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EVOLUTIONARY GAME ANALYSIS OF CARBON EMISSION REDUCTION DECISIONS BY DUOPOLY MANUFACTURERS UNDER CARBON TAX POLICY

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Abstract

To analyze the behavioral strategies of the manufacturers reducing carbon emissions and the conditions of carbon tax for encouraging manufacturers to reduce carbon emissions under consumers are more willing to buy low-carbon products, the evolutionary game model is developed. Analyzing the impact of the consumers low carbon preference, carbon and tax carbon emissions reduction to manufacturers reducing carbon emissions. It found that the evolutionary equilibrium results of the system affected by the cost of unit reducing carbon emissions and the consumer sensitivity of carbon emissions. There is boundary condition of carbon tax rate, and only when the carbon tax rate is greater than boundary condition, the carbon tax policy can effectively encourage manufacturers to reduce carbon emissions. Government should reduce the costs of reducing carbon emissions and increase consumer sensitivity of carbon emissions, and the carbon tax rate must be greater than boundary conditions for promote the reduction of carbon emissions.

Keywords: carbon emissions reduction, carbon tax, duopoly, evolutionary game, low carbon preference

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