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APPENDIX A: DETAILED DERIVATION OF THE UNADJUSTED GNE AND THE ADJUSTED GNE MODELS

MODEL 1: Unadjusted GNE (with Environmental Productivity Disturbance Parameter)

Basic Models

1. $E_{t+j}\beta^{j}u\left(C^{n}_{t+j}, L^{n}_{t+j}\right)$

but $L^{n}_{t} = 1 - n_{t}$

$\therefore \quad E_{t+j}\beta^{j}u\left(C^{n}_{t+j}, 1 - n_{t+j}\right)$

2. $C^{n}_{t} = C_{t} + \theta_{1}G_{1t}$

$C_{t} = C^{n}_{t} - \theta_{1}G_{1t}$

3. $Y^{n}_{t} = \varepsilon_{t} f\left(n^{d}_{t} k^{d}_{t}\right)$

4. $k^{d}_{t+1} = e_{t}\left[(1-\delta)k_{t} + I^{n}_{t}\right]$

5. $I^{n}_{t} = I_{t} + \theta_{2}G_{2t}$

6. $G_{t} = G_{1t} + G_{2t} = T_{t}$

Following McCallum's (1989) Equation:

7. $C_{t} + I_{t} + T_{t} = \varepsilon_{t} f\left(n^{d}_{t} k^{d}_{t}\right) - w\left(n^{d}_{t} - n_{t}\right) - q_{t}\left(k^{d}_{t} - k_{t}\right)$

From equation (4)

$$e_{t}I^{n}_{t} = k_{t+1} - e_{t}(1-\delta)k_{t}$$

$$I^{n}_{t} = \tfrac{1}{e_{t}}k_{t+1} - (1-\delta)k_{t}$$

but $I_t^n = I_t + \theta_2 G_{2t}$

$\therefore \; I_t = e_t^* k_{t+1} - (1-\delta)k_t - \theta_2 G_{2t}$

where $e_t^* = \dfrac{1}{e_t}$

From equation (7)

$$C_t - \theta_1 G_{1t} + e_t^* k_{t+1} - (1-\delta)k_t - \theta_2 G_{2t} + G_{1t} + G_{2t}]$$
$$= \varepsilon_t \; f\left(n_t^d k_t^d\right) - w_t\left(n_t^d - n\right) - q_t\left(k_t^d - k_t\right)$$

Thus, the Lagrange equation can be written as:

8. $$E_t \beta^j \left\{ \mu\left(C_{t+j}^n, L_{t+j}\right) - \lambda_{t+j} \left[C_{t+j}^n + e_{t+j}^* k_{t+j+1} - (1-\delta)k_{t+j} + (1-\theta_1)G_{1,t+j} \right.\right.$$
$$\left.\left. + (1-\theta_2)G_{2,t+j} - \varepsilon_{t+j} \; f\left(n_{t+j}^d k_{t+j}^d\right) + w_{t+j}\left(n_{t+j}^d - n_{t+j}\right) + q_{t+j}\left(k_{t+j}^d - k_{t+j}\right)\right]\right\}$$

The First Order conditions

9a. w.r.t. C_{t+j}^n $\quad E_t U_1 - E_t \lambda_{t+j} = 0$

$$U_1 = \delta U / \delta C_{t+j}^n$$

9b. w.r.t n_{t+j} $\quad E_t U_2 - E_t \lambda_{t+j} w_{t+j} = 0$

$$U_2 = -\delta U / \delta L_{t+j}^n$$

9c. w.r.t. n_{t+j}^d $\quad E_t \varepsilon_{t+j} f_1 - E_t w_{t+j} = 0$

9d. w.r.t. k_{t+j}^d $\quad E_t \varepsilon_{t+j} f_2 - E_t q_{t+} = 0$

9e. w.r.t. k_{t+j+1} $\quad -E_t \lambda_{t+j} \epsilon_{t+j}^* + E_t \beta$

$$\lambda_{t+j+1}\left[\varepsilon_{t+j+1} f_2 - (1-\delta)\right] = 0$$

When the market is at equilibrium

$$\Sigma n_t^d = \Sigma n_t$$

$$\Sigma k_t^d = \Sigma k_t$$

Further, we know that

10. $Y_t^n = E_t \ f(n_t k_t) = C_t + I_t + G_T$

$$= C_t^n + I_t^n + (1-\theta_1)G_{1t} + (1-\theta_2)G_{2t}$$

Consequently, the market equilibrium conditions can be characterized by

11a. $u_1 - \lambda_t = 0$

$u_1 = \lambda_t$ from (9a)

11b. $u_2 + \lambda_t w_t = 0$

but $\varepsilon_t f_1 - w_t = 0$

$w_t = \varepsilon_t f_1$ from 9(c)

$u_2 = \lambda_t \varepsilon_t f_1$ from 9(b) and 9(c)

11c. $-\lambda_t e_t^* + \beta\lambda_{t+1}\left[\varepsilon_{t+1} f_2 - (1-\delta)\right] = 0$ from 9(e)

$\therefore \beta\lambda_{t+1}\varepsilon_{t+1} f_2 - \beta\lambda_{t+1}(1-\delta) = \lambda_t e_t^*$

11d. $C_t^n + I_t^n = \varepsilon_t \ f(\eta_t, k_t) - (1-\theta_1)G_{1t}$

$-(1-\theta_2)G_{2t}$ from (9')

In addition, it is assumed that:

12. $U(C_t^n, 1-n_t) = \theta_1 \ell_n C_t^n + \theta_2 \ell_n (1-n_t)$

13. $\varepsilon_t\ f(n_t, k_t) = \varepsilon_t n_t^{\alpha} k_t^{1-\alpha}$

To lend concreteness to the discussion, we also assume that $\delta = 1$, thus equations (11a) to (11d) becomes:

14a. $\dfrac{\theta_1}{C_t^n} = \lambda_t$

14b. $\dfrac{\theta_2}{1-n_t} = \alpha\lambda_t \varepsilon_t n^{\alpha-1} k_t^{1-\alpha}$

14c. $\lambda_t e_t^* = (1-\alpha)\beta_t \lambda_{t+1} \varepsilon_{t+1} n_{t+1}^{\alpha} k_{+1}^{-\alpha}$

14d. $C_t^n + I_t^n = \varepsilon_t n^{\alpha} k_t^{1-\alpha} - (1-\theta_1)G_{1t} - (1-\theta_2)G_{2t}$

To obtain the optimum solution, it is further assumed that:

$$C_t^n = \Pi_{10} X_t Y_t^n$$

$$I_t^n = \Pi_{20} X_t Y_t^n$$

$$\text{where } X_t = \frac{Y_t - (1-\theta_1)G_{1t} - (1-\theta_2)G_{2t}}{Y_t}$$

Combining (14a) and (14c)

$$\frac{\theta_1}{C_t^{\eta}} = (1-\alpha)\beta\lambda_{t+1} e_t \varepsilon_{t+1} \eta_{t+1}^{\alpha} k_{+1}^{\iota}$$

$$\frac{\theta_1}{C_t^n} = \frac{(1-\alpha)\beta e_t \theta_1 \left[\varepsilon_{t+1} n_{t+1}^{\alpha} k_{t+1}^{-\alpha}\right]}{\Pi_{10} X_{t+1} Y_{t+1}}$$

$$\frac{\theta_1}{\Pi_{10} X_t Y_t} = \frac{(1-\alpha)\beta e_t \theta_1}{\Pi_{10} X_{t+1}}$$

$$\frac{\theta_1}{\Pi_{10}X_tY_t^n} = \frac{(1-\alpha)\beta\theta_1}{\Pi_{10}X_{t+1}I_t^n}$$

$$= \frac{(1-\alpha)\beta}{X_{t+1}\Pi_{20}}$$

$$X_{t+1}\Pi_{20} = (1-\alpha)\beta$$

$$\Pi_{20} = \frac{(1-\alpha)\beta}{X_{t+1}}$$

In addition, it is assumed that the household perceives public goods and services as comparable with private goods and services. This implies that for a household future public and private goods are perfect substitutes. Thus, θ_1 and θ_2 are equal to one. We then can write

$$X_{t+1} = \frac{Y_{t+1} - (\theta_1)G_{t+1} - (\theta_2)G_{2t}}{Y_{t+1}}$$

$$= \frac{Y_{t+1}}{Y_{t+1}} = 1$$

$$\therefore \Pi_{20} = (1-\alpha)\beta$$

$$I_t^n = \Pi_{20} - X_tY_t^n$$

$$I_t^n = (1-\theta)\beta X_tY_t^n$$

$$\frac{I_t^n}{Y_t^n} = (1-\alpha)\beta X_t$$

$$i_t^n = (1-\alpha)\beta\left[\frac{Y_t - (1-\theta_1)G_{1t} - (1-\theta_2)G_{2t}}{Y_t}\right]$$

$$i_t^n = (1-\alpha)\beta\left[1 - (1-\theta_1)g_{1t} - (1-\theta_2)g_{2t}\right]$$

15. $$i_t^n = f(g_{1t}, g_{2t})$$

Since $\Pi_{10}X_tY_t^n + \Pi_{20}X_tY_t^n = X_tY_t$

$$\Pi_{10} + \Pi_{20} = 1$$

$$\Pi_{10} = 1 - [(1-\alpha)\beta$$

$$\Pi_{10} = 1 - \beta + \alpha\beta$$

$$C_t^n = \Pi_{10} X_t Y_t^n$$

$$\frac{C_t^n}{Y_t} = \Pi_{10} X_t$$

$$C_t^n = 1 - \beta + \alpha\beta \left[\frac{Y_t - (1-\theta_1)G_{1t} - (1-\theta_2)G_{2t}}{Y_t} \right]$$

$$C_t^n = (1 - \beta + \alpha\beta)\left[1 - (1-\theta_1)g_{1t} - (1-\theta_2)g_{2t}\right]$$

16. $C_t^n = f_n(g_{1t}, g_{2t})$

Combining (14a) and (14b)

$$\frac{\theta_1}{C_t^n} = \lambda_t \qquad \text{from (14a)}$$

so:

$$\frac{\theta_2}{1-n_t} = \frac{\theta_1 \varepsilon_t \alpha n_t^{\alpha-1} k_t^{1-\alpha}}{C_t^n}$$

but $\quad n_t^{\alpha-1} k_t^{1-\alpha} = \dfrac{y_t^n}{n_t}$

$$\frac{\theta_2}{1-n_t} = \frac{\theta_1 \alpha y_t^n}{\Pi_{10} X_t y_t^n n_t}$$

$$\frac{\theta_2}{1-n_t} = \frac{\theta_1 \alpha}{\Pi_{10} X_t n_t}$$

$$\Pi_{10} X_t n_t \theta_2 = \theta_1 \alpha (1 - n_t)$$

$$\frac{n_t}{1-n_t} = \frac{\theta_1 \alpha}{\Pi_{10} X_t \theta_2}$$

$$\frac{1-n_t}{n_t}=\frac{\Pi_{10}X_t\theta_2}{\theta_1\alpha}$$

$$\frac{1-n_t}{n_t}=\frac{(1-\beta+\alpha\beta)}{\theta_1\alpha}X_t$$

$$\frac{1-n_t}{n_t}=\frac{(1-\beta+\alpha\beta)\theta_2}{\theta_1\alpha}\left[\frac{Y_t-(1-\theta_1)G_{1t}-(1-\theta_2)G_{2t}}{Y_t}\right]$$

17. $$\frac{1-n_t}{n_t}=\frac{(1-\beta+\alpha\beta)\theta_2}{\theta_1\alpha}\left[1-(1-\theta_1)g_{1t}-(1-\theta_2)g_{2t}\right]$$

Legend:

C_t^n = effective consumption expenditure in year t

L_t^n = leisure hours in year t

G_{1t} = government expenditure on goods and services

G_{2t} = government expenditure on investment

I_t^n = effective private investment expenditure

θ_1 = degree of substitutability between effective consumption and government expenditure on goods and services

θ_2 = degree of substitutability between effective investment and government expenditure on investment

Y_t^n = income or output level without government defensive expenditure

ε_t = environmental, productivity disturbances

e_t = disturbances associated with capital stock

n_t = labour input

k_t = capital input

MODEL 2: Adjusted GNE (With Government Defined Expenditure Parameter)

Basic Models

1. $E_{t+j}\beta^{j}u\left(C_{t+j}^{w}, L_{t+j}^{w}\right)$

   $E_{t+j}\beta^{j}u\left(C_{t+j}^{w}, 1-n_{t+j}\right)$

2. $C_{t}^{w} = C_{t} + \theta_{1}G_{1t} + \theta_{31}G_{31t}$

   $C_{t} = C_{t}^{w} - \theta_{1}G_{1t} - \theta_{31}G_{31t}$

3. $Y_{t}^{w} = g(G_{31t}, G_{32t})f\left(n_{t}^{d}, k_{t}^{d}\right)$

4. $k_{t+1}^{d} = \left[(1-\delta)k_{t} + I_{t}^{w}\right]$

5. $I_{t}^{w} = I_{t} + \theta_{2}G_{2t} + \theta_{32}G_{32t}$

6. $G_{t} = G_{31t} + G_{32t} + G_{1t} + G_{2t} :: T_{t}$

   Note that $G_{31} + G_{32} = G_{3}$.

Again, following McCallum's Equat on:

7. $C_{t} + I_{t} + T_{t} = g(G_{31t}, G_{32t})f\left(n_{t}^{d}, k_{t}^{d}\right) - w_{t}\left(n_{t}^{d} - n_{t}\right) - q_{t}\left(k_{t}^{d} - k_{t}\right)$.

From equation (4)

$$k_{t+1} = (1-\delta)k_{t} + I_{t}^{n}$$

$$I_{t}^{n} = k_{t+1} - (1-\delta)k_{t}$$

$$I_{t}^{n} = I_{t} + \theta_{2}G_{2t} + \theta_{32}G_{32t}$$

$$I_{t} = I_{t}^{n} - \theta_{1}G_{2t} - \theta_{32}G_{32t}$$

$$I_{t} = k_{t+1} - (1-\delta)k_{t} - \theta_{2}G_{2t} - \theta_{32}G_{32t}.$$

From equation (7)

$$C_t^w - \theta_1 G_{1t} - \theta_{31} G_{31t} + k_{t+1} - (1-\delta)k_t$$

$$- \theta_2 G_{2t} - \theta_{32} G_{32t} + G_{1t} + G_{2t} + G_{31} + G_{32}$$

$$= g(G_{31} G_{32}) f(n_t^d, k_t^d) - w_t(n_t^d - n_t) - q_t(k_t^d - k_t)$$

Thus, the Lagrange equation can be written as:

8. $$E_t \beta^j \{u(C_{t+j}^w, L_{t+j}^w) - \lambda_{t+j}[C_{t+j}^w + k_{t+1tj} - (1-\delta)k_{t+j} + (1-\theta_1)G_{1,t+j}]$$

$$+(1-\theta_2)G_{2,t+j} + (1-\theta_{31})G_{31,t+j} + (1-\theta_{32})G_{32,t+j}$$

$$-g(G_{31,t+j}, G_{32,t+j}) f(n_{t+j}^d, k_{t+j}^d) + w_{t+j}(n_{t+j}^d - n_{t+j}) + q_{t+j}(k_{t+j}^d - k_{t+j})]$$

First Order Conditions

9a.	w.r.t.	C_{t+j}	$E_t U_1 - E_t \lambda_{t+j} = 0$
9b.	w.r.t.	n_{t+j}	$E_t U_2 - E_t \lambda_{t+j} w_{t+j} = 0$
9c.	w.r.t.	n_{t+j}^d	$E_t g(G_{31}, G_{32t}) f_1 - E_t w_{t+j} = 0$
9d.	w.r.t.	k_{t+j}^d	$E_t g(G_{31}, G_{32t}) f_2 - E_t q_{t+j} = 0$
9e.	w.r.t.	k_{t+j+1}	$-E_t \lambda_{t+j} + E_t \beta \lambda_{t+j+1}[g(G_{31,t+j+1}, G_{32,t+j+1}) f_2 - (1-\delta)]$

When the market is at equilibrium

$$\sum n_t^d = \sum n_t$$

$$\sum k_t^d = \sum k_t$$

Further, we note that

10. $$Y_t^w = g(G_{31}, G_{32}) f(n_t^d k_t^d) = C + I_t + G_T$$

$$= C_t^w + I_t^w + (1-\theta_1)G_{1t} + (1-\theta_2)G_{2t} + (1-\theta_{31})G_{31t} + (1-\theta_{32})G_{32t}$$

11a. $U_1 = \lambda_t$

11b. $U_2 = \lambda_t w_t$

11c. $U_2 = \lambda_t g(G_{31t}, G_{32t}) f_1$

$$\lambda_t = E_t \beta \lambda_{t+j+1} \left[g(G_{31,t+j+1}, G_{3\ ,t+j+1}) f_2 - (1-\delta) \right.$$

Note that $\delta = 1$.

In addition it is assumed that:

12. $U(C_t^w, 1-n_t) = \theta\ \ell n\ C_t^w + \theta_2\ \ell n(1-n_t)$

13. $g(G_{31t}, G_{32t}) f(n_t^d, k_t^d) = g(G_{31t}\ G_{32t}) n_t^{\alpha}, k_t^{1-\alpha}$.

Further, assuming that $\delta = 1$, equations 11a to 11c can now be written as:

14a. $\dfrac{\theta_1}{C_t^w} = \lambda_t$

14b. $\dfrac{\theta_2}{1-n_t} = \alpha\ \lambda_t\ g(G_{31t}, G_{32t}) n^{\alpha-1}, k_t^{1-\alpha}$

14c. $\lambda_t = (1-\alpha) E_t \beta\ \lambda_{t+1} \left[\varepsilon_{t+1}, n_{t+1}^{\alpha}, k_{t+1}^{-\alpha} \right]$

14d. $C_t^w + I_t^w = g(G_{31t}, G_{32t}) n^{\alpha}, k_t^{1-\alpha} - (1-\theta_1) G_{1t} - (1-\theta_2) G_{2t}$

$$-(1-\theta_n) G_{\ 1t} - (1-\theta_n) G_{32t}$$

Combining 14a and 14c

$$\frac{\phi_1}{C_t^w} = (1-\delta)\beta\ \lambda_{t+1} \left[g(G_{31,t+1}, G_{32,t+1}) n_{t-1}^{\alpha}, k_{t+1}^{-\alpha} \right.$$

$$\frac{\phi_1}{C_t^w} = \frac{(1-\delta)\beta\ \phi_1 \left[g(G_{31,t+1}, G_{3\ ,t+1}) n_{t+1}^{\alpha}, k_{t+1}^{-\alpha} \right]}{C_t^n}$$

Suppose that

$$C_t^w = \Pi_{30} Z_t Y_t^w$$

$$I_t^w = \Pi_{40} Z_t Y_t^w$$

where

$$Z_t = \frac{Y_t^w - (1-\theta_1)G_{1t} - (1-\theta_2)G_{2t} - (1-\theta_{31})G_{31t} - (1-\theta_{32})G_{32t}}{Y_t}$$

We now have:

$$\frac{\phi_1}{\Pi_{30} Z_t Y_t^w} = \frac{(1-\alpha)\beta\phi_1 \left[g(G_{31\ +1}, G_{32.t+1})\right]}{Z_{t+1}}$$

$$\frac{\phi_1}{Z_t Y_t^w} = \frac{(1-\alpha)\beta\phi_1}{Z_{t+1}, k_{t+1}}$$

$$\frac{\phi_1}{Z_t Y_t^w} = \frac{(1-\alpha)\beta\phi_1}{Z_{t+1} I_t^w}$$

$$= \frac{(1-\alpha)\beta\phi_1}{Z_{t+1}\Pi_{40}}$$

$$\Pi_{40} = \frac{(1-\alpha)\beta}{Z_{t+1}}$$

Suppose that $\theta_1 = \theta_2 = \theta_{31} = \theta_{32} = \dot{}$, then

$$\Pi_{40} = (1-\alpha)\beta$$

We further note that

$$\Pi_{30} + \Pi_{40} = Y_t^w$$

$$\Pi_{30} + \Pi_{40} = 1$$

$$\Pi_{30} = 1 - \Pi_{40}$$

$$\Pi_{30} = 1 - (1-\alpha)3$$

$$\Pi_{30} = 1 - \beta + \beta\alpha$$

15. $C_t^w = \Pi_{30} Z_{tt}^w$

$$\frac{C_t^w}{Y_t^w} = \frac{\Pi_{30} Z_t}{Y_t^w}$$

$$C_t^w = (1-\beta-\beta\alpha)\left[\frac{Y_t^w - (1-\theta_1)G_{1t} + (1-\theta_2)G_{2t} - (1-\theta_{31})G_{31t} - (1-\theta_{32})G_{32t}}{Y_t}\right]$$

$$C_t^w = (1-\beta+\beta\alpha)\left[1-(1-\theta_1)g_t^w+(1-\theta_2)g_{2t}^w-(1-\theta_{31})g_{31t}^w-(1-\theta_{32})g_{32t}^w\right]$$

$$C_t^w = f\left(g_1^w, g_2^w, g_{31}^w, g_{32}^w\right)$$

Note that $G_{31} + G_{32} = G_3$ in this study.

$$\therefore\ C_t^w = f\left(g_1^w, g_2^w, g_3^w\right.$$

16. $I_t^w = \Pi_{40} Z_t Y_t$

$$\frac{I_t^w}{Y_t} = \frac{(1-\alpha)\beta Z_t Y_t}{Y_t}$$

$$i_t^w = (1-\alpha)\beta\ Z_t$$

$$i_t^w = f\left(g_1^w, g_2^w, g_3^w\right.$$

17. Combining 13a and 13b

$$\frac{\phi_2}{1-n_t} = \frac{\phi_1 g(G_{31t}, G_{32t})\alpha\ n_t^{\alpha-1} k^{-\alpha}}{C_t^w}$$

$$\frac{\phi_2}{1-n_t} = \frac{\theta_1\alpha}{\Pi_{30} Z_t n_t}$$

$$\phi_2 \Pi_{30} Z_t n_t = \phi_1 \alpha (1-n_t)$$

$$\frac{n_t}{1-n_t} = \frac{\phi_1\alpha}{\phi_2 \Pi_{30} Z_t}$$

$$\frac{1-n_t}{n_t} = \frac{\phi_2 \Pi_{30}}{\phi_1 \alpha} Z_t$$

$$\frac{1-n_t}{n_t} = \frac{\phi_2 \Pi_{30}}{\phi_1 \alpha} Z_t \left[\frac{Y_t^w-(1-\theta_1)G_{1t}-(1-\theta_2)G_{2t}-(1-\theta_{31})G_{31t}-(1-\theta_{32})G_{32t}}{Y_t^w}\right]$$

$$\frac{1-n_t}{n_t} = f\left(g_{31}^w, g_{32}^w, g_2^w, g_1^w\right)$$

Legend:

C_t^w = effective consumption

I_t^w = effective investment

G_{1t} = government expenditure on goods and services

G_{2t} = government investment expenditure

G_{31t} = government defensive expenditure (goods and services)

G_{32t} = government defensive expenditure (investment)

θ_1 = subsitutability between G_{1t} and C_t^w

θ_2 = substitutability between G_{2t} and I_t^w

θ_{31} = subsitutability between G_{31t} and C_t^w

θ_{32} = substitutability between G_{32t} and I_t^w

$g(G_{31t}, G_{32t})$ = measures the success of government environmental program

Y_t^w = total output/ income with government defensive expenditure

n_t = labour input

k_t = capital input

APPENDIX B : REGRESSION RESULT USED IN THE DISTRIBUTION PROCEDURE

```
Hello/Bonjour/Aloha/Howdy/G Day/Kia Ora/Konnichiwa/Buenos Dias/Nee Hau
Welcome to SHAZAM - Version 7.0 - MAR 1994 SYSTEM=UNIX    PAR=  312
|_file 12 data5.txt
UNIT 12 IS NOW ASSIGNED TO: data5.txt
|_sample 1 29
|_read(12) G1 G2 G31 G32
  4 VARIABLES AND     29 OBSERVATIONS STARTING AT OBS      1

1
|_ols G31 G1 / resid=uhat1 coef=bhat1

REQUIRED MEMORY IS PAR=    3 CURRENT PAR=  312
 OLS ESTIMATION
    29 OBSERVATIONS    DEPENDENT VARIABLE = G31
...NOTE..SAMPLE RANGE SET TO:   1,   29

 R-SQUARE =   0.9325     R-SQUARE ADJUSTED =   0.9313
VARIANCE OF THE ESTIMATE-SIGMA**2 =   9174.7
STANDARD ERROR OF THE ESTIMATE-SIGMA =   95.785
SUM OF SQUARED ERRORS-SSE=  0.24772E+06
MEAN OF DEPENDENT VARIABLE =   374.47
LOG OF THE LIKELIHOOD FUNCTION = -172.414

MODEL SELECTION TESTS - SEE JUDGE ET AL. (1985,P.242)
 AKAIKE (1969) FINAL PREDICTION ERROR - FPE =       9807.4
   (FPE IS ALSO KNOWN AS AMEMIYA PREDICTION CRITERION - PC)
 AKAIKE (1973) INFORMATION CRITERION - LOG AIC =   9.1907
 SCHWARZ (1978) CRITERION - LOG SC =            9.2850
MODEL SELECTION TESTS - SEE RAMANATHAN (1992,P.167)
 CRAVEN-WAHBA (1979)
   GENERALIZED CROSS VALIDATION - GCV =         9854.3
 HANNAN AND QUINN (1979) CRITERION =           10099.
 RICE (1984) CRITERION =                     9908.7
 SHIBATA (1981) CRITERION =                     9720.1
 SCHWARZ (1978) CRITERION - SC =               10775.
 AKAIKE (1974) INFORMATION CRITERION - AIC =       9805.3

              ANALYSIS OF VARIANCE - FROM MEAN
                       SS          DF         MS            F
REGRESSION     0.19538E+07    1.    0.19538E+07      212.959
ERROR          0.24772E+06   27.      9174.7        P-VALUE
TOTAL          0.22016E+07   28.      78627.          0.000
```

```
              ANALYSIS OF VARIANCE - FROM ZERO
                          SS       DF        MS          F
REGRESSION     0.60204E+07   2.   0.30102E+07      328.097
ERROR          0.24772E+06  27.    9174.7         P-VALUE
TOTAL          0.62681E+07  29.   0.21614E+06       0.000


VARIABLE   ESTIMATED  STANDARD  T-RATIO       PARTIAL STAND ELASTICITY
 NAME     COEFFICIENT   ERROR    27 DF   P-VALUE CORR. COEFF  AT MEANS

G1     0.15756E-01 0.10797E-02  14.593    0.00  0.9421  0.94206     1.7225
CONS  -270.55          47.645   -5.6785   0.00 -0.7377  0.0000    -0.72249
|_print uhat1 bhat1
  UHAT1
  76.74001     85.27525     67.88460     52.28551     22.35055    -10.07683    -
8.774667     4.863319
 -15.96518    -43.01566    -37.62432    -48.03336    -63.61562    -104.0242    -
111.2056    -142.0288
 -132.4469    -25.54276    -85.79021    -57.12615     175.4747     92.48893
97.94350     218.7904
  188.2314    -41.19619    -65.85508    -12.32795    -77.67871
  BHAT1
 0.1575649E-01  -270.5493
1
|_ols G32 G2 / resid=uhat2 coef=bhat2

REQUIRED MEMORY IS PAR=    3 CURRENT PAR=  312
 OLS ESTIMATION
    29 OBSERVATIONS     DEPENDENT VARIABLE = G32
...NOTE..SAMPLE RANGE SET TO:    1,   29

 R-SQUARE =   0.8460     R-SQUARE ADJUSTED =   0.8393
VARIANCE OF THE ESTIMATE-SIGMA**2 =  0.36735E+06
STANDARD ERROR OF THE ESTIMATE-SIGMA =   606.09
SUM OF SQUARED ERRORS-SSE=  0.99183E+07
MEAN OF DEPENDENT VARIABLE =   1666.3
LOG OF THE LIKELIHOOD FUNCTION = -225.917

MODEL SELECTION TESTS - SEE JUDGE ET AL. (1985,P.242)
 AKAIKE (1969) FINAL PREDICTION ERROR - FPE =     0.39268E+06
   (FPE IS ALSO KNOWN AS AMEMIYA PREDICTION CRITERION - PC)
 AKAIKE (1973) INFORMATION CRITERION - LOG AIC =   12.881
 SCHWARZ (1978) CRITERION - LOG SC =             12.975
MODEL SELECTION TESTS - SEE RAMANATHAN (1992,P.167)
 CRAVEN-WAHBA (1979)
   GENERALIZED CROSS VALIDATION - GCV =        0.39456E+06
 HANNAN AND QUINN (1979) CRITERION =          0.40436E+06
```

```
RICE (1984) CRITERION =                    0.39673E+06
SHIBATA (1981) CRITERION =                 0.38919E+06
SCHWARZ (1978) CRITERION - SC =            0.43142E+06
AKAIKE (1974) INFORMATION CRITERION - AIC =  0.39259E+06

              ANALYSIS OF VARIANCE - FROM MEAN
                SS          DF       MS            F
REGRESSION   0.90099E+07   1.    0.90099E+07      24.527
ERROR        0.99183E+07   27.   0.36735E+06      P-VALUE
TOTAL        0.18928E+08   28.   0.67601E+06      0.000

              ANALYSIS OF VARIANCE - FROM ZERO
                SS          DF       MS            F
REGRESSION   0.89534E+08   2.    0.44767E+08      121.867
ERROR        0.99183E+07   27.   0.36735E+06      P-VALUE
TOTAL        0.99453E+08   29.   0.34294E+07      0.000


VARIABLE  ESTIMATED   STANDARD  T-RATIO      PARTIAL STAND ELASTICITY
 NAME     COEFFICIENT  ERROR    27 DF   P-VALUE CORR.  COEFF AT MEANS

G2     0.18778E-01 0.37916E-02  4.9525   0.0000 0.6899  0.689   0.94013
CONS  99.758         335.75     0.29712  0.7686 0.0571  0.000 0.59866E-01
|_print uhat2 bhat2
  UHAT2
 -498.6280   -209.1053   -277.9169   -339.2562   -321.7151   -391.7396   -
437.2141    84.48403
  92.30060    260.7989    392.5695    342.8901    592.2154    495.3185
261.0726    94.78131
 -102.1601   -100.2807   -287.0997   -294.8934    1113.269    1218.010
928.3992    698.4203
  355.6580   -565.4991   -1183.993   -990.5029   -930.1834
  BHAT2
 0.1877786E-01   99.75800
|_end
TYPE COMMAND
```

APPENDIX C : DETAILED RESULTS OF PHILLIPS-PERRON (PP) UNIT ROOT TEST

Variable	Test Statistics	Critical Value	nlag=3	nlag=5	nlag=7
c_t^w	$Z(t_{\bar{\alpha}})$	-2.57	-2.79	-3.25	-3.12
	$Z(\Phi_2)$	3.78	5.24	5.31	4.48
i_t^w	$Z(t_{\bar{\alpha}})$	-2.57	-1.59	-1.57	-1.58
	$Z(\Phi_2)$	3.78	2.54	2.75	2.70
$_{1t}^{w}$	$Z(t_{\bar{\alpha}})$	-2.57	-1.60	-1.58	-1.58
	$Z(\Phi_2)$	3.78	2.52	2.72	2.68
$_{2t}^{w}$	$Z(t_{\bar{\alpha}})$	-2.57	-2.28	-2.26	-2.26
	$Z(\Phi_2)$	3.78	2.58	3.08	3.08
$_{3t}^{w}$	$Z(t_{\bar{\alpha}})$	-2.57	-2.23	-2.29	-2.31
	$Z(\Phi_2)$	3.78	2.59	2.71	2.77
x_t^w	$Z(t_{\bar{\alpha}})$	-2.57	-1.81	-1.64	-1.65
	$Z(\Phi_2)$	3.78	3.08	3.00	3.28

For $Z(t_{\bar{\alpha}})$, the critical value at 10% level is -2.57. PP corresponds to the unit root with constant without trend. Test value less than the critical value indicates stationarity. For $Z(\Phi_2)$, the critical value is 3.78. Test value greater than critical value indicates stationarity.

APPENDIX D : DETAILED RESULTS OF THE COINTEGRATION ANALYSIS

COINTEGRATION ANALYSIS

```
calendar 1962 3 4
allocate 20 1991:2
open data c:\winrats\data7.txt
data(org=obs) / con in g31 g32 g1 g2 lei
set g3 = g31 + g32
source c:\winrats\cats\catsmain.src
@cats(lags=5,season=4,exo,dettrend=drift) 1962:3 1991:2
#in g1 g2 g3
#con lei
compute [string] %catsdir = 'U:\WIN\CATS\'
source(noecho) &%catsdir+'cats.src'
```

COINTEGRATION ANALYSIS

Endogeneous series :

IN G1 G2 G3

Exogeneous series

Non stationary :

CON LEI

Deterministic series :

Unrestricted constant

3 centered seasonal dummies

Effective sample : 1963:04 TO 1991:02

Lag(s) in VAR-model : 5

No. of observations : 111

Obs.- no.of variables: 75

I(1) ANALYSIS

Eigenv.	L-max	Trace	H0: r	p-r
0.2113	28.35	72.89	0	4
0.1348	19.07	46.54	1	3
0.0653	15.50	20.47	2	2
0.0264	7.97	12.97	3	1

BETA (transposed)

IN	G1	G2	G3	CON	LEI
666.500	-592.813	-111.748	-69.522	25.701	0.459
1402.466	-1196.259	24.022	-586.908	22.828	-50.090

-2157.554	2282.046	34.628	-192.503	30.775	-25.359
2741.671	-2697.562	23.400	-462.247	7.099	-43.454

ALPHA

0.001	-0.001	0.000	-0.000
0.001	-0.001	-0.000	-0.000
0.002	-0.000	0.000	0.000
-0.000	-0.000	0.000	0.000

PI

IN	G1	G2	G3	CON	LEI
-1.243	1.108	-0.098	0.532	-0.003	0.050
-1.141	1.007	-0.099	0.522	-0.003	0.049
1.083	-0.891	-0.252	-0.200	0.067	-0.005
-0.485	0.477	0.015	0.028	-0.000	0.000

Re-normalisation of the eigenvectors

EIGENVECTOR(S) (transposed)

IN	G1	G2	G3	CON	LEI
666.4998	-592.8131	-111.7484	-69.5222	25.7015	0.4592

The matrices based on 1 cointegration vectors

BETA (transposed)

IN	G1	G2	G3	CON	LEI
1.000	-0.889	-0.168	-0.104	0.039	0.001

ALPHA		T-VALUES FOR ALPHA
DIN	0.440	2.438
DG1	0.447	2.517
DG2	1.554	5.285
DG3	-0.073	-1.765

PI

	IN	G1	G2	G3	CON	LEI
DIN	0.440	-0.392	-0.074	-0.046	0.017	0.000
DG1	0.447	-0.398	-0.075	-0.047	0.017	0.000
DG2	1.554	-1.382	-0.260	-0.162	0.060	0.001
DG3	-0.073	0.065	0.012	0.008	-0.003	-0.000

T-VALUES FOR PI

2.438	-2.438	-2.438	-2.438	2.438	2.438
2.517	-2.517	-2.517	-2.517	2.517	2.517
5.285	-5.285	-5.285	-5.285	5.285	5.285

-1.765	1.765	1.765	1.765	-1.765	-1.765

Re-normalisation of the eigenvectors

EIGENVECTOR(S) (transposed)

IN	G1	G2	G3	CON	LEI
-500.7722	444.9512	110.4121	0.0000	-26.8336	-4.7762

The LR test, CHISQ(1) = 0.09 , p-value = 0.04

BETA (transposed)

IN	G1	G2	G3	CON	LEI
1.000	-0.889	-0.220	0.000	0.054	0.010

ALPHA		T-VALUES FOR ALPHA
DIN	0.361	2.672*
DG1	0.365	2.751*
DG2	1.164	5.267*
DG3	-0.053	-1.692

PI

	IN	G1	G2	G3	CON	LEI
DIN	0.361	-0.320	-0.080	0.000	0.019	0.003
DG1	0.365	-0.325	-0.081	0.000	0.020	0.003
DG2	1.164	-1.034	-0.257	0.000	0.062	0.011
DG3	-0.053	0.047	0.012	0.000	-0.003	-0.001

T-VALUES FOR PI

2.672	-2.672	-2.672	NA	2.672	2.672
2.751	-2.751	-2.751	NA	2.751	2.751
5.267	-5.267	-5.267	NA	5.267	5.267
-1.692	1.692	1.692	NA	-1.692	-1.692

RESIDUAL ANALYSIS

Correlation matrix

DIN	DG1	DG2	DG3	DLEI
1.000000				
0.999328	1.000000			
0.451184	0.460240	1.000000		
0.152834	0.124603	-0.096071	1.000000	

Standard deviations of residuals

0.002893	0.002848	0.004657	0.000658	0.009077

MULTIVARIATE STATISTICS

LOG(DET(SIGMA)) = -66. 1777
INFORMATION CRITERIA: SC = -59.54140
HQ = -61.79010
TRACE CORRELATION = 0.38689

TEST FOR AUTOCORRELATION
L-B(27), CHISQ(570) = 598.065, p-val = 0.20
LM(1), CHISQ(25) = 15.323, p-val = 0.93
LM(4), CHISQ(25) = 25.695, p-val = 0.42

TEST FOR NORMALITY
CHISQ(10) = 247.512, p-val = 0.00

UNIVARIATE STATISTICS

MEAN	STD.DEV	SKEWNESS	KURTOSIS	MAXIMUM	MINIMUM
-0.000000	0.002893	0.332662	3.535401	0.008729	-0.006768
-0.000000	0.002848	0.345653	3.524181	0.008582	-0.006817
-0.000000	0.004657	-0.218541	2.871206	0.009853	-0.013429
0.000000	0.000658	1.242821	18.425201	0.003896	-0.003183

ARCH(4)	Normality	R-squared
2.565	3.411	0.501
3.135	3.420	0.506
2.679	0.982	0.384
0.814	172.341	0.204

APPENDIX E : DETAILED RESULTS OF THE SHORT-RUN DYNAMICS

The short-run matrices

The lagged endogenous variables

Time: t-1

DIN	DG1	DG2	DG3
2.685	-2.984	-0.068	0.393
2.542	-2.843	-0.069	0.390
-6.085	5.868	-0.054	-0.045
0.618	-0.570	-0.011	-0.049

t-values

0.677	-0.742	-1.068	0.672
0.652	-0.718	-1.095	0.677
-0.953	0.906	-0.526	-0.048
0.685	-0.623	-0.788	-0.365

Time: t-2

DIN	DG1	DG2	DG3
-6.007	5.827	-0.075	0.990
-5.879	5.699	-0.074	0.961
-7.989	7.548	0.328	0.603
-0.599	0.614	-0.020	0.037

t-values

-1.541	1.473	-1.051	1.698
-1.532	1.464	-1.054	1.674
-1.273	1.185	2.851	0.642
-0.676	0.683	-1.219	0.277

Time: t-3

DIN	DG1	DG2	DG3
1.712	-1.651	-0.104	0.037
1.638	-1.578	-0.101	0.053
-8.252	8.037	0.119	0.293
0.152	-0.163	0.005	-0.075

t-values

2.458	-1.438	-2.449	0.762

1.446	-1.425	-1.423	1.093
-1.373	2.324	1.029	1.310
1.179	-1.190	0.907	-1.561

Time: t-4

DIN	DG1	DG2	DG3
-7.503	7.353	0.061	0.263
-7.683	7.536	0.060	0.289
-8.038	7.853	0.026	0.584
0.937	-0.945	-0.001	0.138

t-values

-2.032	1.971	0.872	1.463
-2.114	2.052	1.870	2.515
-1.353	1.308	2.232	0.638
1.116	-1.114	-0.053	1.066

The differences of the exogenous I(1) variables

Time: t-0

DCON
0.167
0.167
0.288
0.003

t-values

4.421
4.493
4.740
0.294

Time: t-1

DCON
0.076
0.075
0.083
0.003

t-values

1.844
1.842
1.247
0.295

Time: t-2

DCON
0.001
0.002
-0.067
0.006
0.034

t-values
0.017
0.043
-1.008
0.669
0.265

Time: t-3

DCON
-0.005
-0.006
0.011
-0.001
-0.196

t-values
-0.113
-0.142
0.166
-0.078
-1.553

Time: t-4
DCON
-0.105
-0.103
0.028
-0.009
0.147

t-values
-2.581
-2.574
0.420
-0.984
1.148

The deterministic variables

SEA(1)	SEA(2)	SEA(3)	CONST
0.000	0.001	0.001	0.006
0.000	0.001	0.001	0.006
0.001	0.002	0.002	0.021
0.000	0.000	0.000	-0.001

t-values

0.294	1.098	0.924	2.585
0.261	1.097	0.898	2.658
0.821	1.341	1.090	5.423
0.546	0.001	0.281	-1.736

APPENDIX F: DETAILED RESULTS OF THE IMPULSE RESPONSE ANALYSIS

```
calendar 1962 3 4
allocate 20 1991:2
open data a:\data7.txt
data(org=obs) / Con In G31 G32 G1 G2 Lei
set g3 = g31 + g32
set de = (in) - (1.064*g1) + (0.901*g2) - (0.810*g3) - (0.250*lei) - (0.467*con)
seasonal seasons
table / in g1 g2 g3 lei con
*
system 1 to 6
vars in g1 g2 g3 lei con
lags 1 to 5
det constant seasons{-2 to 0}
end(system)
estimate(outsigma=V) 63:4 91:2
*
list ieqn = 4 1 2 3 5 6
Errors(impulses) 6 36 V
# 4
# 1
# 2
# 3
# 5
# 6
```

Series	Obs	Mean	Std Error	Minimum	Maximum
IN	116	0.15806550948	0.02226770032	0.11450720000	0.19419660000
G1	116	0.15676414052	0.02162916756	0.11414610000	0.19146850000
G2	116	0.32188284224	0.02045130895	0.27664690000	0.35927610000
G3	116	0.00774929138	0.00270251277	0.00202400000	0.01351060000
LEI	116	0.60189542155	0.07136582099	0.45893250000	0.71948490000
CON	116	0.59045080517	0.01620850483	0.55623790000	0.63327330000

```
Dependent Variable IN - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations   111    Degrees of Freedom   77
Centered R**2    0.979964    R Bar **2   0.971377
Uncentered R**2  0.999665     T x R**2    110.963
Mean of Dependent Variable      0.1599108757
Std Error of Dependent Variable 0.0209418591
Standard Error of Estimate      0.0035430280
Sum of Squared Residuals        0.0009665847
```

Durbin-Watson Statistic 2.033111

Variable	Coeff	Std Error	T-Stat	Signif
**				
1. IN{1}	8.56792796	5.04939168	1.69682	0.09376910
2. IN{2}	11.31964397	6.89637996	-1.64139	0.10479523
3. IN{3}	10.40669384	6.70964578	1.55100	0.12500118
4. IN{4}	-10.88975622	6.44142926	-1.69058	0.09496143
5. IN{5}	3.70026658	4.83227600	0.76574	0.44617203
6. G1{1}	-7.97419638	5.13547282	-1.55277	0.12457940
7. G1{2}	11.46312371	6.99784844	1.63809	0.10548271
8. G1{3}	-10.2625955	6.80906863	-1.50720	0.13585257
9. G1{4}	10.71780758	6.53420928	1.64026	0.10503014
10. G1{5}	-3.53985028	4.88379359	-0.72482	0.47076196
11. G2{1}	-0.13664111	0.08481457	-1.61106	0.11125924
12. G2{2}	-0.10452214	0.10938443	-0.95555	0.34229077
13. G2{3}	0.02044414	0.11011893	0.18566	0.85320345
14. G2{4}	0.15203631	0.11082760	1.37183	0.17410113
15. G2{5}	-0.07587026	0.09072492	-0.83627	0.40559240
16. G3{1}	-0.14960089	0.76792925	-0.19481	0.84605419
17. G3{2}	1.12234544	0.98755853	1.13648	0.25927829
18. G3{3}	-1.53889409	0.96564385	-1.59365	0.11511235
19. G3{4}	0.62635007	0.96444474	0.64944	0.51798593
20. G3{5}	0.18899633	0.76855045	0.24591	0.80640412
21. LEI{1}	0.01053593	0.03924368	0.26847	0.78905193
22. LEI{2}	0.04114828	0.05030196	0.81803	0.41586697
23. LEI{3}	0.06391508	0.05131219	1.24561	0.21668391
24. LEI{4}	-0.01719572	0.05096483	-0.33740	0.73673071
25. LEI{5}	-0.04296554	0.04066792	-1.05650	0.29404464
26. CON{1}	0.06155139	0.05620407	1.09514	0.27686857
27. CON{2}	-0.06209325	0.06951586	-0.89322	0.37452036
28. CON{3}	-0.00740498	0.06818968	-0.10859	0.91380715
29. CON{4}	-0.13076683	0.06967415	-1.87683	0.06432906
30. CON{5}	0.06640071	0.05487250	1.21009	0.22994585
31. Constant	0.07508366	0.03703457	2.02739	0.04608269
32. SEASONS{-2}	0.00072367	0.00106616	0.67876	0.49932229
33. SEASONS{-1}	0.00058392	0.00100756	0.57954	0.56391909
34. SEASONS	0.00125740	0.00107049	1.17460	0.24377291

F-Tests, Dependent Variable IN

Variable	F-Statistic	Signif
IN	1.1945	0.3198163
G1	1.1024	0.3661315
G2	3.0474	0.0145733
G3	0.6830	0.6376609
LEI	2.3890	0.0454532
CON	1.9356	0.0980076

Dependent Variable G1 - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations 111 Degrees of Freedom 77
Centered R**2 0.979308 R Bar**2 0.970441
Uncentered R**2 0.999668 T x R**2 110.963
Mean of Dependent Variable 0.1585628577
Std Error of Dependent Variable 0.0203282960
Standard Error of Estimate 0.0034950164
Sum of Squared Residuals 0.0009405657
Durbin-Watson Statistic 2.031065

Variable	Coeff	Std Error	T-Stat	Signif
1. IN{1}	7.43871383	4.98096729	1.49343	0.13941184
2. IN{2}	-11.06889426	6.80292699	-1.62708	0.10780612
3. IN{3}	10.24112733	6.61872326	1.54730	0.12589220
4. IN{4}	-11.00153936	6.35414134	-1.73140	0.08738602
5. IN{5}	3.95149406	4.76679374	0.82896	0.40968788
6. G1{1}	-6.84407630	5.06588193	-1.35101	0.18064761
7. G1{2}	11.21402525	6.90302047	1.62451	0.10835378
8. G1{3}	-10.09848633	6.71679882	-1.50347	0.13680923
9. G1{4}	10.83425147	6.44566409	1.68086	0.09684279
10. G1{5}	-3.79580319	4.81761321	-0.78790	0.43317333
11. G2{1}	-0.13853373	0.08366525	-1.65581	0.10183054
12. G2{2}	-0.10270644	0.10790216	-0.95185	0.34415251
13. G2{3}	0.02345703	0.10862671	0.21594	0.82960424
14. G2{4}	0.14730390	0.10932577	1.34738	0.18180783
15. G2{5}	-0.07546201	0.08949550	-0.84319	0.40173209
16. G3{1}	-0.14655994	0.75752303	-0.19347	0.84709832
17. G3{2}	1.09666703	0.97417611	1.12574	0.26377301
18. G3{3}	-1.49737329	0.95255839	-1.57195	0.12006270
19. G3{4}	0.63599145	0.95137553	0.66850	0.50581568
20. G3{5}	0.15213733	0.75813581	0.20067	0.84148343
21. LEI{1}	0.01080793	0.03871189	0.27919	0.78084829
22. LEI{2}	0.04474113	0.04962032	0.90167	0.37004418
23. LEI{3}	0.05880576	0.05061686	1.16178	0.24891261
24. LEI{4}	-0.01670017	0.05027420	-0.33218	0.74065465
25. LEI{5}	-0.04259346	0.04011683	-1.06174	0.29167457
26. CON{1}	0.06021925	0.05544245	1.08616	0.28079781
27. CON{2}	-0.06001726	0.06857385	-0.87522	0.38417575
28. CON{3}	-0.00957717	0.06726564	-0.14238	0.88715301
29. CON{4}	-0.12784318	0.06872999	-1.86008	0.06669319
30. CON{5}	0.06525748	0.05412892	1.20559	0.23166599
31. Constant	0.07532840	0.03653271	2.06194	0.04258706
32. SEASONS{-2}	0.00069236	0.00105171	0.65832	0.51229751
33. SEASONS{-1}	0.00055847	0.00099390	0.57196	0.56901644

34. SEASONS	0.00122301	0.00105599	1.15817	0.25037515

F-Tests, Dependent Variable G1

Variable	F-Statistic	Signif
IN	1.1224	0.3556432
G1	1.2309	0.3028741
G2	3.1312	0.0126078
G3	0.6597	0.6550778
LEI	2.4382	0.0417749
CON	1.9415	0.0970544

Dependent Variable G2 - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations 111 Degrees of Freedom 77
Centered R**2 0.927931 R Bar **2 0.897044
Uncentered R**2 0.999760 T x R**2 110.973
Mean of Dependent Variable 0.3237622856
Std Error of Dependent Variable 0.0188161707
Standard Error of Estimate 0.0060374862
Sum of Squared Residuals 0.0028067454
Durbin-Watson Statistic 2.037494

Variable	Coeff	Std Error	T-Stat	Signif
1. IN{1}	-0.14937256	8.60440064	-0.01736	0.98619431
2. IN{2}	-8.17274305	11.75175543	-0.69545	0.48886773
3. IN{3}	7.66366844	11.43355163	0.67028	0.50468537
4. IN{4}	-4.56454512	10.97649807	-0.41585	0.67867857
5. IN{5}	7.13327652	8.23442531	0.86627	0.38903070
6. G1{1}	0.12866611	8.75108694	0.01470	0.98830726
7. G1{2}	8.06401785	11.92466249	0.67625	0.50091005
8. G1{3}	-7.60338448	11.60297282	-0.65530	0.51423008
9. G1{4}	4.67724723	11.13459958	0.42006	0.67560839
10. G1{5}	-7.01310394	8.32221371	-0.84270	0.40200798
11. G2{1}	0.62085550	0.14452802	4.29574	0.00005029
12. G2{2}	0.24166727	0.18639621	1.29652	0.19866698
13. G2{3}	-0.06749646	0.18764784	-0.35970	0.72005799
14. G2{4}	-0.10395333	0.18885543	-0.55044	0.58361192
15. G2{5}	-0.03296391	0.15459952	-0.21322	0.83171789
16. G3{1}	-0.65226555	1.30858752	-0.49845	0.61958771
17. G3{2}	1.50445577	1.68284613	0.89399	0.37411049
18. G3{3}	-1.78987234	1.64550248	-1.08774	0.28010473
19. G3{4}	1.09267038	1.64345915	0.66486	0.50812641
20. G3{5}	-0.76344507	1.30964607	-0.58294	0.56163709
21. LEI{1}	0.04716523	0.06687307	0.70529	0.48275495
22. LEI{2}	0.03320641	0.08571690	0.38740	0.69953160

23. LEI{3}	-0.07417917	0.08743839	-0.84836	0.39886754
24. LEI{4}	-0.01265028	0.08684646	-0.14566	0.88456839
25. LEI{5}	0.02941564	0.06930005	0.42447	0.67240839
26. CON{1}	0.07413324	0.09577438	0.77404	0.44127702
27. CON{2}	-0.15140558	0.11845829	-1.27813	0.20504169
28. CON{3}	0.07976435	0.11619842	0.68645	0.49449162
29. CON{4}	-0.03013284	0.11872802	-0.25380	0.80032867
30. CON{5}	-0.00848324	0.09350532	-0.09072	0.92794699
31. Constant	0.09381056	0.06310865	1.48649	0.14123210
32. SEASONS{-2}	0.00206244	0.00181678	1.13522	0.25980606
33. SEASONS{-1}	0.00121745	0.00171692	0.70909	0.48041042
34. SEASONS	0.00247406	0.00182417	1.35627	0.17897828

F-Tests, Dependent Variable G2

Variable	F-Statistic	Signif
IN	0.4069	0.8426538
G1	0.3809	0.8604399
G2	17.4453	0.0000000
G3	0.5055	0.7712721
LEI	0.3672	0.8695305
CON	0.3782	0.8622257

Dependent Variable G3 - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations 111 Degrees of Freedom 77
Centered R**2 0.936151 R Bar **2 0.908788
Uncentered R**2 0.994209 T x R**2 110.357
Mean of Dependent Variable 0.0079743108
Std Error of Dependent Variable 0.0025299092
Standard Error of Estimate 0.0007640672
Sum of Squared Residuals 0.0000449525
Durbin-Watson Statistic 2.089948

Variable	Coeff	Std Error	T-Stat	Signif
1. IN{1}	0.774366471	1.088920070	0.71113	0.47915083
2. IN{2}	-1.180500172	1.487229951	-0.79376	0.42977590
3. IN{3}	0.614111187	1.446960033	0.42441	0.67244685
4. IN{4}	0.721998820	1.389118144	0.51975	0.60472650
5. IN{5}	-1.423828995	1.042098265	-1.36631	0.17581869
6. G1{1}	-0.744586960	1.107483786	-0.67232	0.50339052
7. G1{2}	1.150222850	1.509112005	0.76219	0.44827792
8. G1{3}	-0.641104405	1.468400938	-0.43660	0.66362304
9. G1{4}	-0.718466743	1.409126499	-0.50987	0.61160318
10. G1{5}	1.437292365	1.053208225	1.36468	0.17632843
11. G2{1}	-0.000147566	0.018290578	-0.00807	0.99358372
12. G2{2}	-0.011694762	0.023589159	-0.49577	0.62146982

13. G2{3}	0.022880838	0.023747557	0.96350	0.33831146
14. G2{4}	-0.004074309	0.023900383	-0.17047	0.86508732
15. G2{5}	0.006590877	0.019565165	0.33687	0.73713289
16. G3{1}	0.868140906	0.165606795	5.24218	0.00000135
17. G3{2}	0.086933350	0.212970665	0.40819	0.68426413
18. G3{3}	-0.103704246	0.208244682	-0.49799	0.61990884
19. G3{4}	0.222869568	0.207986090	1.07156	0.28726489
20. G3{5}	-0.048400692	0.165740758	-0.29203	0.77105174
21. LEI{1}	-0.002190191	0.008463045	-0.25879	0.79648403
22. LEI{2}	-0.011267332	0.010847804	-1.03867	0.30220706
23. LEI{3}	0.017860449	0.011065665	1.61404	0.11060920
24. LEI{4}	-0.004481968	0.010990754	-0.40779	0.68455629
25. LEI{5}	0.001830043	0.008770189	0.20867	0.83525977
26. CON{1}	0.003034568	0.012120617	0.25036	0.80297256
27. CON{2}	0.005203914	0.014991353	0.34713	0.72944233
28. CON{3}	-0.005794401	0.014705357	-0.39403	0.69464556
29. CON{4}	-0.008530762	0.015025489	-0.56775	0.57185467
30. CON{5}	0.005086982	0.011833459	0.42988	0.66848267
31. Constant	-0.002758452	0.007986643	-0.34538	0.73074811
32. SEASONS{-2}	0.000107461	0.000229921	0.46738	0.64154745
33. SEASONS{-1}	-0.000010826	0.000217283	-0.04983	0.96038981
34. SEASONS	0.000055776	0.000230856	0.24160	0.80972926

F-Tests, Dependent Variable G3

Variable	F-Statistic	Signif
IN	1.0019	0.42224159
G1	1.0063	0.41983417
G2	0.4289	0.82714227
G3	53.5082	0.00000000
LEI	0.6941	0.62945330
CON	0.2036	0.96003005

Dependent Variable LEI - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations 111 Degrees of Freedom 77
Centered R**2 0.984125 R Bar **2 0.977322
Uncentered R**2 0.999815 T x R**2 110.980
Mean of Dependent Variable 0.6082119207
Std Error of Dependent Variable 0.0562587624
Standard Error of Estimate 0.0099781168
Sum of Squared Residuals 0.0076663367
Durbin-Watson Statistic 1.929109

Variable	Coeff	Std Error	T-Stat	Signif
1. IN{1}	-4.55807505	14.22044074	-0.32053	0.74943500
2. IN{2}	42.04134995	19.42205490	2.16462	0.03351551

3. IN{3}	-33.59019902	18.89616140	-1.77762	0.07941469
4. IN{4}	9.71182175	18.14079177	0.53536	0.59394506
5. IN{5}	-6.36013191	13.60898475	-0.46735	0.64157081
6. G1{1}	5.44334434	14.46286829	0.37637	0.70767926
7. G1{2}	-42.41248900	19.70781734	-2.15206	0.03452580
8. G1{3}	34.53454199	19.17616278	1.80091	0.07563251
9. G1{4}	-10.77591240	18.40208516	-0.58558	0.55986948
10. G1{5}	6.57501526	13.75407210	0.47804	0.63397518
11. G2{1}	-0.15016163	0.23886058	-0.62866	0.53143342
12. G2{2}	-0.23992059	0.30805588	-0.77882	0.43847174
13. G2{3}	0.30428185	0.31012444	0.98116	0.32958643
14. G2{4}	0.35321360	0.31212023	1.13166	0.26129002
15. G2{5}	-0.15259016	0.25550569	-0.59721	0.55212035
16. G3{1}	-0.26349955	2.16269466	-0.12184	0.90334431
17. G3{2}	-2.25998492	2.78122959	-0.81258	0.41896141
18. G3{3}	1.80724947	2.71951196	0.66455	0.50832421
19. G3{4}	-1.83320305	2.71613496	-0.67493	0.50174139
20. G3{5}	0.96237734	2.16444411	0.44463	0.65783426
21. LEI{1}	0.80912807	0.11052072	7.32105	0.00000000
22. LEI{2}	-0.06424156	0.14166380	-0.45348	0.65147929
23. LEI{3}	0.03782088	0.14450890	0.26172	0.79423610
24. LEI{4}	-0.28977400	0.14353061	-2.01890	0.04697886
25. LEI{5}	0.20174320	0.11453178	1.76146	0.08213008
26. CON{1}	-0.30808639	0.15828574	-1.94639	0.05525544
27. CON{2}	0.18157625	0.19577529	0.92747	0.35657927
28. CON{3}	-0.23332697	0.19204042	-1.21499	0.22808289
29. CON{4}	0.31549262	0.19622108	1.60784	0.11196265
30. CON{5}	-0.28734271	0.15453568	-1.85939	0.06679131
31. Constant	0.25173191	0.10429928	2.41355	0.01817409
32. SEASONS{-2}	-0.00199330	0.00300259	-0.66386	0.50876293
33. SEASONS{-1}	0.00325294	0.00283755	1.14992	0.25373750
34. SEASONS	-0.00154472	0.00301479	-0.51238	0.60985152

F-Tests, Dependent Variable LEI

Variable	F-Statistic	Signi
IN	2.0579	0.0798219
G1	1.8954	0.1047958
G2	0.8802	0.4985075
G3	0.9212	0.4719395
LEI	19.9148	0.0000000
CON	2.1585	0.0673363

Dependent Variable CON - Estimation by Least Squares
Quarterly Data From 1963:04 To 1991:02
Usable Observations 111 Degrees of Freedom 77
Centered R**2 0.783842 R Bar **2 0.691203
Uncentered R**2 0.999875 T x R**2 110.986
Mean of Dependent Variable 0.5886959387

Std Error of Dependent Variable 0.0142209919
Standard Error of Estimate 0.0079025329
Sum of Squared Residuals 0.0048086520
Durbin-Watson Statistic 1.946051

Variable	Coeff	Std Error	T-Stat	Signif
1. IN{1}	13.82935002	11.26239578	1.22792	0.22321644
2. IN{2}	-22.35870984	15.38200349	-1.45356	0.15013125
3. IN{3}	28.66403013	14.96550299	1.91534	0.05916233
4. IN{4}	-16.69021151	14.36726051	-1.16168	0.24895234
5. IN{5}	-1.49867375	10.77813095	-0.13905	0.88977553
6. G1{1}	-13.72455234	11.45439510	-1.19819	0.23451772
7. G1{2}	22.69213896	15.60832346	1.45385	0.15005221
8. G1{3}	-29.30539316	15.18726028	-1.92960	0.05733971
9. G1{4}	16.94292617	14.57420132	1.16253	0.24861124
10. G1{5}	1.28132851	10.89303815	0.11763	0.90666855
11. G2{1}	-0.22494648	0.18917433	-1.18910	0.23805588
12. G2{2}	-0.46841386	0.24397607	-1.91992	0.05857220
13. G2{3}	0.54291320	0.24561434	2.21043	0.03004463
14. G2{4}	-0.05888490	0.24719498	-0.23821	0.81234917
15. G2{5}	-0.11293401	0.20235703	-0.55809	0.57840013
16. G3{1}	-0.91416042	1.71282477	-0.53372	0.59507607
17. G3{2}	3.08007001	2.20269603	1.39832	0.16603210
18. G3{3}	-5.28763254	2.15381651	-2.45501	0.01634399
19. G3{4}	2.81168404	2.15114197	1.30707	0.19508031
20. G3{5}	-0.88981488	1.71421032	-0.51908	0.60519269
21. LEI{1}	-0.05271304	0.08753091	-0.60222	0.54879568
22. LEI{2}	-0.00941016	0.11219580	-0.08387	0.93337536
23. LEI{3}	0.11638816	0.11444908	1.01694	0.31236541
24. LEI{4}	0.06923851	0.11367429	0.60910	0.54425406
25. LEI{5}	0.00844355	0.09070761	0.09309	0.92607755
26. CON{1}	0.75066290	0.12536015	5.98805	0.00000006
27. CON{2}	0.00347878	0.15505137	0.02244	0.98215796
28. CON{3}	-0.00316702	0.15209340	-0.02082	0.98344084
29. CON{4}	-0.16119163	0.15540443	-1.03724	0.30287058
30. CON{5}	0.09957532	0.12239016	0.81359	0.41838903
31. Constant	0.23941745	0.08260361	2.89839	0.00488353
32. SEASONS{-2}	0.00317885	0.00237801	1.33677	0.18523466
33. SEASONS{-1}	-0.00193352	0.00224730	-0.86037	0.39225412
34. SEASONS	0.00318230	0.00238768	1.33280	0.18652706

F-Tests, Dependent Variable CON

Variable	F-Statistic	Signif
IN	1.1270	0.3532683
G1	1.1340	0.3496838

G2	3.4383	0.0074010
G3	1.6867	0.1478338
LEI	1.2980	0.2735903
CON	14.6247	0.0000000

Responses to Shock in G3

Entry	G3	IN	G1
1	0.0029509269563	0.0029091136040	0.0027235627671
2	0.0027913062594	0.0029135158085	0.0027124082194
3	0.0026169520207	0.0047703238729	0.0045397513768
4	0.0022916380607	0.0040482934762	0.0038550586307
5	0.0025986659192	0.0020353475042	0.0019455883263
6	0.0023632091058	0.0029512607678	0.0028636254835
7	0.0023479952596	0.0033818085593	0.0032694758687
8	0.0022492383446	0.0030310786656	0.0029121189925
9	0.0021125270518	0.0036095347845	0.0035134022461
10	0.0020974813199	0.0033309134303	0.0032637923066
11	0.0020418860064	0.0035163465742	0.0034078605580
12	0.0019842915004	0.0040632647406	0.0039564998873
13	0.0018802882650	0.0048361607506	0.0047320871423
14	0.0018224535605	0.0051492251493	0.0050539136009
15	0.0017420925078	0.0057911085859	0.0057001836923
16	0.0016730163478	0.0065243809634	0.0064357518129
17	0.0016077308098	0.0069495551234	0.0068672461193
18	0.0015482065495	0.0075521221432	0.0074796443682
19	0.0014845422111	0.0079357582492	0.0079058049167
20	0.0014218442056	0.0082282148475	0.0081514155054
21	0.0013559836390	0.0085336749530	0.0085071437715
22	0.0013056739108	0.0087712585981	0.0086948286766
23	0.0012595174492	0.0089347657413	0.0088563084780
24	0.0012212744398	0.0091277658323	0.0090445427417
25	0.0011931120799	0.0092085067628	0.0091198728280
26	0.0011680626346	0.0092931019448	0.0091985969799
27	0.0011487192855	0.0093578357845	0.0092664894912
28	0.0011333549485	0.0093989371074	0.0092908967513
29	0.0011191054874	0.0094365519490	0.0093218054773
30	0.0011071223769	0.0094571742000	0.0093452918714
31	0.0011071223757	0.0094571742300	0.0093452918715
32	0.0011071223756	0.0094571742300	0.0093452918716
33	0.0011071223754	0.0094571742300	0.0093452918716
34	0.0011071223754	0.0094571742300	0.0093452918716
35	0.0011071223754	0.0094571742300	0.0093452918716
36	0.0011071223754	0.0094571742300	0.0093452918716

Entry	G2	LEI	CON
1	0.000081824096	0.001161338816	0.002389392064
2	-0.001726190377	0.000979009741	0.001867854147
3	-0.000470416048	0.001685487759	0.008060118016
4	-0.003453678061	0.004243488458	0.001291124274
5	-0.003680065603	0.002912262421	0.001170387448
6	-0.003385309333	0.000218916377	-0.002208388533
7	-0.002438811729	-0.002520925453	-0.003129218707
8	-0.002638140088	-0.007377348172	-0.006455432835
9	-0.002020140419	-0.005154597712	-0.006711819432
10	-0.002304858822	-0.002785182380	-0.006760786032
11	-0.001774725905	-0.001500803517	-0.007152342900
12	-0.001513726389	0.002492721653	-0.008497062855
13	-0.001113351831	0.003757495833	-0.008805358464
14	-0.000707310928	0.005724749268	-0.009100637662
15	-0.000537409353	0.008193610904	-0.009011389190
16	-0.000053142839	0.009332348741	-0.008349560760
17	0.000349174672	0.011234225946	-0.007783983715
18	0.000751278220	0.012945539086	-0.007332484237
19	0.001229303687	0.014255145591	-0.006859409089
20	0.001662643433	0.015764320084	-0.006551625617
21	0.002114439101	0.016827761898	-0.006373804170
22	0.002556166968	0.017606348706	-0.006152307435
23	0.002943685021	0.018239155792	-0.005977211898
24	0.003302518110	0.018898983251	-0.005764686898
25	0.003593042036	0.019454036465	-0.005516784876
26	0.003847528772	0.020035885425	-0.005306912286
27	0.004055741402	0.020714414600	-0.005110684700
28	0.004231387692	0.021205882829	-0.004922331100
29	0.004381513182	0.021671214464	-0.004766359828
30	0.004499923232	0.022034134055	-0.004590321745
31	0.004499923332	0.022034134046	-0.004590321755
32	0.004499923332	0.022034134034	-0.004590321755
33	0.004499923332	0.022034134034	-0.004590321755
34	0.004499923332	0.022034134034	-0.004590321755
35	0.004499923332	0.022034134034	-0.004590321755
36	0.004499923332	0.022034134034	-0.004590321755

Decomposition of Variance for Series G3

Step	Std Error	G3	IN	G1	G2	LEI	CON
1	0.002950927	100.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2	0.005120170	62.93588	3.46770	33.59374	0.00009	0.00139	0.00120
3	0.006317162	58.50621	3.83266	37.60151	0.00107	0.04196	0.01659

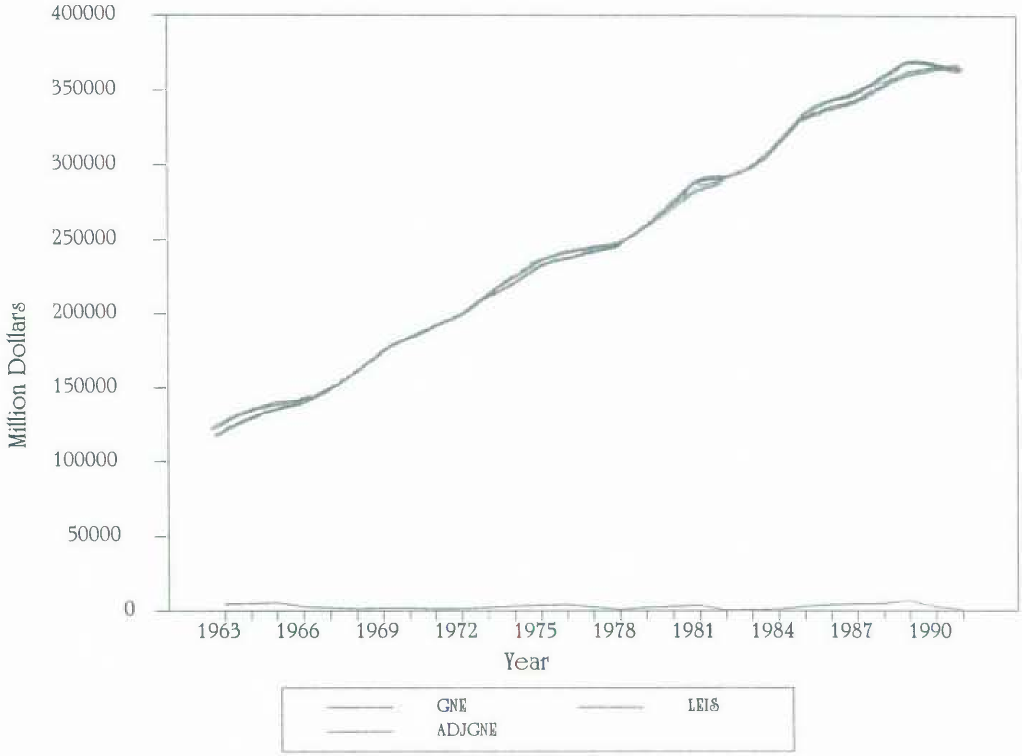
4	0.007233823	54.65391	4.19858	41.07975	0.00150	0.04307	0.02320
5	0.008925872	44.37296	5.19948	50.38111	0.00103	0.02963	0.01580
6	0.009772239	42.86771	5.38544	51.70781	0.00092	0.02484	0.01329
7	0.010095059	45.57964	5.11780	49.26449	0.00089	0.02372	0.01346
8	0.010847687	43.77358	5.25240	50.93951	0.00093	0.02193	0.01166
9	0.012225851	37.44672	5.80633	56.71817	0.00092	0.01864	0.00922
10	0.014889599	27.23118	6.74726	66.00138	0.00083	0.01293	0.00642
11	0.018066725	19.77316	7.44290	72.76981	0.00071	0.00900	0.00443
12	0.021858325	14.33241	7.96036	77.69682	0.00057	0.00629	0.00306
13	0.025566244	11.01747	8.27992	80.69515	0.00047	0.00475	0.00225
14	0.029350661	8.74504	8.50234	82.74666	0.00037	0.00388	0.00171
15	0.032931896	7.22631	8.65274	84.11591	0.00030	0.00335	0.00139
16	0.036214219	6.18916	8.75713	85.04923	0.00025	0.00303	0.00120
17	0.039205854	5.44882	8.83266	85.71441	0.00021	0.00280	0.00109
18	0.041918161	4.90292	8.88923	86.20404	0.00019	0.00260	0.00103
19	0.044397057	4.48250	8.93321	86.58068	0.00017	0.00243	0.00100
20	0.046697923	4.14438	8.96878	86.88340	0.00015	0.00229	0.00101
21	0.048848904	3.86448	8.99817	87.13401	0.00014	0.00216	0.00103
22	0.050896744	3.62557	9.02324	87.34793	0.00013	0.00206	0.00108
23	0.052854936	3.41869	9.04492	87.53319	0.00012	0.00195	0.00112
24	0.054748319	3.23608	9.06409	87.69669	0.00011	0.00186	0.00116
25	0.056583673	3.07402	9.08123	87.84170	0.00011	0.00176	0.00119
26	0.058357211	2.93007	9.09657	87.97038	0.00010	0.00167	0.00121
27	0.060075393	2.80143	9.11042	88.08527	0.00010	0.00158	0.00121
28	0.061731367	2.68685	9.12289	88.18745	0.00009	0.00150	0.00121
29	0.063322854	2.58473	9.13414	88.27842	0.00009	0.00142	0.00120
30	0.064847386	2.49377	9.14428	88.35932	0.00008	0.00136	0.00119
31	0.066300338	2.41302	9.15341	88.43102	0.00008	0.00130	0.00117
32	0.067682444	2.34122	9.16163	88.49468	0.00008	0.00125	0.00115
33	0.068994840	2.27730	9.16903	88.55126	0.00007	0.00120	0.00113
34	0.070241139	2.22015	9.17573	88.60179	0.00007	0.00116	0.00110
35	0.071427512	2.16865	9.18181	88.64727	0.00007	0.00112	0.00108
36	0.072560027	2.12187	9.18736	88.68856	0.00007	0.00109	0.00106

APPENDIX G : LEISURE VALUATION USING ESTIMATE III

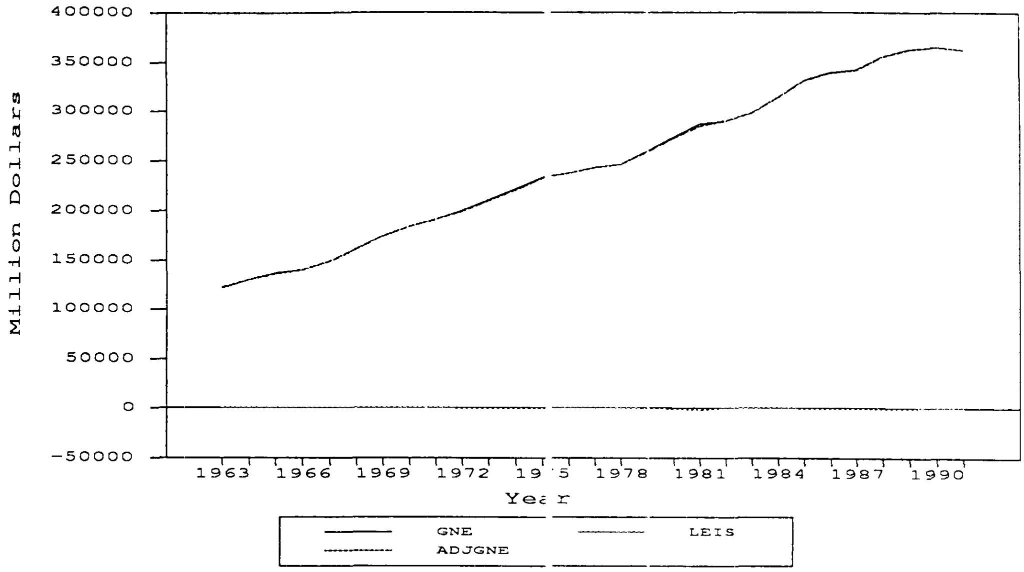
Adjustments to Gross National Expenditures for the value of leisure for 1963 to 1991 using Estimate III

Year (1)	GNE ($M) (2)	Value of Leisure ($M) (3)	Adjusted GNE ($M) (4)	% Leisure to Adjusted GNE (5)	Index of GNE (6)	Index of Leisure (7)	Index of Adjusted GNE (8)
1963	121424	4240	125664	3.37	100	100	100
1964	129712	4744	134456	3.53	107	112	107
1965	135410	5114	140523	3.64	112	121	112
1966	139160	2430	141590	1.72	115	57	113
1967	147910	1687	149597	1.13	122	40	119
1968	160036	1346	161382	0.83	132	32	128
1969	173216	1551	174767	0.89	143	37	139
1970	182979	1444	184423	0.78	151	34	147
1971	190157	1239	191396	0.65	157	29	152
1972	198632	1386	200018	0.69	164	33	159
1973	209680	2012	211692	0.95	173	47	168
1974	221062	2999	224060	1.34	182	71	178
1975	232288	3347	235635	1.42	191	79	188
1976	236648	3789	240437	1.58	195	89	191
1977	242359	2341	244700	0.96	200	55	195
1978	245219	962	246182	0.39	202	23	196
1979	258004	2019	260023	0.78	212	48	207
1980	273121	2721	275842	0.99	225	64	220
1981	286059	3419	289478	1.18	236	81	230
1982	289150	332	289482	0.11	238	8	230
1983	297919	663	298582	0.22	245	16	238
1984	313785	966	314751	0.31	258	23	250
1985	330929	2692	333621	0.81	273	63	265
1986	338818	3685	342502	1.08	279	87	273
1987	342422	4098	346520	1.18	282	97	276
1988	355239	4556	359795	1.27	293	107	286
1989	362609	6755	369363	1.83	299	159	294
1990	365179	2454	367633	0.67	301	58	293
1991	362019	943	362962	0.26	298	22	289

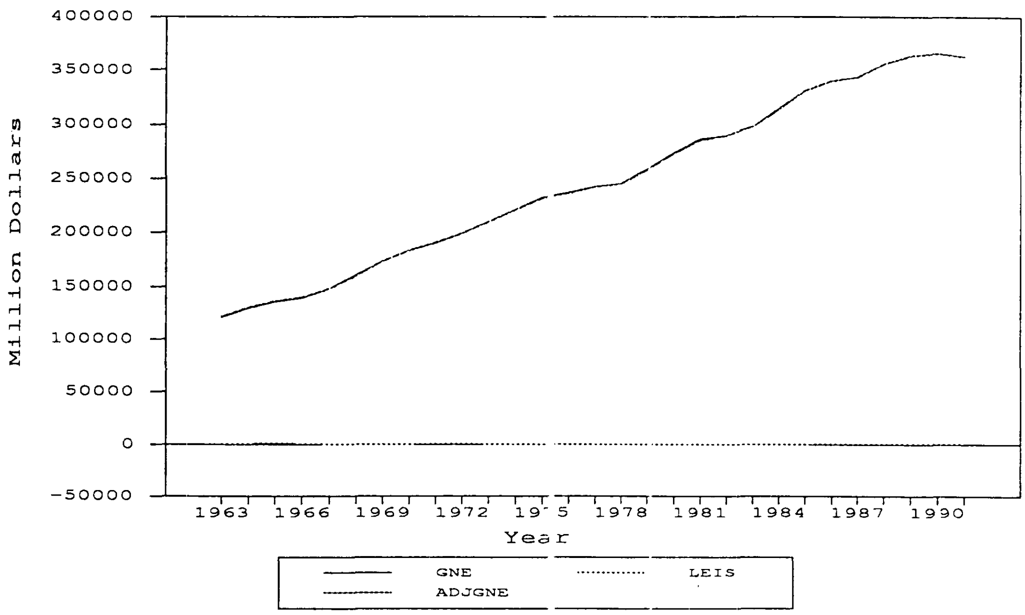
Reported GNE, Adjusted GNE and Leisure Value for 1963 to 1991 using Estimate III



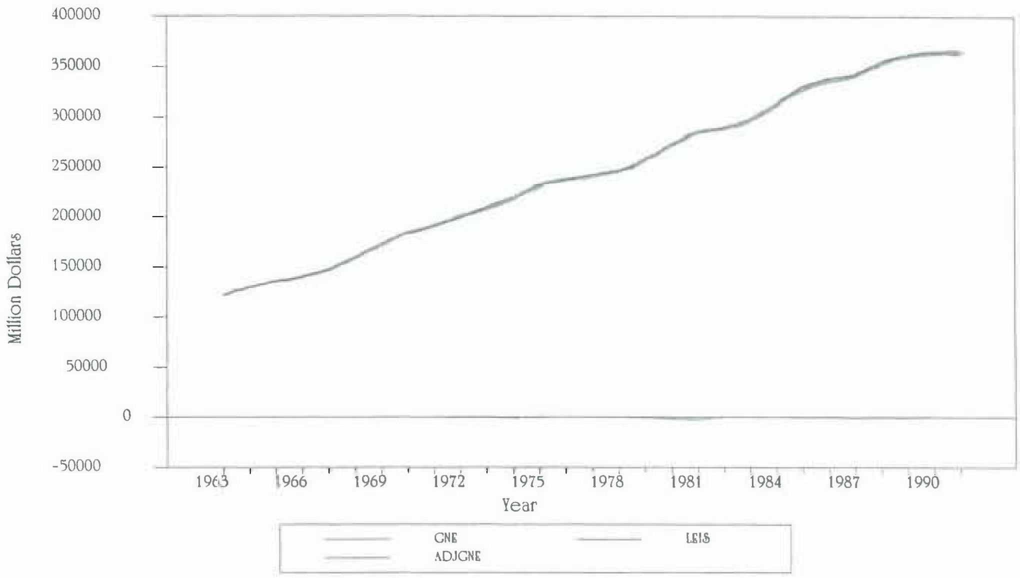
Reported GNE, Adjusted GNE and Leisure Value for 1963 to 1991 using Estimate IVA



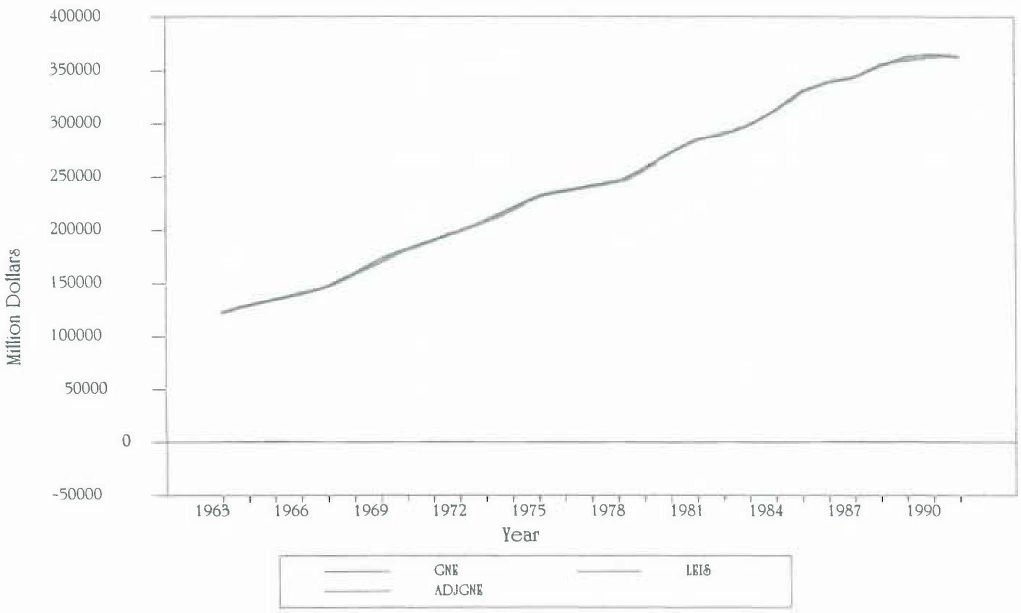
Reported GNE, Adjusted GNE and Leisure Value for 1963 to 1991 using Estimate IVB



Reported GNE, Adjusted GNE and Leisure Value for 1963 to 1991 using Estimate IVA



Reported GNE, Adjusted GNE and Leisure Value for 1963 to 1991 using Estimate IVB



Adjustments to Gross National Expenditures for the value of leisure for 1963 to 1991 using Estimate IVB

Year (1)	GNE ($M) (2)	Value of Leisure ($M) (3)	Adjusted GNE ($M) (4)	%Leisure Value to Adjusted GNE (5)	Index of GNE (6)	Index of Leisure (7)	Index of Adjusted GNE (8)
1963	121424	342	121766	0.28	100	100	100
1964	129712	416	130128	0.32	107	122	107
1965	135410	584	135994	0.43	112	171	112
1966	139160	430	139591	0.31	115	126	115
1967	147910	-194	147717	-0.13	122	-57	121
1968	160036	-303	159733	-0.19	132	-88	131
1969	173216	-300	172916	-0.17	143	-88	142
1970	182979	14	182993	0.01	151	4	150
1971	190157	100	190257	0.05	157	29	156
1972	198632	143	198776	0.07	164	42	163
1973	209680	18	209698	0.01	173	5	172
1974	221062	-153	220909	-0.07	182	-45	181
1975	232288	-403	231886	-0.17	191	-118	190
1976	236648	-426	236223	-0.18	195	-124	194
1977	242359	-432	241927	-0.18	200	-126	199
1978	245219	-127	245092	-0.05	202	-37	201
1979	258004	-558	257446	-0.22	212	-163	211
1980	273121	-650	272472	-0.24	225	-190	224
1981	286059	-712	285347	-0.25	236	-208	234
1982	289150	-75	289074	-0.03	238	-22	237
1983	297919	-244	297675	-0.08	245	-71	244
1984	313785	-328	313457	-0.10	258	-96	257
1985	330929	-312	330616	-0.09	273	-91	272
1986	338818	61	338878	0.02	279	18	278
1987	342422	473	342894	0.14	282	138	282
1988	355239	283	355522	0.08	293	83	292
1989	362609	465	363073	0.13	299	136	298
1990	365179	272	365452	0.07	301	80	300
1991	362019	79	362098	0.02	298	23	297

APENDIX H : LEISURE VALUATION USING ESTIMATES IVA and IVB

Adjustments to Gross National Expenditures for the value of leisure for 1963 to 1991 using Estimate IVA

Year (1)	GNE ($M) (2)	Value of Leisure ($M) (3)	Adjusted GNE ($M) (4)	%Leisure Value to Adjusted GNE (5)	Index of GNE (6)	Index of Leisure (7)	Index of Adjusted GNE (8)
1963	121424	206	121630	0.17	100	100	100
1964	129712	43	129754	0.03	107	21	107
1965	135410	-182	135228	-0.13	112	-88	111
1966	139160	-148	139013	-0.11	115	-72	114
1967	147910	-177	147733	-0.12	122	-86	121
1968	160036	-77	159960	-0.05	132	-37	132
1969	173216	-80	173136	-0.05	143	-39	142
1970	182979	-165	182814	-0.09	151	-80	150
1971	190157	-62	190095	-0.03	157	-30	156
1972	198632	-456	198176	-0.23	164	-221	163
1973	209680	-446	209234	-0.21	173	-216	172
1974	221062	-902	220160	-0.41	182	-438	181
1975	232288	-374	231914	-0.16	191	-182	191
1976	236648	-146	236503	-0.06	195	-71	194
1977	242359	-69	242289	-0.03	200	-34	199
1978	245219	-2	245217	0.00	202	-1	202
1979	258004	-736	257269	-0.29	212	-357	212
1980	273121	-1388	271734	-0.51	225	-673	223
1981	286059	-2281	283778	-0.80	236	-1107	233
1982	289150	-30	289119	-0.01	238	-15	238
1983	297919	-7	297912	0.00	245	-3	245
1984	313785	-143	313642	-0.05	258	-70	258
1985	330929	-285	330644	-0.09	273	-138	272
1986	338818	-325	338493	-0.10	279	-158	278
1987	342422	-630	341792	-0.18	282	-306	281
1988	355239	-315	354924	-0.09	293	-153	292
1989	362609	-650	361958	-0.18	299	-316	298
1990	365179	64	365243	0.02	301	31	300
1991	362019	30	362049	0.01	298	14	298

APPENDIX I : REGRESSION RESULT USED TO DETERMINE THE VALUE OF THE THETAS

```
Hello/Bonjour/Aloha/Howdy/G Da//Kia Ora/Konnichiwa/Buenos Dias/Nee Hau
Welcome to SHAZAM - Version 7.0 - MAR 1994 SYSTEM=UNIX    PAR= 312
|_sample 1 116
|_read (dat6.txt) gne c in g31 g32 g  g2
UNIT 88 IS NOW ASSIGNED TO  dat6.txt
  7 VARIABLES AND      116 OBSERVATIONS STARTING AT OBS      1

|_genr g = g31+g32+g1+g2
|_genr lg = log(g) - lag(log(g))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr gne = log(gne) - lag(log(gne))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr in = log(in) - lag(log(in))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr c = log(c) - lag(log(c))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr g31 = log(g31) - lag(log(g31 )
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr g32 = log(g32) - lag(log(g32 )
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr g1 = log(g1) - lag(log(g1))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
|_genr g2 = log(g2) - lag(log(g2))
..NOTE.LAG VALUE IN UNDEFINED OBSERVATIONS SET TO ZERO
1
|_nl 4 / ncoef=4 auto
...NOTE..SAMPLE RANGE SET TO:    1,   116
|_eq lg = g1 + g2 + g31 + g32
|_eq c = theta1*g1 + theta31*g31
|_eq in = theta2*g2 + theta32*g2
|_eq gne = c + in + (1-theta1)*g1 + (1-theta2)*g2 + (1-theta31)*g31 &
| + (1-theta32)*g32
|_coef theta1 0.5 theta2 -0.5 theta31 0.5 theta32 -0.5
  8 VARIABLES IN  4 EQUATIONS WITH   4 COEFFICIENTS
WITH  1 AUTOREGRESSIVE COEFFICIENTS
    116 OBSERVATIONS
..ALGORITHM USES NUMERIC DERIVATIVES

REQUIRED MEMORY IS PAR=  33 CURRENT PAR= 312
|_end
```

COEFFICIENT STARTING VALUES
THETA1 0.50000 THETA31 0.50000 THETA2 -0.50000
THETA32 -0.50000 RHO 0.00000E+00
100 MAXIMUM ITERATIONS, CONVERGENCE = 0.000010

INITIAL STATISTICS :
TIME = 0.167 SEC. ITER. NO. 0 FUNCT. EVALUATIONS 6
LOG-LIKELIHOOD FUNCTION= 673.7001
COEFFICIENTS
0.5000000 0.5000000 -0.5000000 -0.5000000 0.0000000E+00

GRADIENT
-26.90083 -109.4922 53.48019 157.5934 -11.54052

INTERMEDIATE STATISTICS :
TIME = 2.938 SEC. ITER. NO. 15 FUNCT. EVALUATIONS 115
LOG-LIKELIHOOD FUNCTION= 966.0736
COEFFICIENTS
0.8261078 -0.6618006E-01 0.7014755 -0.4673273E-01 0.1785253E-02

GRADIENT
0.2153028E-01 -0.4546243E-01 0.6897403E-02 -0.1189419 0.7312572

FINAL STATISTICS :

TIME = 4.566 SEC. ITER. NO. 22 FUNCT. EVALUATIONS 179 EXIT
CODE 1
LOG-LIKELIHOOD FUNCTION= 966.0736
COEFFICIENTS
0.8262127 -0.6618387E-01 0.7014623 -0.4673474E-01 0.1797477E-02

GRADIENT
-0.2321485E-05 -0.3931291E-05 -0.1439275E-05 0.2512479E-05 -0.6861001E-04

SIGMA MATRIX
0.43882E-01
-0.54499E-03 0.37261E-03
-0.18719E-02 -0.26622E-03 0.54434E-03
0.47854E-01 -0.50263E-03 -0.22859E-02 0.52515E-01
GTRANSPOSE*INVERSE(H)*G STATISTIC - = 0.66740E-13

	COEFFICIENT	ST. ERROR	T-RATIO
THETA1	0.82621	0.90238E-01	9.1559
THETA31	-0.66184E-01	0.22889E-01	-2.8915
THETA2	0.70146	0.79000E-01	8.8792
THETA32	-0.46735E-01	0.21451E-01	-2.1786
RHO	0.17975E-02	0.31249E-02	0.57521

|_end
TYPE COMMAND

APPENDIX J: REGRESSION RESULTS TO DETERMINE THE VALUE OF THE PARAMETER ALPHA

```
Hello/Bonjour/Aloha/Howdy/G Day/Kia Ora/Konnichiwa/Buenos Dias/Nee Hau
Welcome to SHAZAM - Version 7.0 - MAR 1994 SYSTEM=UNIX    PAR= 312
|_sample 1 116
|_read (alpha.txt) gne cap labour
UNIT 88 IS NOW ASSIGNED TO alpha.txt
  3 VARIABLES AND     116 OBSERVATIONS STARTING AT OBS      1

|_genr gne1 = log(gne)
|_genr cap1 = log(cap)
|_genr lab1 = log(labour)
1
|_ols gne1 cap1 lab1

REQUIRED MEMORY IS PAR=  11 CURRENT PAR= 312
 OLS ESTIMATION
   116 OBSERVATIONS    DEPENDENT VARIABLE = GNE1
...NOTE..SAMPLE RANGE SET TO:   1,  116

 R-SQUARE =  0.9992    R-SQUARE ADJUSTED =  0.9992
VARIANCE OF THE ESTIMATE-SIGMA**2 =  0.83853E-03
STANDARD ERROR OF THE ESTIMATE-SIGMA =  0.28957E-01
SUM OF SQUARED ERRORS-SSE=  0.94754E-01
MEAN OF DEPENDENT VARIABLE =   9.9218
LOG OF THE LIKELIHOOD FUNCTION =  247.787

MODEL SELECTION TESTS - SEE JUDGE ET AL. (1985,P.242)
 AKAIKE (1969) FINAL PREDICTION ERROR - FPE =    0.86022E-03
   (FPE IS ALSO KNOWN AS AMEMIYA PREDICTION CRITERION - PC)
 AKAIKE (1973) INFORMATION CRITERION - LOG AIC =  -7.0583
 SCHWARZ (1978) CRITERION - LOG SC =          -6.9871
MODEL SELECTION TESTS - SEE RAMANATHAN (1992,P.167)
 CRAVEN-WAHBA (1979)
   GENERALIZED CROSS VALIDATION - GCV =       0.86079E-03
 HANNAN AND QUINN (1979) CRITERION =        0.88544E-03
 RICE (1984) CRITERION =                 0.86140E-03
 SHIBATA (1981) CRITERION =                0.85909E-03
 SCHWARZ (1978) CRITERION - SC =            0.92370E-03
 AKAIKE (1974) INFORMATION CRITERION - AIC =   0.86021E-03

              ANALYSIS OF VARIANCE - FROM MEAN
                    SS        DF        MS              F
REGRESSION      118.07         2      59.037          70405.600
ERROR        0.94754E-01     113     0.83853E-03       P-VALUE
```

```
TOTAL             118.17      115.      1.0276              0.000
               ANALYSIS OF VARIANCE - FROM ZERO
                      SS        DF          MS            F
REGRESSION        11537.        3.        3845.8         4586337.543
ERROR          0.94754E-01    113.     0.83853E-03        P-VALUE
TOTAL             11537.      116.       99.461            0.000

VARIABLE   ESTIMATED  STANDARD  T-RATIO         PARTIAL     STAN. ELASTICITY
 NAME     COEFFICIENT   ERROR    113 DF  P-VALUE CORR.    COEFF.  ATMEANS

CAP1      0.39003   0.30572E-01  12.758  0.0000   0.7683  0.37288   0.33540
LAB1      0.62685   0.29189E-01  21.476  0.0000   0.8962  0.62769   0.58446
CONS      0.79507   0.26034E-01  30.53   0.0000   0.9444  0.00000   0.80133
|_end
TYPE COMMAND
```

APPENDIX K: RELATIVE IMPORTANCE OF GOVERNMENT DEFENSIVE EXPENDITURE IN AUSTRALIA FOR SELECTED YEARS

Year	GNE($M)	Government Defensive Expenditure ($M)	Gov't. Defensive Expenditure as % of GNE
1962-1963	120626.52	270.04	0.22
1963-1964	129907.37	656.54	0.51
1964-1965	142523.78	672.23	0.47
1965-1966	142915.05	655.51	0.46
1966-1967	151005.19	715.91	0.47
1967-1968	161098.38	743.78	0.46
1968-1969	175394.75	777.87	0.44
1969-1970	185292.64	1402.96	0.76
1971-1972	195630.40	1516.44	0.78
1972-1973	202861.64	1733.44	0.85
1973-1974	213394.72	1967.59	0.92
1974-1975	233766.91	2052.20	0.88
1975-1976	242687.34	2399.75	0.99
1976-1977	252204.02	2470.68	0.98
1977-1978	256144.88	2287.35	0.89
1978-1979	254777.61	2111.58	0.83
1979-1980	267612.85	2029.01	0.76
1980-1981	270355.85	2178.50	0.81
1981-1982	290233.90	2193.37	0.76
1982-1983	297115.78	2289.42	0.77
1983-1984	289817.38	3836.58	1.32
1984-1985	305239.87	3930.83	1.29
1985-1986	327540.43	3909.32	1.19
1986-1987	339342.67	3923.07	1.16
1987-1988	337205.95	3549.50	1.05
1988-1989	341280.45	2437.72	0.71
1989-1990	377219.44	2087.59	0.55
1990-1991	378972.23	2257.19	0.60
1991-1992	359983.91	2127.55	0.59

APPENDIX L : DATA USED IN THE STUDY

Year	GNE	Consumption	Investment	G31	G32	G1	G2	Work($M)	Leisure($M)
1962 3	29448.12	18496.81	3412.93	5.32	54.28	3407.61	8146.73	2587.52	1204.28
. 4	29747.37	18796.06	3477.06	6.33	57.36	3470.73	8307.53	2632.51	1221.79
1963 1	30456.03	19109.66	3575.95	7.89	65.42	3568.06	8728.72	2666.58	1227.64
. 2	30975.00	19401.14	3711.03	10.02	63.42	3701.01	8624.09	2696.71	1239.13
. 3	31579.29	19998.32	3647.05	11.14	141.27	3635.90	8837.71	2745.10	1259.82
. 4	32098.26	20240.03	3675.48	11.59	144.61	3663.89	9012.11	3024.45	1396.04
1964 1	32315.14	20336.13	3910.79	15.30	149.84	3895.49	9285.39	3497.00	1652.03
. 2	33914.69	20836.43	4157.42	19.19	163.60	4138.23	10004.46	3503.95	1654.34
. 3	35309.89	21322.63	4143.33	14.62	148.38	4128.71	10125.38	3508.41	1656.86
. 4	36620.53	21794.75	4291.30	16.95	156.19	4274.36	10533.32	3525.47	1671.41
1965 1	34806.86	20657.94	4234.16	16.05	146.45	4218.11	10024.72	3545.27	1802.92
. 2	35786.50	21026.13	4240.73	16.15	157.44	4224.58	10598.89	3545.27	1807.50
. 3	36102.09	21302.27	4622.07	18.26	148.03	4603.81	10923.89	3552.07	1813.10
. 4	36148.11	21538.96	4602.34	17.95	148.40	4584.39	10943.24	3558.65	1827.40
1966 1	35138.12	21278.23	4507.18	16.45	145.00	4490.73	10765.44	3636.08	1887.60
. 2	35526.72	21656.27	4606.50	18.01	143.40	4588.48	10681.55	3635.01	1888.35
. 3	36532.33	22010.87	4954.83	16.02	158.98	4938.81	11262.53	3642.51	1901.05
. 4	37459.31	22350.68	4933.17	15.68	158.21	4917.50	11222.15	3671.43	1921.07
1967 1	38185.72	22682.35	5107.29	18.42	163.82	5088.86	11515.34	3685.16	1932.27
. 2	38827.82	22995.24	5231.85	20.38	164.39	5211.47	11545.00	3687.40	1934.37
. 3	38795.72	23559.65	5464.10	15.94	155.68	5448.16	12021.99	3696.67	1948.02
. 4	39407.90	24005.47	5615.53	18.32	161.99	5597.21	12352.09	3722.90	1986.45
1968 1	41428.77	24437.42	6112.44	26.15	172.79	6086.29	12916.47	3667.19	1997.84
. 2	41465.99	24677.02	5825.50	21.63	171.26	5803.87	12836.35	3669.41	2002.82
. 3	42760.08	24999.32	5688.32	19.79	162.85	5668.53	13002.08	3678.64	2009.78
. 4	43577.41	25379.38	5774.08	21.15	170.60	5752.94	13406.95	3704.74	2026.41
1969 1	44076.72	25974.43	5880.10	22.82	171.40	5857.28	13448.83	3792.69	2037.83
. 2	44980.55	26352.30	6098.25	26.25	183.02	6072.00	14056.16	3796.76	2040.59
. 3	45233.57	26786.00	6099.84	29.69	311.51	6070.15	13824.72	3802.44	2048.79
. 4	45998.45	27351.22	6307.75	32.96	316.81	6274.79	14101.75	3822.04	2075.71

1970 1	46386.51	27751.67	6232.93	31.78	320.32	6201.15	14285.21	3886.74	2103.58
. 2	47674.11	27976.39	6453.00	35.25	324.63	6417.75	14510.37	3889.31	2112.79
. 3	47769.54	28411.83	6635.13	32.91	331.49	6602.22	14764.44	3889.31	2116.91
. 4	48065.59	28868.47	6748.11	34.69	336.99	6713.42	15052.06	3897.99	2138.44
1971 1	49958.95	29238.31	6949.36	37.87	353.13	6911.50	15895.31	3904.66	2157.72
. 2	49836.33	29463.84	6994.19	38.57	350.79	6955.62	15772.89	3907.55	2164.59
. 3	50842.93	30001.02	7202.17	35.09	401.29	7167.08	16168.51	3893.98	2152.38
. 4	50299.64	29710.64	7172.98	34.63	394.06	7138.35	15790.85	3900.71	2160.93
1972 1	50379.59	30151.19	7413.63	38.42	393.14	7375.21	15743.02	3930.95	2157.67
. 2	51339.48	30694.98	7409.66	38.36	398.46	7371.31	16020.74	3939.71	2162.22
. 3	51507.89	31207.25	7522.32	41.48	435.04	7480.84	16177.80	3931.91	2171.00
. 4	52722.61	31840.54	7583.94	42.45	439.63	7541.49	16418.00	3958.95	2200.51
1973 1	54318.75	32233.85	7818.57	46.15	448.43	7772.42	16877.75	4009.03	2230.45
. 2	54845.48	32546.14	8256.21	53.04	461.36	8203.17	17553.47	4009.89	2231.42
. 3	57205.42	32885.46	8442.02	53.37	452.44	8388.65	17748.66	4031.90	2248.53
. 4	57668.86	33214.12	8476.82	53.91	460.11	8422.90	18149.16	4052.20	2274.54
1974 1	59732.98	33838.77	8772.22	58.57	457.60	8713.65	18017.94	4034.07	2329.98
. 2	59159.65	34004.37	8865.66	60.04	456.15	8805.62	17942.17	4026.87	2329.95
. 3	61661.78	34304.71	9371.24	64.11	520.94	9307.12	18008.72	3983.91	2306.16
. 4	61957.34	34533.41	9847.70	71.62	522.51	9776.08	18090.52	3995.97	2328.12
1975 1	59928.45	35242.75	10168.36	76.67	529.47	10091.69	18454.17	3904.30	2377.85
. 2	59139.77	35640.45	10341.40	79.40	535.03	10262.00	18744.82	3903.16	2380.15
. 3	62512.20	36933.59	10722.20	75.30	530.92	10646.91	19820.17	3878.64	2370.05
. 4	62245.86	36419.70	10733.42	75.47	526.30	10657.95	19578.47	3900.47	2412.04
1976 1	63220.10	36920.44	10940.95	78.74	544.73	10862.20	20541.58	3887.23	2469.96
. 2	64225.86	37456.15	11143.80	81.94	557.28	11061.86	21197.26	3911.55	2482.95
. 3	65167.86	37773.91	11392.03	84.05	497.48	11307.98	21191.20	3849.53	2443.44
. 4	63008.47	36892.73	11001.15	77.90	493.91	10923.26	21004.77	3893.47	2477.48
1977 1	63843.90	36833.13	11006.39	77.98	492.50	10928.41	20931.11	3924.43	2567.28
. 2	64124.66	37075.63	11019.25	78.18	485.35	10941.07	20557.72	3925.75	2582.01
. 3	63611.97	37178.34	11194.68	73.24	445.30	11121.44	20678.70	3900.83	2569.16

. 4	62039.86	37262.82	11254.78	74.19	444.10	11180.60	20615.98	3901.33	2569.24
1978 1	64369.77	37539.17	11616.07	79.88	455.35	11536.19	21203.78	3948.03	2522.36
. 2	64756.01	38521.13	11469.22	77.56	461.95	11391.66	21548.65	3947.93	2536.48
. 3	66435.15	38848.23	11734.11	84.13	419.15	11649.98	21934.07	3924.43	2529.57
. 4	67013.32	39063.70	11549.25	81.22	423.90	11468.03	22182.55	3959.27	2550.64
1979 1	67544.26	39530.28	11684.04	83.34	432.82	11600.70	22648.39	4034.45	2503.13
. 2	66620.12	39585.01	11469.73	79.97	424.46	11389.76	22211.79	4054.57	2521.37
. 3	66604.91	39986.56	11583.46	108.49	421.60	11474.98	22036.99	4064.74	2530.68
. 4	66101.19	39783.02	11686.47	110.11	423.23	11576.36	22122.35	4099.29	2566.16
1980 1	68895.86	40738.78	12029.61	115.52	440.34	11914.09	23016.19	3970.54	2673.66
. 2	68753.90	40663.58	11993.48	114.95	444.27	11878.53	23221.77	3981.28	2695.81
. 3	70658.44	41475.85	12198.78	103.12	423.64	12095.66	24631.10	4002.76	2721.79
. 4	72599.72	42022.75	12904.28	114.23	433.70	12790.05	25156.81	4043.81	2741.81
1981 1	73079.03	42198.55	12831.85	113.09	442.14	12718.76	25597.49	4126.03	2684.11
. 2	73896.72	42802.90	12770.50	112.13	451.30	12658.37	26076.43	4143.15	2712.45
. 3	75367.51	43461.25	13281.11	127.34	460.49	13153.77	26660.41	4144.37	2720.83
. 4	75042.72	42975.08	12703.15	118.23	456.22	12584.92	26436.96	4142.84	2729.16
1982 1	70909.22	40771.78	11944.80	106.28	421.40	11838.52	24617.86	4157.79	2751.33
. 2	75796.33	44093.97	13738.87	134.55	464.89	13604.32	26890.37	4142.44	2740.50
. 3	73898.13	43631.21	12949.24	180.26	782.36	12768.98	24731.92	4122.62	2732.22
. 4	73037.43	43809.79	13428.38	187.81	780.08	13240.57	24612.79	4074.23	2705.37
1983 1	71673.33	44082.20	13918.72	195.53	772.81	13723.19	24232.93	3929.03	2721.89
. 2	71208.49	43576.70	13235.54	184.77	752.93	13050.77	23193.98	3913.49	2714.04
. 3	73277.34	44022.90	13177.05	163.10	787.27	13013.95	23594.04	3923.15	2726.12
. 4	73330.07	44310.04	13562.83	169.18	793.38	13393.65	23913.30	3954.32	2750.59
1984 1	78190.05	45531.05	14150.02	178.43	819.57	13971.59	25281.76	4126.12	2707.46
. 2	80442.41	46309.27	14551.40	184.76	835.11	14366.64	26093.82	4162.67	2740.17
. 3	80277.95	46524.45	14788.20	189.85	773.61	14598.35	26735.49	4169.78	2752.40
. 4	81493.26	48658.59	14705.93	188.56	777.47	14517.38	26937.22	4281.69	2807.79
1985 1	82534.65	47968.59	14898.10	191.58	791.71	14706.51	27681.48	4198.78	2753.71
. 2	83234.56	48508.96	15125.83	195.17	801.36	14930.66	28185.62	4208.38	2762.44

.	3	85101.31	48975.64	15185.44	226.32	759.55	14959.12	29063.04	4255.35	2801.65
.	4	85088.49	49481.59	15318.53	228.42	753.08	15090.11	28724.75	4292.51	2832.63
1986	1	84888.05	48691.89	15261.46	227.52	748.49	15033.94	28484.74	4347.74	2851.36
.	2	84264.81	49502.29	15538.13	231.88	747.80	15306.25	28448.79	4378.97	2888.09
.	3	84079.17	49548.57	15702.79	226.83	667.25	15475.95	28802.99	4370.98	2887.13
.	4	83634.18	49065.25	15201.07	218.93	670.94	14982.14	28996.24	4375.86	2900.70
1987	1	83970.09	49028.83	15089.59	217.17	659.43	14872.42	28394.33	4388.28	2937.38
.	2	85522.52	49420.14	15210.40	219.08	669.87	14991.33	28940.15	4419.32	2959.09
.	3	86161.88	50602.72	15047.16	159.15	442.05	14888.01	29299.57	4443.53	2975.77
.	4	87456.79	50968.27	15217.95	161.84	456.39	15056.11	30048.87	4442.91	2986.13
1988	1	78751.48	46118.53	14040.36	143.28	418.98	13897.07	28094.14	4605.48	2993.67
.	2	88910.30	51474.98	15314.76	163.36	492.65	15151.39	31943.35	4636.20	3014.01
.	3	91246.52	51693.25	15183.05	155.12	333.89	15027.93	31881.91	4654.77	3036.11
.	4	93286.57	52307.24	15326.18	157.38	358.62	15168.80	33174.29	4699.83	3066.75
1989	1	95984.86	53649.73	15302.70	157.01	375.15	15145.69	34037.82	4761.69	3075.95
.	2	96701.48	53789.03	15882.91	166.15	384.25	15716.76	34513.43	4834.39	3141.89
.	3	96329.57	53824.44	15414.78	172.16	411.14	15242.63	33342.45	4866.03	3168.65
.	4	94403.23	53899.19	15657.26	175.98	396.40	15481.28	32572.35	4916.61	3208.24
1990	1	95151.64	54342.91	15604.56	175.15	380.82	15429.41	31757.94	4681.44	3351.17
.	2	93087.80	54246.83	15748.29	177.41	368.13	15570.88	31095.28	4698.77	3369.88
.	3	92608.15	54561.59	16177.50	167.84	386.20	16009.66	31236.49	4696.54	3374.69
.	4	90408.53	54171.56	15870.14	162.99	371.25	15707.15	30455.29	4657.81	3351.22
1991	1	89177.86	54258.28	16177.86	167.84	357.58	16010.02	29740.81	4757.85	3196.12
.	2	87789.37	54924.10	16011.39	165.22	348.61	15846.17	29271.89	4702.95	3169.80

Year	GNE	Consumption	Investment	G31	G32	G1	G2	Work($M)	Leisure($M)
1962 3	29448.12	18496.81	3412.93	5.32	54.28	3407.61	8146.73	2587.52	1204.28
. 4	29747.37	18796.06	3477.06	6.33	57.36	3470.73	8307.53	2632.51	1221.79
1963 1	30456.03	19109.66	3575.95	7.89	65.42	3568.06	8728.72	2666.58	1227.64
. 2	30975.00	19401.14	3711.03	10.02	63.42	3701.01	8624.09	2696.71	1239.13
. 3	31579.29	19998.32	3647.05	11.14	141.27	3635.90	8837.71	2745.10	1259.82
. 4	32098.26	20240.03	3675.48	11.59	144.61	3663.89	9012.11	3024.45	1396.04
1964 1	32315.14	20336.13	3910.79	15.30	149.84	3895.49	9285.39	3497.00	1652.03
. 2	33914.69	20836.43	4157.42	19.19	163.60	4138.23	10004.46	3503.95	1654.34
. 3	35309.89	21322.63	4143.33	14.62	148.38	4128.71	10125.38	3508.41	1656.86
. 4	36620.53	21794.75	4291.30	16.95	156.19	4274.36	10533.32	3525.47	1671.41
1965 1	34806.86	20657.94	4234.16	16.05	146.45	4218.11	10024.72	3545.27	1802.92
. 2	35786.50	21026.13	4240.73	16.15	157.44	4224.58	10598.89	3545.27	1807.50
. 3	36102.09	21302.27	4622.07	18.26	148.03	4603.81	10923.89	3552.07	1813.10
. 4	36148.11	21538.96	4602.34	17.95	148.40	4584.39	10943.24	3558.65	1827.40
1966 1	35138.12	21278.23	4507.18	16.45	145.00	4490.73	10765.44	3636.08	1887.60
. 2	35526.72	21656.27	4606.50	18.01	143.40	4588.48	10681.55	3635.01	1888.35
. 3	36532.33	22010.87	4954.83	16.02	158.98	4938.81	11262.53	3642.51	1901.05
. 4	37459.31	22350.68	4933.17	15.68	158.21	4917.50	11222.15	3671.43	1921.07
1967 1	38185.72	22682.35	5107.29	18.42	163.82	5088.86	11515.34	3685.16	1932.27
. 2	38827.82	22995.24	5231.85	20.38	164.39	5211.47	11545.00	3687.40	1934.37
. 3	38795.72	23559.65	5464.10	15.94	155.68	5448.16	12021.99	3696.67	1948.02
. 4	39407.90	24005.47	5615.53	18.32	161.99	5597.21	12352.09	3722.90	1986.45
1968 1	41428.77	24437.42	6112.44	26.15	172.79	6086.29	12916.47	3667.19	1997.84
. 2	41465.99	24677.02	5825.50	21.63	171.26	5803.87	12836.35	3669.41	2002.82
. 3	42760.08	24999.32	5688.32	19.79	162.85	5668.53	13002.08	3678.64	2009.78
. 4	43577.41	25379.38	5774.08	21.15	170.60	5752.94	13406.95	3704.74	2026.41
1969 1	44076.72	25974.43	5880.10	22.82	171.40	5857.28	13448.83	3792.69	2037.83
. 2	44980.55	26352.30	6098.25	26.25	183.02	6072.00	14056.16	3796.76	2040.59
. 3	45233.57	26786.00	6099.84	29.69	311.51	6070.15	13824.72	3802.44	2048.79
. 4	45998.45	27351.22	6307.75	32.96	316.81	6274.79	14101.75	3822.04	2075.71

1970 1	46386.51	27751.67	6232.93	31.78	320.32	6201.15	14285.21	3886.74	2103.58
. 2	47674.11	27976.39	6453.00	35.25	324.63	6417.75	14510.37	3889.31	2112.79
. 3	47769.54	28411.83	6635.13	32.91	331.49	6602.22	14764.44	3889.31	2116.91
. 4	48065.59	28868.47	6748.11	34.69	336.99	6713.42	15052.06	3897.99	2138.44
1971 1	49958.95	29238.31	6949.36	37.87	353.13	6911.50	15895.31	3904.66	2157.72
. 2	49836.33	29463.84	6994.19	38.57	350.79	6955.62	15772.89	3907.55	2164.59
. 3	50842.93	30001.02	7202.17	35.09	401.29	7167.08	16168.51	3893.98	2152.38
. 4	50299.64	29710.64	7172.98	34.63	394.06	7138.35	15790.85	3900.71	2160.93
1972 1	50379.59	30151.19	7413.63	38.42	393.14	7375.21	15743.02	3930.95	2157.67
. 2	51339.48	30694.98	7409.66	38.36	398.46	7371.31	16020.74	3939.71	2162.22
. 3	51507.89	31207.25	7522.32	41.48	435.04	7480.84	16177.80	3931.91	2171.00
. 4	52722.61	31840.54	7583.94	42.45	439.63	7541.49	16418.00	3958.95	2200.51
1973 1	54318.75	32233.85	7818.57	46.15	448.43	7772.42	16877.75	4009.03	2230.45
. 2	54845.48	32546.14	8256.21	53.04	461.36	8203.17	17553.47	4009.89	2231.42
. 3	57205.42	32885.46	8442.02	53.37	452.44	8388.65	17748.66	4031.90	2248.53
. 4	57668.86	33214.12	8476.82	53.91	460.11	8422.90	18149.16	4052.20	2274.54
1974 1	59732.98	33838.77	8772.22	58.57	457.60	8713.65	18017.94	4034.07	2329.98
. 2	59159.65	34004.37	8865.66	60.04	456.15	8805.62	17942.17	4026.87	2329.95
. 3	61661.78	34304.71	9371.24	64.11	520.94	9307.12	18008.72	3983.91	2306.16
. 4	61957.34	34533.41	9847.70	71.62	522.51	9776.08	18090.52	3995.97	2328.12
1975 1	59928.45	35242.75	10168.36	76.67	529.47	10091.69	18454.17	3904.30	2377.85
. 2	59139.77	35640.45	10341.40	79.40	535.03	10262.00	18744.82	3903.16	2380.15
. 3	62512.20	36933.59	10722.20	75.30	530.92	10646.91	19820.17	3878.64	2370.05
. 4	62245.86	36419.70	10733.42	75.47	526.30	10657.95	19578.47	3900.47	2412.04
1976 1	63220.10	36920.44	10940.95	78.74	544.73	10862.20	20541.58	3887.23	2469.96
. 2	64225.86	37456.15	11143.80	81.94	557.28	11061.86	21197.26	3911.55	2482.95
. 3	65167.86	37773.91	11392.03	84.05	497.48	11307.98	21191.20	3849.53	2443.44
. 4	63008.47	36892.73	11001.15	77.90	493.91	10923.26	21004.77	3893.47	2477.48
1977 1	63843.90	36833.13	11006.39	77.98	492.50	10928.41	20931.11	3924.43	2567.28
. 2	64124.66	37075.63	11019.25	78.18	485.35	10941.07	20557.72	3925.75	2582.01
. 3	63611.97	37178.34	11194.68	73.24	445.30	11121.44	20678.70	3900.83	2569.16

. 4	62039.86	37262.82	11254.78	74.19	444.10	11180.60	20615.98	3901.33	2569.24
1978 1	64369.77	37539.17	11616.07	79.88	455.35	11536.19	21203.78	3948.03	2522.36
. 2	64756.01	38521.13	11469.22	77.56	461.95	11391.66	21548.65	3947.93	2536.48
. 3	66435.15	38848.23	11734.11	84.13	419.15	11649.98	21934.07	3924.43	2529.57
. 4	67013.32	39063.70	11549.25	81.22	423.90	11468.03	22182.55	3959.27	2550.64
1979 1	67544.26	39530.28	11684.04	83.34	432.82	11600.70	22648.39	4034.45	2503.13
. 2	66620.12	39585.01	11469.73	79.97	424.46	11389.76	22211.79	4054.57	2521.37
. 3	66604.91	39986.56	11583.46	108.49	421.60	11474.98	22036.99	4064.74	2530.68
. 4	66101.19	39783.02	11686.47	110.11	423.23	11576.36	22122.35	4099.29	2566.16
1980 1	68895.86	40738.78	12029.61	115.52	440.34	11914.09	23016.19	3970.54	2673.66
. 2	68753.90	40663.58	11993.48	114.95	444.27	11878.53	23221.77	3981.28	2695.81
. 3	70658.44	41475.85	12198.78	103.12	423.64	12095.66	24631.10	4002.76	2721.79
. 4	72599.72	42022.75	12904.28	114.23	433.70	12790.05	25156.81	4043.81	2741.81
1981 1	73079.03	42198.55	12831.85	113.09	442.14	12718.76	25597.49	4126.03	2684.11
. 2	73896.72	42802.90	12770.50	112.13	451.30	12658.37	26076.43	4143.15	2712.45
. 3	75367.51	43461.25	13281.11	127.34	460.49	13153.77	26660.41	4144.37	2720.83
. 4	75042.72	42975.08	12703.15	118.23	456.22	12584.92	26436.96	4142.84	2729.16
1982 1	70909.22	40771.78	11944.80	106.28	421.40	11838.52	24617.86	4157.79	2751.33
. 2	75796.33	44093.97	13738.87	134.55	464.89	13604.32	26890.37	4142.44	2740.50
. 3	73898.13	43631.21	12949.24	180.26	782.36	12768.98	24731.92	4122.62	2732.22
. 4	73037.43	43809.79	13428.38	187.81	780.08	13240.57	24612.79	4074.23	2705.37
1983 1	71673.33	44082.20	13918.72	195.53	772.81	13723.19	24232.93	3929.03	2721.89
. 2	71208.49	43576.70	13235.54	184.77	752.93	13050.77	23193.98	3913.49	2714.04
. 3	73277.34	44022.90	13177.05	163.10	787.27	13013.95	23594.04	3923.15	2726.12
. 4	73330.07	44310.04	13562.83	169.18	793.38	13393.65	23913.30	3954.32	2750.59
1984 1	78190.05	45531.05	14150.02	178.43	819.57	13971.59	25281.76	4126.12	2707.46
. 2	80442.41	46309.27	14551.40	184.76	835.11	14366.64	26093.82	4162.67	2740.17
. 3	80277.95	46524.45	14788.20	189.85	773.61	14598.35	26735.49	4169.78	2752.40
. 4	81493.26	48658.59	14705.93	188.56	777.47	14517.38	26937.22	4281.69	2807.79
1985 1	82534.65	47968.59	14898.10	191.58	791.71	14706.51	27681.48	4198.78	2753.71
. 2	83234.56	48508.96	15125.83	195.17	801.36	14930.66	28185.62	4208.38	2762.44

. 3	85101.31	48975.64	15185.44	226.32	759.55	14959.12	29063.04	4255.35	2801.65
. 4	85088.49	49481.59	15318.53	228.42	753.08	15090.11	28724.75	4292.51	2832.63
1986 1	84888.05	48691.89	15261.46	227.52	748.49	15033.94	28484.74	4347.74	2851.36
. 2	84264.81	49502.29	15538.13	231.88	747.80	15306.25	28448.79	4378.97	2888.09
. 3	84079.17	49548.57	15702.79	226.83	667.25	15475.95	28802.99	4370.98	2887.13
. 4	83634.18	49065.25	15201.07	218.93	670.94	14982.14	28996.24	4375.86	2900.70
1987 1	83970.09	49028.83	15089.59	217.17	659.43	14872.42	28394.33	4388.28	2937.38
. 2	85522.52	49420.14	15210.40	219.08	669.87	14991.33	28940.15	4419.32	2959.09
. 3	86161.88	50602.72	15047.16	159.15	442.05	14888.01	29299.57	4443.53	2975.77
. 4	87456.79	50968.27	15217.95	161.84	456.39	15056.11	30048.87	4442.91	2986.13
1988 1	78751.48	46118.53	14040.36	143.28	418.98	13897.07	28094.14	4605.48	2993.67
. 2	88910.30	51474.98	15314.76	163.36	492.65	15151.39	31943.35	4636.20	3014.01
. 3	91246.52	51693.25	15183.05	155.12	333.89	15027.93	31881.91	4654.77	3036.11
. 4	93286.57	52307.24	15326.18	157.38	358.62	15168.80	33174.29	4699.85	3066.75
1989 1	95984.86	53649.73	15302.70	157.01	375.15	15145.69	34037.82	4761.69	3075.95
. 2	96701.48	53789.03	15882.91	166.15	384.25	15716.76	34513.43	4834.39	3141.89
. 3	96329.57	53824.44	15414.78	172.16	411.14	15242.63	33342.45	4866.03	3168.65
. 4	94403.23	53899.19	15657.26	175.98	396.40	15481.28	32572.35	4916.61	3208.24
1990 1	95151.64	54342.91	15604.56	175.15	380.82	15429.41	31757.94	4681.44	3351.17
. 2	93087.80	54246.83	15748.29	177.41	368.13	15570.88	31095.28	4698.77	3369.88
. 3	92608.15	54561.59	16177.50	167.84	386.20	16009.66	31236.49	4696.54	3374.69
. 4	90408.53	54171.56	15870.14	162.99	371.25	15707.15	30455.29	4657.81	3351.22
1991 1	89177.86	54258.28	16177.86	167.84	357.58	16010.02	29740.81	4757.85	3196.12
. 2	87789.37	54924.10	16011.39	165.22	348.61	15846.17	29271.89	4702.95	3169.80