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The World Bank

1818 H Street NW

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This file is closed as of
March, 1968. Please see following
Volume.

Mr. Alexander Stevenson

March 29, 1968

Arthur E. Tiemann *AET*

Statistical Publications of the World Bank

The attached letter from Mr. Loftus, the Director of the Statistical Office of the United Nations, refers to the meeting of the AGC Subcommittee on Statistical Activities of February 22, 1968, and requests a statement on the Bank's regular statistical publications. In this connection, I plan to report that the Bank has no regular statistical publications in the usual sense. However the Bank does have statistical releases on prices of specific commodities and on foreign investments in capital markets. Both of these releases already go to organizations outside the Bank. On the other hand, I do not propose to mention the EC-156 publication, since it is not officially designated as a regular publication but rather as a one-time release, generally up dated on an annual basis. Although we have found this latter publication invaluable in answering requests for debt data, we have not made any public announcement on the availability of these data in a published form. I would appreciate your guidance with respect to what I have proposed here.

In addition, I wonder whether Mr. Levy's World Atlas should be included in my response. The same question applies to his World Tables.

The request from Mr. Loftus also requests information about statistical research. The research program of the Economics Department contains econometric projects which may be interpreted as statistical research, and I wonder whether any of them should be included.

When Mr. Consolo attended the recent Advisory Coordinating Committee meeting in Geneva, he cabled Mr. Perinbam to determine whether we would have any input to that meeting. The response for Mr. Demuth's signature is also attached.

Att:2

cc: Mr. Kundu
Mrs. Paulson

AETiemann:ra

Mr. G. Orcutt


March 25, 1968

Alexander Stevenson

Research and the World Bank

There are many things I like about your paper, particularly the need for the Bank Group to have a nucleus of people concerned and in close contact with research on broad problems of economic development, and to stimulate the collection and use of data far more than it has done so that more and better research can be carried out, particularly in the developing countries. But I wonder if the approach followed in the paper, particularly the first part, constitutes a very persuasive case. My own thinking and the reactions of various people at last Thursday's meeting would suggest to me that it is not, and would bring me particularly to the conclusion that long discussions about categories (inductive deductive, basic applied) will quickly become sterile and even counter-productive. Furthermore, few of the Bank policymakers, I suspect, would accept the characterization of themselves on page 5.

To make a persuasive case for more long-run empirical research in the Bank I would think it better to concentrate on a few specific problem areas, (e.g. savings), where (a) there is an obvious need for a type of empirical research which could not be expected to have a pay-off in the short run (say a year), and (b) it can be fairly easily demonstrated both that the results would be relevant to the Bank's work (broadly defined), and that the Bank would be a particularly appropriate place in which to conduct research. In short, I would start with what I take to be Section 3, which is missing, and let the examples bear the weight of the argument.



AStevenson:js

cc: Mr. Kamarck

Mr. Irving S. Friedman
Through Mr. John Hulley 7H
Badri Rao BR

March 25, 1968

International Gold and Foreign Exchange Reserves in the 1930s

The only source for a comprehensive historical series on world reserves is the Monetary Review of the League of Nations. The various studies undertaken by the IMF on international liquidity problems do not carry comprehensive data for the 1930s but rather concentrate on the position as of some key years viz, 1937 and 1938.

The League of Nations Monetary Review has continuous data on gold reserves for the years 1930 through 1938; these are expressed in terms of dollars of old gold content, i.e. \$1 = 1.50463 grammes of fine gold. A copy of the table published by the League of Nations in their Monetary Review for 1939 is attached. For convenience, the figures relating to the central monetary gold reserves of the free world (i.e. excluding the Communist Bloc) may be summarized as follows; the data are shown both as originally reported in terms of dollars of old gold content and converted into current dollars:

Gold Holdings of Central Banks of non-Communist*
Countries, 1929-38
Year and data in millions of dollars of old gold
content/and in current dollars

	Total		U.S.		Others	
	Old dollars	(Current dollars)	Old dollars	(Current dollars)	Old dollars	(Current dollars)
1929	10.0	(17.0)	3.9	(6.6)	6.1	(10.4)
1930	10.6	(17.9)	4.2	(7.1)	6.4	(10.8)
1931	10.8	(18.4)	4.1	(6.9)	6.7	(11.5)
1932	11.4	(19.3)	4.0	(6.8)	7.4	(12.5)
1933	11.4	(19.3)	4.0	(6.8)	7.4	(12.5)
1934	12.3	(20.8)	4.9	(8.2)	7.4	(12.6)
1935	12.6	(21.3)	6.0	(10.1)	6.6	(11.2)
1936	13.2	(22.3)	6.6	(11.3)	6.6	(11.0)
1937	13.8	(23.4)	7.6	(12.8)	6.2	(10.7)
1938	14.5	(24.6)	8.6	(14.5)	5.9	(10.1)

1/ 1 dollar = 1.50463 grammes of fine gold.

2/ 1 dollar = 0.888671 grammes of fine gold.

* i.e. non-Communist countries as of today, but including Yugoslavia.

Source: Table 1 appended.

March 25, 1968

The League of Nations' Monetary Review also has information on the combined gold and foreign assets of Central Banks. The data are however expressed in local currencies. Since a number of currencies were revalued during this period, it would perhaps be sufficient if Central Bank holdings of gold and foreign assets as of various dates were expressed in terms of a base year; for most cases the base year is 1929. Table II shows the year-to-year changes in aggregate reserves as given in the League of Nations' Monetary Review of 1939.

The two tables taken together show that despite fluctuations in the year-to-year reserve position of several countries, most of the industrialized countries were able to add to reserves significantly; major exceptions were Austria, Denmark, Italy and Japan. Indeed, even a few of the non-industrialized countries like Bolivia, Colombia, Ecuador, Greece, Turkey and Yugoslavia had more reserves at the end of 1938 than in 1929. As may be expected the most striking gains were made by the U.S. with a more than four-fold increase from \$2.9 billion to \$11.8 billion over that period.

By all accounts, world reserves rose sharply in the 1930s partly as a result of the revaluation of gold in 1934 as also because of newly mined gold coming on to the market stimulated by the higher price for gold. Meanwhile, world trade had not recovered from the depression. Even in 1937/38 when there was substantial recovery exports did not exceed 93%^{1/} of their 1928 volume. But, since export prices of industrial countries were 17% below 1928 and those of non-industrial countries were 31% lower^{2/} the value of exports was only 72% of 1928. Consequently, the ratio of world reserves to world trade reached peak levels in the 1930s, for example, in 1938, the gold and foreign exchange reserves of countries outside the Communist Bloc corresponded to 117% of imports as against 42% in 1928. Even if the U.S. is excluded the ratios are 63% for 1938 and 35% for 1928.^{3/}

For comparison, it may be noted that in 1957, free world gold and exchange reserves as a percentage of free world imports was 49%^{1/} and had declined further to around 36% at the end of 1967.^{2/}

^{1/} and ^{2/} Source: Trends in International Trade; A report by a Panel of Experts, GATT, October 1958, p. 20.

^{3/} Source: International Reserves and Liquidity; A Study by the Staff of the IMF, August 1958, p. 18.

^{4/} Source: Ibid.

^{5/} Computed from data published in IMF's "International Financial Statistics" March 1968.

Attachment:

cc: Messrs. Kamarch
Kalmanoff

BRao:mk

Table IV. — CENTRAL MONETARY GOLD RESERVES OF THE WORLD.

§ (600,000's) of old gold content (\$1 = 1.50463 grammes of fine gold).

End of:	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Albania	—	—	1	1	1	1	1	1	1	1
Algeria	8	8	8	8	8	8	8	8	8	8
Argentina ¹	405	411	252	248	238	238	262	296	277	256
Australia ²	89	75	51	41	2	2	2	2	2	2
Austria	24	30	27	21	27	27	27	27	27	—
Belgium	165	191	354	361	360	348	346	373	355	343
Bolivia	5	2	6	6	3	2	2	2	2	*2
Brazil	150	11	—	—	—	4	10	14	19	19
Bulgaria	10	11	11	11	11	11	11	12	14	14
Canada	151	194	144	137	127	129	114	112	109	114
Chile	8	8	12	10	12	17	17	17	17	17
China	—	1	—	3	5	4	6	5	9	*11
Colombia	22	17	9	12	14	11	9	11	10	14
Congo, Belgian	1	1	2	2	2	2	2	2	3	*3
Czechoslovakia	37	46	49	51	51	66	66	54	54	56
Denzig	—	—	4	4	6	5	2	3	3	3
Denmark	46	46	39	36	36	36	32	32	32	32
Ecuador	1	1	1	3	3	3	2	2	2	2
Egypt	19	20	21	33	33	32	32	32	32	32
Estonia	2	2	2	4	5	7	9	9	9	9
Finland	8	8	8	8	8	8	12	19	16	15
France	1,631	2,099	2,683	3,257	3,015	3,218	2,598	1,769	1,516	1,435
Germany	560	544	251	209	109	36	37	16 ³	17 ⁴	17 ⁵
Greece	8	7	11	8	24	23	20	16	14	16
Hungary	29	29	18	17	14	14	14	15	15	22
India	128	128	162	162	162	162	162	162	162	162
Iran	—	1	3	4	11	12	14	14	15	*15
Italy	273	279	296	307	373	306	159	123	124	*124
Japan ⁴	542	412	234	212	212	232	251	273	154	97
Latvia	5	5	6	7	9	9	9	9	9	10
Lithuania	4	4	5	5	5	5	4	7	8	6
Mexico ⁶	7	4	3	4	9	13	26	27	13	*15
Morocco	3	3	4	4	4	4	4	5	3	3
Netherlands	180	171	357	415	371	338	259	289	549	587
Netherlands Indies	56	56	45	42	44	46	32	29	39	39
New Zealand ⁷	28	29	28	21	21	15	14	14	14	14
Norway	39	39	42	39	36	34	42	46	43	48
Peru	21	18	12	11	11	11	12	12	13	12
Philippines	3	3	3	1	1	1	1	1	*1	*1
Poland	79	63	67	56	53	56	50	44	49	50
Portugal	9	9	13	24	34	40	40	40	41	41
Romania	55	55	58	57	59	62	65	67	71	79
Salvador, El	5	3	3	3	3	4	4	4	4	4
Siam	—	—	23	28	—	—	—	—	—	—
Spain	495	471	434	436	436	438	435	425 ⁸	310 ⁹	—
Straits Settlements	2	2	2	2	—	—	—	—	—	—
Sweden	66	65	55	55	99	94	109	142	144	190
Switzerland ⁷	115	138	453	477	386	368	268	387	383	413
Turkey	—	—	4	10	12	13	14	16	17	17
Union of South Africa	37	53	39	36	83	108	125	120	112	130
United Kingdom ⁸	711	722	590	587	933	938	977	1,529	1,592	1,592
United States of America	3,900	4,225	4,051	4,045	4,012	4,865	5,980	6,649	7,536	8,571
Uruguay ⁹	68	61	53	48	50	48	45	45	44	41
Venezuela	21	18	18	18	18	23	34	35	31	*31
Yugoslavia	18	19	31	31	32	31	25	29	30	34
Other countries	—	—	—	—	—	—	—	—	—	—
(Latin America only)	*5	*6	*6	*5	*6	*5	*6	*6	*6	*6
U.S.S.R. ¹⁰	147	249	328	—	416	439	—	225	—	—
Total	10,399	11,053	11,392	—	12,035	12,972	—	13,623	—	—
Total, excluding U.S.S.R.	10,252	10,804	11,064	11,643	11,619	12,533	12,807	13,398	14,078	14,775 ¹¹

* Provisional figures. ¹ Argentina: gold reserves of the Conversion Office only; since June 1935: of the Central Bank only. ² Australia: gold with the Issue Department of the Commonwealth Bank only. ³ Excluding gold held by the former "Privatnotenbanken" and transferred to the "Golddiskontbank" in 1936, as well as the gold held by the former Austrian National Bank. ⁴ Japan: domestic gold holdings of the Bank of Japan and, in 1929, of the Government. ⁵ Mexico: Bank of Mexico only. ⁶ New Zealand: the amounts of subsidiary coin included in the published gold reserve of the note-issuing banks up to 1933 have been estimated on the basis of specially furnished official information and are here deducted. ⁷ Switzerland: excluding gold held by Exchange Equalisation Fund amounting, between XII. 36 and VI. 37, to 73 million dollars. ⁸ United Kingdom: Excluding gold on Exchange Equalisation Account: III. 37: 551; IX. 37: 825; III. 38: 880; IX. 38: 448 million dollars. ⁹ Uruguay: since 1935, including gold earmarked for the liquidation of blocked credits. ¹⁰ U.S.S.R.: in the period considered, important amounts of gold have been exported or pledged abroad. ¹¹ Excluding reserves of Bank of Spain.

⁸ August 1st, 1936. ⁹ April 30th, 1938.

Table II

Indices of Gold and Foreign Assets of Central Banks
of non-Communist Countries, 1931-38

	<u>Base Year (100)</u>	<u>1931</u>	<u>1932</u>	<u>1933</u>	<u>1934</u>	<u>1935</u>	<u>1936</u>	<u>1937</u>	<u>1938</u>
Argentina	1935					100	113	105	96
Australia	1929	91	101	134	151	118	147	201	156
Austria	"	40	24	27	38	48	46	55	
Belgium	"	146	148	156	143	197	275	256	248
Bolivia	"	48	53	26	25	52	190	265	
Canada	1935					100	102	105	131
Chile	1929	43	34	37	32	32	32	32	32
Colombia	"	37	46	44	43	85	111	96	125
Denmark	"	60	49	40	25	17	29	69	77
Ecuador	"	46	49	51	77	114	149	143	117
Egypt	"	72	69	78	75	88	88	75	
Finland	"	81	86	167	179	182	234	271	347
France	"	133	129	115	123	100	91	88	130
Germany	"	28	22	20	5	8	6	8	
Greece	"	61	51	127	129	105	102	112	114
India	1935					100	100	100	82
Italy	1929	75	69	72	57	33	39	39	
Japan	"	44	42	36	39	46	45	64	
Netherlands	"	146	166	138	126	97	108	206	220
Netherlands Indies	"	72	75	67	70	50	56	74	79
New Zealand	1934				100	96	76	80	32
Norway	"	84	82	70	83	108	151	194	199
Peru	"	70	47	52	51	56	57	78	
Portugal	"	116	163	143	186	178	197	202	192
Spain	"	102	95	95	96	95	93	67	
Sweden	"	50	82	160	177	203	244	299	286
Switzerland	"	206	270	213	202	147	292	337	334
Turkey	1932		100	103	139	99	220	173	113
Union of South Africa	1929	57	51	255	233	264	251	211	247
United Kingdom	"	83	83	131	132	137	215	224	224
U.S.A.	"	105	113	123	179	265	310	320	413
Uruguay	"	75	74	78	69	129	129	128	
Yugoslavia	"	122	110	110	112	100	122	120	143

Source: League of Nations' Monetary Review, 1939, Table II, pp. 26-35.

International Finance Division
Economics Department
March 25, 1968

Mr. Shigeharu Takahashi

March 25, 1968

Tariq Husain T.H.

A Note on Using Linear Programming to solve a Diversification Problem.

1. The problem of finding alternative uses for released resources can be formulated at different levels of complexity and there is a threshold level below which the use of linear programming (L.P.) may become uneconomic. Above this threshold level the use of L.P. would require at least a week or two of full time work. This estimate may be a bit low if some problems arise in the use of the available L.P. computer program.
2. In order to illustrate the kinds of difficulties that may arise let us take the example used in the draft l/paper. Assume that 100,000 ha would have to be diverted away from coffee. Assume further that the freed land can be used to grow rice, maize, cotton and soya beans; it can also be used to carry on livestock breeding/fattening and/or dairy operations. The problem is to find that combination of these alternative activities which shall optimize some desired objective (like, Maximum revenue or Minimum capital expenditure) subject to given constraints.
3. Of the six alternative activities given above the last two (Livestock breeding and dairy operations) are different from the first four in that while the first four are annual crops the last two are not. Livestock breeding as well as dairy operations involve gestation periods of a few years. That is, in order to use these as alternatives we must formulate our problem in a multi-period (as against a single-period) context. This makes the problem of formulation larger though not necessarily more difficult. Problems may arise in the specification of constraints -- supply and demand constraints, management constraints, infrastructure (stock routes, etc.) constraints etc. Some of these problems may be assumed away (without substantially distorting the problem) others may not. Decisions about these aspects would be pertinent in the formulation stage.
4. If instead of breeding one introduces only fattening as an alternative the problem of gestation is still there (two years, say, instead of four) though management constraints become less severe. But processing constraints (slaughtering capacity, etc.) and demand constraints remain as does the problem of supply of immatures. If only the single period alternatives (maize, rice, etc.) are considered the problem is relatively simple -- so simple in fact that the complexity falls below the threshold level.

1/ Diversification as a means of stabilizing Agricultural commodity prices - some possibilities, problems and constraints page 22, February 28, 1968.

5. Apart from these considerations about the size of the problem there is one other aspect which is important in its own right. Narrow diversification has been defined in the draft paper (footnote 1/) as the displacement of factors of production from existing economic activities to "acceptable" alternative activities. To be "acceptable" the alternate activity must be ecologically suitable, be able to provide employment for the displaced factors of production, and at least maintain if not improve the country's external earnings position. This definition creates additional constraints (full employment of displaced factors of production, maintenance and/or improvement of external receipts) for the linear program. This involves forecasting export prices of the alternative outputs, etc. which may pose some difficulties.

6. In essence, a problem in terms of only single period alternatives (rice, maize, etc.) is easy to solve, though it does not provide any useful insights, especially so as livestock is the alternative in the case of Brazil. The more realistic multi-period formulation of the problem would require about a week or two of full time work. A solution to this problem would be more useful though still only illustrative. In my honest opinion only an illustrative use of L.P. to solve a sample diversification problem may not be worthwhile. In fact, use of L.P. may suppress some of the information available in the present presentation.

THusain/ak

Bank

Mr. Tariq Husain

March 22, 1968

Arthur E. Tiemann *AET*

Comments on draft paper "Estimation, Inference and
Sample Size"

The use of the Chebyshev inequality to obtain sample size is based on acceptance of the closeness of the inequality to an equality. Approximately forty years ago H.L. Rietz in his monograph entitled Mathematical Statistics noted the disappointment of statisticians with the results of the Chebyshev inequality and presented one closer inequality by Camp which only requires that the distribution function be monotonic decreasing for values greater than some number times the population standard deviation.

Using the Camp formula in its simplest form, the factor $\frac{1}{K^2}$ may be replaced by $\frac{4}{9}$ of its value. If this is done the sample size on page 4 can be reduced from 80 to 35.

Unfortunately I have not checked any of the recent work on the problem of finding a criterion for judging the magnitude of sampling errors when little or no limitation is placed on the distribution function, but I believe the original Chebyshev inequality to be excessively loose.

cc: Mr. Stevenson
Mr. Kundu

AETiemann:ra



ASSOCIAZIONE
PER L'UNIVERSITÀ INTERNAZIONALE DEGLI STUDI SOCIALI PRO DEO

IL PRESIDENTE

00198 ROMA, March 21st, 1968
Viale Pola 12 - tel. 85 52 41 (n. 10 linee urbane)
indirizzo telegr.: PRODEO ROMA

Prot.N. CF/3369

Dear Mr. Bhatia:

Please receive my best thanks for your kind letter of March 14th with the enclosed reports worked out by your Economics Department, which are really very interesting for us.

We would also be very grateful if you could include the International Pro Deo Association in the mailing-list of your Department, as we would highly appreciate receiving any further reports on similar subjects.

Would you please extend my warmest thanks and kind regards also to Mr. Kamarck.

Very sincerely yours,

Msgr. Carlo Ferrero

Mr. Samir K. Bhatia
Economics Department
International Bank for
Reconstruction and Development
1818 H Street, N.W.
Washington, D.C. 20433

Mr. E.K. Hawkins

March 21, 1968

R.J. Niebuhr *RM*

Comments on Bernard Oury's Monograph

This paper obviously needs a great deal of re-writing before one could easily give it a good critical reading. A lot of verbiage and extraneous material should be cut out of the paper and it should be extended by more extensive interpretation of the empirical results as well as the specification of the basic model.

I have looked only at the summary, part 1 and part 3 and it is to these sections that I will confine my comments.

Most basically I find myself left a bit cold by the specification of the model. Oury insists upon specifying both yield per acre and acreage as functions of the exact same set of variables. He defines this as his indirect method. His direct method relates total production to the same set of data as in both acreage and yield. Since there is the identity that production equals acreage times average yield per acre I would think that the third relation is mathematically implied by the specific formulations adopted for yield and acreage and, therefore, it really can add no information. If the relation for production is not mathematically consistent with its elements, it would seem to me that there is a specification error. This isn't a situation for restricted least squares as seems to be implied by the author.

I know nothing about this field of applied economics, but it would seem appealing to me to derive yield per acre from a production function formulation. The acreage decision then would logically contain mainly economic variables. That yield per acre and acreage relations contain exactly the same set of arguments seems unduly restrictive. On page 19 when talking about returns to scale, Oury seems implicitly to want to estimate a production function relation, but I don't see how one could interpret his empirical relations for yields presented in part 3 as giving meaningful production functions.

Paragraph 35 to me seems muddled with Oury not recognizing the fact mentioned earlier that specification of the components uniquely specifies the total.

In paragraphs 22 and 37, Oury states that a model linear in the variables implies constant elasticity relations between the independent and dependent variables. This is just not true.

In paragraph 29, towards the end, I fail to understand the argument about opposite signs and statistical significance.

In paragraph 35 I think Oury wrongly condemns the linear regression model for not being able to represent nonlinear phenomena. This seems strange because he seems to recognize here that the phenomena may be represented nonlinearly in the variables.

In equation 23a the first set of brackets seem misplaced.

In section 3 the discussion of the empirical findings is inadequate. Compare the length of this discussion to this section's earlier repetitious material and plain padding, the balance is striking. For example, writing out the equations as he has done on page 40 and 41 is unhelpful and might be justified only if some sort of mnemonic notation was used. Also there are some typos on page 40 and the way the disturbance term is written it seems open to misinterpretation.

Again I would like to stress the need for more interpretation of the results. For example table 8 presents regressions where one of the independent variables is a component of the dependent variable. Also in the first difference regressions one wonders about the use of the trend variable and intercepts and how they enter the theoretical model formulated in the level data in section 1.

I don't claim to have given this paper a good critical reading. If you want this division to make a real contribution at the proposed seminar on this paper someone is going to have to sit down and do quite a bit of work.

RJNiebuhr:te

Act

Mr. Richard W. Van Wagenen

March 21, 1968

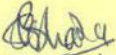
Samir K. Bhatia

Professor Alan A. Walters

1. With reference to your inquiry of yesterday, I should like to inform you that, according to his contract of December 1, 1967, Professor Walters was to work for a maximum of 55 days on the Central American Road User Charges Study. Out of this total, he has so far worked 49 days. This, therefore, leaves provision for him to work for a further 6 days on the study.

2. Mr. S. Please has asked me to inform you that he would like Professor Walters to spend 6 days with him after completing the Modern Quantitative Techniques Course in the Bank and after Professor Walters' lecture commitments in the United States have been fulfilled.

cc: Messrs. Stevenson
Please
Mitchell (PEC)
Laing


SKBhatia/rk

Act
March 20, 1968

Mr. Milton Abelson
Harvard University
Center for International
Affairs
Development Advisory Service
1737 Cambridge Street
Cambridge, Massachusetts

Dear Mr. Abelson:

Many thanks for your letter of March 15 and the address
of Mr. David Henderson.

I appreciated your response during our phone conversation
to my request for suggestions for information on industrial econo-
mists who may be available for our work either as permanent staff
or as consultants.

Many thanks also for your offer to keep our interest in mind
if names of industrial economists come to your attention.

Sincerely yours,



M.A. Sreedhar, Acting Chief
Industrialization Division
Economics Department

MAS:ph

Ec Dept Act

Mr. Guy H. Orcutt

March 13, 1968

O. J. McDiarmid

Research and the I.B.R.D.

I found your draft paper on Basic and Applied Research very stimulating, though I think I disagree with some of the conclusions embodied therein. You have tried without, I think, complete success, to distinguish between basic research as primarily a tool-making undertaking and applied research as a tool-using process. (Excuse the over-simplification). While logically separable, and perhaps useful, in physical science, I do not believe that such a dichotomy can be satisfactorily carried over into such a heterogeneous and ill-defined field as "development economics". In short, I feel that all research in development economics, if it is to be any good, must be "applied". The fact that, as you and many others have said, that no satisfactory theory of economic development exists (apart perhaps from Schumpeter who was really discussing another set of circumstances) may be because the subject does not lend itself to sweeping generalizations. I suppose the same can be said of other aspects of the welfare "sciences".

In saying that I do not see "basic" and "applied" (I take it we are not talking about deductive and inductive methods of analysis) as useful categories of economic research, I am not denying the value of cogitation regarding new analytical tools to help us define and hopefully solve some of our policy and prediction problems. From past experience it would appear that every decade or so such a tool is invented (production function, 1920's; input-output, 1930's; capital/output ratios, 1940's; linear programming, 1950's, etc.). However, in all cases the inventor was trying to solve a set of problems in applied research.

To avoid negativism, I do believe that there is a useful alternative classification of "research" in the Bank, i.e. "country" research and "problem" research and success will be in pulling the two closer together. If there are those among us who are smart enough to invent new tools such as those mentioned above, I am sure their genius will not be dampened by the failure of the Bank to have a department of basic research. As you say, while the Bank has not much of a reputation as a research center, I have not noticed startling new theoretical innovations in development economics emerging from those centers (Yale, Harvard, etc.) where, presumably, the staff is not distracted from high thinking by the necessity of making loans and analyzing the intricacies of country development programs. Perhaps if our unnecessarily restrictive policy on the distribution of economic reports were changed, our reputation might grow.

cc: Mr. B.B.King

Messrs. Kamarck/Stevenson
Economic Advisers

OJMcDiarmid:ke

Econ Dept Act

March 12, 1968

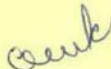
Dr. Paul Rosenstein-Rodan
10 Emerson Place
Boston, Massachusetts 02114

Dear Paul:

This is just to remind you that you
agreed to come into the Bank to have lunch
with me on Monday, March 18 at 12:45 p.m.
in my office, Room 800.

Looking forward to seeing you then,

Sincerely yours,



Andrew M. Kamarck
Director
Economics Department

AMK/vhw

Mr. Andrew M. Kamarck

March 11, 1968

Frank M. Tamagna

Comments on your Draft dated February 15, 1968 on The Organization of Research in the Economics Department - Autonomous Initiative and Financial Markets

1. There is, I believe, an area of economic research that should be of primary interest to the Bank, that is not (and probably could not be) handled by area departments, and is not, as far as I know, being studied in depth by other institutions or agencies. I refer to the role of the private sector, or perhaps we should call it "autonomous" sector,^{1/} in economic development in its three aspects - how to spark "private" (or "autonomous") initiatives, the form and degree of complementarity and competition between sectors, and how to achieve their effective integration in a single market economy. Such a study should include research in case histories, analysis of economic and financial patterns, and their application to newly emerging countries.

2. I am not sure of how this problem of how to spark initiatives and risk-taking by private or local investors, for "grass roots" development that would become continuing and increasingly self-supporting, would fit in your scheme. It does not belong, it would seem, to "Policy Research", which in your definition seems to consist primarily of background information for the presentation and solution of problems as they arise. Neither would it be part of "Operational Research", which is intended to provide our operating staff with advice needed for case-by-case decisions. It could probably be part of "Basic Research", directed, as you indicate, toward meeting "the needs which tomorrow's policy makers will have". I fully share your view that "after 20 years of the Bank existence in very many fields we still have to muddle along on the basis of inadequate knowledge".

3. The various aspects of public-private relationships and their intermingling are one of the "very many fields" of our inadequate knowledge. In a general way, planning and infrastructure have placed emphasis on the public sector almost exclusively, with concentration on the initiative and role of central governments and relegation of autonomous and private sectors to residual estimations and case-by-case considerations. Development has a kind of pyramidal way of "happening", however, being dependent on the contribution of resources that basic and unplanned sectors make to planned and more technologically advanced sectors and proceeding from broader toward more restricted activities. In a sense, the problem should not be viewed in terms of private versus public interest, but of how to intermingle them so as to obtain the fluidity of resources and overlapping competition that is needed to maximize economic return and productivity.

^{1/} The term "autonomous" is adopted to include those quasi public or mixed activities, local government units and voluntary associations, that are increasingly assuming a leading role in social and economic changes.

March 11, 1968

4. A case to the point is the study of financial markets in developing countries. A financial market (or system) is the common link between all sectors, whether public or private, through which resources are mobilized and surpluses transferred to match deficits; a sophisticated market is generally a sign of maturity, while any inadequacy of the system tends to hold back growth in the economy. Substitute can be found to serve the public sectors of the economy, such as the use of fiscal techniques for savings formation and redistribution and of money creation for investment financing - but autonomous and/or the private sectors remain for the most dependent for their needs of external financing on voluntary savings and other funds collected through market institutions. A financial market is just one aspect of the autonomous initiative process, that needs be structured as help to countries to become self-supporting in their own economic environment.

5. The purpose of a financial market study would be to analyze the processes by which institutions and instruments can be introduced, that could gather local savings and transform it into investment capital, in particular countries at various stages of economic development. Both the OECD and ECE have thought enough of the importance of furthering a proper financial framework for their countries, to entrust to two important committees the task of studies of this problem in depth. We do not seem to find the same interest and preoccupation in the Bank for the immensely more difficult task of guiding financial development as an integral part of economic development. Such a study would require, as did these cited studies, the combination of knowledge and experience from various countries, on a comparative and analytical basis. You might consider it as part of the new administrative machinery and the research committee that you propose, involving the Economics Department with area departments, as well as official and private experts, individuals and universities from several of our member countries.

FMTAMAGNA:mm-v *JMB*

cc: Mr. Friedman
Mr. Stevenson
Mr. Sacchetti
Mr. Adler

March 7, 1968

Dr. Richard L. Simmons
N.C. State University Mission
U.S. Embassy - USAID
Lima, PERU

Dear Dick:

As you may have talked to Art Coutu recently, you may be able to anticipate why you should hear from me so soon again. It is to ask whether you would be interested at all in establishing residence in Washington sometime in the not so distant future and if so, if you would be interested in reviewing and developing methodology for appraising projects and sector priorities (primarily, but not exclusively in agriculture) and, hence, join our Department of Economics staff at the World Bank.

In case you have not seen my letter to Jim Seagraves you might want to know my personal impression of the work here. Because I am very hard pressed for time this week preparing for a short mission to Africa I will just quote from my letter to Jim: "..... I am now here at the World Bank just a little over one year. The work has been interesting and promises to become even more challenging as time goes on. This organization is becoming increasingly conscious of the necessity to examine the entire development impact of its investment operations as well of all the other institutions involved in this task. It apparently is not so long ago that the major concern here was the financial "soundness" of the project and the borrowing country and consequently the scope of work for economists was quite limited. Particularly, since about two years ago the objectives have been moving into new directions and economics work has come quite into its own. Quite a number of good economists have joined the staff recently (a recent arrival is Guy Orcutt). No one quite knows how this is going to develop and since economists quite notoriously do not have any clear solutions particularly when it comes to development planning issues, the road ahead is still quite rough and every once in a while the sceptics have their day again. Most of the senior economists here now are concerning themselves with macro-issues and the micro-operations research type problems are primarily pushed by the younger new staff. I am in a group called Investment Planning Division and we (very few of us) are primarily concerned with developing operational models for appraising projects and looking for development potentialities in sectors like agriculture, transportation, etc."

Dr. Richard L. Simmons

- 2 -

March 7, 1968

If you are interested to pursue possible employment with the Bank, and personally I hope you do, I would suggest that you fill out the enclosed form (a necessary evil) and return it to me with whatever related questions you may have. I would then pursue the matter with the people who would be concerned.

With the family all is well. Blossom has a job now and the kids including the baby are growing up rapidly. I hope Janice and your kids are all well.

Best regards,

Yours sincerely,

Shlomo

SReutlinger:bsc

Attachment

S.R.

March 7, 1968

Dr. Joseph D. Coffey
Department of Agricultural Economics
University of California
Berkley
CALIFORNIA

Dear Joe:

A few weeks ago Art Coutu told me about your whereabouts these days and that you may be coming to Washington for a visit sometime in March. The specific purpose of my meeting with Coutu was to see if we could establish some mutually beneficial relationship between my Department here at the World Bank and the North-Carolina-Peru Establishment. Furthermore, I mentioned to Art that we might be expanding our activities here and that we are interested in knowing about good agricultural economists who would consider to join us. Needless to say, Art highly recommended you and I would, therefore, like to encourage you to apply should you be interested in working for the Bank in research related to development and particularly agricultural project issues.

I am fairly much of a newcomer myself in the Bank, having joined a little over a year ago. You may be interested, therefore, in my impression of the role an economist may play here. The work has been interesting and promises to become even more challenging as time goes on. This organization is becoming increasingly conscious of the necessity to examine the entire development impact of its investment operations as well of all the other institutions involved in this task. It apparently is not so long ago that the major concern here was the financial "soundness" of the project and the borrowing country and consequently the scope of work for economists was quite limited. Particularly, since about two years ago the objectives have been moving into new directions and economics work has come quite into its own. Quite a number of good economists have joined the staff recently (a recent arrival is Guy Orcutt). No one quite knows how this is going to develop and since economists quite notoriously do not have any clear solution particularly when it comes to development planning issues, the road ahead is still quite rough and every once in a while the sceptics have their day again. Most of the senior economists here now are concerning themselves with macro-issues and the micro-operations research type problems are primarily pushed by the younger new staff. I am in a

Dr. Joseph D. Coffey

- 2 -

March 7, 1968

group called Investment Planning Division and we (very few of us) are primarily concerned with developing operational models for appraising projects and looking for development potentialities in sectors like agriculture, transportation, etc. This is then the area of work which I thought might interest you.

I regret that I will be away from the office for the remainder of this month. I will return from Africa about April 2. However, in case you should be interested in what we have to offer, I suggest that you meet with Mr. Schmedtje (DU 1-3687), whenever you happen to be in Washington, anyway. I am also enclosing a form which you may fill out and submit to our personnel office with a copy to myself.

In any case I would be happy to hear from you sometime.

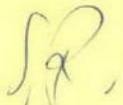
Best regards,

Yours sincerely,

Shlomo

SReutlinger:bso

Attachment



Ec Dept Act

Mr. Barend A. deVries

February 28, 1968

A. Kundu *am*

Letter from Mr. John W. Knudsen

Please note that a closer look at the data will show there are only 16 common observations which could be used for regression analysis.

For the variables used in equations 7, 8 & 9, $\frac{D_1}{X_1}$ has 25 observations (Table 4, column 5 - page 27), and from Annex Table IV, page 81, Y_a has 29 observations, Y_1 has 28, p_d has 28, p_w and p_w have 18.

The last two variables narrowed down the field, and even from there we had to omit 2 observations (for Pakistan and Thailand) since no data for $\frac{D_1}{X_1}$ were available.

$\frac{D_1}{X_1}$

Mr. Knudsen's letter is sent back herewith.

AK:ss

Mr. J. H. Collier

February 26, 1968

Emanuel Levy

Major Development Problems

1. At the meeting of Division Chiefs held on February 20, 1968, Mr. Kassarck requested a brief note from each Division Chief identifying the major development problems in their respective fields. Following is an outline of the problems arising in the data field together with some proposals for future action by the Bank.
2. As is well known, the data compiled by most developing countries are of very poor quality and frequently fail to meet even minimum standards of reliability. The national income estimates, in particular, are in many cases little more than guesses - informed or otherwise. The responsibility for developing and improving statistical work in developing countries is primarily that of the United Nations Statistical Office, which also maintains a large staff of technical experts and consultants. There would appear to be no point, therefore, in the Bank's attempting to duplicate this arrangement. However, in view of the Bank's vital interest in a proper assessment of economic performance in developing countries, there is a strong case for the Bank's assuming a far more active role in this field than heretofore.
3. In the first place, the Bank should have an important voice in determining statistical policies and priorities in developing countries. So far, these have been largely set out by the U.N. with little or no participation by the Bank. These policies are generally global in nature (e.g. recommendations for all countries to carry out various censuses at set intervals). Experience has shown that not only are such programs not appropriate for all countries but may even result in a wasteful use of scarce statistical resources. There is a great need to look much more closely at the problems and requirements of individual countries.
4. In this respect, the Bank has already made some useful contributions directly to the countries concerned. Examples are the proposals submitted to the Governments of the Philippines and Indonesia for improving the performance of their respective statistical systems. In the case of the Philippines, this has already borne fruit and considerable improvement is evident. This sort of advice should be made available by the Bank on a much broader basis.
5. The Bank can also make a contribution through the ad hoc inspection and revision of the national income accounts of countries which are the subject of IBRD survey missions. In the case of

Indonesia, for example, revised and extended national income accounts were prepared in conjunction with the Indonesian statistical authorities and these will no doubt serve as a basis for further work and improvements in the future. It should be pointed out that the Bank is far better placed to do this sort of thing than is the U.N., both because of its prestige and because of its non-political character.

6. Apart from improving the quality of statistics in individual developing countries, the Bank is also vitally concerned with effecting intercountry and inter-regional comparisons. A case in point is the level of per capita GNP in various countries in terms of US dollars, although the list could be enlarged to include items such as comparison of investment, consumption, savings levels, etc.

7. The proper implementation of such intercountry and inter-regional comparisons necessarily depends on the carrying out of basic research projects, such as the computation of representative purchasing power parity rates. Hopefully, the Bank will be involved to a limited extent in the project on real income comparison now being organized by Prof. Kravis of Pennsylvania University. Given the urgency of the problem and the wide field to be covered, however, there would appear to be a strong case for the Bank's undertaking some independent research in this field.

Elvys:eb

Mr. Andrew M. Kamarck

February 26, 1968

John Hulley

Major Development Problems

The following is in response to your request for a brief note on major problems within our field of competence.

A. Problems on which something is being done:

1. Volume and terms of aid from creditor countries: We anticipate that the "Grand Assize", proposed by Mr. Woods in his Stockholm speech, will play an important role on this subject in 1968; we do not know to what extent we will be requested to supply supporting information or studies. Meanwhile we plan to keep up to date our projections of capital inflows, derived from economic reports of Area Departments; we plan to provide staff assistance to Mr. King for his Working Party on IDA criteria; and we hope to increase our co-operation with OECD in its work on terms of aid.

2. Debt reschedulings: We expect to intensify our work on this subject, including analysis of conditions leading to debt crises; we are in touch with IMF who are active in this field, and hope to increase our co-operation with OECD in its work on indebtedness problems.

3. The role of private investment in development: Both OECD and we are hoping to start analytical work in this field in 1968; contacts have been established with a view to co-operation.

B. Problems on which little is being done:

1. Effective debt management by LDCs: Improved debt management is recommended in the IERD study of "Suppliers Credits from Industrialized to Developing Countries". Examples of successful management might be studied, with emphasis on administration, methods of choosing between alternative credits (a subject on which Mr. Shoaib recently requested information) and results.

2. Effective export credits programs of LDCs: As a follow-up on the IERD study on "Suppliers Credits by Developing Countries", case studies might be undertaken on the few countries where such programs are successful.

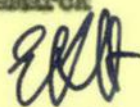
Cc: Messrs. Stevenson
Sacchetti
Kalmanoff

9th jh/jb

Mr. Andrew M. Kamarck

February 26, 1968

E.K. Hawkins



Major Development Problems

You asked for a brief statement on the major development problems as seen from the viewpoint of the work in this Division.

I will start with the topic of population, where it can be argued there is wide acceptance of the viewpoint that rapid population growth is a deterrent to economic development in virtually all Part II countries. My concern has been that this statement has been accepted all too readily and is in danger of becoming another piece of conventional wisdom. The need here is for much more work on the analysis of how this deterrent affect actually operates in different kinds of economy. It may also be necessary to have another look at some of the accepted historical/demographic conclusions as to what actually happened in the earlier stages of growth of the present developed economies.

You will be aware that population is a topic of great current interest outside the Bank. It is of particular interest to the U.S. AID, who have relatively large funds available for research in this field. They are currently engaged in contracting this research work out to U.S. universities, including some which have not previously done much work in the field of population studies. An important part of the explanation for this current interest lies in the attitude of the U.S. Congress, but it also reflects the operations of rather powerful lobbies engaged in the dissemination of ideas, money and the techniques of population control.

Another minor item for this Division, but one which is clearly of major concern for development, is the question of agrarian reform and land tenure arrangements. We were undoubtedly right to pick this subject as one which should be at least watched closely if we are unable to do any more in the way of systematic studies in the sociological field. As it becomes increasingly obvious that the organization of agriculture is a major development problem, the question of land tenure arrangements moves more and more to the front. It is also becoming clear that, as in the field of population control policies, the actual execution of reform schemes is as much an administrative as it is a political problem. I suspect, however, that less progress has been made with the analysis and understanding of this problem than has been made in the field of population control.

Traditionally, the subject of the agrarian reform has been rather zealously guarded by FAO. Unfortunately their attitude has not encouraged others to think that they have an impartial approach and probably the most interesting work on this subject has been done in universities, of which the Land Tenure Center of the University of Wisconsin is one of the best known examples. This work, which has been financed by AID, is now beginning to yield some interesting results. The combined IDB/FAO study with which we have been collaborating in a very minor way may also add to these results as far as Latin America is concerned.

In the main area of divisional activities - research into problems of country economic analysis - there is one generalization which must be made, trite as it may seem. The more work we do in this field, the more it becomes obvious that there is no general theory of the nature of the development process. The field is covered with partial insights which, however illuminating they may be, do not add up to a general theory of the kind which has been so productive in the history of economic thought in the past. In these circumstances we are probably right to err on the pragmatic side and try to use and develop what we know. In the context of our work program, this amounts to applications of macroeconomics of Keynesian origins, using quantitative techniques developed for U.S. and Western Europe. I do not subscribe to the viewpoint that there is something inherently wrong in a transfer of ideas of this kind since I believe that there is an underlying unity to economic phenomena throughout the world. (I do, however, believe it necessary to bear in mind the limitations of macroeconomics all the time.)

An immense amount of research is going forward throughout the world on quantitative aspects of development. One suspects, however, that the significance of much of this work is not in proportion to its volume. From the viewpoint of our interests in the Bank (which I take to be the development of results which would have relevance to either our understanding to the development process or to appropriate policy conclusions) much of the academic work is not significant. The best of this work, however, is beginning to have an impact on the planning and policies of the developing countries.

EKHawkins/w

cc: Mr. de Vries

Ec Dept Act

Mr. Bernard R. Bell

February 21, 1968

Herman G. van der Tak

Research Program Investment Planning Division

Following our conversation yesterday I attach three sets of documents relating to the research program of the Investment Planning Division: (i) Progress Report on Studies, January 31, 1968 (Annex I); (ii) Preliminary Long-Term Research Program (Annex II); (iii) Preliminary Two-Year Research Program for 1968/69, new studies only (Annex III).

I hope this will provide a useful basis for a discussion of the research program of the Investment Planning Division scheduled for Monday, February 26, at 11.00 a.m. in your office.

Attachments

Wf HGvdT:zmc

cc: Mr. Stevenson

February 16, 1968

Mr. Turgut Ozal
Under-Secretary
State Planning Organization
Bakanliklar
Ankara, Turkey

Dear Turgut,

Thank you very much for giving me an opportunity to hear about your program in connection with the RCD and your views about the future of RCD. My discussion with you greatly increased our understanding of the possibilities and accompanying problems in your efforts at regional cooperation

Please give my regards to Mr. Ceyhun and your other colleagues.

Best regards.

Yours sincerely,

A S.

Ayhan Cililingiroglu
Economics Department

cc: Mr. R. Hablutzel

ACililingiroglu:dma

February 16, 1968

AIR MAIL

Professor Henry Bruton
Department of Economics
Williams College
Williamstown, Mass. 01267

Dear Henry:

Please find attached my internal comments (internal to the Sector and Project Group of the Economics Department) on your paper which I promised to send you in our telephone conversation the other day.

I am looking forward to hearing from you early next week whether a seminar discussion in the near future will be possible.

Yours sincerely,

Bertil Walstedt, Adviser
Sector and Project Group
Economics Department

Attachment

BW
BW:jg

Yellow. ^{com. sp. Act.}

OFFICE MEMORANDUM

DATE: February 13, 1968

SUBJECT: "Economies of Scale and Economic Integration" by Mr. Hung

I am sorry that, because of my absence on a mission, I was unable to comment on this article by Mr. Hung. The article strikes me as unduly general, and should have qualified the few facts and research results presented. I do not believe that the article reflects accurately or adequately the findings and thinking of economic research workers, including several in the Bank, on economies of scale in industrial production, and the experience of industry in developing countries. The article may leave the reader with an erroneous impression of the thinking on the subject matter in our institutions.

Since this draft article is only for the September issue I recommend strongly that an alternative be considered in its place. In any case, thorough revisions are needed. I also suggest that, should Mr. Hung prepare a follow-up article on related subjects, my associates and I will be given more time for review.

On page 2 Mr. Hung starts out by saying that it is well established that as an enterprise expands its scale of operation the cost of production per unit decreases. This is true in general, for most industries, and for conditions prevailing in industrial countries but there are certain industries for which this is not true. Entirely apart from the potentials of integration, conditions in underdeveloped countries may not favor large scale operations. For example, take the management factor, mentioned on page 4, where it is said that management efficiency increases in larger enterprises. But the fact of the matter is that management is a very scarce resource in developing countries and, consequently, it may well be desirable to keep down the scale of operation in order to make industrial operations "manageable".

The size of industrial enterprise cannot be judged solely on the basis of economics, as it is understood in industrial countries, or of the technology developed to suit the conditions of industrial countries. Industrialization in the process of economic development is an integral part of the modernization of the economy. Establishing an industry in a small country or a region of a large country brings with it a multitude of inter-reactions: technological adaptation, training of management

and labor; establishing supplies of raw materials and other inputs and developing markets for the output of the plant; setting up financial arrangements for the plant and its products; housing for the workers and other social services. These are all indirect benefits which must be taken into account in judging the appropriateness of size. And these factors are more important for underdeveloped countries than they are for industrial countries. There is no adequate treatment of these factors anywhere in the article. This is a major shortcoming which, in my view, puts the wrong face on the case for integration and large-scale operation.

The article does not seem to be based on adequate facts and research on the subject. For example, in giving examples of products for which economies of scale are found, Mr. Hung mentions farm machinery. It is true that for many types of farm machinery there are significant economies of scale. It is also true -- and this is perhaps much more relevant for the design of industrial development in many of the poor countries -- that there are many products for which economies of scale are less important. They are the more complex machinery and items of equipment of which production is labor intensive even in the industrial country. This also holds for certain types of farm machinery. Thus, while, as it is said on page 6, hundreds of examples could be given of the actual economies achieved, many opposite examples could also be given. The reader will not be impressed by being given a quote from an article which is now almost 10 years old (Table 1).

On page 7, the article addresses itself to the issue of economic integration. It is said to improve the welfare of the integrating region. This is true under certain conditions. However, integration may involve trade diversion and, therefore, reduce welfare. Should not the case against excessive discrimination associated with integration be discussed? Moreover, the same points made in favor of integration can be made for exports in general. Does not this article make points in favor of export efficiency in general rather than integration? Certainly, the relevance of the analysis for the case in favor of exports ought to be pointed out.

On page 8, the author says that it is precisely the low quality and less expensive product which is most suited for mass production techniques. But cannot many high quality and expensive items be quoted which are massed produced, e.g. automobiles, steel, small transformers, etc.? These are also relatively complex products.

The case given for the cement industry in Asia on page 9 requires further qualification and much more detailed analysis before it can be convincing. In the first place, is it not rather abstract and unreal to talk about the cement industry in Asia, the region being far too vast for a realistic analysis? Is it fair and relevant to give the reduction in cost involved in increasing volume from 50,000 tons to 1.8 million tons

if most cement factories are now said to be operating in the 100,000 to 230,000 ton range? Furthermore, the percentage cost reduction possible should make explicit allowance for the cost of transport, especially since cement is quite bulky. Finally, it is not really relevant to say that the region consumes some 10 million tons a year, since much of the consumption may be inland and out of reach of cheap transportation. Consequently, a figure for coastal regions in a smaller and more coherent area would be more relevant.

The author turns next to the case for integration of the steel industry in Latin America. But again the figures given, on page 10, need very serious qualification. They apply to the cost of rolling flat products. But much of the steel consumption of Latin America is for billets, reinforcing bars and other forms of structural steel, and wire. The economics of the production of these latter items is quite different and can be accomplished economically at much lower production volumes than that of flat products. Consequently, an economic case can be made for smaller volume mills, as in fact has been demonstrated by Bank operations.

In discussing the case for integration of electric energy consumption and production, the author ventures outside the concept of integration usually adhered to in trade discussions. The author comes back to this in the closing paragraph. However, while important, policy and facts in this type of integration are often quite different and deserve separate treatment. This aspect of integration should be discussed in another article.

The next subsection, "Are Economies of Scale Unlimited?" does not get to the real point. This section ends by saying that it appears that in developing countries there may be quite proper preference for labor intensive industries which may employ "optimum plants" smaller than those in the capital intensive industries. I have already mentioned above that there is a rather impressive range of products which, even under the technology commonly followed in industrial countries, are produced in a labor intensive manner. If organization, management and technical development is well on its way we have found that developing countries can be reasonably competitive in these products. Thus, little contribution is made by saying "we know only that, generally speaking, unit costs do fall as production increases". The point of the matter is that we know much more and our work has proceeded far enough that we should not be speaking in a general vein.

Under his "Three Observations", on page 12, the author directs himself to the appropriate attitude of planners. He feels that they should give greater attention to the economies of scale in formulating joint industrial plans, and make sure that priority and types of projects and plant location will assure the maximum benefits for the region and the

region and the best allocation of resources. The fact of the matter is that, even under the best of circumstances, planners know very little what is the best allocation of industrial resources. From the experience with successful industrialization one is rather led to believe that industrial planners might best proceed on a piecemeal basis within a sound policy framework rather than promoting a grand design, even if regionally oriented.

In conclusion, while the broad general advocacy of integration may well be warranted, the specific evidence given in the article should be severely qualified and further substantiated. As it now reads, the article distracts from, and contradicts the need for, many other and perhaps more urgent things which developing countries can do and should be doing in order to promote their industrial development. Last, but not least, it should give more explicit recognition to the case for export orientation.

cc: Messrs. R. Goodman
H. G. Hilton
M. L. Hoffman
Lars Lind
S. Lipkowitz
M. Sreedhar

BAdeVries:ya

Ec Act

Mr. Antonio J. Maccone

February 13, 1968

E. Bevan Waide

Commodities Work

Since yesterday's meeting was postponed, I thought it might be useful to put down on paper the Asia Department's need for commodities work in 1968, taking as read (or said) the various suggestions about content and documentation that were made in the first two meetings on this subject. Apart from IBRD operations, Consortia and Consultative Group meetings on India, Pakistan, Malaysia, Thailand, Korea and Ceylon will be held this year. We thus have a high priority need for work on jute and jute textiles, tea, rubber, tin, and oils and fats (with particular reference to oil palm and coconut products). Of slightly lower priority, but nevertheless important, we seek further guidance on tropical timbers, iron ore, rice, and then tobacco, cotton textiles, copper and fibres.

Our main needs are for an evaluation of short and medium-term price and market prospects. However, in some cases we feel a need for additional work on the long-term prospects, particularly for rubber and tin which are important in Ceylon, Malaysia, Indonesia and Thailand. In rubber, I imagine the main question is whether the Behrman Study will give us (perhaps with a little more work on our part) the price forecast which we shall be seeking in July. Regarding rice, we had understood that some econometric work was being done on the demand side - is this so? Because of the importance of rice as an import or export in every country in Asia, we regard additional work on the medium to long-run prospects as having high priority. Would it be possible, in the case of tropical timbers, to enlarge the scope of the plywood study so as to give us judgements about timber exports from the Philippines, Thailand, Malaysia, Indonesia (and even Burma)? I understand that plywood corestock and veneers are the main end-uses of tropical timbers. The coverage being given to jute and tea by the Elz/Varon mission should meet our needs for these commodities, and we hope we are correct in assuming that we can be adequately briefed on fats and oils. Cotton textiles and tobacco will presumably also be handled by the Elz/Varon mission.

I attach a copy of a memorandum from Mr. Perkins which may be of interest.

The "Partial List" distributed at the last meeting is very useful, and we have distributed this to country economists. Will it be succeeded by "Complete List"?

Attachment

cc: & cleared with: Mr. King

cc: Mr. Stevenson, Kalmanoff, NDO

EBWaide:bh
IBRD

February 12, 1968

Mr. E. Kellog
State Department
Room 7511A
2201 C Street, N.W.
Washington, D.C.

Dear Mr. Kellog:

Attached is a copy of a paper which I have just completed, and which I had mentioned over lunch last October. If you have any comments, I will be very glad to hear them.

I hope we will have the opportunity to meet in the near future to discuss this and other matters.

Yours sincerely,

62

George C. Zaidan
Economics Department

GCZaidan:te

Enclosure

OFFICE MEMORANDUM

To: Economic Advisers, Area Departments and
Projects Department

February 8, 1968

From: George Kalmanoff G.K.

Subject: Commodities Work

During our meeting of February 7, 1968 on the subject, we tentatively agreed to continue our discussion on Monday, February 12. The meeting on February 12 is being temporarily postponed, to permit the Export Projections and Trade Division to prepare some concrete suggestions in the light of our discussions thus far. You will be informed of the date of the next meeting.

cc: Messrs. Kamarck, Stevenson, Macone, Bhatia

GKalmanoff:vlb

Economists, Western Hemisphere

February 7, 1968

Enrique Lerdau

Bank Commodity Work

Mr. Weiner has asked me to attend the meetings at which this subject is being discussed. Today the attached list of "recent" documents was distributed, which may be of interest.

Could you let me know by 9:30 a.m. Monday 12th - orally if preferred - what observations and requests for priority treatment of commodities in 1968 you wish me to convey to the next meeting?

ELerdau:tg

Ec Ach

INCOMING CABLE

DATE AND TIME OF CABLE: **FEBRUARY 5, 1968** **425PM**

LOG NO.: **WU 12 / 6**

TO: **BARANSON INTBAFRAD**

FROM: **CLEVELAND, OHIO**

ROUTING	
ACTION COPY:	MR. BARANSON
INFORMATION COPY:	MR. STEVENSON
DECODED BY:	

TEXT:

NEGLECTED TO ASK YOU FOR ONE OTHER COPY YOUR MANUSCRIPT.
GREATLY APPRECIATE YOUR SENDING AT ONCE
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ACTION DATE: 10/1/68
 ACTION BY: J. J. WATSON
 APPROVED BY: J. J. WATSON

RECOMMENDED TO THE BOARD OF DIRECTORS FOR APPROVAL.
 BOARD OF DIRECTORS: 10/1/68
 BOARD OF DIRECTORS: 10/1/68

COMMUNICATIONS
 GENERAL FILES
 FEB 6 8 53 AM 1968

FOR INFORMATION PURPOSES, PLEASE CALL THE TELEPHONE NUMBER 1-800-555-1212

IMPRINT

Mr. J. H. Williams

February 2, 1968

Andrew M. Kamarck

A. M. Kamarck (signed)

Economic Intelligence Work on Developed Economies

You will recall I raised the problem of where the economic work in the Bank on developed countries should be done in my memorandum of June 2, 1967.

It seems to me that some kind of decision in principle ought to be reached on this within the near future. The IDA replenishment negotiations with the Part I countries seems to be becoming a continuous process. Sir Denis Rickett in his work of liaison with Part I countries I would think would ask almost immediately as to who in the Bank is responsible for this work and to whom he should turn for help, briefing materials and so forth.

A decision on the exact size of the staff to do this work presumably should wait until we discover from Sir Denis how much help he will need.

cc: Mr. Friedman
Mr. Knapp

AMK:ner



OKLAHOMA STATE UNIVERSITY • STILLWATER

Research, Instruction, and Extension
Department of Agricultural Economics
372-6211, Exls. 7511, 7521, 7515

74074

February 2, 1968

Projects Dept. Correspondence

ANS'D BY No answer required

DATE Feb. 5th.

Mr. Tully Friedgut
F-350
IBRD, 1818 H Street, N. W.
Washington, D. C. 20433

Dear Mr. Friedgut:

Thank you very much for the World Bank publications and your informative letter. I will be expecting the questionnaire back from Dr. Sitton.

Furthermore, I will be contacting Professor Tangri concerning possible exchange of information.

I am hoping to be able to go to D. C. later this year to collect information on my topic. I am sure that the World Bank would be one of the organizations I would like to visit and I would be very pleased to meet you on that occasion.

Sincerely yours,

P. Pinstrup Andersen

P. Pinstrup Andersen
Research Assistant

ld

cc: Dr. Luther Tweeten

Ec Ad

February 1, 1968

Mr. Harry Haines Bell
Director, Research Division
United Nations Conference on
Trade and Development
Palais des Nations
Geneva, Switzerland

Dear Harry:

This is just to acknowledge receipt with thanks
of your division's research memorandum No. 13/4
"Illustrative Tariff Profiles of Selected Developed
Countries - Kennedy Round - Part III."

Sincerely yours,

A. M. Kamarck (signed)

Andrew M. Kamarck
Director
Economics Department

AMK:ner

document sent to Kalmanoff

1-2450-5 6213:01

1968 FEB -2 PM 12:07

document sent to Kojima

VAK:net.

Economic Department
Director
Vladimir M. Kozlov
V. M. Kozlov (signed)
Sincerely yours

Comrades - Kennedy Group - Part III.
"Interpretation of the results of selected development
of long duration, a research memorandum No. 13/1
This is that to acknowledge research with results

Dear Mr. Kozlov:

General Secretary
United Nations
League and Development
United Nations Conference on
Director's Research Division
Mr. Kozlov's letter will

Very truly yours

69

Ec Dept Act

Mr. A. Stevenson through Mr. H.G. van der Tak

March 4, 1968

M.A. Sreedhar

Principal Activities of the Industrialization Division: February 16-29

Sreedhar: General supervision.

Cilingiroglu: 1. Worked on the Pakistan Equipment Industry report. (7 days)
2. Prepared for U.A.R. Mission and left on February 28.

Datas: 1. Returned from Philippines Mission on February 26.
2. Worked on the Mission report. (4 days)

Nowicki: 1. Revised draft of the Working Paper on "Projection of Automobile Demand in Developing Countries". (1 day)
2. Completed revision of draft Working Paper on "French Economic Thinking and Research on Development". (2 days)
3. Prepared for Colombia Mission. (5 days)
4. Attended talk by Mr. de Vries on his visit to India and seminars by Harterger and by Bruton. (1 day)
5. Completed the Effective Writing Course.

Schrenk: Iraq and Singapore Missions.

Villela: At EDI.

Martinez: (RA) 1. Revised the draft on "Pulp and Paper Industry". (1 day)
2. Worked for Mr. Sreedhar on the information system of the Division. (4 days)
3. Sick leave. (4 days)

May: (RA) 1. Compiled statistical information for Mr. Walstedt's Heavy Mechanical Equipment report. (5 days)
2. Worked for Mr. Cilingiroglu on Pakistan Mission report. (4 days)

Snell: (RA) Worked on Middle East Task Force.

Turay: (RA) Continued work on capital investment in manufacturing industries in developing countries for Mr. Sreedhar. (9 days)

The "Automotive Industries in Developing Countries" by Mr. Jack Baranson was issued on February 20, as EC/O/68-21a for circulation to the Economic Committee.

MAS:ph

cc: Industrialization Division

March 1, 1968

Mr. Robert C. Moncure
Africa and Middle East Branch
Economic Research Service
U. S. Department of Agriculture
Washington, D.C. 20250

Dear Bob:

Thank you very much for your letter of February 27, enclosing a copy of "The World Agricultural Situation" published by your Department. I am sure this will be of great interest to my colleagues here. I was glad to hear that you are back in Washington for some time.

With regard to your friend, I will be glad to forward your letter to our Personnel Division for their handling, as all recruiting for all Departments in the Bank is coordinated by them. I appreciate, however, your thinking of the Bank.

With best wishes,

Sincerely yours,

A. M. Kamarck (signed)

Andrew M. Kamarck
Director
Economics Department

cc: Mr. Dyck (with incoming letter)

SKBhatia
SKBhatia/rk

Ec Stopp Act

January 31, 1968

Professor Arnold C. Harberger
Chairman
Department of Economics
University of Chicago
Chicago, Illinois 60637

Dear Al:

This is to follow up on John Adler's letter.

I would like to give lunch for you on Thursday, February 15. I hope you can make it. If you can, you could come to my office at about 12:50 and we would then go on up to the Bank dining room together.

All best wishes,

Sincerely yours,

A. M. Kamarck (signed)

Andrew M. Kamarck
Director
Economics Department

AMK:ner

Ec. Act

January 31, 1968

Giannini Foundation
Department of Agricultural Economics
University of California
Berkley
CALIFORNIA

Dear Sir:

I would appreciate receiving a copy of the
following at your earliest convenience:

G. G. Taylor, "Economic Planning of Water
Supply Systems", Giannini Foundation Research Paper
Number 291.

Thanking you,

Yours sincerely,

Shlomo Reutlinger
Economics Department

SR:bsc

J H

January 31, 1968

Mr. A. R. Tainsh
Ostermalmsgatan 61
Stockholm 0, Sweden

Dear Mr. Tainsh:

Thank you for sending me a copy of your article
"Gross National Waste" in Now. As you requested, I
am passing this on to Mr. Friedman.

Best wishes for the New Year,

Sincerely yours,

A. M. Kamarck (signed)

Andrew M. Kamarck
Director
Economics Department

AMK:ner

OFFICE MEMORANDUM

TO: FILES

DATE: January 31, 1968

FROM: Andrew M. Kamarck *amy*SUBJECT: Per Capita GNP Figures

I had lunch on January 29 with Mr. Handfield-Jones, the Canadian Alternate Executive Director in the Fund; Mr. John Stone, the Australian Executive Director in the Bank, and Mr. Johnstone who is the new head of the General Studies Division of the Research Department in the Fund.

This lunch was organized by Mr. Handfield-Jones in agreement with Mr. Stone. The purpose of the lunch was to express the distrust that both Mr. Stone and Mr. Handfield-Jones have of the conventional per capita GNP figures shown in the annual reports of the Bank and Fund. Mr. Stone tended to go so far as to say that these figures inherently were so bad and so misleading that no figures should be provided. Mr. Handfield-Jones emphasized rather the difficulties of evaluating the subsistence sector. He suggested that it would be more informative and more representative if the figures given on national accounts clearly isolated the subsistence sector. In this way, one would have a better view of what economy really consisted of.

Both Mr. Johnstone and I accepted their points in so far as they implied the need for improvement of the data and the need to regard existing data with a cautious eye. I also feel that Mr. Handfield-Jones had a real point on the handling of the subsistence sector.

cc: Messrs. Adler
AMK:ner Collier
Levy

Mr. John Hulley

January 31, 1968

Badri Rao *BR*

Suggested Topics for Charts

With reference to our conversation, I suggest the following topics for presentation in chart form. The suggestions have the approval of those colleagues with whom I have discussed this matter. However, on one point there was some disagreement. I feel that in addition to the global data being charted in a set of "master-charts" we should have supplemental charts on each topic showing data for each of the five regions: Europe, Western Hemisphere, Asia, Africa and the Middle East and North Africa. I also feel that the regional charts should identify data for at least two of the most important countries in each region. As against this view, it was argued that regional data have less meaning than country data and that instead of regional charts we should have supplemental charts plotting the data for say ten or fifteen important LDCs.

I do not agree that regional data have little meaning; they are indeed of operational significance. Secondly identifying the data for ten or fifteen countries in each chart would make it overly cumbersome to read.

Since the charts are to be simple, I have suggested the minimal number of items for inclusion under each topic. Even then, the regional charts may become cumbersome if individual country data are plotted on the same chart: Assuming that three items are included in a regional chart and that three countries are identified, there would be, in all, twelve observations to make. If only two countries are identified, the number of observations would be nine and if the items plotted are only two and data for two countries are identified, the number of observations would be reduced to six.

The master charts might perhaps be printed on transparent sheets so as to enable comparison with the regional country charts by placing them over the latter.

Finally, it may be appropriate to consider some topics for which historical data may not be available, e.g. distribution of financial flows by broad purpose (capital aid, non-profit finance); tied assistance; and average terms of official bilateral loans in relation to bond yields in lender-country.

1. Net flow of financial resources to LDCs.
LDC balance on goods and service account.
Net changes in reserves.
2. Net flow of financial resources to LDCs.
Net flow of official capital.
Net flow of private capital.
3. LDC growth rates.
Per capita receipts of external assistance.

4. Net flow of official bilateral capital.
Net flow of grants and grant like assistance.
5. Net flow of financial resources in relation to national income.
Net flow of official bilateral capital in relation to national income.
6. Net flow of multilateral assistance.
Net flow of loan assistance.
Net Bank-Group assistance.
7. External Public Debt Outstanding.
Including undisbursed amount.
Excluding undisbursed amounts.
8. Debt Service
Amortization
Interest.
9. Net changes in disbursed debt
Net changes in debt service obligations
Changes in the debt service ratio.
10. Gross earnings from goods and services.
Debt service.
Debt service ratio.
11. LDC GNP
Gross domestic investment.
Net receipts from goods and services.
Net inflow of financial resources.

OFFICE MEMORANDUM

TO: FILES

DATE: January 31, 1968

FROM: Andrew M. Kamarck *amk*SUBJECT: Planning

I spoke to Mr. Hawkins today on the work on economic planning methodology and techniques in the Economics Department. I asked him to continue his and his division's interest in this.

I also asked him to think about ways in which this work could be carried forward.

We made a preliminary reconnaissance of several ideas. One was that we might have somebody, preferably someone who has had actual experience in the Bank in this matter (e.g. Bevan Waide), bring together an analysis of Bank experience in this field. We also discussed the possibility of bringing in somebody from the universities or elsewhere as a summer consultant or as a sabbatical year to make an exploration of the existing literature and experience.

I mentioned to Mr. Hawkins that at a meeting some time ago in Mr. Demuth's office there had been agreement reached that the work in the Bank in this field should proceed along the lines that Waterston would continue in the field of planning organization, the Area Departments would staff themselves to provide whatever technical assistance we felt justified in providing to member countries in helping them plan and that the Economics Department would do the back up work on planning methodology and techniques.

cc: Messrs. Friedman
Stevenson
de Vries
Hawkins

AMK:ner

Mr. Benjamin B. King

January 26, 1968

Shinji Asanuma, Division D

Commodities Work

We have the following comments to offer on Mr. Kalmanoff's memorandum dated January 12, 1968:

- (1) In the past, we tended to rely on ad hoc briefings, mostly verbal, of the Economics Department which were usually prepared at short notices. No basic studies are available recently, for example, for rubber, tin, oil palm and tropical timber (the last basic study on rubber was issued back in 1963). At one time the mission leader had to go to New York to obtain industry opinions, in the absence of a reasonably up-to-date basic study or written briefs. In the future it would be appreciated if the Economics Department could prepare studies or at least extensive notes on important commodities biennially and also provide outgoing economic missions with updating memoranda, describing changing factors in supply and demand, together with a summary of industry opinions.
- (2) We have no comment.
- (3) It would seem necessary to have fresh looks at rubber, palm oil, tin, rice and tropical timber for Malaysia and Indonesia Economic Missions, both tentatively scheduled in early summer, because market prospects for rubber and palm oil have changed considerably since the last missions. In fact, we have already asked the Economics Department for these studies last July (please refer to Mr. McDiarmid's memorandum to Mr. Stevenson, dated July 7, 1967, of which a copy is attached).
- (4) As usual, we would need forecasts of export price trends and analyses of individual countries' positions in the world markets. In addition, any past attempts to measure various elasticities of supply and demand, if made available in summary forms, could be very helpful to the mission work. It should not be difficult in cases of rubber and rice, as we understand that econometric studies are well underway for these commodities.
- (5) We have no comment.

Attachment

SAasanuma:br

Cleared with and cc (without attachment): Mr. Brakel

Econ Digit Act

Mr. Benjamin B. King

January 24, 1968

E. Bevan Waide

Commodities Work

Referring to George Kalmanoff's memorandum of January 12, I have the following comments regarding India. Under Item (1) to the best of my knowledge there was no outstanding example of a failure to meet our requirements on commodity analysis. I did not feel that there was any such shortcoming at the time of writing the last economic report, nor, as far as I know, was Mr. Baneth's work early in 1967 held up by the absence of the necessary commodity studies. As you know, we have emphasized the internal policy and production problems of the main export commodities, because these internal problems are clearly more important in the short run than world price prospects.

Regarding Item (3), we have already been in touch with the Economics Department and the Elz/Varon Mission will look in detail into the prospects for jute and tea exports and, to a lesser extent, export prospects for cotton textiles, tobacco and fats and oils. This mission will thus already meet the bulk of our requirements for commodities work on India. In addition, however, we could use an up-dated report on iron ore price prospects, because the most recent study on this is already about four years old.

Regarding Item (4), the types of information and analysis required are, in essence, thus described in the terms of reference for the Elz/Varon Mission.

Regarding Item (5), the documentation already prepared is generally adequate and I have not encountered difficulty in obtaining the necessary information. It will be useful, however, to have a list of the commodity studies available, indicating the date on which fundamental work was last done. Referring for a moment to the commodity studies on Malaysian exports (rubber, tin, iron ore, and tropical timbers) we encountered no great difficulty in obtaining up-dated views and judgments from the relevant commodity experts; however, these up-dating reviews were invariably verbal exercises, and it would have been very useful to have, from time to time, brief memoranda updating an earlier report, indicating in what way the judgments of the earlier report have had to be modified in the light of subsequent events.

cc: Votaw, NDO

EBWaide:bh
IBRD

Mr. Benjamin B. King

January 23, 1968

O. J. McDiarmid

Loneliness of the Country Economist

I sympathize with Bevan Waide's note to you about the flow of information on Bank economic work. I have also felt the lack of flow, not down-stream from the higher elevations but up-stream from the divisions within the Asia Department. I too often find out about what our people are up to from outsiders. I doubt, however, whether Bevan's suggestion of a periodic summary of the multifarious documents would help, and besides, who would do it? I do not find time to read the stuff myself, except occasionally late at night after having completed my regular homework on Asia Department reports.

On a few occasions, I have tried to break down the barrier between the division economists and economic advisers by calling a meeting on some topic that I felt should be of interest to the economists in the Department. The last was on the Dudley Seers' note on economic reports. I cannot say that these meetings (I think I have had three in about ten years) were howling successes. The attendance was sparse and discussion desultory. I suspect the former was because the country economists were preoccupied in taking care of the needs of their division chiefs, under the chain of command which the Establishment thinks desirable. The identity of economists in the Asia Department is somewhat obscure, since unlike in other area departments, they are not listed in the "Bank/IDA Assignments" document which The Secretary puts out from time to time. Consequently, their identification requires some research which I have not yet fully accomplished.

Despite the deficiencies of the past get-together, and being aware of the repugnance with which more meetings are justifiably viewed, I think it might be worth another effort. I suggest that at monthly intervals we get the division economists together with front office economic staff to go over (a) the economic work being done elsewhere in the Bank; and (b) our own economic missions and problems. On point (a), certain selected draft papers emanating from time to time from the Economics Department might be assigned to individuals on which to report to the group. This might even save us of some time. We might chew over this momentous idea for a time as I am about to dash off on another country assignment.

cc: Messrs. Goodman, Street, Melmoth, Gibbs, Kraske, Votaw, Brakel
and country economists.

OJMcDiarmid:ke

Mr. Benjamin B. King

January 23, 1968

C.G.F.F. Melmoth

Commodities Work

Reference your memorandum of January 15.

I should like to comment on Item I and to remark that commodity reports are of value when they are relatively current. The jute industry (raw and manufactured) in Pakistan is very important and since Pakistan is the largest exporter of raw jute, world conditions are important to consideration of future trends. In February/March 1967, Mr. Varon visited Pakistan and certain other countries to collect information for his jute study. An annex on jute was included in the Economic Report on Pakistan distributed in April 1967, but the full report was supposed to become available in May 1967. It has been promised from time to time but it is yet to arrive and it would, I imagine, be out-of-date by now. Some (investment) opinions have had to be given without the advantage of an up-to-date study of jute being available to the Bank.

CJMartin/CGFFMelmoth:dp

CM

Mr. Benjamin B. King

January 23, 1968

Maurice F. Perkins

Commodities Work - Comments on Mr. Kalmanoff's Memorandum.

This memorandum consolidates the comments from Division A.

Item 1. Given the limited resources available in the Bank for commodity analyses, work has been concentrated quite rightly on the general factors influencing supply and demand as a means of determining forward price estimates. The consequence, however, is that insufficient attention is given to particular variations in supply in any given country. This is important for country economic reporting particularly because it is also inadequately handled by the country economist given other priorities on his time and his generally inadequate commodity background. What specifically is needed is more attention to, a) variations in individual country supply stemming from price behavior on international markets for the commodity concerned and, b) variations, or possible variations in supply, stemming from economic forces within the country which are extraneous to the commodity but indirectly influencing its supply. This is not to say that a) is given no consideration, but that it is given inadequate attention; in the case of b), however, it is fair to state that it is almost completely neglected.

To improve on this situation the following subjects need to be given more attention in commodity analysis (the emphasis here is on agricultural commodities):

- i) The institutional framework within which export commodities are produced in different countries. Internal conditions such as producers' attitudes and values, taxation, government controls, etc. can affect producers' response to price changes in different ways. Thus heavy corporate income taxes have affected the output quality-wise of the better types of tea in Ceylon but not the smallholders' output. The country economist knows about this because the government is trying to raise loans to correct the situation. The commodity analyst, however, would learn about it only accidentally unless he were intimately aware of conditions of tea production within the country.
- ii) The organization of factor input markets. The efficacy of internal factor markets in supplying necessary inputs such as fertilizers, insecticides, seed, machinery, etc. plus credit facilities in some countries result in a wide variation in producer responses to international price movements. As such markets are well organized in Taiwan for paddy but poorly organized in Burma, the supply response to external price changes, if operable, could be quite different in the two countries.

- iii) The influence of government long-term development plans and programs. Some governments in commodity exporting countries may be actively promoting export crops in their development programs, whereas others are concentrating attention on non-agricultural development. This would affect the future output of traditional export crops in various countries in a quite different manner but to appraise this requires some appreciation of the content of development programs.
- iv) Opportunity costs for factors engaged in the production of a commodity relative to, a) the supply of labor (e.g. the extent to which other commodities and sectors absorb labor relative to growth in the labor force); b) alternative uses of existing land in cultivation and availability of new land for a particular commodity (e.g. the degree of versatility of land, such as paddy land, which is not generally utilizable for other crops, should price ratios change; the extent of reserves of unused land which could be brought into cultivation) and c) the supply of long-term capital available for development of a particular commodity varies from country to country and thus results in different commodity supply responses. Thus in Malaysia, where population growth exceeds the absorptive capacity of industry but there is unused upland jungle in rainfed areas, there is bound to be an expansion in agriculture. The land resources, however, are such that the main effort will probably go into tree crops, particularly rubber and to a lesser extent in palm oil. In Ceylon different conditions place the emphasis on annual crops, particularly paddy rather than tree crops. In Taiwan where industrial development growth is high, land resources scarce, and internal demand growing, the result may be a reduction in agricultural commodity exports.

In addition, specific technical details are required to permit an adequate interpretation of general market price forecasts:

- i) The relationship between representative c.i.f. prices in major markets and corresponding f.o.b. and other values required to compute foreign exchange earnings, return to producers, etc. in exporting countries varies considerably. A comparison requires a detailed knowledge of freight and other charges between c.i.f. and f.o.b. points as well as fobbing charges. Account needs also to be taken of various grades of a commodity and the relevant premia and discounts involved which affect a country's foreign exchange earnings.
- ii) A balance sheet analysis for determining exportable production in any given period would allow not only for the size of the crop in any one year but some estimate of the influence of stock and domestic offtake variations and thus would provide a more accurate short-term picture than will a reliance on published estimates of the size of the crop.

The reasons for these defects are twofold. First there is not enough manpower devoted to commodity analysis. A commodity economist can at best handle two commodities (in the case of very involved commodity

groups, such as oils and fats, he may be able to handle only one effectively). The rule should be the same as for country economists in area departments who usually do not handle more than two country reports a year. Second, the commodity analyst does not always have the opportunity to visit major producing areas frequently enough to obtain the necessary detailed information relative to the subjects mentioned. These are seldom readily available in published form. Hence, he is often placed in the embarrassing position of having less information on internal supply conditions than a country economist, who in turn, usually does not have the complete picture.

Item 3. Division A requires periodic data on the following commodities:

- i) Rice.
- ii) Tin.
- iii) Copper.
- iv) Coconut products and palm oil (within the framework of fats and oils).
- v) Fibres (particularly kenaf and manila hemp).
- vi) Tea.
- vii) Rubber.

Item 4. The types of information and analysis required relates mainly to country economic reporting at the time missions are preparing new or updated reports.

- i) Prior to departure of a mission, a verbal presentation of long- and short-term demand and supply conditions should be made, followed by a short memorandum indicating specific aspects of supply including new developments and information gaps which should have special attention by the mission.
- ii) Upon the return of the mission a one page (single spaced) report per commodity should be available which should contain:
 - a) An analysis of recent events affecting short-term supply in the particular country plus factors affecting the longer-term position.
 - b) A brief statement of general demand and supply conditions affecting the market for the commodity as a whole.
 - c) A brief statement containing estimates of foreign exchange earnings expected in the next few years with emphasis on the main influential factors.

Item 5. Generally speaking, if the material suggested in item 4 is made available, there is little need for additional information as a routine matter. Notes on international commodity meetings are interesting but not essential for country economic reporting, although they may be of importance for other Bank purposes. The following, however, would be useful:

- i) A semi-annual combined commodity report consisting of one page for each commodity showing the most recent annual and estimated future

price or prices plus the latest estimates of foreign exchange earnings for major supplying countries. This document should not contain any verbal statement, as it would be used exclusively as a check list.

- ii) Unscheduled and infrequent brief notes could be prepared and circulated, if and when some significant event affecting a commodity market in general or a particular supplying country occurs. These should show any effect on a country's foreign exchange earnings position. Care should be taken that these do not become routinized.

Although basic reports may be needed for special Bank purposes, they are not required for country economic reporting. The commodity analyst would need to do the underlying work for such a report on a continuing basis; but the actual formal report preparation and subsequent revisions take up an inordinate amount of time and would detract from the servicing involved in the suggestions made above.

Mr. J. J. Polak

January 22, 1968

Alexander Stevenson

Studies of the Economics Department

This is in response to your memorandum dated January 15, 1968 to Mr. Kamarck. In your memorandum you asked whether you might inform your colleagues about the economic studies going on in the Bank's Economics Department. I suggest that the appropriate people might contact Division Chiefs or the authors of studies included in the Bank list in case they thought an exchange of views on any study would be desirable. We would welcome any such interchange of ideas.

ASTevenson:js
cc: Mr. Kamarck

Mr. Alexander Stevenson

December 21, 1967

John H. Adler

Work of Comparative Data Division

Mr. Collier and Mr. Levy have informed me of their discussion with you regarding the personnel requirements of the Comparative Data Division, especially the need for adding on a permanent basis two research assistants.

I suggest that high priority be given to the personnel requirements of the Comparative Data Division. The Bank has a unique comparative advantage in assembling, evaluating and disseminating comparative country data. The advantage is twofold: one, we have direct contact with most of the LDCs through our country missions and can therefore get data readily, and two, we are probably better informed about the quality of the data than most other organizations and, unlike the U.N., are under no constraint if and when we want to "improve" the figures by appropriate adjustments, modifications or explanations.

Moreover, the data which the Division is collecting are of vital importance to Bank operations and to research. The more complete the comparative data are, the easier it is for country economists to form judgments on such questions as: Is the rate of investment high or low? Is the distribution of investment plausible or sensible or out of line in comparison with other countries? If it is out of line, why? How does the rate of public savings in one country compare with that of other, similar countries? I could extend this list ad infinitum. What I am driving at is the simple proposition that our operational judgments are now to a large extent based on hunches and ignorance--which can at least be mitigated, though perhaps not eliminated, by comparisons.

As to research, I am convinced that a reasonably comprehensive data bank which is continuously kept up to date and improved would be a major asset for research purposes. On the basis of my own work I am impressed how much one can learn from the growth rate data which we have now for the first time for some 70 countries.

I find it difficult to accept the argument that the data so far have not been widely used. They have not been used because until now the data simply were not available; I am confident they will be used extensively once we have them. If they are not used, then I suggest that there is something wrong with our research, not with the data bank.

JHA:mem

cc: Mr. Collier
Mr. Levy

Mr. G. Kalmanoff (through Mr. Weiner)

January 19, 1968

E. Lerdau

Commodity Work Requirements of Western Hemisphere Department

Regarding the agenda circulated by you for the January 31 meeting, which I have been asked by Mr. Weiner to attend, it may help the discussion to outline the kind of support from the Commodities Division which this Department would find most useful.

We need whatever help we can get to enable our economic missions to make more intelligent and informed assessments of a country's balance of payments prospects. The time horizon determines the degree of precision that is required and possible, and varies to some extent from country to country. The most common cases are three to five year forecasts, in which particular stress is placed on the current and first subsequent year. However, a truly long term view - say twenty years - of the prospects of particular commodities is also necessary to us; particularly the impact of technological trends - which might be minimal in a 5 year projection - should be assessed from time to time. Thus the creditworthiness of Venezuela will be vitally affected by the long term prospects of oil vis a vis other sources of energy; that of Brazil, Colombia and most of Central America by the prospects for synthetic coffee, etc. These long term assessments - which should not require frequent changes - would guide our attitude toward development policies in a much broader way than the more financially oriented short and medium term balance of payments analysis.

For the latter we would like to be able to count, at all times, on reasoned world price projections of the principal primary commodities in our countries' export and import trade. We also want to be able to obtain informed and reasoned statements on the quantities that particular countries will be able to export in all those cases in which this is largely determined by international agreements or by policies in the importing countries. Examples of the latter are cereal and meat exports from Uruguay and Argentina to the EEC and British policies determining meat imports and their distribution by source. The production prospects and potential in our countries, by and large, are probably best determined by the economic missions themselves; what would seem logical is that the Commodities Division continuously revise its short term price projections in the light of:

- (a) its own demand forecasts, and
- (b) the changing forecasts of world supplies that it obtains, inter alia, from the Bank's economic missions.

The criticism made by Seers and others that different Bank economic reports work with different price forecasts seems to us to be a motive for concern only if these results from lack of coordination inside the Bank. Under the scheme proposed here it would, on the contrary, be an essential feature that the information gathered in - say - March by three economic missions regarding probable harvest levels in three countries be brought to bear on the reports of three other missions in July. Thus the March missions could very well use different price projections from those of the July missions; if they are arrived at by the iterative process described above they would be more "consistent" than if both used the same prices in spite of the added knowledge on supplies.

The particular ways in which the Commodities Division should organize its work to be able to perform the functions described, are obviously a matter for the Economics Department to decide. It is, however, important that the process include a fairly ample and systematic written record of the reasoning underlying particular forecasts. For one thing, area economists frequently have to discuss their balance of payments forecasts in considerable detail with government officials and have to be able to draw on a thorough briefing for this purpose. Moreover, personnel assignments change from time to time and should interfere as little as possible with continuity of approach. In other words, it is not enough to get particular price forecasts communicated orally, however soundly based they may be.

Thus, we do not have too many specific suggestions for the type of documentation that should be prepared or for its timing. One alternative one might think of is an annual paper on each major commodity, in which the price forecasts are explicitly related to particular world demand and supply assumptions and for monthly addenda and revisions in the light of developments, including revised supply forecasts emerging from economic missions, trade policy developments, etc., reports on international commodity meetings, etc. The latter, incidentally, we find useful and think that they should be continued, but they are only part of the kind of permanent briefing that we would like to have. Whether the more occasional long term studies for major commodities that I referred to earlier could also be undertaken by your Division or whether they would have to be done elsewhere - inside or outside the Bank - would have to be considered by you; I think it is more important that they be done well than who is to do them.

I have referred above to area economic missions as sources of relevant information for the Bank's commodity work. A simple way to communicate this information might be for the appropriate persons in your Department to arrange for brief oral exchanges after missions. I would emphasize the oral aspect of the exchange, not only to minimize paper but to permit your people to probe for information which might not be included in hastily written notes by people who would be under great pressure to work on their mission reports.

Cleared with and cc: Mr. Weiner
cc: Messrs. Macne, Wright (o/r)

ELordau/tg

Mr. Benjamin B. King

January 19, 1968

Jochen Kraske

Commodities Work

I refer to your memorandum of January 15 asking for information related to the coverage and nature of the work of our Commodities Division. The following comments are related to the headings in the proposed agenda:

- Item 1 - We have required the help of the Commodities Division sporadically in the past. They have done work for us on sugar in the context of our economic reports on Taiwan and on silk, tuna fish and tungsten for our economic reports on Korea. We found the Commodities Division reasonably well informed and we have no suggestions for any changes or improvements in their work.
- Item 3 - We are confronted with plans to establish iron and steel and petrol-chemical industries in Korea and Taiwan. It would be of some help to our economic evaluation of these plans if we could have up-to-date information on these commodities by the time we will be writing the economic report on China, presumably March/April 1968.
- Item 4 - Information on iron and steel and petrol-chemical industries should include data on the general situation of supply and demand in the world market, possibly including some comments on the expected impact of the devaluation of the pound sterling on suppliers in the Far East. Studies may also take into account the expansion of substitutes. One aspect in evaluating petrol-chemical industries in relatively small countries will be to consider the possibilities for regional cooperation in this field; Commodities people may be in a position to furnish some information relevant to this aspect.
- Item 5 - No comments.

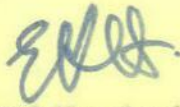
JKraske:rk

cc: Messrs. Jansen
Reif
Jang

Mr. J.D. Scott

January 18, 1968

E.K. Hawkins



Structuralism and Monetarism

Before leaving for India Mr. de Vries asked me to look at the article by Mr. Dirks on the above subject. Although I am not an expert on this aspect of economic thought, my reaction to the article was very favorable. It appears to be a good presentation of the two sides of this controversy and I have no substantive comments to make.

I do not know how far an article of this kind should include references, but I take it that the footnote on page 3 is intended to give at least the main sources of the controversy. If that is so, I think that it should also include the well known article by Dudley Seers in the Oxford Economic Papers for June 1962, entitled "A Theory of Inflation and Growth in Under-Developed Economies, based on the Experience of Latin America". I believe that Arthur Lewis once said that whenever he came upon a persuasive version of the structuralist argument, it usually turned out that it had been written by Dudley Seers!

EKHawkins/w

cc: Mr. Kamarek
Mr. de Vries

Mr. Alexander Stevenson

January 17, 1968

Benjamin B. King

BENJAMIN B. KING

Flow of Information

As I mentioned on the telephone, Bevan Waide has put on paper his feelings about the lack of information on what is going on. I'm sure he is not the only one.

In response to your suggestion I have already sent you a list of economists in this department to whom seminar notices and such flimsy pieces of paper should be sent directly.

The two additional suggestions I have to make are:

- (i) That all documents in this general economic circulation will be identified by a series number or in some other way, so that I can tell by a glance at my copy that further circulation is unnecessary.
- (ii) That a list of bulkier documents be prepared monthly and given the same circulation. In "documents" I would include yellow-cover drafts, commodity notes and anything else in similar shape, which might be of interest. Such a list might be useful to you, too.

BBKing:gg

cc. Messrs. Bhatia
Waide

ip file

Mr. Benjamin B. King

January 16, 1968

EBevan Waide

The Flow of Information about Bank Economic Work

Changing one's office from one Division to another always results in a disruption in the flow of materials describing what is going on within and without the Bank. While getting reestablished I thought I would take the opportunity to mention a flow of information that has never been more than a trickle, namely, the flow of information about the economic work being done in other Departments of the Bank.

As a country economist, in my experience one gets to know about other work in the Bank only on a random basis - luncheons with colleagues, corridor conversations, meetings of economic committees and subcommittees, etc., the latter for most country economists being few and far between. Occasionally, as for example in the case of the study of rate covenants being undertaken by the Projects Department, we learn about it through Senior Staff Meeting minutes; on other occasions missions in the field are a good source of information, and I first heard about an import substitution study on Malaysia from somebody in Kuala Lumpur. On rare occasions, reports of interest are circulated to all economists, but in the last year through this channel I can recall receiving only the Dudley Seers' note on Bank economic reports, and Mr. DeVries' study on exports of developing countries. Reports that reach the Board are listed in our "Blue copy" circulation, somewhat unreliably, but obviously not all reports reach the Board.

Would it be possible to devise a systematic way through which economists could learn what their colleagues are doing so as to help them avoid the pitfalls of a narrow country specialization within an expanding IBRD? I am not arguing for a wider circulation of reports because the volume of paper flows is already great enough; what would be useful, however, is a brief periodic summary that would let each country economist know who is doing what, so that the experience accumulated by staff members, on specialized topics as well as on various countries, can be more readily shared whenever the need arises.


EBevanWaide:ofb

cc: Messrs. Goodman, Stevenson, Votaw, McDiarmid

Division Heads

Benjamin B. King

Commodities Work

BENJAMIN B. KING

January 15, 1968

I would be grateful if you would let me have a short note in reaction to the attached memorandum from Mr. Kalmanoff. Would you please write it as far as possible under the same headings as the proposed agenda (obviously nothing is required on item 2)). I would like to have the note, which can be amplified verbally, by January 24th.

Attach.


Distribution:

Messrs. Street
Brakel
Gibbs
Kraske
Melmoth
Votaw

BBKing:gg

Mr. W. Wapenhans

January 12, 1968

J.B. Hendry 

Agricultural Division Research Interests.

1. There are two broad types of problem in which the Agricultural Division has a continuing interest, and on which the Economics Department might provide some assistance. These would include (a) better understanding of significant factors which affect agricultural development, and the manner in which Bank agricultural projects are likely to promote such development, and (b) adaptations of the most advanced analytical techniques to the selection and evaluation of projects. The first of these falls most clearly under the heading of "research" in that it involves new understanding of the developmental process, whereas the second constitutes technical advisory and service activities rather than research as such. A brief word on each of the types of problem may serve to indicate the kinds of activities which might be involved.
2. One aspect of developmental research could be concerned with the supply and demand conditions likely to prevail for agricultural commodities. These represent, in some sense, the limits within which developmental efforts will take place, and are thus of significance. The supply and demand for agricultural inputs constitute another part of the setting for future development. An alternative approach, and one more directly related to the Division's activities, would start by focusing on the projects themselves, analyzing them from the twin standpoints of their relative impact on promoting development and the reliability of the original appraisal estimates (e.g., in matters such as size and phasing of costs and benefits, implementation time, organizational difficulties). In other words, although the Division must continue to make recommendations affecting agricultural development (i.e., in its project appraisals), a body of experience on past projects is beginning to accumulate which permits some testing of the reliability and value of the Division's methodology and general performance in making such recommendations. A critical review of the effectiveness of past operations would appear indispensable to any real effort to improve future performance, and research activities which facilitate a feedback of actual experience are thus extremely important and should be initiated at an early date.
3. The Division has already begun to test the suitability of certain new analytical techniques in its work. Examples of this include a current effort to incorporate a risk analysis based on estimates of probabilities in the appraisal of a land settlement and credit project in Papua, the development of computer programs relating to livestock growth, and programs for agricultural credit project cash flows at the level of central banks and commercial banks. There will thus be continuing need to test and refine the models already being developed, as well as to draw up new

models which may be applicable to other types of agricultural project, and the assistance of the Economics Department will be required in all such activities. Economics Department staff may also be able to suggest additional techniques which may be relevant to the types of project work being undertaken by the Division.

4. Looking ahead to the next six-month period, three specific activities fall within the two types of problem outlined above.

- (a) Assistance from the Economics Department to complete the development of a risk analysis model for the Tanzania Livestock project, for a risk analysis model of the Papua land settlement and credit project, for the agricultural project cash flow model, and for a linear program model of the El Salvador irrigation project. This would constitute largely a continuation of assistance by the Economics Department.
- (b) In order to obtain a better understanding of the economic impact of agricultural projects, it will be necessary to analyze the past experience and also prepare for the future collection of data which will make continuing study easier to carry out and more effective in producing meaningful results. This requires careful preparation of a research design to accomplish it, and completing the research design alone could take some or all of the ensuing six months. The need to understand better how projects are soundly executed and operated is set forth in Operational Memorandum 6.06, particularly in paras 6-8 and 12.
- (c) The Division supports the interest expressed by Area Departments in more detailed analysis of commodity projections, and would benefit from efforts expended in this area. Assuming that some work will proceed on commodity projections, but depending on which crops and countries are involved, the Division would have a particular interest in projections of internal demand and supply of commodities in countries where important agricultural projects are being considered. As things are at present, appraisal missions generally are unable to obtain reliable projections for internal supply and demand for agricultural produce.

JBHendry:asl

cc: Mr. Evans

Mr. Takahashi

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ECONOMIC COMMITTEE

EC/M/68 - 1

January 11, 1968

Minutes of ^{1/}Meeting on Future Research Projects for the Economics
Department

ADDENDUM

1. It has been agreed by Messrs. Kamarck, Lipkowitz and Sadove that the Projects Department should participate in the proposed regular meetings of Area and Economics Department representatives.
2. As well, it was understood that the suggestion, that greater emphasis should be given to commodity studies by the Economics Department, was also of operational significance to the Projects Department.

C. F. Owen
Secretary

Secretary's Department

-
- 1/ The Economic Committee Meeting was held on December 19, 1967.
See EC/M/67-34, dated December 29, 1967.

D I S T R I B U T I O N

Committee:

The Economic Adviser to the President, Chairman
Director, Economics Department
Director, Special Economic Studies
Director, EDI
Special Adviser to the President (Mr. Rist)
Senior Adviser, Economics Department
Economic Advisers, Area and
Projects Departments

Copies For Information:

President
President's Council
Directors, Area Departments
Special Adviser to the President (Mr. Schmidt)
Secretary
Treasurer
Director, Office of Information
Director, European Office
Secretary, Loan Committee
Executive Vice President (IFC)

Econ. Syst. Act.

OFFICE MEMORANDUM

January 12, 1968

To: Economic Advisers, Area Departments and Projects Department
From: George Kalmanoff *G. K.*
Subject: Commodities Work

Pursuant to the discussion of the research activities of the Economics Department at the Economic Committee on December 19, 1967, I should like to meet with you to discuss the commodities work of the Department. I suggest that we meet on January 31, 1968 at 9:30 A.M. in Room 866. Please let me know if this time is inconvenient for attendance by you or by a representative you may wish to designate. Mr. Antonio J. Macone, Chief of the Export Projections and Trade Division, will attend from the Economics Department besides myself.

The general objective of the meeting will be to have a full and frank exchange concerning the commodities work so as to effect improvements in the coverage and nature of the work in the light of the needs of your Departments.

In order to make the discussion as fruitful as possible, a suggested agenda is given below. If you have any suggestions for modifications or additions to the agenda, please let me have them in advance of our meeting.

The agenda would be as follows:

- 1) Indications by the Area Departments and Projects Department of ways in which their needs for commodity analyses have failed to be met, as regards coverage of particular commodities as well as content of the analyses they have received.
- 2) Statement by Mr. Macone of work over the past year and of the prospective 1968 work program of his division.
- 3) Priority requirements of the Area Departments and Projects Department with respect to commodities to be covered and timing.
- 4) The types of information and analyses required for the commodities covered.
- 5) Suggestions for changes in types of documentation prepared on commodities (e.g. basic reports, reports of international commodity meetings, notes on recent developments, commodity reference sheets).

cc: Messrs. Kamarck, Stevenson, Macone, Bhatia

GKalmanoff:vlb

Mr. L. Goreux (through R.E. Hawkins)

January 8, 1968

H.G. Carter

Buffer Stock Programming Problem

I have now given the buffer stock problem a considerable amount of thought and have formulated the problems you set forth. I have also, however, come to the conclusion that it would not be practical to attempt to solve them with the computer services currently available to us.

The model of the buffer stock operation in its simplest form assumes a fixed supply that is perfectly foreseeable and simplifies by leaving out commercial stocks. Three possible criteria for this operation are 1) maximize earnings of the buffer stock, 2) maximize exports of the supplying countries less the cost of inventory in the buffer, and 3) the same as 1) but using various different discount rates for future time periods.

Let us assume the following notation:

- D_t = consumption in the t th period
- S_t = supply in the t th period
- B_t = net purchases of the buffer stock in the t th period
- H_t = total cumulative holdings of the buffer stock at time t
- P_t = price of commodity at time t
- C_t = cost of purchases by buffer stock in time period t
- r = annual carrying cost (fractional) of buffer stock
- i = discount rate
- V_t = total value of the buffer stock at time t
- R = maximum amount of funds which can be spent by the buffer

Equations:

- 1) $B_t = a + \sum_{j=0}^k b_j - jP_t$
- 2) $B_t = S_t - D_t$
- 3) $C_t = B_t P_t$
- 4) $H_t = H_{t-1} + B_t$
- 5) $H_t \geq 0$
- 6) $V_t = V_{t-1} + C_t$
- 7) $V_t \leq R$

This set of equations creates a programming matrix that is 6t variables and 7t constraints. The criterion functions for the three different objectives are:

- a) $\text{Min} \left(\sum C_t + r \sum H_t \right)$
- b) $\text{Max} \left(\sum P_t S_t - r \sum H_t \right)$
- c) $\text{Min} \left(\sum e^{-it} C_t + r \sum e^{-it} H_t \right)$

All three problems are non-linear as a result of equation 3), and the one indicated by 8b) is also non-linear as a result of the P_1S_1 term. All the non-linearities fall into the general category of quadratic programming, and thus pose a computational problem.

This computer problem can be approached from two directions; we can use a non-linear (quadratic) programming package or we can make linear approximations to the product terms and use a linear programming package. The problem with the non-linear packages is that they are always specific to the particular problem at hand and thus should we be able to obtain one that incorporated a suitable optimizing algorithm, it would still require a considerable amount of sophisticated programming and debugging to make it fit our problem. The problem with making linear approximations^{1/} is that we would have to use iterative methods (i.e. a sequence of computer runs) and the speed of solution is a direct function of our turn-around time. Since our current turnaround time is at best one day this would mean a probable solution time for each problem of 2-3 weeks. Any variations we wished to make on a particular problem would be likely to occupy a week each. When we get our new computer next summer it may be possible to get as many as four runs a day and thus our problem could be tackled more easily, but as Honeywell has not agreed to supply a separable programming algorithm with their L.P. Package it will still be cumbersome.

The buffer stock model is a good example of the kind of problem which is not naturally suited to conventional computer set-ups. This is largely due to the necessity of approaching a solution in iterative fashion; such a procedure is not compatible with the inherent turnaround lag in conventional systems. As I feel this type of problem is one which the Bank will meet with increasing frequency in the future it may well be wise for us to consider seriously the possibility of other computer methods, especially remote access time sharing, for solving the buffer stock problem. In summary I do not think it would be at all wise for us to proceed any further with the problem within the current data processing framework.

1/ There does exist a transformation that would allow us to use the separable programming algorithm.

NGCarter:tc

cc. Messrs: Tinsman, Fraser, Krishnaswamy, and Kundu

Form No. 75
(2-60)

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL FINANCIAL
CORPORATION

INTERNATIONAL DEVELOPMENT
ASSOCIATION

ROUTING SLIP

Date

1/6/68

NAME

ROOM NO.

Mr. Karmach

Mr. Bhatia

one change on country

E Reports

To Handle

Appropriate Disposition

Approval

Comment

Full Report

Information

Initial

Note and File

Note and Return

Prepare Reply

Per Our Conversation

Recommendation

Signature

Send On

REMARKS

① you may like to see this before it is issued.

② Do you wish copies of this to be distributed in connection with your address to the members of O. P. on Jan 7

From

S. Bhatia

ROUTING SLIP

Date
December 27, 1968

NAME

ROOM NO.

~~Mr. Kamarek~~

Mr. Bhatia

File

and

To Handle

Note and File

Appropriate Disposition

Note and Return

Approval

Prepare Reply

Comment

Per Our Conversation

Full Report

Recommendation

Information

Signature

Initial

Send On

REMARKS

1. I am enclosing, for your consideration and approval, a draft chart describing the composition and major activities of the Department.
2. If you agree, I am thinking of distributing a copy of it along with our Status of Studies - 1st Quarter, 1969, in order that the structure of the Department and the Divisions mentioned in the Status of Studies may be more readily understood.

From

Samir K. Bhatia
Samir K. Bhatia

INTERNATIONAL BANK FOR
RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL DEVELOPMENT
ASSOCIATION

INTERNATIONAL FINANCE
CORPORATION

Country Economic Reports [add]

Selected Bank country
economic reports, on countries,
edited to remove highly confidential data,
will be made ~~available~~ and
made generally available.

So far a report on New Zealand,
published by Dr. W. Z. Hirst, and
a report on a draft plan
for Mauritania have been
released.

Mr. Bhatia:

Please note that "Division" will be added after the Division names in the final with the exception of Comparative Data. Also under publications, the heading 'Others' will be on the same level as the other headings and the references will be underneath similar to the last reorganizational chart.

Rosemary.

COMPOSITION AND MAJOR ACTIVITIES OF ECONOMICS DEPARTMENT

Andrew M. Kamarck, Director

Alexander Stevenson, Deputy Director

Fiscal Policies of Developing Countries

S. Please, Chief

Makes studies of specific development finance problems of less developed countries and assists in the analysis of such problems for country economic reports.

Quantitative Techniques and Analysis

E. K. Hawkins, Chief

Responsible for the exploration of quantitative techniques and their application to country economic work.

Comparative Data

E. Levy, *chief*

Carries out data study and prepares comparative statistics on economic growth and development in Bank member countries for general use within the Bank and for publications, such as the Annual Report and the World Bank Atlas.

Sector and Projects Studies

H. G. van der Tak, Chief

Works on projects and sector research problems so as to provide a better basis for judgements on appropriate policies and investment priorities in the lending and other activities of the Bank.

Economics of Industrialization

G. Kalmanoff, Chief

Responsible for questions related to the study of industrialization and industrial policy in developing countries.

Economics of Urbanization

R. M. Westebbe, Chief

Works on the problems of urbanization in developing countries.

Statistical Services

A. E. Tiemann, Chief

This is in great part a service organization to provide all Departments in the Bank with the statistical compilations, analyses and advice they require. Collects and compiles basic data on external debt for World Bank Group and 3 Regional Development Banks. Maintains selected information on commodity prices, on foreign bonds and equities, and on interest rates in selected capital markets.

Population Studies

E.K. Hawkins, Acting Chief

Concerned with population studies of interest to the Bank, with special reference to country economic work, and the analysis + appraisal of population control programmes.

and on International & Foreign Bond and equity issues in primary capital markets

Trade Policies and Export Projections

A. J. Macone, Chief

Studies the developments in the supply, demand, prices and trade of major primary commodities and their impact on the export earnings of developing countries.

PUBLICATIONS

Economics Department Working Papers

Papers issued in this series contain no confidential material of any sort nor do they commit the Bank in matters of policy or opinion. These are generally the work available in the Department which merits wider distribution than that given to office memoranda. They are issued in mimeographed form and are known as Economics Department Working Papers. Up till now the Department has issued 34 papers of this nature. Copies of these can be obtained through the Office of the Director, Economics Department.

Departmental Reports

These appear under EC numbers and are distributed to member governments through the Executive Directors. They are unclassified reports covering commodities, debt tables and general studies on economic and financial subjects. They are not for publication but contain information which may be disclosed. Such of these papers as are still in print may be obtained from the Information Department on request. A complete list of these reports can be obtained through the Office of the Director, Economics Department.

World Bank Staff Occasional Papers

These are generally reports of the same category as Departmental Reports which it was decided in 1966 should be given wider circulation by offering them for sale. In addition there is a large free distribution list for developing countries. The papers are analytical in content, and in principle they should either contribute to the state of existing knowledge in economic development or to the better understanding of existing knowledge. So far, 6 have been published. One of these on Sector and Project Planning in Transport, is from the Projects Department: so the series is not confined only to Economics Department studies.

Country Economic Studies

A series akin to that of Occasional Papers is under way. They will be produced by country teams, usually under the leadership of an Area Department, and edited in the Economics Department. One report, a draft plan for Mauritania, has been published.

Others

Reference Handbook on
Commodity Prices (yearly)

World Tables
(yearly)

World Bank Atlas
(yearly)

Debt Tables
(yearly)

Historical Debt Tables
(yearly)

Foreign Issues in Various Capital Markets
(semi-annually)

Economics Department: Status of Studies

Outlines the status of research work undertaken by the Department. This paper is issued quarterly by the Office of the Director to the staff members of the Bank and to 3 Regional Development Banks and to international and research institutions both in this country and abroad, for their information.

Office of the Director
Economics Department

Mr. Bernard Bell

January 3, 1968

Warren C. Baum

Possible Transport Research Subjects for Economics Department

1. We have given considerable thought to studies which might usefully be done for us by the Economics Department. A number of possible lines of inquiry were suggested in the Division. From these we have produced a smaller list that could form an appropriate basis for discussion with the Economics Department.

2. I appreciate that in suggesting such a list we should, ideally, have some indication as to their staff availability and competence to handle the topics. We understand, however, that at this stage they would prefer a 'shopping list' for consideration.

3. For the sake of brevity, I list our suggestions below in the broadest of terms. At a joint meeting with the Economics Department we could explain the thinking, issues and significance of the topics to aid in the final selection process. The items are listed by category rather than in any order of priority.

A. Roads and Road Transport

1. Economic aspects of controlling entry into the road transport industry and regulating its operations. Terms of reference for this study are already available. Some consideration has already been given as to whether this can or should be undertaken within the Bank.
2. Economic and Technical Analysis of Road Maintenance Projects. Such a study could include a number of important elements for us, e.g. the identification and measurement of maintenance benefits; the possible 'trade-offs' between different initial design standards and maintenance; the effect of reconstruction timing on current maintenance expenditures and operations; the relationship of maintenance and stage construction; the interplay of capital-v-labor techniques both in construction and current maintenance. Although the focus would be primarily on maintenance, many of the issues have implications for construction as well.

B. Ports

UNCTAD (Geneva) has underway a substantial program of work into the economics of ports and shipping. We should establish a close liaison with them on this. We, in the Division, have a fruitful exercise in progress on sensitivity analysis. The Economics Department has already done some

useful 'pieces' for us (e.g. optimum number of berths). It has some work on optimum depths in progress. We think that these, together with some other issues, could be usefully brought together under a title such as

'Studies in the evaluation of port investments;
theory and practice'

A number of critical issues are involved, e.g. the distribution of benefits between foreign shipping lines and the domestic economy. We think the Economics Department should do some work on ports as a matter of high priority, and would like a full discussion with them to identify the specific areas in which they could most usefully supplement the work being done by UNCTAD.

C. Railways

1. A uniform, practical methodology for considering branch line closures. This could again be a meeting ground of theory and practice. What is done in practice in a number of countries? Is the Rechel approach, developed at the Bank's initiative in Spain, of generalized value for other borrowers? Are the issues and answers different in developing countries? M. Hutter has provided some comments on an outline methodology which we had prepared.
2. A uniform methodology, illustrated by appropriate case studies, to compare the dieselization-v-electrification of tractive power. This is a question we are likely to face increasingly in railway projects. The approaches adopted to answer the question seem to vary considerably. The issues take us outside the transport sector, e.g. capacity and marginal costs in electricity generation and distribution. They also involve financial-v-economic criteria, etc. The Division would like this to be a joint project with the Economics Department.

D. Aviation

We have questions concerning the economic evaluation of airport and/or aviation projects. Difficult problems of pricing policies may be involved. However, before we go much further I recommend that we get in touch with ICAO (in Montreal) to see what they have done and are doing.

E. Other - General

1. Urban Transportation in Developing Countries. The Economics Department have already suggested a reconnaissance

January 3, 1968

type of paper into this (memo of H. van der Tak to B. Bell 12/8/67). We think a short investigation is worthwhile, but of somewhat lower priority for us in the Division than the other items listed here.

2. Systems Analysis and Transport Planning Models. The issues involved here include their role, usefulness, degree of complexity; the significance of transport costs in total distribution costs; elasticity of transport demand, etc. We agree in principle with the topic. We have some reservations, however, on a suggestion by the Economics Department that this might be a joint Bank-Stanford University (California) project. We would like some clarification and discussion.

During our considerations the possibility of a 'manual on transport project evaluation techniques' arose. We will pursue this with the EDI.

V. W. H. 113 .
VWHogg:gh
Bank

cc: Mr. Chadenet
Mr. Sadove

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ECONOMIC COMMITTEE

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EC/M/67 - 34

December 29, 1967

Minutes of Meeting on Future Research Projects for the Economics Department

1. The Economic Committee met on December 19, 1967^{1/} to discuss suggestions for additional future research projects that might be undertaken by the Economics Department. As a background document the Committee had before it the "Status of Major Studies", distributed by the Economics Department on October 17, 1967.

Existing Situation

2. Mr. Kamarck said that there was a good flow of research problems tied in with project and sector work and the arrangements for agreeing on what was of top priority with the Projects Department seemed to be working well. He thought the Economics Department ought to be able to be more helpful on country economics. The meeting had been called to permit a discussion and exchange of ideas. Mr. Kamarck requested suggestions from the Committee members.

Recommendations

3. There was agreement on the following:

- (a) Commodity Studies: More emphasis and more staff was needed on this work because of its operational significance to the Area Departments. Also, a basic level of work would have to be continuously maintained to meet sudden and urgent operational needs.

1/ Members of the Economic Committee present: Messrs. Kamarck (Deputy Chairman), Avramovic, Stevenson, Adler, de Vries, King, Lipkowitz, McDiarmid, Sadove, Thompson, Weiner, Wright.
Also present: Messrs. Collier, Hogg, Leon, Takahashi, van der Mel

D I S T R I B U T I O N

Committee:

The Economic Adviser to the President, Chairman
Director, Economics Department
Director, Special Economic Studies
Director, EDI
Special Adviser to the President (Mr. Rist)
Senior Adviser, Economics Department
Economic Advisers, Area and
Projects Departments

Copies For Information:

President
President's Council
Directors, Area Departments
Special Adviser to the President (Mr. Schmidt)
Secretary
Treasurer
Director, Office of Information
Director, European Office
Secretary, Loan Committee
Executive Vice President (IFC)

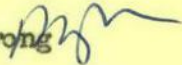
- (b) Regular Meetings: The heads of the four main groups in the Economics Department (Country, International, Sector and Project, and General) should meet regularly with Area Department representatives at about six months' intervals. This regular exchange of views should help in identifying and agreeing as to the priority needs of the Area Departments for work on country economics.

C. F. Owen
Secretary

Secretary's Department

Mr. S. Lipkowitz

December 27, 1967

W. J. Armstrong 

Economic Studies

This is to confirm our recent conversation that the Public Utilities Division has no suggestions for new studies by the Economic Department. We would, however, like to have some results on the studies underway: e.g. on Pakistan Load Control and on Water.

WJArmstrong:ejw

cc: Mr. Knox

Mr. J. K. Schmedtje

December 22, 1967

H. H. Thias

Proposals for Work in 1968/69

I. Research

(a) Economies of Scale and Factor Substitution in Education

A study of this kind would throw some light on the "production functions" in the educational system. There has hardly been any work done on the question of how the composition of inputs (teachers with different qualifications, educational facilities, teaching equipment, etc.) changes with the size of educational establishments, and how their performance (in terms of cost per pupil/year or cost per graduate) will be affected. The same question can be posed at the level of the class (effects of changes in pupil-teacher ratios, etc.). An aspect that deserves closer examination is the possible substitution of "traditional" inputs (like teachers) by "new media" (such as school television).

(b) A Framework for Evaluating the Performance of Educational Projects

This is not a topic of immediate actuality, since up to now only one project (Tunisia) is completed, and a second one (Tanzania) close to completion. However, in two years or so a number of other projects will have been executed, and it may become interesting to see whether these projects are fulfilling the initial expectations, and, if not, for what reasons. Such an evaluation might conceivably lead to a reassessment of the Bank's criteria and conditions for financing educational projects.

(c) A Simplified Procedure for Calculating the Costs of Educational Projects

From the very limited field experience I had, it seems that the process of calculating (or, at a later stage, checking) cost figures for educational projects is rather cumbersome, requiring a great amount of fact-finding work in the country. It might be worthwhile to develop a framework for costing which shows the physical unit requirements for educational facilities of different kinds and sizes, for different types of structures, different soil and climatic conditions, etc. One would thus arrive at input figures per pupil-place (e.g., tons of cement, steel, amount of bricks, numbers of hours of skilled and unskilled labor, etc.). Another important aspect which should already be introduced at this early stage are the prospective repair and maintenance costs. Such a list, in conjunction with the respective cost figures (possibly already collected as a routine matter in some part of the Bank), might speed up cost calculations considerably. However, this is obviously work that would have to be undertaken jointly with an architect.

(d) The Role of Foreign Manpower in Developing Economies

In many member countries, vital industrial and services activities are still dependent on the employment of expatriate high- and medium-level manpower. So far there does not exist, to the best of my knowledge, an overall or even partial survey of the numbers of persons involved, their origin, qualifications, the duration and conditions of their contracts, their payments relative to the local salary level, etc. It seems that a systematic study of one or several of these aspects would be of interest to the Bank, particularly in developing policy guidelines for financing technical assistance activities normally (but not necessarily always) related to a specific Bank-supported project.

(e) The Economic Aspects of Investment in Health

This is a sector which so far has not been included into the Bank's field of action. However, after the Bank has moved into the financing of one type of human resources development (education), consideration of an equally (in developing countries possibly even more) important type (health) would seem perfectly logical. If such an increase in the scope of the Bank's activities were likely to occur during, say, the next two or three years, it would be justifiable to prepare for this event by doing the theoretical groundwork and elementary fact-finding.

II. Observation

Apart from these subjects there are a number of topics on which this Division might keep an eye, as it were, in order to be able to make an articulate contribution whenever called upon.

- (a) The desalinization of water (profitability in relation to size of projects and water use).
- (b) The economic implications of alternative ways of protein production.
- (c) The diffusion of technological knowledge and the selection of labor-intensive production processes. (The advance of best-practice techniques within a sector or country or their transfer from one country to another is a process which is still far from being satisfactorily analyzed. Most developing countries face the problem of how to absorb their surplus agricultural labor - not to mention their natural population increase. Yet, the development of new industries often places an undue emphasis on the most advanced (and hence labor-saving) techniques. It would be a challenging task for engineers and industrial planners to devise and introduce to a greater extent technologies which make use of idle resources while being economical and maintaining an acceptable quality of output).

- (d) The role of local self-help in the economic growth process of developing countries.
- (e) A framework for assessing a country's "degree of development" (it is generally recognized that per capita income alone is a rather poor criterion of a country's relative position as far as its economic performance and development potentials are concerned. A battery of easily obtainable indicators which cover a broader range of social and economic activities would undoubtedly be of help in securing an equitable treatment of member countries, e.g., with regard to loan conditions).

III. Training

Since I do not know to which extent the field of education and manpower planning is treated in the regular program of the EDI, my proposals are rather tentative. If there appears to exist a sufficiently strong demand, it might be considered either to give this topic a somewhat stronger emphasis in the normal EDI courses, or to organize a special training session for educational administrators in member countries.

cc: Mr. H. G. van der Tak

HHT:jlh

Mr. Warren C. Baum

December 21, 1967

V. W. Hogg

Possible Transport Research Subjects for Economics Department

1. Last month, Mr. Geolot asked the section chiefs to give some thought to studies which might usefully be done for us by the Economics Department. In attempting to coordinate this activity within the Division a number of possible lines of inquiry have been suggested. Since no orders of priority exist, and some of the topics are strongly felt but vaguely described, a discussion to sift the issues into a smaller list could be an appropriate subject for discussion at the next section chiefs meeting.

2. I appreciate that in suggesting a list to the Economics Department we should, ideally, have some indication as to their staff availability and competence to handle the topics. In discussion with me Mr. van der Tak has indicated he would like a reasonably long 'shopping list' to consider.

3. For the sake of brevity, I list below in the broadest of terms most of the topics suggested. At a joint meeting, the appropriate section chief and I could explain the thinking, issues and significance of the topics to aid in the selection process. At this stage this may be better than attempting to produce a more extended memorandum outlining each in some detail. Such a discussion may help us also to decide whether some studies might not be done outside the Economics Department (e.g. by consultants or other agencies), the possible time involved, etc.

4. The topics mentioned are linked in groups:-

A. Roads and Road Transport Sector

1. Economic aspects of controlling entry into the road transport industry and regulating its operations. Terms of reference for this are already available.
2. Economic justification of road maintenance projects. How 'sophisticated' should we be?
3. A planned 'before' and 'after' study. That is select a project in advance with the deliberate intention of re-examining the impact at some specified period in the future.
4. A thorough economic analysis of capital-v-labor intensive construction methods.
5. Maximum axle-loads in relation to total transportation costs.
6. The role of non-quantifiable benefits in highway appraisals, with particular reference to Africa.

7. A comparative analysis of actual highway user charging methods and unit levels. This would supplement the recent study on road pricing by seeing what exactly takes place in practice.

B. Ports

1. A re-evaluation of the techniques of evaluation. This could include synthesizing into one document a number of issues (some of which have been looked at in whole or part), e.g. optimum number of berths, depths, distribution of benefits, etc. 'Studies in the evaluation of port investments: theory and practice' - as a title.
2. An analysis of the economics of port pricing methods, their relation to cost structures and port utilization. A survey of the economic literature shows this is completely neglected, unlike for railways.
3. The role of computers in port operations in developing countries.
4. The impact of air freighting (incl. containers) on port needs and operations.

C. Railways

1. A uniform, practical methodology for considering branch line closings. A survey of what is done in practice? How generalized is the Rachel approach to Spain? Are the issues and answers different in developing countries?
2. A uniform methodology, perhaps illustrated by an appropriate case study, of comparing dieselization-v-electrification of tractive power.
3. The manner and methods by which subsidies to railways are and should be handled in railway accounts - guidelines to borrowers.

D. Aviation

1. Economic criteria for the evaluation of air port and/or aviation projects. An outline for the possible content airport feasibility studies has been prepared in the Division.
2. Pricing policies for airport services - theory and practice.
3. New types of flight equipment and their role in developing countries.

E. General Other

1. A manual on project evaluation techniques specifically related to practical examples in transport.
2. Urban transportation in Developing Countries - a reconnaissance type of paper into the problems (vide H. van der Tak to B. Bell, 8 Dec. memo).
3. Systems Analysis and Transport Planning Models - their role, usefulness, degree of complexity, etc. Attached is a memo to me from G.J. Roth offering some further observations on the suggestion already put forward by Economics Department (de Weille).
4. What factors influence the consumer's choice of transport modes, i.e. how significant are transport costs and service costs in total distribution costs? Why does not apparent low cost mode get used to extent expected?
5. Is there any evidence as to the elasticity of demand for transport? Are transport cost reductions/increases passed on to users and with what effect?

5. Clearly this list is beyond the joint resources of the Division and the Economics Department. Some are more urgent than others. Some are of greater substance than others. Some could form the basis of major reports, while others could be internal 'think' papers not appropriate for publication. Some could be sub-contracted outside the Bank and some done entirely by the Economics Department, perhaps on a joint basis by different Divisions in that department.

VMlogg:nep
Bank

cc: Mr. Carmichael
Mr. Hardy
Sir Gordon MacKay
Mr. Engelmann
Mr. van Helden

Mr. L.J.C. Evans

December 18, 1967

J.B. Hendry *JBH*

Research Suggestions

1. On two occasions within the past month I have had talks with members of the Economics Department on research suggestions relating to agricultural projects, and Mr. Wapenhans convened a meeting to discuss this topic during your most recent absence. The Economic Section has also devoted one section meeting to the topic. A meeting of the Economic Committee has been scheduled for December 19th to discuss research activities by the Economics Department, and you requested a statement be prepared outlining useful suggestions which have been made in the Division. These could be forwarded to the Economic Advisors who would represent the Projects Department at the December 19th meeting, to be used by them in the discussion of future research as might be appropriate.

2. The suggestions for new directions which have come from members of the Economics Section fall roughly into four main categories, summarized below without particular implication of order of importance:

- (a) Research designed to produce standard programs to be used for different types of agricultural projects, the objective being to enable data collected by appraisal missions to be analyzed readily and quickly by computer -- Examples of this would be a series of linear programs for different types of projects, or programs designed to analyze the potential production or net benefits from alternative cropping patterns.
- (b) Research designed to determine the empirical basis for key assumptions being made in project appraisals -- Examples of this would be empirical study of the validity of coefficients now being used to express the conversion of TDN into livestock production, or the actual farm gate prices of crops in a country of particular importance to the Division.
- (c) Research designed to determine new methodologies which might be useful in project evaluation -- An example already done is the preliminary work on risk analysis. Further modification of basic ideas is underway to make the analysis on a probability basis more easily applied in actual appraisals.

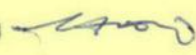
- (d) Research related to broad problems of supply and demand of agricultural commodities -- This research would be closely related to the kinds of problems which arise in considering means by which to stimulate diversification of production. If there is excess research capacity in the Economics Department at present, it should be possible to use some of this for the Bank study of diversification which is currently being carried out under the direction of Mr. Avramovic.

3. There appears to be agreement that the present study of agricultural taxation and agricultural credit is a valuable research effort, and should be encouraged to continue.

JBHendry:asl
cc: Mr. Takahashi

Mr. Jochen K. Schmedtje

December 7, 1967

H. David Davis 

Possible Research Projects for Inclusion in the
Longer Term Work Program of the Investment
Planning Division

Further to your request for suggestions in the above connection, apart from the already agreed research proposals in the field of tourism, the other possibility would arise from the article by G. A. Colley entitled "International Tourism Today" in the July 1967 issue of Lloyds Bank Review on which you have also asked me to comment. I therefore respond to your two requests in this one memorandum.

The Impact of Tourism on the Balance of Payments in Developing Countries

Since the article has five sections -- two on world-wide aggregates, one on developing countries and one each on Western Europe and the United Kingdom respectively -- I presume that elaboration along the lines continued therein with respect to developing countries would imply more analysis with respect to latter similar to that in the article with respect to Western Europe and the United Kingdom. Most of this is concerned with the impact of tourism on the balance of payments. The section on the United Kingdom is a better model since it presents figures over a number of years while those for Western Europe are for a single year, 1965.

A certain amount of work has been done on the impact of tourism on the balance of payments, particularly by IUOTO. But most of it includes only a partial list of countries -- probably because of the shortage of suitable data -- and usually the less-developed countries are not segregated from the others. Furthermore, the approach has usually been rather static, with analysis concerned only with one or two years in the recent past. Of greater interest might be derived from both a longer historical analysis and forward projections based on varying hypotheses.

As a first step, it might be worthwhile making a "statistical reconnaissance" in order to see what data is available and what can be done with it. The shape of further research work could then be considered.

It should be noted that some work along these lines was carried out a year or two ago in the International Finance Division, then under the supervision of Mr. Leon, with Mr. Rao and Mr. Pfefferman actually doing

Mr. J. K. Schmedtje

- 2 -

December 7, 1967

the work. It could be argued that further work on this should be up to that Division rather than the Investment Planning Division.

Other Projects

I do not feel qualified to suggest research projects outside the field of tourism.

Mr. Mohamed Shoaib

December 7, 1967

Alexander Stevenson

Grant Elements

In accordance with your request, I attach a table of "Grant Elements" for comparing different types of loans. I should like, at your convenience, to discuss this with you and show you other ~~additional~~ material which we have on the subject.

Att.

A handwritten signature in dark ink, appearing to be 'A. Stevenson', with a stylized flourish.

AStevenson:js

TABLE OF GRANT ELEMENTS FOR COMPARING LOANS WITH
RESPECT TO INTEREST RATES, GRACE PERIODS, MATURITIES
AND THE INCREASED COST DUE TO TYING

The attached table is intended to help in comparing alternative loans from the borrower's point of view. In view of the many economic factors which may influence a borrower in deciding to select one loan rather than another, it should be emphasized that the guidance which any such table can provide can only be very rough. Consequently, the table should be used with great caution.

Three factors which contribute toward making a loan more or less attractive as seen from the borrower's point of view are the grace period, the maturity, and the rate of interest. For various combinations of these three factors the tables give a comparative measure of attractiveness, in which the larger the positive percentage the more value the borrower receives as compared with a standard loan. An average IBRD loan of 20 years maturity, at 6% interest and having a three-year grace period was chosen as the standard in order to make the measure simple and permit comparison with a well-known type of loan.

The measure used in these tables is known as a "Grant Element". It is derived by subtracting from the face value of the loan the present value of the stream of service payments discounted at the 6% average used for IBRD loans, and expressing this difference as a percentage of the face value. When this measure is computed for two loans being compared, the loan showing the higher figure may be considered the more attractive with respect to the three factors, interest rate, grace period and maturity, taken together.

A fourth factor which affects the attractiveness of a loan to a borrower is the degree of freedom allowed the borrower to use the proceeds in the cheapest market. Where the borrower must spend the proceeds in the lending country and where this results in his having to pay more for a given amount of goods and services, the attractiveness of a given loan is reduced. If one has available an average percentage increase in costs resulting from the tying of purchases, one can make the appropriate adjustment in the grant element. This is done in the 5 columns at the righthand side of the table.

An obvious limitation of these tables is that to be meaningful, loans to be compared must have interest rates less than 6%, since all loans of 6% or more will show a zero or negative grant element regardless of grace period or maturity. For terms where negative values appear in the table, the effect of tying makes the loan less attractive than the standard 6% loan without tying.

To summarize, by taking the present value of a stream of service payments, adjusted where appropriate for the effect of tying purchases to the lending country, one obtains a measure of the increase in value to the borrower compared with an average IBRD loan. By obtaining such a measure for two loans and reducing each to a percentage of the respective face values, one obtains two figures reflecting the relative attractiveness of these two loans.

For example: an untied loan bearing interest at $3\frac{1}{2}\%$ with 40 years maturity and 5 years grace will have a grant element of 28.51%. A loan bearing interest at 1% with 5 years grace and 15 years maturity with an increase in cost of 20% due to tying will have a grant element of 23.74%. With respect to the four factors included in the comparison, therefore, the second loan will be less attractive than the first. A more detailed economic analysis should, of course, be undertaken if additional economic factors are to be given consideration.

Methodology

1. Disbursement and repayment of loans

- a. The loans were assumed fully disbursed by the lender within six months of contract date, although in practice disbursements may be extended over a longer period.
- b. Interest and principal payable semi-annually; principal repayable in equal instalments.
- c. Grace period is defined as the length of time from the date the loan is contracted to and including the first principal repayment date.

2. The discount rate used was 6% per annum; service payments (interest plus amortization) were discounted semi-annually.

3. Grant element = $\frac{100 \times \text{Face value of loan} - \text{Sum of discounted service payments}}{\text{Face value of loan}}$

Technically, if the lender disbursed the loan over a period longer than six months, the discounted value of these disbursements would have to be substituted in the formula for the face value of the loan.

4. The concept of tying was introduced by keeping the value of the equipment received by the borrower constant and increasing the number of dollars to be repaid by him by 5, 10, 15, 20 and 25%. Thus, if the value of the equipment is 100, and the increase in cost due to tying is 5%, the disbursement in the above formula would be 100, but service payments would be computed on a loan of 105.

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	0.	PERCENT INCREASE	REPAYMENT COST DUE	TERMS TO TYING	LEVEL (./.)	PRINCIPAL
		0.	5.00	10.00	15.00	20.00	25.00	
10	1	26.81	23.15	19.49	15.83	12.17	8.51	
	2	29.12	25.58	22.04	18.49	14.95	11.41	
	3	31.35	27.92	24.48	21.05	17.62	14.19	
	4	33.48	30.16	26.83	23.51	20.18	16.85	
	5	35.53	32.31	29.09	25.86	22.64	19.42	
	10	44.63	41.86	39.10	36.33	33.56	30.79	
15	1	35.76	32.55	29.34	26.12	22.91	19.70	
	2	37.88	34.78	31.67	28.56	25.46	22.35	
	3	39.92	36.91	33.91	30.90	27.90	24.90	
	4	41.87	38.96	36.06	33.15	30.24	27.34	
	5	43.74	40.93	38.12	35.30	32.49	29.68	
	10	52.03	49.63	47.23	44.84	42.44	40.04	
20	1	43.22	40.38	37.54	34.70	31.86	29.03	
	2	45.17	42.43	39.69	36.95	34.21	31.47	
	3	47.04	44.39	41.75	39.10	36.45	33.80	
	4	48.83	46.28	43.72	41.16	38.60	36.04	
	5	50.55	48.08	45.61	43.14	40.66	38.19	
	10	58.14	56.05	53.95	51.86	49.77	47.67	
25	1	49.47	46.95	44.42	41.89	39.37	36.84	
	2	51.27	48.84	46.40	43.97	41.53	39.09	
	3	53.00	50.65	48.30	45.95	43.60	41.25	
	4	54.65	52.38	50.12	47.85	45.58	43.32	
	5	56.23	54.05	51.86	49.67	47.48	45.29	
	10	63.21	61.37	59.53	57.69	55.85	54.01	
30	1	54.74	52.47	50.21	47.95	45.69	43.42	
	2	56.41	54.23	52.05	49.87	47.69	45.51	
	3	58.01	55.91	53.81	51.71	49.61	47.51	
	4	59.54	57.51	55.49	53.47	51.44	49.42	
	5	61.00	59.05	57.10	55.15	53.20	51.25	
	10	67.43	65.81	64.18	62.55	60.92	59.29	
40	1	63.00	61.15	59.30	57.45	55.60	53.75	
	2	64.45	62.67	60.90	59.12	57.34	55.56	
	3	65.84	64.13	62.42	60.71	59.01	57.30	
	4	67.16	65.52	63.88	62.24	60.60	58.95	
	5	68.43	66.85	65.27	63.69	62.12	60.54	
	10	73.97	72.67	71.37	70.07	68.77	67.47	
50	1	69.06	67.52	65.97	64.42	62.88	61.33	
	2	70.34	68.86	67.37	65.89	64.41	62.92	
	3	71.56	70.14	68.71	67.29	65.87	64.45	
	4	72.72	71.36	69.99	68.63	67.27	65.90	
	5	73.83	72.52	71.22	69.91	68.60	67.29	
	10	78.67	77.61	76.54	75.47	74.41	73.34	

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	0.75 PERCENT	REPAYMENT	TERMS	LEVEL	PRINCIPAL
		0.	INCREASE IN	COST DUE	TO TYING(./.)		
		0.	5.00	10.00	15.00	20.00	25.00
10							
	1	23.46	19.63	15.80	11.97	8.15	4.32
	2	25.48	21.76	18.03	14.31	10.58	6.85
	3	27.43	23.80	20.17	16.54	12.92	9.29
	4	29.30	25.76	22.23	18.69	15.16	11.62
	5	31.09	27.65	24.20	20.76	17.31	13.86
	10	39.05	36.01	32.96	29.91	26.86	23.82
15							
	1	31.29	27.85	24.42	20.98	17.55	14.11
	2	33.15	29.80	26.46	23.12	19.78	16.43
	3	34.93	31.67	28.42	25.17	21.91	18.66
	4	36.64	33.47	30.30	27.13	23.96	20.79
	5	38.27	35.19	32.10	29.01	25.93	22.84
	10	45.53	42.80	40.08	37.36	34.63	31.91
20							
	1	37.82	34.71	31.60	28.49	25.38	22.27
	2	39.53	36.50	33.48	30.45	27.43	24.41
	3	41.16	38.22	35.28	32.34	29.39	26.45
	4	42.73	39.87	37.00	34.14	31.28	28.41
	5	44.23	41.45	38.66	35.87	33.08	30.29
	10	50.87	48.41	45.96	43.50	41.05	38.59
25							
	1	43.29	40.45	37.62	34.78	31.95	29.11
	2	44.86	42.11	39.35	36.59	33.84	31.08
	3	46.37	43.69	41.01	38.33	35.65	32.97
	4	47.82	45.21	42.60	39.99	37.38	34.78
	5	49.21	46.67	44.13	41.59	39.05	36.51
	10	55.31	53.07	50.84	48.60	46.37	44.13
30							
	1	47.90	45.29	42.69	40.08	37.47	34.87
	2	49.36	46.83	44.29	41.76	39.23	36.70
	3	50.76	48.29	45.83	43.37	40.91	38.45
	4	52.10	49.70	47.30	44.91	42.51	40.12
	5	53.38	51.04	48.71	46.38	44.05	41.72
	10	59.01	56.96	54.91	52.86	50.81	48.76
40							
	1	55.13	52.88	50.64	48.39	46.15	43.91
	2	56.40	54.22	52.03	49.85	47.67	45.49
	3	57.61	55.49	53.37	51.25	49.13	47.01
	4	58.77	56.71	54.65	52.58	50.52	48.46
	5	59.88	57.87	55.86	53.86	51.85	49.85
	10	64.73	62.96	61.20	59.43	57.67	55.91
50							
	1	60.43	58.45	56.47	54.49	52.52	50.54
	2	61.55	59.62	57.70	55.78	53.86	51.93
	3	62.61	60.74	58.88	57.01	55.14	53.27
	4	63.63	61.81	59.99	58.18	56.36	54.54
	5	64.60	62.83	61.06	59.29	57.52	55.75
	10	68.84	67.28	65.72	64.16	62.61	61.05

GRANT ELEMENTS

		INTEREST RATE		1.00 PERCENT		REPAYMENT TERMS		LEVEL PRINCIPAL	
				INCREASE IN		COST DUE TO TYING(./.)			
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00		
10									
	1	22.34	18.46	14.57	10.69	6.81	2.92		
	2	24.27	20.48	16.70	12.91	9.12	5.34		
	3	26.12	22.43	18.74	15.04	11.35	7.65		
	4	27.90	24.30	20.69	17.09	13.48	9.88		
	5	29.61	26.09	22.57	19.05	15.53	12.01		
	10	37.19	34.05	30.91	27.77	24.63	21.49		
15									
	1	29.80	26.29	22.78	19.27	15.76	12.25		
	2	31.57	28.15	24.73	21.30	17.88	14.46		
	3	33.26	29.93	26.59	23.25	19.92	16.58		
	4	34.89	31.64	28.38	25.12	21.87	18.61		
	5	36.45	33.27	30.10	26.92	23.74	20.56		
	10	43.36	40.53	37.69	34.86	32.03	29.20		
20									
	1	36.02	32.82	29.62	26.42	23.22	20.02		
	2	37.64	34.53	31.41	28.29	25.17	22.05		
	3	39.20	36.16	33.12	30.08	27.04	24.00		
	4	40.70	37.73	34.77	31.80	28.83	25.87		
	5	42.13	39.23	36.34	33.45	30.55	27.66		
	10	48.45	45.87	43.29	40.72	38.14	35.56		
25									
	1	41.23	38.29	35.35	32.41	29.47	26.53		
	2	42.73	39.86	37.00	34.14	31.27	28.41		
	3	44.17	41.37	38.58	35.79	33.00	30.21		
	4	45.54	42.82	40.10	37.38	34.65	31.93		
	5	46.86	44.21	41.55	38.89	36.23	33.58		
	10	52.67	50.31	47.94	45.57	43.21	40.84		
30									
	1	45.61	42.90	40.18	37.46	34.74	32.02		
	2	47.01	44.36	41.71	39.06	36.41	33.76		
	3	48.34	45.76	43.17	40.59	38.01	35.42		
	4	49.61	47.10	44.58	42.06	39.54	37.02		
	5	50.83	48.38	45.92	43.46	41.00	38.54		
	10	56.20	54.01	51.82	49.62	47.43	45.24		
40									
	1	52.50	50.13	47.75	45.38	43.00	40.63		
	2	53.71	51.40	49.08	46.77	44.45	42.14		
	3	54.87	52.61	50.35	48.10	45.84	43.58		
	4	55.97	53.77	51.57	49.37	47.16	44.96		
	5	57.03	54.88	52.73	50.58	48.43	46.28		
	10	61.64	59.73	57.81	55.89	53.97	52.05		
50									
	1	57.55	55.43	53.31	51.18	49.06	46.94		
	2	58.62	56.55	54.48	52.41	50.34	48.27		
	3	59.63	57.61	55.60	53.58	51.56	49.54		
	4	60.60	58.63	56.66	54.69	52.72	50.75		
	5	61.53	59.60	57.68	55.76	53.83	51.91		
	10	65.56	63.84	62.12	60.39	58.67	56.95		

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 1.50 PERCENT INCREASE IN		REPAYMENT TERMS COST DUE TO TYING(./.)		LEVEL PRINCIPAL	
		0.	5.00	10.00	15.00	20.00	25.00
10							
	1	20.11	16.11	12.12	8.12	4.13	0.13
	2	21.84	17.94	14.03	10.12	6.21	2.30
	3	23.51	19.69	15.86	12.04	8.21	4.39
	4	25.11	21.37	17.62	13.88	10.13	6.39
	5	26.65	22.98	19.31	15.65	11.98	8.31
	10	33.47	30.15	26.82	23.50	20.17	16.84
15							
	1	26.82	23.16	19.50	15.84	12.18	8.53
	2	28.41	24.83	21.25	17.67	14.09	10.51
	3	29.94	26.43	22.93	19.43	15.93	12.42
	4	31.40	27.97	24.54	21.11	17.68	14.25
	5	32.81	29.45	26.09	22.73	19.37	16.01
	10	39.02	35.97	32.93	29.88	26.83	23.78
20							
	1	32.42	29.04	25.66	22.28	18.90	15.52
	2	33.88	30.57	27.27	23.96	20.66	17.35
	3	35.28	32.05	28.81	25.57	22.34	19.10
	4	36.63	33.46	30.29	27.12	23.95	20.78
	5	37.91	34.81	31.71	28.60	25.50	22.39
	10	43.60	40.78	37.96	35.14	32.32	29.50
25							
	1	37.10	33.96	30.81	27.67	24.52	21.38
	2	38.46	35.38	32.30	29.22	26.15	23.07
	3	39.75	36.74	33.72	30.71	27.70	24.69
	4	40.99	38.04	35.09	32.14	29.19	26.24
	5	42.18	39.29	36.39	33.50	30.61	27.72
	10	47.40	44.78	42.15	39.52	36.89	34.26
30							
	1	41.05	38.11	35.16	32.21	29.26	26.32
	2	42.31	39.42	36.54	33.65	30.77	27.88
	3	43.51	40.68	37.86	35.03	32.21	29.38
	4	44.65	41.89	39.12	36.35	33.58	30.82
	5	45.75	43.04	40.33	37.61	34.90	32.19
	10	50.58	48.10	45.63	43.16	40.69	38.22
40							
	1	47.25	44.61	41.98	39.34	36.70	34.06
	2	48.34	45.76	43.17	40.59	38.01	35.42
	3	49.38	46.85	44.32	41.79	39.25	36.72
	4	50.37	47.89	45.41	42.93	40.45	37.97
	5	51.32	48.89	46.45	44.02	41.59	39.15
	10	55.48	53.25	51.03	48.80	46.57	44.35
50							
	1	51.80	49.39	46.98	44.57	42.16	39.75
	2	52.75	50.39	48.03	45.67	43.31	40.94
	3	53.67	51.35	49.04	46.72	44.40	42.09
	4	54.54	52.27	50.00	47.72	45.45	43.18
	5	55.37	53.14	50.91	48.68	46.45	44.22
	10	59.00	56.95	54.90	52.86	50.81	48.76

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 2.00 PERCENT INCREASE IN		REPAYMENT TERMS COST DUE TO TYING(./.)			LEVEL PRINCIPAL
		0.	5.00	10.00	15.00	20.00		25.00
10	1	17.87	13.77	9.66	5.55	1.45	-2.66
	2	19.42	15.39	11.36	7.33	3.30	-0.73
	3	20.90	16.94	12.99	9.03	5.08	1.12
	4	22.32	18.44	14.55	10.67	6.79	2.90
	5	23.69	19.87	16.06	12.24	8.43	4.61
	10	29.75	26.24	22.73	19.22	15.71	12.19
15	1	23.84	20.03	16.22	12.42	8.61	4.80
	2	25.25	21.52	17.78	14.04	10.31	6.57
	3	26.61	22.94	19.27	15.60	11.93	8.26
	4	27.91	24.31	20.70	17.10	13.50	9.89
	5	29.16	25.62	22.08	18.53	14.99	11.45
	10	34.69	31.42	28.16	24.89	21.62	18.36
20	1	28.81	25.25	21.70	18.14	14.58	11.02
	2	30.12	26.62	23.13	19.63	16.14	12.64
	3	31.36	27.93	24.50	21.07	17.63	14.20
	4	32.56	29.18	25.81	22.44	19.07	15.70
	5	33.70	30.39	27.07	23.76	20.44	17.13
	10	38.76	35.70	32.63	29.57	26.51	23.45
25	1	32.98	29.63	26.28	22.93	19.58	16.23
	2	34.18	30.89	27.60	24.31	21.02	17.73
	3	35.33	32.10	28.87	25.63	22.40	19.17
	4	36.43	33.26	30.08	26.90	23.72	20.54
	5	37.49	34.36	31.24	28.11	24.99	21.86
	10	42.14	39.24	36.35	33.46	30.57	27.67
30	1	36.49	33.32	30.14	26.97	23.79	20.61
	2	37.61	34.49	31.37	28.25	25.13	22.01
	3	38.67	35.61	32.54	29.47	26.41	23.34
	4	39.69	36.68	33.66	30.65	27.63	24.61
	5	40.67	37.70	34.73	31.77	28.80	25.83
	10	44.96	42.20	39.45	36.70	33.95	31.20
40	1	42.00	39.10	36.20	33.30	30.40	27.50
	2	42.97	40.12	37.26	34.41	31.56	28.71
	3	43.89	41.09	38.28	35.48	32.67	29.87
	4	44.78	42.01	39.25	36.49	33.73	30.97
	5	45.62	42.90	40.18	37.46	34.74	32.03
	10	49.31	46.78	44.25	41.71	39.18	36.64
50	1	46.04	43.34	40.65	37.95	35.25	32.55
	2	46.89	44.24	41.58	38.93	36.27	33.62
	3	47.71	45.09	42.48	39.86	37.25	34.63
	4	48.48	45.91	43.33	40.75	38.18	35.60
	5	49.22	46.68	44.14	41.60	39.07	36.53
	10	52.45	50.07	47.69	45.32	42.94	40.56

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	2.50 PERCENT	REPAYMENT TERMS			LEVEL PRINCIPAL
		0.	5.00	10.00	15.00	20.00	25.00
		INCREASE IN COST DUE TO TYING(./.)					
10	1	15.64	11.42	7.20	2.98	-1.23	-5.45
	2	16.99	12.84	8.69	4.54	0.39	-3.76
	3	18.29	14.20	10.12	6.03	1.94	-2.14
	4	19.53	15.51	11.48	7.46	3.44	-0.59
	5	20.73	16.76	12.80	8.84	4.87	0.91
	10	26.04	22.34	18.64	14.94	11.24	7.54
	15	1	20.86	16.90	12.95	8.99	5.03	1.08
2		22.10	18.20	14.31	10.41	6.52	2.62
3		23.28	19.45	15.61	11.78	7.94	4.11
4		24.42	20.64	16.87	13.09	9.31	5.53
5		25.52	21.79	18.07	14.34	10.62	6.89
10		30.35	26.87	23.39	19.90	16.42	12.94
20		1	25.21	21.47	17.73	13.99	10.25	6.52
	2	26.35	22.67	18.99	15.30	11.62	7.94
	3	27.44	23.81	20.19	16.56	12.93	9.30
	4	28.49	24.91	21.34	17.76	14.18	10.61
	5	29.49	25.96	22.44	18.91	15.39	11.86
	10	33.91	30.61	27.31	24.00	20.70	17.39
	25	1	28.86	25.30	21.74	18.19	14.63	11.07
2		29.91	26.41	22.90	19.40	15.89	12.39
3		30.92	27.46	24.01	20.55	17.10	13.65
4		31.88	28.47	25.07	21.66	18.26	14.85
5		32.80	29.44	26.08	22.72	19.36	16.00
10		36.87	33.71	30.56	27.40	24.24	21.09
30		1	31.93	28.53	25.12	21.72	18.32	14.91
	2	32.91	29.55	26.20	22.84	19.49	16.13
	3	33.84	30.53	27.22	23.91	20.61	17.30
	4	34.73	31.47	28.20	24.94	21.68	18.41
	5	35.58	32.36	29.14	25.92	22.70	19.48
	10	39.34	36.30	33.27	30.24	27.20	24.17
	40	1	36.75	33.59	30.43	27.26	24.10
2		37.60	34.48	31.36	28.24	25.12	22.00
3		38.41	35.33	32.25	29.17	26.09	23.01
4		39.18	36.14	33.10	30.06	27.01	23.97
5		39.92	36.91	33.91	30.91	27.90	24.90
10		43.15	40.31	37.47	34.62	31.78	28.94
50		1	40.29	37.30	34.32	31.33	28.34	25.36
	2	41.03	38.08	35.13	32.19	29.24	26.29
	3	41.74	38.83	35.92	33.00	30.09	27.18
	4	42.42	39.54	36.66	33.78	30.91	28.03
	5	43.07	40.22	37.38	34.53	31.68	28.84
	10	45.89	43.19	40.48	37.78	35.07	32.37

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	3.00 PERCENT INCREASE IN	REPAYMENT TERMS		LEVEL PRINCIPAL	
		0.	5.00	COST	DUE TO TYING(./.)		
				10.00	15.00	20.00	25.00
10							
	1	13.40	9.07	4.74	0.41	-3.92	-8.25
	2	14.56	10.29	6.02	1.75	-2.53	-6.80
	3	15.67	11.46	7.24	3.03	-1.19	-5.41
	4	16.74	12.58	8.42	4.25	0.09	-4.07
	5	17.77	13.65	9.54	5.43	1.32	-2.79
	10	22.32	18.43	14.55	10.66	6.78	2.90
15							
	1	17.88	13.77	9.67	5.56	1.46	-2.65
	2	18.94	14.89	10.84	6.78	2.73	-1.32
	3	19.96	15.96	11.95	7.95	3.95	-0.05
	4	20.93	16.98	13.03	9.07	5.12	1.17
	5	21.87	17.96	14.06	10.15	6.24	2.34
	10	26.02	22.32	18.62	14.92	11.22	7.52
20							
	1	21.61	17.69	13.77	9.85	5.93	2.01
	2	22.59	18.72	14.84	10.97	7.10	3.23
	3	23.52	19.70	15.87	12.05	8.23	4.40
	4	24.42	20.64	16.86	13.08	9.30	5.52
	5	25.28	21.54	17.80	14.07	10.33	6.60
	10	29.07	25.52	21.98	18.43	14.88	11.34
25							
	1	24.74	20.97	17.21	13.45	9.68	5.92
	2	25.64	21.92	18.20	14.48	10.76	7.05
	3	26.50	22.82	19.15	15.47	11.80	8.12
	4	27.33	23.69	20.06	16.43	12.79	9.16
	5	28.12	24.52	20.93	17.34	13.74	10.15
	10	31.60	28.18	24.76	21.34	17.92	14.50
30							
	1	27.37	23.74	20.11	16.47	12.84	9.21
	2	28.20	24.61	21.02	17.44	13.85	10.26
	3	29.00	25.45	21.90	18.35	14.80	11.25
	4	29.77	26.26	22.75	19.23	15.72	12.21
	5	30.50	27.03	23.55	20.08	16.60	13.13
	10	33.72	30.40	27.09	23.77	20.46	17.15
40							
	1	31.50	28.08	24.65	21.23	17.80	14.38
	2	32.23	28.84	25.45	22.06	18.67	15.28
	3	32.92	29.57	26.21	22.86	19.50	16.15
	4	33.58	30.26	26.94	23.62	20.30	16.98
	5	34.22	30.93	27.64	24.35	21.06	17.77
	10	36.99	33.84	30.68	27.53	24.38	21.23
50							
	1	34.53	31.26	27.98	24.71	21.44	18.16
	2	35.17	31.93	28.69	25.45	22.20	18.96
	3	35.78	32.57	29.36	26.15	22.94	19.72
	4	36.36	33.18	30.00	26.82	23.63	20.45
	5	36.92	33.76	30.61	27.45	24.30	21.15
	10	39.34	36.30	33.27	30.24	27.20	24.17

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 3.50 PERCENT INCREASE IN		REPAYMENT TERMS COST DUE TO TYING(./.)		LEVEL PRINCIPAL	
		0.	5.00	10.00	15.00	20.00	25.00
10	1	11.17	6.73	2.29	-2.15	-6.60	-11.04
	2	12.14	7.74	3.35	-1.04	-5.44	-9.83
	3	13.06	8.71	4.37	0.02	-4.33	-8.67
	4	13.95	9.65	5.35	1.04	-3.26	-7.56
	5	14.81	10.55	6.29	2.03	-2.23	-6.49
	10	18.60	14.53	10.46	6.39	2.32	-1.75
15	1	14.90	10.65	6.39	2.14	-2.12	-6.37
	2	15.78	11.57	7.36	3.15	-1.06	-5.27
	3	16.63	12.46	8.30	4.13	-0.04	-4.21
	4	17.45	13.32	9.19	5.06	0.93	-3.19
	5	18.23	14.14	10.05	5.96	1.87	-2.22
	10	21.68	17.76	13.85	9.93	6.02	2.10
20	1	18.01	13.91	9.81	5.71	1.61	-2.49
	2	18.82	14.76	10.70	6.65	2.59	-1.47
	3	19.60	15.58	11.56	7.54	3.52	-0.50
	4	20.35	16.37	12.38	8.40	4.42	0.43
	5	21.06	17.12	13.17	9.22	5.28	1.33
	10	24.22	20.44	16.65	12.86	9.07	5.28
25	1	20.61	16.64	12.67	8.71	4.74	0.77
	2	21.36	17.43	13.50	9.57	5.64	1.71
	3	22.08	18.19	14.29	10.40	6.50	2.60
	4	22.77	18.91	15.05	11.19	7.33	3.46
	5	23.43	19.60	15.77	11.95	8.12	4.29
	10	26.34	22.65	18.97	15.29	11.60	7.92
30	1	22.81	18.95	15.09	11.23	7.37	3.51
	2	23.50	19.68	15.85	12.03	8.20	4.38
	3	24.17	20.38	16.59	12.80	9.00	5.21
	4	24.81	21.05	17.29	13.53	9.77	6.01
	5	25.42	21.69	17.96	14.23	10.50	6.77
	10	28.10	24.50	20.91	17.31	13.72	10.12
40	1	26.25	22.56	18.88	15.19	11.50	7.81
	2	26.85	23.20	19.54	15.88	12.23	8.57
	3	27.43	23.80	20.18	16.55	12.92	9.29
	4	27.98	24.38	20.78	17.18	13.58	9.98
	5	28.51	24.94	21.36	17.79	14.22	10.64
	10	30.82	27.36	23.90	20.44	16.99	13.53
50	1	28.78	25.21	21.65	18.09	14.53	10.97
	2	29.31	25.77	22.24	18.70	15.17	11.64
	3	29.82	26.31	22.80	19.29	15.78	12.27
	4	30.30	26.82	23.33	19.85	16.36	12.88
	5	30.76	27.30	23.84	20.38	16.92	13.45
	10	32.78	29.42	26.06	22.70	19.34	15.98

GRANT ELEMENTS

		INTEREST RATE 4.00 PERCENT REPAYMENT TERMS LEVEL PRINCIPAL INCREASE IN COST DUE TO TYING(./.)					
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00
<hr/>							
10							
	1	8.94	4.38	-0.17	-4.72	-9.28	-13.83
	2	9.71	5.19	0.68	-3.84	-8.35	-12.86
	3	10.45	5.97	1.49	-2.98	-7.46	-11.94
	4	11.16	6.72	2.28	-2.16	-6.61	-11.05
	5	11.84	7.44	3.03	-1.38	-5.79	-10.19
	10	14.88	10.62	6.37	2.11	-2.15	-6.40
<hr/>							
15							
	1	11.92	7.52	3.11	-1.29	-5.70	-10.10
	2	12.63	8.26	3.89	-0.48	-4.85	-9.22
	3	13.31	8.97	4.64	0.30	-4.03	-8.37
	4	13.96	9.65	5.35	1.05	-3.25	-7.55
	5	14.58	10.31	6.04	1.77	-2.50	-6.77
	10	17.34	13.21	9.08	4.95	0.81	-3.32
<hr/>							
20							
	1	14.41	10.13	5.85	1.57	-2.71	-6.99
	2	15.06	10.81	6.56	2.32	-1.93	-6.18
	3	15.68	11.46	7.25	3.03	-1.18	-5.40
	4	16.28	12.09	7.91	3.72	-0.47	-4.65
	5	16.85	12.69	8.54	4.38	0.22	-3.94
	10	19.38	15.35	11.32	7.29	3.26	-0.78
<hr/>							
25							
	1	16.49	12.32	8.14	3.96	-0.21	-4.39
	2	17.09	12.95	8.80	4.66	0.51	-3.64
	3	17.67	13.55	9.43	5.32	1.20	-2.92
	4	18.22	14.13	10.04	5.95	1.86	-2.23
	5	18.74	14.68	10.62	6.56	2.49	-1.57
	10	21.07	17.12	13.18	9.23	5.28	1.34
<hr/>							
30							
	1	18.25	14.16	10.07	5.98	1.90	-2.19
	2	18.80	14.74	10.68	6.62	2.56	-1.50
	3	19.34	15.30	11.27	7.24	3.20	-0.83
	4	19.85	15.84	11.83	7.82	3.81	-0.19
	5	20.33	16.35	12.37	8.38	4.40	0.42
	10	22.48	18.60	14.73	10.85	6.97	3.10
<hr/>							
40							
	1	21.00	17.05	13.10	9.15	5.20	1.25
	2	21.48	17.56	13.63	9.71	5.78	1.85
	3	21.95	18.04	14.14	10.24	6.34	2.43
	4	22.39	18.51	14.63	10.75	6.87	2.98
	5	22.81	18.95	15.09	11.23	7.37	3.51
	10	24.66	20.89	17.12	13.36	9.59	5.82
<hr/>							
50							
	1	23.02	19.17	15.32	11.47	7.63	3.78
	2	23.45	19.62	15.79	11.96	8.14	4.31
	3	23.85	20.05	16.24	12.43	8.62	4.82
	4	24.24	20.45	16.66	12.88	9.09	5.30
	5	24.61	20.84	17.07	13.30	9.53	5.76
	10	26.22	22.54	18.85	15.16	11.47	7.78

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 4.50 PERCENT		REPAYMENT TERMS		LEVEL PRINCIPAL	
		INCREASE IN		COST DUE TO TYING(./.)			
		0.	5.00	10.00	15.00	20.00	25.00
10							
	1	6.70	-2.04	-2.63	-7.29	-11.96	-16.62
	2	7.28	2.65	-1.99	-6.63	-11.26	-15.90
	3	7.84	3.23	-1.38	-5.99	-10.60	-15.20
	4	8.37	3.79	-0.79	-5.37	-9.96	-14.54
	5	8.88	4.33	-0.23	-4.78	-9.34	-13.90
	10	11.16	6.72	2.27	-2.17	-6.61	-11.05
15							
	1	8.94	4.39	-0.17	-4.72	-9.27	-13.82
	2	9.47	4.94	0.42	-4.11	-8.64	-13.16
	3	9.98	5.48	0.98	-3.52	-8.02	-12.53
	4	10.47	5.99	1.51	-2.96	-7.44	-11.92
	5	10.94	6.48	2.03	-2.42	-6.88	-11.33
	10	13.01	8.66	4.31	-0.04	-4.39	-8.74
20							
	1	10.81	6.35	1.89	-2.57	-7.03	-11.49
	2	11.29	6.86	2.42	-2.01	-6.45	-10.88
	3	11.76	7.35	2.94	-1.48	-5.89	-10.30
	4	12.21	7.82	3.43	-0.96	-5.35	-9.74
	5	12.64	8.27	3.90	-0.47	-4.83	-9.20
	10	14.53	10.26	5.99	1.71	-2.56	-6.83
25							
	1	12.37	7.99	3.60	-0.78	-5.16	-9.54
	2	12.82	8.46	4.10	-0.26	-4.62	-8.98
	3	13.25	8.91	4.57	0.24	-4.10	-8.44
	4	13.66	9.35	5.03	0.71	-3.60	-7.92
	5	14.06	9.76	5.46	1.17	-3.13	-7.43
	10	15.80	11.59	7.38	3.17	-1.04	-5.25
30							
	1	13.68	9.37	5.05	0.74	-3.58	-7.89
	2	14.10	9.81	5.51	1.22	-3.08	-7.37
	3	14.50	10.23	5.95	1.68	-2.60	-6.87
	4	14.88	10.63	6.37	2.12	-2.14	-6.39
	5	15.25	11.01	6.78	2.54	-1.70	-5.94
	10	16.86	12.70	8.54	4.39	0.23	-3.93
40							
	1	15.75	11.54	7.33	3.11	-1.10	-5.31
	2	16.11	11.92	7.72	3.53	-0.66	-4.86
	3	16.46	12.28	8.11	3.93	-0.25	-4.43
	4	16.79	12.63	8.47	4.31	0.15	-4.01
	5	17.11	12.96	8.82	4.67	0.53	-3.62
	10	18.49	14.42	10.34	6.27	2.19	-1.88
50							
	1	17.27	13.13	8.99	4.86	0.72	-3.42
	2	17.58	13.46	9.34	5.22	1.10	-3.02
	3	17.89	13.78	9.68	5.57	1.47	-2.64
	4	18.18	14.09	10.00	5.91	1.82	-2.27
	5	18.46	14.38	10.30	6.23	2.15	-1.93
	10	19.67	15.65	11.63	7.62	3.60	-0.41

GRANT ELEMENTS

		INTEREST RATE 5.00 PERCENT REPAYMENT TERMS LEVEL PRINCIPAL INCREASE IN COST DUE TO TYING(./.)					
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00
10							
	1	4.47	-0.31	-5.09	-9.86	-14.64	-19.42
	2	4.85	0.10	-4.66	-9.42	-14.18	-18.93
	3	5.22	0.49	-4.25	-8.99	-13.73	-18.47
	4	5.58	0.86	-3.86	-8.58	-13.30	-18.02
	5	5.92	1.22	-3.49	-8.19	-12.89	-17.60
	10	7.44	2.81	-1.82	-6.45	-11.07	-15.70
15							
	1	5.96	1.26	-3.44	-8.15	-12.85	-17.55
	2	6.31	1.63	-3.05	-7.74	-12.42	-17.11
	3	6.65	1.99	-2.68	-7.35	-12.02	-16.68
	4	6.98	2.33	-2.32	-6.98	-11.63	-16.28
	5	7.29	2.65	-1.98	-6.62	-11.25	-15.89
	10	8.67	4.11	-0.46	-5.03	-9.59	-14.16
20							
	1	7.20	2.56	-2.08	-6.72	-11.36	-16.00
	2	7.53	2.91	-1.72	-6.34	-10.97	-15.59
	3	7.84	3.23	-1.38	-5.98	-10.59	-15.20
	4	8.14	3.55	-1.05	-5.64	-10.23	-14.83
	5	8.43	3.85	-0.73	-5.31	-9.89	-14.47
	10	9.69	5.17	0.66	-3.86	-8.37	-12.89
25							
	1	8.25	3.66	-0.93	-5.52	-10.11	-14.69
	2	8.55	3.97	-0.60	-5.17	-9.75	-14.32
	3	8.83	4.27	-0.28	-4.84	-9.40	-13.96
	4	9.11	4.56	0.02	-4.52	-9.07	-13.61
	5	9.37	4.84	0.31	-4.22	-8.75	-13.28
	10	10.53	6.06	1.59	-2.89	-7.36	-11.83
30							
	1	9.12	4.58	0.04	-4.51	-9.05	-13.60
	2	9.40	4.87	0.34	-4.19	-8.72	-13.25
	3	9.67	5.15	0.63	-3.88	-8.40	-12.92
	4	9.92	5.42	0.92	-3.59	-8.09	-12.60
	5	10.17	5.68	1.18	-3.31	-7.80	-12.29
	10	11.24	6.80	2.36	-2.08	-6.51	-10.95
40							
	1	10.50	6.03	1.55	-2.92	-7.40	-11.87
	2	10.74	6.28	1.82	-2.65	-7.11	-11.57
	3	10.97	6.52	2.07	-2.38	-6.83	-11.28
	4	11.19	6.75	2.31	-2.13	-6.57	-11.01
	5	11.40	6.98	2.55	-1.88	-6.31	-10.74
	10	12.33	7.95	3.56	-0.82	-5.21	-9.59
50							
	1	11.51	7.09	2.66	-1.76	-6.19	-10.61
	2	11.72	7.31	2.90	-1.52	-5.93	-10.35
	3	11.93	7.52	3.12	-1.28	-5.69	-10.09
	4	12.12	7.73	3.33	-1.06	-5.46	-9.85
	5	12.31	7.92	3.54	-0.85	-5.23	-9.62
	10	13.11	8.77	4.42	0.08	-4.27	-8.61

GRANT ELEMENTS

		INTEREST RATE 5.50 PERCENT REPAYMENT TERMS LEVEL PRINCIPAL INCREASE IN COST DUE TO TYING(./.)					
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00
10							
	1	2.23	-2.65	-7.54	-12.43	-17.32	-22.21
	2	2.43	-2.45	-7.33	-12.21	-17.09	-21.97
	3	2.61	-2.26	-7.13	-12.00	-16.87	-21.73
	4	2.79	-2.07	-6.93	-11.79	-16.65	-21.51
	5	2.96	-1.89	-6.74	-11.59	-16.45	-21.30
	10	3.72	-1.09	-5.91	-10.72	-15.54	-20.35
15							
	1	2.98	-1.87	-6.72	-11.57	-16.42	-21.28
	2	3.16	-1.69	-6.53	-11.37	-16.21	-21.05
	3	3.33	-1.51	-6.34	-11.17	-16.01	-20.84
	4	3.49	-1.34	-6.16	-10.99	-15.81	-20.64
	5	3.65	-1.17	-5.99	-10.81	-15.63	-20.44
	10	4.34	-0.45	-5.23	-10.01	-14.80	-19.58
20							
	1	3.60	-1.22	-6.04	-10.86	-15.68	-20.50
	2	3.76	-1.05	-5.86	-10.67	-15.48	-20.29
	3	3.92	-0.88	-5.69	-10.49	-15.30	-20.10
	4	4.07	-0.73	-5.52	-10.32	-15.12	-19.91
	5	4.21	-0.58	-5.37	-10.16	-14.94	-19.73
	10	4.84	0.09	-4.67	-9.43	-14.19	-18.94
25							
	1	4.12	-0.67	-5.47	-10.26	-15.05	-19.85
	2	4.27	-0.51	-5.30	-10.09	-14.87	-19.66
	3	4.42	-0.36	-5.14	-9.92	-14.70	-19.48
	4	4.55	-0.22	-4.99	-9.76	-14.53	-19.31
	5	4.69	-0.08	-4.85	-9.61	-14.38	-19.14
	10	5.27	0.53	-4.21	-8.94	-13.68	-18.42
30							
	1	4.56	-0.21	-4.98	-9.75	-14.53	-19.30
	2	4.70	-0.06	-4.83	-9.59	-14.36	-19.12
	3	4.83	0.08	-4.68	-9.44	-14.20	-18.96
	4	4.96	0.21	-4.54	-9.29	-14.05	-18.80
	5	5.08	0.34	-4.41	-9.15	-13.90	-18.65
	10	5.62	0.90	-3.82	-8.54	-13.26	-17.98
40							
	1	5.25	0.51	-4.22	-8.96	-13.70	-18.44
	2	5.37	0.64	-4.09	-8.82	-13.55	-18.29
	3	5.49	0.76	-3.96	-8.69	-13.42	-18.14
	4	5.60	0.88	-3.84	-8.56	-13.28	-18.00
	5	5.70	0.99	-3.73	-8.44	-13.16	-17.87
	10	6.16	1.47	-3.22	-7.91	-12.60	-17.29
50							
	1	5.76	1.04	-3.67	-8.38	-13.09	-17.81
	2	5.86	1.15	-3.55	-8.26	-12.97	-17.67
	3	5.96	1.26	-3.44	-8.14	-12.84	-17.55
	4	6.06	1.36	-3.33	-8.03	-12.73	-17.42
	5	6.15	1.46	-3.23	-7.92	-12.62	-17.31
	10	6.56	1.88	-2.79	-7.46	-12.13	-16.80

Mr. J. Schmedtje

December 1, 1967

Shlomo Reutlinger *SR*

Research Program Proposals for Investment Planning Division

I. General Introduction

1. It may serve a useful purpose, prior to presenting specific research proposals, if a definite understanding and consensus were attained both in the Division and Department and with other Departments on the broad aims of research activities undertaken in or on the initiative of the Bank. My comments below then are of a provocative nature to check whether we are tuned in on the same objectives and to suggest possibly some criteria which we may use to set priorities for choosing among a set of research proposals.
2. Top priority should be assigned to problem areas in which (a) the Bank in fact has it within its power to substantially affect the success or failure of the development drive in developing countries, and (b) the Bank has unique experience and data beyond what is available elsewhere. This then would include continuous concern with improving project appraisal procedures for the purpose of selecting projects. But far beyond this and perhaps more effectively and importantly we should make greater efforts to supply in conjunction with every project loan a prescription to operate the project in the most effective way we know. Too often, it seems to me, our consultants (at great expense) and our appraisors do not go far beyond giving a "yes" or "no" answer to a project, tacitly accepting a mode of operation (a "user charge" policy, a series of unrelated activities, some of which may be completely unjustified, a non-optimal size of operation, etc.) which has not been carefully checked out. There are some sceptics among us, who may go so far as to suggest that our "yes" or "no" answer to a project is of little relevance to what a country will do. This may or may not be so. But contrarywise, there seems to be little doubt in my mind, that whatever is contained in our appraisal or in a consultant's report about the mode of operation of a project vitally affects how that project is carried out, whether or not we have critically considered the described details. Partly, this is so because the loan will become effective only if a strict itemized disbursement program is observed. But even more importantly, we must be aware that it is the prestige and the authority with which a Bank or a consultant's document speaks which will be difficult to be challenged later on by others. In summary, the Bank's impact seems to me greatest in the area of project design and any research which will assist in the optimum design of projects (whether their overall return is 5% or 50%) is of high priority.

(A propos, it may be useful to stimulate renewed discussion on whether it might not be useful to extend two types of loans, one which is based on strict adherence to a particular mode of operation of a project and consequently a thorough appraisal, and another one which is given to a broadly defined project without any suggestion as to the details. The latter would apply if for whatever reason we do not wish or cannot do an adequate appraisal.)

3. Relatedly, the Bank seems to have a fair amount of influence on pricing and taxing policies as they effect the services or products produced by Bank sponsored projects. It has been suggested in some quarters that the Bank may not have always exerted its influence in this area in the best possible way. Hence, because of the magnitude of the possible impact and the amount of experience uniquely available to the Bank, it may be useful to expand research in this area.

4. On a higher level of aggregation the Bank could have an impact on accelerating development through participation in the process of determining priorities and complementarities among various projects in a sector or region. The appraisal of sectors and regions is, of course, a legitimate and important function of other national and international agencies. Nevertheless, because of the direct relationship between closely related projects, it may be useful for the Bank to take an active part in such studies. This has been recognized, of course, in some particular cases (the Indus Basin) and with respect to the Bank's role in administering the UNDP study projects in the transport sector. We should engage in the development and review of the methodology of sector analysis to support these efforts and to the extent that further involvement in sector studies, either as the executing agency or as co-operators, is anticipated.

5. On the still higher aggregative level of inter-sector studies, the Bank's major impact could be in pointing up relationships between particularly highly related sectors. In this area, we may attempt to initiate and participate in the preparation of an overall plan for related sectors (transportation-agriculture, irrigation-power, etc.).

II. Specific Topics for Research Projects

Project Appraisal Methodology

6. With few exceptions, our research work with respect to improving on the methodology of project appraisal should be conducted in conjunction with an actual case, but clearly the analysis and conclusions must be much more general. Ideally, we should be informed of suitable projects far in advance of the project being submitted to consultants for detailed planning. We should be given the opportunity to investigate how the project could be planned under a large number of differing conditions than those actually prevailing in the particular case in order to derive useful generalizations.

7. In the area of prescribing optimum modes of operation, we should conduct several studies:

(a) Alternative Objective Functions

The idea would be to take a hard look at the economic surplus from a project and to assign different weights to a dollar earned in various categories, say for wages to poor and wealthy people, or for consumption, domestic investment.

Maximizing such a weighted benefit (social utility function) may substantially change the order of priorities between different projects, and, less frequently though, the optimum mode of operation of projects.

(b) Multi-dimensional Optimization Models

Linear programming type models for activity analysis and regional allocation problems may be primarily useful for choosing among alternative projects, for instance, (particularly when consultants are engaged for project preparation) may present problems which ought to be examined with an activity analysis type model. One would have to choose a project in which there are obviously many land use alternatives (neither inelastic nor completely elastic demand for water) and the water availability can be altered with reasonable differences in costs (neither inelastic nor completely elastic supply of water).

(c) Optimum Capacity of Structure when Demand or Supply is Uncertain

Models might be prepared to determine the number of berths when ship arrivals cannot be predicted with certainty or the size of reservoirs when water inflow or utilization are random variables. A paper on how to analyze for optimum solutions should be prepared.

(d) Probability Appraisal

The idea is to further examine the practical advantage of estimating a probability distribution of the rate of return from subjectively estimated probability distributions of crucial elements affecting the rate of return and to compare results with conventional single valued estimates.

(e) A Critical Review of Selected Project Appraisals

We may take a quick look at many appraisal reports and write a short paper on such features of reports which seem to indicate weaknesses in the economic analysis or presentation. Subsequently, we could draw up a list of problem areas and crucial projections in projects which were appraised a sufficiently long time ago to permit us to check either by questionnaires or field checks or both what has actually materialized.

Alternatively, we may do a thorough reappraisal of one or two projects in order to compare the projections in the appraisal with what actually has happened and why (i.e., the El Salvador Feeder Road Project).

Evaluation of Policy

8. In the field of evaluating policies which affect inter- and intra allocations of resources in sectors and projects we may wish to undertake or commission the following studies:

(f) Irrigation Water Charges

This would be a study of what constitutes a reasonable pricing for water delivered from irrigation projects in terms of resource allocation, technical and political feasibility. The study could first review a large number of hypothetical problems (selected on the basis of prevalence of similar cases found in appraisal reports). The empirical part of such a study would determine whether economically optimum pricing policies are being followed in a sample of projects and if not, whether departures from optimum policies can be justified on other grounds.

(g) Taxes and Subsidies of Agricultural Export Commodities

A study could be made to determine how taxes and subsidies of selected export commodities in selected countries affect the contribution made by the Bank projects to development. Similarly, as in (f) we would examine whether currently practiced policies are reasonable in terms of any number of criteria or whether they are based on traditions which could be effectively challenged.

(h) A Study of Farmers' Responsiveness to Incentives

An analysis could be made by a carefully designed experiment (in co-operation with G. Orcutt), possibly attached to an agricultural credit project, of the responsiveness of farmers to income opportunities created by our projects and the factors which affect the degree of response, such as extension services, reduction of risk hazards, etc. That is, farmers or group of farmers could be selected at random and assigned different "treatments".

Sector Analysis

9. As this is an area in which not much has been done in general, much exploratory work must be done before pursuing any specific proposals. We could think about proceeding as follows:

(i) Survey of Literature on Sector Analyses

Primarily the objective would be to do a comparative study of the quality and usefulness of various studies and models which have been tried in developing countries. We

could then pursue the more promising ones (with or without the authors of the original studies) to see whether they lead to conclusions and/or project identification in a way which is useful to the Bank.

(j) Participation in Sector (Country) Mission

The idea would be that we would be informed, say, three months in advance of an important sector survey mission. We would then collect all the information that can be gotten (from whatever source) here in the office, and try to identify by whatever suitable method of analysis the crucial issues and possibly tentative recommendations. Subsequently, we would join the mission with the purpose of further studying already identified and new problems. If we should conclude that a complete sector study or a joint study of several related sectors could have a reasonable pay-off, we could propose to the country and to UNDP to undertake such a study - perhaps in close co-operation with a consultants' firm and FAO.

SReutlinger:bsc

Mr. A. M. Kamarek

November 28, 1967

A. E. Tiemann and A. Kundu

International Price Competitiveness by M. J. Ulmer

1. We have read with interest the revised version of Mr. Ulmer's paper. Although some of the material is entirely rewritten, the substance is essentially the same. He does repeat here that his proposed index of price competitiveness is a "First Approximation." The index is based on export and import of manufactured goods only, and the simple form is derived under the assumptions that i) price elasticities of demand are the same for all exported goods and also for all imported goods, and ii) cross elasticities of demand are negligibly small or zero. Mr. Ulmer believes that these assumptions are substantially correct, and recommends that after the work on proposed index is initiated they could be examined and the index suitably corrected.

2. On the formulation of the index our comments on Mr. Ulmer's earlier paper are still applicable. Furthermore, prior to actual construction of the index, we suggest that he should rather examine the validity of his assumptions first from past data, and then proceed accordingly.

3. Since Mr. Balassa made some comments on the earlier paper, he might like to see this version also.

cc: Messrs. Stevenson, Balassa and Tiemann

AE
AETiemann/AKundu/afc

Mr. J. K. Schmedtje

November 27, 1967

Bernard Oury

Research Suggestions (Follow-up to my Memo dated Nov. 6, 1967)

1. During the Investment Planning Division Meeting held November 24, 1967, you invited additional suggestions about future topics of interest. I might add the following.
2. The Ghana desk has informally shown interest in the development of a cocoa model for Ghana. This would be a good example of agricultural model building involving a tree-crop (perennial).
3. Work in the area of the economics of fertilizer use in LDC's, aimed at facilitating the work of the Bank Group.
4. Work in the area of crop diversification possibilities in LDC's.
5. Imputation of agricultural output to technological inputs as a way to measure the separate effects of the major segments of modern technology.
6. Earlier studies such as "The Evaluation of Agricultural Projects: A Study of Some Economic and Financial Aspects" (EC-128, May 7, 1964) might need some revision. Economic reappraisal of selected earlier agricultural loans might also be of interest to the Bank Group.

B. Oury
BOury:jln

Mr. B. R. Bell

November 24, 1967

H. G. van der Tak

Sector Studies

1. I recently discussed with you what the Sector and Project Group could do to support sector studies undertaken or supervised by the Projects Department. You suggested that I should write down briefly the ideas we talked about in order to stimulate and facilitate further discussion on this topic in the Projects Department.
2. As I see it, "sector studies" comprehend a wide range of rather different exercises. The usual sector reviews undertaken in the framework of our country economic work contain, apart from descriptive material, a discussion of broad policy questions pertaining to the sector concerned. General background research on various policy issues, such as pricing problems, tax incentives and disincentives, credit and financing problems, regulation and control, marketing, trade policies, etc., would provide a better basis for our specific policy judgments and advice in particular countries.
3. At the other extreme are large investment planning efforts such as UNDP-type sector surveys, the Indus Basin Study, etc. These involve a much larger effort in terms of time, manpower and money, resulting in a well-founded and detailed investment program for the sector or subsector concerned, drawn up on the basis of intensive fact finding and analysis. Further research on methods that may usefully be employed in this type of work would seem necessary. This would refer to various systems analysis approaches to transport networks, power systems, river basins, regional allocation of resources and location problems, etc. We should know much more about the advantages and limitations of various types of models for different purposes and in different circumstances.
4. In between these types of "sector study" are several other types which tend to blend. Plan or program review missions try to make some judgment on the appropriateness of the level and composition of investment and expenditure programs drawn up by the government. Project identification missions look around a country and, on the basis of experience and common sense, try to pick out promising investment possibilities. Still other missions try to determine the direction in which further development of the sector should take place and draw up a tentative broad outline of a development plan for the sector. All these missions are usually small, with one to three people per sector and are required to produce a report in, say, four months, of which some four weeks or so are spent in the field. In this short period they have to make a judgment on resource allocation problems and optimum investment and expenditure patterns, usually on the basis of very limited and deficient information, and without the benefit of intensive fact finding and

November 24, 1967

analysis. I am not certain whether background research can provide much help for this kind of exercise. It may be worth investigating, however, whether very simple heavily-stylized models might not be useful in testing whether conclusions arrived at follow from the assumptions and judgments made. It might also be possible to try some analysis along these lines before a mission goes out into the field, on the basis of such data as are already available in the Bank, in order to bring out the crucial variables that the mission should look into more closely. And insights derived from the intensive and detailed analysis referred to above in paragraph 3, might be useful in arriving at sensible judgments in other countries where conditions appear similar.

5. All this should, of course, be worked out in much more detail. It may suffice, however, to start a discussion on the kind of research that the Sector and Project Group should undertake in support of sector studies (as distinct from project analysis). In particular, I think it is helpful to consider separately the three broad areas of (a) sector policy questions and problems (b) large-scale intensive analysis of sector investment priorities and (c) the small-scale efforts directed at preliminary screening of investments, program review, and identifying the direction and emphasis of sector development programs.

VW
HVDt:smc

cc: Messrs. Stevenson
Sadove
Schmidtje

Mr. Adler

November 20, 1967

Harold Graves

Economic Surveys

In connection with your current interest in economic surveys of various kinds, I thought you would be interested to see that the ECLA Economic Survey of Latin America regularly contains economic profiles of individual countries, as per the attached example. You may want to check the other regional surveys to see whether other material of this kind is regularly published.

Attachment

cc: Mr. Lind

John

HG:ap

Mr. John C. L. Hulley

November 17, 1967

J. Burke Knapp

How about a nice simple heading for column G of the British table (following the pattern of column F) as follows:

"Estimated drawings - three-year deferment
of annual U.S. balances for three years".

The Note in this column might then read:

Deferment for three years, i.e. the difference between procurement in the U.S. and the annual U.S. pro rata drawings in each of the first three years is deferred three years; the adjustment in the pattern of pro rata drawings in the first, second and third years would be compensated by each and opposite adjustment in the pattern of pro rata drawings in the fourth, fifth and sixth years respectively.

cc: Mr. Cherniavsky

Mr. Andrew M. Kamarck

November 13, 1967

Badri Rao

Seminar for Senior Staff

With reference to your memorandum of November 8, 1967 and our telephonic conversation today, I am forwarding herewith an outline for your proposed talk to the Senior Staff. I have also indicated the source material for your speech. The page and table references are to the DAC Chairman's 1967 review of "Development Assistance Efforts and Policies" a copy of which I am forwarding with this memorandum.

cc: Mr. John Hulley

BRao:mk

Foreign Economic Assistance: Recipients and Donors

- I. Topicality: Likely issues before second UNCTAD Pp.155-157
- II. The Concept and Measurement of Foreign Economic Assistance.
- Some general remarks Pp.107, para 2 - 110.
Grants, commodity assistance, official loans,
private capital and investment, commercial
credits.
Tied assistance. p.87.
- III. Performance by LDCs.
- Overall and regional growth rates. Table II-1, p.25
Growth and income levels. p. 26
Growth and manufacturing. p.28; II.4, p.29
Exports and growth. p.29 last para - 30
Exports of primary producers. p.30, paras 2 and 3
Foreign exchange reserves.
- IV. Contribution of External Financial Resources
- Aggregate quantum of flow. Table III.2 Pp.36-37
Aid concentration. p. 129
Official assistance, volume and direction. Table 6, Annex
p.192-3
Private capital. p. 55 and p. 62
Debt service burden. Table V.2, p.73
- V. Performance of Developed in relation to UNCTAD Target
- The facts. Pp.104-5 & Table VII-1
Role of Technical Assistance Pp.45-46
Softening of aid terms. p. 74, Table V.6, p.81
Shift to non-project assistance. p. 126
Harmonization of terms. p. 83
Debt rescheduling. p.84
- VI. Aid giving Capacity
- Aid in relation to government expenditures. p. 112
Balance of payments constraints. p. 114
Need for a long-view. p. 116
Magnitude of effort needed. Pp.118-119
Table V.5, p.79

Economics Department
International Finance Division

November 13, 1967

Mrs. Huguette Angel

November 9, 1967

Benjamin B. King *Bob*

Grant Element Tables

I have a few initial comments on these tables.

Introduction

This might be made more explicit. I attach a revision to work on which I used here.

Grace Period

Your definition of a grace period appears to be the period up to and including the date on which the first principal payment is made. Thus for a loan with 3 years grace (e.g. Eximbank), principal payments are not made on the first five semi-annual dates. The first is on the sixth.

I have been consistently using a different definition, which appears not to be the one in common usage in the Bank (yours is correct). Maybe I am the only one out of step, but it might be useful to define it somewhere, just in case there are others in the same boat.

Discrepancies

Look at the figures for Eximbank and Eastern governments in the first table on selected loans. Compare them with the ones in the appropriate tables. They are different. Why? The tables appear to be right.

Additional Example

You might add DAC terms (25 years, 7 years grace, 3 percent). But first, what do they mean by 7 years' grace?*

Formula

As a matter of interest, there is a formula for your tables:

$$G.E. = (1 - \frac{h}{i})(1 - \frac{a_m - a_g}{m-g})$$

h = the interest rate of the loan.
i = the discount rate

* See DAC(65) 14 (Final), July 23, 1965. Maybe Mr. Hulley has the reference.

m = the number of semi-annual periods during which the loan is outstanding.

g = the number of semi-annual periods during which no principal payment is made, i.e. by your definition the grace period is $(g+1)/2$ years.

a_m, a_g = the present value of an annuity at $i/2$ interest for m and g periods.

cc: Messrs. Stevenson
Goodman
Hulley

BBKing:ke

Mr. Mohamed Shoaib

November 7, 1967

H A
Huguette Angel (Through Mr. A. Stevenson)

Grant element tables

Please find a set of grant element tables prepared at your request.

These include: 1) one table for selected loans with special repayment terms.

2) tables for hypothetical loans with level principal repayments.

Tables of grant elements for same hypothetical loans when repayments are level total were also prepared but not given since the results were very close to those obtained when repayments were level principal.

Attachment.

cc: Messrs. Friedman
Kamarck
Stevenson
B. King
Larsen
Edelman
Thompson
Wright
Weiner
van der Mel
Tiemann
Kundu
Kalmanoff
Karaosmanoglu
Mrs. Paulson
Mrs. Slappey

HAngel/ms

OFFICE MEMORANDUM

TO: Mr. Mohamed Shoaib
FROM: Huguette Angel ^{H.A.} (Through Mr. A. Stevenson)
SUBJECT: Grant element tables

DATE: November 7, 1967

Please find a set of grant element tables prepared at your request. These include: 1) one table for selected loans with special repayment terms. 2) tables for hypothetical loans with level principal repayments.

Tables of grant elements for same hypothetical loans when repayments are level total were also prepared but not given since the results were very close to those obtained when repayments were level principal.

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GRANT ELEMENT TABLES

The amounts in the tables are grant elements calculated in the following manner:

Grant element = $100 \times \left(\frac{\text{sum of discounted repayments} - \text{sum of discounted disbursements}}{\text{sum of discounted disbursements}} \right)$.

The discount rate used was 6%.

The amount of the loan was assumed fully disbursed during the initial period.

The concept of tying was introduced by assuming that while the amount received remained constant the principal repayments were increased by 5, 10, 15, 20 or 25%.

The first table gives grant elements of selected loans.

The other tables apply to hypothetical loans with interest rates of 0., 0.75, 1.0, 1.5, 2.5, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0 and 5.5 respectively. In all cases, repayments were semi-annual and level principal.

Statistical Services Division
November 6, 1967

GRANT ELEMENTS
SELECTED LOANS WITH SPECIAL REPAYMENT TERMS/1

	Int. %	Term to Maturity (yrs)	Grace Period (years)	Increase in cost due to tying (%)					
				0.	5.00	10.00	15.00	20.00	25.00
IBRD/2	6.00	22	5	0.	-5.00	-10.00	-15.00	-20.00	-25.00
Suppliers credits/3	6.00	9	2	0.	-5.00	-10.00	-15.00	-20.00	-25.00
IDA credits/4	.75	50	10	71.82	70.42	69.01	67.60	66.19	64.78
AID/5	1.00 2.50	40	10	54.37	52.09	49.81	47.53	45.25	42.97
Export-Import Bank/3	5.50	10	3	2.98	-1.88	-6.73	-11.58	-16.43	-21.28
Loans from France/3	4.50	12	2	8.32	3.73	-0.85	-5.44	-10.02	-14.61
Germany/3	4.25	19	4	14.02	9.73	5.43	1.13	-3.17	-7.4
U.K./3	4.25	23	6	16.47	12.29	8.12	3.94	-0.24	-4.41
Loans from Eastern go- vernment/3	2.50	15	3	23.91	20.10	16.30	12.49	8.69	4.88

/1 The repayment terms used are the weighted average terms for loans granted in 1965.

/2 Level total payment; the principal repayment in each period is rounded to the nearest \$5,000.

/3 Level principal payments.

/4 The principal repayments are 1% of amount of loan from years 11 to 20 and 3% thereafter.

/5 Level principal payment. Interest is 1% during grace period and 2.5% thereafter.

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	0.	PERCENT INCREASE	REPAYMENT COST	TERMS DUE TO TYING	LEVEL (./.)	PRINCIPAL
		0.	5.00	10.00	15.00	20.00	25.00	
10	1	26.81	23.15	19.49	15.83	12.17	8.51	
	2	29.12	25.58	22.04	18.49	14.95	11.41	
	3	31.35	27.92	24.48	21.05	17.62	14.19	
	4	33.48	30.16	26.83	23.51	20.18	16.85	
	5	35.53	32.31	29.09	25.86	22.64	19.42	
	10	44.63	41.86	39.10	36.33	33.56	30.79	
15	1	35.76	32.55	29.34	26.12	22.91	19.70	
	2	37.88	34.78	31.67	28.56	25.46	22.35	
	3	39.92	36.91	33.91	30.90	27.90	24.90	
	4	41.87	38.96	36.06	33.15	30.24	27.34	
	5	43.74	40.93	38.12	35.30	32.49	29.68	
	10	52.03	49.63	47.23	44.84	42.44	40.04	
20	1	43.22	40.38	37.54	34.70	31.86	29.03	
	2	45.17	42.43	39.69	36.95	34.21	31.47	
	3	47.04	44.39	41.75	39.10	36.45	33.80	
	4	48.83	46.28	43.72	41.16	38.60	36.04	
	5	50.55	48.08	45.61	43.14	40.66	38.19	
	10	58.14	56.05	53.95	51.86	49.77	47.67	
25	1	49.47	46.95	44.42	41.89	39.37	36.84	
	2	51.27	48.84	46.40	43.97	41.53	39.09	
	3	53.00	50.65	48.30	45.95	43.60	41.25	
	4	54.65	52.38	50.12	47.85	45.58	43.32	
	5	56.23	54.05	51.86	49.67	47.48	45.29	
	10	63.21	61.37	59.53	57.69	55.85	54.01	
30	1	54.74	52.47	50.21	47.95	45.69	43.42	
	2	56.41	54.23	52.05	49.87	47.69	45.51	
	3	58.01	55.91	53.81	51.71	49.61	47.51	
	4	59.54	57.51	55.49	53.47	51.44	49.42	
	5	61.00	59.05	57.10	55.15	53.20	51.25	
	10	67.43	65.81	64.18	62.55	60.92	59.29	
40	1	63.00	61.15	59.30	57.45	55.60	53.75	
	2	64.45	62.67	60.90	59.12	57.34	55.56	
	3	65.84	64.13	62.42	60.71	59.01	57.30	
	4	67.16	65.52	63.88	62.24	60.60	58.95	
	5	68.43	66.85	65.27	63.69	62.12	60.54	
	10	73.97	72.67	71.37	70.07	68.77	67.47	
50	1	69.06	67.52	65.97	64.42	62.88	61.33	
	2	70.34	68.86	67.37	65.89	64.41	62.92	
	3	71.56	70.14	68.71	67.29	65.87	64.45	
	4	72.72	71.36	69.99	68.63	67.27	65.90	
	5	73.83	72.52	71.22	69.91	68.60	67.29	
	10	78.67	77.61	76.54	75.47	74.41	73.34	

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	0.75 PERCENT INCREASE IN	REPAYMENT COST DUE TO TYING	TERMS	LEVEL PRINCIPAL	
		0.	5.00	10.00	15.00	20.00	25.00
10	1	23.46	19.63	15.80	11.97	8.15	4.32
	2	25.48	21.76	18.03	14.31	10.58	6.85
	3	27.43	23.80	20.17	16.54	12.92	9.29
	4	29.30	25.76	22.23	18.69	15.16	11.62
	5	31.09	27.65	24.20	20.76	17.31	13.86
	10	39.05	36.01	32.96	29.91	26.86	23.82
15	1	31.29	27.85	24.42	20.98	17.55	14.11
	2	33.15	29.80	26.46	23.12	19.78	16.43
	3	34.93	31.67	28.42	25.17	21.91	18.66
	4	36.64	33.47	30.30	27.13	23.96	20.79
	5	38.27	35.19	32.10	29.01	25.93	22.84
	10	45.53	42.80	40.08	37.36	34.63	31.91
20	1	37.82	34.71	31.60	28.49	25.38	22.27
	2	39.53	36.50	33.48	30.45	27.43	24.41
	3	41.16	38.22	35.28	32.34	29.39	26.45
	4	42.73	39.87	37.00	34.14	31.28	28.41
	5	44.23	41.45	38.66	35.87	33.08	30.29
	10	50.87	48.41	45.96	43.50	41.05	38.59
25	1	43.29	40.45	37.62	34.78	31.95	29.11
	2	44.86	42.11	39.35	36.59	33.84	31.08
	3	46.37	43.69	41.01	38.33	35.65	32.97
	4	47.82	45.21	42.60	39.99	37.38	34.78
	5	49.21	46.67	44.13	41.59	39.05	36.51
	10	55.31	53.07	50.84	48.60	46.37	44.13
30	1	47.90	45.29	42.69	40.08	37.47	34.87
	2	49.36	46.83	44.29	41.76	39.23	36.70
	3	50.76	48.29	45.83	43.37	40.91	38.45
	4	52.10	49.70	47.30	44.91	42.51	40.12
	5	53.38	51.04	48.71	46.38	44.05	41.72
	10	59.01	56.96	54.91	52.86	50.81	48.76
40	1	55.13	52.88	50.64	48.39	46.15	43.91
	2	56.40	54.22	52.03	49.85	47.67	45.49
	3	57.61	55.49	53.37	51.25	49.13	47.01
	4	58.77	56.71	54.65	52.58	50.52	48.46
	5	59.88	57.87	55.86	53.86	51.85	49.85
	10	64.73	62.96	61.20	59.43	57.67	55.91
50	1	60.43	58.45	56.47	54.49	52.52	50.54
	2	61.55	59.62	57.70	55.78	53.86	51.93
	3	62.61	60.74	58.88	57.01	55.14	53.27
	4	63.63	61.81	59.99	58.18	56.36	54.54
	5	64.60	62.83	61.06	59.29	57.52	55.75
	10	68.84	67.28	65.72	64.16	62.61	61.05

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	1.00 PERCENT	REPAYMENT TERMS		LEVEL PRINCIPAL	
		0.	INCREASE IN	COST DUE	TO TYING(./.)		
			5.00	10.00	15.00	20.00	25.00
10							
	1	22.34	18.46	14.57	10.69	6.81	2.92
	2	24.27	20.48	16.70	12.91	9.12	5.34
	3	26.12	22.43	18.74	15.04	11.35	7.65
	4	27.90	24.30	20.69	17.09	13.48	9.88
	5	29.61	26.09	22.57	19.05	15.53	12.01
	10	37.19	34.05	30.91	27.77	24.63	21.49
15							
	1	29.80	26.29	22.78	19.27	15.76	12.25
	2	31.57	28.15	24.73	21.30	17.88	14.46
	3	33.26	29.93	26.59	23.25	19.92	16.58
	4	34.89	31.64	28.38	25.12	21.87	18.61
	5	36.45	33.27	30.10	26.92	23.74	20.56
	10	43.36	40.53	37.69	34.86	32.03	29.20
20							
	1	36.02	32.82	29.62	26.42	23.22	20.02
	2	37.64	34.53	31.41	28.29	25.17	22.05
	3	39.20	36.16	33.12	30.08	27.04	24.00
	4	40.70	37.73	34.77	31.80	28.83	25.87
	5	42.13	39.23	36.34	33.45	30.55	27.66
	10	48.45	45.87	43.29	40.72	38.14	35.56
25							
	1	41.23	38.29	35.35	32.41	29.47	26.53
	2	42.73	39.86	37.00	34.14	31.27	28.41
	3	44.17	41.37	38.58	35.79	33.00	30.21
	4	45.54	42.82	40.10	37.38	34.65	31.93
	5	46.86	44.21	41.55	38.89	36.23	33.58
	10	52.67	50.31	47.94	45.57	43.21	40.84
30							
	1	45.61	42.90	40.18	37.46	34.74	32.02
	2	47.01	44.36	41.71	39.06	36.41	33.76
	3	48.34	45.76	43.17	40.59	38.01	35.42
	4	49.61	47.10	44.58	42.06	39.54	37.02
	5	50.83	48.38	45.92	43.46	41.00	38.54
	10	56.20	54.01	51.82	49.62	47.43	45.24
40							
	1	52.50	50.13	47.75	45.38	43.00	40.63
	2	53.71	51.40	49.08	46.77	44.45	42.14
	3	54.87	52.61	50.35	48.10	45.84	43.58
	4	55.97	53.77	51.57	49.37	47.16	44.96
	5	57.03	54.88	52.73	50.58	48.43	46.28
	10	61.64	59.73	57.81	55.89	53.97	52.05
50							
	1	57.55	55.43	53.31	51.18	49.06	46.94
	2	58.62	56.55	54.48	52.41	50.34	48.27
	3	59.63	57.61	55.60	53.58	51.56	49.54
	4	60.60	58.63	56.66	54.69	52.72	50.75
	5	61.53	59.60	57.68	55.76	53.83	51.91
	10	65.56	63.84	62.12	60.39	58.67	56.95

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	1.50 PERCENT INCREASE IN	REPAYMENT TERMS		LEVEL PRINCIPAL	
		0.	5.00	COST DUE	TO TYING(./.)		
				10.00	15.00	20.00	25.00
10							
	1	20.11	16.11	12.12	8.12	4.13	0.13
	2	21.84	17.94	14.03	10.12	6.21	2.30
	3	23.51	19.69	15.86	12.04	8.21	4.39
	4	25.11	21.37	17.62	13.88	10.13	6.39
	5	26.65	22.98	19.31	15.65	11.98	8.31
	10	33.47	30.15	26.82	23.50	20.17	16.84
15							
	1	26.82	23.16	19.50	15.84	12.18	8.53
	2	28.41	24.83	21.25	17.67	14.09	10.51
	3	29.94	26.43	22.93	19.43	15.93	12.42
	4	31.40	27.97	24.54	21.11	17.68	14.25
	5	32.81	29.45	26.09	22.73	19.37	16.01
	10	39.02	35.97	32.93	29.88	26.83	23.78
20							
	1	32.42	29.04	25.66	22.28	18.90	15.52
	2	33.88	30.57	27.27	23.96	20.66	17.35
	3	35.28	32.05	28.81	25.57	22.34	19.10
	4	36.63	33.46	30.29	27.12	23.95	20.78
	5	37.91	34.81	31.71	28.60	25.50	22.39
	10	43.60	40.78	37.96	35.14	32.32	29.50
25							
	1	37.10	33.96	30.81	27.67	24.52	21.38
	2	38.46	35.38	32.30	29.22	26.15	23.07
	3	39.75	36.74	33.72	30.71	27.70	24.69
	4	40.99	38.04	35.09	32.14	29.19	26.24
	5	42.18	39.29	36.39	33.50	30.61	27.72
	10	47.40	44.78	42.15	39.52	36.89	34.26
30							
	1	41.05	38.11	35.16	32.21	29.26	26.32
	2	42.31	39.42	36.54	33.65	30.77	27.88
	3	43.51	40.68	37.86	35.03	32.21	29.38
	4	44.65	41.89	39.12	36.35	33.58	30.82
	5	45.75	43.04	40.33	37.61	34.90	32.19
	10	50.58	48.10	45.63	43.16	40.69	38.22
40							
	1	47.25	44.61	41.98	39.34	36.70	34.06
	2	48.34	45.76	43.17	40.59	38.01	35.42
	3	49.38	46.85	44.32	41.79	39.25	36.72
	4	50.37	47.89	45.41	42.93	40.45	37.97
	5	51.32	48.89	46.45	44.02	41.59	39.15
	10	55.48	53.25	51.03	48.80	46.57	44.35
50							
	1	51.80	49.39	46.98	44.57	42.16	39.75
	2	52.75	50.39	48.03	45.67	43.31	40.94
	3	53.67	51.35	49.04	46.72	44.40	42.09
	4	54.54	52.27	50.00	47.72	45.45	43.18
	5	55.37	53.14	50.91	48.68	46.45	44.22
	10	59.00	56.95	54.90	52.86	50.81	48.76

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	2.00 PERCENT INCREASE IN	REPAYMENT TERMS		LEVEL PRINCIPAL	
		0.	5.00	COST	DUE TO TYING(./.)		
		0.	5.00	10.00	15.00	20.00	25.00
10	1	17.87	13.77	9.66	5.55	1.45	-2.66
	2	19.42	15.39	11.36	7.33	3.30	-0.73
	3	20.90	16.94	12.99	9.03	5.08	1.12
	4	22.32	18.44	14.55	10.67	6.79	2.90
	5	23.69	19.87	16.06	12.24	8.43	4.61
	10	29.75	26.24	22.73	19.22	15.71	12.19
15	1	23.84	20.03	16.22	12.42	8.61	4.80
	2	25.25	21.52	17.78	14.04	10.31	6.57
	3	26.61	22.94	19.27	15.60	11.93	8.26
	4	27.91	24.31	20.70	17.10	13.50	9.89
	5	29.16	25.62	22.08	18.53	14.99	11.45
	10	34.69	31.42	28.16	24.89	21.62	18.36
20	1	28.81	25.25	21.70	18.14	14.58	11.02
	2	30.12	26.62	23.13	19.63	16.14	12.64
	3	31.36	27.93	24.50	21.07	17.63	14.20
	4	32.56	29.18	25.81	22.44	19.07	15.70
	5	33.70	30.39	27.07	23.76	20.44	17.13
	10	38.76	35.70	32.63	29.57	26.51	23.45
25	1	32.98	29.63	26.28	22.93	19.58	16.23
	2	34.18	30.89	27.60	24.31	21.02	17.73
	3	35.33	32.10	28.87	25.63	22.40	19.17
	4	36.43	33.26	30.08	26.90	23.72	20.54
	5	37.49	34.36	31.24	28.11	24.99	21.86
	10	42.14	39.24	36.35	33.46	30.57	27.67
30	1	36.49	33.32	30.14	26.97	23.79	20.61
	2	37.61	34.49	31.37	28.25	25.13	22.01
	3	38.67	35.61	32.54	29.47	26.41	23.34
	4	39.69	36.68	33.66	30.65	27.63	24.61
	5	40.67	37.70	34.73	31.77	28.80	25.83
	10	44.96	42.20	39.45	36.70	33.95	31.20
40	1	42.00	39.10	36.20	33.30	30.40	27.50
	2	42.97	40.12	37.26	34.41	31.56	28.71
	3	43.89	41.09	38.28	35.48	32.67	29.87
	4	44.78	42.01	39.25	36.49	33.73	30.97
	5	45.62	42.90	40.18	37.46	34.74	32.03
	10	49.31	46.78	44.25	41.71	39.18	36.64
50	1	46.04	43.34	40.65	37.95	35.25	32.55
	2	46.89	44.24	41.58	38.93	36.27	33.62
	3	47.71	45.09	42.48	39.86	37.25	34.63
	4	48.48	45.91	43.33	40.75	38.18	35.60
	5	49.22	46.68	44.14	41.60	39.07	36.53
	10	52.45	50.07	47.69	45.32	42.94	40.56

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 2.50 PERCENT INCREASE IN REPAYMENT TERMS LEVEL PRINCIPAL COST DUE TO TYING(./.)					
		0.	5.00	10.00	15.00	20.00	25.00
10							
	1	15.64	11.42	7.20	2.98	-1.23	-5.45
	2	16.99	12.84	8.69	4.54	0.39	-3.76
	3	18.29	14.20	10.12	6.03	1.94	-2.14
	4	19.53	15.51	11.48	7.46	3.44	-0.59
	5	20.73	16.76	12.80	8.84	4.87	0.91
	10	26.04	22.34	18.64	14.94	11.24	7.54
15							
	1	20.86	16.90	12.95	8.99	5.03	1.08
	2	22.10	18.20	14.31	10.41	6.52	2.62
	3	23.28	19.45	15.61	11.78	7.94	4.11
	4	24.42	20.64	16.87	13.09	9.31	5.53
	5	25.52	21.79	18.07	14.34	10.62	6.89
	10	30.35	26.87	23.39	19.90	16.42	12.94
20							
	1	25.21	21.47	17.73	13.99	10.25	6.52
	2	26.35	22.67	18.99	15.30	11.62	7.94
	3	27.44	23.81	20.19	16.56	12.93	9.30
	4	28.49	24.91	21.34	17.76	14.18	10.61
	5	29.49	25.96	22.44	18.91	15.39	11.86
	10	33.91	30.61	27.31	24.00	20.70	17.39
25							
	1	28.86	25.30	21.74	18.19	14.63	11.07
	2	29.91	26.41	22.90	19.40	15.89	12.39
	3	30.92	27.46	24.01	20.55	17.10	13.65
	4	31.88	28.47	25.07	21.66	18.26	14.85
	5	32.80	29.44	26.08	22.72	19.36	16.00
	10	36.87	33.71	30.56	27.40	24.24	21.09
30							
	1	31.93	28.53	25.12	21.72	18.32	14.91
	2	32.91	29.55	26.20	22.84	19.49	16.13
	3	33.84	30.53	27.22	23.91	20.61	17.30
	4	34.73	31.47	28.20	24.94	21.68	18.41
	5	35.58	32.36	29.14	25.92	22.70	19.48
	10	39.34	36.30	33.27	30.24	27.20	24.17
40							
	1	36.75	33.59	30.43	27.26	24.10	20.94
	2	37.60	34.48	31.36	28.24	25.12	22.00
	3	38.41	35.33	32.25	29.17	26.09	23.01
	4	39.18	36.14	33.10	30.06	27.01	23.97
	5	39.92	36.91	33.91	30.91	27.90	24.90
	10	43.15	40.31	37.47	34.62	31.78	28.94
50							
	1	40.29	37.30	34.32	31.33	28.34	25.36
	2	41.03	38.08	35.13	32.19	29.24	26.29
	3	41.74	38.83	35.92	33.00	30.09	27.18
	4	42.42	39.54	36.66	33.78	30.91	28.03
	5	43.07	40.22	37.38	34.53	31.68	28.84
	10	45.89	43.19	40.48	37.78	35.07	32.37

GRANT ELEMENTS

		INTEREST RATE	3.00 PERCENT	REPAYMENT TERMS		LEVEL PRINCIPAL
			INCREASE IN	COST DUE	TO TYING(./.)	
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00 25.00
10						
	1	13.40	9.07	4.74	0.41	-3.92 -8.25
	2	14.56	10.29	6.02	1.75	-2.53 -6.80
	3	15.67	11.46	7.24	3.03	-1.19 -5.41
	4	16.74	12.58	8.42	4.25	0.09 -4.07
	5	17.77	13.65	9.54	5.43	1.32 -2.79
	10	22.32	18.43	14.55	10.66	6.78 2.90
15						
	1	17.88	13.77	9.67	5.56	1.46 -2.65
	2	18.94	14.89	10.84	6.78	2.73 -1.32
	3	19.96	15.96	11.95	7.95	3.95 -0.05
	4	20.93	16.98	13.03	9.07	5.12 1.17
	5	21.87	17.96	14.06	10.15	6.24 2.34
	10	26.02	22.32	18.62	14.92	11.22 7.52
20						
	1	21.61	17.69	13.77	9.85	5.93 2.01
	2	22.59	18.72	14.84	10.97	7.10 3.23
	3	23.52	19.70	15.87	12.05	8.23 4.40
	4	24.42	20.64	16.86	13.08	9.30 5.52
	5	25.28	21.54	17.80	14.07	10.33 6.60
	10	29.07	25.52	21.98	18.43	14.88 11.34
25						
	1	24.74	20.97	17.21	13.45	9.68 5.92
	2	25.64	21.92	18.20	14.48	10.76 7.05
	3	26.50	22.82	19.15	15.47	11.80 8.12
	4	27.33	23.69	20.06	16.43	12.79 9.16
	5	28.12	24.52	20.93	17.34	13.74 10.15
	10	31.60	28.18	24.76	21.34	17.92 14.50
30						
	1	27.37	23.74	20.11	16.47	12.84 9.21
	2	28.20	24.61	21.02	17.44	13.85 10.26
	3	29.00	25.45	21.90	18.35	14.80 11.25
	4	29.77	26.26	22.75	19.23	15.72 12.21
	5	30.50	27.03	23.55	20.08	16.60 13.13
	10	33.72	30.40	27.09	23.77	20.46 17.15
40						
	1	31.50	28.08	24.65	21.23	17.80 14.38
	2	32.23	28.84	25.45	22.06	18.67 15.28
	3	32.92	29.57	26.21	22.86	19.50 16.15
	4	33.58	30.26	26.94	23.62	20.30 16.98
	5	34.22	30.93	27.64	24.35	21.06 17.77
	10	36.99	33.84	30.68	27.53	24.38 21.23
50						
	1	34.53	31.26	27.98	24.71	21.44 18.16
	2	35.17	31.93	28.69	25.45	22.20 18.96
	3	35.78	32.57	29.36	26.15	22.94 19.72
	4	36.36	33.18	30.00	26.82	23.63 20.45
	5	36.92	33.76	30.61	27.45	24.30 21.15
	10	39.34	36.30	33.27	30.24	27.20 24.17

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE	3.50 PERCENT	REPAYMENT	TERMS	LEVEL	PRINCIPAL
		0.	INCREASE IN	COST	DUE TO TYING(. / .)	20.00	25.00
10							
	1	11.17	6.73	2.29	-2.15	-6.60	-11.04
	2	12.14	7.74	3.35	-1.04	-5.44	-9.83
	3	13.06	8.71	4.37	0.02	-4.33	-8.67
	4	13.95	9.65	5.35	1.04	-3.26	-7.56
	5	14.81	10.55	6.29	2.03	-2.23	-6.49
	10	18.60	14.53	10.46	6.39	2.32	-1.75
15							
	1	14.90	10.65	6.39	2.14	-2.12	-6.37
	2	15.78	11.57	7.36	3.15	-1.06	-5.27
	3	16.63	12.46	8.30	4.13	-0.04	-4.21
	4	17.45	13.32	9.19	5.06	0.93	-3.19
	5	18.23	14.14	10.05	5.96	1.87	-2.22
	10	21.68	17.76	13.85	9.93	6.02	2.10
20							
	1	18.01	13.91	9.81	5.71	1.61	-2.49
	2	18.82	14.76	10.70	6.65	2.59	-1.47
	3	19.60	15.58	11.56	7.54	3.52	-0.50
	4	20.35	16.37	12.38	8.40	4.42	0.43
	5	21.06	17.12	13.17	9.22	5.28	1.33
	10	24.22	20.44	16.65	12.86	9.07	5.28
25							
	1	20.61	16.64	12.67	8.71	4.74	0.77
	2	21.36	17.43	13.50	9.57	5.64	1.71
	3	22.08	18.19	14.29	10.40	6.50	2.60
	4	22.77	18.91	15.05	11.19	7.33	3.46
	5	23.43	19.60	15.77	11.95	8.12	4.29
	10	26.34	22.65	18.97	15.29	11.60	7.92
30							
	1	22.81	18.95	15.09	11.23	7.37	3.51
	2	23.50	19.68	15.85	12.03	8.20	4.38
	3	24.17	20.38	16.59	12.80	9.00	5.21
	4	24.81	21.05	17.29	13.53	9.77	6.01
	5	25.42	21.69	17.96	14.23	10.50	6.77
	10	28.10	24.50	20.91	17.31	13.72	10.12
40							
	1	26.25	22.56	18.88	15.19	11.50	7.81
	2	26.85	23.20	19.54	15.88	12.23	8.57
	3	27.43	23.80	20.18	16.55	12.92	9.29
	4	27.98	24.38	20.78	17.18	13.58	9.98
	5	28.51	24.94	21.36	17.79	14.22	10.64
	10	30.82	27.36	23.90	20.44	16.99	13.53
50							
	1	28.78	25.21	21.65	18.09	14.53	10.97
	2	29.31	25.77	22.24	18.70	15.17	11.64
	3	29.82	26.31	22.80	19.29	15.78	12.27
	4	30.30	26.82	23.33	19.85	16.36	12.88
	5	30.76	27.30	23.84	20.38	16.92	13.45
	10	32.78	29.42	26.06	22.70	19.34	15.98

GRANT ELEMENTS

		INTEREST RATE 4.00 PERCENT INCREASE IN		REPAYMENT TERMS LEVEL PRINCIPAL COST DUE TO TYING(./.)			
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00
10							
	1	8.94	4.38	-0.17	-4.72	-9.28	-13.83
	2	9.71	5.19	0.68	-3.84	-8.35	-12.86
	3	10.45	5.97	1.49	-2.98	-7.46	-11.94
	4	11.16	6.72	2.28	-2.16	-6.61	-11.05
	5	11.84	7.44	3.03	-1.38	-5.79	-10.19
10	14.88	10.62	6.37	2.11	-2.15	-6.40	
15							
	1	11.92	7.52	3.11	-1.29	-5.70	-10.10
	2	12.63	8.26	3.89	-0.48	-4.85	-9.22
	3	13.31	8.97	4.64	0.30	-4.03	-8.37
	4	13.96	9.65	5.35	1.05	-3.25	-7.55
	5	14.58	10.31	6.04	1.77	-2.50	-6.77
10	17.34	13.21	9.08	4.95	0.81	-3.32	
20							
	1	14.41	10.13	5.85	1.57	-2.71	-6.99
	2	15.06	10.81	6.56	2.32	-1.93	-6.18
	3	15.68	11.46	7.25	3.03	-1.18	-5.40
	4	16.28	12.09	7.91	3.72	-0.47	-4.65
	5	16.85	12.69	8.54	4.38	0.22	-3.94
10	19.38	15.35	11.32	7.29	3.26	-0.78	
25							
	1	16.49	12.32	8.14	3.96	-0.21	-4.39
	2	17.09	12.95	8.80	4.66	0.51	-3.64
	3	17.67	13.55	9.43	5.32	1.20	-2.92
	4	18.22	14.13	10.04	5.95	1.86	-2.23
	5	18.74	14.68	10.62	6.56	2.49	-1.57
10	21.07	17.12	13.18	9.23	5.28	1.34	
30							
	1	18.25	14.16	10.07	5.98	1.90	-2.19
	2	18.80	14.74	10.68	6.62	2.56	-1.50
	3	19.34	15.30	11.27	7.24	3.20	-0.83
	4	19.85	15.84	11.83	7.82	3.81	-0.19
	5	20.33	16.35	12.37	8.38	4.40	0.42
10	22.48	18.60	14.73	10.85	6.97	3.10	
40							
	1	21.00	17.05	13.10	9.15	5.20	1.25
	2	21.48	17.56	13.63	9.71	5.78	1.85
	3	21.95	18.04	14.14	10.24	6.34	2.43
	4	22.39	18.51	14.63	10.75	6.87	2.98
	5	22.81	18.95	15.09	11.23	7.37	3.51
10	24.66	20.89	17.12	13.36	9.59	5.82	
50							
	1	23.02	19.17	15.32	11.47	7.63	3.78
	2	23.45	19.62	15.79	11.96	8.14	4.31
	3	23.85	20.05	16.24	12.43	8.62	4.82
	4	24.24	20.45	16.66	12.88	9.09	5.30
	5	24.61	20.84	17.07	13.30	9.53	5.76
10	26.22	22.54	18.85	15.16	11.47	7.78	

GRANT ELEMENTS

TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 4.50 PERCENT INCREASE IN		REPAYMENT TERMS COST DUE TO TYING(./.)		LEVEL 20.00	PRINCIPAL 25.00
		0.	5.00	10.00	15.00		
10							
	1	6.70	2.04	-2.63	-7.29	-11.96	-16.62
	2	7.28	2.65	-1.99	-6.63	-11.26	-15.70
	3	7.84	3.23	-1.38	-5.99	-10.60	-15.20
	4	8.37	3.79	-0.79	-5.37	-9.96	-14.54
	5	8.88	4.33	-0.23	-4.78	-9.34	-13.90
	10	11.16	6.72	2.27	-2.17	-6.61	-11.05
15							
	1	8.94	4.39	-0.17	-4.72	-9.27	-13.82
	2	9.47	4.94	0.42	-4.11	-8.64	-13.16
	3	9.98	5.48	0.98	-3.52	-8.02	-12.53
	4	10.47	5.99	1.51	-2.96	-7.44	-11.92
	5	10.94	6.48	2.03	-2.42	-6.88	-11.33
	10	13.01	8.66	4.31	-0.04	-4.39	-8.74
20							
	1	10.81	6.35	1.89	-2.57	-7.03	-11.49
	2	11.29	6.86	2.42	-2.01	-6.45	-10.88
	3	11.76	7.35	2.94	-1.48	-5.89	-10.30
	4	12.21	7.82	3.43	-0.96	-5.35	-9.74
	5	12.64	8.27	3.90	-0.47	-4.83	-9.20
	10	14.53	10.26	5.99	1.71	-2.56	-6.83
25							
	1	12.37	7.99	3.60	-0.78	-5.16	-9.54
	2	12.82	8.46	4.10	-0.26	-4.62	-8.98
	3	13.25	8.91	4.57	0.24	-4.10	-8.44
	4	13.66	9.35	5.03	0.71	-3.60	-7.92
	5	14.06	9.76	5.46	1.17	-3.13	-7.43
	10	15.80	11.59	7.38	3.17	-1.04	-5.25
30							
	1	13.68	9.37	5.05	0.74	-3.58	-7.89
	2	14.10	9.81	5.51	1.22	-3.08	-7.37
	3	14.50	10.23	5.95	1.68	-2.60	-6.87
	4	14.88	10.63	6.37	2.12	-2.14	-6.39
	5	15.25	11.01	6.78	2.54	-1.70	-5.94
	10	16.86	12.70	8.54	4.39	0.23	-3.93
40							
	1	15.75	11.54	7.33	3.11	-1.10	-5.31
	2	16.11	11.92	7.72	3.53	-0.66	-4.86
	3	16.46	12.28	8.11	3.93	-0.25	-4.43
	4	16.79	12.63	8.47	4.31	0.15	-4.01
	5	17.11	12.96	8.82	4.67	0.53	-3.62
	10	18.49	14.42	10.34	6.27	2.19	-1.88
50							
	1	17.27	13.13	8.99	4.86	0.72	-3.42
	2	17.58	13.46	9.34	5.22	1.10	-3.02
	3	17.89	13.78	9.68	5.57	1.47	-2.64
	4	18.18	14.09	10.00	5.91	1.82	-2.27
	5	18.46	14.38	10.30	6.23	2.15	-1.93
	10	19.67	15.65	11.63	7.62	3.60	-0.41

GRANT ELEMENTS


TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	INTEREST RATE 5.00 PERCENT INCREASE IN REPAYMENT TERMS LEVEL PRINCIPAL COST DUE TO TYING(./.)					
		0.	5.00	10.00	15.00	20.00	25.00
10	1	4.47	-0.31	-5.09	-9.86	-14.64	-19.42
	2	4.85	0.10	-4.66	-9.42	-14.18	-18.93
	3	5.22	0.49	-4.25	-8.99	-13.73	-18.47
	4	5.58	0.86	-3.86	-8.58	-13.30	-18.02
	5	5.92	1.22	-3.49	-8.19	-12.89	-17.60
	10	7.44	2.81	-1.82	-6.45	-11.07	-15.70
15	1	5.96	1.26	-3.44	-8.15	-12.85	-17.55
	2	6.31	1.63	-3.05	-7.74	-12.42	-17.11
	3	6.65	1.99	-2.68	-7.35	-12.02	-16.68
	4	6.98	2.33	-2.32	-6.98	-11.63	-16.28
	5	7.29	2.65	-1.98	-6.62	-11.25	-15.89
	10	8.67	4.11	-0.46	-5.03	-9.59	-14.16
20	1	7.20	2.56	-2.08	-6.72	-11.36	-16.00
	2	7.53	2.91	-1.72	-6.34	-10.97	-15.59
	3	7.84	3.23	-1.38	-5.98	-10.59	-15.20
	4	8.14	3.55	-1.05	-5.64	-10.23	-14.83
	5	8.43	3.85	-0.73	-5.31	-9.89	-14.47
	10	9.69	5.17	0.66	-3.86	-8.37	-12.89
25	1	8.25	3.66	-0.93	-5.52	-10.11	-14.69
	2	8.55	3.97	-0.60	-5.17	-9.75	-14.32
	3	8.83	4.27	-0.28	-4.84	-9.40	-13.96
	4	9.11	4.56	0.02	-4.52	-9.07	-13.61
	5	9.37	4.84	0.31	-4.22	-8.75	-13.28
	10	10.53	6.06	1.59	-2.89	-7.36	-11.83
30	1	9.12	4.58	0.04	-4.51	-9.05	-13.60
	2	9.40	4.87	0.34	-4.19	-8.72	-13.25
	3	9.67	5.15	0.63	-3.88	-8.40	-12.92
	4	9.92	5.42	0.92	-3.59	-8.09	-12.60
	5	10.17	5.68	1.18	-3.31	-7.80	-12.29
	10	11.24	6.80	2.36	-2.08	-6.51	-10.95
40	1	10.50	6.03	1.55	-2.92	-7.40	-11.87
	2	10.74	6.28	1.82	-2.65	-7.11	-11.57
	3	10.97	6.52	2.07	-2.38	-6.83	-11.28
	4	11.19	6.75	2.31	-2.13	-6.57	-11.01
	5	11.40	6.98	2.55	-1.88	-6.31	-10.74
	10	12.33	7.95	3.56	-0.82	-5.21	-9.59
50	1	11.51	7.09	2.66	-1.76	-6.19	-10.61
	2	11.72	7.31	2.90	-1.52	-5.93	-10.35
	3	11.93	7.52	3.12	-1.28	-5.69	-10.09
	4	12.12	7.73	3.33	-1.06	-5.46	-9.85
	5	12.31	7.92	3.54	-0.85	-5.23	-9.62
	10	13.11	8.77	4.42	0.08	-4.27	-8.61

GRANT ELEMENTS

		INTEREST RATE 5.50 PERCENT INCREASE IN		REPAYMENT TERMS COST DUE TO TYING(./.)		LEVEL PRINCIPAL	
TERM TO MATURITY (YEARS)	GRACE PERIOD (YEARS)	0.	5.00	10.00	15.00	20.00	25.00
<hr/>							
10	1	2.23	-2.65	-7.54	-12.43	-17.32	-22.21
	2	2.43	-2.45	-7.33	-12.21	-17.09	-21.97
	3	2.61	-2.26	-7.13	-12.00	-16.87	-21.73
	4	2.79	-2.07	-6.93	-11.79	-16.65	-21.51
	5	2.96	-1.89	-6.74	-11.59	-16.45	-21.30
	10	3.72	-1.09	-5.91	-10.72	-15.54	-20.35
<hr/>							
15	1	2.98	-1.87	-6.72	-11.57	-16.42	-21.28
	2	3.16	-1.69	-6.53	-11.37	-16.21	-21.05
	3	3.33	-1.51	-6.34	-11.17	-16.01	-20.84
	4	3.49	-1.34	-6.16	-10.99	-15.81	-20.64
	5	3.65	-1.17	-5.99	-10.81	-15.63	-20.44
	10	4.34	-0.45	-5.23	-10.01	-14.80	-19.58
<hr/>							
20	1	3.60	-1.22	-6.04	-10.86	-15.68	-20.50
	2	3.76	-1.05	-5.86	-10.67	-15.48	-20.29
	3	3.92	-0.88	-5.69	-10.49	-15.30	-20.10
	4	4.07	-0.73	-5.52	-10.32	-15.12	-19.91
	5	4.21	-0.58	-5.37	-10.16	-14.94	-19.73
	10	4.84	0.09	-4.67	-9.43	-14.19	-18.94
<hr/>							
25	1	4.12	-0.67	-5.47	-10.26	-15.05	-19.85
	2	4.27	-0.51	-5.30	-10.09	-14.87	-19.66
	3	4.42	-0.36	-5.14	-9.92	-14.70	-19.48
	4	4.55	-0.22	-4.99	-9.76	-14.53	-19.31
	5	4.69	-0.08	-4.85	-9.61	-14.38	-19.14
	10	5.27	0.53	-4.21	-8.94	-13.68	-18.42
<hr/>							
30	1	4.56	-0.21	-4.98	-9.75	-14.53	-19.30
	2	4.70	-0.06	-4.83	-9.59	-14.36	-19.12
	3	4.83	0.08	-4.68	-9.44	-14.20	-18.96
	4	4.96	0.21	-4.54	-9.29	-14.05	-18.80
	5	5.08	0.34	-4.41	-9.15	-13.90	-18.65
	10	5.62	0.90	-3.82	-8.54	-13.26	-17.98
<hr/>							
40	1	5.25	0.51	-4.22	-8.96	-13.70	-18.44
	2	5.37	0.64	-4.09	-8.82	-13.55	-18.29
	3	5.49	0.76	-3.96	-8.69	-13.42	-18.14
	4	5.60	0.88	-3.84	-8.56	-13.28	-18.00
	5	5.70	0.99	-3.73	-8.44	-13.16	-17.87
	10	6.16	1.47	-3.22	-7.91	-12.60	-17.29
<hr/>							
50	1	5.76	1.04	-3.67	-8.38	-13.09	-17.81
	2	5.86	1.15	-3.55	-8.26	-12.97	-17.67
	3	5.96	1.26	-3.44	-8.14	-12.84	-17.55
	4	6.06	1.36	-3.33	-8.03	-12.73	-17.42
	5	6.15	1.46	-3.23	-7.92	-12.62	-17.31
	10	6.56	1.88	-2.79	-7.46	-12.13	-16.80

Mr. S.K. Bhatia

November 6, 1967

E.K. Hawkins 

Departmental Working Papers

Please note that, in addition to the distribution list, we have sent copies of Working Papers 7 and 8 to the following people:

Mr. Marshall Hall
Mr. Enrique Lerdau
Mr. H. van der Heijden
Mr. Murray Ross
Mr. Roger Nelson
Mr. Elliott R. Morss (IMF)
Mr. P.L. Chen-Young
Mr. A. Shibusawa
Mr. de Costa
Mr. Philip Hayes (M.O.D.)

EKHawkins/w

Mr. A. Stevenson

November 2, 1967

J. H. Williams

Mr. Kamarck's Meeting with Senior Advisers and Group Heads

I was glad to receive a copy of Mr. Bhatia's memorandum of October 27. Part I makes me wonder whether there is some misunderstanding. It appears to institute a new procedure, or at least "arrangement", but I do not recall anyone in my Department having been involved in its consideration. Secondly I am not at all sure that the arrangement as described in Mr. Bhatia's paper reflects the understanding of it by Projects Department. Accordingly, before the new procedure does come into effect I would wish, if you are agreeable to arrange for a meeting with yourself and Mr. Bell so that we may all be clear on what we are trying to do.


JHWilliams:mk

c.c. Mr. Bell

OFFICE MEMORANDUM

TO: Files

DATE: October 27, 1967

FROM: Samir K. Bhatia SUBJECT: Mr. Kamarck's Meeting with Senior Advisers and Group Heads

Messrs. Kamarck (Chairman), Stevenson, Adler, de Vries, Sacchetti, Collier, Kalmanoff, van der Tak and Bhatia (Secretary) met on Thursday, October 19, 1967, in Mr. Kamarck's office to discuss the following three issues:

- I. The Economics Department Arrangement for Review of Project Reports
- II. Review of the Economic Working Party System
- III. Discussion of Draft Paper Entitled "Proposed Consensus" prepared by Mr. Collier dated October 19, 1967.

Professor Mason was present part of the time.

I. The Economics Department Arrangement for Review of Project Reports

Messrs. Stevenson and van der Tak outlined the arrangement for review of Project Reports which they had discussed with Mr. Bernard Bell of the Projects Department. Reports would be sent by the Projects Department division concerned to Mr. van der Tak at the same time as reports were being sent to the Projects Department Front Office, prior to sending it to the country working party. The Economics Department would review, in particular, those sections dealing with economic analysis of the project; comments would be addressed to Mr. Sadove. The arrangement would go into effect on October 23, 1967.

Mr. van der Tak elaborated on how he expected the arrangement to work. The report would normally be reviewed by staff of the Investment Planning Division, with appropriate consultations with other divisions, in particular, the Export Projections and Trade Division. Important comments were to be made in writing, minor ones could be dealt with orally; it might be useful if, before comments were made, reviewing staff would contact the author of the report to clear up misunderstandings. Important issues should be discussed in a tripartite meeting between Mr. Sadove, the Projects Department Division concerned, and the Sector and Project Group. A record should be kept of the agreements reached on revision of substantive points. Major disagreements should be referred to the Front Office. Green cover reports presented to the Loan Committee would be reviewed to ascertain whether adequate changes had been made, and the Front Office informed accordingly. Initially at least, the arrangement was to be strictly bilateral between the Projects and Economics Departments, and would not involve the country working party. It would appear likely, however, that it would lead to ad hoc participation in

October 27, 1967

working party discussions on economic aspects of projects. The arrangement was experimental and its efficacy should be reviewed after a few months.

As a counterpart of this review function, the Projects Department would welcome participation of members of the Economics Department in project missions. It would serve to keep staff members of the Economics Department in touch with real problems faced in the Bank's operational work. This practical experience would also be of great value to the Sector and Project Group in evolving sound economic methodology.

Conclusion: Mr. Kamarck welcomed this arrangement in principle. However, he emphasized that in order to prevent this arrangement from becoming too onerous and absorbing too much personnel, it should be considered as only "Technical Assistance" to the Projects Department. It is important to be in close touch with the real problems and to help secure better economic analysis of projects from day to day, but it is also important to keep sufficiently free of day to day routine to continue to make a contribution to the improvement of project analytical techniques and methodology. He felt that at this stage this arrangement should be considered as an experiment and should be reviewed at a later date. Mr. Kamarck asked Mr. van der Tak to be directly responsible for the review arrangements with the Projects Department.

II. Review of the Economic Working Party System

Mr. Kamarck asked for the opinions of those present on the Economic Working Party system which was introduced on June 6 of this year. In response, Mr. Collier who had attended Economic Working Party meetings on India and Togo said that he believed that the system was working very satisfactorily. Mr. Adler shared his views but observed that at present no record was kept of the proceeding of the meetings. In the absence of such minutes, it was difficult to ascertain whether points raised at the meeting were actually incorporated in the revised report or not.

Conclusion: Mr. Kamarck suggested that the Economics Department representative at these meetings should raise the question of minutes with the Chairman of the Working Party.

III. Discussion of Draft Paper Entitled "Proposed Consensus"

A copy of this paper was distributed in the meeting and discussed. In view of the discussion, Mr. Kamarck asked Mr. Collier to redraft the paper in order to incorporate the comments made.

Cleared with Mr. Stevenson and Mr. van der Tak (Part I)

cc: Messrs. Kamarck, Stevenson, Adler, de Vries, Sacchetti, Mason
Collier, Kalmanoff, van der Tak

SKBhatia:rk

October 26, 1967

Dear Mr. van Hoek,

Thank you very much for your letter dated October 9, 1967, which arrived during my absence from Washington.

As requested by you, I am enclosing a copy of revised pages outlining the composition and major activities of the Economics Department of the World Bank for inclusion in the Catalogue of Social and Economic Development Research Institutes and Programmes to be published by your organization.

I should be obliged if you would send me a copy of this Catalogue when it is published.

Yours sincerely,

Andrew M. Kamarck
Director
Economics Department

Enclosure

Mr. Francois van Hoek
Head of Division
Organisation for Economic Co-operation
and Development
91, boulevard Exelmans
Paris - XVIe, France

SKBhaia:rk

REVISED

International Organisations

I.B.R.D.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

ECONOMICS DEPARTMENT

1818 H Street, N.W.
Washington, D.C. 20433

Tel. Executive 3-6360

I. GENERAL INFORMATION

Director: Andrew M. Kamarck

Nature of the Organisation: The Economics Department has, under different names, always been a Department of the International Bank for Reconstruction and Development, and has close links with the Economic Adviser to the President, Irving S. Friedman.

Aim of the Institute: The Economics Department has a central role in the economic and statistical work of the World Bank Group of institutions. It deals both at the research and the operations level with the wide range of economic questions that arise in the course of the World Bank Group's activities. These are concerned primarily with the basic problem of assisting economic growth in developing countries. The research activities of the Department aim to provide criteria for evaluation of country economic development, economic programmes and policies and to develop analytical tools that facilitate the economic work of the Bank. For example, what are the principles by which the creditworthiness of an economy should be judged when making loans? How is economic performance to be measured for an economy and how should aid be linked to performance?

Questions of special economic significance may be referred to the Department for analysis. In its operational activities the Department co-operates with the Bank's Area Departments in investigating economic growth - efforts, programmes and policies - in specific countries and in assessing credit requirements and making recommendations. Thirdly, the Department provides statistical services, compiling, analysing and publishing statistics in major fields of interest to the Bank. Finally, the Department aims to keep the economics of the Bank up with the latest developments, through the organisation of research seminars, refresher courses and training programmes.

Administration and Organisation: The Department is headed by the Director, Andrew M. Kamarck, and a Deputy Director, Alexander Stevenson. John H. Adler, Barend A. de Vries, Guy H. Orcutt, and Ugo Sacchetti are Senior Advisers. The Department is organised into four Groups which consist of several Divisions, each dealing with a distinct group of problems.

Staff: 79 full-time professionals are working on various projects and another 4 on special assignments outside the Department. In addition, there are four part-time Consultants, Professors E.S. Mason, Bela Balassa, Isaiah Frank, and Frank M. Tamagna.

Financial Resources: The Department is a part of the World Bank and its financial resources stem from the general budget of the Bank.

Facilities: The staff use the well-equipped Joint Library of the Bank and the International Monetary Fund as well as the Bank's collection of official publications and Bank studies. Research work draws on empirical data and other information obtained in the course of Bank relations with member countries and borrowing entities.

Working Links: Numerous.

II. TRAINING ACTIVITIES

The Bank has a Young Professional Training Programme with the object of training young people for employment in the Bank. A number of the Young Professionals are trained in the Economics Department.

III. RESEARCH ACTIVITIES

Country Group (J.H. Collier, Group Head): This group works primarily with the Area Departments and consists of the following divisions:

1. Domestic Finance Division: The major responsibility of this division is to help assess developing countries' domestic fiscal and financial problems and their financing plans for public investment and development programmes. Among the division's major research works at present is a study of the process of generation of domestic savings and their channeling to investment in selected developing countries.
2. Comparative Analysis Division: The major task of this division is to ensure that, so far as possible, a consistent set of criteria is applied in the Bank's country economic work.
3. Comparative Data Division: The major function of this division is to prepare comparative statistics on economics growth and development in Bank member countries for Bank publications, such as the Annual Report and the World Bank Atlas. The division has also prepared World Tables, summarizing and comparing individual country information for the world at large.

Sector and Project Group (H.G. van der Tak, Group Head): The work of this group is closely related to that of the Projects Department of the Bank and to the International Finance Corporation. The divisions in this group are as follows:

1. Investment Planning Division: This division is concerned with the determination and application of investment criteria and with questions related to resource allocation generally, in main sectors such as transport, power and water excluding industry. Well advanced in the division's current programme are studies of practicable methods of cost-benefit analysis in education projects and of problems in urban water supply projects. Another study which the division is exploring is the possibility of deriving agricultural production models for the developing countries to improve projections of output at the project and sector levels. Research is also in hand on special problems that arise in project analysis in countries undergoing serious inflation and on questions of optimum timing of investments.
2. Industrialization Division: This division is mainly engaged in studying the industrial sector and industrial planning and policy in different developing countries and allied problems such as estimating demand for industrial products and studying protection and tax incentives in development. A study of the appropriate pace and pattern of import substitution and of the desirable level and structure of production in developing economies is in progress.

International Group (G. Kalmanoff, Group Head): This group is responsible for providing information and analyses of developments in international trade which are matters of close concern to the Bank. It works closely with the Area and Projects Departments and also with other international organisations such as the FAO, OECD, and UNCTAD. The group consists of the following two divisions:

1. International Finance Division: This division is concerned with the analysis of various aspects of the relationship between development and international finance, such as the study of multilateral and bilateral aid flows, private international capital flows and problems related to external debt of developing countries.
2. Export Projections and Trade Division: This division studies the developments in the supply, demand, prices and trade of major primary commodities and their impact on the export earnings of developing countries. Projections of these variables are made to provide a basis for work by other groups and departments on the economics of specific developing countries. A report on feedgrains was recently issued and studies of aluminum, copper, rice, jute, nickel and plywood are in progress.

The division has also completed a Reference Handbook on Commodity Prices and has in hand a survey of possible effects on developing countries' exports of reducing barriers to trade in primary products.

General Group: This group is composed of the following two divisions:

1. Applied Quantitative Research Division: This division is working experimentally on the application of econometric techniques to country economic work and is responsible for population studies of interest to the Bank.
2. Statistical Services Division: This is in greater part a service organisation to provide all Departments in the Bank with the statistical compilations, analyses and advice, computations and tabulations which they require. Another major activity of this division is to provide detailed and up-to-date information about the long-term external public debt of member countries. In addition, the division maintains selected information on commodity prices, on foreign bonds and equities, and on interest rates in selected capital markets. The division also studies the methods of compiling and presenting these continuing collections, and the development of computer programmes to store and process data and to accommodate the types of projection and analysis frequently needed in Bank work. This division has also a Graphics Section which prepares all charts appearing in Bank, IDA, and IFC reports.

IV. PUBLICATIONS AND DOCUMENTS

A number of reports prepared by the Department are given fairly wide circulation in mimeographed form and some are published by the Bank as Occasional Papers. In addition, the Department issues Economics Department Working Papers for the use of staff members. The Department has recently introduced a new quarterly publication (Economics Department: Status of Major Studies), outlining the status of major on-going, planned, and completed studies in the Department, for the information and the use of staff members of the Bank.

V. OPERATIONAL ACTIVITIES

The Department makes available from time to time personnel to man Bank missions to different countries seeking development finance. The Department also provides staff to represent the Bank in international meetings and conferences.

October 26, 1967

Mr. A. Kundu

October 18, 1967

N.G. Carter

Factor Analysis

With reference to your memo of September 22 and our conversation on this subject, I would like to set forth my comments.

I think that it should first be pointed out that factor analysis ^{1/} is not an alternative to least squares regression, it is rather an aid to such a procedure. It enables analysis to proceed without the common problems that arise as a result of multicollinearity, whether this be strong or weak. It is thus a very useful tool, but there are some pitfalls. In the first place, extraction of as many factors as there are original variables and then retranslation of the factor analysis regression results back to the original variables does nothing at all except waste time; the same results can be obtained by direct application of least squares. Furthermore, there can be a serious objection to the extraction of a factor that does not have any direct economic interpretation. Let me also add that factor analysis is a useful tool, but not at all as pleasant as certain more direct measures and indicators of multicollinearity.^{2/}

The nature of the procedure creates some difficulties for us. The extraction of factors is an iterative procedure with factors being produced in order of their contribution to trace. If one has a good a priori notion of the factors that will result, then a limit to the number that should be extracted can be set, otherwise the method calls for intervention by the user and a judgment as to the cutoff after most of the entire set is viewed. Such a procedure is obviously not suited to our current service bureau set up (nor will it be particularly good with our projected in-house machine-it is best suited to time sharing). Thus we shall probably have to use the factor analysis program as a unit unto itself rather than have it integrated into a regression analysis program.

I would suggest that we aim for a program that will extract all n factors from a set of observations on n variables, and that will produce as output the correlation of each factor with the original variables, the contribution of each factor to the trace of the correlation matrix, and the calculated observations of the extracted factors. These observations should also be punched out in DAM input format (F10.0) so that the selected factors can be used in the regression analysis with the observations on the dependent variable.

I hope we can set up a meeting of all interested users of this program and come to a consensus of features desired so that work can begin.

^{1/} By factor analysis I mean more correctly, principal components analysis.

^{2/} See for example Farrar and Glauber Multicollinearity Revisited REStat Feb.67.

cc: Messrs. Hawkins, Tiemann, Niebuhr

Mr. Alexander Stevenson

October 9, 1967

Arthur E. Tiemann *art*

Co-Ordination of Statistical Methods

1. Messrs. Jaycox and Pouliquen of the Projects Department have prepared a paper on risk analysis for a proposed investment in Port of Mogadiscio, Somalia (vide their memo to Mr. Baum dated September 19, 1967), and utilised the services of our Programming Section to program the system for the computer. The paper incorporates a statistical methodology which uses probability and Monte Carlo techniques to estimate the rate of return in terms of several relevant parameters. Messrs. Jaycox and Pouliquen suggested that "the computer approach may efficiently be used in the economic and financial analysis of a project and could both simplify and accelerate the work of an appraisal mission. However, the set up of the program is time consuming and it could be useful to develop, beforehand, models of a few typical problems".
2. The Statistical Services Division has been unable to review the technique because the paper does not contain sufficient detail to permit a thorough examination of the methodology. However, the general description indicates that such methods may have broader application throughout the Bank. For example, we understand that Mr. Ray of the Economics Department is thinking of using Monte Carlo technique in a study on Ports. Mr. Andreu, presently in Administration Department, has been working on projects which most probably are methodologically similar to the risk analysis problem. These staff members have contacted us only for piecemeal work of their problems, and therefore we had no opportunity to examine them properly.
3. The matter is brought to your attention since in the process of servicing individual requests we have seen evidence of the possibility of duplication of analytical and programming efforts. Research problems from different backgrounds may often have application of the same statistical technique. Understandably, the staff members working on various projects may not realize this. With our experience in Operations Research and Applied Statistics, we may be of greater help to these staff members if we knew beforehand what techniques are contemplated. We could then provide them with generalized versions of the solutions of their problems, which, with minor modifications, could be suited to individual requirements. This would conserve time and energy of all concerned.
4. As we have noted on previous occasions, all staff members anticipating non-routine statistical and programming work could benefit if they would consult us well in advance to explore methodological problems. In this connection the description of research work put up by the Departments (e.g. Economics Dept: Research Projects EC/O/67-5) in their mention of proposed techniques, should provide sufficient detail to keep everyone informed of the analytical processes contemplated. Furthermore this would enable us to explore analytical methods

October 9, 1967

thoroughly and thus plan for general applicability of the solution techniques. In this way, the Statistical Services Division, through its General Statistics Section, could serve as a clearinghouse for statistical techniques. If you concur, we could undertake this function on a more systematic basis. Such a function would not eliminate all duplication of statistical effort but could provide a focal point where economists interested in statistical methodologies for their economic analyses could turn for information. In view of the wide variety of statistical skills and expertise available throughout the Bank, the establishment of a clearinghouse for statistical techniques could well provide a more thorough utilization of such skills.

all
AK:ss

Mr. J. Schmedtje

October 6, 1967

Jan de Weille

Investment Planning Division: Research Program

1. This memo first lists studies in the pipeline and with which I am connected and second suggests and briefly discusses a number of studies which our division could undertake in the near future.

2. In the pipeline at the moment are:

- a. The optimum timing of investments;
- b. The optimum number of berths;
- c. The optimum depth of a port;
- d. A review of 62 road project appraisal reports;
- e. El Salvador feeder road reappraisal study.

I would hope that by early next year the first four studies have been finished.

3. In the field of transport I suggest the following two studies:

- a. A study on systems analysis for transportation planning purposes. In recent years, the trend, inside as well as outside the Bank, has been towards a more comprehensive approach towards project planning in the field of transport. A number of interesting studies have been, or are being made in this whole area and the time would seem to have come to take stock.

Aspects to be covered in this study: inventory and analysis of existing models and approaches (Harvard, Stanford, Lockheed International; India, Brazil, Columbia, Sudan, Dahomey); evaluation of these models; recommendations as to the possible improvements of the models; conclusions as to the usefulness of the systems analysis approach for transportation planning purposes.

This study might require some 8 man months and could be undertaken by a Young Professional and myself.

- b. A study on road maintenance costs. There would seem to be ample scope for a worthwhile contribution. The existing literature on the subject is generally poor and limited. Moreover, in view of the fairly extensive road (re)construction programs in many underdeveloped countries during the last decade, the issue of road maintenance and costs has become increasingly important.

October 6, 1967

Aspects to be covered in this study: review of existing literature (Soberman, Millard, our Iran Study, etc.); collection and analysis of cost data (physical and price component) for maintenance of different types of roads and different conditions; collection and analysis of data with a bearing on the impact of traffic volume on maintenance, etc. The co-operation of the Transportation Division of the Bank's Project Department in this study should be secured.

This study might require some 5 to 6 man months and could be undertaken by a Young Professional under my guidance.

4. As studies dealing with general problems in the field of project appraisal, I suggest the following two:

- a. A study on the role of taxation in project evaluation. My impression is that this is a neglected area. Some rules of thumb do exist ("taxes should be excluded in an economic evaluation") but it seems to me that the problem is not really thought through.

Aspects to be covered in this study: existing project appraisal practices in dealing with direct and indirect taxes; the role of direct and indirect taxation in resource allocation; taxation and the criteria used for investment planning by the public and private sector of the economy; implications of present project appraisal practices with a view to optimum resource allocation; conclusions and recommendations as to the treatment of taxes in project appraisal.

This study might require some 6 man months and could perhaps best be undertaken in co-operation with our Domestic Finance Division. I would like to take an active interest in this study.

- b. A study dealing with the so-called indirect/secondary benefits of projects. This problem is briefly touched upon in the recent van der Tak/Ray paper. A more extensive discussion of the problem in a separate paper would, however, seem to be fully warranted in view of the diverse opinions which seem to exist on this topic.

Aspects to be covered in the study: definition of indirect/secondary benefits; existing project appraisal practices with respect to their treatment; analysis of the role of indirect/secondary benefits given the criteria used in optimum resource allocation; conclusions and recommendations.

Mr. J. Schmedtje

-3-

October 6, 1967

This study might require some 6 to 8 man months.
Mr. Reutlinger might wish to take an active part in
it.

JdeWeille:bsc/*dw*

cc. Mr. H. G. van der Tak

8 cm. Opt. ?

Mr. F. Bhatia

October 5, 1967

Marko Zlatich

Economics Department Working Papers.

1. It has been brought to my attention that the Working Papers, defined in Ad.Min./66 (June 22, 1966), are not now being distributed to the Joint Library. When the distribution scheme for these papers was being worked out, it was understood by Mr. Loftus, the Librarian, that Mrs. Gilmore would include the Joint Library on the distribution list, but, he has yet to even see a copy.
2. Since the Joint Library will bind and catalogue these papers, it is recommended that three (3) copies of each working paper issued to date be provided and that the Joint Library be placed on the distribution list for the same number of copies of each future working paper.
3. In order to conserve copies, you may remove Mr. Rasmussen's name from the list and earmark his copy for the Joint Library.

cc: Mr. Loftus
MZ:mva

041
September 27, 1967

OFFICE MEMORANDUM

TO: Group Heads and Division Chiefs
FROM: Alexander Stevenson
SUBJECT: Progress Reports

I. Status of Major Studies

1. I enclose an outline of the table discussed, covering the major studies in progress or planned in your Division. This table should be completed and returned to Mr. Bhatia by October 4, 1967. At monthly intervals, thereafter, he will bring it up-to-date, and for this purpose Divisions will supply the details of any changes required. This table will supersede the table entitled "A Status of Major Studies in Progress and Planned" which is at present submitted every month in full detail.
2. On the basis of the information supplied by Divisions, the Director's Office will prepare another version of the table which will not contain Columns 5 and 6, for circulation to other Departments so as to keep them informed of our main activities.
3. A note on the outline of the table is attached as Annex A.

II. Fortnightly Progress Reports

4. The present progress reports submitted fortnightly will remain in effect. However, wherever possible, it would be preferable that the activities of staff members should be broken down into two groups:
 - a) time spent on major study or studies (in weeks or hours);
 - b) time spent on other activities.
5. At present Division's progress reports are circulated in the Blue Books as they arrive in the Front Office. From now on, separate books will be circulated twice a month containing progress reports from all Divisions so as to provide a clearer picture of the Department's work.

NOTE ON THE OUTLINE OF THE TABLE

The attached table is broken down into three parts:

- (I) Studies in Progress
- (II) Studies Planned
- (III) Studies Completed

Explanation of the Columns-

In the columns of the table, details should be given as follows:

- 1) "Starting Date" - the date on which the main work on the study actually begins;
- 2) "Division Draft" - the date on which the draft is submitted to the Division Chief by the staff member;
- 3) "First Draft" - the date on which the draft is first sent outside the Division for comments;
- 4) "Final Paper" - the date on which the study is scheduled to appear in the form of a departmental working paper or a Bank document;
- 5) "Remarks" - reasons for changes in given dates of the study or difficulties encountered in maintaining the schedule for the study.

Part II

a) Under Part II, only those studies should be mentioned on which the preparatory work has already been started and the main work is due to begin within a few months.

b) In practice, it may not always be possible to complete every column in this section.

CC: MR. KAMARCK

SKBhatia

DIVISION:

ECONOMICS DEPARTMENT

STATUS OF MAJOR STUDIES

Part I - In Progress

<u>Title of Study</u> (1)	<u>A Brief Description of Study</u> (2)	<u>Estimated Total Man- Month Required</u> (3)	<u>Author(s)</u> (4)	<u>Starting Date</u> (5)	<u>Division Draft</u> (6)	<u>First Draft</u> (7)	<u>Final Paper</u> (8)	<u>Remarks</u> (9)
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Part II - Planned

Part III - Completed

OFFICE MEMORANDUM

TO: Mr. Alexander Stevenson

DATE: September 25, 1967

FROM: Samir Bhatia

SUBJECT: Points for your consideration - Tuesday Meeting1. Circulation of Progress of Operations Reports -

At present, these reports are circulated in the Blue Books as these arrive in the Front Office. Since the arrival times of these reports vary, the reports are circulated separately. This does not tend to provide a complete picture of the Department's work at any onetime. I have discussed this issue and its disadvantages with the Division Chiefs, and have come to the conclusion that it would be much better if we circulated these reports twice a month in ^{two} separate books (say, in a Brown Book) containing progress reports from all the Divisions at onetime. This would help to provide a clear picture of the whole Department's work in a systematic way.

If you agree with this, perhaps you could announce it tomorrow.

2. Inclusion of Press Articles in the Blue Book -

You might like to announce that from now on the Blue Books, in addition to the regular contents, will also include press articles of general interest to the whole Department. It would be appreciated if any one noticing articles of this nature would send two copies of it to the Front Office for inclusion in the Blue Books. For the time being, the Front Office is taking care of the Financial Times.

Mr. Arthur E. Tiemann

September 22, 1967

A. Kundu *CM*

Regression and Factor Analysis

1. Recent studies in the Bank in quantitative research have quite frequently involved manipulation of a large number of variables by regression analysis. This has led me to explore the availability of a simpler computer-oriented method for discarding the redundant variables in multivariate analysis.
2. Mr. John T. Scott, Jr., in his paper "Factor Analysis and Regression" (*Econometrica*, Vol. 34, No. 3, July 1966), suggested factor analysis regression i.e., a stochastic linear equation from factor analysis, as an alternative estimation procedure to classical least squares regression. Mr. Scott pointed out that a regression equation derived from factor analysis had more general applications than least squares method, since factor analysis could handle situations where all variables, dependent and independent, were subject to errors in measurement, were produced by a stochastic process, or had intercorrelation. Mr. Scott also presented some empirical results where the factor analysis regression produced coefficients with theoretically expected algebraic signs and the least squares regression did not.
3. Messrs. E. M. L. Beale, M. G. Kendall and D. W. Mann in their paper "The Discarding of Variables in Multivariate Analysis" written for C.E.I.R., Ltd. discussed the problems of redundant variables in regression analysis where any variable could be discarded as adding little or nothing to the accuracy with which the regression equation correlated with the dependent variable, and in interdependence analysis where a constellation in p dimensions could be collapsed into fewer dimensions thereby discarding any of the original variables. For the regression analysis problem the authors obtained the best solution, viz, the one that maximizes the multiple correlation between the selected variables and the dependent variable, by introducing cut-off rules in an enumeration scheme of combining the variables. The problem of interdependence analysis, although should be tackled by finding principal components and associating variables to be rejected with the eigenvectors corresponding to small eigenvalues, was again solved by using cut-off rules so that a set of variables were selected in such a way that the minimum multiple correlation of the selected variable with any rejected variable was maximized. The above solutions were obtained within the framework of multiple regression calculations with the help of minor modifications. An illustration of the interdependence analysis calculation by the above optimum regression method was given and compared with component analysis results. There was no significant difference between the two sets of results. The authors, however, pointed out that the component analysis results were not optimum in any precise sense.

September 22, 1967

4. Comparing the two methods, one finds that Scott's factor analysis regression uses factor loadings in an intermediate stage which are later translated to original variables. CEIR methods on the other hand always deals with variables. Scott mentions that factor analysis regression will take more computer time than ordinary least squares methods. CEIR optimum multiple regression program took 8 minutes on the CDC 3200 computer to solve a problem with 16 independent variables. It is estimated that factor analysis regression will not take more than half the time required by CEIR program.

5. In view of the results obtained from the factor analysis regression, viz., regression coefficients as expected from theoretical considerations, and the reasonable amount of computer time involved, I think Scott's approach should be brought to the attention of staff members for comment with a view to its application within the Bank. As standard factor analysis computer programs are readily available from the computer manufacturers, Scott's factor analysis regression program can be built upon those programs without a major effort.

cc: Messrs. Stevenson
Hawkins
Carter
Niebuhr

AK:ss

Files

September 22, 1967

Sanir Bhatia

Capital Inflow Paper

Messrs. Stevenson (Chairman), Collier, de Vries, Haddins, Hulley, Rao and Bhatia met at 2:30 p.m. on Friday, September 15, 1967, to discuss Mr. Haddins' memorandum dated September 6, entitled "Capital Inflow Paper".

Main Issues

The main issues considered in the meeting were:

- (a) What should be done with the present draft.
- (b) Whether this work should be continued in the future.

Present Draft Study

With regard to the future of the present draft study, three possibilities were put forward. These were: (a) that it might be published as a Bank Staff Occasional Paper or as an Economics Department Working Paper; (b) that it might be left in its present form; and (c) that an article might be prepared, based on the present study but dealing only with the methodology and conception of the subject, for publication in Finance and Development.

After comparing the limitations of each of these possibilities, the meeting felt that the present study should not be made more widely available but that alternative (c) could be further considered.

Future Work

Following discussion, it was decided that the Department should continue with this work for the time being. This decision was reached after taking into consideration the fact that the Department was from time to time asked by other Bank Officials to supply information on the subject, particularly in view of the on-going IDA replenishment talks. Mr. Stevenson said, however, that this matter should be discussed again when Mr. Kusarek returned to the office from the Rio meetings.

As regards the present scope of the study, various suggestions were made concerning possible modifications. For example, it was suggested that an attempt might be made to classify the countries included in the study according to whether the figure given was an estimate of absorptive capacity, a forecast of likely future aid, etc. Mr. de Vries raised the point that since it was frequently the practice to consult area economists to obtain figures for the study, it would be helpful if the Comparative Analysis Division were to make a note of the questions discussed. Mr. de Vries also suggested that someone from the International Finance Division should be associated with this study which falls directly in their line of work.

Cleared with Messrs. Stevenson, Collier, Hilley and Koo. Hawkins.

cc: Mr. Kuzarek (on his return)
Those present

SKR:atia:aa

DRAFT
SKBhatia
September 21, 1967

OFFICE MEMORANDUM

TO: Files
FROM: Samir Bhatia
SUBJECT: Capital Inflow Paper

Messrs. Stevenson (Chairman), Collier, de Vries, Hawkins, Hulley, Kao and Bhatia met at 2:30 p.m. on Friday, September 15, 1967, to discuss Mr. Hawkins's memorandum dated September 6, entitled "Capital Inflow Paper".

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- (a) What should be done with the present draft.
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but*

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As regards the present scope of the study, various suggestions were made concerning possible modifications. ^{suggested} [For example, it was put forward that it would be useful if countrywise estimates could be categorized, ^{check an attempt might be made to classify the} ~~perhaps under such heads as: Absorptive Capacity, Aid Constraint, etc.~~ ^{countries included in the study according to whether the figure given was an estimate of absorptive capacity, or forecast of likely future aid, etc.}] ^{Mr. Hulley does not want this.}

Mr. de Vries raised the point that since it was frequently the practice to consult area economists to obtain figures for the study, it would be helpful if the Comparative Analysis Division were to ^{make a note of the} ~~put their points on~~ ^{answers} record. ^{questions discussed. whose?} Mr. de Vries also suggested that someone from the International Finance Division should be associated with this study which falls directly in their line of work.

Cleared with Messrs. Hulley and Kao

~~Not cleared with Mr. Collier~~ ✓

DRAFT
SKBhatia
Sept. 21, 1967

ECONOMICS DEPARTMENT

Summary of the Meeting of Division Chiefs, September 19, 1967, No. 3

Present: Messrs. Stevenson (Chairman), de Vries, Balassa, Collier, van der Tak, Elsaas, Goreux, Hulley, Kao, Levy, Macone, Orcutt, Please, Schmedtje, Tiemann, Walstedt, Westebbe and Bhatia (Secretary).

Road User Charges Study

Mr. van der Tak said that Messrs. Bell, Baum, Sadove, Hogg (from the Projects Department), van der Tak, Walters and Churchill had met last Friday, September 15, to discuss the first two chapters of the Road User Charges Study prepared by Prof. Walters. The discussion was mainly concentrated on the issue of marginal cost pricing (as used in the study) vs. full cost pricing. As time was short since Prof. Walters was leaving for England, it was decided to hold another meeting with the Projects Department when important issues such as investment criteria, etc. would be discussed. Mr. van der Tak reported that meanwhile, he was giving the finishing touches to the remaining chapters of the study so that the study could be circulated as soon as possible.

Central American Road Study

Mr. Please said that since Prof. Walter's study was supposed to serve as an analytical framework for the subject, he thought it would be a good idea to combine both these studies for internal publication. Mr. van der tak questioned the usefulness of this because he thought that based on one case study, the Central American Road Study would not prove or

disprove the conclusions reached in Prof. Walter's study. Mr. Stevenson felt that the Central American Road Study should not be made dependent on Prof. Walter's study but it should be treated separately. Mr. Please said that the draft of the Central American Road Study was expected to be ready by the end of the month.

Economic Reports

Mr. Levy said that he did not always get the green cover economic reports of the Bank. Mr. Stevenson advised him to discuss this matter with Mr. Collier.

Channel of Reporting within the Department

Mr. Stevenson said that recently there had been one or two cases where staff members did not go through the proper channel of reporting. He reminded staff members that they should always follow the regular practice of reporting through their Division Chiefs. In this connection, he also reminded staff members that copies of all outgoing letters concerning the U.N. and its agencies should always be sent to the Development Services Department.

Distribution: Tuesday Meeting

SKBhatia
September 19, 1967

OFFICE MEMORANDUM

TO: Files

DATE: September 20, 1967

FROM: John Hulley *JH*SUBJECT: Work of International Finance Division

Mr. Kamarck and Mr. Stevenson met with me on September 6th to discuss questions relating to the work of this Division. We did not review all the work of the Division, but only certain amendments or changes of emphasis, as follows:

- 1) As part of the working Party procedure, the Division should review in detail sections of the Economic Reports concerned with debt and capital requirements. Arrangements should be worked out with Mr. Collier.
- 2) Related to the above is the need for further consideration of the request from Mr. Thorp, the DAC Chairman, for IBRD recommendations on terms of lending.
- 3) Members of the Division should participate in debt rescheduling analyses, whether formal or (as in India) informal. Such participation will be arranged by Mr. Kamarck or Mr. Stevenson ad hoc as cases arise.
- 4) Information on capital markets in donor countries should be maintained, along with briefing material on economic conditions and aid programs and policies.
- 5) To make possible adequate attention to the above financial questions, assignments on trade will not in principle be given to the Division. However, unfinished work in the trade field should be completed.
- 6) Experience on country missions is generally desirable. Normally, however, members of this Division may expect to be sent to multilateral conferences where facts or policies pertaining to groups of countries are reviewed, or to meetings on debt rescheduling.
- 7) The Division should have the full-time services of at least one research assistant.

Cleared in draft by (and Cc to) Messrs. Stevenson
Kalmanoff

Cc: Messrs. Kamarck
Collier
Bhatia

jh/jb

Draft
S. K. Bhatia
September 14, 1967

To: Dr. Otto Donner

From: Alexander Stevenson

Subject: Dr. Hans Havemann - Proposed Summer Project

With reference to our talk on the subject and Prof. Havemann's letter to you dated September 5, 1967, which you were kind enough to forward to me, I have discussed his proposal within the Economics Department and with the IFC. Everybody with whom I discussed the proposal shares my views that this subject--the transfer of technology--is of vital importance for the development of less-developed countries.

The main idea of Professor Havemann's proposal is to further the development of an indigenous technology by international support of the necessary research. He proposes to scrutinize conventional engineering processes and design with a view to ensure the best possible utilization of existing resources both human and natural. Our reaction to this is that it would serve little purpose to survey general needs and theorize on the usefulness of adaptation. This would add to the generalizations that already abound in this field. What is needed is more knowledge on the economic costs and technical feasibilities of actual industrial design changes. However this is an extremely vast and difficult subject. Such research would need to be carried out by teams of industrial engineers and economists versed in the trade and industrialization problems of developing countries. While the Bank has a general interest in the area, ^{is} ~~there are certain restrictions in the~~ ^{research projects it supports must be rather closely} ~~selection of projects.~~ ^{related to its operational interests and needs and in our} ~~Moreover, as you are aware, with present budgetary~~ ^{position} ~~control, there is little room for flexibility.~~ ^{we must interpret these guidelines rather strictly.} In these circumstances I am ^{time we cannot see our way} sorry to inform you that at this stage it would not be possible to proceed with Prof. Havemann's proposal for a summer project.

However, ~~I should like to add that~~, we will certainly keep his project in mind and if circumstances permit, at some future date, we will ~~certainly~~ take a fresh look at ^{his} ~~Professor Havemann's~~ proposal.

We should be more than happy to meet Prof. Havemann when he comes to Washington. Perhaps, in the meantime, you would be kind enough to let him know our position on the matter.

cc & cleared with Dr. Fuchs (FFC)
th

DRAFT
SKBhatia
September 12, 1967

ECONOMICS DEPARTMENT

Summary of the Meeting of Division Chiefs, September 12, 1967, No. 2

Present: Messrs. Stevenson, Kalmanoff, van der Tak, Balassa, Hawkins, Holsen, Hulley, Kao, Levy, Macone, Thias, Tiemann, Westebbe, Villela, Bhatia (Secretary).

★ The Historical External Debt Study

Mr. Tiemann, in answer to ^{his} a question by Mr. Kalmanoff, said that he would decide, in consultation with Mr. Stevenson, whether punching of data on the cards should be done in overtime by the regular staff of his division or on a contract basis outside. ^{in order to complete this} Apart from this, he said no other problems were foreseen in the completion of the Historical External Debt Study (EC-149).

Road User Charges Study

Mr. van der Tak announced that the two chapters of the revised Road User Charges Study prepared by Prof. Alan Walters were circulated on September 8. Anyone interested could obtain copies from him.

El Salvador Feeder Road End Use Study

Mr. van der Tak mentioned that problems had arisen in connection with this study, ~~mainly as a result of~~ ^{the} a new government in ~~the country~~ ^{El Salvador} ~~did not~~ ^{appear anxious to go ahead with the study}. Mr. Stevenson suggested that he should ask Mr. Mirza to prepare a note

Mr. v. der Tak find out from

just what was it would then be considered sufficient to
outlining the problem and the steps which should be taken to ensure
successful completion of the study. Subsequently, Mr. Stevenson would
pursue this matter with the Executive Director of the country, so that
some decision on the matter could be taken before mid-October, which Mr.
van der Tak considered important *if* for the completion of the study *was to be completed*
as planned.

Bank's Occasional Papers

In view of the number of incoming papers, Mr. Stevenson agreed that it would be a good idea to determine some criterion for the selection of papers for publication.

Control of Statistical Services

Mr. Tiemann, in answer to a question by Mr. Stevenson, said that the new system of controlling and planning of requests for the services of the Statistical Division by other divisions of the Department was working well. However, there were still a few offices where a "contact man" had not been designated. Mr. Tiemann would review this point and agreed to send a complete list of "contact men" to Mr. Stevenson.

Dudley Seers' Reports

Mr. Stevenson asked Mr. Macone whether he had seen the comments made in the report by Prof. Seers regarding his division. Mr. Macone said that he had asked one of his research assistants to look into that matter.

Progress Reports

Mr. Stevenson mentioned that it would be desirable to have some uniformity of contents in the Progress Reports and said that Mr. Bhatia

would be seeing the Group Heads and Division Chiefs to establish this point with them.

Distribution: Tuesday Meeting

SKBhatia/aa

September 12, 1967

X

Mr. Kalmanoff enquired about the status of the Historical External Debt Study which we had undertaken to do for UNCTAD. Mr. Tiemann replied that apart from ^asmall internal administrative problem concerning the punching of the data on the cards, ~~neither~~ whether this should be done in overtime by regular staff of his division or on a contract basis outside, no other problem was foreseen in the completion of the study. Mr. Tiemann, in consultation with ~~the~~ Mr. Stevenson, would take a decision on this matter very shortly.

Mr. Alexander Stevenson

September 11, 1967

Samir Bhatia

Points for Your Consideration - Tuesday Meeting

The following are the points which you may wish to mention in tomorrow's Division Chiefs meeting:

1. Speaker for Friday Staff Meeting - Mr. Ball is to be the guest speaker at our staff meeting on Friday, September 15.
2. A Review of the Proposed Control of Statistical Services - A few months ago it was agreed that some control of requests to the Statistical Division from the rest of the Department was essential, so that the Statistical Services Division would have an idea of the total amount of time and work involved. Such planning and control could be exercised at Division Chief level with reference to Group Heads if necessary (see minutes of Tuesday Administrative Meeting of June 27, 1967). You might like to review the working of the proposed control in tomorrow's meeting.
3. Progress Reports - In reviewing the file containing division progress reports, I found that, at present, there is no set system of reporting.
 - a. Most of these reports are addressed to Mr. Kamarck with a copy to you and to the appropriate Group Head. However, there are cases where reports are addressed to the Group Head with a copy to you and to Mr. Kamarck. Other times, the report is sent to Mr. Kamarck through the Group Head with a copy to you and to the Group Head. Thus, at present, there is no well established system of addressing reports.
 - b. There is also no uniformity as to the contents of the reports. There are only a few (3) reports which, in addition to the staff activity, also submit a detailed analysis of the status of each of the major on going studies in their division.

In view of this, I would suggest, if you agree, that you should mention in tomorrow's meeting that each progress report should be addressed to the Group Head and a copy sent to you. As regards uniformity of the contents of these reports, you might mention that I should like to see the Group Heads and Division Chiefs this week if convenient to them and will take that opportunity to establish this point with them.

4. Time Available for Review of Country Economic Reports - While talking with the Comparative Analysis Division, I was informed that the time available to them for review of economic reports is not sufficient.

Mr. Alexander Stevenson

- 2 -

September 11, 1967

I believe, several weeks ago, this problem was discussed in one of the Tuesday meetings and subsequently you requested Mr. Adler to look into this matter. Perhaps tomorrow might be a good time (if Mr. Adler is in) to ask him how far he has succeeded in solving this problem (or what he has decided in this respect).

Econ. Dept. ? ✓

Mr. Alexander Stevenson

September 8, 1967

Andrew M. Kamarck A. M. Kamarck (signed)

Work on Developed Countries

Mr. Cope called me today on the subject of economic work on the developed countries. He said that he had been thinking about it and he had also talked with Mr. Williams and he gathered from Mr. Williams that he was not going to come up with general recommendations on economic work until around the end of the year.

Mr. Cope said that he thought that Mr. Sacchetti's memorandum on the subject was a very good one but that he would prefer to wait until around the end of the year before making up his mind on the subject.

cc: Mr. Friedman
Mr. Sacchetti

AMK:ner

Mr. Alexander Stevenson

September 7, 1967

Samir Bhatia

Studies Expected to be Circulated in September - October, 1967

First Draft

1. Referring to the Department's table entitled "Studies in Progress 1966-67", I should like to bring to your attention the fact that the first drafts of the following studies are scheduled to be circulated sometime this month:

<u>Title</u>	<u>Group or Division</u>
a. Development Finance Problem in Brazil ^{1/}	Domestic Finance Division
b. Electrical Equipment Industry	Industrialization Division
c. Mechanical Equipment Industry	"
d. Commodity Outlook Studies	Export Projections and Trade Division
i. Jute	"
ii. Aluminum	"
iii. Plywood	"
iv. Meat	"
e. Econometric Study of the World Market for Rubber	Applied Quantitative Research Div.
f. A Note on the Economic Benefits of Road Transport Projects	Investment Planning Division

Final Version

2. In addition, the final versions of the following studies are expected to be completed in September - October, 1967:

<u>Title</u>	<u>Group or Division</u>
a. Value-Linking of Domestic Bond Issues	Domestic Finance Division

^{1/} Expected date, as mentioned in the progress report dated September 1, is 31st September 1967.

September 7, 1967

Final Version (cont'd.)

<u>Title</u>	<u>Group or Division</u>
b. Economic Analysis of Road Transport Project	Investment Planning Division
c. Urban Water Supply Projects	"
d. Techniques for Project Appraisal under Uncertainty	"
e. Optimum Timing of Investments	"
f. Cost-Benefit Analysis of Education Projects (General Framework) <u>1/</u>	"
g. Econometric Model for Malaysia	Applied Quantitative Research Div.

3. The following are the studies for which "division" drafts have been completed but the future status of these studies has not been mentioned in the Progress Report 2/:

<u>Title</u>	<u>Group or Division</u>	<u>Division Draft Completed</u>
a. Analysis of Road Construction and Maintenance Costs	Investment Planning Division	July 1967
b. Economic Justification of Water Supply Projects	"	April 1, 1966
c. Road User Charges	"	February 1967

4. I would appreciate it if you would kindly ask your secretary to let me know when these Reports arrive in your office.

1/ Economic Committee draft.

2/ See Mr. Schmedtje's memo to Mr. Kamarck, dated September 1, 1967, on "Principal Activities of Investment Planning Division, August 16 - 31."

Mr. H. van der Tak

August 29, 1967

V. W. Hogg

Economics Department Working Paper No. 4

1. I have looked through this paper. I agree with you (your memo Aug. 14) that the exercise was largely unsuccessful. To what extent was it carried out or discussed with our highway engineers? Some of them, including Hank van Helden, had not seen the report. As you know an appraisal report is, in effect, the tip of an iceberg. It is conceivable that some of the data required is in the working papers of the particular engineers concerned.

2. I have sent copies to Messrs. van Helden, Hardy and Young.

3. The new "Data Bank" and increasing emphasis on data collection might make a better effort possible in the future. At that time I think it would be instructive to have an engineer on a brief 'sabbatical' to work with your economists.

4. Do you think that the right 'economic questions' were asked anyway? To what extent would it have been useful to analyze similar data from developed countries as a basis for comparison and indicator of differences, etc.

VW:Hogg:gh
Bank

OFFICE MEMORANDUM

TO: Files

DATE: August 23, 1967

FROM: Arabinda Kundu *AK*

Statistical Services Division - Economics Department

SUBJECT: Present Worth and Annuity Tables

1. Recently we had the occasion to prepare the attached present worth and annuity tables as a handy reference in discounting calculations. The present worth tables are calculated over 50 periods with 1 to 30 per cent interest rates, and the annuity tables over 25 periods with 1 to 25 per cent interest rates. The interest rates are at 1 per cent intervals. To have some significant figures for the extreme periods and interest rates, the tables have been prepared with 1,000 as the principal amount instead of the usual 1.

2. A few copies of the tables are available for the interested users, and can be obtained upon request from the General Statistics Section.

Attachment

cc: Mrs. Paulson
Mr. Tiemann

ANNUITY TABLE: 25 Periods, 1 to 25 percent

PAGE 1

ANNUITY WORTH 1,000 TODAY OR PERIODIC PAYMENT NECESSARY TO PAY OFF A LOAN OF 1,000

PERIODS	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	1010,0000	1020,0000	1030,0000	1040,0000	1050,0000	1060,0000	1070,0000	1080,0000	1090,0000	1100,0000
2	507,5124	515,0495	522,6108	530,1961	537,8049	545,4369	553,0918	560,7692	568,4689	576,1905
3	340,0221	346,7547	353,5304	360,3485	367,2086	374,1098	381,0517	388,0335	395,0548	402,1148
4	256,2811	262,6238	269,0270	275,4900	282,0118	288,5915	295,2281	301,9208	308,6687	315,4708
5	206,0398	212,1584	218,3546	224,6271	230,9748	237,3964	243,8907	250,4565	257,0925	263,7975
6	172,5484	178,5258	184,5975	190,7619	197,0175	203,3626	209,7958	216,3154	222,9198	229,6074
7	148,5283	154,5120	160,5064	166,6096	172,8198	179,1350	185,5532	192,0724	198,6905	205,4055
8	130,6903	136,5098	142,4564	148,5278	154,7218	161,0359	167,4678	174,0148	180,6744	187,4440
9	116,7404	122,5154	128,4339	134,4930	140,6901	147,0222	153,4865	160,0797	166,7988	173,6405
10	105,5821	111,3265	117,2305	123,2909	129,5046	135,8680	142,3775	149,0295	155,8201	162,7454
11	96,4541	102,1779	108,0774	114,1490	120,3889	126,7929	133,3569	140,0763	146,9467	153,9631
12	88,6488	94,5596	100,4621	106,5522	112,8254	119,2770	125,9020	132,6950	139,6507	146,7633
13	82,4148	88,1184	94,0295	100,1437	106,4558	112,9601	119,6508	126,5218	133,5666	140,7785
14	76,9012	82,6020	88,5263	94,6690	101,0240	107,5849	114,3449	121,2969	128,4332	135,7462
15	72,1238	77,8255	83,7666	89,9411	96,3423	102,9628	109,7946	116,8295	124,0589	131,4738
16	67,9446	73,6501	79,6108	85,8200	92,2699	98,9521	105,8576	112,9769	120,2999	127,8166
17	64,2581	69,9698	75,9525	82,1985	88,6991	95,4448	102,4252	109,6294	117,0462	124,6641
18	60,9820	66,7021	72,7087	78,9933	85,5462	92,3565	99,4126	106,7021	114,2123	121,9302
19	58,0518	63,7818	69,8139	76,1386	82,7450	89,6209	96,7530	104,1276	111,7304	119,5469
20	55,4153	61,1567	67,2157	73,5818	80,2426	87,1846	94,3929	101,8522	109,5465	117,4596
21	53,0308	58,7848	64,8718	71,2801	77,9961	85,0045	92,2890	99,8323	107,6166	115,6244
22	50,8637	56,6314	62,7474	69,1988	75,9705	83,0456	90,4058	98,0321	105,9050	114,0051
23	48,8858	54,6581	60,8139	67,3091	74,1368	81,2785	88,7139	96,4222	104,3819	112,5718
24	47,0735	52,8711	59,0474	65,5868	72,4709	79,6750	87,1890	94,9780	103,0226	111,2998
25	45,4068	51,2204	57,4279	64,0120	70,9525	78,2267	85,8105	93,6788	101,8063	110,1681

ANNUITY WORTH 1,000 TODAY OR PERIODIC PAYMENT NECESSARY TO PAY OFF A LOAN OF 1,000

PERIODS	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1110,0000	1120,0000	1130,0000	1140,0000	1150,0000	1160,0000	1170,0000	1180,0000	1190,0000	1200,0000
2	583,9336	591,6981	599,4836	607,2897	615,1163	622,9630	630,8295	638,7156	646,6210	654,5455
3	409,2131	416,3490	423,5220	430,7315	437,9770	445,2579	452,5737	459,9239	467,3079	474,7253
4	322,3264	329,2344	336,1942	343,2048	350,2654	357,3751	364,5331	371,7387	378,9909	386,2891
5	270,5703	277,4097	284,3145	291,2835	298,3156	305,4094	312,5639	319,7778	327,0502	334,3797
6	236,5766	243,2257	250,1532	257,1575	264,2369	271,3859	278,6148	285,9101	293,2743	300,7057
7	212,2153	219,1177	226,1108	233,1924	240,3604	247,6127	254,9472	262,3620	269,8549	277,4239
8	194,3211	201,3028	208,3867	215,5700	222,8501	230,2243	237,6899	245,2444	252,8851	260,6094
9	180,6017	187,6789	194,8689	202,1684	209,5740	217,0825	224,6905	232,3948	240,1922	248,0795
10	169,9014	176,9842	184,2896	191,7135	199,2521	206,9011	214,6566	222,5146	230,4713	238,5228
11	161,1210	168,4154	175,8415	183,3943	191,0690	198,8608	206,7648	214,7764	222,8909	231,1038
12	154,0273	161,4368	168,9861	176,6693	184,4808	192,4147	200,4656	208,6278	216,8960	225,2650
13	148,1510	155,6772	163,3503	171,1637	179,1105	187,1841	195,3781	203,6862	212,1022	220,6200
14	143,2282	150,8712	158,6075	166,6091	174,6845	182,8280	191,2302	199,6781	208,2346	216,8931
15	139,0652	146,8242	154,7418	162,8090	171,0171	179,3575	187,8221	196,4028	205,0919	213,8821
16	135,5167	143,3900	151,4262	159,6154	167,9477	176,4136	185,0040	193,7101	202,5234	211,4361
17	132,4715	140,4567	148,6084	156,9154	165,3669	173,9522	182,6616	191,4853	200,4143	209,4401
18	129,8429	137,9373	146,2009	154,6212	163,1863	171,8849	180,7060	189,6395	198,6756	207,8054
19	127,5625	135,7630	144,1344	152,6632	161,3364	170,1417	179,0675	188,1028	197,2376	206,4625
20	125,5756	133,8788	142,3538	150,9860	159,7615	168,6670	177,6904	186,8200	196,0453	205,3565
21	123,6379	132,2401	140,8143	149,5449	158,4168	167,4162	176,5300	185,7464	195,0544	204,4439
22	122,3131	130,8105	139,4795	148,3032	157,2658	166,3526	175,5502	184,8463	194,2294	203,6896
23	120,9712	129,5600	138,3191	147,2308	156,2784	165,4466	174,7214	184,0902	193,5416	203,0653
24	119,7872	128,4634	137,3083	146,3028	155,4208	164,6734	174,0192	183,4543	192,9673	202,5479
25	118,7402	127,5000	136,4259	145,4984	154,6904	164,0126	173,4234	182,9188	192,4873	202,1187

ANNUITY WORTH 1,000 TODAY OR PERIODIC PAYMENTS NECESSARY TO PAY OFF A LOAN OF 1,000

PERIODS	21%	22%	23%	24%	25%
1	1210,0000	1220,0000	1230,0000	1240,0000	1250,0000
2	652,4887	670,4505	678,4305	686,4286	694,4444
3	442,1755	449,6581	497,1725	504,7183	512,2951
4	323,6324	401,0201	408,4514	415,9255	423,4417
5	341,7653	349,2059	356,7004	364,2477	371,8467
6	308,2030	315,7644	323,3887	331,0742	338,8195
7	285,0671	292,7824	300,5678	308,4216	316,3417
8	258,4149	276,2790	284,2592	292,2932	300,3985
9	256,0535	264,1111	272,2494	280,4654	288,7562
10	246,6652	254,8950	263,2085	271,6021	280,0726
11	239,4106	247,8071	256,2890	264,8522	273,4929
12	233,7295	242,2848	250,9259	259,6483	268,4476
13	229,2340	237,9385	246,7283	255,5983	264,5434
14	225,6471	234,4907	243,4178	252,4230	261,5009
15	222,7664	231,7382	240,7910	249,9191	259,1169
16	220,4406	229,5298	238,6969	247,9358	257,2407
17	218,5548	227,7507	237,0210	246,3592	255,7592
18	217,0204	226,3130	235,6757	245,1022	254,5862
19	215,7685	225,1479	234,5932	244,0978	253,6556
20	214,7448	224,2019	233,7204	243,2938	252,9159
21	213,9060	223,4323	233,0156	242,6493	252,3273
22	213,2177	222,8055	232,4457	242,1319	251,8584
23	212,5522	222,2943	231,9845	241,7164	251,4845
24	212,1871	221,8771	231,6108	241,3822	251,1862
25	211,8043	221,5362	231,3079	241,1135	250,9481

PRESENT WORTH TABLE: 50 Periods, 1 to 30 percent

PRESENT WORTH OF 1,000

PERIODS	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%
1	990,0990	980,3222	970,8738	961,5385	952,3810	943,3962	934,5794	925,9259	917,4312	909,0909
2	980,2960	961,1686	942,5959	924,5562	907,0295	889,9964	873,4387	857,3388	841,6800	826,4463
3	970,5901	942,3223	915,1417	888,9964	863,8376	839,6153	816,2979	793,8322	772,1835	751,3148
4	960,9803	923,8454	888,4870	854,8042	822,7025	792,0937	762,8952	735,0299	708,4252	683,0135
5	951,4657	905,7308	862,6088	821,9271	783,5262	747,2582	712,9862	680,5832	649,9314	620,9213
6	942,0452	887,9714	837,4843	790,3145	746,2154	704,9605	666,3422	630,1696	596,2673	564,4739
7	932,7181	870,5602	813,0915	759,9178	710,6813	665,0571	622,7497	583,4904	547,0342	513,1581
8	923,4832	853,4704	789,4092	730,6902	676,8394	627,4124	582,0091	540,2689	501,8663	466,5074
9	914,3398	836,7553	766,4167	702,5867	644,6089	591,6985	543,0337	500,2490	460,4278	424,0976
10	905,2870	820,3483	744,0939	675,5642	613,9133	558,3948	508,3493	463,1935	422,4108	385,5433
11	896,3237	804,2530	722,4213	649,5809	584,6793	526,7875	475,0928	428,8829	387,5329	350,4039
12	887,4492	788,4932	701,3799	624,5970	556,8374	496,9654	444,0120	397,1138	355,5347	318,6308
13	878,6626	773,0325	680,9513	600,5741	530,3214	468,8390	414,9644	367,6979	326,1786	289,6644
14	869,9630	757,5750	661,1178	577,4751	505,0680	442,3010	387,8172	340,4610	299,2465	263,3313
15	861,3495	743,0147	641,8619	555,2645	481,0171	417,2651	362,4460	315,2417	274,5380	239,3920
16	852,8213	728,4458	623,1669	533,9082	458,1115	393,6463	338,7346	291,8905	251,8698	217,6291
17	844,3775	714,1626	605,0164	513,3732	436,2967	371,3644	316,5744	270,2690	231,0732	197,8447
18	836,0173	700,1594	587,3946	493,6281	415,5207	350,3438	295,8639	250,2490	211,9937	179,8588
19	827,7399	686,4308	570,2860	474,6424	395,7340	330,5130	276,5083	231,7121	194,4897	163,5080
20	819,5445	672,9713	553,6758	456,3869	376,8895	311,6047	258,4190	214,5482	178,4309	148,6436
21	811,4302	659,7758	537,5493	438,8334	358,9424	294,1554	241,5131	198,6557	163,6981	135,1306
22	803,3962	646,8390	521,8925	421,9554	341,8499	277,5051	225,7132	183,9405	150,1817	122,8460
23	795,4418	634,1559	506,6917	405,7263	325,5713	261,7973	210,9469	170,3153	137,7814	111,6782
24	787,5661	621,7215	491,9337	390,1215	310,0679	246,5785	197,1466	157,6993	126,4049	101,5256
25	779,7684	609,5309	477,6056	375,1168	295,3028	232,5986	184,2492	146,0179	115,9678	92,2960
26	772,0480	597,5793	463,6947	360,6892	281,2407	219,8100	172,1955	135,2018	106,3925	83,9055
27	764,4039	585,8620	450,1891	346,8166	267,8483	207,3680	160,9304	125,1868	97,6078	76,2777
28	756,8356	574,3746	437,0768	333,4775	255,0936	195,6301	150,4022	115,9137	89,5484	69,3433
29	749,3421	563,1123	424,3464	320,6514	242,9463	184,5567	140,5628	107,3275	82,1545	63,0394
30	741,9229	552,0709	411,9868	308,3187	231,3774	174,1101	131,3671	99,3773	75,3711	57,3086
31	734,5771	541,2460	399,9871	296,4603	220,3595	164,2548	122,7730	92,0160	69,1478	52,0987
32	727,3041	530,6333	388,3370	285,0579	209,8662	154,9574	114,7411	85,2000	63,4384	47,3624
33	720,1031	520,2287	377,0262	274,0942	199,8725	146,1862	107,2347	78,8889	58,2003	43,0568
34	712,9733	510,0282	366,0449	263,5521	190,3548	137,9115	100,2193	73,0453	53,3948	39,1425
35	705,9142	500,0276	355,3834	253,4155	181,2903	130,1052	93,6629	67,6345	48,9861	35,5841
36	698,9249	490,2232	345,0324	243,6687	172,6574	122,7408	87,5355	62,6246	44,9413	32,3492
37	692,0049	480,6109	334,9829	234,2968	164,4356	115,7932	81,8088	57,9857	41,2306	29,4083
38	685,1534	471,1872	325,2262	225,2854	156,6054	109,2389	76,4569	53,6905	37,8262	26,7349
39	678,3697	461,9482	315,7535	216,6206	149,1480	103,0555	71,4550	49,7134	34,7030	24,3044
40	671,6531	452,8904	306,5566	208,2890	142,0457	97,2222	66,7804	46,0309	31,8376	22,0949
41	665,0031	444,0102	297,6280	200,2779	135,2816	91,7150	62,4116	42,6212	29,2088	20,0863
42	658,4109	435,3041	288,9592	192,5749	128,8396	86,5274	58,3286	39,4641	26,7971	18,2603
43	651,8999	426,7688	280,5429	185,1682	122,7044	81,6256	54,5127	36,5408	24,5845	16,6002
44	645,4455	418,4007	272,3718	178,0463	116,8613	77,0051	50,9464	33,8341	22,5545	15,0911
45	639,0549	410,1968	264,4386	171,1984	111,2965	72,6501	47,6135	31,3279	20,6922	13,7192
46	632,7276	402,1537	256,7365	164,6139	105,9967	68,5378	44,4986	29,0073	18,9837	12,4720
47	626,4630	394,2684	249,2588	158,2826	100,9492	64,6583	41,5875	26,8586	17,4162	11,3382
48	620,2604	386,5376	241,9988	152,1949	96,1421	60,9984	38,8668	24,8691	15,9782	10,3074
49	614,1192	378,9584	234,9503	146,3411	91,5639	57,5457	36,3241	23,0269	14,6589	9,3704
50	608,0368	371,5279	228,1071	140,7126	87,2037	54,2884	33,0476	21,3212	13,4485	8,5186

PRESENT WORTH OF 1,000

PERIODS	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	900,9009	892,8571	884,9558	877,1930	869,5652	862,0650	854,7009	847,4576	840,3361	833,3333
2	811,6224	797,1939	783,1467	769,4675	756,1437	743,1629	730,5136	718,1844	706,1648	694,4444
3	731,1914	711,7802	693,0502	674,9715	657,5162	640,6577	624,3706	608,6309	593,4158	578,7037
4	658,7310	635,5181	613,3187	592,0803	571,7532	552,2911	533,6500	515,7889	498,6688	482,2531
5	593,4513	567,4269	542,7599	519,3687	497,1767	476,1130	456,1112	437,1092	419,0494	401,8776
6	534,6408	506,6311	480,3185	455,5865	432,3276	410,4423	389,8386	370,4315	352,1423	334,8980
7	481,6584	452,3492	425,0606	399,6373	375,9370	353,8255	333,1954	313,9250	295,9179	279,0816
8	433,9265	403,8332	376,1599	350,5591	326,9018	305,0255	284,7824	266,0382	248,6705	232,5680
9	390,9248	360,6100	332,8848	307,5079	284,2624	262,9530	243,4037	225,4561	208,9668	193,8067
10	352,1845	321,9732	294,5883	269,7438	247,1847	226,6836	208,0374	191,0645	175,6024	161,5056
11	317,2833	287,4761	260,6977	236,6174	214,9432	195,4169	177,8097	161,9190	147,5650	134,5880
12	285,6408	256,6751	230,7059	207,5591	186,9072	168,4628	151,9741	137,2195	124,0042	112,1567
13	257,5143	229,1742	204,1645	182,0694	162,5280	145,2266	129,8924	116,2877	104,2052	93,4639
14	231,9948	204,6198	180,6766	159,7100	141,3287	125,1953	111,0192	98,5489	87,5674	77,8866
15	209,0043	182,6963	159,8908	140,0965	122,8945	107,5270	94,8882	83,5160	73,5861	64,9055
16	188,2922	163,1217	141,4962	122,8917	106,8648	93,0405	81,1010	70,7763	61,8370	54,0879
17	169,6326	145,6443	125,2179	107,7997	92,9259	80,2074	69,3171	59,9799	51,9639	45,0732
18	152,8222	130,0396	110,8123	94,5611	80,8051	69,1443	59,2454	50,8304	43,6671	37,5610
19	137,6776	116,1068	98,0640	82,9484	70,2653	59,6071	50,6371	43,0766	36,6951	31,3009
20	124,0339	103,6568	86,7823	72,7617	61,1003	51,3855	43,2796	36,5056	30,8362	26,0841
21	111,7423	92,5596	76,7985	63,8261	53,1307	44,2978	36,9911	30,9370	25,9128	21,7367
22	100,6687	82,6425	67,9633	55,9878	46,2006	38,1878	31,6163	26,2178	21,7754	18,1139
23	90,6925	73,7880	60,1445	49,1121	40,1744	32,9205	27,0225	22,2185	18,2987	15,0949
24	81,7050	65,8821	53,2252	43,0808	34,9343	28,3757	23,0961	18,8292	15,3770	12,5791
25	73,6081	58,8233	47,1020	37,7902	30,3776	24,4653	19,7403	15,9569	12,9219	10,4826
26	66,3136	52,5208	41,6831	33,1493	26,4153	21,0908	16,8720	13,5228	10,8587	8,7355
27	59,7420	46,8936	36,8877	29,0783	22,9699	18,1817	14,4205	11,4600	9,1250	7,2796
28	53,8216	41,8693	32,6440	25,5073	19,9738	15,6739	12,3253	9,7119	7,6681	6,0663
29	48,4879	37,3833	28,8885	22,3748	17,3685	13,5120	10,5344	8,2304	6,4437	5,0553
30	43,6828	33,3779	25,5651	19,6270	15,1031	11,6482	9,0038	6,9749	5,4149	4,2127
31	39,3539	29,8017	22,6239	17,2167	13,1331	10,0416	7,6955	5,9110	4,5503	3,5106
32	35,4540	26,6087	20,0212	15,1024	11,4201	8,6565	6,5774	5,0093	3,8238	2,9255
33	31,9405	23,7577	17,7179	13,2477	9,9305	7,4625	5,6217	4,2452	3,2133	2,4379
34	28,7752	21,2123	15,6795	11,6208	8,6352	6,4332	4,8049	3,5976	2,7002	2,0316
35	25,9236	18,9395	13,8757	10,1937	7,5089	5,5459	4,1067	3,0488	2,2691	1,6930
36	23,3546	16,9103	12,2794	8,9418	6,5295	4,7809	3,5100	2,5837	1,9068	1,4108
37	21,0402	15,0985	10,8667	7,8437	5,6778	4,1215	3,0000	2,1896	1,6024	1,1757
38	18,9551	13,4808	9,6165	6,8804	4,9372	3,5530	2,5641	1,8556	1,3465	0,9797
39	17,0767	12,0364	8,5102	6,0355	4,2932	3,0629	2,1916	1,5725	1,1315	0,8165
40	15,3844	10,7468	7,5312	5,2943	3,7332	2,6405	1,8731	1,3327	0,9509	0,6804
41	13,8598	9,5354	6,6647	4,6441	3,2463	2,2763	1,6010	1,1294	0,7901	0,5670
42	12,4863	8,5673	5,8980	4,0738	2,8229	1,9623	1,3683	0,9571	0,6715	0,4725
43	11,2489	7,6494	5,2195	3,5735	2,4547	1,6916	1,1695	0,8111	0,5643	0,3937
44	10,1342	6,8298	4,6190	3,1346	2,1345	1,4583	0,9996	0,6874	0,4742	0,3281
45	9,1299	6,0980	4,0876	2,7497	1,8561	1,2572	0,8544	0,5825	0,3985	0,2734
46	8,2221	5,4447	3,6174	2,4120	1,6140	1,0838	0,7302	0,4937	0,3348	0,2279
47	7,4100	4,8513	3,2012	2,1158	1,4035	0,9343	0,6241	0,4184	0,2814	0,1899
48	6,6757	4,3105	2,8329	1,8560	1,2204	0,8054	0,5334	0,3545	0,2365	0,1582
49	6,0141	3,8754	2,5070	1,6280	1,0612	0,6943	0,4559	0,3005	0,1987	0,1319
50	5,4182	3,4502	2,2186	1,4281	0,9228	0,5986	0,3897	0,2546	0,1670	0,1099

PHASE II QUANTITY OF 1,000

PERIODS	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%
1	824,4463	819,6721	813,0081	806,4514	800,0000	793,6508	787,4016	781,2500	775,1934	769,2308
2	833,0135	827,8624	820,9822	813,3642	806,0000	799,8816	793,8012	787,7516	781,7254	775,7160
3	844,4739	838,7769	831,3839	824,4873	817,0000	809,9060	802,8100	795,7132	788,6137	781,5161
4	854,2074	847,3291	839,8975	832,9734	825,6000	818,6000	811,6015	804,5290	797,4114	790,1278
5	863,5433	856,4993	848,2012	841,1077	833,6800	826,6800	819,6816	812,6784	805,6383	798,5991
6	871,5308	864,2781	855,7815	847,0869	839,1440	831,9060	824,3294	816,7337	809,1010	801,4762
7	879,5313	871,5486	862,7817	853,8443	845,7152	837,3881	829,8610	822,3357	814,7178	807,1063
8	887,5291	879,7611	869,8794	860,9067	852,7722	844,4112	836,7645	829,7779	821,4014	813,5895
9	895,4588	887,0173	877,1865	868,2796	859,2177	850,9295	842,3500	834,4202	826,0864	817,2094
10	903,5436	894,8294	884,1679	875,3545	866,3742	857,1504	848,6142	840,7033	832,3615	823,5382
11	911,8460	902,2127	891,5755	882,8343	873,8993	864,6908	856,1372	847,7444	839,4454	830,7986
12	919,5256	909,9776	899,3947	890,6728	881,7195	872,4530	863,8009	855,6988	847,2894	838,9220
13	927,9055	918,3915	907,8006	898,9264	889,9756	880,9569	871,7251	863,3897	854,8034	846,0169
14	935,3433	925,7963	915,1224	906,2149	897,9805	888,3380	879,2166	870,5544	861,2972	852,3976
15	943,5086	933,8527	923,8150	914,6894	905,1844	895,2206	885,7296	876,6519	867,9358	858,5366
16	951,3624	941,5186	931,4350	922,0076	912,1475	902,7783	893,8344	884,2593	875,0045	865,9282
17	959,1425	949,0316	938,8219	929,8126	919,5180	909,6653	899,1924	889,0463	879,1818	869,5601
18	967,3492	956,8948	946,5829	937,8166	927,8144	917,6074	907,5373	897,7549	887,2185	877,8924
19	975,7349	964,9646	954,7966	945,7876	935,4115	925,3868	915,6593	905,1835	894,9213	884,8403
20	983,0949	972,7415	962,9183	953,5384	943,5292	933,8008	923,9332	913,7466	903,3405	893,2618
21	990,2603	979,3519	969,9417	960,9180	950,9234	940,8022	930,6088	920,5052	910,1601	900,0475
22	997,0911	986,5717	976,5217	967,8049	957,7387	947,4922	937,2038	927,0391	916,6900	906,1135
23	1004,4720	993,3211	983,5543	974,1007	963,9030	953,5145	943,0975	932,8211	922,2805	911,5950
24	1011,3074	999,4599	989,9547	980,7264	970,2224	959,6004	948,9263	938,4728	927,7174	916,8423
25	1018,5186	1006,9343	997,6542	987,6180	977,7779	967,0955	956,5404	945,8881	934,9189	923,8172
26	1025,0401	1013,8339	1003,5969	993,7242	983,0223	972,4568	961,8003	950,9313	939,7325	928,4001
27	1031,8183	1020,5889	1010,3373	1000,0034	989,4179	978,9498	968,5751	957,9745	946,9329	935,7886
28	1038,8085	1027,3188	1016,9885	1006,4221	995,9343	985,5475	975,2402	964,9957	954,4007	943,6450
29	1045,9740	1034,5301	1024,0703	1013,9533	1003,5474	993,2282	982,9765	972,7779	962,2007	951,4962
30	1053,2843	1042,5657	1031,9084	1021,5752	1011,2379	1000,9747	990,7689	980,6077	970,1812	959,5817
31	1060,7143	1049,5030	1038,9328	1028,5704	1018,2904	1007,9936	997,7655	987,6048	977,1730	966,5936
32	1068,2432	1057,7238	1047,3275	1037,0245	1026,7923	1016,5400	1006,3767	996,3709	986,1892	975,8258
33	1075,8539	1065,4129	1054,9793	1044,8262	1034,6338	1024,4873	1014,3754	1004,2898	994,2242	983,9737
34	1083,5321	1073,1582	1062,8775	1052,6663	1042,5071	1032,3867	1022,2956	1012,2664	1002,1738	991,9336
35	1091,2662	1080,9493	1070,7134	1060,5373	1050,4056	1040,3069	1030,2327	1020,1769	1010,1347	1000,1028
36	1099,0465	1088,7781	1078,5800	1068,4333	1058,3245	1048,2436	1038,1833	1028,1382	1018,1044	1008,0791
37	1106,8649	1096,6376	1086,4715	1076,3495	1066,2596	1056,1933	1046,1443	1036,1080	1026,0809	1016,0608
38	1114,7148	1104,5228	1094,3834	1084,2818	1074,2077	1064,1534	1054,1136	1044,0843	1034,0627	1024,0468
39	1122,5907	1112,4285	1102,3117	1092,2273	1082,1662	1072,1218	1062,0895	1052,0659	1042,0486	1032,0360
40	1130,4882	1120,3512	1110,2534	1100,1833	1090,1329	1080,0966	1070,0704	1060,0515	1050,0377	1040,0277
41	1138,4035	1128,2379	1118,1060	1107,9178	1097,8063	1087,7167	1077,6455	1067,5802	1057,5202	1047,4613
42	1146,3334	1136,1360	1126,0375	1115,9192	1105,8251	1095,7509	1085,6937	1075,6414	1065,5927	1055,5464
43	1154,2756	1144,0364	1133,9362	1123,8661	1113,8161	1103,7843	1093,7644	1083,7545	1073,7526	1063,7566
44	1162,2277	1152,0506	1141,9507	1131,8775	1121,8244	1111,7883	1101,7643	1091,7502	1081,7416	1071,7366
45	1170,1882	1160,0300	1149,9300	1139,8625	1129,8143	1119,7804	1109,7563	1099,7410	1089,7306	1079,7225
46	1178,1556	1168,0655	1157,9652	1147,8904	1137,8348	1127,7942	1117,7648	1107,7417	1097,7282	1087,7197
47	1186,1286	1176,0973	1165,9969	1155,9220	1145,8719	1135,8312	1125,7968	1115,7707	1105,7486	1095,7314
48	1194,1062	1184,0715	1173,9711	1163,9028	1153,8583	1143,8239	1133,7945	1123,7661	1113,7420	1103,7228
49	1202,0878	1192,0587	1181,9583	1171,8949	1161,8564	1151,8281	1141,8047	1131,7812	1121,7577	1111,7391
50	1210,0726	1200,0461	1189,9457	1179,8883	1169,8558	1159,8324	1149,8089	1139,7854	1129,7619	1119,7402

Mr. Alexander Stevenson

August 21, 1967

Rosalind Gilmore

A Thing of Shreds and Patches

You asked for some notes about this job as I have done it over the last 20 months.

If one leaves aside its evolution toward a more stable, central and centralizing role in the Department (my memorandum of June 28) and jobs I have recently done within this context with which you are familiar; its older, or underlying, role emerges as that of a Nanki-Poo, a singer of songs for occasions, in which impressions of pattern are often misleading since, though subjects sometimes recur, they were dealt with separately as they arose and without continuous involvement. Recently a closer involvement in day-to-day front office work (made possible by geographical proximity) has enabled the job to develop more into that of a Pooh-Bah or Lord High Everything Else, taking on much of whatever needs to be done in the front office but does not need your own attention or Mr. Kamarck's.

I doubt whether the disappearance of Nanki-Poo will be greatly felt; whereas Pooh-Bah is capable of being very useful. But I will briefly describe the work done in the Nanki-Poo days so that you may consider which pieces might remain appropriate to Pooh-Bah and which are candidates to be hived off into the divisions.

A. "Ballads..."

Proposal for Establishing an Expanded Creditor Reporting System

My first long job in the Department was to draft the paper setting out the proposed scheme for reporting on external lending by creditor countries, and then take part in our end of the exchanges with OECD, and creditor country officials, on drafting and on the ideas for changes which stemmed from French and other reservations, until the point at which the proposal finally emerged as an official DAC paper.

The Economics Department

Soon after that I started gathering the material for a paper describing all work done in the Department in 1965 (finalized early in April 1966 to accompany the budget submission, and circulated within the Bank on April 25, 1966). This, together with a check list of work and responsibilities by departments (prepared for an orientation seminar given by Mr. King), and increasing familiarity with the Tuesday, Thursday and Friday meetings, was the beginning of the process of taking a look at the Department's work and responsibilities as a whole.

This theme was taken up again in the autumn of 1966, when much information and descriptive material was prepared for the Board discussion of the Department. This was circulated in the Department and the Bank in a paper of December 1966 "Economics Department: Organization and Work in Progress", which described the Department and its work by divisions and annexed (amongst other things) lists showing staff members participation in missions, international conferences and other meetings, and their publications in 1966, as well as studies and reports to the Board since the beginning of fiscal 1965-1966.

Budgets 1966-1967 and 1967-1968

For the 1966 budget I prepared all the divisional budget submissions for use as annexes to the main budget memorandum. This also helped to make me familiar with the Department and its staffing. I have also done work which bore on details of budgets, e.g. the note of a meeting on accounting for services to member countries; and, as you know, short memoranda on research assistants and on fees for consultants.

French Ideas on Development

In the early summer of 1966 I spent most of my time on a survey of papers presented at a conference of French economists and officials, to see what themes were being stressed in French thinking about development. This was completed on June 28; the memorandum distributed to the Economic Committee on December 28 and to the Board on February 28, 1967.

The World Indicative Plan

Some work in the summer of 1966 bears particularly on the centralizing role which the job chanced to fulfill on that occasion but can be organized and expected to fulfill in the future. The FAO had prepared a large number of projections of GNP, growth rates, etc. for 1975 and 1985 as part of the World Indicative Plan. Under the Cooperative Program, Mr. Ergas sent a set of these to Mr. Kamarck for Bank comments. At about the same time Mr. Goresaux in Rome sent a somewhat different set to Mr. de Vries. Mr. Kamarck sent his set for comments to the Area Department Directors who, after consulting their desk officers, provided views and revised projections which were incorporated into a letter to Mr. Ergas. Mr. de Vries sent his to the Economic Advisers, received comments direct from them, and it was when he also chanced to ask me to pull them together in a draft reply (an accident unrelated to functional responsibility) that the two sets of papers came to be put together. As often the muddle began outside the Bank, but closer involvement of this job in day-to-day work would mean that such extraneous muddles were more quickly detected.

Continental Shelf and Deep Water Mining

One very interesting but in itself peripheral research job was to prepare for a proposal of Mr. Kamarck's (of great central interest) a world map showing the continental shelves, estimates of the value of minerals and other

resources in the off-shelf areas, and such information as was available on the costs of mining it.

The Research Lists

Soon after work on the continental shelves I started on the first of the tabular summaries of research in progress in the Department. The longest was prepared in September 1966, and a version of it was originally annexed to the Board presentation papers. Thereafter, shorter summary lists were prepared for the Department, and for the Economic Committee (circulated January 12, 1967), to which it was intended to add notes on economic research in other parts of the Bank before sending the list to the Board. The latest version of the list is that recently prepared for the Board as an alternative to the descriptive paper on the Department written in May-June 1967.

Filing and Paper-Handling

Many ideas which emerged from the work described above (as well as from other tasks described below) were relevant in the survey which I made of paper-handling and filing in the Department, which was begun in 1966 and completed in my report of January 19, 1967 to Mr. King. The recommendations dealt with filing, routing papers, logging, and paper-keeping within the Department. The business of meshing the Department's work with the records kept in the central filing system is now in the hands of General Files (though I have periodic discussions of problems with them) and a start has been made on some other points with the changes in Economics Department Working Papers; but there are further subjects in it which might be taken up with profit in due course.

B. "...Songs..."

Some subjects which have recurred in a thematic way, but without involving major pieces of work or being aspects of a continuous responsibility, have been the following.

Training Courses

The first job I did in the Department was a survey of the replies to a questionnaire Mr. King had circulated on needs for training in the Bank. I was also involved on some points on Mr. Walters' course on quantitative techniques, and, as you know, I have exchanged some memoranda on extra-mural training, language training and a writing course with Mr. Van Wagenen. (I now wonder whether these things would not have been better done by Mrs. Armstrong, and also consider that such arrangements as I make for economic seminars, now that the method of announcement is itself probably settled, would be better left to the office of whoever is chairing the particular seminar.)

UNCTAD

One of the things I first did when here was to prepare short notes on points of interest in the bundles of papers that periodically come in from the four UNCTAD Committees, and also summaries of major UNCTAD policy statements, such as speeches by Dr. Prebisch. This was in response to a request from Mr. Friedman to Mr. Kalmanoff, and the task is now being carried out in the International Finance Division. In addition I have gathered collections of reading material for Mr. Rajan and others on subjects which may arise at the second UNCTAD conference, and have written the notes of sundry meetings discussing the replies to be given to letters from UNCTAD, on the line to be taken by Bank representatives at UNCTAD Committee meetings or expert groups.

Africa

At various times I have provided for Mr. Kamarck information about developments in Africa, and aid to Africa. This has included summary tables of the main indicators for all Sub-Saharan African countries, information on railways, ports, schools, power and passenger cars in Africa, and figures for United States, British, European and Soviet aid to Africa.

Crank Letters

I have also from time to time drafted the replies to letters which do not fall very clearly to anyone within the Bank, such as those suggesting that we should finance an air-borne computer center, control the United States inflation or endorse a "moral plan for world development within an ethical conception".

Editorial Committee

The Editorial Committee has no secretary, but I have acted as its minute writer on the two occasions on which it has met. In the intervening period I have occasionally seen Editorial Committee papers, and last year, when Mr. Latimer was on leave, I handled some of the more immediate correspondence about the World Bank Staff Occasional Papers. I am sure that these jobs should be taken over within the editorial staff: one cannot effectively write the minutes of such a committee without a continuing involvement in the papers coming before it.

Missions

I have also at various times assessed the Department's involvement in country economic missions, drafting some speaking notes on this for Mr. Woods, and several times providing analyses for the Shosib Committee. For the latter I also did an analysis of the measure of accuracy in the forecasts of missions, updating this once subsequently for Mr. de Vries. In addition, I have made periodic comparisons of the staffing pattern for country economic missions as between the various departments, based on the Economic Committee Secretariat reports on sources of supply for staffing

economic missions (which I arranged to reach Mr. Kamarck every six months).

Population

Various assignments on tabulation and comparison of population and other figures began with a request from Mr. Woods. After rapidly preparing population tables as background for a speech of his, I used the information to complete world maps for Mr. Woods showing population by countries. Later I prepared a fairly elaborate comparison in percentage and absolute terms of population in IDA countries, compared with the IDA money they had received, for Mr. Friedman in connection with IDA replenishment, and did some further work on indicators of welfare, health, wealth and so on in relation to various populations. All of this has now gone over to the Comparative Country Data Division.

Country Economic Work

Questions how to handle country economic work have also recurred in various ad hoc meetings which I have recorded, from soon after I arrived, and I have done the first drafts on one or two memoranda ultimately sent out by Mr. Kamarck or Mr. Friedman on specific points in this field.

Performance

Performance criteria have also been a recurrent subject at meetings; and Mr. Kamarck recently asked me to find for him what has been written in AID, the Bank and elsewhere on performance. I have also been editing the AID paper on Taiwan, which is to be distributed in the Bank mainly for the light it throws on using aid as a performance lever.

Administrative Assistant

Naturally, I have come into intermittent contact with some of the things which Mrs. Armstrong does, and last summer I sat in her office and filled in on some part of her duties while she was on leave. In effect, this meant dealing with plans for getting and allocating space, for this was the time at which Mr. van der Tak and Mr. Walstedt's Divisions moved to the Fund building. Contact with other secretaries, and arrangements for secretarial assistance were looked after by Mrs. Weyrich, and travel and leave arrangements by Miss Allen. I think it would be very useful to establish for the future some understandings about what are the overlapping areas in which the two front office assistants should be continually aware of what the other is doing, and should cover for each other when one is on leave.

C. "...And Snatches"

Finally, there have been many very short jobs. Some relate directly to a continuing stream of work, and form the kernel from which the central job will emerge in the future; others have arisen rather at haphazard and are not very easy to remember. I will try to describe the former and give some examples of the others.

Meetings and Administrative Minutes

First, there is the regular Tuesday Meeting, and until recently the Thursday Meeting. In theory I have also been secretary of the staff meeting, but this has no minutes. Arising out of these three meetings, and sometimes from other administrative decisions, are the series of Economics Department Administrative Minutes: the first two preceded my arrival, but I have drafted all the rest. The Administrative Minutes cover many points of organization and method in the Department; and, together with keeping the records of the newly inaugurated series of front office and divisional work program meetings and what flows from them, may be among the most important functions falling to this job.

Other Meetings and Memoranda

There have also been a variety of other front office meetings for which I have written the minutes. These have covered such subjects as our contribution to the United Nations progress report on the development decade; the Bank budget accounts; briefing for discussions of debt and terms of assistance at various meetings of the DAC Working Party on Financial Aspects of Development Assistance; harmonization of terms; tourism; computer expenditure; discussions with the African Development Bank; subjects for the 1967-1968 budget; the Bank policy towards Malawi; and Economic Working Parties. It is arguable that a number of these meetings should have been recorded by members of the division primarily concerned with the subject under discussion; but several of the others, particularly those involving representatives from outside the Bank and possibly from other Bank departments, should, I think, continue to be dealt with from within the front office, and therefore by whoever holds this job.

There have also been first drafts of memoranda to heads of other departments or Economic Advisers on such things as computer expenditure, recognition of Bank work, and statistical services, analogous to Administrative Minutes within the Department.

Paper-Handling and Communication

In addition to the subjects dealt with in Administrative Minutes (e.g. blue books and Economics Department Working Papers) I have done one or two other jobs on paper-handling in the Department, such as getting the reports kept in Mr. Latimer's office listed for information, and preparing some guidance on printing and distributing Bank economic reports. This latter paper could not however be issued since overhaul of the Bank-wide system may invalidate what it says.

Newspapers and Periodicals

Each Monday morning I filter the weekend New York Times for Mr. Kamarch, and I also look after his collection of economic articles and book reviews, to which he adds from time to time. I think, however, that before I go I

will have these arranged in such a way that he can simply mark future articles for inclusion in one of three or four books which could be kept in his outer office. If we pursue arrangements for divisional staff members to pick up interesting articles, the newspaper job could also conceivably be done in divisions: but Mr. Kamarck may prefer to have it done by someone closer to the run of his interests.

Russia

It may be for the same reason that Mr. Kamarck has asked me to look through a recent book on Soviet aid and extract anything of interest. Indeed occasional work of this sort may continue to be a worthwhile break in the routine of the job and keep the incumbent in touch with the particular current interests of the Department heads.

Economics Department

Short pieces of work related to the Department as a whole have included comments on a draft handbook by the Information Department on the Economic Work of the World Bank Group; ideas for the Activities Chapter of the Annual Report; and collecting studies and papers representative of the Department's work for those outside the Bank with a legitimate interest (the Asian and African Development Banks, Mr. Anraku and so on). This sort of task is of course quick and easy once familiarity with the Department is built up, and is exactly what the design of the job should enable the incumbent to have at his finger tips.

Conclusion

In this memorandum I have only enumerated subjects, without discussing the way the job is organized. Now that its existence is stabilized, and continuing flows of work can be further developed, it will be able, with the excision of some of the above tasks, to carry out what experience is showing to be the central functions for such a position more effectively than hitherto, including the organization and procedural work, as well as substantive matters.

If you wish we could discuss the items in this paper, along with the suggestions for the future in my memorandum of June 28, and from these two perhaps arrive at a reasonably short job-description which would be useful for the future.

RG

RGilmore/afw

OFFICE MEMORANDUM

TO: Mr. Herman van der Tak

DATE: August 17, 1967

FROM: Bertil Walstedt

SUBJECT: Research Projects Recently Completed, In Progress or Under Consideration

Until the Industrial Protection Study was launched, research within the Division was quite narrowly operational. The aim was to provide better tools than those known to exist for industrial experts on country missions or for market study in project appraisals.

The ultimate embodiment of our research was generally a working paper. Sometimes this remained in our files; more often it was circulated to interested parties within the Bank. Only exceptionally was it released to outsiders.

Below, I have arranged available papers and memoranda under four headings: demand studies, studies of the steel industry, studies of other industries, studies of major problems of industrialization. I have identified studies of relatively modest scope with an asterisk.

I. Demand Studies

1. The Demand for Steel (Walstedt - Datas). This study is essentially completed and has been reviewed by experts. It would be desirable to integrate some additional statistical regressions prepared after the initial study had been done.
2. Consumer Spending Patterns and Income Elasticities of Demand (Datas). This study contains factual information on consumer spending patterns. After suitable editing, it could be issued under blue cover or as a working paper.
3. Projection of Automobile Demand in Developing Countries (Nowicki). This is an ambitious and interesting study. It needs more editing and more additional work than the other two studies, but this should be well worth the effort.

We might consider issuing all three papers as a series of "Studies in Demand Projections".

II. Studies of the Steel Industry

The steel industry is important to most developing countries in terms of its effect on their balance of payments, its heavy investment requirements, and their own aspirations. In the more advanced industrializing countries, steel, together with equipment items, account for the bulk of the total imports (as much as three fourths of these imports in many

August 17, 1967

countries). A study of the steel industry would be a logical complement to our three studies of the engineering industries. Equally important, the Bank and IFC are doing much financing of steel projects.

1. Demand for Steel (see above under Demand Studies).
2. Investment Costs in Steel Production (Walstedt). The basic aim of this study was to provide factual information regarding investment costs for nine major processes in iron and steel production, as well as total investment costs for different types of steel mills. It shows how investment costs are affected by scale, technology and other factors. Since a large share of the total steel production costs (say, one half or more in developing countries) is represented by charges against the investment, an understanding of factors determining these costs is crucial to an understanding of the economics of steel production. The study of investment costs in steel may be viewed, for internal purposes, as a companion piece to the study of investment costs in nitrogen fertilizers (see III/1 below). Unlike the latter study, it cannot be considered for wider circulation. Although it encompasses about 70 pages of text, tables and graphs, it is relatively cursory (the field is enormous and highly technical) and, in part, outdated (technology has progressed substantially since 1963). As a desk study and background paper, it should still be useful.
3. *Ocean Freights for Steel (Martinez). This study has two purposes: To provide an appropriate picture of the freight protection that new steel mills in developing countries would receive and to provide information for project appraisals.
4. *World Market Prices for Steel Billets (Walstedt, May). This study was prepared at the request of IFC to provide a benchmark regarding the economics of proposed basic steel making capacity for Argentina.
5. *Steel Prices 1955-1965 (May). The value of this study lies in the graphs showing export and domestic prices for several categories of steel, 1955-1965. The present text is not well geared to the purpose of presenting this subject and would have to be completely revised. (not attached).

III. Studies of Other Industries

1. Investment Costs in Nitrogen Fertilizers (Cilingiroglu). This is perhaps the most interesting one of the studies we have in rough draft, and I would give a high priority to its completion. It was interrupted because of Cilingiroglu's work on the Heavy Electrical Equipment Study. Charges against the investment predominate in the cost structure for nitrogen fertilizers. The study analyzes the reasons for observed very high investment costs in fertilizer plants in developing countries.

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IV. Studies of Major Problems of Industrialization

1. Northeast Brazil - A Case Study in Regional Economic Development (Guillot-Lageat). In my view, the progressive decline or protracted backwardness of certain regions is one of the really major problems of industrial development, much overlooked. Guillot's paper was a first attempt to explore this problem. In response to a recent request by the United Nations, the Bank indicated that "it would judge any projects or programs presented to it for depressed areas on the basis of the same criteria of economic soundness which it applies generally in connection with its financing". This is not very satisfactory, and it would be hard to defend this policy in terms of logic or economics. Nevertheless, it accurately reflects our lack of knowledge and understanding of this problem.

V. Studies Under Consideration

Within the Division, we have given much thought to the most productive areas for future research. The six suggestions below reflect the research interests of individual staff members:

1. Programming of growth and expansion of engineering industries in developing countries. A sequel to the industrial protection study (Baranson).
2. Public enterprise in manufacturing, with special reference to Pakistan (Villela).
3. The learning phenomenon in industry (Schrenk).
4. Three proposals by Nowicki covering, respectively: (a) industrial concentration and its economic effects; (b) industrial policies of developing countries; (c) productivity of industrial investment.
5. Economics of the pulp and paper industry (Dadas). We have much information on this industry in our files which it would be useful to synthesize.
6. Comparison of economic returns as between major sectors (Lall). This is viewed as a short paper for discussion.

All these proposals are in a very preliminary phase of elaboration, but you may still be interested in the attached outlines for general background. Nowicki's suggestions, I feel, are rather too general, and the focus would have to be narrowed to provide a practical research project.

Attached (with original only copies of studies and study proposals mentioned in the text).

BW:jg

cc: Mr. Stevenson

Members of Industrialization Division

July 21, 1967

Mr. Alexander Stevenson
c/o General Delivery
Menemsha, Martha's Vineyard
Massachusetts

Dear Mr. Stevenson:

Thank you for your letter. I am enclosing a few papers you may care to look at, and will give you in this letter a quick report on the various things I have in hand.

Distribution of Economics Department Papers

I had some notes in draft for you, when the issue became live again with Mr. Tiemann's memorandum of June 30 to Mr. King about attributing authorship to the papers. As a result, I gave the notes to Mr. Kamarck, and a shortened version of them is being circulated for discussion at the next Tuesday Meeting. Copies of these various papers are enclosed in case you would like to glance at them. I do not think I will now take the longer draft memorandum any further, as the circulated notes perhaps say as much as is needed, but you may like to see it for your own information. I will let you know the outcome of the discussion on Tuesday, July 25.

Research in Progress

Also enclosed is a copy of the typed version of the list of studies in progress, of which we have at present made five copies for limited use within the Department. I will press on with the paper on research plans which I promised you, as soon as one or two other jobs are cleared up. I suddenly realize that the present research list does not include studies which have come out as annexes to Country Economic Reports (for instance, "Bananas - Problems and Prospects" which appeared as Annex 3 of the Ecuador Report WH-157A), and I wonder if we should make some effort to get these in. Conceivably even, in the long run, we should endeavor to list all the Country Economic and Project Reports to which staff members have contributed; but in the first place it might be best to confine listing to those reports where we had prepared an entire annex, say on a sector, or a commodity.

July 21, 1967

Blue Books

Before he left on leave Mr. King handed back the proposal on Blue Books with the suggestion that, rather than all blue copies coming in to me or my successor, two Blue Books might be made up by a Front Office secretary and then handed in first to whoever held this job to remove inappropriate papers, either destroying them or putting them in to you and Mr. Kamarek. I think this would be a useful change in the proposal, eliminating possible accumulations of unsorted and unseen paper while I or my successor happened to be out of the office. If we do consolidate the issue of Economics Department papers, and can use the Blue Book more as a means of informing people what is available by including in it lists of studies, rather than long finished papers themselves, then its role should become more direct and useful.

Mr. King also suggested that an alternative to destroying blues of the more ephemeral material would be to channel them into a departmental chronological file, maintained in the Front Office in which staff members could browse if they wished. I do not myself think that such a file would be very useful, or much used, but it is difficult for me to judge.

Organizational Bulletin

I have started on a rough functional description of the Department, designed to take in the elements listed in the existing Organizational Bulletin and adding the new functions we have taken on since that was drafted. This may in any case be useful to clear our own minds; but, with the sort of cautionary words which I have given the preamble, do you think it might serve as a basis (shortened preferably in the first part if we can do so without losing too much significant) for our entry in the forthcoming Organizational Manual, or is it not yet on the right lines?

Front Office Assistant Job

Several of these papers will be relevant to the continued consideration of the structure of this job for the future. I do not think it likely that there will be an opportunity of discussing this with Mr. Kamarek before your return, but by then I should have a few more papers, and a few more ideas, to add to the discussion. One quite important point that occurs to me is that, although I think the work I have done for Mr. Latimer (minutes of Editorial Committee, and holding some parts of the fort while he has been away) should be handed over to whoever will be his research assistant, the two jobs should nonetheless be done in closer coordination since he also, for different reasons, needs to be informed of the work coming forward in the Department, and there are many ways in which the two jobs could complement each other, particularly in streamlining paper handling, and taking measures to avoid loss of work.

July 21, 1967

I have in hand a few draft notes on the mechanics of the job, but I doubt if they are worth bothering you with. I will also talk to Jonathan Agnew about his job in the Projects Department, but I already have the impression that it is at present subject to similar uncertainties.

Mr. Anraku

In addition to accepting at Miss Carpenter's urgent request a one-day visit from another Japanese graduate student, Mr. Harada, who wished to discuss project appraisal in the Bank, we have agreed to Mr. Anraku's four-week stay and he will be arriving on July 31. I have arranged for him to spend most of that day with the Information Department, after which he will come to us. Would you be prepared to see him briefly? After you had talked to him I could myself take him around the Department and introduce him to a few people, then leaving him with the International Finance Division who have agreed to find space for him and generally look after him during his stay. If he needs other interviews arranged then I could take care of what he wants as the time goes along.

Extra-Mural Training Courses

Administration Department broadened the categories of those eligible for such courses and also said that they needed nominations at once to plan autumn schedules. The attached list shows the names I gave to Mr. Dyck; and was made up from nominations by Mr. de Vries and Mr. King, and deductions from the annotations to Mr. Dyck's manuscript list about what Mr. Kalmanoff's nominations would have been. Mr. Collier's divisions are unrepresented as he is still away and no names sprang immediately to mind. Other candidates can of course be proposed for the spring semester but I thought I should just ask whether we had made any serious omissions from the present list.

Conclusion

I think that is about all. I should particularly welcome your views on the suggestions on Economics Department Working Papers, above all whether they, or the list of them, should go to the Board; and on the first shot at a functional description of the Department.

Yours sincerely,

Rosalind E.J. Gilmore

Enclosures:

RG
RGilmore/jb

July 20, 1967

OFFICE MEMORANDUM

TO: Tuesday Meeting
FROM: Rosalind Gilmore
SUBJECT: Proposal on Economics Department Working Papers

Attached are the notes on distribution of Economics Department work to which Mr. Kamarck referred at the meeting of July 18; and which are now circulated for discussion at the next Tuesday Meeting.

DRAFT
July 19, 1967

SUBJECT: Distribution of Economics Department Papers

At present Economics Department finished work may be distributed as Bank reports, World Bank Staff Occasional Papers, Economics Department Working Papers, attachments to Secretarial Memoranda, or ad hoc.

The methods of distribution are loosely coordinated one with the other; may tend to overlap; do not entirely guard against missing out people who should see a given production; and perhaps sometimes fail to lend the full impact to some parts of the Department's work.

An equally important problem is the extent to which work done can be lost to view, either because it is never widely distributed or owing to the absence of well known arrangements for distribution and subsequent availability of work which may later be needed.

Possible Changes

Many of these problems would be resolved if the Department itself were to issue various papers in a finished series, with a minimum set distribution within the Bank, and to issue also a periodic list of the papers in this series, and of the EC Reports prepared.

The Economics Department Working Papers (described in AdMin/66-9) were not intended to be such a series. Their keynote was to be flexibility, and the title is not altogether appropriate to a series including a much broader range of the Department's work than they were designed to do. But the series is now familiar, and has been cleared by Administration Department, so that it may be best to build on it.

The main practical changes that would be needed would be to adopt a minimum set distribution (perhaps emanating from the Front Office) and to ensure that a list of the papers was periodically circulated.

Presumably the title page need not be changed, and the disclaimer about committing the Bank should stay. It is for consideration whether the ruling about confidential material might be changed so as to allow "restricted" papers to be issued in the series when it was felt desirable not to circulate material more widely than to the Board and the Bank. It is also for consideration whether the minimum set distribution should include the Board. It would probably be excessive to send to them the whole of a series which will include some papers in which the Executive Directors will not be interested; but there may be advantages in making the series accessible to them by regularly sending them the index of papers so that an ED could ask for a copy of any paper he was interested in, and by sometimes sending a paper to them on the Department's initiative (as with blue and grey cover reports).

Finally, much useful work is lost to view after reaching the stage of being circulated as a draft report or paper. It might usefully complement the arrangements discussed above if the list of such draft reports and papers, held by Mr. Latimer, were from time to time circulated with the lists of EC reports and of Economics Department Working Papers. If so, it would also be worth making further efforts to ensure that all draft reports reach Mr. Latimer's central collections: the section on unnumbered and draft reports in the annexed list, made up from his records, shows some gaps.

Advantages

A broadened series of Economics Department Working Papers would have the following advantages:

- (i) it would provide a convenient way for staff members to write up more of their work in finished form without polishing it for publication;
- (ii) it would provide a medium for circulating more widely summaries of interesting information from time to time prepared in the Department (for instance, the paper on debt rescheduling activities, or notes on aid policies of donor countries);
- (iii) in particular it could make more widely available:-
 - (a) the first or partial results of a research project before the whole enterprise was worked through,
 - (b) the "fall out" of participation in a mission, in terms of interesting information or analysis not really appropriate to the mission report, and
 - (c) background information or analysis accumulated in replying to ad hoc requests for briefing or speech material;
- (iv) it would help to preserve work that has been done, and give a helpful point of reference for discovering whether completed work existed on a particular subject;
- (v) it might provide a useful source of material for responding to ad hoc requests without having to spend time on rewriting;

- (vi) it would help the gradual process of more fully informing people outside the Department of staff members' work.

Annexes

A suggested distribution list for the Economics Department Working Papers is annexed, together with a suggested distribution for the periodic list of Working Papers and EC and draft reports. Annex 2 is a list of EC reports, Working Papers, and drafts and unnumbered reports for the fiscal year 1966/67 presently available in Mr. Latimer's office.

cc: Mr. Latimer

DISTRIBUTION LIST FOR ECONOMICS DEPARTMENT WORKING PAPERS

Economics Department

Messrs. Kamarck
Stevenson
Adler
de Vries
King
Sacchetti
Latimer
Group Heads (3)
Division Chiefs (9)
Mrs. Gilmore/Armstrong

Others

Mr. Friedman
Economic Advisers (8)
Mr. Pryor (Information Department)
Research Files (2)

* * *

DISTRIBUTION FOR SIX-MONTHLY LISTS OF WORKING PAPERS
AND OF EC REPORTS

Board of Executive Directors (via Secretary's Office)
includes:-

President
President's Council
Executive Vice President, IFC
Deputy Executive Vice President, IFC
Department Heads, Bank and IFC

Economic Committee
(so far as not covered above)
includes:-

Economic Advisers

Editorial Committee

Mr. Pryor (Information Department)

Research Files

Economics Department Staff Members or Blue Book

ECONOMIC REPORTS 1966-67EC Reports

EC-144	August, 1966	Commodity Price Trends (1966 Edition)
EC-145	Aug. 9, 1966	Statistics of Medium - and Long- Term External Public Debt 1956-1965.
EC-146	Aug. 31, 1966)	External Public Debt-Estimated
EC-148	Oct. 4, 1966)	Service & Principal Amounts -
EC-150	Oct. 24, 1966)	Various countries.
EC-154	May 31, 1967)	
EC-147	Sep. 26, 1966	An Economic Reappraisal of a Road Project: The First Iranian Road Loan of 1959 (IRN-227)
EC-149	Oct. 14, 1966	External Medium - And Long-Term Public Debt Past & Projected Amounts Outstanding, Transactions and Payments; 1956-1975
EC-151	Nov. 14, 1966	Basic Trends in Coarse Grain Economy
EC-152	April 1967	The Structure of Protection in the Industrial Countries and its Effects on the Exports of Proces- sed Goods from Developing Nations
EC-153	May 16, 1967	The Export Experience of Developing Countries

Unnumbered Economic Reports

July 29, 1966	Economic Performance Study	R. M. Sundrum
Aug. 3, 1966	Public Expenditure Patterns in Selected Developing Countries	R. Sharif
Aug. 4, 1966	A Note on Capital Requirement Estimates	A. Elsaas

Unnumbered Economic Reports (cont'd)

Sept. 21, 1966	The World Bank's Estimates of the Capital Requirements of the Lesser Developed Countries	Economics Department
	International Capital Markets Historical Evolution and Present Position and Prospects	R. Zafiriou
Nov. 15, 1966	Part I The Pre-1914 Century	
March 27, 1967	Part II The Interwar Years	
June 20, 1967	Part III The Postwar Period	
Dec. 14, 1966	Suppliers' Credits from Industrialized to Developing Countries	Bank Staff
Dec. 29, 1966	A Note on the Economic Analysis of Road Transport Projects	H. G. van der Tak
Mar. 17, 1967	The Economics of Road User Charges	Alan A. Walters (consultant)
	Part II Application	" "
Mar. 21, 1967	Models for Economic Planning in India	A. Elsaas
May 25, 1967	International Plywood Market and its Prospects	O. G. Khan
June 19, 1967	Techniques for Project Appraisal Under Uncertainty	S. Reutlinger
June 28, 1967	Automotive Industries in Developing Economies	J. Baranson

Working Papers

June 6, 1967	Working Paper No. 1 -- Earmarking of Taxes for Highways in Developing Countries	P. Eklund
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- 3 -

Working Papers (cont'd)

June 5, 1967

Working Paper No. 2 -- Present
Worth Calculation of Projects:
Twelve Tables

J. de Weille
H. M. Kim

ECONOMICS DEPARTMENT
Tuesday Administrative Meeting
9:30 a.m. July 18, 1967

Present: Messrs. Kamarck, de Vries, Sacchetti, Balassa, Dubey, Elsaas,
Holsen, Macone, Schmedtje, Schrenk, Tiemann, Miss Vial, Mr. Westebbe,
Mrs. Gilmore (Secretary)

Project Appraisal Under Uncertainty

Mr. Schmedtje said that the Investment Planning Division would be very grateful to have comments on Mr. Reutlinger's draft study, especially from the Statistical Services and Applied Quantitative Research Divisions. It was agreed that he would send copies of the draft to Mr. Dubey for the International Finance Division, and also to Mr. Schrenk.

Economic Working Parties

It was agreed that the organization of Economic Working Parties would be reviewed in September after two months more experience of their working, when an Operational Memorandum describing the system would be prepared and issued. In the meantime, a standard practice would be initiated of inviting the Economics Department representative's views on the policy and economic sections of the President's Report before it was finalized.

Kennedy Round

Mr. Balassa said that AID were studying the effects of the Kennedy Round, as well as GATT and UNCTAD, so that some papers should be forthcoming by the end of the month.

Distribution: Tuesday Meeting
Miss Vial
Messrs. Dubey
Elsaas
Holsen
Schmedtje
Schrenk

R. Gilmore
July 18, 1967

*Pls. make
one photo copy.*

Mr. Alexander Stevenson

July 7, 1967

Orville J. McDiarmid

Commodity Projections for Country Economic Missions

The Asia Department is mounting economic missions to Thailand and Malaysia early next year. It also seems likely that economic missions will have to be sent to Indonesia and the Philippines towards the end of this year.

There will be, as usual, a need for a forecast of commodity price trends. In the past, we have been helped by the close cooperation of the Economics Department on this matter, but we have tended to rely on ad hoc briefings of the Economics Department which were usually prepared at a short notice, and so not without some difficulty. We feel that it is worthwhile to have a fresh comprehensive look at the main export commodities of these countries, namely, rubber, palm oil, tin, rice and tropical timbers and to have preparations started well in advance. This would be very important, for example, in case of the Malaysia mission which would make a mid-Plan review of the First Malaysia Plan (1966-70), as we believe that the actual rubber price movement has so far departed considerably from our expectations.

We should appreciate it very much, if the Economics Department could plan to have studies on these commodities prepared and made available to us for these economic missions. I understand that an econometric study of rubber is well underway and that a study on rice will have been completed early next year.

SAsanuma:hh
IBRD

MA--Econ.

Mr. Jan de Weille

June 30, 1967

A. Meroz

Suggested Subjects for Advanced Studies

There are two subjects which I would like to indicate for possible advanced studies. I tried to group several aspects of each of the subjects, which I feel could explain better my needs in acquiring more knowledge in both these subjects.

1. The first group of subjects is in the field of operations research.
 - (a) probabilistic methods in linear programming (incorporating risk and uncertainty elements in a process of planning)
 - (b) problems of timing and location in a simultaneous evaluating of alternative activities (projects)
 - (c) non-linear programming (dynamic aspects of planning; forecasting methods and explanatory models based on non-linear relationships)
2. The second group of subjects is in the field of public investment theory.
 - (a) techniques for relating economic objectives, engineering and government planning
 - (b) city planning with regard to policy making criteria of public expenditure in urban services.

AM:jlh

Yellow copy.

Mr. Barend A. de Vries

June 27, 1967

Patrick de Fontenay

The Decline of Multiple Exchange Rates, 1947-67

I am afraid that I have very few critical comments on this thorough and accurate review of developments in the field of multiple exchange rate practices. The following are only suggestions which, I hope, may be useful.

1. The Author states that "the use of multiple rates was allied with the existence of domestic inflation" (p.3). This is true to the extent that multiple exchange rates are a symptom of balance of payments difficulties often caused by inflation. However, for many LDCs multiple exchange rates were used mainly as an instrument to influence resource allocation instead of a system of taxes and subsidies or to raise revenue. Indeed, it seems that inflation contributed to the decline of multiple exchange rate practices since internal price changes called for frequent revisions of the exchange rates and such frequent changes made the system unmanageable.

2. It may be worth mentioning that in some cases (e.g. Argentina) the unification of the exchange rates was accompanied by the introduction of an intricate system of surcharges and special bonuses on various types of imports and exports so that the elimination of multiple rates was a purely formal operation with little beneficial effects.

3. This raises the problem of defining multiple exchange rates. The existence of tariffs and special taxes and restrictions tends to create an implicit system of multiple rates. Do the United States and the United Kingdom have multiple exchange rate systems because of the Exchange Equalization Tax on the premium on investment sterling? This could be clarified.

4. The Fund's effort toward simplifying member countries' rate structure is probably as important as the final elimination of multiple rates. There should be a distinction between simplification and elimination, however, and it is not clear from the text (p.11) that Brazil and Venezuela still retain a multiple exchange rate system.

Cc: Mr. Kalmanoff

PdeF/jb

Mr. Jan de Weille

June 26, 1967

Bernard Oury

Areas of Interest

1. You have asked me to indicate areas of interest to me regarding the Bank's policy of giving its professional staff opportunities for continuing education and self fulfilment.

2. I wish to indicate that corresponding to my global education, I have a rather wide interest embracing the various areas of the Bank group activities: Macro and micro economic problems related to economic development, economic planning and strategy of economic development, project appraisal, financing, cost-benefit analysis, optimum decision making, computer techniques including systems analysis and simulation techniques.

BO:jln

yellow

June 23, 1967

OFFICE MEMORANDUM

TO: FILES

FROM: Rosalind Gilmore

SUBJECT: Work Program of Comparative Analysis Division

A meeting was held at 10 a.m. on Monday, June 19, to discuss the work program of the Comparative Analysis Division. There were present Messrs. Kamarck, Stevenson, Collier, Maiss, Maane, Streng and Mrs. Gilmore.

Operational Work

The main changes in the Division's day-to-day work would follow from the creation of Economic Working Parties. In future the Division (and indeed the Department as a whole) would be involved earlier and more directly in discussion of draft reports rather than writing comments on reports at the green cover stage. Indeed, the Division need no longer comment on every country economic report at this stage: it should do so only when it was specifically requested by the Sub-Committee Chairman, or when a report had special relevance to some topic in which a staff member had developed expert knowledge. In general, members of the Division should try to develop special interests in particular longer-range country economic problems (for instance the economics of coffee production), and follow carefully the treatment of each such problem in the appropriate reports.

Research Program

For some time the paper on capital inflows had taken up all the time available for research. The exercise would have to be updated periodically, but it was now possible also to consider some other research projects. Mr. Maiss said he had in mind a number of subjects which frequently raised problems in country economic work, and which might repay investigation to systematize our knowledge of what the Bank (and possibly other organizations) had already done in these fields and what its impact had been; to improve our knowledge of the analytical techniques applicable in these fields; and to develop the theoretical framework from which these problems could be approached in future work.

The subjects were discussed with the following tentative conclusions.

(i) Analysis of Imports

Projecting a country's imports and import requirements was becoming increasingly important to the Bank's operational work but, in marked contrast with export projections, there was little knowledge or technical skill to bring to bear. It might be worth doing some basic research into what techniques were available, and what data they required, and then experimenting with their application in conjunction with economic missions to countries in which the foreign exchange constraint seemed particularly important; and, if possible, for which the Applied Quantitative Research Division was building an econometric model.

(ii) Program Lending

It would be worth undertaking some research into the experience both of AID and the Bank with non-project lending, and its impact on the policies of the recipient government, and of the aid-giving institution. This might include an analysis of the benefits of broadening the horizons of thought about aid first from project to sector, and then on to country-wide considerations. A particularly important part of such a paper would be an analysis of Bank recommendations to consortia and consultative groups.

(iii) Local Currency Financing

Some theoretical work on the manner of local currency financing, and its treatment in country economic reports, might be useful. But it was not of a high priority.

(iv) Experience with Policy Understandings

It would be well worthwhile to make an analysis of policy understandings entered into by the Bank with member countries, including the form they had taken, and their outcome and impact on the Bank's operations, on the lines of the paper suggested on program finance. It would, however, probably be preferable to avoid broad-brush speculations about the future uses of policy understandings.

(v) Recommendations in Reports

A study might be made of the extent to which recommendations, expectations and projections in past reports had been borne out by events. But it was doubtful if this would be of great benefit.

(vi) Reviewing Reports

At some stage it might be worth analyzing the composition of each and every country economic report over a period of say two years, simply in

structural terms, to see how far they shared common features and whether the results could usefully be applied in reviewing future country economic reports.

(vii) Terms of Lending

Some future general work on harmonization of terms would be needed by the Department but probably fell more appropriately to the International Finance Division.

Conclusion

Summing up, Mr. Kamarck said he had two specific suggestions about work, and one about organization, to make in addition to a few general remarks.

First, two areas for useful research would be:

- (viii) Country Comparisons: further use might be made of the idea of comparing and contrasting the experience of two significant countries, on the lines of Professor Mason's paper on India and Pakistan;
- (ix) Regional Studies: it was plain that work on regions as opposed to individual countries would become increasingly important, and the Division might make a particular contribution to studies of the ecological constraints on development (such as debilitating diseases in Africa) and studies of the effectiveness and significance of existing regional organizations and arrangements (EACSO, the Central American Common Market, etc.).

On organization, Mr. Kamarck suggested the idea that country economists, after perhaps five years in an area department, might come on assignment to the Comparative Analysis Division to carry out some piece of theoretical economic work related to country operations, both for their own benefit, and to contribute their direct knowledge and experience to the work of the Division.

Finally, Mr. Kamarck said that the Division's basic approach to both operational and research work, through a strong focus on individual countries, and in close cooperation with the Area Departments, seemed entirely the right one. The function for which the Division was needed in the Bank's country work, parallel to that already performed in its project and sector work by the Investment Planning Division, was to identify, analyze and generalize the most frequently recurrent specific problems; to undertake basic studies directed towards means of dealing with them, and to participate in applying those means.

The next year in the Bank would be one not of expansion, but of regrouping and retrenchment, so as to be ready for the next steps forward. The Department should therefore consolidate its experience of country economic work, and in particular equip itself to deal with regional problems and regional studies. This was work not yet being done in the Bank, the responsibility for which was almost certain to fall to the Economics Department (whereas, it seemed likely that responsibility for work on the developed countries was likely to be allocated elsewhere). Of the projects which Mr. Maiss had mentioned, (v) should probably be dropped and (iii) accorded a very low priority. The rest, together with the further two he had suggested, should be kept in mind for the right opportunity to undertake them, though the demands of operational work would clearly prevent a start being made of most of them for the present.

cc and clearance: Mr. Kamarck
Mr. Maiss

Distribution: Those Present
Tuesday Meeting

yellow

Mr. Alexander Stevenson

June 22, 1967

E. S. Mason

Comments on the Work Programs of the Department

Here are a few random comments on the various work programs presented by the divisions.

Comparative Analysis Division

In laying off the non-operational research work on the country problems, how are these countries to be selected? Does the Division have the responsibility for country expertise on a particular group of countries in which the Bank's interests are large?

Import requirements can hardly be studied except in connection with a comprehensive forecast of the rate and character of economic growth. This would involve projections of domestic savings, relative sectoral growth rates, import substitution policies and so on. I do not see how techniques for estimating import requirements can be divorced from a fairly elaborate study of the whole economy.

Impact on policy of recipient countries of non-project lending by AID and the Bank. This is an interesting and important subject on which I am doing a good deal of work myself. Conditions imposed by the Fund should be brought into this inquiry. In fact, I think one of the central problems concerned with the use of leverage to bring about domestic policy changes is what should be the relationship between stabilization policies and growth policies. As far as I can see, this is a neglected field of economic analysis but one of central importance to the work both of the Bank and of the Fund. Would there be possibilities of a joint Fund-Bank inquiry into this range of problems?

International Finance Division

I do think that continued interest in industrial protection policies and their effect on the direction of import substitution should be maintained, but I am not at all sure whether the Industrialization Division is not a better place for this work. If a particular country is going to be selected for a pilot study of protection policy, I would suggest Pakistan where a great deal of work has already been done. I refer primarily to the work of the Pakistan Institute of Economic Development. Some of this has been published in the Pakistan Economic Review and a good deal of it is available in mimeographed form.

External debt studies clearly should be a primary concern of the Division and these studies are obviously directly relevant to the work of the Bank.

If any studies of private investment are to be undertaken, I should suppose they should be in this Division. The studies proposed, however, do not seem to me to be very interesting. It might be better, with respect to a particular country, to ask the questions what is the volume of annual private investment likely to be under present conditions and what might it be if the country in question undertook specific changes in policy affecting foreign private investment.

Industrialization Division

I do think that the possibilities and limitations of industrial import substitution should be a continuing interest of the Bank and probably the Industrialization Division should be the center of this work. It would appear to me that the comparative advantages and disadvantages of different lines of industrialization in the LDC's should be the primary focus of this division.

There is an interesting PhD thesis now nearing completion at Harvard on the subject of time as a cost in the process of Indian industrialization. The author, Robert Repetto, has collected a lot of empirical material on the time required to get plans constructed in India and the effects of this on cost and production. Some time in the fall it might be useful to get him here to discuss his findings. This seems to me to be a field of inquiry close to the interests of the Industrialization Division and one that is relevant to Bank work.

The four studies proposed by the Division on page 2 of their memorandum look interesting.

Since the Bank seems increasingly interested in quasi-program loans via such institutions as PICIC in Pakistan and ICICI in India, there would seem to be a case for closer scrutiny of the operation of such institutions and their effect on the direction of industrialization.

Institutional and Quantitative Research Division

I find it very difficult on the basis of this memorandum and what I already know to ascertain what the primary focus of this Division is or should be. The Conrad proposal is an interesting one and I can see that the Behrman econometric study of the world rubber market might be useful. It is difficult, however, to see into what central groove these studies fit. Is it one of the Division's jobs to undertake the construction and testing of aggregative planning and growth models?

A great deal of work on this subject is being done in the universities and probably most of it should be done there. Has the Division a function in interpreting and evaluating this work for Bank purposes?

The title of the Division is confusing to say the least. One would have thought that quantitative and institutional research involved techniques used in all the other divisions. How will the work of this division fit into what Guy Orcutt is going to do? Am I right in thinking that the major of this division's responsibilities are as yet inadequately specified?

Work on Financial Markets

What appears to be contemplated is a useful series of studies quite relevant to the problems of the Bank. They obviously need more definition but I have no useful comments to make.

cc: Mr. Kamarck

ESM/ner

Mr. Andrew M. Kamarok

June 15, 1967

Arthur E. Tiemann *AET*

Recommended statistics texts

In response to your requests for some modern texts of statistics, I recommend the following which represent three levels of mathematical sophistication:

- 1) Elementary Business Statistics: The Modern Approach - by Freund and Williams, published in 1964 by Prentice-Hall, Inc.

This book is geared to an elementary mathematics background but covers both traditional and modern techniques. An attempt is made to blend elementary mathematics with advanced concepts.

- 2) Business Economics and Statistics - by Merrett and Barnock, published in 1962 by Prentice-Hall, Inc.

This book assumes some basic knowledge of statistics and some algebraic sophistication. The emphasis is on market strategy and business research from an economic perspective but the statistical techniques described here are quite general and very up-to-date.

- 3) Applied Economic Forecasting - by Theil, published in 1966 by North-Holland Publishing Company.

Although this book does not purport to be a statistics book as such, it contains fairly sophisticated descriptions of some of the more advanced statistical techniques for economic forecasting.

On a still more advanced level is "The Advanced Theory of Statistics" in three volumes by Kendall and others, published by Hafner. The last volume was published in 1967. These books are highly technical but quite exhaustive as well as exhausting in presenting new techniques.

AETiemann/ms

Mr. Alexander Stevenson

June 15, 1967

Bertil Walstedt

Industrialization Division Work Program June-August 1967

1. In the table attached to my memorandum of June 10, an indication regarding vacation periods was inadvertently left out.
2. Would you please replace the old table with the attached table where the vacation periods are marked. There are no other changes.

Attachment

[Signature]
BW:gg

cc: Mr. van der Tak

OFFICE MEMORANDUM

TO: Mr. Herman van der Tak

FROM: Bertil Walstedt *Bertil Walstedt*

SUBJECT: Industrialization Division Work Program June-August 1967

DATE: June 10, 1967

1. It might be of some value to indicate our present work schedules, the expected completion dates for major work in progress and the principal research interests of different members of the division.
2. One word of explanation should be said with respect to the attached table. The blanks, to the extent that the corresponding time will not be allocated to field missions or major research projects, will be reserved primarily for background work and/or minor studies in the area of principal research interest for each staff member.^{1/}
3. We already have an arrangement whereby each staff member (except those most recently arrived) are responsible for keeping up with technical and economic developments in a certain number of industries. At an early date, I hope to revise these assignments to fit the areas of research interest, the desirability of assigning a few industries to new staff members, and other considerations.
4. From my conversation with you, I conclude that the pin-pointing of major research efforts by the division is likely to take some time and cannot be fixed at this moment.

Attachment

BW:jg

cc: Mr. Stevenson
Industrialization Division

^{1/} The interruptions (blanks) in the work on the Industrial Protection Study correspond to the time required to obtain comments on the first drafts from inside and outside the Bank.

Industrialization Division Work Program June-August 1967^{1/}

		<u>June</u> <u>26-30</u>	<u>July</u> <u>2-8</u>	<u>July</u> <u>9-15</u>	<u>July</u> <u>16-22</u>	<u>July</u> <u>23-29</u>	<u>July 30</u> <u>Aug. 5</u>	<u>August</u> <u>6 - 12</u>	<u>August</u> <u>13-19</u>	<u>August</u> <u>20-26</u>	<u>Research Area</u>
Walstedt	IPS	Mech.Equip.-First draft						IPS Mech.Equip.-Final draft			1. Demand for steel (estimated 1 full week of work for blue cover) 2. Economics of steel industry. (Study similar to the monographs on the equipment industries under the Industrial Protection Study.
Baranson	IPS	Auto.Study-Final draft									1. Exports of manufacturers.
Cilingiroglu	IPS	Elec.Equip.Study .....2/									1. Investment costs for nitrogen fertilizers. 2. Chemicals.
Datas		Demand Elasticities Consumer Goods									1. Chemicals; pulp and paper.
Guillot											1. Textiles with particular reference to countries in an early stage of development, including exports of textiles. 2. Learning process in industrialization.
Lall		One third of the time allocated for editorial assistance to the Division Chief									1. Industrialization of backward regions.
Nowicki											1. Exports of manufacturers; 2. Steel and heavy mechanical equipment.
Schrenk	IPS	Mech.Equip.-First draft						IPS Mech.Equip.-Final draft			1. Learning process in industrialization.
Villela		3/ 3/									1. Public enterprise in manufacturing. 2. Industrialization of backward regions.

^{1/} IPS = Industrial Protection Study. The target dates for completion of the first drafts (in the case of the automotive study, the final draft) are at the beginning of the dotted lines. The ends of the dotted lines represent deadlines by which the work should be completed barring "force majeure".

^{2/} Comments on study industry contacts received after July 15 will be forwarded to Mr. Cilingiroglu.

^{3/} Lecturing at seminar on industrial development to take place in Lima.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

INTERNATIONAL DEVELOPMENT ASSOCIATION

OFFICE MEMORANDUM

TO: Mr. Warren C. Baum
FROM: Hans A. Adler *WHA*
SUBJECT: Status of Economic Studies (Progress Report)

DATE: June 6, 1967

The status of economic studies involving transportation is as follows:

1) User charges. A draft of Professor Walters' study has been completed and was discussed with him on May 11. The Economics Department is preparing minutes of the meeting for circulation. Walters has prepared two further notes, one on the relationship of his recommendations to location and investment decisions, the other on the appropriate unit for pricing; these notes are expected to be circulated in early June. The next step will be to prepare a short paper outlining the major issues and considerations which could form the basis for a decision as to an appropriate road user charges policy. The Economics Department is considering asking Walters to assist in this, though I would suggest that such a paper should be the responsibility of Bank staff. In addition, a case study of three Central American countries is now expected to go forward, subject to final approval. The Economics and Western Hemisphere Departments have assigned full-time staff and the Transportation Division will also provide assistance. A first draft may be expected tentatively by the end of 1967 or early 1968.

2) Port and Shipping Statistics. A contract has been signed with Westinform for the provision of basic data periodically for three years.

3) Port Projects. Messrs. Higginbottom and Hughes had prepared terms of reference (in October, 1966) for a study on the depth to which ports should be dredged and the method for determining berth capacities. Mr. de Weille of the Economics Department has been assigned to undertake a study of port projects but its start has been delayed to July; with existing staff, work on the study will be only on a part-time basis.

4) Line Closing Studies. Mr. Puzar has made some further progress on this study but the earlier target of Spring, 1967, cannot be met. With our present shortage of economists, it has turned out to be

June 6, 1967

unrealistic to expect the staff to undertake such studies concurrently with their other work. We are, however, attempting to set specific time aside for completion of the study.

5) Appraisal of Road Projects. Mr. van der Tak has prepared draft of a study on the methodology for appraising road projects. We have submitted our comments on the draft and a revised version is scheduled for the end of June.

6) Optimum Timing of Investments. The Economics Department (Mr. de Weille) has been preparing a paper on this subject. This is particularly important in our appraisal of investments for replacement, such as the optimum age for replacing freight cars. We have reviewed a preliminary draft. Completion is expected this summer.

7) Preparation of Transport Plan. My paper on this subject has been completed and will be published as a Bank Occasional Paper in the late summer or early fall.

8) Truck Regulation. Terms of reference for such a study have been completed and were circulated on May 23. The next step would be to reach agreement with the Economics Department to proceed with the study and to select a consultant to undertake it.

9) End-use Studies. The Economics Department (Messrs. Reutlinger and de Weille) is starting preliminary work on another economic end-use study, which is to focus on penetration and feeder roads in El Salvador. Work has started - after being held in abeyance temporarily for operational reasons involving relations with El Salvador. The field work is tentatively scheduled for the summer or fall and a first draft for the Spring of 1968.

10) Problems of Project Evaluation Under Inflation. Mr. Schmedtje (Economics Department) is working on this paper; a draft is expected in the fall. It goes beyond transport but is clearly of interest to us in such situations as Brazil, for example.

11) Road Construction and Maintenance Costs. A paper on this subject by Mr. de Weille will be circulated in June.

12) Uncertainty and Risk. Mr. Reutlinger (Economics Department) is preparing a paper on how uncertainty and risk attaching to estimates of benefits and costs can be taken into account more adequately in project appraisal. A draft is planned for June.

13) Miscellaneous. a) We will continue with shorter papers, such as the one I did on the handling of risk in project appraisal. b) No action has been taken on my proposal for a study on project appraisal, in which the methodology would be illustrated by actual case

studies (see Annex to November 1, 1966, Progress Report); it is possible, however, that the studies of port projects (item 3 above) and the end-use studies (item 9) may cover similar ground. c) No work is being done on urban transport.

HAAdler:ncp
IBRD

Cleared with and cc: Mr. van der Tak

cc: Messrs. Chadenet, Bell, Lipkowitz
Geolot, Carmichael, Engelmann, Hardy, Loven
All Transport Economists
Mr. Sadove

Mr. Irving S. Friedman

June 2, 1967

Andrew M. Kamarck

Work on Developed Economies

With the progressive elimination of the more developed countries as borrowers from the Bank, the economic work in the Bank on developed countries is progressively disappearing. No one has ever been responsible for work on the U.S. and Canada. Work on the United Kingdom and France which used to be covered when we were lending to their colonies, has now disappeared for some years. Most of the other European countries are also no longer regularly covered. The same is true of Australia and Japan. Unfortunately, these are also the countries from which we draw our IDA funds and when there are discussions with them, briefing papers have to be prepared on an ad hoc basis. It is not even clear whose responsibility it is to prepare the ad hoc papers: Japan is still done by the Asia Department, the preparation of briefs on the European countries and Canada seem to fall to the Economics Department. But, such ad hoc work cannot be very satisfactory as it is bound to lack depth of knowledge and, above all, any real insight as to the position of the economy.

It seems to me there is a need for consideration to be given as to whether the Area Departments should man themselves to cover the developed economies to a suitable extent or whether some other arrangements should be made in these cases. I might add that although in the Economics Department from time to time we have been called upon to help out in this field on an emergency basis, we have not included such work in our work program either, nor under present circumstances do we have the manpower available to do it.

cc: Mr. Williams

AMK
AMK/vhw

100-100-2 11 2:28
JUN 11 1967

Mr. Hans Adler

June 1, 1967

H. G. van der Tak

Your Progress Report on Status of Economic Studies in Transport

We have only one comment on your progress report, concerning item (1). I would like to suggest that you amend the paragraph on the user charges study as follows:

A draft of Professor Walters' study has been completed and was discussed with him on May 11. The Economics Department is preparing minutes of the meeting for circulation. Professor Walters has prepared two further notes, one on the relationship of his recommendations to location and investment decisions, the other on the appropriate unit for pricing; these notes are expected to be circulated in early June. The next step will be for Professor Walters, in collaboration with the Economics Department, to prepare a short paper outlining the major issues and considerations which could form the basis for a decision as to an appropriate road user charges policy. The proposed case study of three Central American countries is now expected to go forward. The Economics and Western Hemisphere Departments have assigned full-time staff; our part-time staff is still to be named; arrangements for Professor Walters' association with the study are still being considered. A first draft may be expected, tentatively, by the end of '67 or early '68.

row
HGvdT:zmc

Mr. Andrew M. Kamarck

June 1, 1967

Rosalind Gilmore

Work Program of Industrialization Division

This note is to record your meeting of 2:30 p.m. on Thursday, May 25 to discuss the work program of the Industrialization Division, at which were also present Messrs. Stevenson, Walstedt, Baranson, Cilingiroglu, Nowicki and Villela.

Work in Hand

Mr. Walstedt reported that his own time and that of Messrs. Baranson, Cilingiroglu and Schrenk was fully committed to the Industrial Protection Study until the early autumn, as was a part of that of Messrs. Datas and Lall. Mr. Villela had started preliminary work for a study of government enterprise in manufacturing in Pakistan, an idea which had arisen in part out of questions raised by us in connection with the recent Pakistan Industry Report and in part from discussions with the Pakistan Government. Mr. Nowicki had examined what research had already been done on the demand for automobiles and trucks, and was preparing a memorandum which would recommend against further work in this field. Mr. Datas and Mr. Guillot were occupied with missions whose work would fairly soon be completed.

The timetable of the industry reports for the Industrial Protection Study was this:

- i) Automotive: The letter circulating the draft to manufacturers could set June 15 as the deadline for comments, and Mr. Baranson would then be able to complete a revised draft for circulation in the Bank by the end of June;
- ii) Electrical Equipment: A draft would be ready for circulation to manufacturers in two weeks time, and a revised version taking in their comments could be prepared for distribution in the Bank before Mr. Cilingiroglu left for home leave on July 15;
- iii) Mechanical Equipment: Visits had still to be made to the United States manufacturers but most of the other work was done and the study could probably be completed by end August.

Thus, by September the three industry studies could be considered for issue as Bank reports, for publication as World Bank Staff Occasional Papers, or perhaps, with the addition of a more generalized section, for publication as a book.

June 1, 1967

Projects in Mind

In the course of the summer and early autumn, then, almost the entire Division would become free to devote themselves to new tasks (or old ones laid aside for the Industrial Protection Study), of which the following were in mind:

- a) An investigation of the reasons for the disproportionately high investment costs of nitrogen fertilizer plants in developing countries, into which Mr. Cilingiroglu had already put a good deal of work;
- b) A study of the steel industry, with which Mr. Walstedt was already well acquainted, on the lines of the three industry reports of the Industrial Protection Study;
- c) A study of industrialization in Africa to give members of the Division the theoretical equipment to cope with practical problems which would increasingly be met in country economic work on Africa;
- d) A follow up study by Mr. Baranson to that of the automotive industry, concentrating either on a particular country or on re-export capacity and the import substitution sector, designed to help newly industrializing countries avoid the mistakes which others had made in the past.

Each of these ideas had originated within the Division, although the IFC was naturally interested in the proposed studies of both the steel and the fertilizer industry. Apart from the old IFC request to study import licensing in India and Pakistan, and two minor requests on New Zealand and Yugoslavia, the Division had no specific outside requests for work in the pipeline.

Planning the Future Program

Mr. Kamarck outlined the method of planning a divisional work program which had been found useful for the Domestic Finance and Quantitative Techniques Divisions. Briefly, this was to give the research program a strong country framework by selecting first a number of problems which had in practice proved to be important in the development of Bank member countries, and then, in consultation with the Area Departments, selecting a small number of countries in which it would be agreed that the Division would work on a problem, designing their research towards its theoretical study, elucidation and resolution. The field work might, if practicable, coincide at least in part with a country economic mission but would not necessarily do so.

June 1, 1967

This approach had two objects. The first was to ensure that, while Department staff members continued to make their contribution to the Bank's country economic work, this work would not be hit-or-miss but oriented to the important problems and ~~be~~ cumulative. The second was that Bank research was undertaken in areas where Bank experience, access to governments and officials, and constant country work enabled it to make a contribution which could not be matched by a university or research institute.

One result of such an approach might be that, instead of preparing a long sector annex to a country economic report (which was always apt to get buried once the immediate purposes of the mission had been met), the Economics Department staff member would contribute a few pages of analysis to the main mission report, and then apply the rest of the information he had gathered to the Department's own theoretical work on the problem under study.

Mr. Walstedt said that he doubted whether a worldwide survey of developing countries' problems would add anything much to the list of problems he had already suggested above. The new factor was the idea of going over the list with the Area Departments and so arriving jointly at a short list of countries on which attention was to be concentrated and approaching the work by building up a world-wide study by doing country work first.

It was agreed that Mr. Walstedt would discuss the research ideas further with the members of the Division. With this list, and possibly also a short list of countries, he would then widen the discussions to include the Area Departments if he thought this appropriate. In any case, he would, by Friday, June 2, be ready to make some proposals (orally if this were more convenient) to Mr. Kamarck and Mr. Stevenson about the subjects and countries to be studied, and the next steps to be taken.

Distribution: Those Present
Mr. Friedman

RG/vw

RG.

Mr. Bertil Walstedt

May 26, 1967

Alexander Stevenson

Work Program

I told Mr. James Raj this morning that your people would be making up your future work program fairly soon and would like to consult with IFC about its needs and problems. He told me you should arrange talks with the appropriate divisions and that afterwards he, himself, would like to have a discussion in particular about some problems which are coming up connected with UNIDO and other international agencies. These IFC is not equipped to handle and he wished to discuss them with us.

AS: Stevenson:js
cc: Mr. Kamarek

OFFICE MEMORANDUM

TO: Files

FROM: E.K. Hawkins *EKH*

SUBJECT: Institutional and Quantitative Research Division - Work Program

DATE: May 17, 1967

A meeting was held in Mr. Kamarck's office on Wednesday, May 10, to discuss the research proposal put forward by Prof. A. Conrad as a consultant to the above Division. Mr. Kamarck requested that the proposal be discussed in the context of the entire work program of the Division and asked Mr. Hawkins to outline that work program and the aims that lay behind it.

Mr. Hawkins made a statement in which he explained that he had always envisaged the work of the Division as being mainly concerned with investigating the use of quantitative economic techniques for the purpose of assisting the country economic analysis of the Bank. He pointed out that the philosophy behind this approach had been set out in a memorandum to files dated April 6, 1966.

Mr. Hawkins drew an analogy between the work of the Investment Planning Division and the role it played in providing a research and service function to the project analysis of the Bank. He said that he had envisaged the quantitative economic research as having a similar role to play for the applied macro-economics done in the Bank, mainly the concern of the country economists.

The role of consultants in the program had arisen from a suggestion made by the A.D. Little team working on the computer feasibility study. The idea had been that it might be possible to hire consultants who could give an initial impetus to the work program by supplementing the relatively inexperienced staff members with the use of more experienced econometricians who were not available for full time positions. It was also felt that these consultants could exercise valuable advisory functions. In developing this idea into a workable arrangement, it was decided that, apart from the advisory functions, it would be desirable for each consultant to have a particular topic for which they would be responsible for preparing a study for the Bank. The choice of these studies came to depend upon the consultants' interests and special knowledge and the Bank's needs. A good example of this arrangement was that worked out with Prof. Behrman, of the University of Pennsylvania, whereby we were able to contract for an econometric study of the world market for rubber. This enables us to draw upon the experience of the University of Pennsylvania in the field of quantitative commodity studies and to define a topic which will ultimately provide information and guidance to several areas of the Bank's activities, particularly commodity projections and econometric work on countries in the Asian area. In the case of Prof. Marshall Hall, the approach was different, since Prof. Hall came to our attention when we tried to employ him full time and in the process came to know of his interest in the construction of an econometric model for Jamaica. When this country was included in the Division's work program, an arrangement was negotiated with Prof. Hall whereby he will work with us, with responsibility for a particular section of the study.

It had proved more difficult than we had been led to believe to recruit consultants. We were fortunate, however, to obtain the services of Prof. Conrad, who is the most experienced consultant we have available. His main function is to provide advice on model construction and econometric techniques. At the same time he suggested a project concerned with the study of capital-output ratios as forecasting tools and he was asked to develop this proposal as being a study the results of which would again be of value to more than one part of the Bank's activities. It was this proposal that was now before the meeting, this being the first time that it had been spelled out in sufficient detail for us to appraise its implications in full.

Mr. de Vries pointed out that in practice there was a distinction between "elaborate" and "simple" models. Three "elaborate" models were currently in preparation -- Brazil, Jamaica and Malaysia. It seemed best to complete the work on these models and evaluate their usefulness before embarking on new ones. On the other hand, there was no reason not to undertake simple econometric work, including work on African countries, as the need arose.

Reference was made in the subsequent discussion to the model that appears in the draft country economic report on Uganda. Mr. Hawkins pointed out that this model was in many ways a prototype of the kind of work which he had foreseen as a possible outcome of the Division's activities; its apparent simplicity was deceptive since it represented the results of a considerable amount of work involving a model for East Africa originally prepared outside the Bank. Mr. King stated that one should not draw a rigid distinction between complex models and none at all. For many economies, including many African economies, only relatively simple models would be required and the amount of sophistication involved in any model should be related to the purposes for which it was to be employed. He made a plea for work to be done on African countries where it was possible by suitable rearrangement of financial and national accounting data to obtain a fairly clear picture of the operation of the economy. While the use of sophisticated econometric methods might be necessary to provide further illumination, this did not necessarily mean that a complex model was essential. Mr. Hawkins pointed out that he had long wanted to explore this idea and some experimental investigations were now under way making use of data for Peru. It would be possible to extend the analysis to other countries when the possible usefulness of the techniques had been more clearly established.

Mr. Kamarck stated that the natural division of labor appeared to be that the Division should concentrate on country economic models, thus working closely with the area departments and on country needs arising out of operations. Cross-section studies that are back-up work for country models should then be done by consultants.

Mr. de Vries felt there was a Bank-wide demand for cross-section analysis as a guidance to both the Bank's policy work and its country work. However, not all the cross-section work need be undertaken in the Quantitative Research Division. At the moment the Division was doing preliminary work on savings parameters. The Conrad proposal was, in a sense, a cross-section study focusing on the capital-output ratio. In a way, the work of the

May 17, 1967

Commodity Division could be regarded as a series of cross-section studies dealing with export parameters. It would seem best that where cross-section studies were based on an analysis of data emerging from the Bank's day-to-day work that they be undertaken by the Bank's own staff, assisted by outside consultants, if necessary. In drawing up any lines of division, it should be borne in mind that there was a considerable amount of inter-reaction and cross fertilization cross-section studies and country studies.

Mr. Hawkins then described briefly the development of the Conrad proposal from its first preliminary outline of November 1966, the oral exposition of the problem in theoretical terms at a Bank seminar in March and the implications of the present proposal in terms of commitments during the next fiscal year. He explained that the question of employing one of Mr. Conrad's students as a summer interne had seemed to offer a possible way of moving the second stage of the project forward during the summer months; this stage involved the investigation of data available within the Bank. (It would also be possible to employ an existing research assistant in the Department part-time for this purpose.) The proposal as it now stood fell into several parts and there were no substantive problems with respect to Part I, (the analysis of existing studies and literature) which was already under way. The second part involved the collection and analysis of data on a country basis and would involve the use of information collected by the Bank on country and project missions. We had no experience of the retrieval and use of such information for a project of this kind. It was, therefore, necessary to proceed initially on a pilot basis with one or two countries, expanding the coverage as opportunities became available. The selection of these countries required further discussion with Prof. Conrad, which would be followed by appropriate discussions with the area departments concerned. At one stage it had been proposed that a professional within the Division should also work on this topic as an "anchor man" and to provide the necessary introductions within the Bank for the summer employee. Mr. Hawkins felt that there were difficulties about this suggestion and had come to the conclusion that this role should be played by himself which would leave the professional econometricians free to pursue their own projects. He felt that this represented the best allocation of limited staff resources. (Special arrangements would have to be made for the period of five weeks when he was to be on home leave.)

The proposal included the continued employment of the summer interne after September working with Prof. Conrad in New York. This was a new suggestion which had not been considered before and Mr. Kamarck felt that we could make no commitment beyond September at this time. It was agreed that the question of summer employment could be confirmed and Prof. Conrad and Mr. Barth could be informed accordingly. A new agreement would have to be worked out with Prof. Conrad to cover both his advisory services and his research project through the next fiscal year. In his case this agreement would extend beyond September to the end of fiscal year 1967/68. Mr. Hawkins was instructed to consult with Personnel and with Prof. Conrad, in order to draft a new letter of agreement. He should also prepare an estimate for the budget of the cost of employing Prof. Conrad as a consultant in the next fiscal year.

EKHawkins/w

cc: Messrs. Kamarck, Stevenson, de Vries and King cc: Tuesday Meeting (June 233)

OFFICE MEMORANDUM

TO: Files

DATE: May 12, 1967

FROM: N.G. Carter

SUBJECT: Meeting of Institutional and Quantitative Research
Division with Economists From the Middle East and
North Africa Department

Present: Messrs: Mabouche, Golden, and Payson - Area Department.
Messrs: Hawkins, Leon, Elsaas, Krishnamurty, Carter - Economics
Department.

This meeting was held at the request of the country economists for a preliminary exploration of the possibilities of undertaking quantitative economic research for Tunisia and Morocco, and to discuss the possible role that the Institutional and Quantitative Research Division might play in this research.

It was pointed out that the Bank currently enjoys very close relations with these countries, especially Tunisia, and that it would be appropriate in the near future for the Bank's economic work to move in parallel with the forward planning in those two countries. This, it was felt, would require the country economists to be aware, if not involved in, various types of models, and quantitative techniques. For this purpose a working arrangement between the area department and the Institutional and Quantitative Research Division of the Economics department might prove to be very fruitful.

The problems in the two countries are not at all similar. Tunisia is more developed with relatively good data and has a limited choice of policies it can follow. Consequently the types of models needed there might be long-term perspective models followed by shorter detailed planning exercises. Morocco, on the other hand, is faced with problems of misallocation of investment. Thus while Tunisia might want to focus on consumption, employment and income distribution, Morocco might be better off looking at questions of resource allocation.

Mr. Hawkins explained the type of work underway in the Division and indicated our ultimate interest in expanding it to cover countries such as Tunisia and Morocco, for which we had no experience.

After further discussion it was concluded that closer contact between the two groups would be desirable, but that it was somewhat premature to discuss specific models at this stage. There was general agreement that there were a number of different types of models that could be useful, but that significant conclusions on this matter could only be reached after a careful study of the economy involved. As this would involve the expense of a certain amount of manpower on the part of the Institutional and Quantitative Research division it was agreed that the next step would be a formal request to the economics department for assistance.

cc: Messrs. de Vries, Mabouche, Golden, Payson, Leon

Mr. Irving Friedman

May 9, 1967

Alexander Stevenson

Mrs. Vichitra

We have arranged with Mr. Macone's Commodity Division to accommodate Mrs. Vichitra when she arrives. I would appreciate it if when she comes to see you you will refer her to Mr. Kamarck or to me and we will see that she is taken care of.



AStevenson:js
cc: Mr. Kamarck

Mr. Barend A. de Vries

May 8, 1967

E.K. Hawkins *EKH*Division Meeting

We have had a discussion amongst ourselves of the kind of topics that we feel might usefully be discussed at Divisional meetings, beginning with the proposed meeting on Thursday, May 11. I think it is desirable to agree upon a list of topics like this so that people can have adequate warning and can make some kind of preparation to give a presentation.

There is also a feeling that while it may be appropriate to ask people to come from outside the Division, we would like to consider these meetings as mainly the concern of the Division. This is particularly true when we are in the process of considering work in progress where the problems are mainly technical ones which might be of little interest to people who are not econometricians or statisticians, or where the work is still largely in progress. (I propose to include a standing invitation to Messrs. Kundu and Oury to attend our meetings if they are interested and able to do so.)

The following items are suggested, of which we would suggest tackling Nos. 1 and 2 next Thursday.

1. The advantages and disadvantages of aggregative vs. disaggregative models.
2. Mr. Niebuhr's presentation of his present work on Malaysia.
3. Relationship of our work program to the proposed import study.
4. Preliminary results of the savings study (Mr. Krishnamurthy).
5. The paper on Indian planning models (Mr. Elsas).
6. Further work on the model for Jamaica (Messrs. Hawkins and Carter).
7. The possibility of a simulation model (Mr. Carter).
8. The Bank's interests in the field of population (Mr. Hawkins).

You may wish to add to this list, as it can obviously be extended.

EKHawkins/w

cc: Members of Division
Mr. Oury
Mr. Kundu (on return)

Mr. Andrew M. Kamarok

May 4, 1967

Peter Streng *fy*

Adjustment of Pensions in Germany

1. The German social insurance system which started on a strict insurance basis some 100 years ago, was gradually converted to a "pay-as-you-go" scheme in which the workers of today support the pensioners of today. The idea behind this is that a pension should no longer be considered as a return for previous money contributions, but for previous work. Since productivity and wages today are considerably higher than in the past, pensions should also be higher, every retired person during his active life having contributed to make this possible. Consequently, in computing a pension, work performed in the past is to be considered as if it were being done now. Moreover, a pension established this way will be adjusted at regular intervals to follow the rising standard of living. As a result of this, every pensioner receives an income which enables him to keep up the social status he had achieved during his working life, making allowance for the more modest requirements of older people no longer at work.

2. In the actual calculation of retirement pensions this principle is accounted for in the following way:

- (a) Each year a "General Basis of Assessment" (GBA) is fixed for the subsequent year, which is the average gross annual remuneration of all persons insured under the scheme over the past three years;
- (b) the "Individual Basis of Assessment" (IBA) is a percentage of this GBA corresponding to the ratio between the insured person's gross remuneration and the average gross remuneration of all persons insured over the contribution period concerned;
- (c) the "Annual Rate" of an old-age pension, finally, is 1.5 percent of the IBA for each year of insurance.

Thus, the formula for computing a pension is as follows:

$$\text{Pension} = \text{Years insured} \times \frac{1.5}{100} \times 1 \text{ GBA}$$

$$\text{where } 1 = \frac{\text{Individual remuneration}}{\text{Average remuneration}}$$

May 4, 1967

3. Supposing, for example, a person has worked for 40 years, his average earnings over this period being equal to the average for all participants of the scheme, the pension he is entitled to would amount to $40 \times 1.5 = 60$ percent of the GBA. If the latter were 20,000 his pension would be 12,000 a year. Assuming that his income has been 25 percent higher than the average, the pension would be $40 \times 1.5 \times 1.25 = 75$ percent of the GBA = 15,000 a year. On the other hand, if his working income has been below average, his pension would be less than 60 percent of the GBA.

4. Subsequent adjustments of the existing pensions are made by special legislation whenever changes in the general wage level necessitate a change in the GBA of new pensions. Such adjustments have been made regularly once a year, the percentage increase being equal to that of the GBA.

cc: Messrs. Stevenson
Collier

PStreng:cc

Mr. Clifford F. Owen

May 4, 1967

Benjamin B. King

Economic Research (EC/O/67-54)

I do not think that the last entry on page 4 (Indian debt and terms of aid) should be included. It is doubtful whether it can be called research. The enquiry is likely to be in bits and pieces, much of it tentative. In fact, the process will have more an operational than a research character. It is more than likely that much of the material will be confidential.

cc.: Messrs. Stevenson
Goodman
Gilmartin
Collier

BHK-rbr

ECONOMIC COMMITTEE

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WBG ARCHIVES

EC/O/67 - 54

May 1, 1967

Economic Research

1. Attached, for your information, is a memorandum "Economic Research Projects in Progress" which has been prepared in the Economics Department
2. Any comments should be conveyed to me either in writing or by phone (ext. 3985).
3. It is proposed to distribute the memorandum to the Executive Directors for information.

C. F. Owen
Secretary

Attachment

Secretary's Department

D I S T R I B U T I O N

Messrs. Friedman
Kamarck
Adler
Avramovic
Rist
Stevenson

Bell
Collier
de Vries
Edelman
Gilmartin
Kalmanoff
King (B.B.)
Larsen

Lipkowitz
Maiss
McDiarmid
Sacchetti
Sadove
Thompson
Weiner
Wright

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Economic Research Projects in Progress

Title	Description
<u>Economics Department</u>	
Road User Charges	A study of the economic and financial principles for a suitable system of road user charges, and their practical implementation in developing countries.
Agricultural Production Models	A study exploring the possibilities of deriving agricultural production models for developing countries.
Urban Water Supply Projects	In its initial phase, a quantitative study of the factors influencing the demand in urban water supply systems.
Cost-benefit Analysis of Education Projects	A study of the practical possibilities of applying cost-benefit analysis to specific education projects in developing countries.
Special Aspects of Project Analysis	Optimum timing of investments: uncertainty in project analysis: problems of project analysis in an inflationary situation.
Public Expenditure Patterns	A study of public expenditure patterns in developing countries as a first step in facilitating judgment on the appropriate balance between expenditures in various sectors.
Domestic Development Finance in Brazil	Study of the trends in public and private savings in Brazil since 1951. Trends in current receipts and expenditures, savings, capital expenditures, and deficit financing of all levels of government - federal, autonomous organization, state and municipal - are examined. In the private sector the study concentrates upon private savings channeled through the banking

Title	Description
Domestic Development Finance in Brazil (Cont.)	system and other financial intermediaries, the changing institutional structure of the intermediaries, and the effects of inflation upon the process of mobilizing and allocating savings.
Value Linking of Bonds	Examination of value linking as a device by which the distorting effects of inflationary expectations upon decisions to save and to invest can be corrected. In addition to the theoretical analysis of the problem, an evaluation is made of experience with the use of the technique in Finland, Israel and Brazil.
Industrial Protection and Import Substitution	Analysis of cost profile and protection in automotive, heavy mechanical and electrical equipment industries in developing countries.
Structure of Protection in Developing Countries	Comparative study of the experience of Argentina, Chile, Mexico, Nigeria, Kenya, Pakistan and the Philippines. Likely to be considered for publication as a book jointly with IDB.
Export Experience of Developing Countries	Comparative analysis of growth of exports of 29 developing countries.
Individual Commodity Studies	Analysis of supply and demand trends in major commodity markets. (Under way: aluminum, copper, rice jute, nickel and plywood).
Trade Barriers to Exports of Developing Countries	Critical survey of possible effects of reducing barriers to trade in primary products on developing countries exports.

Title	Description
Presentation of External Debt	A number of standard tables and indexes which would be helpful in giving a comparative view of external debt problems and could be used as basis for further elaboration. Informative section on external debt rescheduling and forms of indebtedness other than those reported to the Bank.
Country Economic Models	Econometric analysis of crucial relationships in selected developing countries (Under way: Brazil, Jamaica, Malaysia and Uganda).
Policy Framework for Development: Pakistan's Experience	The study analyzes the major policy changes in Pakistan during the 1960's and their impact on Pakistan's economic growth.
<u>Economic Development Institute</u>	
An Introduction to the Economic and Financial Appraisal of Development Projects.	The subjects to be covered include a general model for project analysis; the difference between financial and economic analysis; concepts and measurement of benefits and costs; the rate of return and other investment criteria; discounting, compounding, and the use of financial tables; the internal rate of return and benefit/cost ratios; the financial effect of variations in the terms of loans; the measurement of a project's effects on the balance of payments; project selection according to a country's comparative advantage; and common sources of bad projects.

Title	Description
Financial Institutions in Developing Countries	A study of successful cases of new financial institutions in developing countries and their contributions of development. In the study an attempt is being made to determine the reasons for the success of the various institutions and to appraise the potential usefulness of the same kind of institutions in other developing countries.
<u>Asia Department</u>	
Indian Debt and Terms of Aid	A factual inquiry into the present and prospective Indian debt situation and its implications for the terms of future aid.

Economics Department
May 1, 1967

Mr. Barend A. de Vries

April 4, 1967

Patrick B. de Fontenay

"What does it really mean? The Forward Exchange Market" by Snajaya Lall.

This is a very good description of forward exchange markets. After some changes and corrections, it should make an excellent article for Finance and Development.

A. General Comments

1. The policy section is weaker than the descriptive part. Some advantages of interventions in forward markets are not listed, viz., there are no limits to the range within which forward rates can fluctuate as there are for spot rates according to IMF rules, and support of forward rates do not require the expanding of foreign reserves as support of spot rates do. The last section should be rewritten not in terms of "gaining reserves" but of averting outflows of short-term funds due to interest-rate differentials, and the mechanism through which interest-rate differentials can be offset by intervention on the forward exchange market should be better explained. The wording of the policy section should be also more cautious (see first sentence, p. 12).

2. The section on "commercial forward exchange" needs rewriting. I see no advantage in distinguishing between traders who "never cover in the forward market", "always cover", and "sometimes cover". "Leads and lags" effects, "hedging" and the relation of forward market operations with foreign trade should be mentioned instead.

B. Specific Comments

1. The first sentence gives the impression that forward markets are independent of spot markets. This should be corrected.

2. p. 2: 3d sentence should be rewritten. Protection against the exchange risk involved in holding foreign currency cannot be offset by selling domestic currency.

3. p. 4: 1st paragraph. There is a serious mistake there which calls for rewriting the whole paragraph. The author indicates that if the interest rate in France is 5% higher than in the U. S. the profit to be made by a U. S. investor would be lower than 5% if the forward rate for the dollar were at a discount to the spot rate. This is wrong. The profit would be higher. Profit from "pure arbitrage" is reduced to the extent that the currency of the country with the lower rate of interest sells at a premium to the spot rate on forward markets.

4. p. 7. I would delete the first two sentences: they are controversial and do not add anything.

April 4, 1967

5. p. 9, 3d sentence. Speculators are not "punished" by a falling forward rate but by an unchanged spot rate. Same remark applies to second sentence p. 10.

6. p. 9, last paragraph. The distinction between pure and commercial speculators is mostly that the former operate in forward markets and the latter in spot markets. In addition it is not correct to say that pure speculators reduce reserve by the amount of their profits.

7. p. 10, last paragraph. Same remark as under 4. Delete.

cc: Mr. Leon
No blue copies.

PdeFontenay:yd

Mr. W. Stolper

March 22, 1967

L. de Azcarate

Your Memorandum dated March 16, 1967 on IMF report SM/66/84 of July 6, 1966

Part I, p.3 - Coffee smuggling: I see no mention of this.

Part I, p.10 - Nigerian banknotes: I believe that the reason for the unofficial market is something like this: imported goods (from Hong Kong, Japan, Tchechoslovakia, etc.) used to be smuggled from Nigeria (and Ghana) into Togo (and still more Dahomey) when lower tariffs and the exchange rate of the pound in the British countries made them very attractive for Togolese and Dahomeians. The demand for Nigerian pounds banknotes therefore was high, outside the official market, and the CFA franc would then be sold at a discount. The same thing happened between Niger and Nigeria. It is said that the francs bought by Nigerians (i.e. more often Lebanese traders) were later exchanged at the official rate in France after having been channeled through Nigerian and Swiss or even Lebanese banks. I used to think, but I may be wrong, that this sort of trade had ceased due to the higher tariffs and prices in Nigeria and even that smuggling goes the opposite way now.

Part I, p.11 - 12% figure for Government financing: I agree that this is probably unrealistic in view of the budget position. But those who indulge in this sort of exercise, in the French territories, are normally much more unrealistic still.

Part II, p.2 - GDP - see Comptes Economiques du Togo for 1964 by Mrs. Nguyen Thy Ngugen, Lome 1966. I am certain according to French practise that "government" means "salaries". "Commerce and Trade" is measured by the amount of gross margins plus wages plus taxes, including I suppose, surpluses of OPAT.

Part II, p.8: Industrial projects: I think that given their small number and the complication and delays involved with getting information through letters etc. we had better wait and get the information on the spot. As for rules of thumb from the Projects Department I shall get in touch with them but I think that they will be more helpful when we submit them the relevant information on projects contemplated and ask for their appraisal. I do not think that the Bank has ever looked into the Port of Lome.

Cash flow table: This will probably be obtainable on the spot - I shall write to Lome to have this ready.

Part II, p.11 - Electricity: I am not aware of the facts. I remember that in Dahomey the concessionnaire company used to behave as a typical monopoly, having got the means to do so from the Government (colonial authorities at that time). I agree that the price-tax policy of the Government - OPAT deserves to be investigated - it reflects the frequent conflict between pricing policy and revenue requirements.

I am sure that we shall be able to get without difficulty the cost structure of export products (i.e. between producer price to the f.o.b. stage). I shall ask Lome to have this prepared.

Part II, p. 17 : information on Investment Code enterprises: I shall ask the Ministry of Finance to prepare this information.

Part II - pages 18-20: Price policy: control of retail prices is a periodic mania in these countries (largely inherited from French practices). Everybody agrees that they are largely ineffective. As for the SOTEXIM operations on imported goods I am sorry to learn that Togo has not escaped this mode: in other countries of the region the general pattern of events has been: import-export firms make large profits on imported goods, so the State should take over this trade, sell cheaper, still make profits and thus satisfy everybody! The official firms set up in this context usually sell luxury goods, to the great satisfaction of the European population (I used to buy my Scotch at the State grocery, where good soap and scooters could also be found), ends up with large unsold stocks, huge bank overdrafts, deficits and one or two managers kicked out or in jail (see Upper Volta, Niger, Algeria, Ghana, etc.)

Part II, table 14 : I shall ask in advance for the detail of import taxes but this may be difficult to obtain by categories of goods.

Part II, page 27, table 15 : Budget: We shall be able to work out a functional distribution with the help of the Treasury. Capital budget has indeed to be constructed if you want to have the whole picture, i.e. including all sources of aid. To be prepared on the spot with FAC, FED, Caisse Centrale, Embassies, US AID, etc.

Part II, page 31 : Treasury: as far as I recall Treasury deposits are call money with the BCEAO in Lome (i.e. liabilities for the Bank); Treasury Investments are assets in the form, I think, of French Treasury Bonds in Paris (i.e. liabilities for the Bank and equivalent foreign assets). As such these investments are quite liquid.

Part II, p. 33: rediscount corresponding to unpaid bills: I don't know to what extent unpaid bills have grown in Togo (certainly less than in Dahomey). The relevant information will be got only by talking to BCEAO in Lome and Paris, also with the Treasurer. I think BCEAO has statistics of rediscounts by industry, but they are reluctant to communicate them when a small number of firms is concerned in any one category.

Part II, p.58: quasi money = time deposits.

Part II, p.43: table 22 (imports): could we think of an adequate breakdown to send in frame form to Lome?

Part II, p.50: Aid received: see capital budget - Debt: the Bank requires the information only from countries to which it (or IDA) has made loans. With the help of BCEAO we should be able to get the information. I shall write to them about this.

Part II, p.59 - Table V: see above "p.43"

LdeAzcarate:gmb *VA*

cc: Mr. Billington
Mr. Bachmann

For General files. *scuba*
West Virginia Univ.

WEST VIRGINIA UNIVERSITY

MORGANTOWN, WEST VIRGINIA

REGIONAL RESEARCH INSTITUTE

26506

March 13, 1967

Mr. E. K. Hawkins
Institutional and Quantitative Research Division
Economics Department
International Bank for Reconstruction and Development
1818 H Street, NW
Washington, D. C. 20433

Dear Mr. Harkins:

In my brief meeting with Mr. Upper, and the group of visitors he accompanied to West Virginia University, I mentioned that we are currently constructing an input-output table for West Virginia, but that this is only the first phase of a longer-range project. During the second phase we intend to "simulate" the process of economic development by modifying the actual input-output table on the basis of a variety of assumptions. The latter will be dictated by conventional location theory, and long-term growth trends in national markets.

We do not at the moment have anything on paper concerning either phase of this work. We expect the basic input-output tables to be completed and ready for publication by June. We expect them to be published by the University, but as you well know there is a considerable time lag in getting materials through the press. I really cannot say when the input-output tables will be available, but only that they will be at some time in the future.

The results of the experimental work which we are contemplating will not be available for an even longer time.

I will be discussing our proposed work with a graduate seminar at the University of Pittsburgh in May, and I have been asked to write a paper for this meeting. While this paper will have no empirical content it will summarize the method we propose to follow. I don't know how useful this might be, but I will see that you get a copy of this paper when it is ready.

Sincerely yours,



William H. Miernyk, Director
Regional Research Institute

WHM:lr

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OFFICE MEMORANDUM

TO: Files

DATE: February 16, 1967

FROM: A. Kundu *A. Kundu*

Statistical Services Division, Economics Dept.

SUBJECT: Elasticity Table

1. In demand analysis or prediction of consumption of a commodity the most common problem is to estimate the increase in demand or consumption under various assumptions of elasticity and growth of income or expenditure. The attached "Elasticity Table" should prove handy as a ready reference for this type of calculation.

2. The "Elasticity Table" has been produced according to the following principles:

Suppose consumption and expenditures are y and x . Then expenditure elasticity of consumption is defined as

$$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$$

where η is the elasticity and $\Delta y, \Delta x$ are the changes in consumption and expenditure.

The above definition relates to the concept of elasticity at a point. Since consumption-expenditure relations are observed at discrete points of time, the concept of point elasticity is not applicable to continuous curves and mathematical functions.

However, as we are interested in the growth of consumption and expenditure we shall have to compare the consumption-expenditure positions at two different points of time, assuming that there is a growth path, i.e., a continuous curve joining the discrete points of time. The concept of arc elasticity assumes that a straight line passes through the two points of time, and the arc elasticity is defined as the point elasticity mid-way between the two points:

$$\eta = \frac{\frac{\Delta y}{y' + y}}{2} / \frac{\frac{\Delta x}{x' + x}}{2} = \frac{y' - y}{y' + y} / \frac{x' - x}{x' + x}$$

where (y', x') and (y, x) are the consumption-expenditure patterns.

It is easily seen from above that for small arcs and continuous curves the point elasticity at any point of the arc can serve as an approximate measure of the elasticity of arc. Hence a point elasticity, assumed to be constant over the arc connecting two discrete points of time, could be taken as a simple measure of arc elasticity.

February 16, 1967

Now, starting with a constant point elasticity, small changes, and a continuous curve we can write, for the point (y, x),

$$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x} = \frac{dy}{y} / \frac{dx}{x}.$$

After integrating, the above becomes

$$\log y = \eta \log x + c$$

Where c is a constant.

Therefore, for a value of x' we shall have y' given by,

$$\log y' = \eta \log x' + c.$$

From the above two equations,

$$\log y' - \log y = \eta (\log x' - \log x),$$

$$\text{or, } \log (y'/y) = \eta \log (x'/x),$$

and if $y' = y + \Delta y$ and $x' = x + \Delta x$,

$$\log (1 + \frac{\Delta y}{y}) = \eta \log (1 + \frac{\Delta x}{x}).$$

Thus, given η a constant elasticity, one can estimate $\Delta y/y$ from $\Delta x/x$ or vice versa.

3. The "Elasticity Table" shows values of $\Delta y/y$ for various values of $\Delta x/x$ within the range .01 to 2.50 and values of η within the range -1.00 to 1.00. The "Table" extends to 8 pages. On each page the second column shows the values of $\Delta x/x$, and columns 3 to 11 give the values of $\Delta y/y$ for various values of η shown at the top of the columns. To take an example, suppose expenditure increases by 10% (i.e., $\Delta x/x = 0.10$) and elasticity is -.6 (i.e., $\eta = -.60$). Looking at Page 1 where we have the column heading of -.60 for η and then row 10 corresponding to $\Delta x/x = .10$, we find the value of $\Delta y/y$ to be -.0556 which means y will increase by 5.56%, or again, if supply of a commodity increases by 10% (i.e., $\Delta y/y = 0.10$) and price elasticity of demand is -.55 (i.e., $\eta = -.55$), then to clear the market the price will have to go down by 16% (i.e., $\Delta x/x = -.16$), as can be seen from Page 5, Row 16 and column heading "-.55".

4. A few copies of the "Elasticity Table" are available for the interested users, and can be obtained upon request.

cc: Messrs. Goor
Tiemann
Maccone (3 copies)

ELASTICITY TABLE: Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\Delta x/x \backslash \eta$	-1.00	-.90	-.80	-.75	-.70	-.65	-.60	-.55	-.50
1	0.0100	-0.0099	-0.0089	-0.0079	-0.0074	-0.0069	-0.0064	-0.0060	-0.0055
2	0.0200	-0.0196	-0.0177	-0.0157	-0.0147	-0.0138	-0.0128	-0.0118	-0.0108
3	0.0300	-0.0291	-0.0263	-0.0234	-0.0219	-0.0205	-0.0190	-0.0176	-0.0161
4	0.0400	-0.0385	-0.0347	-0.0309	-0.0290	-0.0271	-0.0252	-0.0233	-0.0213
5	0.0500	-0.0476	-0.0430	-0.0383	-0.0359	-0.0336	-0.0312	-0.0288	-0.0265
6	0.0600	-0.0566	-0.0511	-0.0455	-0.0428	-0.0400	-0.0372	-0.0344	-0.0315
7	0.0700	-0.0654	-0.0591	-0.0527	-0.0495	-0.0463	-0.0430	-0.0398	-0.0365
8	0.0800	-0.0741	-0.0669	-0.0597	-0.0561	-0.0524	-0.0488	-0.0451	-0.0414
9	0.0900	-0.0826	-0.0746	-0.0666	-0.0626	-0.0585	-0.0545	-0.0504	-0.0463
10	0.1000	-0.0909	-0.0822	-0.0734	-0.0690	-0.0645	-0.0601	-0.0556	-0.0511
11	0.1100	-0.0991	-0.0896	-0.0801	-0.0753	-0.0704	-0.0656	-0.0607	-0.0558
12	0.1200	-0.1071	-0.0970	-0.0867	-0.0815	-0.0763	-0.0710	-0.0657	-0.0604
13	0.1300	-0.1150	-0.1042	-0.0931	-0.0876	-0.0820	-0.0764	-0.0707	-0.0650
14	0.1400	-0.1228	-0.1112	-0.0995	-0.0936	-0.0876	-0.0816	-0.0756	-0.0695
15	0.1500	-0.1304	-0.1182	-0.1058	-0.0995	-0.0932	-0.0868	-0.0804	-0.0740
16	0.1600	-0.1379	-0.1250	-0.1120	-0.1053	-0.0987	-0.0920	-0.0852	-0.0784
17	0.1700	-0.1453	-0.1318	-0.1180	-0.1111	-0.1041	-0.0970	-0.0899	-0.0827
18	0.1800	-0.1525	-0.1384	-0.1240	-0.1167	-0.1094	-0.1020	-0.0945	-0.0870
19	0.1900	-0.1597	-0.1449	-0.1299	-0.1223	-0.1146	-0.1069	-0.0991	-0.0912
20	0.2000	-0.1667	-0.1513	-0.1357	-0.1278	-0.1198	-0.1118	-0.1036	-0.0954
21	0.2100	-0.1736	-0.1576	-0.1414	-0.1332	-0.1249	-0.1165	-0.1081	-0.0995
22	0.2200	-0.1803	-0.1639	-0.1471	-0.1385	-0.1299	-0.1212	-0.1125	-0.1036
23	0.2300	-0.1870	-0.1700	-0.1526	-0.1438	-0.1349	-0.1259	-0.1168	-0.1076
24	0.2400	-0.1935	-0.1760	-0.1581	-0.1490	-0.1398	-0.1305	-0.1211	-0.1116
25	0.2500	-0.2000	-0.1819	-0.1635	-0.1541	-0.1446	-0.1350	-0.1253	-0.1155
26	0.3000	-0.2308	-0.2103	-0.1893	-0.1786	-0.1678	-0.1568	-0.1457	-0.1344
27	0.3500	-0.2593	-0.2367	-0.2134	-0.2015	-0.1895	-0.1772	-0.1648	-0.1522
28	0.4000	-0.2857	-0.2613	-0.2360	-0.2230	-0.2098	-0.1964	-0.1828	-0.1689
29	0.4500	-0.3103	-0.2842	-0.2571	-0.2432	-0.2290	-0.2146	-0.1998	-0.1848
30	0.5000	-0.3333	-0.3057	-0.2770	-0.2622	-0.2471	-0.2317	-0.2159	-0.1999
31	0.5500	-0.3548	-0.3259	-0.2957	-0.2801	-0.2642	-0.2479	-0.2312	-0.2142
32	0.6000	-0.3750	-0.3449	-0.3134	-0.2971	-0.2804	-0.2632	-0.2457	-0.2278
33	0.6500	-0.3939	-0.3628	-0.3301	-0.3131	-0.2957	-0.2778	-0.2595	-0.2408
34	0.7000	-0.4118	-0.3797	-0.3459	-0.3283	-0.3103	-0.2917	-0.2727	-0.2531
35	0.7500	-0.4286	-0.3957	-0.3609	-0.3428	-0.3241	-0.3049	-0.2852	-0.2649
36	0.8000	-0.4444	-0.4108	-0.3751	-0.3565	-0.3373	-0.3175	-0.2972	-0.2762
37	0.8500	-0.4595	-0.4252	-0.3887	-0.3696	-0.3499	-0.3296	-0.3087	-0.2871
38	0.9000	-0.4737	-0.4388	-0.4016	-0.3821	-0.3619	-0.3411	-0.3196	-0.2974
39	0.9500	-0.4872	-0.4518	-0.4139	-0.3940	-0.3734	-0.3521	-0.3301	-0.3074
40	1.0000	-0.5000	-0.4641	-0.4257	-0.4054	-0.3844	-0.3627	-0.3402	-0.3170
41	1.2500	-0.5556	-0.5180	-0.4773	-0.4557	-0.4331	-0.4097	-0.3853	-0.3598
42	1.5000	-0.6000	-0.5616	-0.5196	-0.4970	-0.4734	-0.4488	-0.4229	-0.3959
43	1.7500	-0.6364	-0.5977	-0.5548	-0.5317	-0.5074	-0.4819	-0.4550	-0.4267
44	2.0000	-0.6667	-0.6280	-0.5848	-0.5613	-0.5365	-0.5104	-0.4827	-0.4535
45	2.5000	-0.7143	-0.6762	-0.6329	-0.6092	-0.5839	-0.5570	-0.5284	-0.4979

$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$ Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE: Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\Delta x/x \backslash \eta$		-.45	-.40	-.35	-.30	-.25	-.20	-.15	-.10	-.05
1	0.0100	-0.0045	-0.0040	-0.0035	-0.0030	-0.0025	-0.0020	-0.0015	-0.0010	-0.0005
2	0.0200	-0.0089	-0.0079	-0.0069	-0.0059	-0.0049	-0.0040	-0.0030	-0.0020	-0.0010
3	0.0300	-0.0132	-0.0118	-0.0103	-0.0088	-0.0074	-0.0059	-0.0044	-0.0030	-0.0015
4	0.0400	-0.0175	-0.0156	-0.0136	-0.0117	-0.0098	-0.0078	-0.0059	-0.0039	-0.0020
5	0.0500	-0.0217	-0.0193	-0.0169	-0.0145	-0.0121	-0.0097	-0.0073	-0.0049	-0.0024
6	0.0600	-0.0259	-0.0230	-0.0202	-0.0173	-0.0145	-0.0116	-0.0087	-0.0058	-0.0029
7	0.0700	-0.0300	-0.0267	-0.0234	-0.0201	-0.0168	-0.0134	-0.0101	-0.0067	-0.0034
8	0.0800	-0.0340	-0.0303	-0.0266	-0.0228	-0.0191	-0.0153	-0.0115	-0.0077	-0.0038
9	0.0900	-0.0380	-0.0339	-0.0297	-0.0255	-0.0213	-0.0171	-0.0128	-0.0086	-0.0043
10	0.1000	-0.0420	-0.0374	-0.0328	-0.0282	-0.0235	-0.0189	-0.0142	-0.0095	-0.0048
11	0.1100	-0.0459	-0.0409	-0.0359	-0.0308	-0.0258	-0.0207	-0.0155	-0.0104	-0.0052
12	0.1200	-0.0497	-0.0443	-0.0389	-0.0334	-0.0279	-0.0224	-0.0169	-0.0113	-0.0057
13	0.1300	-0.0535	-0.0477	-0.0419	-0.0360	-0.0301	-0.0241	-0.0182	-0.0121	-0.0061
14	0.1400	-0.0573	-0.0511	-0.0448	-0.0385	-0.0322	-0.0259	-0.0195	-0.0130	-0.0065
15	0.1500	-0.0610	-0.0544	-0.0477	-0.0411	-0.0343	-0.0276	-0.0207	-0.0139	-0.0070
16	0.1600	-0.0646	-0.0576	-0.0506	-0.0435	-0.0364	-0.0292	-0.0220	-0.0147	-0.0074
17	0.1700	-0.0682	-0.0609	-0.0535	-0.0460	-0.0385	-0.0309	-0.0233	-0.0156	-0.0078
18	0.1800	-0.0718	-0.0641	-0.0563	-0.0484	-0.0405	-0.0326	-0.0245	-0.0164	-0.0082
19	0.1900	-0.0753	-0.0672	-0.0591	-0.0508	-0.0426	-0.0342	-0.0258	-0.0172	-0.0087
20	0.2000	-0.0788	-0.0703	-0.0618	-0.0532	-0.0446	-0.0358	-0.0270	-0.0181	-0.0091
21	0.2100	-0.0822	-0.0734	-0.0645	-0.0556	-0.0465	-0.0374	-0.0282	-0.0189	-0.0095
22	0.2200	-0.0856	-0.0765	-0.0672	-0.0579	-0.0485	-0.0390	-0.0294	-0.0197	-0.0099
23	0.2300	-0.0889	-0.0795	-0.0699	-0.0602	-0.0504	-0.0406	-0.0306	-0.0205	-0.0103
24	0.2400	-0.0923	-0.0824	-0.0725	-0.0625	-0.0524	-0.0421	-0.0318	-0.0213	-0.0107
25	0.2500	-0.0955	-0.0854	-0.0751	-0.0648	-0.0543	-0.0436	-0.0329	-0.0221	-0.0111
26	0.3000	-0.1114	-0.0996	-0.0877	-0.0757	-0.0635	-0.0511	-0.0386	-0.0259	-0.0130
27	0.3500	-0.1263	-0.1131	-0.0997	-0.0861	-0.0723	-0.0583	-0.0440	-0.0296	-0.0149
28	0.4000	-0.1405	-0.1259	-0.1111	-0.0960	-0.0807	-0.0651	-0.0492	-0.0331	-0.0167
29	0.4500	-0.1540	-0.1381	-0.1219	-0.1055	-0.0887	-0.0716	-0.0542	-0.0365	-0.0184
30	0.5000	-0.1668	-0.1497	-0.1323	-0.1145	-0.0964	-0.0779	-0.0590	-0.0397	-0.0201
31	0.5500	-0.1790	-0.1608	-0.1422	-0.1232	-0.1038	-0.0839	-0.0636	-0.0429	-0.0217
32	0.6000	-0.1906	-0.1714	-0.1517	-0.1315	-0.1109	-0.0897	-0.0681	-0.0459	-0.0232
33	0.6500	-0.2018	-0.1815	-0.1608	-0.1395	-0.1177	-0.0953	-0.0724	-0.0488	-0.0247
34	0.7000	-0.2124	-0.1912	-0.1695	-0.1472	-0.1242	-0.1007	-0.0765	-0.0517	-0.0262
35	0.7500	-0.2226	-0.2006	-0.1779	-0.1545	-0.1306	-0.1059	-0.0805	-0.0544	-0.0276
36	0.8000	-0.2324	-0.2095	-0.1859	-0.1617	-0.1367	-0.1109	-0.0844	-0.0571	-0.0290
37	0.8500	-0.2418	-0.2181	-0.1937	-0.1685	-0.1426	-0.1158	-0.0881	-0.0597	-0.0303
38	0.9000	-0.2509	-0.2264	-0.2012	-0.1752	-0.1483	-0.1205	-0.0918	-0.0622	-0.0316
39	0.9500	-0.2596	-0.2344	-0.2084	-0.1816	-0.1538	-0.1250	-0.0953	-0.0646	-0.0328
40	1.0000	-0.2680	-0.2421	-0.2154	-0.1877	-0.1591	-0.1294	-0.0987	-0.0670	-0.0341
41	1.2500	-0.3057	-0.2770	-0.2471	-0.2159	-0.1835	-0.1497	-0.1145	-0.0779	-0.0397
42	1.5000	-0.3379	-0.3069	-0.2744	-0.2403	-0.2047	-0.1674	-0.1284	-0.0876	-0.0448
43	1.7500	-0.3657	-0.3328	-0.2982	-0.2618	-0.2235	-0.1832	-0.1408	-0.0962	-0.0493
44	2.0000	-0.3900	-0.3556	-0.3192	-0.2808	-0.2402	-0.1973	-0.1519	-0.1040	-0.0534
45	2.5000	-0.4309	-0.3941	-0.3550	-0.3133	-0.2689	-0.2216	-0.1713	-0.1177	-0.0607

$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$: Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE. Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\frac{\Delta x}{x} \backslash \eta$	.05	.10	.15	.20	.25	.30	.35	.40	.45
1	0.0100	0.0005	0.0010	0.0015	0.0020	0.0025	0.0030	0.0035	0.0040
2	0.0200	0.0010	0.0020	0.0030	0.0040	0.0050	0.0060	0.0070	0.0080
3	0.0300	0.0015	0.0030	0.0044	0.0059	0.0074	0.0089	0.0104	0.0119
4	0.0400	0.0020	0.0039	0.0059	0.0079	0.0099	0.0118	0.0138	0.0158
5	0.0500	0.0024	0.0049	0.0073	0.0098	0.0123	0.0147	0.0172	0.0197
6	0.0600	0.0029	0.0058	0.0088	0.0117	0.0147	0.0176	0.0206	0.0236
7	0.0700	0.0034	0.0068	0.0102	0.0136	0.0171	0.0205	0.0240	0.0274
8	0.0800	0.0039	0.0077	0.0116	0.0155	0.0194	0.0234	0.0273	0.0313
9	0.0900	0.0043	0.0087	0.0130	0.0174	0.0218	0.0262	0.0306	0.0351
10	0.1000	0.0048	0.0096	0.0144	0.0192	0.0241	0.0290	0.0339	0.0389
11	0.1100	0.0052	0.0105	0.0158	0.0211	0.0264	0.0318	0.0372	0.0426
12	0.1200	0.0057	0.0114	0.0171	0.0229	0.0287	0.0346	0.0405	0.0464
13	0.1300	0.0061	0.0123	0.0185	0.0247	0.0310	0.0373	0.0437	0.0501
14	0.1400	0.0066	0.0132	0.0198	0.0266	0.0333	0.0401	0.0469	0.0538
15	0.1500	0.0070	0.0141	0.0212	0.0283	0.0356	0.0428	0.0501	0.0575
16	0.1600	0.0074	0.0150	0.0225	0.0301	0.0378	0.0455	0.0533	0.0612
17	0.1700	0.0079	0.0158	0.0238	0.0319	0.0400	0.0482	0.0565	0.0648
18	0.1800	0.0083	0.0167	0.0251	0.0337	0.0422	0.0509	0.0596	0.0684
19	0.1900	0.0087	0.0175	0.0264	0.0354	0.0444	0.0536	0.0628	0.0721
20	0.2000	0.0092	0.0184	0.0277	0.0371	0.0466	0.0562	0.0659	0.0757
21	0.2100	0.0096	0.0192	0.0290	0.0389	0.0488	0.0589	0.0690	0.0792
22	0.2200	0.0100	0.0201	0.0303	0.0406	0.0510	0.0615	0.0721	0.0828
23	0.2300	0.0104	0.0209	0.0315	0.0423	0.0531	0.0641	0.0751	0.0863
24	0.2400	0.0108	0.0217	0.0328	0.0440	0.0553	0.0667	0.0782	0.0899
25	0.2500	0.0112	0.0226	0.0340	0.0456	0.0574	0.0692	0.0812	0.0934
26	0.3000	0.0132	0.0266	0.0401	0.0539	0.0678	0.0819	0.0962	0.1107
27	0.3500	0.0151	0.0305	0.0460	0.0619	0.0779	0.0942	0.1108	0.1275
28	0.4000	0.0170	0.0342	0.0518	0.0696	0.0878	0.1062	0.1250	0.1441
29	0.4500	0.0188	0.0379	0.0573	0.0771	0.0973	0.1179	0.1389	0.1602
30	0.5000	0.0205	0.0414	0.0627	0.0845	0.1067	0.1293	0.1525	0.1761
31	0.5500	0.0222	0.0448	0.0679	0.0916	0.1158	0.1405	0.1658	0.1916
32	0.6000	0.0238	0.0481	0.0730	0.0986	0.1247	0.1514	0.1788	0.2068
33	0.6500	0.0254	0.0514	0.0780	0.1053	0.1334	0.1621	0.1916	0.2218
34	0.7000	0.0269	0.0545	0.0828	0.1120	0.1419	0.1726	0.2041	0.2365
35	0.7500	0.0284	0.0576	0.0876	0.1184	0.1502	0.1828	0.2164	0.2509
36	0.8000	0.0298	0.0605	0.0922	0.1247	0.1583	0.1928	0.2284	0.2651
37	0.8500	0.0312	0.0635	0.0967	0.1309	0.1663	0.2027	0.2403	0.2790
38	0.9000	0.0326	0.0663	0.1011	0.1370	0.1741	0.2123	0.2519	0.2927
39	0.9500	0.0340	0.0691	0.1054	0.1429	0.1817	0.2218	0.2633	0.3062
40	1.0000	0.0353	0.0718	0.1096	0.1487	0.1892	0.2311	0.2746	0.3195
41	1.2500	0.0414	0.0845	0.1293	0.1761	0.2247	0.2754	0.3282	0.3832
42	1.5000	0.0469	0.0960	0.1473	0.2011	0.2574	0.3164	0.3781	0.4427
43	1.7500	0.0519	0.1065	0.1639	0.2242	0.2878	0.3546	0.4248	0.4988
44	2.0000	0.0565	0.1161	0.1791	0.2457	0.3161	0.3904	0.4689	0.5518
45	2.5000	0.0646	0.1335	0.2067	0.2847	0.3678	0.4562	0.5503	0.6505

$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$. Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE: Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\Delta x/x \backslash \eta$	.50	.55	.60	.65	.70	.75	.80	.90	1.00
1	0.0100	0.0050	0.0055	0.0060	0.0065	0.0070	0.0075	0.0080	0.0100
2	0.0200	0.0100	0.0110	0.0120	0.0130	0.0140	0.0150	0.0160	0.0200
3	0.0300	0.0149	0.0164	0.0179	0.0194	0.0209	0.0224	0.0239	0.0300
4	0.0400	0.0198	0.0218	0.0238	0.0258	0.0278	0.0299	0.0319	0.0400
5	0.0500	0.0247	0.0272	0.0297	0.0322	0.0347	0.0373	0.0398	0.0500
6	0.0600	0.0296	0.0326	0.0356	0.0386	0.0416	0.0447	0.0477	0.0600
7	0.0700	0.0344	0.0379	0.0414	0.0450	0.0485	0.0521	0.0556	0.0700
8	0.0800	0.0392	0.0432	0.0473	0.0513	0.0554	0.0594	0.0635	0.0800
9	0.0900	0.0440	0.0485	0.0531	0.0576	0.0622	0.0668	0.0714	0.0900
10	0.1000	0.0488	0.0538	0.0589	0.0639	0.0690	0.0741	0.0792	0.1000
11	0.1100	0.0536	0.0591	0.0646	0.0702	0.0758	0.0814	0.0871	0.1100
12	0.1200	0.0583	0.0643	0.0704	0.0764	0.0826	0.0887	0.0949	0.1200
13	0.1300	0.0630	0.0695	0.0761	0.0827	0.0893	0.0960	0.1027	0.1300
14	0.1400	0.0677	0.0747	0.0818	0.0889	0.0961	0.1033	0.1105	0.1400
15	0.1500	0.0724	0.0799	0.0875	0.0951	0.1028	0.1105	0.1183	0.1500
16	0.1600	0.0770	0.0851	0.0931	0.1013	0.1095	0.1177	0.1261	0.1600
17	0.1700	0.0817	0.0902	0.0988	0.1074	0.1162	0.1250	0.1338	0.1700
18	0.1800	0.0863	0.0953	0.1044	0.1136	0.1228	0.1322	0.1416	0.1800
19	0.1900	0.0909	0.1004	0.1100	0.1197	0.1295	0.1394	0.1493	0.1900
20	0.2000	0.0954	0.1055	0.1156	0.1258	0.1361	0.1465	0.1570	0.2000
21	0.2100	0.1000	0.1105	0.1212	0.1319	0.1427	0.1537	0.1647	0.2100
22	0.2200	0.1045	0.1156	0.1267	0.1380	0.1493	0.1608	0.1724	0.2200
23	0.2300	0.1091	0.1206	0.1323	0.1440	0.1559	0.1680	0.1801	0.2300
24	0.2400	0.1136	0.1256	0.1378	0.1501	0.1625	0.1751	0.1878	0.2400
25	0.2500	0.1180	0.1306	0.1433	0.1561	0.1691	0.1822	0.1954	0.2500
26	0.3000	0.1402	0.1552	0.1705	0.1859	0.2016	0.2175	0.2335	0.3000
27	0.3500	0.1619	0.1795	0.1973	0.2154	0.2338	0.2524	0.2714	0.3500
28	0.4000	0.1832	0.2033	0.2237	0.2445	0.2656	0.2871	0.3089	0.4000
29	0.4500	0.2042	0.2267	0.2497	0.2732	0.2971	0.3214	0.3462	0.4500
30	0.5000	0.2247	0.2498	0.2754	0.3015	0.3282	0.3554	0.3832	0.5000
31	0.5500	0.2450	0.2726	0.3008	0.3296	0.3590	0.3891	0.4199	0.5500
32	0.6000	0.2649	0.2950	0.3258	0.3573	0.3896	0.4226	0.4565	0.6000
33	0.6500	0.2845	0.3171	0.3505	0.3847	0.4198	0.4558	0.4928	0.6500
34	0.7000	0.3038	0.3389	0.3749	0.4119	0.4498	0.4888	0.5288	0.7000
35	0.7500	0.3229	0.3604	0.3990	0.4387	0.4795	0.5215	0.5647	0.7500
36	0.8000	0.3416	0.3817	0.4229	0.4653	0.5090	0.5540	0.6004	0.8000
37	0.8500	0.3601	0.4026	0.4464	0.4916	0.5382	0.5863	0.6358	0.8500
38	0.9000	0.3784	0.4234	0.4698	0.5177	0.5672	0.6183	0.6711	0.9000
39	0.9500	0.3964	0.4438	0.4929	0.5436	0.5960	0.6502	0.7062	0.9500
40	1.0000	0.4142	0.4641	0.5157	0.5692	0.6245	0.6818	0.7411	1.0000
41	1.2500	0.5000	0.5621	0.6267	0.6940	0.7641	0.8371	0.9131	1.2500
42	1.5000	0.5811	0.6553	0.7329	0.8141	0.8991	0.9882	1.0814	1.5000
43	1.7500	0.6583	0.7443	0.8348	0.9300	1.0302	1.1355	1.2463	1.7500
44	2.0000	0.7321	0.8299	0.9332	1.0423	1.1577	1.2795	1.4082	2.0000
45	2.5000	0.8708	0.9918	1.1205	1.2576	1.4035	1.5589	1.7243	2.5000

$$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x} \text{ . Values of } \frac{\Delta y}{y} \text{ for given } \frac{\Delta x}{x} \text{ and } \eta \text{ calculated from the equation } \log \left(1 + \frac{\Delta y}{y} \right) = \eta \log \left(1 + \frac{\Delta x}{x} \right) .$$

ELASTICITY TABLE: Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\Delta x/x$	η	-1.00	-.90	-.80	-.75	-.70	-.65	-.60	-.55	-.50
1	-0.0100	0.0101	0.0091	0.0081	0.0076	0.0071	0.0066	0.0060	0.0055	0.0050
2	-0.0200	0.0204	0.0183	0.0163	0.0153	0.0142	0.0132	0.0122	0.0112	0.0102
3	-0.0300	0.0309	0.0278	0.0247	0.0231	0.0216	0.0200	0.0184	0.0169	0.0153
4	-0.0400	0.0417	0.0374	0.0332	0.0311	0.0290	0.0269	0.0248	0.0227	0.0206
5	-0.0500	0.0526	0.0472	0.0419	0.0392	0.0366	0.0339	0.0313	0.0286	0.0260
6	-0.0600	0.0638	0.0573	0.0507	0.0475	0.0443	0.0410	0.0378	0.0346	0.0314
7	-0.0700	0.0753	0.0675	0.0598	0.0559	0.0521	0.0483	0.0445	0.0407	0.0370
8	-0.0800	0.0870	0.0779	0.0690	0.0645	0.0601	0.0557	0.0513	0.0469	0.0426
9	-0.0900	0.0989	0.0886	0.0784	0.0733	0.0682	0.0632	0.0582	0.0532	0.0483
10	-0.1000	0.1111	0.0995	0.0879	0.0822	0.0765	0.0709	0.0653	0.0597	0.0541
11	-0.1100	0.1236	0.1106	0.0977	0.0913	0.0850	0.0787	0.0724	0.0662	0.0600
12	-0.1200	0.1364	0.1219	0.1077	0.1006	0.0936	0.0866	0.0797	0.0728	0.0660
13	-0.1300	0.1494	0.1335	0.1179	0.1101	0.1024	0.0947	0.0871	0.0796	0.0721
14	-0.1400	0.1628	0.1454	0.1282	0.1198	0.1114	0.1030	0.0947	0.0865	0.0783
15	-0.1500	0.1765	0.1575	0.1388	0.1296	0.1205	0.1114	0.1024	0.0935	0.0847
16	-0.1600	0.1905	0.1699	0.1497	0.1397	0.1298	0.1200	0.1103	0.1006	0.0911
17	-0.1700	0.2048	0.1826	0.1607	0.1500	0.1393	0.1288	0.1183	0.1079	0.0976
18	-0.1800	0.2195	0.1955	0.1721	0.1605	0.1490	0.1377	0.1264	0.1153	0.1043
19	-0.1900	0.2346	0.2088	0.1836	0.1712	0.1589	0.1468	0.1348	0.1229	0.1111
20	-0.2000	0.2500	0.2224	0.1954	0.1822	0.1691	0.1561	0.1433	0.1306	0.1180
21	-0.2100	0.2658	0.2363	0.2075	0.1934	0.1794	0.1656	0.1519	0.1384	0.1251
22	-0.2200	0.2821	0.2506	0.2199	0.2048	0.1900	0.1753	0.1608	0.1464	0.1323
23	-0.2300	0.2987	0.2652	0.2326	0.2166	0.2008	0.1852	0.1698	0.1546	0.1396
24	-0.2400	0.3158	0.2802	0.2455	0.2285	0.2118	0.1953	0.1790	0.1629	0.1471
25	-0.2500	0.3333	0.2955	0.2588	0.2408	0.2231	0.2056	0.1884	0.1714	0.1547
26	-0.3000	0.4286	0.3785	0.3302	0.3067	0.2836	0.2609	0.2386	0.2167	0.1952
27	-0.3500	0.5385	0.4736	0.4115	0.3814	0.3520	0.3231	0.2949	0.2674	0.2403
28	-0.4000	0.6667	0.5837	0.5048	0.4669	0.4299	0.3938	0.3587	0.3244	0.2910
29	-0.4500	0.8182	0.7127	0.6133	0.5658	0.5197	0.4749	0.4315	0.3893	0.3484
30	-0.5000	1.0000	0.8661	0.7411	0.6818	0.6245	0.5692	0.5157	0.4641	0.4142
31	-0.5500	1.2222	1.0517	0.8942	0.8201	0.7488	0.6804	0.6146	0.5514	0.4907
32	-0.6000	1.5000	1.2811	1.0814	0.9882	0.8991	0.8141	0.7329	0.6553	0.5811
33	-0.6500	1.8571	1.5724	1.3160	1.1976	1.0852	0.9786	0.8774	0.7814	0.6903
34	-0.7000	2.3333	1.9552	1.6200	1.4669	1.3228	1.1871	1.0593	0.9390	0.8257
35	-0.7500	3.0000	2.4822	2.0314	1.8284	1.6390	1.4623	1.2974	1.1435	1.0000
36	-0.8000	4.0000	3.2567	2.6239	2.3437	2.0852	1.8466	1.6265	1.4234	1.2361
37	-0.8500	5.6667	4.5146	3.5617	3.1489	2.7734	2.4319	2.1214	1.8389	1.5820
38	-0.9000	9.0000	6.9433	5.3096	4.6234	4.0119	3.4668	2.9811	2.5481	2.1623
39	-0.9500	19.0000	13.8227	9.9856	8.4574	7.1418	6.0092	5.0342	4.1948	3.4721

$\eta = \frac{\Delta y/y}{\Delta x/x}$. Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE: Values of $\Delta y / y$ corresponding to $\Delta x / x$ for given elasticities (η).

$\Delta x / x \backslash \eta$	-0.45	-0.40	-0.35	-0.30	-0.25	-0.20	-0.15	-0.10	-0.05
1	-0.0100	0.0045	0.0040	0.0035	0.0030	0.0025	0.0020	0.0015	0.0010
2	-0.0200	0.0091	0.0081	0.0071	0.0061	0.0051	0.0040	0.0030	0.0020
3	-0.0300	0.0138	0.0123	0.0107	0.0092	0.0076	0.0061	0.0046	0.0031
4	-0.0400	0.0185	0.0165	0.0144	0.0123	0.0103	0.0082	0.0061	0.0041
5	-0.0500	0.0234	0.0207	0.0181	0.0155	0.0129	0.0103	0.0077	0.0051
6	-0.0600	0.0282	0.0251	0.0219	0.0187	0.0156	0.0125	0.0093	0.0062
7	-0.0700	0.0332	0.0295	0.0257	0.0220	0.0183	0.0146	0.0109	0.0073
8	-0.0800	0.0382	0.0339	0.0296	0.0253	0.0211	0.0168	0.0126	0.0084
9	-0.0900	0.0434	0.0384	0.0336	0.0287	0.0239	0.0190	0.0142	0.0095
10	-0.1000	0.0486	0.0430	0.0376	0.0321	0.0267	0.0213	0.0159	0.0106
11	-0.1100	0.0538	0.0477	0.0416	0.0356	0.0296	0.0236	0.0176	0.0117
12	-0.1200	0.0592	0.0525	0.0458	0.0391	0.0325	0.0259	0.0194	0.0129
13	-0.1300	0.0647	0.0573	0.0499	0.0427	0.0354	0.0282	0.0211	0.0140
14	-0.1400	0.0702	0.0622	0.0542	0.0463	0.0384	0.0306	0.0229	0.0152
15	-0.1500	0.0759	0.0672	0.0585	0.0500	0.0415	0.0330	0.0247	0.0164
16	-0.1600	0.0816	0.0722	0.0629	0.0537	0.0446	0.0355	0.0265	0.0176
17	-0.1700	0.0875	0.0774	0.0674	0.0575	0.0477	0.0380	0.0283	0.0188
18	-0.1800	0.0934	0.0826	0.0719	0.0613	0.0509	0.0405	0.0302	0.0200
19	-0.1900	0.0995	0.0879	0.0765	0.0653	0.0541	0.0430	0.0321	0.0213
20	-0.2000	0.1056	0.0934	0.0812	0.0692	0.0574	0.0456	0.0340	0.0226
21	-0.2100	0.1119	0.0989	0.0860	0.0733	0.0607	0.0483	0.0360	0.0239
22	-0.2200	0.1183	0.1045	0.0909	0.0774	0.0641	0.0509	0.0380	0.0252
23	-0.2300	0.1248	0.1102	0.0958	0.0816	0.0675	0.0537	0.0400	0.0265
24	-0.2400	0.1314	0.1160	0.1008	0.0858	0.0710	0.0564	0.0420	0.0278
25	-0.2500	0.1382	0.1220	0.1059	0.0901	0.0746	0.0592	0.0441	0.0292
26	-0.3000	0.1741	0.1533	0.1330	0.1129	0.0933	0.0739	0.0550	0.0363
27	-0.3500	0.2139	0.1880	0.1627	0.1380	0.1137	0.0900	0.0668	0.0440
28	-0.4000	0.2584	0.2267	0.1958	0.1656	0.1362	0.1076	0.0796	0.0524
29	-0.4500	0.3087	0.2701	0.2327	0.1964	0.1612	0.1270	0.0938	0.0616
30	-0.5000	0.3660	0.3195	0.2746	0.2311	0.1892	0.1487	0.1096	0.0718
31	-0.5500	0.4324	0.3763	0.3224	0.2707	0.2209	0.1732	0.1272	0.0831
32	-0.6000	0.5103	0.4427	0.3781	0.3164	0.2574	0.2011	0.1473	0.0960
33	-0.6500	0.6039	0.5219	0.4440	0.3702	0.3001	0.2336	0.1705	0.1107
34	-0.7000	0.7191	0.6186	0.5241	0.4350	0.3512	0.2723	0.1979	0.1279
35	-0.7500	0.8661	0.7411	0.6245	0.5157	0.4142	0.3195	0.2311	0.1487
36	-0.8000	1.0632	0.9037	0.7565	0.6207	0.4953	0.3797	0.2731	0.1746
37	-0.8500	1.3483	1.1358	0.9425	0.7667	0.6069	0.4614	0.3292	0.2089
38	-0.9000	1.8184	1.5119	1.2387	0.9953	0.7783	0.5849	0.4125	0.2589
39	-0.9500	2.8500	2.3145	1.8534	1.4565	1.1147	0.8206	0.5673	0.3493

$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$. Values of $\Delta y / y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE; Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

$\Delta x/x \backslash \eta$	.05	.10	.15	.20	.25	.30	.35	.40	.45
1	-0.0100	-0.0005	-0.0010	-0.0015	-0.0020	-0.0025	-0.0030	-0.0035	-0.0040
2	-0.0200	-0.0010	-0.0020	-0.0030	-0.0040	-0.0050	-0.0060	-0.0070	-0.0080
3	-0.0300	-0.0015	-0.0030	-0.0046	-0.0061	-0.0076	-0.0091	-0.0106	-0.0121
4	-0.0400	-0.0020	-0.0041	-0.0061	-0.0081	-0.0102	-0.0122	-0.0142	-0.0162
5	-0.0500	-0.0026	-0.0051	-0.0077	-0.0102	-0.0127	-0.0153	-0.0178	-0.0203
6	-0.0600	-0.0031	-0.0062	-0.0092	-0.0123	-0.0153	-0.0184	-0.0214	-0.0244
7	-0.0700	-0.0036	-0.0072	-0.0108	-0.0144	-0.0180	-0.0215	-0.0251	-0.0286
8	-0.0800	-0.0042	-0.0083	-0.0124	-0.0165	-0.0206	-0.0247	-0.0288	-0.0328
9	-0.0900	-0.0047	-0.0094	-0.0140	-0.0187	-0.0233	-0.0279	-0.0325	-0.0370
10	-0.1000	-0.0053	-0.0105	-0.0157	-0.0209	-0.0260	-0.0311	-0.0362	-0.0413
11	-0.1100	-0.0058	-0.0116	-0.0173	-0.0230	-0.0287	-0.0344	-0.0400	-0.0455
12	-0.1200	-0.0064	-0.0127	-0.0190	-0.0252	-0.0315	-0.0376	-0.0438	-0.0498
13	-0.1300	-0.0069	-0.0138	-0.0207	-0.0275	-0.0342	-0.0409	-0.0476	-0.0542
14	-0.1400	-0.0075	-0.0150	-0.0224	-0.0297	-0.0370	-0.0442	-0.0514	-0.0585
15	-0.1500	-0.0081	-0.0161	-0.0241	-0.0320	-0.0398	-0.0476	-0.0553	-0.0629
16	-0.1600	-0.0087	-0.0173	-0.0258	-0.0343	-0.0427	-0.0510	-0.0592	-0.0674
17	-0.1700	-0.0093	-0.0185	-0.0276	-0.0366	-0.0455	-0.0544	-0.0631	-0.0718
18	-0.1800	-0.0099	-0.0196	-0.0293	-0.0389	-0.0484	-0.0578	-0.0671	-0.0763
19	-0.1900	-0.0105	-0.0209	-0.0311	-0.0413	-0.0513	-0.0613	-0.0711	-0.0808
20	-0.2000	-0.0111	-0.0221	-0.0329	-0.0436	-0.0543	-0.0648	-0.0751	-0.0854
21	-0.2100	-0.0117	-0.0233	-0.0347	-0.0461	-0.0572	-0.0683	-0.0792	-0.0900
22	-0.2200	-0.0123	-0.0245	-0.0366	-0.0485	-0.0602	-0.0718	-0.0833	-0.0946
23	-0.2300	-0.0130	-0.0258	-0.0384	-0.0509	-0.0633	-0.0754	-0.0874	-0.0993
24	-0.2400	-0.0136	-0.0271	-0.0403	-0.0534	-0.0663	-0.0790	-0.0916	-0.1040
25	-0.2500	-0.0143	-0.0284	-0.0422	-0.0559	-0.0694	-0.0827	-0.0958	-0.1087
26	-0.3000	-0.0177	-0.0350	-0.0521	-0.0689	-0.0853	-0.1015	-0.1174	-0.1330
27	-0.3500	-0.0213	-0.0422	-0.0626	-0.0825	-0.1021	-0.1212	-0.1400	-0.1583
28	-0.4000	-0.0252	-0.0498	-0.0738	-0.0971	-0.1199	-0.1421	-0.1637	-0.1848
29	-0.4500	-0.0294	-0.0580	-0.0858	-0.1127	-0.1388	-0.1642	-0.1888	-0.2127
30	-0.5000	-0.0341	-0.0670	-0.0987	-0.1294	-0.1591	-0.1877	-0.2154	-0.2421
31	-0.5500	-0.0391	-0.0767	-0.1129	-0.1476	-0.1810	-0.2130	-0.2438	-0.2734
32	-0.6000	-0.0448	-0.0876	-0.1284	-0.1674	-0.2047	-0.2403	-0.2744	-0.3069
33	-0.6500	-0.0511	-0.0997	-0.1457	-0.1894	-0.2308	-0.2702	-0.3075	-0.3429
34	-0.7000	-0.0584	-0.1134	-0.1652	-0.2140	-0.2599	-0.3032	-0.3439	-0.3822
35	-0.7500	-0.0670	-0.1294	-0.1877	-0.2421	-0.2929	-0.3402	-0.3844	-0.4257
36	-0.8000	-0.0773	-0.1487	-0.2145	-0.2752	-0.3313	-0.3830	-0.4307	-0.4747
37	-0.8500	-0.0905	-0.1728	-0.2477	-0.3157	-0.3777	-0.4340	-0.4852	-0.5318
38	-0.9000	-0.1087	-0.2057	-0.2921	-0.3690	-0.4377	-0.4988	-0.5533	-0.6019
39	-0.9500	-0.1391	-0.2589	-0.3620	-0.4507	-0.5271	-0.5929	-0.6495	-0.6983

$\eta = \frac{\Delta y/y}{\Delta x/x}$. Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

ELASTICITY TABLE: Values of $\Delta y/y$ corresponding to $\Delta x/x$ for given elasticities (η).

	.50	.55	.60	.65	.70	.75	.80	.90	1.00
1	-0.0100	-0.0050	-0.0055	-0.0060	-0.0065	-0.0070	-0.0075	-0.0080	-0.0100
2	-0.0200	-0.0101	-0.0110	-0.0120	-0.0130	-0.0140	-0.0150	-0.0160	-0.0200
3	-0.0300	-0.0151	-0.0166	-0.0181	-0.0196	-0.0211	-0.0226	-0.0241	-0.0300
4	-0.0400	-0.0202	-0.0222	-0.0242	-0.0262	-0.0282	-0.0302	-0.0321	-0.0400
5	-0.0500	-0.0253	-0.0278	-0.0303	-0.0328	-0.0353	-0.0377	-0.0402	-0.0500
6	-0.0600	-0.0305	-0.0335	-0.0364	-0.0394	-0.0424	-0.0453	-0.0483	-0.0600
7	-0.0700	-0.0356	-0.0391	-0.0426	-0.0461	-0.0495	-0.0530	-0.0564	-0.0700
8	-0.0800	-0.0408	-0.0448	-0.0488	-0.0528	-0.0567	-0.0606	-0.0645	-0.0800
9	-0.0900	-0.0461	-0.0505	-0.0550	-0.0595	-0.0639	-0.0683	-0.0727	-0.0900
10	-0.1000	-0.0513	-0.0563	-0.0613	-0.0662	-0.0711	-0.0760	-0.0808	-0.1000
11	-0.1100	-0.0566	-0.0621	-0.0675	-0.0729	-0.0783	-0.0837	-0.0890	-0.1100
12	-0.1200	-0.0619	-0.0679	-0.0738	-0.0797	-0.0856	-0.0914	-0.0972	-0.1200
13	-0.1300	-0.0673	-0.0737	-0.0802	-0.0865	-0.0929	-0.0992	-0.1054	-0.1300
14	-0.1400	-0.0726	-0.0796	-0.0865	-0.0934	-0.1002	-0.1070	-0.1137	-0.1400
15	-0.1500	-0.0780	-0.0855	-0.0929	-0.1002	-0.1075	-0.1148	-0.1219	-0.1500
16	-0.1600	-0.0835	-0.0914	-0.0993	-0.1071	-0.1149	-0.1226	-0.1302	-0.1600
17	-0.1700	-0.0890	-0.0974	-0.1058	-0.1141	-0.1223	-0.1304	-0.1385	-0.1700
18	-0.1800	-0.0945	-0.1034	-0.1123	-0.1210	-0.1297	-0.1383	-0.1468	-0.1800
19	-0.1900	-0.1000	-0.1094	-0.1188	-0.1280	-0.1371	-0.1462	-0.1551	-0.1900
20	-0.2000	-0.1056	-0.1155	-0.1253	-0.1350	-0.1446	-0.1541	-0.1635	-0.2000
21	-0.2100	-0.1112	-0.1216	-0.1319	-0.1421	-0.1521	-0.1620	-0.1719	-0.2100
22	-0.2200	-0.1168	-0.1277	-0.1385	-0.1491	-0.1596	-0.1700	-0.1803	-0.2200
23	-0.2300	-0.1225	-0.1339	-0.1451	-0.1562	-0.1672	-0.1780	-0.1887	-0.2300
24	-0.2400	-0.1282	-0.1401	-0.1518	-0.1634	-0.1748	-0.1860	-0.1971	-0.2400
25	-0.2500	-0.1340	-0.1463	-0.1585	-0.1706	-0.1824	-0.1941	-0.2056	-0.2500
26	-0.3000	-0.1633	-0.1781	-0.1927	-0.2069	-0.2209	-0.2347	-0.2482	-0.3000
27	-0.3500	-0.1938	-0.2110	-0.2278	-0.2442	-0.2603	-0.2761	-0.2915	-0.3500
28	-0.4000	-0.2254	-0.2449	-0.2640	-0.2825	-0.3006	-0.3183	-0.3355	-0.4000
29	-0.4500	-0.2584	-0.2802	-0.3014	-0.3220	-0.3420	-0.3613	-0.3801	-0.4500
30	-0.5000	-0.2929	-0.3170	-0.3402	-0.3627	-0.3844	-0.4054	-0.4257	-0.5000
31	-0.5500	-0.3292	-0.3554	-0.3807	-0.4049	-0.4282	-0.4506	-0.4721	-0.5500
32	-0.6000	-0.3675	-0.3959	-0.4229	-0.4488	-0.4734	-0.4970	-0.5196	-0.6000
33	-0.6500	-0.4084	-0.4386	-0.4674	-0.4946	-0.5204	-0.5450	-0.5682	-0.6500
34	-0.7000	-0.4523	-0.4843	-0.5144	-0.5428	-0.5695	-0.5946	-0.6183	-0.7000
35	-0.7500	-0.5000	-0.5335	-0.5647	-0.5939	-0.6211	-0.6464	-0.6701	-0.7500
36	-0.8000	-0.5528	-0.5874	-0.6193	-0.6487	-0.6759	-0.7009	-0.7241	-0.8000
37	-0.8500	-0.6127	-0.6478	-0.6796	-0.7086	-0.7350	-0.7590	-0.7808	-0.8500
38	-0.9000	-0.6838	-0.7182	-0.7488	-0.7761	-0.8005	-0.8222	-0.8415	-0.9000
39	-0.9500	-0.7764	-0.8075	-0.8343	-0.8573	-0.8772	-0.8943	-0.9090	-0.9500

$\eta = \frac{\Delta y}{y} / \frac{\Delta x}{x}$. Values of $\Delta y/y$ for given $\frac{\Delta x}{x}$ and η calculated from the equation $\log(1 + \frac{\Delta y}{y}) = \eta \log(1 + \frac{\Delta x}{x})$.

cc: Dept.

Mr. U.K. Ghoshal

January 30, 1967

Rosalind Gilmore

Memoranda for the Board

I attach the stencils of two memoranda prepared in the Economics Department, together with draft cover notes for their submission to the Executive Directors. As you will see from the attached notes, Mr. Shoaib suggested, and Mr. Friedman agreed, that they should go to the Board; and we have now made some changes in format consequent on Mr. Friedman's comments of January 18. Amongst these we have moved the signatures and dates to the end of the memoranda, including there the names of authors, as we believe this to be the appropriate procedure. If this is mistaken, or if you prefer to attribute the papers to the Department alone, please do so.

cc: Mr. Kassarck
Mr. Macone
Mr. Elz
Mr. Varon

Attachments:

RG.
RGilmore/jb

Problems of Developing Countries

The attached paper, describing the discussion of development problems at a conference held under the auspices of the Institut de Recherche et Formation en vue du Développement harmonisé, was prepared in the Economics Department, and is now distributed in case it may be of wider interest.

DRAFT COVER NOTE

The Food for Peace Act of 1966

The attached memorandum was prepared for use within the Economics Department, and is distributed in case it may be of wider interest.

Re. Dept. Est.
+ World Tables.

Mr. Andrew M. Kamarck

January 18, 1967

Leonard B. Rist

Sundry Remarks.-

1. World Tables.

This is most interesting and useful. I know you cannot include everything in them. It would, however, be very illuminating to have a column of scholarisation (percent of children of school age going to school). UNESCO publishes figures on this and it would be easy to add them, say, next to the population figures. This is one very important aspect of development.

2. Economics of Education.

I understand you have a study under way on the subject. The attached paper from the Morgan Guaranty Survey may perhaps be of assistance.

3. Mr. Belasa's Paper on Protection and its Effects on Developing Countries.

Please see my attached note to Mr. Owen.

att.

E. Dept. Act

Mr. H. Latimer

December 15, 1966

Paolo Leon *PL*

Progress in Capital Theory.

I think it would be useful to photocopy and distribute, out of the November issue of the Quarterly Journal of Economics, the discussion by Pasinetti, Morishima, Garegnani, Bruno and Samuelson on "technique switching" (pp. 503-583). This a fundamental discussion which affects permanently the "established" theory of capital and, therefore, all neoclassical schemes of pricing, income distribution, etc. Although in the minds of many people the neoclassical theory is buried at least since 1953, the discussion is important because for the first time the "American School" (Samuelson) recognizes that it is, in fact, dead.

Mr. Kamarck suggested that we should make this series of papers available in the Department.

Mr. Andrew M. Kamarck

December 9, 1966

Charles G. Goor

Proposed Developing Countries Chart Book

1. Some preliminary work was done sometime ago on plans for such a chart series. However, this project has been the victim of the Division workload and other priorities. As a result of your recent memorandum on this subject, I am reactivating the project.
2. Because of the lapse of time since I last worked on this project, I have started to reassemble all the basic materials, update my thinking on the subject, and draft a new set of plans. I will do this as quickly as possible and will present you with a preliminary outline.

CGGoor/ms

ECONOMIC COMMITTEE

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WBG ARCHIVES

EC/O/66 - 176

November 16, 1966

OFFICE MEMORANDUM

TO: Members of the Economic Committee
FROM: C. F. Owen
SUBJECT: Showing of Film on Input-Output Structure of American Economy

1. The Economics Department is arranging to show the following film in the Eugene Black Auditorium on Friday the 18th of November at 4:00 p.m.

THE INPUT-OUTPUT STRUCTURE OF THE AMERICAN ECONOMY.

2. This film has been loaned by the Scientific American and is in color with a running time of approximately 40 minutes. It is thought that the film will be of interest not only to economists, but also to others who may wish to know more about input-output techniques and the uses that can be made of them.

3. I should appreciate if you would advise all economists in your Department of this film and bring it to the attention of any others who may be interested in it.

C. F. Owen
Secretary

D I S T R I B U T I O N

Messrs. Friedman
Kamarck
Adler
Avramovic
Rist
de Vries
Collier

Bell
Edelman
Gilmartin
King (B.B.)
Larsen
Lipkowitz

Maiss
McDiarmid
Sacchetti
Sadove
Thompson
Weiner
Wright

Mr. A. M. Kamarck

October 17, 1966

Bela Balassa

1966 Publications by Staff Members

In reference to your memo of September 21, I am listing below my publications in the year 1966.

"Les effets du Marche Commun sur les courants d'echanges internationaux," (with Alain Camu) Revue d'Economie Politique, 1966 (2), pp. 201-27.

"Tariff Reductions and Trade in Manufactures among the Industrial Countries," American Economic Review, June, 1966, pp. 466-73.

"American Direct Investments in the Common Market," Banca Nazionale del Lavoro Quarterly Review, June, 1966, pp. 121-146.

"Planning in an Open Economy," Kyklos, 1966 (3), pp. 385-410

"Wirtschaftliche Entwicklung und Internationales Handel," in Entwicklungspolitik, ed. H. Besters and E. Boesch, Stuttgart, Kreuz Verlag, 1966

"Aussenhandelstheorie," in Sowjetsystem und Demokratische Gesellschaft, ed. C. D. Kernig, Freiburg, Herder Verlag, 1966.

BBalassa/pam

Mr. Barend A. de Vries

September 12, 1966

A. Kundu

Statistics Div., Economics Dept.
Your Memo of Sept. 6, 1966

1. I hope you have received the table of export unit values for individual countries sent to you.

2. We have calculated the new price ratios as defined by you for A commodities only and for all commodities. They are shown in the computer-run columns 40 and 41 (38A and 26A according to your notation). Percentage changes of Col. 41 over Col. 25 are given in Col. 42 (27A).

3. The results of the regression equations with new $\frac{(\dot{P}_{xi})}{P_{xj}}$ as the independent variable and \dot{x}_c , \dot{x}_m , \dot{s} , D , D_g , and D_M as dependent variables show \dot{P} is significant only in relation to x_c . The regression equation is as follows:

$$\dot{x}_c = 23.7673 + 1.31 (\dot{P})$$

(52.7) (.565)

$$R = .408$$

\dot{P} significant

$$R^2 = .135$$

$$SCT = 1.785$$

4. I am also enclosing tables showing total export figures of various countries in your study and the country reports and percentage distribution of some selected commodities.

5. We have checked "Export Variations 1950-63" and filled in the gaps in Tables 1 and 2. Please see pages 5 and 6 for some significant changes.

AK
Kundu:ee

CROSS REFERENCE SHEET

COMMUNICATION: **Senior Staff Meeting SSM/M/66-15**

DATED: **April 25, 1966**

TO:

FROM:

FILED UNDER: **Committees - Senior Staff Meetings**

SUMMARY:

ECONOMICS DEPARTMENT

7. Mr. Kamarck reported that:

- (a) A meeting was being organized for mid-May to try to coordinate the commodity studies of the Bank and FAO. An inventory which had been made of the Bank's needs for such studies had made clear that they could only be met if full advantage were taken of opportunities for division of labor with other agencies.
- (b) The Department of Information had arranged for a visit to the Bank by Professor Nyilas, Head of the Department of International Economics at the Karl Marx University of Budapest, who wished to discuss the Bank's approach to the "investment decision process", with special reference to the application of the newest techniques in developed and underdeveloped countries.

8. With reference to item (b), the Chairman said that the Bank should cooperate with Professor Nyilas. His personal experience had been that theoretical economists from Eastern European countries were usually so unfamiliar with the working of private enterprise that discussion with them tended to be time-consuming and fruitless.

~~Mr. Bell~~ 250
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ECONOMIC COMMITTEE

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WBG ARCHIVES

EC/O/66 - 32

March 7, 1966

"Interesting Change" Analysis

Attached for your information is a report, "Exploration of the Possibility of Making an 'Interesting Change' Analysis for IFS", which has been prepared by Mr. Earl Hicks of the Fund. Mr. Hicks is interested in the Bank's reaction to his report; Mr. B. B. King would like to have your comments, even if it is only to the effect that the innovation would, or would not, be helpful.

C. F. Owen
Secretary

D I S T R I B U T I O N

Messrs. Friedman
Kamarck
Adler (J.H.)
Avramovic
Rist
de Vries

Bell
Edelman
Gilmartin
King (B.B.)
Larsen
Lipkowitz

Maiss
McDiarmid
Sadove
Thompson
Weiner
Wright

Mr. B. A. de Vries

March 4, 1966

E. K. Hawkins

Production Functions

1. I have read the outline sent to us by Mr. Liu and I have the following brief comments.
2. In any econometric studies we do there is an obvious need for some work to be done on production functions. This is one of the relations that I was going to propose that we study in detail in the same way that we have talked about studying savings functions. If Mr. Liu is interested in this topic, we should encourage him to work on it. His present outline, however, seems to me far too academic as a starting point and I think we should ask him to formulate ideas in a way more suitable to our purposes.
3. The first need is to make the 'state of the art' accessible to those of us (including myself) who have not followed this subject in detail; in other words it is necessary to outline the theoretical issues involved before one can think of applying the methods to lesser developed countries. Secondly, I would want Mr. Liu to work fairly closely with Mr. Niebuhr and Mr. Kundu to relate production functions to the input/output information available for some countries. I think it would also be useful if Mr. Liu could make a survey of production functions that have been used for models of under-developed countries. This would fit in with our plan of drawing up an inventory of such models that have been used.
4. This particular topic is a good example of one that would be suitable for group discussion amongst ourselves; it could be handled in the regular meetings that I wish to organize for the group and which we have already discussed.
5. I see no harm in asking Mr. Liu to think about these matters in between now and when he joins us in mid-year. I think that it would be most useful for him to concentrate on the question of summarizing the present thinking on the subject, with particular reference to the manner in which it is relevant to different types of under-developed countries. If he could draw up some kind of bibliography this would be very valuable.

E. K. Hawkins:bs0

ECONOMIC COMMITTEE

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SEP 02 2011

WBG ARCHIVES

EC/O/66 - 18

February 7, 1966

Leverage

The attached memorandum, dated January 21, 1966, from Mr. Stevenson to Mr. Alter, is distributed for information with Mr. Stevenson's permission.

Mr. Kamarck requested this distribution, as he considers that the memorandum is an interesting contribution to the important subject of how aid-givers can obtain improved economic performance in a country.

C. F. Owen
Secretary

D I S T R I B U T I O N

Messrs. Friedman
Kamarck
Adler (J.H.)
Avramovic
Rist
de Vries

Bell
Edelman
Gilmartin
King (B.B.)
Larsen
Lipkowitz

Maiss
McDiarmid
Sadove
Thompson
Weiner
Wright

OFFICE MEMORANDUM

To: Mr. Alter
From: Alexander Stevenson
Subject: Leverage

January 21, 1966

In recent years lenders, including the Bank, have been more and more preoccupied with the problem of how their aid can be used to stimulate better economic performance, usually identified with an increased growth rate in the recipient countries. What a lender can do depends, of course, on how much he is prepared to put in, where he is prepared to put it, and how large his contribution is likely to be in relation to the resources available to the recipient economy for development. What can be done will also vary with the degree of receptivity in the recipient country and in particular with the influence of people in its government who have the same policy objectives as the lender. Furthermore, since development is a continuing and complex process, turning the aid tap on and off suddenly may do more harm than good.

Your memorandum to the Loan Committee on Costa Rica, dated January 17, raises some interesting questions in my mind on the use of leverage and I wonder if we might not begin to think of some general principles. For instance:

1. If the aim is to secure improvements in broad aspects of economic policy, for example, fiscal, monetary and exchange rate policy, influence can best be exerted by offering to lend more if policies are made more appropriate to stimulating healthy economic growth, less if they are not.

2. If the aim is to secure improved economic policies in a particular economic sector, the lender can exert maximum pressure and influence by offering to lend more or less support to that sector, depending on policy and performance in it.

3. In appropriate cases, where changes sought are related either to a particular economic sector or to a particular program in it for which money is being made available, influence can be exerted by planning a series of loans making the granting of the second in some way dependent on the success of the first.

If these guidelines made sense, they would lead to the conclusion that, to set up a multi-tranche arrangement related to a particular program like that suggested for agricultural credit in Costa Rica in such a way that the second and subsequent tranches are related to improvements in performance in areas which have nothing to do with agriculture or with the operation of the agricultural credit program, would not be in general desirable. Whether it is in this specific case depends, however, also on political considerations and I have to leave to you and to your judgment of the Finance Minister's judgment that it would help him. In making that judgment you have also to take account of which effect the approach will have on the Bank's reputation in Costa Rica in the long run.