MEDICAL CARE DEMAND AND CONSUMPTION: A COINTEGRATION ANALYSIS

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ABSTRACT

There is a need to acquire a better understanding of medical care demand and consumption in Malaysia and Singapore. This study attempts to examine the medical care demand function using a simplified generalized version of Grossman’s Health Capital Model. The model is used to derive a cointegration restriction between the demand for medical care, net consumption expenditure and the relative price of medical care. The results are consistent with the prediction of the model. Overall, this cointegration relationship (considered as a basis for the medical care demand equation) suggests that net consumption expenditure and relative price of medical care are the key determinants of the macroeconomic demand for medical care in the long run. By quantifying elasticities, the study highlights the measure of weightage accorded to prices and consumption. The paper also provides support for the work of Lee and Kong (1999) in justifying the use of medical care demand functions in a time series context. Furthermore, the model draws attention to the microeconomic foundations of a macroeconomic relationship.
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\( n \)  
Total length of life

\( t \)  
Age

\( H_{0} \)  
Inherited stock of health

\( H_{t} \)  
Stock of health in period \( t \)

\( H_{\text{net}} \)  
Death stock

\( \phi_{t} \)  
Service flow per unit stock or number of healthy days per unit stock

\( h_{t} \)  
Total number of healthy days in period \( t \)

\( z_{t} \)  
Consumption of an aggregate commodity in period \( t \)

\( l_{t} \)  
Gross investment in health

\( \delta_{t} \)  
Rate of depreciation

\( M_{t} \)  
Medical care

\( f(H_{t}) \)  
Time input in gross investment function

\( X_{t} \)  
Goods input in the production of \( z_{t} \)

\( f_{t} \)  
Time input in the production of \( z_{t} \)

\( E_{t} \)  
Stock of human capital

\( y_{t} \)  
Marginal product of medical care in the gross investment production function

\( g_{t} \)  
Marginal product of time

\( P_{t} \)  
Price of medical care

\( V_{t} \)  
Price of \( X_{t} \)

\( W_{t} \)  
Wage rate

\( A_{t} \)  
Initial assets

\( r \)  
Rate of interest

---

TW_i = Hours of work
TI_i = Sick time
Ω = Constant length of the period
R = Full wealth
G_i = Marginal product of health capital
U_{hi} = Marginal utility of healthy days
λ = Marginal utility of wealth
π_i = Marginal cost of gross investment in health
π_i = Percentage rate of change of marginal cost
γ_i = Monetary rate of return on an investment in health or marginal efficiency of health capital
α_i = Psychic rate of return on an investment in health
\tilde{} = A tilde over a variable denotes a percentage time derivative
S_i = Share of depreciation in the cost of health capital
ε = Elasticity of the MHE schedule
K = Fraction of the total cost of gross investment accounted for by time
σ_p = Elasticity of substitution between medical care and own time in the production of gross investment
H_{i,W} = Elasticity of H with regard to W
M_{i,W} = Elasticity of M with regard to W
\circ{} = A circumflex over a variable denotes a percentage change per unit change in E
r_H = Percentage change in gross investment for a one unit change in E
C_i = Total cost of gross investment in health in period i
\bar{C}_i = Total cost of Z_i
m_i = Weight attached to total utility in period i
q_i = Marginal cost of Z_i
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