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论文

中国三类自然资本的关键性检验与分析:1949—2007年

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摘要:

论文围绕关键自然资本的测算、"关键性"假设检验及案例展开,研究指出:随着观察期的延长,中国境内自然资本与物质资本的互补性不断下降,从20 a来看,淡水、化石能源及生产性土地具有物质资本无法替代的影响效力;中长期回归式中关键自然资本的回归系数为负数,由于生产性足迹描述关键自然资本开采情况,故而当下我国关键自然资本开采水平对可持续发展较不利。以此为据,估算南水北调工程引发相关区域淡水变动对当地可持续发展的影响,结果显示:受水区福利的增加对应着水源区福利的下降,南水北调东、中线工程缓和了受水区关键自然资本不可持续开采的压力,增加了水源区承担的关键自然资本不可持续式开采负外部性。

关键词: 资源经济 自然资本 关键性检验 南水北调工程

Test for the Criticality of Three Kinds of Natural Capital by China Provincial Panel Data from 1949 to 2007

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Abstract:

Critical natural capital performs important environmental function, which supposed that it is not able to be replaced by artificial capital. So identifying critical natural capital is the precondition of achieving national sustainable development. The research consists of panel data calculation, test of critical natural capital, as well as case analysis. The first of which aims to obtain the times series of regional critical natural capital ecological footprint of 27 areas in China, the second of which tests the irreplaceability of certain kinds of natural capital, such as water, cropland and fossil fuels, and the third of which analyzes influence of natural capital on China’s long-term consumption. In the paper, the conception of critical natural capital is introduced and natural capital referred is finally divided into three aspects, i.e., productive solid, water and energy. Then the framework of domestic ecological footprint theory is utilized in classifying and calculating the natural capital of regions. The hypothesis of the econometric test used here followed Ferreira’s research is that broader estimates of capital provide more information about changes in capital stocks and thus more information about future consumption prospects. Regression turns out that its performance is more sensitive to changes in the time horizon than in capital measures, and that the fit is best for the time horizon with 20 years, in which the probability of physical capital’s coefficient for future consumption prospects decline to 0.0009 from 0.0073 of the regression with 10 years and 0.5511 with 5 years, while the probability of natural capital’s coefficient for future consumption prospects is persistently above 0.4. The findings prove the irreplaceability by physical capital of critical natural capital, consisted of productive solid, water and energy. In the 20 years’ model, the negative coefficient of natural capital for future consumption prospects predicts the unsustainable utilization pattern of natural capital in the nation, in that domestic ecological footprint theory emphases on exploration of local resources. Additionally, the South-to-North Water Diversion project has been analyzed according to the findings of the research by operating the 20 years’ regression with the data of changing in water ecological footprint of relative regions. As a result of the South-to-North Water Diversion project, the changed distribution of resource will relieve the burdens of hardships in the development of water-receiving areas, which are at the cost of the decrease in the source area of reservoirs.

Keywords: resource economics natural capital criticality test South-to-North Water Diversion Project

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