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(Makridakis,

.   ( ) :Wheelwights, and McGee,2003)

Endogenous Variable

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.(faostat. FAO. Org.)   .The Structural Form

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Rank   ( ) Condition

.(William,2003, Gujarati, 1979) Condition

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	R^2	F	%
$\ln X_1 = 9.204 - 0.017\,T$ $(272.30)^{**}\ (-6.83)^{**}$	0.70	46.59	-1.7
$\ln X_2 = 3.928 + 0.047\,T$ $(149.42)^{**}\ (23.44)^{**}$	0.96	549.67	4.7
$\ln X_3 = 7.332 - 0.009\,T$ $(222.52)^{**}\ (-3.68)^{**}$	0.40	13.54	-0.9
$\ln X_4 = -1.624 - 0.042\,T$ $(-44.88)^{**}\ (-15.32)^{**}$	0.92	234.94	-4.2
$\ln X_5 = 9.221 - 0.022\,T$ $(263.44)^{**}\ (-8.35)^{**}$	0.78	69.75	-2.2

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: (X_3) ( )*

        / (X_4)

: $.(e_1)$

Simultaneous Equation   :

Model

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$$\hat{Y}_1 = b_0 + b_1 X_1 + b_2 \hat{Y}_2 + e_1 \ \dots \ (\text{سلوكية})$$

$$\hat{Y}_1 = a_0 + a_1 X_1 + a_2 X_2 + a_3 X_3 + e_1 \ \dots \ (\text{سلوكية})$$

$$\hat{Y}_2 = c_0 + c_1 X_2 + c_2 \hat{Y}_1 + e_2 \ \dots \ (\text{سلوكية})$$

$$\hat{Y}_2 = \hat{Y}_1 \times X_4 \ \dots \ (\text{تعريفية})$$

$$\hat{Y}_3 = \hat{Y}_2 \times X_3 \ \dots \ (\text{تعريفية})$$

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Endogenous Variables   ‑

Endogenous Variables   ‑ $(\hat{Y}_1)$

$(\hat{Y}_1)$ /   ( ) $.(\hat{Y}_2)$

$(\hat{Y}_2)$

$.(\hat{Y}_3)$ Exogenous Variables   ‑

         (X_1)

         (X_2)

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Exogenous   Variables   –

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: (X_2) (X_1)

(X_3)

.(e_1, e_2)

(2SLS)   **:Identification**

.Eviews 6

( ) :   ( )   Order Condition

(X_1) %   .Rank Condition

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(X_2) %

%   ( ) % .   (k)

(X_3) (L)

.% .   (K-L) > (M-1)   (M)

over identified

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$$\ln \hat{Y}_1 = 2.05 + 0.78 \ln X_1 + 0.05 \ln X_2 + 0.23 \ln X_3 - 0.22 \ln X_4$$

$(1.37)^{ns}\ (3.58)^{**}$ $(3.85)^{**}$ $(0.92)^{ns}$ $(-1.47)^{*}$

$R^2 = 0.85\ \ F = 23.71\ \ D.W = 1.78$

$LM\ test = 1.12\ \ Arch\ test = 1.02$

$$\ln \hat{Y}_1 = 2.65 + 0.72 \ln X_1 + 0.05 \ln X_2 + 0.13 \ln X_3$$

$(1.79)^{*}\ (3.26)^{**}$ $(4.12)^{**}$ $(0.53)^{ns}$

$R^2 = 0.83\ \ \ F = 29.03\ \ D.W = 1.74$

$LM\ test = 1.12\ \ Arch\ test = 1.02$

$$\hat{Y}_2 = \hat{Y}_1 \times X_4$$

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$(\hat{Y}_2)$

Breusch-GodFrey serial   F

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(X_2)

( ) % .   Arch Test   .

%

$(\hat{Y}_1)$.   (F)

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Breusch-GodFrey serial correlation LM Test

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Arch Test   .

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$$\ln \check{Y}_1 = 5.22 + 0.78 \ln X_1 + 0.08 \ln X_2 - 1.05 \ln X_3 + 0.39 ar(1)$$
$$(21.60)^{**} \ (20.63)^{**} \ (2.39)^* \ (-17.93)^{**} \ (2.27)^*$$
$$R^2 = 0.99 \ F = 689.88 \ D.W = 1.93$$
$$LM \ test = 0.88 \ Arch \ test = 3.18$$
$$\ln \check{Y}_2 = 7.26 + 0.14 \ln X_1 + 0.22 \ln X_2 - 2.44 \ln X_3 + 0.61 ar(1)$$
$$(4.85)^{**} \ (0.66)^{ns} \ (2.30)^* \ (-6.17)^{**} \ (2.69)^{**}$$
$$R^2 = 0.95 \ F = 74.78 \ D.W = 1.79$$
$$LM \ test = 0.27 \ Arch \ test = 1.72$$
$$\ln \check{Y}_1 = 2.11 + 0.72 \ln X_1 + 0.46 \ln \check{Y}_2$$
$$(21.53)^{**} \ (20.73)^{**} \ (37.89)^{**}$$
$$R^2 = 0.99 \ F = 1037.14 \ D.W = 1.21$$
$$LM \ test = 1.12 \ Arch \ test = 0.01$$
$$\ln \check{Y}_2 = 0.09 + 0.19 \ln X_2 - 0.93 \ln \check{Y}_1 + 0.46 ar(1)$$
$$(0.35)^{ns} \ (1.20)^{**} \ (-7.74)^{**} \ (2.10)^*$$
$$R^2 = 0.95 \ F = 99.09 \ D.W = 1.79$$
$$LM \ test = 1.19 \ Arch \ test = 1.56$$
$$\check{Y}_3 = \check{Y}_2 \times X_3$$

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	R^2	F
$\ln X_1 = 1210.57 + 33.02\,T - 1.54\,T^2$ $(19.50)^{**}\ (2.66)^{**}\ (-2.95)^{**}$	0.33	4.73
$\ln X_2 = 5.77 - 0.24\,T$ $(26.32)^{**}\ (-14.49)^{**}$	0.91	210.21
$\ln X_3 = 7.88 - 0.012\,T$ $(260.13)^{**}\ (-5.21)^{**}$	0.58	27.12
$\ln X_4 = 1.032 + 0.591 \ln X_{4t-1} + 0.019 \ln T$ $(2.10)^{*}\ (3.26)^{**}\ (2.73)^{*}$	0.37	5.34

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	R^2	F
$\ln X_1 = 1.032 + 0.591 \ln X_{1t-1} + 0.019 \ln T$ $(2.10)^{*}$ $(3.26)^{**}$ $(2.73)^{*}$	0.37	5.34
$\ln X_2 = 1.671 + 0.029\,T$ $(35.27)^{**}$ $(8.21)^{**}$	0.77	67.40
$\ln X_3 = 3.928 + 0.021\,T$ $(7268.77)^{**}$ $(503.44)^{**}$	0.99	253450.6

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Gujarati, D.,(**1979**). "Basic Econometrics" London, MC Grow-Hill International Book Company.

http://faostat.FAO. Org/.

Makridakis, S.; Wheelwights, S.; and McGee, V.E. (**1993**). Forecasting Methods and Application. 2nd ed New York: Johns Wiley and Sons.

William H. Greene (**2003**). Econometric Analysis, Fifth edition, New York University.

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An Economic Study of Production and Consumption of Honey Bee in Egypt

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ABSTRACT

This research aimed to identify the current status of production and consumption of honey in Egypt and study the determinants of honey production and consumption during the period 1990-2010, and then predict the behavior of internal and external variables defined for the system of production and consumption of honey in Egypt until the year 2020. This study adopted the objectives on the method of two stage least squares (2SLS) in estimating simultaneous Equations models for production and consumption of honey in Egypt.

The study found the following: (1) A decline in production and domestic consumption of honey with annual decline rate of 1.7%, and 2.2%, respectively, during the period 1990 - 2011 (2) a 10% changes in the number of modern and traditional cell and clover leads to changes in the same direction for the production of honey by 7.2%, 0.5% and 1.3%, respectively, (3) a 10% change in real per capita income leads to changes in the same direction to the average per capita consumption of honey bees by 1.9%, while 10% change in real retail price of honey leads to changes in the per capita consumption of honey bees by 9.3% in opposite direction, (4) the domestic production of honey is expected to decline from 5637.4 tones, with a value of 81.7 million pounds in 2014 to 3912.5 tons, with a value of 35.5 million pounds in 2020, decreasing the total domestic consumption of honey from 5.65 tons in 2013, to 4.9 tons in 2020(5) The study recommends to increase the local production of honey to increase the average per capita of honey bees through encouraging of beekeepers and young graduates by providing good breeds of bees and Queens, as well as activating the role of agricultural extension and the participation of Egyptian universities in the orientation and training of young graduates and holders of apiaries on the use of modern techniques for the production of honey.

Keywords: Production, Consumption, honey, Simultaneous Equations.