial F}{\partial L} = F_L \text{ IS A FUNCTION OF } \underline{\text{ONLY}}\ K/L$$

(SAME IS TRUE FOR $\frac{\partial F}{\partial K}$)

PROFIT MAX $\Longrightarrow$

(4)
$$\begin{cases} \underset{\|}{MPL_N^C}(\ )\, p_N^C = MPL_N^K(\ )\, p_N^K \\ F_L(K_N^C/L_N^C)\, p_N^C = A_N F_L(K_N^K/L_N^K)\, p_N^K \end{cases}$$

SINCE BOTH SECTORS FACE THE SAME INPUT PRICES : $\frac{K_N^C}{L_N^C} = \frac{K_N^K}{L_N^K}$

$$\Longrightarrow F_L\left(\frac{K_N^C}{L_N^C}\right) = F_L\left(\frac{K_N^K}{L_N^K}\right)$$

SO (4) $\Longrightarrow$

$$(5)\quad \boxed{\frac{p^K_N}{p^C_N} = \frac{1}{A_N}} \Rightarrow (6)\quad p^K_N = \underbrace{\frac{p^C_N}{A_N}}_{\text{USING (3)}} = \boxed{\frac{d^C}{A_N}}$$

SOUTH IMPORTS K-GOODS ⇒

$$(7)\quad \boxed{p^K_S} = d^K p^K_N \underset{\text{USING (6)}}{=} \boxed{\frac{d^K d^C}{A_N}}$$

GDP

SOUTH:

$$(8)\quad Y_S = F(K_S, L_S) = L_S \cdot f(k_S)$$

WHERE $k_S = K_S / L_S$

NORTH

$$Y_N = p^K_N Q^K_N + p^C_N Q^C_N =$$

$$= p^K_N \underbrace{A_N F(K^K_N, L^K_N)}_{\text{DIV. \& MULT. BY } L^K_N} + p^C_N \underbrace{F(K^C_N, L^C_N)}_{\text{DIV. \& MULT. BY } L^C_N}$$

$$= p^K_N A_N L^K_N f\left(\frac{K^K_N}{L^K_N}\right) + p^C_N L^C_N f\left(\frac{K^C_N}{L^C_N}\right)$$

SAME AND EQUAL TO $f\left(\frac{K_N}{L_N}\right)$

since (5) & (6) $\Rightarrow \boxed{p^C_N} = A_N p^K_N = \boxed{d^C}$

WE HAVE:

(9)
$$\boxed{Y_N} = p^K_N A_N f(\overbrace{K_N/L_N}^{k_N}) \, \overbrace{[L^K_N + L^C_N]}^{= L_N}$$
$$= \boxed{p^K_N A_N \; L_N \; f(k_N)}$$
$$= \boxed{d^C L_N f(k_N)}$$

GDP p.c. (OR P. WORKER) IN REAL TERMS

$$\boxed{y_N} = \frac{Y_N}{L_N \cdot p^C_N} = \overbrace{\frac{d^C}{p^C_N}}^{=1} \frac{L_N}{L_N} f(k_N) = \boxed{f(k_N)}$$

(10)
$$\boxed{y_S} = \frac{Y_S}{L_S \underbrace{p^C_S}_{=1}} \underset{\text{USING (8)}}{=} \frac{L_S}{L_S} f(k_S) = \boxed{f(k_S)}$$