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Long-Term Forecast and
Policy Implications : Simulations
with a World Econometric Model
(I - FAIS IV)

by
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1. Introduction

With an aim to analyze the world economy by means of a multi-country econometric model,^{1/} the present project was initiated in 1974 under the joint-sponsorship of University of Tsukuba and Foundation for Advancement of International Science (FAIS). The model covers eight developed countries,^{2/} five major developing countries^{3/} and two remaining regions (i.e. socialist and other developed region and other developing region) and it has been used for various types of international policy simulations, especially for the international coordination of demand management policies of developed countries, assessment of international impacts of oil price increase, comparative study of floating vs. fixed exchange rate regimes, etc.^{4/} Although the model originally aims to make short or medium-term analysis, the present paper attempts to analyze the long-term structure of the world economy with special reference to growth potentials, trends in international inflation, balance of payments, currency adjustments of various types of economies, such as developed, oil producing, and non-oil producing developing countries, etc.

Since the present long-term analysis is the first experiment

^{1/} For detail discussions of the model, see S. Shishido [7].

^{2/} Japan, U.S., Canada, U.K., France, West Germany, Italy and Australia.

^{3/} Korea, Indonesia, India, Iran and Brazil.

^{4/} See, for instance, [4] [5] [6] [8].

for our model, the following projections are of a highly preliminary nature and is regarded as an interim report. Only the standard simulations based on the simplified assumptions are discussed in the present paper, leaving the other elaborated scenarios to be prepared after the IIASA conference.

2. Use of the Model for

Long-term Analysis

For developed countries, the present model includes major Keynesian type macro-economic variables, such as real expenditures of various items, corresponding price deflators, money incomes including various transfers, money stocks, interest rates, etc. The supply side of the model includes capacity real GNP based on production function approach, which serves as a target for the demand management by means of monetary and fiscal policy variables. For developing countries the model includes more supply oriented variables. For instance, the aggregative output is determined mostly by productive investment, while imports of primary products are affected by both domestic supply capacity and final consumption.

Price levels are important variables for both developed and developing countries which affect international competitiveness in the world market. The rate of inflation, defined as GNP deflator, is in most cases accounted for by the rate of capacity utilization, supply of money, import prices and price expectations.

Money supply is made endogenous in the developed countries, while exogenous in the developing countries. In the former case the money supply is determined in a reduced form of supply and demand conditions such as balance of payment surplus (or deficit), government deficits, business demand for investment, monetary policies of the central bank, etc.

The international transmissions of economic fluctuation are

embodied in the model through commodity trade flow matrices of two commodity groups : a) primary and b) manufacturing products. The demand pressures in the model are propagated from importing to exporting countries, while inflationary pressures of prices in the reverse direction, i.e. from exporting to importing countries.

Another international block is provided for world market of six types of primary products,^{1/} where international prices and output levels are determined by global market conditions. A similar consideration is made for international freight and shipping.

As for the exchange rate, the present model (T-FAIS IV) includes them as endogenous variables for eight developed countries and as exogenous for the developing countries. They are determined by relative prices, current balances, expected real rates of interest and market intervention by the central bank.^{2/} Thus the model enables the analysis of international transmissions under the floating exchange rate regime. Various interesting studies have been made in this context, especially on the comparative analysis of fixed vs. floating regimes. In the present long-term forecast, however, we temporarily exogenized the exchange rates of all countries in view of the consistency with the developing countries.

In using the model for long-term forecast for the year 2000, the following points need to be considered.

First, the growth trends of the economies need to be assessed

^{1/} a) coffee and tea, b) other food, c) petroleum, d) other fuels, e) metallic ores and f) non-food raw materials.

^{2/} See S. Shishido [6].

mechanism to a certain extent by adjusting the assumptions of capital flows.

Fourthly, the supply side of output, especially sectoral changes in the production structure, foreign trade and technical progress is not explicitly taken into accounts for each economy in the present model, except for the distinction between primary and industrial sectors. Since those sectoral changes are closely related to the long-run productivity growth and international competitiveness, the long-term forecasts with the present model needs to be improved in the light of the results of side studies on sectoral analysis.

Lastly, an alternative forecast for the developed countries can be made by fixing the normal rate of capacity utilization and deriving private consumption as a residual. Although this approach is attractive in obtaining growth trends, fiscal-monetary measures consistent with such trends are likely to become somewhat exaggerated sometimes especially at the time when the external impacts through the export happen to change greatly. This approach, however, probably needs to be tested for checking the present forecasts which are chiefly based on demand side for developed countries.

3. Major Assumptions for 1980-2000

Our standard forecast is based on the following major assumptions.

First, there will be no possibilities of great wars, nor great disasters which may affect the trends of demographic factors, output capacities and policy variables. Thus the public expenditures of each government are assumed to grow at the average growth rate observed in recent years, as shown in Table 1.

Second, the discount rates and money supplies by monetary authorities are assumed in principle to reflect recent trend of inflation, i.e. higher rates for more inflationary countries and lower rates for less inflationary countries. Short-term fluctuations are exceptionally included for smoothing the economic growth in some cases.

Third, world market conditions for primary products are expected to continue to be tight for energy supplies, especially for crude oil, but gradually becoming less restrictive during the 1990's. This tendency will also depend on the rate of inflation in the industrial countries.

Fourth, the exchange rates for Japan and West Germany are assumed either to remain unchanged or to keep rising, while those for other developed countries are assumed to be unchanged except for the U.K. For developing countries, the recent falling trends are extrapolated. These assumptions imply that there will be no significant changes in business and policy behaviors in terms of technical progress, international competitiveness and management of fiscal, monetary policies.

Lastly, it is also assumed that the structural relationships

of macro-economic variables, estimated from data for the 1960's and the 1970's, will hold for the coming twenty years without significant changes. These rather bold assumptions might be subject to criticism, since the U.S. recent government efforts to stimulate exports might become to be realized in the parameters of their export functions. Similarly a success in incomes policy to check the rate of inflation might change the values of the parameters in price determination functions. Meanwhile, in the present, preliminary stage we rather disregard these factors, which can be included in more elaborated scenarios based on alternative policy variants.

4. The Results of Standard Forecasts

We present here only standard forecasts, i.e. standard scenarios based on highly simplified assumptions discussed above. Elaborations for alternative scenarios on uncertainties, alternative behaviors and policies, etc. are to be finalized on these standard scenarios.

For evaluating the alternative impacts of exchange rate assumptions we prepared two standard scenarios : a) fixed exchange rates as of 1980 for all the developed countries (Case 1), b) gradually rising exchange rates for Japan and West Germany (Case 2). A less optimistic assumption is also made for the imports of "other developed and socialist countries" (Case 3). This is because it tends to accelerate the world imports in an exaggerated way especially in the 1990's in Case 1 and Case 2. The rate of growth of the imports for this region in Case 3 is assumed to rise at about 6 percent as against about 9 percent in the previous two cases. Major assumptions for policy variables are summarized in Table 1 and the results of our forecast are given in Tables 2 to 7.

As shown in Table 2, the world trade tends to grow at about 5.6 to 6.9 percent in the coming twenty years in these cases, while real GNP for developed eight countries tend to rise at about 4.6 to 5.5 percent. Although limited in coverage, five developing countries in the model show 7.3 to 7.9 percent growth rate in real GNP.

In comparing these three cases in Table 7, it is noticeable

that the faster GNP growth rates of Japan, West Germany, Italy and Australia in Cases 1 and 2 are generally reduced in Case 3 and the growth gaps tend to be narrowed among the industrial economies. A similar pattern is observed for the world imports whose rate of increase is lowest, 5.6 percent, in Case 3.

Generally, however, the above results including Case 3 appears to be optimistic as compared with other alternative long-term forecasts as shown in Table 3. [2] [3] [9] Major reasons for this optimism are a) no significant changes in structural parameters such as those in consumption, investment, export, import, etc., b) no explicit assumptions on decreasing return to scale in technical progress as a result of increasing costs for anti-pollution, energy-conservation, or other social constraints, etc., and c) expansionary impacts in world market by fast-growing nations such as Japan, West Germany and newly industrialized nations (NIC) with higher income elasticities in exports. Relatively faster growth of Italy and Australia appears to be exaggerated in view of their growing difficulties in the balance of payments and inflations. More restrictive policies in their demand management would considerably reduce their growth rates.

Since the first two factors above are self-explanatory, the last factor need to be explained on a more technical basis. As shown in later tables, remarkable changes in terms of dependency of the other developed countries on the exports to Japan, West Germany and the N.I.C. nations, as a result of the latter's faster economic growth, are likely to produce expansionary impacts in the former's

growth rates as well. While the high elasticities of the exports of Japan, West Germany and the N.I.C. nations are assumed to remain unchanged, the average elasticities of exports of both groups tend to rise to a certain extent, thus accelerating the expansion of the world trade especially in the 1990's, as in Cases 1 and 2.

Although this gradual but accelerating expansion of the world trade and income is highly desirable, it should also be noted that this tendency is based on debatable assumptions of a continuous rapid growth of productivities of the above fast-growing countries and growing inflationary pressures on the other developed countries, especially on the U.S.. This growth-pole hypothesis needs to be further examined by elaborate alternative scenarios.

In view of increasing imbalances in terms of balance of payments between deficit and surplus nations, Case 2 indicates an upward adjustment of exchange rates for Japan (about 3 % annually) and West Germany (about 1 % annually). For growth rates of real GNP, the two countries suffer a slight decline in the growth rate in an early period but they tend to recover later on. Because of a smaller amount of adjustment, West Germany recovers more quickly. The other developed countries also accelerate their growth rates due to an increase in their exports, which further affects overall expansions in the developing countries. In this context a gradual long-term adjustment of the Japanese yen seems to prove to be beneficial to all the other nations. Since, however, there are no significant long-term improvements in current balances in deficit nations, a faster growth, further import liberalization,

or voluntary export restrictions might be preferable on the side of Japan. This again need to be examined more closely in terms of the competitiveness of related nations, supply restrictions of energy resources, etc.

As for developing countries, our standard scenarios also suggest rather an optimistic tendency in terms of growth, but less so in balance of payments except for OPEC countries. Because of the limited coverage of the model for the developing countries, it can only be stated that NIC nations such as Korea and Brazil can perform relatively better, but a typical NODC like India can also continue to grow at about 5 percent.

Lastly, inflationary pressures can be analyzed in terms of capacity utilization. In Cases 1 and 2, the rates tend to keep rising, although fluctuating in short-term, and to exceed the capacity limits in the 1990's, except for Japan. This might imply that the Japan's domestic demand need to be further stimulated while those for the other developed nations, particularly Italy and Australia, should be rather restrained, if the technical progress in capacities follow the past trends. In Case 3, on the other hand, most of the developed countries indicate a fairly balanced growth pattern with modest and nearly normal rates of capacity utilization.

5. Alternative Scenarios

— Further Research

The standard scenarios, shown above, indicate rather an optimistic future for the years 1980-2000. The two of them suggest an even accelerating expansion in the 1990's as a result of the continued growth of Japan, West Germany and newly industrial nations, regardless of the revaluation of currencies by Japan and West Germany as in Case 2. Structural imbalances, however, appear to remain between surplus and deficit developed countries and non-oil developing countries, which suggests continuous efforts on economic aids and trade liberalization.

Pessimistic scenarios are now under way, which take account of increased trade barriers and more conservative monetary and fiscal policies to deal with stagflations in most of developed countries and increasingly restrictive supply of energy resources. These scenarios will be finalized after the IIASA conference.

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Table I

Major Exogenous Variables
for Developed Countries, 1980 - 2000

	Discount ^{1/} Rate, (%)	Public Investment (rate of change,%)	Exchange Rate (1.00 = 1963)			Imports (%)
			Case 1	Case 2 & Case 3	Case 3	
U.S.A.	9.0 (10.0)	1.5	1.000	1.000	—	—
Japan	5.0 (10.0)	5.0	1.570	1.570 + 3.011	—	—
Canada	10.0	1.5	1.091	1.091	—	—
U.K.	9.0 (10.0)	1.0	0.686 + 0.420	0.686 + 0.420	—	—
France	8.0	2.5	0.985	0.985	—	—
West Germany	4.0 (9.0)	2.5	1.967	1.967 + 2.192	—	—
Italy	10.0	2.5	0.833	0.833	—	—
Australia	8.0	2.5	0.974	0.974	—	—
Other Developed and Socialist Countries	—	—	—	—	—	6.1 ^{2/}

Note : ^{1/} Figures in bracket denote the upper limit of the discount rates.

^{2/} Manufacturing imports are assumed to grow exogenously at 6.1 percent.

Table 2
Summary of Standard Forecasts

	1960	1970	1980	1985	1990	1995	2000	1980 - 2000
1 World Imports (Case 1)	107.0	237.9 8.3	443.8 6.5	584.3 5.7	793.3 6.3	1063.9 6.0	1547.4 7.8	6.4
2 do. (Case 2)		444.9 6.5	593.6 6.5	593.6 5.9	831.5 7.0	1141.7 6.5	1694.9 8.2	6.9
3 do. (Case 3)		443.6 6.4	586.8 6.4	586.8 5.8	757.7 5.3	974.3 5.2	1325.5 6.4	5.6
4 GNP: DeveloPed Countries (Case 1)	1279.5	2092.9 5.0	2908.9 3.3	3483.8 3.7	4576.2 5.6	5827.6 5.0	8158.9 7.0	5.3
5 do. (Case 2)		2900.8 3.3	3500.0 3.3	3500.0 3.8	4656.4 5.9	6040.0 5.3	8515.0 7.1	5.5
6 do. (Case 3)		2899.6 3.3	3481.1 3.3	3481.1 3.7	4449.1 5.0	5466.3 4.2	7193.0 5.6	4.6
7 GNP: DeveloPing Countries (Case 1)	226.0	367.9 5.0	670.3 6.2	919.6 6.5	1321.7 7.5	1956.7 8.2	2968.4 8.7	7.7
8 do. (Case 2)		670.3 6.2	921.2 6.2	921.2 6.6	1329.6 7.6	1987.3 8.4	3048.8 8.9	7.9
9 do. (Case 3)		670.4 6.2	908.6 6.2	908.6 6.3	1276.5 7.0	1842.6 7.6	2722.1 8.1	7.3

Note : Imports: billions of US dollars in 1963 prices.

GNP(or GDP): billions of US dollars in 1970 prices based on purchasing power parity
of Kravis for 1970[1].

Table 3

Comparison of Alternative
Forecasts for Real GNP

				(%)
		Developed ^{1/} countries	Developing ^{2/} countries	Period
T-FAIS IV	Case 1	5.3	7.7	1980 - 2000
do.	Case 2	5.5	7.9	do.
do.	Case 3	4.6	7.3	do.
OECD	A	4.3	6.5	1975 - 2000
do.	B ₂	3.4	6.0	do.
Leontief	X	4.0	7.2	1970 - 2000
do.	C	3.6	6.9	do.
WAES	1	3.7	4.6	1985 - 2000
do.	2	2.5	3.6	do.

Note : ^{1/} Eight developed countries in T-FAIS IV.

^{2/} Five major developing countries in T-FAIS IV.

Source : OECD Facing the Future : Mastering the Probable and
Managing the Unpredictable [3].

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WAES..... Energy : Global Prospects, 1985 - 2000, MIT, 1977 [9].

Table 4

World Imports in 1963 prices : Case 1

A. Values and Average Annual Growth Rates

		(Billions of US dollars, and %)				
		1980	1985	1990	1995	2000
1	U.S.A.	66.1	108.2 10.4	127.8 3.4	156.0 4.1	218.8 7.0
2	Japan	23.2	27.3 3.3	32.3 3.4	43.1 5.9	64.1 8.3
3	Canada	26.9	41.4 9.0	50.9 4.2	59.4 3.1	78.8 5.8
4	U.K.	34.8	48.1 6.7	61.2 4.9	77.8 4.9	105.6 6.3
5	France	27.0	33.6 4.5	44.3 5.7	57.9 5.5	80.7 6.8
6	West Germany	53.9	54.5 0.2	59.0 3.1	68.7 3.1	98.6 7.5
7	Italy	12.0	23.1 14.0	32.1 6.8	47.8 8.3	78.0 10.3
8	Australia	6.4	8.6 6.2	11.7 6.4	15.9 6.2	23.7 8.4
9	Korea	4.3	6.4 8.4	9.4 8.0	13.4 7.3	17.9 6.0
10	India	3.1	3.5 2.9	5.2 7.9	7.2 6.8	9.7 6.3
11	Indonesia	2.6	4.1 9.3	5.8 7.5	7.9 6.1	10.9 6.7
12	Iran	9.4	15.6 10.7	21.0 6.2	26.9 5.0	33.9 4.8
13	Brazil	4.5	7.5 10.7	13.2 12.0	23.1 11.9	39.8 11.5
14	Other Developed and Socialist Countries	103.8	126.5 4.0	207.1 10.4	303.2 7.9	460.1 8.7
15	Other Developing Countries	66.1	76.0 2.8	112.4 8.1	155.9 6.8	226.9 7.8
16	Total	443.8	584.3 5.7	793.3 6.3	1063.9 6.0	1547.4 7.8

Table 4

World Imports in 1963 prices : Case 1

B. Shares		(%)				
		1980	1985	1990	1995	2000
1	U.S.A.	14.9	18.5	16.1	14.7	14.1
2	Japan	5.2	4.7	4.1	4.1	4.1
3	Canada	6.1	7.1	6.4	5.6	5.1
4	U.K.	7.8	8.2	7.7	7.3	6.8
5	France	6.1	5.8	5.6	5.4	5.2
6	West Germany	12.1	9.3	7.4	6.5	6.4
7	Italy	2.7	4.0	4.0	4.5	5.0
8	Australia	1.4	1.5	1.5	1.5	1.5
9	Korea	1.0	1.1	1.2	1.3	1.2
10	India	0.7	0.6	0.6	0.7	0.6
11	Indonesia	0.6	0.7	0.7	0.7	0.7
12	Iran	2.1	2.7	2.7	2.5	2.2
13	Brazil	1.0	1.3	1.7	2.2	2.6
14	Other Developed and Socialist Countries	23.3	21.6	26.1	28.5	29.7
15	Other Developing Countries	14.9	13.0	14.2	14.7	14.7
16	Total	100.0	100.0	100.0	100.0	100.0

Table 5

World Imports in 1963 prices : Case 2

A. Values and Average Annual Growth Rates

(Billions of US dollars, and %)

	1980	1985	1990	1995	2000
1 U.S.A.	65.7	107.9 10.4	130.9 3.9	172.2 5.6	261.7 8.7
2 Japan	22.9	28.6 4.6	34.8 4.0	42.9 4.3	69.2 10.0
3 Canada	26.7	41.1 9.0	52.3 4.9	65.2 4.5	91.8 7.1
4 U.K.	34.8	48.2 6.7	62.3 5.3	81.1 5.4	112.3 6.7
5 France	27.1	34.0 4.6	45.8 6.1	60.9 5.9	85.6 7.0
6 West Germany	53.9	55.0 0.4	63.5 2.9	75.8 3.6	105.4 6.8
7 Italy	12.1	23.7 14.4	33.5 7.2	50.7 8.7	83.3 10.4
8 Australia	6.4	8.7 6.5	12.2 7.0	17.7 7.7	28.6 10.0
9 Korea	4.3	6.4 8.5	9.6 8.2	14.2 8.3	20.5 7.6
10 India	3.0	3.5 2.8	5.1 7.7	7.0 6.6	9.5 6.3
11 Indonesia	2.6	4.1 9.4	5.9 7.7	8.3 7.0	12.0 7.7
12 Iran	9.4	15.6 10.7	21.1 6.3	27.1 5.1	34.5 4.9
13 Brazil	4.5	7.5 10.7	13.2 12.1	23.3 12.0	40.4 11.6
14 Other Developed and Socialist Countries	105.1	131.3 4.6	222.4 11.1	328.0 8.1	496.9 8.7
15 Other Developing Countries	66.6	78.1 3.2	119.2 8.8	167.3 7.0	243.5 7.8
16 Total	444.9	593.6 5.9	831.5 7.0	1141.7 6.5	1694.9 8.2

Table 5

World Imports in 1963 prices : Case 2

B. Shares

(%)

	1980	1985	1990	1995	2000
1 U.S.A.	14.8	18.2	15.7	15.1	15.4
2 Japan	5.2	4.8	4.2	3.8	4.1
3 Canada	6.0	6.9	6.3	5.7	5.4
4 U.K.	7.8	8.1	7.5	7.1	6.6
5 France	6.1	5.7	5.5	5.3	5.0
6 West Germany	12.1	9.3	7.6	6.6	6.2
7 Italy	2.7	4.0	4.0	4.4	4.9
8 Australia	1.4	1.5	1.5	1.6	1.7
9 Korea	1.0	1.1	1.1	1.2	1.2
10 India	0.7	0.6	0.6	0.6	0.6
11 Indonesia	0.6	0.7	0.7	0.7	0.7
12 Iran	2.1	2.6	2.5	2.4	2.0
13 Brazil	1.0	1.3	1.6	2.0	2.4
14 Other Developed and Socialist Countries	23.6	22.1	26.7	28.7	29.3
15 Other Developing Countries	15.0	13.2	14.3	14.7	14.4
16 Total	100.0	100.0	100.0	100.0	100.0

Table 6

World Imports in 1963 prices : Case 3

A. Values and Average Annual Growth Rates

		(Billions of US dollars, and %)				
		1980	1985	1990	1995	2000
1	U.S.A.	65.7	107.7 10.4	128.8 3.6	154.7 3.7	202.8 5.6
2	Japan	22.9	28.4 4.4	32.2 2.5	38.5 3.6	51.5 6.0
3	Canada	26.7	41.1 9.0	51.6 4.7	60.7 3.3	75.3 4.4
4	U.K.	34.8	48.1 6.7	60.7 4.8	76.1 4.6	99.6 5.5
5	France	27.1	33.8 4.5	43.2 5.1	55.1 5.0	73.8 6.0
6	West Germany	53.9	54.7 0.3	59.9 1.8	65.1 1.7	86.1 5.8
7	Italy	12.0	23.3 14.1	30.7 5.7	44.8 7.9	70.9 9.6
8	Australia	6.4	8.7 6.4	11.7 6.2	15.5 5.8	21.4 6.7
9	Korea	4.3	6.4 8.4	9.3 7.7	13.0 6.8	16.4 4.8
10	India	3.0	3.5 2.9	5.1 7.8	7.2 6.9	9.8 6.5
11	Indonesia	2.6	4.1 9.4	5.9 7.5	7.9 6.1	10.5 5.9
12	Iran	9.4	15.6 10.7	21.1 6.2	26.9 5.0	33.8 4.7
13	Brazil	4.5	6.8 8.5	11.2 10.7	19.2 11.3	32.8 11.3
14	Other Developed and Socialist Countries	103.8	127.0 4.1	172.7 6.3	232.8 6.2	316.3 6.3
15	Other Developing Countries	66.6	77.6 3.1	113.8 8.0	156.9 6.6	224.5 7.4
16	Total	443.6	586.8 5.8	757.7 5.3	974.3 5.2	1325.5 6.4

Table 6

World Imports in 1963 Prices : Case 3

B. Shares

		(%)				
		1980	1985	1990	1995	2000
1	U.S.A.	14.8	18.4	17.0	15.9	15.3
2	Japan	5.2	4.8	4.2	3.9	3.9
3	Canada	6.0	7.0	6.8	6.2	5.7
4	U.K.	7.8	8.2	8.0	7.8	7.5
5	France	6.1	5.8	5.7	5.7	5.6
6	West Germany	12.2	9.3	7.9	6.7	6.5
7	Italy	2.7	4.0	4.1	4.6	5.4
8	Australia	1.4	1.5	1.5	1.6	1.6
9	Korea	1.0	1.1	1.2	1.3	1.2
10	India	0.7	0.6	0.7	0.7	0.7
11	Indonesia	0.6	0.7	0.8	0.8	0.8
12	Iran	2.1	2.7	2.8	2.8	2.6
13	Brazil	1.0	1.2	1.5	2.0	2.5
14	Other Developed and Socialist Countries	23.4	21.6	22.8	23.9	23.9
15	Other Developing Countries	15.0	13.2	15.0	16.1	16.9
16	Total	100.0	100.0	100.0	100.0	100.0

Table 7

Case 1 Real GNP in 1970 prices ^{1/}

	1960	1970	1980	1985	1990	1995	2000	1980 - 2000
1 U.S.A.	662.4	981.3	1317.9	1497.5	1935.1	2295.3	2995.9	4.2
2 Japan	102.9	294.0	502.7	670.3	892.6	1202.2	1730.5	6.4
3 Canada	48.2	80.2	108.4	116.3	155.3	212.7	267.0	4.6
4 U.K.	128.2	168.7	170.7	176.3	208.2	258.3	338.4	3.5
5 France	101.0	177.9	242.3	296.6	381.6	499.9	697.9	5.4
6 West Germany	140.9	227.2	344.2	419.0	581.9	770.0	1246.9	6.6
7 Italy	73.4	126.4	167.6	227.6	308.2	429.4	625.6	6.8
8 Australia	22.5	37.2	55.1	80.2	113.3	159.8	256.7	8.0
9 Korea	7.7	18.7	41.7	58.8	82.7	114.5	151.4	6.7
10 India	125.1	179.2	208.2	242.6	306.3	405.7	556.4	5.0
11 Indonesia	13.7	20.1	43.7	62.0	83.4	108.6	148.7	6.3
12 Iran	12.1	28.1	112.0	160.8	211.4	268.0	340.1	5.7
13 Brazil	67.0	121.8	264.7	395.4	637.9	1059.9	1771.8	10.0
14 Developed Countries (1-8)	1279.5	2092.9	2908.9	3483.8	4576.2	5827.6	8158.9	5.3
15 Developing Countries (9-13)	226.0	367.9	670.3	919.6	1321.7	1956.7	2968.4	7.7
16 Total	1505.5	2460.8	3579.2	4403.4	5897.9	7784.3	11127.3	5.8
		5.0	3.8	4.2	6.0	5.7	7.4	

^{1/} : Estimated from Kravis purchasing power parity for 1970 [1] and U.N., Yearbook of National Accounts, 1976.

Table 7.

Case 2 Real G N P in 1970 prices ^{1/}

	1960	1970	1980	1985	1990	1995	2000	1980 - 2000
1 U.S.A.	662.4	981.3	1317.9	1507.3	1979.3	2404.2	3061.7	
2 Japan	102.9	294.0	492.5	659.7	859.4	1131.3	1741.4	4.3
3 Canada	48.2	80.2	108.8	118.1	157.0	220.3	289.0	6.5
4 U.K.	128.2	168.7	171.1	178.0	212.6	263.3	341.8	5.0
5 France	101.0	177.9	242.7	299.2	393.0	528.4	746.3	3.5
6 West Germany	140.9	227.2	344.7	426.9	621.6	872.4	1377.7	5.8
7 Italy	73.4	126.4	167.9	228.9	312.6	438.1	643.2	7.2
8 Australia	22.5	37.2	55.2	81.9	120.9	182.0	313.9	6.9
9 Korea	7.7	18.7	41.7	59.0	84.2	121.6	173.0	9.1
10 India	125.1	179.2	208.2	242.6	306.3	405.7	557.1	7.4
11 Indonesia	13.7	20.1	43.7	62.4	84.9	115.0	165.1	5.0
12 Iran	12.1	28.1	112.0	161.1	212.3	271.2	346.8	6.9
13 Brazil	67.0	121.8	264.7	396.1	641.9	1073.8	1806.8	5.8
14 Developed Countries (1-8)	1279.5	2092.9	2900.8	3500.0	4656.4	6040.0	8515.0	10.1
15 Developing Countries (9-13)	226.0	367.9	670.3	921.2	1329.6	1987.3	3048.8	5.5
16 Total	1505.5	2460.8	3571.1	4421.2	5986.0	8027.3	11563.8	7.9
		5.0	3.8	4.4	6.2	6.0	7.6	6.1

1/ : See note on Case 1.

Table 7
Case 3 Real GNP in 1970 prices ^{1/}

	1960	1970	1980	1985	1990	1995	2000	1980 - 2000
1 U.S.A.	662.4	981.3	1318.1	1502.2	1923.3	2258.3	2873.8	
2 Japan	102.9	294.0	492.1	654.1	798.5	980.7	1233.6	4.0
3 Canada	48.2	80.2	108.7	117.7	151.9	207.7	264.5	4.7
4 U.K.	128.2	168.7	170.8	177.0	203.4	247.2	317.6	4.5
5 France	101.0	177.9	242.4	297.7	376.8	482.1	646.5	3.1
6 West Germany	140.9	227.2	344.6	423.0	577.7	717.6	1032.8	5.0
7 Italy	73.4	126.4	167.7	228.1	304.1	418.9	599.1	5.6
8 Australia	22.5	37.2	55.1	81.3	113.4	153.8	225.2	6.6
9 Korea	7.7	18.7	41.7	58.9	82.1	110.7	138.0	7.3
10 India	125.1	179.2	208.3	242.7	306.4	406.0	557.4	6.2
11 Indonesia	13.7	20.1	43.7	62.3	83.5	108.1	141.1	5.0
12 Iran	12.1	28.1	112.0	161.0	211.5	267.9	337.6	6.0
13 Brazil	67.0	121.8	264.7	383.7	593.0	950.0	1547.9	5.7
14 Developed Countries (1-8)	1279.5	2092.9	2899.6	3481.1	4449.1	5466.3	7193.0	9.2
15 Developing Countries (9-13)	226.0	367.9	670.4	908.6	1276.5	1842.6	2722.1	4.6
16 Total	1505.5	2460.8	3570.0	4389.6	5725.5	7308.9	9915.1	7.3
		5.0	3.8	4.2	5.5	5.0	6.3	5.2

^{1/} : See note on Case 1.