

Factor-Eliminating Technical Change, Human Capital Formation, and Development Traps

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Abstract: How does factor-eliminating technical change affect long-run development through its interaction with human capital formation? Although such a technical change is often expected to promote growth, we show that it can, in fact, halt capital accumulation. As the economy adopts technologies that displace unskilled labor, the skill premium initially rises, encouraging education. However, education responses are incomplete: partial skill upgrading expands the supply of skilled labor and caps further increases in skilled wages. As a result, capital accumulation may stall, trapping the economy in a low-capital steady state even when advanced technologies are available. We develop a general equilibrium model in which firms choose between production technologies and workers decide whether to acquire education. If all workers become skilled, capital accumulation resumes, and the economy converges to a high-capital equilibrium. The model identifies a mechanism through which endogenous technology switching and education decisions jointly shape wage dynamics and long-run development.

Keywords: Factor-eliminating technical change; human capital formation; education costs; wage dynamics; development traps.

JEL Classification: J24, O33, O41, I25.

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