Specific Factors Models:

Argument to show that an increase in the endowment of the specific factor decreases the real return (per unit) of both specific factors.

Assumptions:

1. 3 factors: labor (L, mobile), land (T, specific to food sector), capital (K, specific to manufacturing sector).
2. 2 goods: manufactures (M) and food (F).
3. Production Functions:
   \[ q_M = f_M(L_M, K) \]
   \[ q_F = f_F(L_F, T) \]
   Both production functions exhibit constant returns to scale (they are homogeneous of degree one) and are assumed to be increasing functions of both inputs.
4. Perfect competition.

Implications from our assumptions:

5. Our assumption (3) implies that the marginal products are functions of the input ratios used. Specifically,
   Food sector:
   \[ MPL_F \text{ is a decreasing function of } L_F / T \text{ or an increasing function of } T / L_F . \]
   \[ MPT \text{ is a decreasing function of } T / L_F \text{ or an increasing function of } L_F / T. \]
   Manufacturing sector:
   \[ MPL_M \text{ is a decreasing function of } L_M / K \text{ or an increasing function of } K / L_M . \]
   \[ MPK \text{ is a decreasing function of } K / L_M \text{ or an increasing function of } L_M / K. \]
6. Our assumption (4) implies that factors are paid the value of their marginal product:
   Food sector:
   \[ w = MPL_F \cdot p_F \text{ or } w/p_F = MPL_F \]
   \[ R_T = MPT \cdot p_F \text{ or } R_T / p_F = MPT \]
   Manufacturing sector:
   \[ w = MPL_M \cdot p_M \text{ or } w/p_M = MPL_M \]
   \[ R_K = MPK \cdot p_M \text{ or } R_K / p_M = MPK \]

Effects on specific factors rewards of an increase in the endowment of Land:

An increase in T, shifts out the entire curve MPL_F because all the new land has to be employed in the food sector. The food sector’s demand for labor is now higher at every wage rate, labor shifts from the manufacturing sector towards the food sector and at the new equilibrium, the wage rate is higher.

Since commodity prices are fixed, w/p_F and w/p_M are higher and from (7) and (9) we get that the marginal product of labor is higher in both sectors. From implication (5) we conclude that both T/L_F and K/L_M are higher.

Using (5) again this implies that both MPT and MPK are lower. From (8) and (10) we get that R_T / p_F and R_K / p_M are lower.