

The Kyoto University Quarterly Model of the Japanese Economy

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Introduction

This is a quarterly econometric model of the Japanese Economy developed at the Institute of Economic Research, Kyoto University. It has been used for the short-term forecast as well as policy simulations. The outcomes have been announced for the past several years not only in Japan but also abroad particularly in cooperation with Project Link. The model here is the version in use as of February, 1979.

The new SNA statistics provide more detailed information on expenditures and income than the old national income statistics. But the published statistics of

the new system are not yet complete in the sense that we cannot define all of the various balances and identities in a macroeconomic framework. There are no capital consumption allowances broken down by household, government and private corporate firm. Transfers among government, household, non-profit private institution, corporate firms and overseas sector are not complete matrixwise.

The model presented here, therefore, has a certain limitation due to this so that it cannot help being of a somewhat provisional nature.

I The Model

(1) Expenditures in National Income Accounts

Private consumption expenditures

$$\begin{aligned}
 1) \quad C &= 1026.7 + .19572 \frac{YD}{PC} \\
 &\quad (2.81) \quad (4.46) \\
 &\quad + \left(.76080 - .68284 \frac{\Delta PC}{PC_{-1}} \right) C_{-1} \\
 &\quad (12.53) \quad (5.89) \\
 R^2/SE/DW &= .9980/434.2/1.5230 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Personal consumption expenditures on food

$$\begin{aligned}
 2) \quad CF &= 1064.8 + .08178 \frac{YD}{PCF} \\
 &\quad (4.68) \quad (4.86) \\
 &\quad + \left(.65542 - .40814 \frac{\Delta PCF}{PCF_{-1}} \right) CF_{-1} \\
 &\quad (8.82) \quad (4.08) \\
 R^2/SE/DW &= .9964/165.2/1.4249 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Public consumption expenditures

$$3) \quad CG = CG \cancel{Y} / PCG$$

Housing investment

$$4) \quad IH = 1521.3 + 0.3128 \frac{YD}{PIH} \\ (3.32) \quad (2.80)$$

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$$\begin{aligned}
&+.6694 \text{ } IH_{-1} + 1.09338 \frac{DLBH}{PIH} \\
&\quad (8.50) \quad (1.42) \\
&-203.4 \text{ } RLB \\
&\quad (2.85)
\end{aligned}$$

$$\begin{aligned}
&.9704/259.8/2.2553 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Private fixed investment

$$5) \quad IF = -10296.2 + .12565 \sum_0^3 GDP_{-i}$$

$$\quad (21.53) \quad (39.33)$$

$$\begin{aligned}
&-.03701 \sum_1^4 KF_{-i} \\
&\quad (21.19)
\end{aligned}$$

$$\begin{aligned}
&+.15552 \sum_0^3 (\dot{O} \cdot GDP)_{-i} \\
&\quad (8.07)
\end{aligned}$$

$$\begin{aligned}
&-.11062 \sum_0^3 (\dot{O} \cdot KF_{-1})_{-i} \\
&\quad (8.17)
\end{aligned}$$

$$\begin{aligned}
&.9932/265.9/1.3533 \\
&\quad (1967.1-1977.1)
\end{aligned}$$

Public fixed investment

$$6) \quad IG = IG\mathcal{V}/PIG$$

Private inventory investment

$$7) \quad IIP = 1584.9$$

$$\quad (3.79)$$

$$\begin{aligned}
&+ (.18191 - .12171) \frac{4O}{O_{-1}} \\
&\quad (6.33) \quad (2.37)
\end{aligned}$$

$$\begin{aligned}
&+.0511 \text{ } PWM)GDP \\
&\quad (3.82)
\end{aligned}$$

$$\begin{aligned}
&-.7033 \text{ } KIP_{-1} \\
&\quad (6.81)
\end{aligned}$$

$$\begin{aligned}
&.6330/592.9/1.7256 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Exports of goods and services

$$8) \quad EGS = EGS\mathcal{V}/PE$$

Factor income from abroad

$$9) \quad ET = ET\mathcal{V}/P$$

$$10) \quad E = EGS + ET$$

Imports of goods and services

$$11) \quad MGS = MGS\mathcal{V}/PM$$

Factor income to abroad

$$12) \quad MT = MT\mathcal{V}/P$$

$$13) \quad M = MGS + MT$$

Gross domestic products in real terms

$$\begin{aligned}
14) \quad GDP &= C + CG + IH + IF + IG \\
&\quad + IIP + IIG + EGS - MGS
\end{aligned}$$

Gross national products in real terms

$$15) \quad GNP = GDP + ET - MT$$

Private consumption expenditures, current values

$$16) \quad C\mathcal{V} = C \cdot PC$$

Housing investment, current values

$$17) \quad IH\mathcal{V} = IH \cdot PIH$$

Private fixed investment, current values

$$18) \quad IF\mathcal{V} = IF \cdot PIF$$

Private corporate inventory investment, current values

$$\begin{aligned}
19) \quad IIP\mathcal{V} &= 27.066 + .00682 \cdot \\
&\quad (.41) \quad (25.59)
\end{aligned}$$

$$(PWM + PWM_{-1})IIP$$

$$\begin{aligned}
&.9384/267.3/1.5981 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Exports of goods and services, current values

$$\begin{aligned}
20) \quad EGS\mathcal{V} &= -457.44 + 1.2826 \frac{XB}{REX} \\
&\quad (2.86) \quad (12.36)
\end{aligned}$$

$$\begin{aligned}
&+ 2.3530 \frac{XFI + XTO + XSO}{REX} \\
&\quad (3.63)
\end{aligned}$$

$$\begin{aligned}
&+ 1501.7 \text{ } Q1 + 853.68 \text{ } Q2 \\
&\quad (10.39) \quad (6.27)
\end{aligned}$$

$$\begin{aligned}
&+ 455.00 \text{ } Q3 \\
&\quad (3.31)
\end{aligned}$$

$$\begin{aligned}
&.9980/309.6/2.2171 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Factor income from abroad, current values

$$\begin{aligned}
21) \quad ET\mathcal{V} &= 85.63 + 1.6187 \text{ } XII/REX \\
&\quad (8.20) \quad (78.7)
\end{aligned}$$

$$\begin{aligned}
&-76.19 \text{ } Q1 - 65.95 \text{ } Q3 \\
&\quad (5.66) \quad (4.77)
\end{aligned}$$

$$\begin{aligned}
&.9934/37.39/1.9908 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

$$22) \quad E\mathcal{V} = EGS\mathcal{V} + ET\mathcal{V}$$

Imports of goods and services, current values

$$\begin{aligned}
23) \quad MGS\mathcal{V} &= -292.35 + 1.4681 \frac{MB}{REX} \\
&\quad (4.50) \quad (32.20)
\end{aligned}$$

$$\begin{aligned}
&+ 1.2669 \frac{MFI + MTO + MSO}{REX} \\
&\quad (7.64)
\end{aligned}$$

$$\begin{aligned}
 &+328.27 Q1+178.37 Q2 \\
 &\quad (5.13) \quad (2.71) \\
 &424.69 Q3 \\
 &\quad (6.45) \\
 &\quad .9995/152.37/2.4897 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Factor income to abroad, current values

$$\begin{aligned}
 24) \quad MT\% &= 135.6 \\
 &\quad (7.24) \\
 &+1.6616(MII+MSG)/REX \\
 &\quad (60.6) \\
 &-100.94 Q1-18.95 Q2 \\
 &\quad (4.69) \quad (.863) \\
 &-85.58 Q3 \\
 &\quad (3.89) \\
 &\quad .9892/51.5/2.2036 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

$$25) \quad M\% = MGS\% + MT\%$$

Gross domestic products in current values

$$\begin{aligned}
 26) \quad GDP\% &= C\% + CG\% + IH\% + IF\% \\
 &\quad + IG\% + IIP\% + IIG\% \\
 &\quad + EGS\% - MGS\%
 \end{aligned}$$

Gross national products in current values

$$27) \quad GNP\% = GDP\% + ET\% - MT\%$$

(2) Definition of Stocks

Removal and scrappage, real terms

$$\begin{aligned}
 28) \quad RF &= 105.34 + .0370 KF_{-1} \\
 &\quad (.33) \quad (12.27) \\
 &\quad .7778/743.6/1.4788 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Private gross fixed capital stocks, real terms

$$29) \quad KF = KF_{-1} + 0.25 (IF - RF)$$

Private inventory stocks, real terms

$$30) \quad KIP = KIP_{-1} + 0.25 IIP$$

Accumulated sum of private savings

$$31) \quad KSP = KSP_{-1} + 0.25 SP$$

(3) Commodity Trade

Commodity exports, custom clearance basis, seasonally adjusted

$$\begin{aligned}
 32) \quad \ln(XC/PEC) &= 5.718 + 1.4811 \ln(TW) \\
 &\quad (7.04) \quad (63.8) \\
 &\quad -1.2133 \sum_0^5 w_i \ln\left(\frac{PEC}{PEW}\right)_{-i} \\
 &\quad (8.31) \\
 &\quad -.9268 \ln\left(\frac{PWM}{PEC/REX}\right) \\
 &\quad (5.04) \\
 &\quad w_0 \sim w_5: .2586, .3017, .2328, \\
 &\quad .1293, .0517, .0259 \\
 &\quad .9903/.03973/1.528 \\
 &\quad (1966.3-1977.4)
 \end{aligned}$$

Commodity exports, balance of payments account

$$\begin{aligned}
 33) \quad XB &= (1.05350 - .1607 Q1 \\
 &\quad (583.87) \quad (64.33) \\
 &\quad -.0769 Q2 - .0476 Q3) XC \\
 &\quad (30.14) \quad (18.65) \\
 &\quad .9908/.00598/1.8560 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Commodity imports, custom clearance basis, seasonally adjusted

Foodstuff

$$\begin{aligned}
 34) \quad \ln(MC1/PMC1/REX) &= -3.27216 \\
 &\quad (2.70) \\
 &\quad +.4331 \ln CF + .6812 \cdot \\
 &\quad (2.80) \quad (6.45) \\
 &\quad \ln(MC1/PMC1/REX)_{-1} \\
 &\quad .9696/.05034/1.9813 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Textile and other raw materials

$$\begin{aligned}
 35) \quad \ln(MC24/PMC24/REX) &= .84932 + .22792 \cdot \\
 &\quad (6.20) \quad (5.69) \\
 &\quad \sum_0^1 \ln(PWC24/PMC24)_{-i} \\
 &\quad +.12428 \sum_0^1 \ln O_{-i} + .2764 \cdot \\
 &\quad (3.99) \quad (2.29) \\
 &\quad \ln(MC24/PMC24/REX)_{-1} \\
 &\quad .9549/.03557/1.8601 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Metal ores and scraps

$$\begin{aligned}
36) \quad & \ln (MC\ 3/PMC\ 3/REX) \\
& = -1.10252 + .2219 \cdot \\
& \quad (3.04) \quad (1.83) \\
& \quad \ln (PWC\ 3/PMC\ 3)_{-2} \\
& \quad + .21820 \sum_0^1 \ln O_{-i} \\
& \quad \quad (3.39) \\
& \quad + .1943 \ln (O/O_{-4}) + .5772 \cdot \\
& \quad \quad (2.13) \quad (5.17) \\
& \quad \ln (MC\ 3/PMC\ 3/REX)_{-1} \\
& \quad .9826/.04490/1.8532 \\
& \quad (1966.1-1977.1)
\end{aligned}$$

Mineral fuels

$$\begin{aligned}
37) \quad & \ln (MC\ 5/PMC\ 5/REX) \\
& = -.66350 + .41359 \sum_0^1 \ln O_{-i} \\
& \quad (2.30) \quad (5.58) \\
& \quad + .0319 \ln KOIL + .1526 \cdot \\
& \quad \quad (2.87) \quad (1.08) \\
& \quad (MC\ 5/PMC\ 5/REX)_{-1} \\
& \quad .9827/.03849/2.1899 \\
& \quad (1967.1-1977.1)
\end{aligned}$$

Chemicals

$$\begin{aligned}
38) \quad & \ln (MC\ 6/PMC\ 6/REX) \\
& = -3.87495 + 1.08624 \cdot \\
& \quad (17.93) \quad (15.98) \\
& \quad \left[\frac{2}{3} \ln (PWC\ 6/PMC\ 6) \right. \\
& \quad \left. + \frac{1}{3} \ln (PWC\ 6/PMC\ 6)_{-1} \right] \\
& \quad + 1.16175 \left[\frac{3}{5} \ln O \right. \\
& \quad \quad (24.34) \\
& \quad \left. + \frac{2}{5} \ln O_{-1} \right] \\
& \quad + .3912 \ln (O/O_{-4}) \\
& \quad \quad (3.08) \\
& \quad .9755/.07236/1.4109 \\
& \quad (1966.1-1977.1)
\end{aligned}$$

Machinery and other manufactures

$$\begin{aligned}
39) \quad & \ln (MC\ 78/PMC\ 78/REX) \\
& = 1.88579 + .87558 \cdot \\
& \quad (2.81) \quad (5.72)
\end{aligned}$$

$$\begin{aligned}
& \left[\frac{2}{3} \ln (PIF/PMC\ 78) \right. \\
& \quad \left. + \frac{1}{3} \ln (PIF/PMC\ 78)_{-1} \right] \\
& \quad + .39568 \sum_0^1 \ln O_{-i} + .3942 \cdot \\
& \quad \quad (6.00) \quad (4.73) \\
& \quad \ln (MC\ 78/PMC\ 78/REX)_{-1} \\
& \quad .9909/.04604/1.6262 \\
& \quad (1966.1-1977.1)
\end{aligned}$$

Total commodity, custom clearance basis

$$\begin{aligned}
40) \quad & MC = MC\ 1 + MC\ 24 + MC\ 3 \\
& \quad + MC\ 5 + MC\ 6 + MC\ 78
\end{aligned}$$

Commodity imports: balance of payments account

$$\begin{aligned}
41) \quad & MB = (.88028 - .0242\ Q1 \\
& \quad (181.50) \quad (3.77) \\
& \quad + .0100\ Q2 - .0389\ Q3 \\
& \quad \quad (1.56) \quad (6.06) \\
& \quad + .0375\ D732) \cdot (MC \\
& \quad \quad (7.94) \\
& \quad - RMFI \cdot MFI) \\
& \quad .7534/.01505/1.4156 \\
& \quad (1966.1-1977.1)
\end{aligned}$$

(4) Trade of Invisibles*Exports/Receipts, not seasonally adjusted**Freight and merchandise insurance*

$$\begin{aligned}
42) \quad & \ln XFI = -.59868 \\
& \quad (1.10) \\
& \quad + .2733 \ln (FRTL \cdot RXCJ \cdot XB/ \\
& \quad \quad (5.04) \\
& \quad \quad PE/REX) \\
& \quad - .1994 \ln (FRTL \cdot RXCJ \cdot XB/ \\
& \quad \quad (3.23) \\
& \quad \quad PE/REX)_{-1} \\
& \quad + .9499 \ln XFI_{-1} \\
& \quad \quad (21.53) \\
& \quad + .0989\ Q2 + .0616\ Q3 \\
& \quad \quad (5.29) \quad (3.20) \\
& \quad .9963/.04986/1.6292
\end{aligned}$$

(1966.1-1977.1)

Investment income

$$\begin{aligned}
 43) \quad \ln XII &= -2.747 \\
 &\quad (21.2) \\
 &\quad + 1.0919 \ln \left[\frac{RFL3}{100} (KLA \right. \\
 &\quad \left. + KSBA + GFX)_{-1} \right] \\
 &\quad + .1838 Q1 + .1733 Q3 \\
 &\quad \quad (5.25) \quad (4.80) \\
 &\quad .9916/.09321/1.724 \\
 &\quad (1967.1-1977.1)
 \end{aligned}$$

Tourism

$$\begin{aligned}
 44) \quad \ln (XTO/PC/REX) &= -10.195 \\
 &\quad (3.10) \\
 &\quad + 3.165 \ln (YDUS/PCUS) \\
 &\quad \quad (3.41) \\
 &\quad + 1.5525 \ln (PCUS/PC/REX) \\
 &\quad \quad (3.41) \\
 &\quad + .2481 \ln (XTO/PC/REX)_{-1} \\
 &\quad \quad (1.43) \\
 &\quad + .2866 DEXP - .3607 Q1 \\
 &\quad \quad (2.58) \quad (7.88) \\
 &\quad + .0888 Q2 \\
 &\quad \quad (1.15) \\
 &\quad .8579/.11857/1.8511 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Other services

$$\begin{aligned}
 45) \quad \ln (XSO/PC/REX) &= -5.30191 \\
 &\quad (2.24) \\
 &\quad + 4.6727 \ln (YDUS/PCUS) \\
 &\quad \quad (8.24) \\
 &\quad + .4373 \ln (PCUS/PC/REX) \\
 &\quad \quad (1.46) \\
 &\quad - .1324 Q2 \\
 &\quad \quad (2.89) \\
 &\quad .9019/.1320/.6291 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Total exports of services: balance of payments account

$$\begin{aligned}
 46) \quad XS &= XFI + XTO + XII \\
 &\quad + XSO + XSG
 \end{aligned}$$

Imports

Freight and merchandise insurance

$$\begin{aligned}
 47) \quad \ln MFI &= -1.86235 + .3263 \cdot \\
 &\quad (6.52) \quad (6.90) \\
 &\quad \ln (FRTL \cdot RMCF \cdot MB/PM/ \\
 &\quad REX) + .6838 \ln MFI_{-1} \\
 &\quad \quad (14.61) \\
 &\quad - .0669 Q1 - .0420 Q2 \\
 &\quad \quad (4.36) \quad (2.53) \\
 &\quad - .0233 Q3 \\
 &\quad \quad (1.48) \\
 &\quad .9973/.0366/1.6077 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Tourism

$$\begin{aligned}
 48) \quad \ln (MTO/PCUS) &= -13.7352 \\
 &\quad (4.91) \\
 &\quad + 1.91878 \left[\frac{1}{2} \ln (YD/PC) \right. \\
 &\quad \quad (11.69) \\
 &\quad \left. + \frac{1}{2} \ln (YD/PC)_{-1} \right] - .76976 \cdot \\
 &\quad \quad (6.58) \\
 &\quad \sum_6 \ln (PCUS/PC/REX)_{-i} \\
 &\quad + .2630 \ln (GFX/MB) \\
 &\quad \quad (6.93) \\
 &\quad + .0347 Q2 + .0673 Q3 \\
 &\quad \quad (.87) \quad (1.69) \\
 &\quad .9841/.1082/.9880 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Investment income

$$\begin{aligned}
 49) \quad \ln MII &= -9.07924 \\
 &\quad (34.43) \\
 &\quad + .38777 \ln [RFL3 \cdot KLL \\
 &\quad \quad (2.78) \\
 &\quad + RED(KSNN + KSBL)] \\
 &\quad + .8406 \ln [RFL3 \cdot KLL \\
 &\quad \quad (6.09) \\
 &\quad + RED(KSNN + KSBL)]_{-1} \\
 &\quad + .1660 Q1 + .1225 Q3 \\
 &\quad \quad (4.69) \quad (3.39) \\
 &\quad .9877/.0962/1.4278 \\
 &\quad (1966.1-1977.1)
 \end{aligned}$$

Other services

$$\begin{aligned}
 50) \quad \ln (MSO/PCUS) &= -5.00615 \\
 &\quad (3.68)
 \end{aligned}$$

$$\begin{aligned}
& +1.0780 \ln GNP & +.6312 \dot{O} + .4135 \dot{P}\dot{E}W \\
& (13.59) & (11.75) \quad (9.27) \\
& -1.2337 \ln (PCUS/PC/REX) & .9766/.0150/1.0819 \\
& (11.06) & (1967.2-1977.1)
\end{aligned}$$

$$\begin{aligned}
& +.0764 Q1 - .0379 Q2 \\
& (2.70) \quad (1.31) \\
& +.0375 Q3 \\
& (1.30) \\
& .9837/.0674/.7511 \\
& (1966.1-1977.1)
\end{aligned}$$

Total imports of services: balance of payments account

$$\begin{aligned}
51) \quad MS &= MFI + MII + MTO \\
& + MSO + MSG
\end{aligned}$$

(5) Wage, Prices and Deflators

Wage income, adjusted by hours worked

$$\begin{aligned}
52) \quad \dot{W} &= -.76696 \\
& (8.29) \\
& + 1.12332 \sum_0^8 w_i \dot{CPI}_{-i} \\
& (16.26) \\
& + .05340 \sum_0^8 w_i (RU + .05)_{-i}^{-1} \\
& (9.25) \\
& w_i: 0.4, 0.3, 0.2, 0.1 \\
& .8806/.0240/1.6357 \\
& (1966.4-1977.1)
\end{aligned}$$

Wholesale price index (mfg and mining)

$$\begin{aligned}
53) \quad \dot{P}\dot{W} &= -.08134 + .2828 \dot{P}\dot{M}M \\
& (9.29) \quad (31.08) \\
& + .06173 \sum_1^4 ULC_{-i} \\
& (8.04) \\
& + .5959 \dot{O} + .3972 \dot{P}\dot{E}W \\
& (12.60) \quad (10.12) \\
& .9844/.0132/1.0766 \\
& (1967.2-1977.1)
\end{aligned}$$

Wholesale price index (mfg)

$$\begin{aligned}
54) \quad \dot{P}\dot{W}M &= -.08892 + .2588 \dot{P}\dot{M}M \\
& (8.93) \quad (24.99) \\
& + .06024 \sum_1^4 ULC_{-i} \\
& (6.90)
\end{aligned}$$

Wholesale price index of metal products

$$\begin{aligned}
55) \quad \dot{P}\dot{W}C3 &= -.07853 + .7032 \dot{P}\dot{M}C3 \\
& (4.34) \quad (4.26) \\
& + .5609 \dot{O} + 1.0528 \dot{P}\dot{W}M \\
& (5.45) \quad (3.58) \\
& .9078/.0650/.6886 \\
& (1966.1-1977.1)
\end{aligned}$$

Wholesale price index of textiles and miscellaneous products

$$\begin{aligned}
56) \quad \dot{P}\dot{W}C24 & \\
& = -.03303 + .6259 \dot{P}\dot{M}C24 \\
& (2.91) \quad (12.69) \\
& + .1475 \dot{O} + .4038 \dot{I}H \\
& (1.39) \quad (4.13) \\
& .8412/.04866/.9975 \\
& (1966.2-1977.1)
\end{aligned}$$

Wholesale price index of chemical products

$$\begin{aligned}
57) \quad \dot{P}\dot{W}C6 &= -.01787 + .0845 \dot{P}\dot{M}C5 \\
& (3.89) \quad (7.15) \\
& + .9746 \dot{P}\dot{W}M \\
& (11.70) \\
& .9678/.0252/1.0097 \\
& (1966.1-1977.1)
\end{aligned}$$

Unit value index of exports (dollar term)

$$\begin{aligned}
58) \quad \dot{P}\dot{E}C &= .22155 \\
& (5.41) \\
& + .7871 \dot{P}\dot{W}M_{-1} + .5614 \dot{R}\dot{E}X_{-1} \\
& (11.40) \quad (8.47) \\
& -.9663 KIP \cdot 0.001 \\
& (5.47) \\
& + .2890 \dot{P}\dot{E}W \\
& (3.78)
\end{aligned}$$

$$\begin{aligned}
& .9577/.0220/1.1302 \\
& (1966.1-1977.1)
\end{aligned}$$

Consumer price index

$$\begin{aligned}
59) \quad \dot{CPI} &= .021 + .4838 \sum_0^1 w_i \dot{P}\dot{W}_{-i} \\
& (2.4) \quad (12.5)
\end{aligned}$$

$$+.1815 \sum_0^1 w_i \dot{C}\dot{P}IP_{-i} \\ (4.65)$$

$$+.1536 \sum_0^1 w_i \dot{W}_{-i} \\ (2.67)$$

$$w_0=0.6, w_1=0.4$$

$$.9429/.0149/1.2001$$

$$(1967.1-1977.1)$$

Deflator of consumption expenditures

$$60) \quad P\dot{C}=.0324+.12806 \sum_0^3 w_i \dot{W}_{-i} \\ (4.03) \quad (2.32)$$

$$+.44530 \sum_0^3 w_i P\dot{W}_{-i} \\ (11.97)$$

$$+.0285 DD761 \\ (2.19)$$

$$w_i: 0.4, 0.3, 0.2, 0.1 \quad i=0, 3$$

$$.9376/.0127/1.169$$

$$(1967.1-1977.1)$$

Deflator of public consumption expenditures

$$61) \quad P\dot{C}G=-.005+.6686 \sum_0^1 w_i \dot{W}_{-i} \\ (0.5) \quad (5.78)$$

$$+.0435 \sum_0^1 w_i P\dot{W}_{-i} \\ (.54)$$

$$+2.0731 R\dot{W}G \\ (2.51)$$

$$w_0=0.6, w_1=0.4$$

$$.8716/.0261/2.403$$

$$(1967.1-1977.1)$$

Deflator of private fixed investment

$$62) \quad P\dot{I}F=.0056+.7984 P\dot{W}M \\ (1.89) \quad (28.56)$$

$$+.0301 DD7512 \\ (2.55)$$

$$.9522/.0163/.5763$$

$$(1966.2-1977.1)$$

Deflator of housing investment

$$63) \quad P\dot{I}H=.02467+.7647 P\dot{I}F \\ (10.6) \quad (30.5)$$

$$+.2966 P\dot{W}C24 \\ (24.2)$$

$$.9779/.0118/.7096$$

$$(1966.2-1977.1)$$

Deflator of public fixed investment

$$64) \quad P\dot{I}G=.0217+.8875 P\dot{I}F \\ (11.1) \quad (9.64)$$

$$+.1549 P\dot{W}M \\ (2.06)$$

$$.9835/.0103/2.313$$

$$(1966.2-1977.1)$$

Deflator of exports

$$65) \quad P\dot{E}=.00839 \\ (2.57)$$

$$+.4867(P\dot{W}M+P\dot{W}M_{-1}) \\ (34.8)$$

$$-.1776(R\dot{E}X+R\dot{E}X_{-1}) \\ (8.9)$$

$$-.0679 DREX \\ (10.2)$$

$$.9753/.01572/1.563$$

$$(1966.2-1977.1)$$

Deflator of imports

$$66) \quad P\dot{M}=0.2(P\dot{E}W-R\dot{E}X)$$

$$+.0088+.5050 P\dot{M}M \\ (1.96) \quad (37.5)$$

$$.9702/.0275/.7040$$

$$(1966.2-1977.1)$$

GDP deflator

$$67) \quad P=GDP\mathcal{V}/GDP$$

(6) Employment and Production

Demand for labor, employees man-hours

$$68) \quad \ln(LW \cdot H)$$

$$=3.927+.09632 \ln GDP \\ (3.78) \quad (2.83)$$

$$+.2003 \ln(O/O_{-1}) \\ (3.74)$$

$$-.02723 \ln(W/P)_{-1} \\ (1.32)$$

$$+.60104 \ln(LW \cdot H)_{-1} \\ (5.77)$$

$$.9577/.00878/2.005$$

$$(1966.1-1977.1)$$

Hours worked

$$\begin{aligned}
69) \quad \ln H &= .9550 - .01591 \ln GDP \\
&\quad (3.30) \quad (2.24) \\
&\quad + .1764 \ln (O/O_{-1}) \\
&\quad (4.77) \\
&\quad + .8296 \ln H_{-1} \\
&\quad (17.3) \\
&\quad .9786/.0060/2.626 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Number of employees

$$70) \quad LW = (LW \cdot H)/H$$

Number of non-agricultural self-employed

$$\begin{aligned}
71) \quad LSNA &= 1.945 + .09010 \ln GDP \\
&\quad (3.30) \quad (2.42) \\
&\quad + .0619 \ln \left(\frac{YSNA/LSNA}{YW/LW} \right)_{-1} \\
&\quad (1.93) \\
&\quad + .5700 \ln (LSNA)_{-1} \\
&\quad (4.04) \\
&\quad .9214/.01455/1.595 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Number of people at work

$$72) \quad L = LW + LSNA + LSA$$

Labor supply

$$\begin{aligned}
73) \quad NL &= 1230.7 + 18.79 \left(\frac{YW + YS}{L \cdot P} \right) \\
&\quad (3.58) \quad (3.47) \\
&\quad + 100.9 \dot{O} + .7276 NL_{-1} \\
&\quad (2.95) \quad (9.52) \\
&\quad .9875/17.8/2.463 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Unemployment

$$74) \quad U = NL - L$$

Rate of unemployment

$$75) \quad RU = U/NL$$

Industrial production index, 1975 = 100.0

$$\begin{aligned}
76) \quad O &= 59.36 + .00097[.72 C \\
&\quad (14.91) \quad (57.75) \\
&\quad + 1.2(IH + IF + IG) \\
&\quad + 1.63(IIP + IIG) + 1.65 EGS \\
&\quad + .29 CG)] - .2063 \frac{KIP_{-1}}{O_{-1}} \\
&\quad (13.24)
\end{aligned}$$

$$.9888/2.3528/.5437 \\ (1966.1-1977.1)$$

(7) Income Distribution*Compensation for employees*

$$77) \quad YW = W(LW \cdot H)$$

Income of self-employed, agriculture and fishery

$$\begin{aligned}
78) \quad YSA/LSA \\
&= -1.27210 + .2559 \frac{YW}{LW} \\
&\quad (1.66) \quad (4.78) \\
&\quad + .0770 PWA - .0286 PWM \\
&\quad (3.51) \quad (1.51) \\
&\quad .9740/.4530/1.5736 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Income of self-employed, non-agriculture

$$\begin{aligned}
79) \quad YSNA &= 450.34 + .3291 GNP\% \\
&\quad (1.27) \quad (6.52) \\
&\quad - .3458(YW + YRH) \\
&\quad (4.87) \\
&\quad + YC + YSA)
\end{aligned}$$

$$.9614/763.0/1.3337 \\ (1966.1-1977.1)$$

Income of self-employed, total

$$80) \quad YS = YSA + YSNA + YRENT$$

Property income of household, excluding dividend receipts

$$\begin{aligned}
81) \quad YRH \\
&= 1598.7 + .0106 RLB \cdot KSP_{-1} \\
&\quad (18.38) \quad (67.48) \\
&\quad .9906/363.7/.8641 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Corporate dividend payments to household

$$\begin{aligned}
82) \quad YDIH &= 23.83 + .0078(YC + YC_{-1}) \\
&\quad (.56) \quad (2.66) \\
&\quad + .9351 YDIH_{-2} \\
&\quad (31.95) \\
&\quad .9734/75.52/1.4593 \\
&\quad (1966.1-1977.1)
\end{aligned}$$

Personal income

$$83) \quad YP = YW + YS + YRH + YDIH$$

Personal disposable income

$$84) \quad YD = YP + TR + TROH - TP \\ - SI - TRHO$$

$$.9642/382.91/2.3293 \\ (1971.1-1977.1)$$

Personal savings

$$85) \quad SP = YD - (C\cancel{Y} - CNH\cancel{Y})$$

Corporate profit

$$86) \quad YC = -650.60 + .2274 \cdot \\ (1.06) \quad (13.28) \\ (\sum_0^1 GNP\cancel{Y}_{-i} - \sum_0^1 YW_{-i}) \\ -.0142 RLB \sum_0^1 LB_{-i} \\ (11.75) \\ .8289/963.65/.8769 \\ (1966.1-1977.1)$$

Corporate tax

$$92) \quad TC = -1418.12 \\ (6.83)$$

$$+.1928 RC 1 \sum_1^2 YCA_{-i} \\ (4.32) \\ +5.6422 RC 2 \sum_0^1 YDIH_{-i} \\ (20.99) \\ +1824.70 DTC \\ (6.82)$$

$$.9590/412.90/.7084 \\ (1966.1-1977.1)$$

Corporate profit after dividend payment

$$87) \quad YCA = -444.33 + .8933 YC \\ (3.95) \quad (65.84) \\ -880.46 D741 \\ (13.07) \\ .9908/204.84/1.5248 \\ (1966.1-1977.1)$$

Indirect tax

$$93) \quad TI = 82.77 + (.03551 \\ (.82) \quad (55.01) \\ -.0027 D744) \sum_0^1 GNP\cancel{Y}_{-i} \\ (6.31)$$

$$.9943/217.2/1.5791 \\ (1966.1-1977.1)$$

Corporate savings

$$88) \quad SC = YCA - TC$$

National income

$$89) \quad Y = YP + YCA + YRNH + YRG \\ + YCG - INTG - INTP$$

Current surplus

$$94) \quad SG = TP + TC + TI + SI + YRG \\ - INTG - CG\cancel{Y} - TR \\ - SUB - TRGP$$

Net increase in public borrowing

$$95) \quad BG = SG - IG\cancel{Y} - IIG\cancel{Y}$$

Statistical discrepancy

$$90) \quad DISC \\ = GNP\cancel{Y} - D - TI + SUB - Y$$

(9) Balance of Payments Account

Trade balance

$$96) \quad BT = XB - MB$$

Invisible trade balance

$$97) \quad BS = XS - MS$$

Current account

$$98) \quad BC = BT + BS + BU$$

Basic balance

$$99) \quad BB = BC + \Delta(KLL - KLA)$$

Over-all account

$$100) \quad BA = BB + \Delta KSN + BEO$$

Gold and foreign exchange reserves

$$101) \quad GFX = GFX_{-1} + BA + BONR$$

(8) Taxes and Fiscal Balance

Personal income tax

$$91) \quad TP = 280.83 + .0742(YW \\ (.58) \quad (4.20) \\ + YDIH + YRH + YSA) \\ + .1912 YSNA \\ (2.39) \\ -.0004 LW \cdot EQA \\ (1.62) \\ + 1107.13 DLAND \\ (2.36)$$

II List of Variable: by Alphabetical Order

<i>BA</i>	S130	10 ⁶ \$	private non-profit institution, saar.	
	Balance of payments, over-all account.		<i>CPI</i>	S29
<i>BB</i>	S149	10 ⁶ \$	Consumer price index, 1975=100.	
	Balance of payments, basic balance.		<i>CPIP</i>	E64
<i>BC</i>	S129	10 ⁶ \$	Index of regulated consumer prices, 1975=100.	
	Balance of payments, current account.			
<i>BEO</i>	E38	10 ⁶ \$	<i>D</i>	E2 10 ⁹ ¥
	Errors and omission in balance of payments.		Total depreciation allowance in NIA, current, saar.	
<i>BG</i>	S92		<i>D741</i>	E78
	Government demand for funds, saar.		Dummy, =1.0 for 1974.1 and after, 0.0 otherwise.	
<i>BONR</i>	E40	10 ⁶ \$	<i>DD761</i>	E84
	Balance of official, non-reserve transactions.		Dummy, =1.0 for 1976.1 only, and 0.0 otherwise.	
<i>BS</i>	S128	10 ⁶ \$	(Similar dummy variables should read like this.)	
	Balance of invisible trade.		<i>DEXP</i>	E92
<i>BT</i>	S127	10 ⁶ \$	Dummy variable, =1.0 in 1970.2 and 1970.4, =0.0 otherwise.	
	Balance of trade.		<i>DISC</i>	S82 10 ⁹ ¥
<i>BU</i>	E77	10 ⁶ \$	Statistical discrepancy in NIA, saar.	
	Balance of unilateral transfer.		<i>DLAND</i>	E94
<i>C</i>	S1	10 ⁹ ¥	Dummy variable, =1.0 in 1974.1 and 1974.2, =0.0 otherwise.	
	Private consumption, real term, saar.		<i>DLBH</i>	E26 10 ⁹ ¥
<i>CY</i>	S46	10 ⁹ ¥	Increase in housing loans from private banks, sa.	
	Private consumption, current value, saar.		<i>DREX</i>	E97
<i>CF</i>	S11	10 ⁹ ¥	Dummy variable, =1.0 after 1975.3.	
	Personal consumption on food, real, saar.		<i>DTC</i>	E93
<i>CG</i>	S2	10 ⁹ ¥	Dummy variable, =1.0 in 1974.3 and 1975.1, =0.0 otherwise.	
	Government consumption, real, saar.			
<i>CGY</i>	E7	10 ⁹ ¥		
	Government consumption, current, saar.			
<i>CNHY</i>	E5	10 ⁹ ¥	<i>E</i>	S7 10 ⁹ ¥
	Current consumption expenditures by			

Exports and income from abroad in NIA, real, saar.	<i>IF</i>	S4	10 ⁹ ¥	Business fixed investment, real, saar.
<i>EY</i> S50 10 ⁹ ¥	<i>IFY</i>	S48	10 ⁹ ¥	Business fixed investment, current, saar.
Exports and income from abroad in NIA, current, saar.	<i>IG</i>	S5	10 ⁹ ¥	Government fixed investment, real, saar.
<i>EGS</i> S107 10 ⁹ ¥	<i>IGY</i>	E6	10 ⁹ ¥	Government fixed investment, current, saar.
Exports of goods and services in NIA, real, saar.	<i>IH</i>	S3	10 ⁹ ¥	Private housing investment, real, saar.
<i>EGSY</i> S137 10 ⁹ ¥	<i>IHY</i>	S47	10 ⁹ ¥	Private housing investment, current, saar.
Exports of goods and services in NIA, current, saar.	<i>IIG</i>	E9	10 ⁹ ¥	Government inventory investment, real, saar.
<i>EQA</i> E19 10 ⁵ ¥	<i>IIGY</i>	E8	10 ⁹ ¥	Government inventory investment, current, saar.
Level of income tax exemption for a household of four persons.	<i>IIP</i>	S6	10 ⁹ ¥	Private corporate inventory invest- ment, real, saar.
<i>ET</i> S142 10 ⁹ ¥	<i>IIPY</i>	S49	10 ⁹ ¥	Private corporate inventory invest- ment, current, saar.
Factor income from abroad in NIA, real, saar.	<i>INTP</i>	E47	10 ⁹ ¥	Interest payment on consumer's loan, current, saar.
<i>ETY</i> S140 10 ⁹ ¥	<i>INTG</i>	E48	10 ⁹ ¥	Government interest payments on bond, current, saar.
Factor income from abroad in NIA, current, saar.	<i>KF</i>	S96	10 ⁹ ¥	Gross fixed capital stock (net of <i>RF</i>), real, sa.
<i>FRTL</i> E75	<i>KIP</i>	S97	10 ⁹ ¥	Private corporate inventory stock, real,
Liner freight rate (the Bremen index), 1965=100.				
<i>GDP</i> S67 10 ⁹ ¥				
Gross Domestic Product, real, saar.				
<i>GDPY</i> S68 10 ⁹ ¥				
Gross Domestic Product, current, saar.				
<i>GFX</i> S131 10 ⁶ \$				
Gold and foreign exchange reserves.				
<i>GNP</i> S9 10 ⁹ ¥				
Real GNP, saar.				
<i>GNPY</i> S52 10 ⁹ ¥				
Current GNP, saar.				
<i>H</i> S16				
House worked, 1975=100.				

sa.			Imports and income paid to abroad,
<i>KLA</i>	E33	10 ⁶ \$	NIA, current, saar.
Outstandings of long-term assets over-			
seas.			<i>MB</i>
<i>KLL</i>	E34	10 ⁶ \$	S120 10 ⁶ \$
Outstandings of long-term liabilities			Merchandise imports, balance of pay-
overseas.			ments basis.
<i>KOIL</i>	E46	10 ⁴ kl	<i>MC</i>
Stock of imported crude oil.			S119 10 ⁶ \$
<i>KSBA</i>	E36	10 ⁶ \$	Commodity imports, custom clearance
Foreign short-term assets of foreign			basis, sa.
exchange banks.			<i>MC 1</i>
<i>KSBL</i>	E37	10 ⁶ \$	S113 10 ⁶ \$
Foreign short-term liabilities of foreign			Imports of food and beverage, custom
exchange banks.			clearance basis, sa.
<i>KSNV</i>	E35	10 ⁶ \$	<i>MC 24</i>
Net outstandings of overseas short-			S114 10 ⁶ \$
term assets (net of liabilities) in			Imports of crude materials, custom
private non-banking sector.			clearance basis, sa.
<i>KSP</i>	S98	10 ⁹ ¥	<i>MC 3</i>
Accumulated personal savings.			S115 10 ⁶ \$
			Imports of metal ores and scraps,
<i>L</i>	S19	10 ⁴	custom clearance basis, sa.
Total population at work, sa.			<i>MC 5</i>
<i>LB</i>	E25	10 ⁹ ¥	S116 10 ⁶ \$
Loan outstandings from private banks.			Imports of mineral fuels, custom clear-
<i>LSA</i>	E14	10 ⁴	ance basis, sa.
Number of self-employed, agriculture			<i>MC 6</i>
and fishery, sa.			S117 10 ⁶ \$
<i>LSNA</i>	S18	10 ⁴	Imports of chemical products, custom
Number of self-employed, non-agricul-			clearance basis, sa.
tural, sa.			<i>MC 78</i>
<i>LW</i>	S17	10 ⁴	S118 10 ⁶ \$
Number of employees, sa.			Imports of machineries and other mfg
			products, custom clearance basis, sa.
<i>M</i>	S8	10 ⁹ ¥	<i>MFI</i>
Imports and income paid to abroad,			S122 10 ⁶ \$
NIA, real, saar.			Payments of freight and merchandise
<i>MY</i>	S51	10 ⁹ ¥	insurance.
			<i>MGS</i>
			S121 10 ⁹ ¥
			Imports of goods and services, NIA,
			real, saar.
			<i>MGSY</i>
			S138 10 ⁹ ¥
			Imports of goods and services, NIA,
			current, saar.
			<i>MII</i>
			S124 10 ⁶ \$
			Payments of investment income to
			abroad.
			<i>MS</i>
			S126 10 ⁶ \$

Total service imports, balance of payments basis.	1970=1.0, sa.
<i>MSG</i> E31 10 ⁶ \$	<i>PEC</i> S135
Payments for overseas government services.	Unit value index of commodity export in dollar term, 1975=1.00.
<i>MSO</i> S125 10 ⁶ \$	<i>PEW</i> E63
Payments for other services including non-merchandise insurance.	Price index of world manufacturing export, 1970=1.0.
<i>MT</i> S143 10 ⁹ ¥	<i>PIF</i> S71
Factor income paid to abroad, NIA, real, saar.	Fixed investment deflator, 1970=1.00, sa.
<i>MT</i> ¥ S141 10 ⁹ ¥	<i>PIG</i> S43
Factor income paid to abroad, NIA, current, saar.	Government capital formation deflator, 1970=1.00, sa.
<i>MTO</i> S123 10 ⁶ \$	<i>PIH</i> S41
Payments for tourism.	Housing investment deflator, 1965=1.00, sa.
<i>NL</i> S20 10 ⁴	<i>PM</i> S136
Total labor force.	Deflator of goods and service imports, 1970=1.00, sa.
<i>O</i> S10	<i>PMC 1</i> E54
Industrial production index, 1975=100.	Unit value index of foodstuff imports, 1975=100.
<i>P</i> S53	<i>PMC 2</i> E55
GDP deflator, 1970=1.00, sa.	Unit value index of MC2 imports, 1975=100.
<i>PC</i> S35	<i>PMC 3</i> E56
Consumption deflator, 1970=1.00, sa.	Unit value index of MC3 imports, 1975=100.
<i>PCF</i> S55	<i>PMC 4</i> E57
Food consumption deflator, 1970=1.00, sa.	Unit value index of MC4 imports, 1975=100.
<i>PCG</i> S37	<i>PMC 5</i> E58
Government consumption deflator, 1970=1.00, sa.	Unit value index of MC5 imports, 1975=100.
<i>PCUS</i> E68	<i>PMC 6</i> E59
Consumption deflator in U.S., NIA, 1967=100.0, sa.	Unit value index of MC6 imports, 1975=100.
<i>PE</i> S45	<i>PMC 7</i> E60
Deflator of goods and service exports,	Unit value index of MC7 imports,

1975=100.	quarter.
<i>PMC 8</i> E61	<i>Q3</i> E82
Unit value index of <i>MC8</i> imports, 1975=100.	Seasonal dummy for the third quarter.
<i>PMC 24</i> S132	
Deflator for <i>MC2+MC4</i> , derived from <i>PMC2</i> and <i>PMC4</i> price index, 1975=100.	<i>RC 1</i> E17
<i>PMC 78</i> S133	Corporate income tax rate.
Deflator for <i>MC7+MC8</i> , derived from <i>PMC7</i> and <i>PMC8</i> price index, 1975=100.	<i>RC 2</i> E18
<i>PMM</i> S62	Corporate income tax rate as applied to dividend payment credit.
Price index of imported materials (SITC0-4), 1975=100.	<i>RED</i> E71
<i>PW</i> S31	Euro-dollar rate.
Wholesale price index (mining and mfg), 1975=100.	<i>REX</i> E69
<i>PWA</i> S65	Index of yen value against U.S. dollar, 1.0 before 1971.3.
Wholesale price index for foodstuffs and inedible agricultural product, 1975=100.	<i>RF</i> S95 10 ⁹ ¥
<i>PWC 3</i> S57	Removal and scrappage of capital stock, real, saar.
Wholesale price index for metal prod- ucts, 1975=100.	<i>RFL3</i> E70
<i>PWC 24</i> S59	Average of long-term bond yield (U.S., U.K. and G.E.).
Wholesale price index for textiles and miscellaneous products, 1975=100.	<i>RLB</i> E28
<i>PWC 6</i> S61	Average loan rate by bank, percentage.
Wholesale price index for chemical products, 1975=100.	<i>RMCF</i> E74
<i>PWM</i> S33	Ratio of import cargo shipped by foreign vessels, per cent.
Wholesale price index for manufac- turing products, 1975=100.	<i>RMF</i> E76
	Ratio of payments for merchandise freight and insurance to total pay- ments of freight and insurance.
<i>Q1</i> E80	<i>RU</i> S22
Seasonal dummy for the first quarter.	Rate of unemployment= U/NL .
<i>Q2</i> E81	<i>RWG</i> E16
Seasonal dummy for the second	Ratio of wage bills in government consumption (estimate from annual statistics).
	<i>RXCJ</i> E73
	Ratio of export cargo shipped by Japanese vessels, per cent.

<i>SC</i>	S89		<i>ULC</i>	S26	
		Corporate saving, current, saar.			Unit labor cost, $ULC = YW/O$.
<i>SG</i>	S91				
		Government current surplus, saar.	<i>W</i>	S25	
<i>SI</i>	E4	10 ⁹ ¥			Wage income employee, saar, adjusted by index of hours worked, $W = YW/LW/H$.
		Personal contributions to social insurance, NIA, saar.			
<i>SP</i>	S88	10 ⁹ ¥			
		Personal saving, saar.	<i>XB</i>	S106	10 ⁶ \$
<i>SUB</i>	E20	10 ⁹ ¥			Merchandise exports, balance of payments basis.
		Government subsidy to firms, NIA, saar.	<i>XC</i>	S105	10 ⁶ \$
					Commodity exports, custom clearance basis, sa.
<i>TC</i>	S86	10 ⁹ ¥	<i>XFI</i>	S108	10 ⁶ \$
		Corporate tax (private corporations), NIA, saar.			Receipts of freight and merchandise insurance.
<i>TI</i>	S84	10 ⁹ ¥	<i>XII</i>	S110	10 ⁶ \$
		Indirect tax, NIA, saar.			Receipts of investment income from abroad.
<i>TP</i>	S85	10 ⁹ ¥	<i>XS</i>	S112	10 ⁶ \$
		Personal income tax, NIA, saar.			Total service exports, balance of payments basis.
<i>TR</i>	E3	10 ⁹ ¥	<i>XSG</i>	E30	10 ⁶ \$
		Social security benefit to persons, NIA, saar.			Government receipts of services from abroad.
<i>TRGP</i>	E27	10 ⁹ ¥	<i>XSO</i>	S111	10 ⁶ \$
		Net Transfer from government to private sector, other than social security benefit, NIA, saar.			Receipts of other services including non-merchandise insurance.
<i>TRHO</i>	E12	10 ⁹ ¥	<i>XTO</i>	S109	10 ⁶ \$
		Transfer payments by household other than <i>SI</i> and <i>TP</i> , NIA, saar.			Receipts from tourism.
<i>TROH</i>	E1	10 ⁹ ¥			
		Transfer receipts by household other than <i>TR</i> , NIA, saar.	<i>Y</i>	S72	10 ⁹ ¥
<i>TW</i>	E43				National income, NIA, saar.
		Quantum index of world manufacturing export, 1975=100.	<i>YC</i>	S80	10 ⁹ ¥
					Corporate income, NIA, saar.
<i>U</i>	S21	10 ⁴	<i>YCA</i>	S100	10 ⁹ ¥
		Number of unemployment.			Corporate income after dividend payment, NIA, saar.

<i>YCG</i>	E10	10 ⁹ ¥	
Income of government enterprise, saar (Government payments of interests on public debt).			
<i>YD</i>	S87	10 ⁹ ¥	
Personal disposable income, NIA, saar.			
<i>YDUS</i>	E67	10 ⁹ \$	
Personal disposable income, USA, saar.			
<i>YDIH</i>	S81	10 ⁹ ¥	
Corporate dividend payments to house- hold, NIA, saar.			
<i>YP</i>	S83	10 ⁹ ¥	
Personal income, saar.			
<i>YRENT</i>	E44	10 ⁹ ¥	
Imputed rent of household, NIA, saar.			
<i>YRG</i>	E10	10 ⁹ ¥	
Property income of general govern- ment, NIA, saar.			
<i>YRH</i>	S77	10 ⁹ ¥	
Household's property income excluding			

<i>YDIH</i> , NIA, saar.			
<i>YRNH</i>	E45	10 ⁹ ¥	
Property income of private non-profit institution, NIA, saar.			
<i>YS</i>	S76	10 ⁹ ¥	
Income of self-employed, saar.			
<i>YSA</i>	S74	10 ⁹ ¥	
Income of self-employed, agriculture and fishery, saar.			
<i>YSNA</i>	S74	10 ⁹ ¥	
Income of self-employed, non-agricul- tural, saar.			
<i>YW</i>	S73	10 ⁹ ¥	
Compensation of employees, saar.			

saar : seasonally adjusted at annual rate.
sa : seasonally adjusted at quarterly
rate.

NIA: National Income Account.
Real terms in NIA are expressed in 1970
yen.

III The Forecast of the Japanese Economy: 1978-1979

Since 1977, particularly at the time of LINK Kyoto Meeting, major economic policy issues in Japan have been (1) accelerating domestic activity and (2) narrowing of trade surplus, namely, a pursuit of double targets which are in trade-off relations. The economy has been virtually free from inflation since the latter half of 1977. The substantial upvaluation of the currency seems to have stabilized domestic prices and completely destroyed the public's inflationary expectation. From the viewpoint of a textbook macroeconomic theory, the economy has no dilemma or trilemma in her persuing both domestic and external

equilibria. But in practice the Government's heavy reliance on deficit financing has come to a "limit," and a fairly conservative view on the fiscal deficit is being shared in common by not only Government bureaucrats, especially those of Ministry of Finance and the governmental party, but also by most of the opposition parties.

In the fiscal 1978 which is about to conclude, the Government adopted one of the most expansionary budget in the modern history of Japan, with 33 per cent of its revenue dependent upon bond issuance. Besides, some additional spending was added last Fall, when Mr. Fukuda

realized that it would be utterly difficult to keep his words given at the Bonn Summit. Towards the end of fiscal 1978, the growth rate is rising. However, the rate of growth for the whole fiscal 1978 is likely to end up close to 6 per cent. This is way below the original target posted by the Fukuda Cabinet, but I should say (and have been contending) that the original target was unrealistic from the start. Judging from a recent change in the trend of trade balance; that is, a fast shrinking of trade surplus in real terms (National Income Account), more than 7 per cent growth of the domestic aggregate demand could not bring about 6 per cent growth of GNP. However, with the present rate of modest expansion, domestic situation in employment/unemployment is not likely to worsen further. Then why did Mr. Fukuda insist with 7 per cent? Perhaps there was a certain confusion in identifying policy targets and policy instruments.

The long-awaited change in the balance of payments has taken place. As shown by Table 1 upward trend in imports and downward one in exports (both in quantity) are clear. Durable consumption

goods to be shipped to the U.S. have been declining in number of units. Imports of various manufactured goods are growing at the annual rate of 30 per cent in values. A tight control by the Government on foodstuff import is being undermined by increasing 'semi-processed' food products that are not under the control. Clearly, with certain time lags, the balance of payments in current account has begun to contract. As long as the Government successfully manage the pressure for protecting domestic industries from competitive imports, this tendency will add a momentum.

Bright aspect in the private sector is P & E investment. A recent survey of corporate investment plans indicates that majority firms are revising upward their planned capital outlays. Power industry has been a leader in picking-up P & E investment, followed by service industries. It is observed that investment surveys tend to underestimate recent trend mainly because these surveys heavily rely on large corporations while their relative share in the total capital spending has been dwindling. Fiscal 1978 will have seen an increase in private real fixed

Table 1 Recent Trend of Trade and Balance of Payments in Japan

	1977.4	1978.1	2	3	4	1979 Jan.
Goods exports value	21.03	23.12	23.24	24.37	24.98	—
Volume change (%)	1.1	1.5	-5.7	-0.2	0.3	-5.0
Goods imports, fob	15.85	16.27	16.48	17.56	20.63	—
Volume change (%)	1.2	2.5	1.8	1.7	5.7	2.3
Trade balance	5.17	6.89	6.75	6.81	4.35	0.94
Current account	3.74	5.07	4.80	4.60	2.19	0.34
Basic balance	2.57	5.41	1.18	0.58	-2.81	0.14
Over-all account	3.18	6.04	0.91	1.10	-2.07	0.77
Exchange rate (¥/\$)	251	240	220	191	190	197

investment by 7–8 per cent over fiscal 1979. As for 1979, views are divided, but an optimistic view seems to be obtaining more supports among economists and forecasting institutions. Some of the factors that reinforce optimism of P & E investment outlook are: 1) stagnant period has lasted long enough and technical obsolescence has proceeded; 2) in view of high energy cost and related price system change some industries have “dead stocks” to be written-off while they are still counted as “productive capacity” which causes an under estimation in capacity utilization.

Housing investment is not so promising. Housing starts (for private dwelling units) have been hovering around one and half million for the past three years, despite the Governments’ effort for stimulating it. The well-known high price of land tends to shift peoples’ preference to urban multiplex from single houses with small land site. Thanks to the Government’s stimulus, housing loans have become cheaper, and average age of young family that starts to buy dwelling units has come down. However, a lack of public control on land use and a potentially strong price expectation on land, supply of medium priced multiplex is limited. We foresee that the number of housing starts will remain at the present level and that only growth factor in this market is growth in size and interior outlay per unit.

Let us proceed to discussing 1979

budget that starts from this April. Mr. Ohira’s budget plan, now in the Diet, was drawn up under the strong fear of further rising fiscal deficit. The planned spending seems to be only slightly expansionary (11.0 per cent increase over the 1978 budget while the anticipated rate of current GNP growth is 9.9 per cent). Among the spending items a heavy stress is put on public investment. Public fixed investment in N.I.A. is assumed to grow at about 15 per cent, while public consumption at 9. With this modest spending plan, fiscal 1979 will see further increase in the dependency ratio on bond issuance, from 33 to 37 per cent.

Overall outlook of the economy this year is not as good as last year. Major differences are seen in (1) weaker public expenditure and (2) contraction of trade surplus. General public’s pessimistic view on the future economy has not improved. It might be reinforced by the unfavorable situation in labor market where unemployment rate among male workforce with family, age of 45 and up, is rising. Hence it is unlikely that we will see a further decline in personal saving ratio as long as there is no improvement in labor market.

The details of our forecast for the years 1979 and 1980 are presented in the following tables from 2 to 11. They are made in February, 1979.

Forecast by Kyoto University Quarterly Model, Feb., 1979.

Table 2 Real Expenditures, Production and Unemployment

	1978CY	1979CY	1980CY
<i>C</i> P. Consp	56.527	59.276	61.877
%	5.24	4.86	4.39
<i>IH</i> Hous. I	7.355	7.644	8.212
%	9.33	3.94	7.42
<i>IF</i> Fixed I	16.067	17.324	18.525
%	4.88	7.83	6.93
<i>IIP</i> Inv. Chg.	1.500	1.898	2.021
%	-16.05	26.58	6.44
<i>IG</i> Gov. I	11.774	13.333	14.583
%	17.47	13.25	9.37
<i>CG</i> Gov. Csptn	9.221	9.536	9.758
%	6.41	3.41	2.33
<i>IIG</i> Gov. Inv. Chg.	0.238	0.262	0.212
%	35.38	10.06	-19.05
<i>E</i> Export	18.601	18.185	19.069
%	2.20	-2.24	4.86
<i>M</i> Import	12.518	13.413	14.536
%	6.17	7.15	8.37
<i>GNP</i>	108.764	114.045	119.720
%	6.07	4.86	4.98
<i>O</i> Prod. Ind.	138.981	146.669	156.885
% 1970=100	6.62	5.53	6.96
<i>U</i> Unemp. (10 ⁴)	122.352	126.720	114.282

Table 3 Current Values of Expenditures

	1978CY	1979CY	1980CY
<i>CY</i>	114.365	125.275	137.991
%	10.20	9.54	10.15
<i>IHY</i>	14.171	15.420	17.267
%	10.92	8.81	11.98
<i>IFY</i>	25.129	28.194	31.614
%	6.69	12.20	12.13
<i>IIFY</i>	2.152	2.863	3.171
%	-29.38	33.05	10.77
<i>IGY</i>	20.407	24.058	27.567
%	20.11	17.89	14.59
<i>CGY</i>	22.038	23.933	26.037
%	8.81	8.60	8.79
<i>IIGY</i>	0.323	0.325	0.300
%	-13.30	0.54	-7.69
<i>EY</i>	24.174	22.956	24.347
%	-5.52	-5.04	6.06
<i>MY</i>	20.245	21.226	23.081
%	-10.34	4.85	8.74
<i>GNPY</i>	202.513	221.797	245.211
%	10.19	9.52	10.56

Table 4 Trade and Balance of Payments

		1978CY	1979CY	1980CY
<i>XC</i>	Exp. fob	96.700	100.454	112.825
	%	20.80	3.88	12.31
<i>MC</i>	Imp. cif	77.426	90.009	104.303
	%	9.40	16.25	15.88
<i>MC1</i>	foodstuff	10.780	12.357	13.523
	%	6.48	14.63	9.44
<i>MC24</i>	Oth. Mat	9.403	9.662	10.385
	%	-2.04	2.75	7.49
<i>MC3</i>	Met. Ore.	4.850	5.226	5.612
	%	2.07	7.75	7.38
<i>MC5</i>	Min. Fuel	32.089	37.639	43.079
	%	3.36	17.30	14.45
<i>MC6</i>	Chemical	3.331	3.725	4.344
	%	10.65	11.82	16.60
<i>MC78</i>	Mach & Oth	16.971	21.399	27.360
	% Mfc.	40.39	26.09	27.85
<i>XB</i>	Exp.	95.430	99.282	111.563
	%	20.34	4.04	12.37
<i>MB</i>	Imf. fob	67.838	78.648	90.684
	%	9.75	15.94	15.30
<i>BT</i>	Trade Bal.	27.592	20.634	20.879
<i>XSNA</i>	Exp. Serv.	19.183	22.133	25.279
	%	17.30	15.38	14.21
<i>MSNA</i>	Imp. Serv.	27.833	32.823	38.109
	%	24.18	17.93	16.11
<i>BS</i>	Bal. Invisible	-8.651	-10.690	-12.831
<i>BC</i>	Current Ac.	18.369	9.444	7.649

Table 5 Price Index and Deflators

		1978CY	1979CY	1980CY
<i>PW</i>	Wholesale	164.320	166.053	170.146
	%	-2.53	1.05	2.46
<i>PC</i>	Cons. Def.	2.023	2.113	2.230
	%	4.16	4.46	5.52
<i>PIF</i>	Def. IF	1.564	1.627	1.706
	%	1.73	4.02	4.87
<i>PIH</i>	Def. IH	1.927	2.016	2.102
	%	1.46	4.61	4.26
<i>PE</i>	Def. Exp.	1.298	1.262	1.277
	%	-7.65	-2.76	1.15
<i>PIM</i>	Def. Imp.	1.620	1.582	1.588
	%	-15.41	-2.31	0.34
<i>PIG</i>	Def. IG	1.733	1.804	1.890
	%	2.23	4.07	4.76
<i>PCG</i>	Def. CG	2.390	2.510	2.668
	%	2.04	5.01	6.33

Table 6 Wage and Income Distribution

		1978CY	1979CY	1980CY
<i>W</i>	Wage Earng	0.299	0.315	0.336
	%	6.26	5.41	6.54
<i>YW</i>	Wage Income	106.454	113.180	122.063
	%	7.43	6.32	7.85
<i>YS</i>	Self Emp.	23.837	26.150	28.635
	%	7.60	9.70	9.51
<i>YR</i>	Rentier's	22.402	24.875	28.369
	%	8.98	11.04	14.04
<i>YC</i>	Corporate	19.117	21.425	26.844
	%	30.34	12.07	25.29
<i>YP</i>	Personal	173.139	188.373	206.624
	%	9.15	8.80	9.69
<i>YD</i>	Disposabl	150.907	163.719	179.424
	%	8.41	8.49	9.59
<i>YDI</i>	Dividend	1.603	1.907	2.312
	%	9.77	18.98	21.24
<i>YG</i>	Gov. Corp.	1.729	1.875	2.017
	%	11.04	8.46	7.60
<i>Y</i>	Nat. Income	167.573	183.519	202.956
	%	10.07	9.52	10.59

Table 7 Fiscal Balance

		1978CY	1979CY	1980CY
<i>TP</i>	Pers. Tax	9.774	10.847	12.228
	%	9.42	10.98	12.73
<i>TC</i>	Corp. Tax	8.079	10.205	13.110
	%	11.79	26.31	28.47
<i>TI</i>	Indirect T.	14.049	15.334	16.874
	%	10.37	9.14	10.04
<i>SI</i>	Soc. Ins.	12.458	13.807	14.971
	% Contrib.	18.84	10.83	8.43
<i>YG</i>		1.729	1.875	2.017
	%	11.04	8.46	7.60
<i>CG</i>		22.038	23.933	26.037
	%	8.81	8.60	8.79
<i>TR</i>	Transfer	18.843	22.262	25.244
	%	22.68	18.15	13.40
<i>TRGA</i>		0.090	0.090	0.090
	%	6.47	-0.83	0.28
<i>INTG</i>	Gov. Int.	4.847	6.102	7.364
	% on Bond	36.37	25.91	20.68
<i>SG</i>	Gov. Sav.	0.271	-0.319	0.465
	%	-86.94	-217.69	-245.95
<i>DG</i>	Gov. Dep.	2.107	2.418	2.731
	%	19.33	14.77	12.92
<i>IG</i>		20.407	24.058	27.567
	%	20.11	17.89	14.59
<i>IIG</i>		0.323	0.325	0.300
	%	-13.30	0.54	-7.69
<i>BG</i>	Dem. For.	-18.352	-22.283	-24.670
	% Ext. Fund	33.42	21.42	10.71

Table 8 Saving and Investment Balance

		1978CY	1979CY	1980CY
<i>SC</i>	Corp. Sav.	9.435	9.313	11.421
	%	57.79	-1.30	22.64
<i>SP</i>	Pers. Sav.	36.542	38.444	41.433
	%	10.60	5.20	7.78
<i>SG</i>	Gov. Sav.	0.271	-0.319	0.465
	%	-86.94	-217.69	-245.95
<i>DF</i>	CCA Fixed	17.452	18.823	20.509
	%	7.77	7.86	8.95
<i>DH</i>	CCA Hous.	3.938	4.466	5.052
	%	13.75	13.41	13.13
<i>DG</i>	CCA Gov.	2.107	2.418	2.731
	%	19.33	14.77	12.92
<i>IG</i>		20.407	24.058	27.567
	%	20.11	17.89	14.59
<i>IIG</i>		0.323	0.325	0.300
	%	-13.30	0.54	-7.69
<i>IH</i>		14.171	15.420	17.267
	%	10.92	8.81	11.98
<i>IF</i>		25.129	28.194	31.614
	%	6.69	12.20	12.13
<i>IIP</i>		2.152	2.863	3.171
	%	-29.38	33.05	10.77

Table 9 Labor Supply, Market

		1978CY	1979CY	1980CY
<i>NL</i>	Work Force	5508.809	5552.484	5588.074
	%	1.05	0.79	0.64
<i>LW</i>	Employee	3812.014	3845.988	3893.064
	%	1.15	0.89	1.22
<i>LSA</i>	Self. Empld	584.791	579.000	571.000
	% Agric.	-0.50	-0.99	-1.38
<i>LSNA</i>	Self Empld	989.657	1000.781	1009.733
	% Non-Agric.	0.49	1.12	0.89
<i>L</i>	Total at Work	5386.457	5425.766	5473.793
	%	0.84	0.73	0.89
<i>U</i>		122.352	126.720	114.282
	%	10.98	3.57	-9.81
<i>RU</i>		0.022	0.023	0.020
	%	9.84	2.75	-10.38
<i>H</i>	Hours Worked	93.452	93.423	93.423
	%	-0.04	-0.03	0.0

Table 10 Exogenous Variables

		1978CY	1979CY	1980CY
<i>IG</i>		20.407	24.058	27.567
	%	20.11	17.89	14.59
<i>CG</i>		22.038	23.933	26.037
	%	8.81	8.60	8.79
<i>TR</i>		18.843	22.262	25.244
	%	22.68	18.15	13.40
<i>SI</i>		12.458	13.807	14.971
	%	18.84	10.83	8.43
<i>LSA</i>		584.791	579.000	571.000
	%	-0.50	-0.99	-1.38
<i>LB</i>	Bank Loan	1278.881	1404.139	1562.788
	% outstdgs	9.37	9.79	11.30
<i>RLB</i>	B. Loan Rate	6.400	6.000	6.037
	%	-15.36	-6.25	0.62
<i>DLBH</i>	Hous. Loan	937.268	1037.250	996.685
	% New	12.46	10.67	-3.91
<i>TW</i>	World Exp.	482.325	503.075	526.925
	% Index	6.18	4.30	4.74
<i>PEW</i>	MFG. Exp.	2.090	2.277	2.472
	% Priced Ind.	9.51	8.95	8.55
<i>RECHUS</i>	Exch.	207.663	187.451	176.687
	% Rate	28.67	10.78	6.09
<i>PMC1</i>	Imp. Pric	240.500	256.369	271.033
	% Ind. Food	6.74	6.60	5.72
<i>PMC2</i>	Text. Mat	247.000	248.490	261.754
	%	-3.00	0.60	5.34
<i>PMC3</i>	Metal	150.000	155.625	161.050
	%	-0.19	3.75	3.49
<i>PMC4</i>	Oth. Mat	221.400	227.257	241.120
	%	-3.35	2.65	6.10
<i>PMC5</i>	Min. Fuel	610.000	680.925	732.625
	%	1.42	11.63	7.59
<i>PMC6</i>	Chemical	173.125	182.265	194.296
	%	6.23	5.28	6.60
<i>PMC7</i>	Machin.	157.372	170.773	184.478
	%	4.88	8.52	8.03
<i>PMC8</i>	Oth. Mfc	196.850	212.600	228.000
	%	11.81	8.00	7.24

Table 11 Great Ratios

	1978CY	1979CY	1980CY
<i>CY/YD</i>	0.758	0.765	0.769
<i>YW/Y</i>	0.635	0.617	0.601
<i>YC/Y</i>	0.114	0.117	0.132
<i>IF/GNP</i>	0.148	0.152	0.155
<i>KF/GNP</i>	1.369	1.382	1.394
<i>GNP/L</i>	0.020	0.021	0.022
	%	5.18	4.10
<i>O/LW</i>	0.036	0.038	0.040
	%	5.41	4.60