

# Bifurcation Analysis on Dynamic Optimal Policy: A Case of Two-Sector Leontief-Shinkai Model

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October 2013

**Abstract:** This study examines how dynamic optimal policy changes with respect to the discount factor. For this purpose, we employ the two-sector Leontief-Shinkai model of optimal growth. There exists a bifurcation value of the discount factor,  $1/\zeta$ , where  $\zeta$  represents a marginal rate of transformation of capital between today and tomorrow under full utilization of factors. When a discount factor is above  $1/\zeta$ , the optimal policy function becomes a ‘flat’ top map and dynamical transition of an optimal program is qualitatively the same as those in the case without discounting. When a discount factor is below  $1/\zeta$ , the optimal policy becomes a ‘tent’ map.

*Journal of Economic Literature* Classification Numbers: D90, C62, O21.

*Key Words:* Bifurcation Analysis, Discount Factor, Two-sector Leontief-Shinkai model, Dynamic programming.

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