Appendix 1: Symbols and Notations

max: Maximize

min: Minimize

s.t.: Subject to

q: Vector of Quantities Consumed

P: Vector of Prices

M: Income

p: Vector of Normalized Prices, i.e. P/M

U(q): Direct Utility Function (aka Utility Function)

$M \geq P.q$: Budget Constraint

V(P,M): Indirect Utility Function

V(p): Indirect Utility Function with Normalized Prices

E(P,u): "The" Expenditure Function

E(P,q): The Amount of Expenditures

D(q,u): The Distance Function

x^M (P,M): Marshallian (aka Uncompensated or Walrasian or Ordinary) Demand Function

x^M (p): Vector of Normalized Marshallian Demand Function

$p=\phi(q)$: Vector of Hotelling-style Inverse Demand Function

x^C (P,u): Vector of Hicksian (aka Compensated) Demand Function

$p=\psi(q,u)$: Vector of Antonelli-style Inverse Demand Function

H-W Id.: Hotelling-Wold Identity

Antonelli: Antonelli Equation

Slutsky: Slutsky Equation

Roy Id.: Roy's Identity

Norm'd Roy Id.: Normalized Version of Roy's Identity

Shephard: Shephard's Lemma

Norm'd Shephard: Shephard's Lemma with Normalized Prices

DUF: Direct Utility Function

IUF: Indirect Utility Function

EF: Expenditure Function

DF: Distance Function

HIDF: Hotelling-style Inverse Demand Function

MDF: Marshallian Demand Function

HDF: Hicksian Demand Function

AIDF: Antonelli-style Inverse Demand Function

EAF: Expenditure Amount Function

BC: Budget Constrain