

Topic # 8: Biased technological change and organizational change.

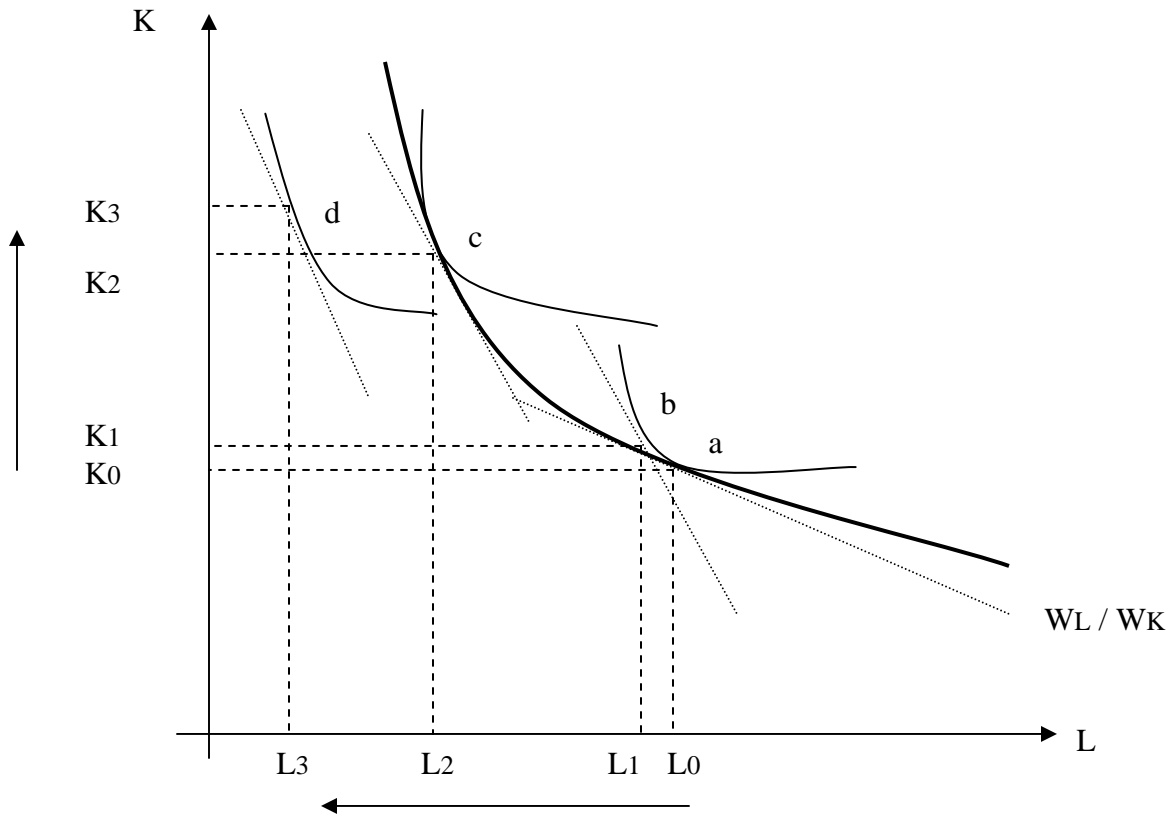
(*) Allen (2009), “Why was the Industrial Revolution British?”, in The British Industrial Revolution in Global Perspective, Pg. 135-55.

(* -DL) Allen (2009), “The Industrial Revolution in Miniature”, Journal of Economic History, Pg. 901-27.

(* -DL) Clark (1994), “Factory Discipline”, Journal of Economic History, Pg. 128-63.

- Question: Why did the first industrial revolution happen in Britain?
- Theory: Modeling induced innovation and technological diffusion.
- Evidence: Input saving biases.

- Biased technological change and induced innovation.
- Production and cost functions and the identification of biases.
- Britain's high wage and cheap fuel economy.
- Foreign inventions – biased innovations and adoption – neutral adaptations (micro-inventions).
- Modeling technological diffusion.
- Factories as a uniquely British GPT.



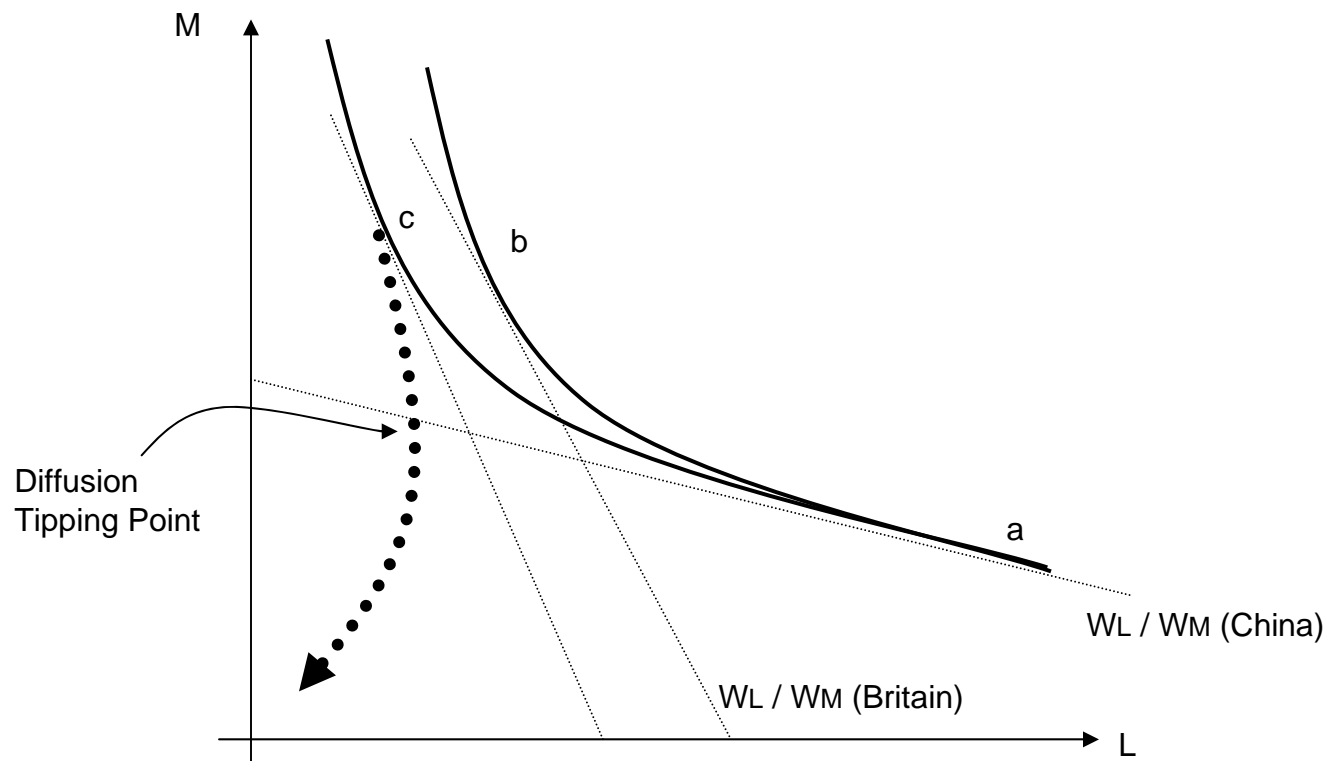
Changing Technique, Induced Adoption and Induced Innovation

- Flexible cost and production functions allow input elasticities to vary over time (as technology changes).
 - o Allows output dependent scale elasticity estimates, and input substitution elasticities that change with technological biases.

$$\ln Q_{it} = \theta + \sum_X \lambda_X \ln X_{it} + \lambda_t Yrs + \sum_X \sum_Y \beta_{XY} \ln X_{it} \ln Y_{it} \\ + \sum_X \beta_{Xt} Yrs \ln X_{it} + \beta_{tt} Yrs^2 + \sum_j \kappa_j Z_j + \varepsilon_{it}$$

Biased Technological Change

Neutral Technological Change



Biased Technological Change and Technological Diffusion