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基于二元面板数据模型的技术集成AMT选择

陈业华[1], **陈倩倩**[2]

1. 燕山大学 经济管理学院, 秦皇岛 066004;
2. 北京航空航天大学 经济管理学院, 北京 100191

AMT selection of technology integration based on the binary panel data model

CHEN Ye-hua[1], CHEN Qian-qian[2]

1. School of Economics and Management, Yanshan University, Qinhuangdao 066004, China;
2. School of Economics and Management, Beihang University, Beijing 100191, China

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摘要 技术集成理论的产生和可供选择的先进制造技术(AMT)资源的增多为我国企业进行自主创新和技术跨越提供了客观条件, 同时技术市场的不断多元化发展也使技术选择成为亟待解决的问题. 针对目前AMT选择方法的不完善, 利用二元离散Logit选择原理, 构建一种多项AMT选择的二元带趋势面板数据选择模型, 给出了模型的随机效用结构, 同时给出并分析效用模型随机趋势扰动项的概率分布. 讨论了随机效用模型的估计问题, 给出并证明消除效用模型随机意外项和随机扰动项的两个定理, 进一步给出模型面板数据处理的方法, 将模型中的随机偏好变量进行模糊处理, 最终将一个多期面板数据模型转化成一个可以估计的截面数据模型, 为多项技术集成AMT资源的选择提供理论工具. 最后通过一个算例, 验证了理论方法的有效性和可行性.

关键词: 技术集成 面板数据模型 随机趋势项 先进制造技术(AMT)

Abstract: The introduction of technology integration theory and the emergence of more alternative advanced manufacturing technology (AMT) provide objective conditions for the innovation activities of domestic enterprises, which may even lead to technological leap. At the same time the diversity of technology market makes technical choices become a question to be resolved. Because of the imperfection of the AMT selection methods, this paper intends to establish an AMT selection model using binary-logit-discrete-choice theory with binary trend panel data. The random effect structure of the model and the probability distribution of the random trend disturbance term of utility model are also given. It discussed the estimation of the random utility model, presented and proved two theorems of eliminating random accidents and random disturbance items of the mode. A panel data processing method is given to handle the random preference variables of the model, eventually transform the multi-period panel data model to a cross-sectional data model that can be estimated. The paper thus presents a theoretical approach to choose multi-technology integrated AMT resources. An example is given to verify the theoretical approach is effective and feasible at last.

Key words: technology integration panel data model stochastic trend advanced manufacturing technology (AMT)

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