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A Note on Testing the Induced Innovation Hypothesis under Dynamic Adjustment

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Abstract:

This note proposes an empirical test of the induced innovation hypothesis under a dynamic adjustment framework. The dynamic dual approach is employed to derive the system of behavioral equations and dynamic analogue to Hayami and Ruttan's definition of factor-using bias. Empirical implementation of the proposed methodology is demonstrated by examining the plausibility of the induced innovation hypothesis against the development experience of Taiwan's agricultural production. Based on the econometrically estimated parameters, the induced factor-using bias for each input are calculated and graphed against its relative prices. The results suggest that technical change was biased in the labor-saving and material-using direction during the period 1952 to 1987, in response to the continuous increase in the labor wage rate and the decline in material prices relative to other input prices. However, technical change in Taiwan's agricultural production was almost neutral with respect to the use of capital for the entire period, which was a period revealing relative stability in capital prices. The results render support to the induced innovation hypothesis, indicating that technical change was directed towards using (saving) the factors that became relatively less (more) expensive.

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