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The Impact of Rising Energy Prices on Transportation Costs and Industrial Location Patterns*

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Recent studies of the impact of rising energy prices on firms' location decisions generally assume that the rise of energy prices has no impact on transportation costs of raw materials, intermediate goods, and consumer goods. Leaving out the energy price factor in transportation cost functions may create some bias in the discussion of the optimum location of firms. In this paper, the transportation cost effect of rising energy prices is included explicitly in a model of bilateral monopoly. It shows that the optimum location of firms will be affected by rising energy prices when both the buyer's and the seller's production functions are constant returns to scale. The final outcome depends on the relative strength of the impact of rising energy prices on various transportation rates. These results are quite different from the ones obtained in the previous papers, namely, Sakashita (1980), Hwang and Mai (1987), and Cheng and Shieh (1991).

1 . Introduction

Lately we have observed interest in the discussion of the impact of rising energy prices on firm's location decisions. In a recent paper,

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能源價格上升對運輸成本和廠址選擇的影響

張光美

摘要

近來有許多探討能源價格上升如何影響廠商對廠址的選擇之研究。其中包括一九八O年Sakashita教授的著作，一九八七年黃鴻與麥朝成教授的作品，以及謝勇男與張光美教授一九九一年的文章。以上所有的研究著作都假定能源價格的上升不會影響各種運輸費率。然而在實際運作上，不論是那一種運輸方式均少不了要使用能源，因此，能源加價對運輸成本應當有其影響力。在本文中作者擬以一個生產函數為一階齊次式的生產模型，以及線型空間的廠址型態來探討在雙邊獨佔的市場模式下，能源價格上升對運輸成本以及廠址選擇所產生的影響。研究結果顯示，當我們把能源價格加入了運輸成本結構中，廠商的最佳廠址深受能源價格上升的影響。此一結果與謝張兩教授的結論不同。至於影響的方式則有視於能源價格上升對原料、中間財以及消費財的邊際運輸成本所產生的影響力大小而定。舉一例說明：如果運送原料的費用受到能源加價的影響最大，而對中間財運費的影響最小，則雙邊獨占市場的賣方就會盡可能將廠址移近原料的供應地以縮減運費，而買方就會盡量將廠址移往市場方向以節省運費。如果我們假定能源價格上升對各種運輸費率的影響完全相同，則能源加價對廠址選擇就沒有影響力了。因為各種運費會同時比例增加，廠商就不必變換廠址來節省運費。在此特例之下，本文的結論與謝張的結論就不謀而合了。