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非对称企业合作创新的进化博弈模型分析

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An Analysis of Evolutionary Game Model on Cooperative Innovation between Asymmetric Corporations

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摘要 转型深化期,合作创新愈来愈多的在不同产业或规模、实力不同的非对称企业间开展。但实践表明,非对称企业间的合作创新关系却大多难以长久维持,合作关系常因合作一方单方面违约而瓦解,近年来不乏研发联盟在合作一段时间后"突然"解散的例证。论文针对这一现实问题,运用进化博弈理论,在前人相关研究基础上,引入合作创新超额收益、违约额外收益、超额收益分配系数和违约成本等影响因素,构造不同产业或规模、实力不同的两家非对称企业合作创新的进化博弈模型,对合作创新策略做进化博弈分析,判断策略的进化稳定性,分析非对称企业间进行合作创新的策略选择。研究表明:如企业违约而获得的额外净收益大于继续合作创新所获得的超额收益,则企业策略选择将视对方策略选择概率而定,但合作创新终将因一方企业违约而终止;如企业违约而获得的额外净收益小于继续合作创新所获得的超额收益,则企业策略选择将不受对方策略选择影响,合作创新终会因双方企业遵守合作契约而得到维持。

关键词： 非对称企业 转型深化期 合作创新 进化博弈

Abstract： During the period of enhanced transition,there have been an increasing number of cooperative innovations between asymmetric corporations which are in different industries or have different scales and strength.However,many cases have shown that it is difficult to maintain a longterm and steady relationship of cooperative innovation between asymmetric corporation participants.The relationship of cooperative innovation often collapses along with one participant breaking the contact unilaterally.To solve this practical problem,we propose an evolutionary game model in which the participants are assumed to have bounded rationality.The proposed model has advant ages over traditional game theory's assumption of full rationality by taking the following four factors into account: excess returns of cooperative innovation,additional revenue of breaking the contact,coefficient of excess return's distribution,and cost of breaking the contact By const ructing game model of two asy mmet ric corporations which are in different indust ries or have different scales and strength,this paper analizes the strategies of cooperative innovation under the evolutionary game theory,the evolutionary stability of strategies and the asymmetric corporations' decision strategies.It is shown that,if the corporation's additional revenue of breaking the contact is greater than t he excess ret urns of cont inuous co operat ive inno vation,t he st rategy choice of cor porat ion will depend on the probability of the other corporation' strategy,but cooperative innovation will eventually terminate because of one corporation' breaking down the contract.On the contrary,cooperative innovation will be maintained because of two corporations' complying with the contract.The corporation's decision making is affected by the revenue of its strategy before cooperative innovation and by the probability of the other corporation's strategy in the process of cooperative innovation.

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