ECO 601 Problem Set #4 KEY Fall 2004

1. See answer key to Question # 3, Test #1, Fall 2003.

2. See answer key to Question #5, Final Exam, Fall 2003.

3. See answer key to Question # 5, Test #1, Fall 2003.

4. $U = X^{.3} Y^{.7}$

$X^* = .3I/P_x \qquad Y^* = .7I/P_y$

(a) $U = (.3I/P_x)^{.3} (.7I/P_y)^{.7} = .54 I P_x^{-.3} P_y^{-.7}$

$E = 1.84\, U\, P_x^{.3} P_y^{.7}$

(b) $X_c = \frac{dE}{dP_x} = .55\, U\, P_x^{-.7} P_y^{.7}$

(c) Slutsky eq: $\frac{dX}{dP_x} = \frac{dX}{dP_x}\Big|_{\bar{u}} - X \frac{dX}{dI}$

Marshallian: $\frac{dX}{dP_x} = -.3I/P_x^2$ ✓

substitution effect: $\frac{dX}{dP_x}\Big|_{\bar{u}} = \frac{dX_c}{dP_x}$

$\frac{dX_c}{dP_x} = -.385\, U\, P_x^{-1.7} P_y^{.7}$

but $U = .54 I P_x^{-.3} P_y^{-.7}$

so $\frac{dX_c}{dP_x} = -.21 I P_x^{-2}$

income effect: $-X \frac{dX}{dI} = -(.3I P_x^{-1})(.3 P_x^{-1})$

$= -.09 I P_x^{-2}$

subst. effect + income effect $= -.21 I P_x^{-2} - .09 I P_x^{-2}$

$= -.3I/P_x^2$ ✓

so Slutsky equation checks out!