ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672
157 SCOMM 9: HOUSE SPEC. COMM. ON PERMANENT FUND 1977-78

Statement of Development Credits Approved during the Fiscal Year 1974/75

(US dollars)

Purpose and borrower	Date of approval	Maturities	Service charge	Principal amount
Afghanistan				
Second agricultural credit	April 15, 1975	1935/2024	¾%	$ 13,000,000
Water supply and sanitation	June 5, 1975	1985/2024	¾%	9,000,000
Bangladesh[1]				
Third import program	October 8, 1974	1985/2024	¾%	50,000,000
Third import program (amendment)	February 27, 1975	1985/2024	¾%	25,000,000
Fertilizer	January 28, 1975	1985/2024	¾%	33,000,000
Population	February 25, 1975	1985/2024	¾%	15,000,000
Barisal irrigation	April 22, 1975	1985/2024	¾%	27,000,000
Bolivia				
Agricultural credit	June 19, 1975	1985/2025	¾%	7,500,000
Burma				
Forestry	July 11, 1974	1984/2024	¾%	24,000,000
Telecommunications	May 27, 1975	1985/2025	¾%	21,000,000
Cameroon				
Rubber estate	June 3, 1975	1985/2025	¾%	16,000,000
Education (supplement)	June 19, 1975	1979/2019	¾%	1,200,000
Roads (supplement)	June 19, 1975	1980/2019	¾%	1,000,000
Dahomey				
Education	June 19, 1975	1985/2025	¾%	4,000,000
Egypt, Arab Republic of				
Industry	December 3, 1974	1985/2024	¾%	35,000,000
Telecommunications	May 8, 1975	1985/2025	¾%	30,000,000
El Salvador				
Sites and services	October 29, 1974	1985/2024	¾%	6,000,000
Ethiopia				
Lower Adiabo agricultural development	September 17, 1974	1984/2024	¾%	9,500,000
Highways	April 29, 1975	1985/2025	¾%	32,000,000
Telecommunications	May 6, 1975	1985/2025	¾%	16,000,000
Education	May 27, 1975	1985/2025	¾%	23,000,000
Ghana				
Oil palm	February 18, 1975	1985/2024	¾%	13,600,000
Guinea				
Irrigation and pineapple development	June 26, 1975	1985/2025	¾%	7,000,000
Guyana				
Education	April 15, 1975	1985/2024	¾%	4,000,000
Haiti				
Highways	June 5, 1975	1985/2024	¾%	20,000,000
India				
Rajasthan Canal Command Area development	July 16, 1974	1985/2024	¾%	83,000,000
Sindri fertilizer	November 26, 1974	1985/2024	¾%	91,000,000
Rajasthan dairy development	December 5, 1974	1985/2024	¾%	27,700,000
Madhya Pradesh dairy development	December 5, 1974	1985/2024	¾%	16,400,000
Drought prone areas	December 5, 1974	1985/2024	¾%	35,000,000
Industrial imports	February 11, 1975	1985/2024	¾%	100,000,000
Godavari barrage	February 11, 1975	1985/2024	¾%	45,000,000
Agricultural Refinance Corporation (ARC)	April 15, 1975	1985/2024	¾%	75,000,000
West Bengal agricultural development	April 22, 1975	1985/2024	¾%	34,000,000
Industrial imports (amendment)	February 27, 1975	1985/2024	¾%	100,000,000
Chambal Command Area development	June 17, 1975	1985/2025	¾%	24,000,000
Jordan				
Rural development and irrigation	July 2, 1974	1984/2024	¾%	7,500,000
Education	March 4, 1975	1985/2024	¾%	6,000,000
Industry–potash engineering	June 19, 1975	1980/1985	¾%	1,000,000
Power	June 9, 1975	1985/2025	¾%	5,000,000
Kenya				
Group farm rehabilitation	March 11, 1975	1985/2025	¾%	7,500,000
Sites and services	April 29, 1975	1985/2025	¾%	8,000,000
Agriculture–forestry	June 19, 1975	1985/2025	¾%	10,000,000
Lesotho				
Education	July 11, 1974	1984/2024	¾%	4,000,000
Malagasy Republic				
Livestock and rural development	July 16, 1974	1984/2024	¾%	9,600,000
Agriculture–forestry	December 17, 1974	1984/2024	¾%	6,750,000

[1] Does not include Bangladesh consolidation credit of $31,044,965, which replaced credits originally made to Pakistan.

Appendix G

International Development Association

Purpose and borrower	Date of approval	Maturities	Service charge	Principal amount
Malawi				
Highways	December 3, 1974	1985/2024	¾%	$ 10,000,000
Agricultural development	March 20, 1975	1985/2025	¾%	8,500,000
Mali				
Livestock	February 11, 1975	1985/2025	¾%	13,300,000
Agriculture (supplement)	February 11, 1975	1982/2021	¾%	2,600,000
Highways (supplement)	June 3, 1975	1983/2022	¾%	8,300,000
Mauritania				
Highways	November 12, 1974	1985/2024	¾%	3,000,000
Mauritius				
Education	July 23, 1974	1984/2024	¾%	3,500,000
Morocco				
Agriculture	June 5, 1975	1985/2025	¾%	14,000,000
Pakistan				
Telecommunications	September 5, 1974	1985/2024	¾%	36,000,000
Development finance company	May 6, 1975	1985/2025	¾%	30,000,000
Paraguay				
Small farm credit and rural development	August 6, 1974	1985/2024	¾%	11,000,000
Rwanda				
Education	June 9, 1975	1985/2025	¾%	8,000,000
Senegal				
Education	January 28, 1975	1985/2024	¾%	15,000,000
Irrigation	April 29, 1975	1977/1985	¾%	1,000,000
Agricultural development	May 20, 1975	1985/2025	¾%	7,000,000
Sierra Leone				
Rural development	April 29, 1975	1985/2025	¾%	5,000,000
Somalia				
Education	August 6, 1974	1984/2024	¾%	8,000,000
Sri Lanka				
Dairy development	July 11, 1974	1984/2024	¾%	9,000,000
Program credit	September 17, 1974	1984/2024	¾%	15,000,000
Development finance company	June 26, 1975	1985/2025	¾%	4,500,000
Sudan				
Education	April 29, 1975	1985/2025	¾%	10,000,000
Power	May 22, 1975	1985/2024	¾%	23,000,000
Irrigation (supplement)	June 26, 1975	1983/2023	¾%	20,000,000
Swaziland				
Education	November 26, 1974	1985/2024	¾%	5,000,000
Tanzania				
Sites and services	July 2, 1974	1984/2024	¾%	8,500,000
Highways	August 6, 1974	1984/2024	¾%	10,200,000
Rural development	August 6, 1974	1984/2024	¾%	10,000,000
Kilombero sugar development	September 5, 1974	1984/2024	¾%	9,000,000
Togo				
Cocoa and coffee development	July 23, 1974	1984/2024	¾%	6,000,000
Upper Volta				
Livestock	May 27, 1975	1985/2025	¾%	9,000,000
Rural roads	June 26, 1975	1985/2025	¾%	7,500,000
Western Samoa				
Highways	March 4, 1975	1985/2025	¾%	4,400,000
Yemen Arab Republic				
Agricultural development	May 6, 1975	1985/2025	¾%	10,000,000
Highways	June 17, 1975	1985/2025	¾%	9,000,000
Water supply and sewerage	June 17, 1975	1985/2025	¾%	8,100,000
Yemen, People's Democratic Republic of				
Fisheries (supplement)	January 28, 1975	1983/2022	¾%	1,600,000
Education	July 11, 1974	1984/2024	¾%	5,400,000
Highways	May 22, 1975	1985/2025	¾%	15,500,000
Zaire				
Highways	February 11, 1975	1985/2024	¾%	26,000,000
Rail and river transportation	June 3, 1975	1985/2025	¾%	26,000,000
TOTAL				$1,576,150,000

Bank/IDA Appendices

Bank and IDA Lending Operations by Major Purpose and Region

Cumulative totals of loans and credits approved, June 30, 1975[1]
(US$ millions)

Purpose[2]	Bank loans to current borrowers by region							IDA credits to current borrowers by region
	Eastern Africa	Western Africa	Europe, Middle East, North Africa	Latin America, Caribbean	East Asia and Pacific	South Asia	Total	Eastern Africa
AGRICULTURE, FORESTRY AND FISHING								
Agricultural credit	$ –	$ 3.5	$ 234.5	$ 128.9	$ 39.5	$ –	$ 406.4	$ 14.6
Area development	27.9	88.0	92.7	246.6	198.0	52.0	705.2	141.7
Food and non-food crops	57.4	202.4	10.0	12.0	–	–	281.8	48.1
Irrigation, flood control and drainage	35.0	17.5	436.2	431.3	333.5	149.0	1,402.5	118.9
Forestry and fishing	24.7	–	37.5	8.7	42.3	–	113.2	16.8
Crop processing and storage	–	–	34.9	84.8	34.3	–	154.0	16.3
Livestock	5.3	32.6	83.0	503.0	7.5	–	631.4	90.9
Agricultural research	–	–	12.7	–	50.0	–	62.7	–
Other	5.6	–	2.3	22.7	–	26.3	56.9	10.0
Subtotal	$ 155.9	$ 344.0	$ 943.8	$1,438.0	$ 705.1	$ 227.3	$ 3,814.1	$ 457.3
EDUCATION	$ 64.0	$ 96.3	$ 233.1	$ 208.4	$ 154.2	$ –	$ 756.0	$ 166.4
INDUSTRY								
Iron and steel	$ –	$ –	$ 185.1	$ 409.0	$ –	$ 189.0	$ 783.1	$ –
Pulp and paper	–	–	40.0	20.0	–	4.2	64.2	2.0
Fertilizer and other chemicals	–	–	102.0	50.0	115.0	176.0	443.0	–
Mining, other extraction	137.5	131.0	73.3	96.8	–	54.5	493.1	2.5
Small industry and industrial estates	–	–	40.0	–	30.0	–	70.0	4.0
Development finance companies	26.0	24.0	1,147.2	263.0	425.5	656.2	2,541.9	49.5
Other	15.0	0.6	209.4	22.5	–	–	247.5	–
Subtotal	$ 178.5	$ 155.6	$1,797.0	$ 861.3	$ 570.5	$1,079.9	$ 4,642.8	$ 58.0
NON-PROJECT	$ 130.0	$ 80.0	$ 168.0	$ 60.0	$ 100.0	$ –	$ 538.0	$ –
POPULATION	$ –	$ –	$ 16.5	$ 5.0	$ 30.0	$ –	$ 51.5	$ 12.0
POWER	$ 397.1	$ 278.2	$1,133.6	$3,202.0	$ 879.8	$ 292.7	$ 6,183.4	$ 35.8
TECHNICAL ASSISTANCE	$ –	$ –	$ 2.8	$ 13.2	$ –	$ –	$ 16.0	$ –
TELECOMMUNICATIONS	$ 101.6	$ 54.3	$ 158.0	$ 255.7	$ 110.3	$ 27.5	$ 707.4	$ 37.4
TOURISM	$ –	$ 9.7	$ 49.6	$ 43.0	$ 25.0	$ –	$ 127.3	$ –
TRANSPORTATION								
Aviation	$ 29.0	$ 3.0	$ –	$ 74.5	$ –	$ 5.6	$ 112.1	$ –
Highways	186.7	181.0	617.5	1,375.1	369.1	39.9	2,769.3	358.2
Pipelines	20.0	–	148.9	23.3	–	116.2	308.4	–
Ports, waterways and shipping	81.3	151.3	475.3	151.1	166.0	109.8	1,134.8	58.0
Railways	197.9	63.2	594.5	646.5	379.7	520.2	2,402.0	30.0
Other	28.0	25.0	–	–	–	–	53.0	–
Subtotal	$ 542.9	$ 423.5	$1,836.2	$2,270.5	$ 914.8	$ 791.7	$ 6,779.6	$ 446.2
URBANIZATION	$ 28.0	$ –	$ 53.0	$ 22.9	$ 56.0	$ –	$ 159.9	$ 19.5
WATER SUPPLY AND SEWERAGE	$ 22.6	$ 23.5	$ 237.4	$ 393.0	$ 156.6	$ –	$ 833.1	$ 4.1
TOTAL	$1,620.6	$1,465.1	$6,629.0	$8,773.0	$3,702.3	$2,419.1	$24,609.0	$1,236.7

[1] Except for the total shown in footnote 4, no account is taken of cancellations and refundings subsequent to original commitment; amounts of cancellations and refundings are shown by country and purpose in the Statements of Loans and of Development Credits, which are available on request. Bank loans of $460 million to IFC are excluded. Due to rounding, totals may not agree with those shown in Appendix 2.

[2] Operations have been classified by the major purpose they finance. Many projects include activity in more than one sector or subsector.

[3] Includes $497 million in European reconstruction loans made before 1952.

[4] Cancellations, terminations, and refundings total $1,059 million. This figure includes $46 million of loans and $176 million of credits made to Pakistan in earlier years for development projects in its former eastern wing, now Bangladesh. The loans and credits were reactivated, in revised form, as commitments to Bangladesh.

Appendix 1

IDA credits by region									
Eastern Africa	Western Africa	Europe, Middle East, North Africa	Latin America, Caribbean	East Asia and Pacific	South Asia	Total	Total Bank and IDA to current borrowers	Bank loans to past borrowers	Total Bank and IDA
$ 14.6	$ 17.0	$ 47.0	$ 18.5	$ 15.5	$ 465.2	$ 577.8	$ 984.2	$ –	$ 984.2
141.7	69.1	20.0	–	14.0	119.0	363.8	1,069.0	12.2	1,081.2
48.1	64.8	15.0	–	121.8	–	249.7	531.5	–	531.5
118.9	28.5	175.4	18.5	121.2	398.0	860.5	2,263.0	59.8	2,322.8
16.8	1.3	7.1	–	10.0	24.0	59.2	172.4	7.0	179.4
16.3	–	–	–	–	101.2	117.5	271.5	40.0	311.5
90.9	36.3	29.5	53.5	10.6	83.1	303.9	935.3	–	935.3
–	–	–	–	–	–	–	62.7	–	62.7
10.0	14.0	–	–	–	–	24.0	80.9	–	80.9
$ 457.3	$231.0	$294.0	$ 90.5	$293.1	$1,190.5	$2,556.4	$ 6,370.5	$ 119.0	$ 6,489.5
$ 166.4	$ 95.9	$ 68.8	$ 24.1	$ 91.4	$ 49.5	$ 496.1	$ 1,252.1	$ 12.9	$ 1,265.0
$ –	$ –	$ –	$ –	$ –	$ –	$ –	$ 783.1	$ 156.2	$ 939.3
2.0	–	–	–	–	–	2.0	66.2	–	66.2
–	–	21.4	–	35.0	262.0	318.4	761.4	–	761.4
2.5	–	–	–	–	–	2.5	495.6	–	495.6
4.0	–	2.3	–	16.5	9.5	32.3	102.3	–	102.3
49.5	–	52.0	6.2	25.0	79.5	212.2	2,754.1	32.8	2,786.9
–	–	18.7	–	–	–	18.7	266.2	184.1	450.3
$ 58.0	$ –	$ 94.4	$ 6.2	$ 76.5	$ 351.0	$ 586.1	$ 5,228.9	$ 373.1	$ 5,602.0
$ –	$ –	$ 35.0	$ –	$ –	$1,525.0	$1,560.0	$ 2,098.0	$1,115.1[3]	$ 3,213.1
$ 12.0	$ –	$ 9.8	$ –	$ 13.2	$ 36.2	$ 71.2	$ 122.7	$ –	$ 122.7
$ 35.8	$ 17.1	$ 40.9	$ 50.3	$111.0	$ 268.0	$ 523.1	$ 6,706.5	$ 796.7	$ 7,503.2
$ –	$ –	$ –	$ –	$ 15.0	$ 6.0	$ 21.0	$ 37.0	$ –	$ 37.0
$ 37.4	$ 8.9	$ 30.0	$ –	$ 12.8	$ 375.7	$ 464.8	$ 1,172.2	$ 27.8	$ 1,200.0
$ –	$ –	$ 10.0	$ –	$ 16.0	$ 4.2	$ 30.2	$ 157.5	$ –	$ 157.5
$ –	$ 5.0	$ 2.5	$ –	$ –	$ –	$ 7.5	$ 119.6	$ 16.2	$ 135.8
358.2	202.5	86.5	113.3	88.4	110.4	959.3	3,728.6	457.1	4,185.7
–	–	–	–	–	–	–	308.4	–	308.4
58.0	6.0	–	–	19.9	163.7	247.6	1,382.4	49.8	1,432.2
30.0	34.9	38.5	8.0	40.0	459.2	610.5	3,012.6	295.3	3,307.9
–	–	–	–	–	–	–	53.0	–	53.0
$ 446.2	$248.4	$127.5	$121.3	$148.3	$ 733.3	$1,825.0	$ 8,604.6	$ 818.4	$ 9,423.0
$ 19.5	$ 8.0	$ 9.3	$ 26.0	$ –	$ 35.0	$ 97.8	$ 257.7	$ –	$ 257.7
$ 4.1	$ 13.9	$ 63.1	$ 3.0	$ 4.4	$ 114.6	$ 203.1	$ 1,036.2	$ 2.0	$ 1,038.2
$1,236.7	$623.2	$782.8	$321.4	$781.7	$4,689.0	$8,434.8	$33,043.9	$3,265.0	$36,308.9[4]

Approved Bank and IDA Lending Operations by Country

Cumulative total, June 30, 1975
(US dollars)

	Bank loans		IDA credits		TOTAL	
	Number[1]	Amount	Number[1]	Amount	Number[1]	Amount
Afghanistan	–	$ –	10	$ 65,500,000	10	$ 65,500,000
Algeria	10	310,500,000	–	–	10	310,500,000
Argentina	9	532,300,000	–	–	9	532,300,000
Australia	7	417,730,000	–	–	7	417,730,000
Austria	9	106,336,429	–	–	9	106,336,429
Bangladesh[2]	1	46,189,500	30	467,994,965	31	514,184,465
Belgium	4	76,000,000	–	–	4	76,000,000
Bolivia	2	55,250,000	10	60,300,000	12	115,550,000
Botswana	3	41,500,000	6	15,750,000	9	57,250,000
Brazil	54	2,316,690,000	–	–	54	2,316,690,000
Burma	3	33,350,000	5	95,000,000	8	128,350,000
Burundi	1	4,800,000	4	8,280,000	5	13,080,000
Cameroon	10	97,900,000	6	85,450,000	16	183,350,000
Central African Republic	–	–	3	12,400,000	3	12,400,000
Chad[8]	–	–	6	24,200,000	6	24,200,000
Chile	20	268,200,000	–	19,000,000	20	287,200,000
China, Republic of	14	329,400,000	4	15,300,000	18	344,700,000
Colombia	61	1,216,280,000	–	19,500,000	61	1,235,780,000
Congo, People's Republic of the	1	30,000,000	6	22,130,000	7	52,130,000
Costa Rica	18	190,100,000	–	5,500,000	18	195,600,000
Cyprus	10	77,100,000	–	–	10	77,100,000
Dahomey	–	–	5	30,600,000	5	30,600,000
Denmark	3	85,000,000	–	–	3	85,000,000
Dominican Republic	3	54,000,000	3	22,000,000	6	76,000,000
East African Common Services Authority[3]	9	229,800,000	–	–	9	229,800,000
Ecuador	13	120,100,000	5	36,900,000	18	157,000,000
Egypt, Arab Republic of	5	218,500,000	10	216,075,000	15	434,575,000
El Salvador	13	114,985,000	2	19,600,000	15	134,585,000
Equatorial Guinea	–	–	1	2,000,000	1	2,000,000
Ethiopia	12	108,600,000	20	260,100,000	32	368,700,000
Fiji	3	18,200,000	–	–	3	18,200,000
Finland	18	316,779,464	–	–	18	316,779,464
France	1	250,000,000	–	–	1	250,000,000
Gabon	6[4]	69,300,000	–	–	6	69,300,000
Gambia, The	–	–	3	5,800,000	3	5,800,000
Ghana	3	76,000,000	11	86,500,000	14	162,500,000
Greece	10	234,800,000	–	–	10	234,800,000
Guatemala	7	92,500,000	–	–	7	92,500,000
Guinea	3	75,200,000	1	7,000,000	4	82,200,000
Guyana	7	41,450,000	2	13,500,000	9	54,950,000
Haiti	1	2,600,000	3	30,350,000	4	32,950,000
Honduras	14	127,450,000	3	34,200,000	17	161,650,000
Iceland	10	47,014,000	–	–	10	47,014,000
India	44	1,536,610,000	71	3,441,700,000	115	4,978,310,000
Indonesia	8	380,000,000	38	561,800,000	46	941,800,000
Iran	33	1,210,700,000	–	–	33	1,210,700,000
Iraq	6	156,200,000	–	–	6	156,200,000
Ireland	7	122,500,000	–	–	7	122,500,000
Israel	11	284,500,000	–	–	11	284,500,000
Italy	8	399,628,000	–	–	8	399,628,000
Ivory Coast[5]	16	206,800,000	1	7,500,000	17	214,300,000
Jamaica	14	143,200,000	–	–	14	143,200,000
Japan	31	862,900,000	–	–	31	862,900,000
Jordan	–	–	12	61,300,000	12	61,300,000
Kenya	15	220,300,000	15	148,300,000	30	368,600,000
Korea, Republic of	20	800,000,000	6	110,800,000	26	910,800,000
Lebanon	3	66,600,000	–	–	3	66,600,000
Lesotho	–	–	3	13,700,000	3	13,700,000
Liberia	9	30,850,000	2	11,000,000	11	41,850,000
Luxembourg	1	12,000,000	–	–	1	12,000,000

Appendix 2

	Bank loans		IDA credits		TOTAL	
	Number[1]	Amount	Number[1]	Amount	Number[1]	Amount
Malagasy Republic	5	$ 32,850,000	6	$ 83,550,000	11	$ 116,400,000
Malawi	–	–	13	85,590,000	13	85,590,000
Malaysia	29	630,100,000	–	–	29	630,100,000
Mali[5] [8]	–	–	9	83,200,000	9	83,200,000
Malta	1	7,500,000	–	–	1	7,500,000
Mauritania[8]	1	66,000,000	6	24,250,000	7	90,250,000
Mauritius	4	25,500,000	4	20,200,000	8	45,700,000
Mexico	41	2,220,100,000	–	–	41	2,220,100,000
Morocco	20	483,800,000	3	50,800,000	23	534,600,000
Nepal	–	–	7	33,700,000	7	33,700,000
Netherlands	8	244,000,000	–	–	8	244,000,000
New Zealand	6	126,800,000	–	–	6	126,800,000
Nicaragua	19	112,750,000	2	23,000,000	21	135,750,000
Niger[8]	–	–	5	22,104,000	5	22,104,000
Nigeria	27	760,400,000	2	35,500,000	29	795,900,000
Norway	6	145,000,000	–	–	6	145,000,000
Oman	2	8,450,000	–	–	2	8,450,000
Pakistan[6]	33	708,860,500	25	592,113,035	58	1,300,973,535
Panama	11	142,690,000	–	–	11	142,690,000
Papua New Guinea	5	55,500,000	4	25,200,000	9	80,700,000
Paraguay	8	46,850,000	5	37,500,000	13	84,350,000
Peru	27	339,025,000	–	–	27	339,025,000
Philippines	30	648,900,000	1	32,200,000	31	681,100,000
Portugal	5	57,500,000	–	–	5	57,500,000
Romania	5	290,000,000	–	–	5	290,000,000
Rwanda	–	–	5	30,400,000	5	30,400,000
Senegal[5] [8]	8	33,750,000	12	82,050,000	20	115,800,000
Sierra Leone	4	18,700,000	2	15,800,000	6	34,500,000
Singapore	14	181,300,000	–	–	14	181,300,000
Somalia	–	–	8	52,900,000	8	52,900,000
South Africa	11	241,800,000	–	–	11	241,800,000
Southern Rhodesia	5[7]	86,950,000	–	–	5	86,950,000
Spain	11	460,700,000	–	–	11	460,700,000
Sri Lanka	8	93,910,000	6	58,400,000	14	152,310,000
Sudan	6	134,000,000	10	173,450,000	16	307,450,000
Swaziland	4	17,450,000	2	7,800,000	6	25,250,000
Syrian Arab Republic	3	168,600,000	3	47,300,000	6	215,900,000
Tanzania	8	122,200,000	18	168,000,000	26	290,200,000
Thailand	30	658,900,000	3	32,000,000	33	690,900,000
Togo	–	–	3	18,400,000	3	18,400,000
Trinidad and Tobago	11	97,800,000	–	–	11	97,800,000
Tunisia	22	266,450,000	5	69,800,000	27	336,250,000
Turkey	28	909,400,000	10	178,500,000	38	1,087,900,000
Uganda	1	8,400,000	7	44,300,000	8	52,700,000
Upper Volta[5] [8]	–	–	9	47,200,000	9	47,200,000
Uruguay	11	155,200,000	–	–	11	155,200,000
Venezuela	13	383,300,000	–	–	13	383,300,000
Western Samoa	–	–	1	4,400,000	1	4,400,000
Yemen Arab Republic	–	–	8	65,250,000	8	65,250,000
Yemen, People's Democratic Republic of	–	–	5	28,160,000	5	28,160,000
Yugoslavia	33	1,142,100,000	–	–	33	1,142,100,000
Zaire	6	220,000,000	10	124,000,000	16	344,000,000
Zambia	17	455,150,000	–	–	17	455,150,000
TOTAL	1,151	$27,873,327,893	526	$8,434,047,000	1,677	$36,307,374,893

[1] Joint Bank/IDA operations are counted only once, as Bank operations. When more than one loan is made for a single project, they are counted only once.

[2] Includes $175,826,965 in IDA amount and 19 IDA credits which replace commitments originally made to Pakistan. Also includes $46,189,500 in Bank amount and 1 Bank loan which replace commitments originally made to Pakistan.

[3] Jointly guaranteed by Kenya, Tanzania, and Uganda.

[4] One of these loans, of $35 million, is jointly guaranteed by Congo (People's Republic of the), France, and Gabon.

[5] One loan for $7.5 million shown against Ivory Coast is shared with Mali, Senegal, and Upper Volta.

[6] Excludes $175,826,965 in IDA amount and 19 IDA credits which were replaced by commitments made to Bangladesh. Also excludes $46,189,500 in Bank amount and 1 Bank loan which were replaced by commitments made to Bangladesh.

[7] Two of these loans, totaling $37 million, have been assigned in equal shares to Southern Rhodesia and Zambia but are counted only once, against Southern Rhodesia.

[8] One operation, involving credits for a total of $14 million, is shared by the following countries: Chad–$2 million; Mali–$2.5 million; Mauritania–$2.5 million; Niger–$2 million; Senegal–$3 million; Upper Volta–$2 million. Amounts are included in each country's total, and the operation is counted only once, against Senegal.

Administrative Budgets of the Bank and IDA

Appendix 3

For the Fiscal Year ending June 30, 1976

	Actual expenses 1975	Budget 1976
	(Thousands of US dollars)	
BY ORGANIZATION UNIT		
Board of Governors	1,052	1,134
Development Committee	209	365[1]
Executive Directors	5,066	5,863
Executive Offices	789	884
Regional Offices	69,498	86,636
Central Projects Staff	18,416	22,789
Cooperative Programs—FAO, Unesco, WHO, and UNIDO	4,995	6,663
Development Policy Staff	16,527	18,503
Financial Staff	9,510	11,232
Audit and Evaluation	1,565	2,118
Legal and Secretary's	3,748	4,472
External Relations	3,726	4,615
Economic Development Institute	3,789	4,943
Organization Planning & Personnel Management	17,225	20,104
European and Tokyo Offices	2,230	2,489
Grants for consultants to member countries	291	490
Consultative Group for Food Production and Investment	39	212
Settlement of Investment Disputes, ICSID	158	187
Contingency allowance	—	5,259
Funding of uncovered liabilities in Staff Retirement Plan	4,147	4,159
TOTAL	162,980	203,117
Less: Reimbursements	−3,986	−10,498
IFC service and support fee	−1,455	− 1,485
TOTAL IBRD/IDA	157,539	191,134
BY EXPENSE CATEGORY		
Personal services	99,682	120,951
Operational travel	17,586	21,745
Representation	480	593
Consultants	11,237[2]	15,618[2]
Contractual services	5,223	6,325
Overhead expenses:		
Other travel	7,885	9,111
Office occupancy	8,742	9,610
Communications	3,266	3,660
Other expenses	4,732	6,086
Contingency	—	5,259
Funding of uncovered liabilities in Staff Retirement Plan	4,147	4,159
TOTAL	162,980	203,117
Less: Reimbursements	−3,986	−10,498[3]
IFC service and support fee	−1,455	− 1,485[4]
TOTAL IBRD/IDA	157,539	191,134
Of which: IBRD	109,937	126,148
IDA	47,602[5]	64,986[5]

The Administrative Budgets for the fiscal year ending June 30, 1976, were prepared by the President and approved by the Executive Directors in accordance with the By-Laws of the Bank and IDA. For purposes of comparison, the administrative expenses incurred during the fiscal year ended June 30, 1975, are also shown.

[1] This figure represents the Bank's share (approximately 50%) of the cost of the Committee.

[2] The figures shown include the costs of the Cooperative Programs.

[3] Includes an estimated $5,341,000 to be received for technical assistance to be provided to petroleum exporting countries.

[4] In fiscal 1976, general assistance rendered by the Bank to IFC will be paid for by a service and support fee, which has been established for the year at $1,485,000.

[5] The Association reimburses the Bank a single management fee for administrative expenses incurred on its behalf. The management fee, which comprises the Association's budget for the year, has been established at $64,986,000 for the fiscal year ending June 30, 1976.

Governors and Alternates of the Bank and IDA

Appendix 4

June 30, 1975

Member	Governor	Alternate
Afghanistan	Fazal Haque Khaliqyar	Mahammed Sarwar Haidar
Algeria	Ismail Mahroug	Rachid Hassam
Argentina	Celestino Rodrigo	Ricardo Antonio Cairoli
Australia	W. G. Hayden	Sir John Phillips
Austria	Hannes Androsch	Walter Neudörfer
Bahamas[1]	Arthur D. Hanna	Reginald L. Wood
Bahrain[1]	Mahmood Al-Alawi	Yusuf Ahmed Shirawi
Bangladesh	Nurul Islam	Kafiluddin Mahmood
Barbados[1]	Errol W. Barrow	Stephen E. Emtage
Belgium	Willy De Clercq	Cecil de Strycker
Bolivia	Victor Castillo Suárez	Manuel Mercado Montero
Botswana	Q. K. J. Masire	F. G. Mogae
Brazil	Mário Henrique Simonsen	Paulo H. Pereira Lira
Burma	U Lwin	U Chit Moung
Burundi	Gabriel Mpozagara	Jean Ndimurukundo
Cambodia	Khy Taing Lim	Hak Hèm Say
Cameroon	Abdoulaye Maikano	Ahmadou Bello
Canada	John N. Turner	Paul Gérin-Lajoie
Central African Republic	Jean Paul Mokodopo	Joseph Moutou-Mondziaou
Chad	Abdoulaye Lamana	Mahamat Farris
Chile	Raúl Sáez Sáez	Jorge Cauas Lama
China	Kwoh-Ting Li	Chun-Heng Tu
Colombia	Rodrigo Botero Montoya	Germán Botero de los Rios
Congo, People's Republic of the	Saturnin Okabe	Daniel Obel
Costa Rica	Porfirio Morera Batres	Bernal Jiménez
Cyprus	Andreas C. Patsalides	A. C. Afxentiou
Dahomey	Augustin Honvoh	Abou Baba-Moussa
Denmark	Ivar Norgaard	Wilhelm Ulrichsen
Dominican Republic	Diógenes H. Fernández	Luis M. Guerrero Gómez
Ecuador	Jaime Moncayo García	Guillermo Maldonado Lince
Egypt, Arab Republic of	Mohamed Zaki Shafei	Rafik Sowelem
El Salvador	Rigoberto Antonio Martínez Renderos	Atilio Vieytez
Equatorial Guinea	Andrés Nko Ivasa	(vacant)
Ethiopia	Negash Desta	Teferra Wolde-Semait
Fiji	C. A. Stinson	Savenaca Siwatibau
Finland	Heikki Tuominen	Osmo Kalliala
France	Minister of Finance	Marcel Théron
Gabon	Michel Anchouey	J. Félix Mamalepot
Gambia, The	S. M. Dibba	T. G. G. Senghore
Germany, Federal Republic of	Hans Apel	Egon Bahr
Ghana	I. K. Acheampong	K. D. Fordwor
Greece	Panayiotis Papaligouras	Evangelos Devletoglou
Guatemala	Eduardo Palomo E.	Jorge Lamport Rodil
Guinea	N'Faly Sangaré	Momory Camara
Guyana	F. E. Hope	Harold Wilkinson
Haiti	Emmanuel Bros	Antonio André
Honduras	Porfirio Zavala Sandoval	(vacant)
Iceland	Olafur Johannesson	Matthias A. Mathiesen
India	C. Subramaniam	M. G. Kaul
Indonesia	Rachmat Saleh	Julianto Moeliodihardjo
Iran	Hushang Ansary	Jahangir Amuzegar
Iraq	Sa'adi Ibrahim	(vacant)
Ireland	Richie Ryan	C. H. Murray
Israel	Moshe Sanbar	Arnon Gafni[2]
Italy	Guido Carli	Paolo Baffi
Ivory Coast	Henri Konan Bédié	Abdoulaye Kone
Jamaica[1]	David H. Coore	G. Arthur Brown
Japan	Masayoshi Ohira	Teiichiro Morinaga
Jordan	Hanna Odeh	Hashim Dabbas
Kenya	Mwai Kibaki	Nicholas Nganga
Korea, Republic of	Yong Hwan Kim	Sung Whan Kim
Kuwait	Abdul Rahman Salim Al-Ateeqi	Abdlatif Y. Al-Hamad
Laos	Oudong Souvannavong	Houan Lianmongkhol

(continued)

Governors and Alternates of the Bank and IDA (continued)

June 30, 1975

Member	Governor	Alternate
Lebanon	Khalil Salem	Farid Solh
Lesotho	E. R. Sekhonyana	S. Montsi
Liberia	Edwin Williams	D. Franklin Neal
Libyan Arab Republic	Mohammad Zarrough Ragab	Nuri A. Baryun
Luxembourg	Raymond Vouel	Albert Dondelinger
Malagasy Republic	Raymond Randriamandranto	Céline Rabekoriana Rabevazaha
Malawi	D. T. Matenje	C. W. Collins
Malaysia	Hussein bin Onn	Abdullah bin Ayub
Mali	Sékou Sangaré	Mahamar Oumar Maiga
Mauritania	Sidi Ould Cheikh Abdallahi	Ibrahima A. Ba
Mauritius	Kehar Singh Jagatsingh	Bramduth Ghoorah
Mexico	José López Portillo	Gustavo Romero Kolbeck
Morocco	Abdelkader Benslimane	Mustapha Faris
Nepal	Bhekh B. Thapa	B. B. Prad[illegible]
Netherlands	W. F. Duisenberg	J. P. Pronk
New Zealand	H. G. Lang	N. V. Lough
Nicaragua	Guillermo Sevilla-Sacasa	Juan José Martínez L.
Niger	Alfidja Abderrahmane	Annou Mahaman
Nigeria	Shehu Shagari	A. A. Ayida
Norway	Per Kleppe	Christian Brinch
Oman	Qais Zawawi[2]	Sherif Lotfy[2]
Pakistan	Rana Mohammad Hanif Khan	A. G. N. Kazi
Panama	Nicolás Ardito Barletta	Miguel A. Sanchiz
Paraguay	César Romeo Acosta	Augusto Colmán V.
Peru	Amilcar Vargas Gavilano	Luis Barúa Castañeda
Philippines	Cesar E. A. Virata	Alejandro Melchor, Jr.
Portugal[1]	José Joaquím Fragoso	Mário José Brandão Ferreira
Qatar[1]	Abdul Aziz Al-Thani	Madhat Abdul Latif Masud
Romania[1]	Florea Dumitrescu	Mihai Diamandopol
Rwanda	Denis Ntirugirimbabazi	Célestin Ndagijimana
Saudi Arabia	Ahmed Zaki Saad	(vacant)
Senegal	Ousmane Seck	Famara Ibrahima Sagna
Sierra Leone	C. A. Kamara-Taylor	B. Strasser-King
Singapore[1]	Hon Sui Sen	Howe Yoon Chong
Somalia	Abdurahman Nur Herzi	Mohamud Jama Ahmed
South Africa	T. W. de Jongh	G. P. C. de Kock
Spain	José Luis Ceron Ayuso	Luis Coronel de Palma
Sri Lanka	N. M. Perera	(vacant)
Sudan	Mamoun Beheiry	Awad Ahmed Khalifa
Swaziland	James Nxumalo	V. E. Sikhondze
Sweden	G. E. Sträng	Kjell-Olof Feldt
Syrian Arab Republic	Mohammed El Charif	Abdul Hadi Nehlawi
Tanzania	W. K. Chagula	Kighoma Ally Malima
Thailand	Boonchu Rojanastien	Abhijai Jaiwatana
Togo	Henri Dogo	Damien Eklu-Natey
Trinidad and Tobago	G. M. Chambers	F. B. Rampersad
Tunisia	Mustapha Zaanouni	Rachid Sfar
Turkey	Yilmaz Ergenekon	Ihsan Ozol
Uganda	Semyano Kiingi	Jino Geria
United Arab Emirates[1]	Hamdan Bin Rashid Al Maktoom	S. A. Wissa
United Kingdom	Gordon Richardson	Sir Douglas Wass
United States	William E. Simon	Charles W. Robinson
Upper Volta	Antoine Dakouré	Pierre Tapita
Uruguay[1]	Alejandro Vegh Villegas	Juan Eduardo Azzini
Venezuela[1]	Gumersindo Rodríguez	Hector Hurtado
Viet-Nam	Le-Quang-Uyen	Nguyên Van Dong
Western Samoa	F. P. S. Saili	Kolone Vaai
Yemen Arab Republic	Abdul Karim El-Eryani	Abdulla Al-Sanabani
Yemen, People's Democratic Republic of	Fadhle Mohsin Abdulla	Faraj Saeed Bin Ghanem
Yugoslavia	Momcilo Cemović	Miodrag Stojiljković
Zaire	Bofossa w'Amb'ea Nkoso	Mbeka Makosso
Zambia	A. B. Chikwanda	L. J. Mwananshiku

[1] Member of the Bank only.
[2] Appointment effective after June 30, 1975.

Officers and Department Directors of the Bank and IDA

Appendix 5

July 1, 1975

President	Robert S. McNamara
Senior Vice President, Operations	J. Burke Knapp
Vice President and General Counsel	A. Broches
Vice President, Finance	I. P. M. Cargill
Vice President, Organization Planning and Personnel Management	Bernard Chadenet
Vice President, Development Policy	Hollis B. Chenery
Vice President, External Relations	William D. Clark
Vice President	Mohamed Shoaib
Vice President, Projects Staff	Warren C. Baum
Regional Vice President, East Asia and Pacific	Bernard R. Bell
Regional Vice President, Europe, Middle East and North Africa	Munir P. Benjenk
Regional Vice President, Western Africa	Roger Chaufournier
Regional Vice President, Eastern Africa	S. Shahid Husain
Regional Vice President, Latin America and the Caribbean	Adalbert Krieger
Regional Vice President, South Asia	Mervyn L. Weiner
Director, Programming and Budgeting Department	John H. Adler
Secretary	P.N. Damry
Controller	K. Georg Gabriel
Treasurer	Eugene H. Rotberg

Director, Regional Projects Department, Eastern Africa	Hans A. Adler
Senior Adviser, Office of the Senior Vice President, Operations	Gerald Alter
Director, Education Department	Duncan S. Ballantine
Director, Country Programs Department II, Europe, Middle East and North Africa	Maurice P. Bart
Director, European Office	Jean P. Carrière
Director, Personnel Department	R. A. Clarke
Director, Country Programs Department II, Western Africa	F. X. de la Renaudière
Director, Country Programs Department, South Asia	William Diamond
Director, Development Research Center	John H. Duloy
Special Representative for Inter-American Organizations	Luis Escobar
Director, Industrial Projects Department	Hans Fuchs
Director, Financial Policy	Raymond J. Goodman
Director, Resident Staff in Indonesia	David L. Gordon
Special Representative for United Nations Organizations	Julian P. Grenfell
Director, Development Economics Department	Ravi Gulhati
Director, Development Finance Companies Department	Douglas Gustafson
Director, Policy Planning and Program Review Department	Mahbub ul Haq
Director, International Relations Department	Michael L. Hoffman
Director, Transportation and Urban Projects Department	Edward V. K. Jaycox
Director, Economic Development Institute	Andrew M. Kamarck
Director, Population and Nutrition Projects Department	K. Kanagaratnam
Director, Organization Planning Department	James M. Kearns
Director, Regional Projects Department, East Asia and Pacific	Syed Salar Kirmani
Director, Regional Projects Department, Latin America and the Caribbean	A. David Knox
Special Adviser to the President, Office of the Vice President, Finance	Mohamed Nassim Kochman
Executive Secretary, Consultative Group on International Agricultural Research	Michael L. Lejeune
Director, Country Programs Department I, Latin America and the Caribbean	Enrique Lerdau
Director, Tokyo Office	Tarao Maeda
Director, Information and Public Affairs Department	John E. Merriam
Director, Computing Activities Department	Mervin E. Muller
Associate General Counsel	Lester Nurick
Director, Country Programs Department I, Europe, Middle East and North Africa	Martijn J. W. M. Paijmans
Director, Country Programs Department I, Eastern Africa	Stanley Please
Director, Internal Auditing Department	Lawrence N. Rapley
Director, Public Utilities Department	Yves Rovani
Director, Special Studies, East Asia and Pacific	Robert Sadove
Director, Development Policy	Ernest Stern
Director, Regional Projects Department, Western Africa	Wilfried P. Thalwitz
Director, Economic Analysis and Projections Department	Wouter Tims
Director, Tourism Projects Department	Stokes M. Tolbert
Director, Administrative Services Department	James E. Twining, Jr.
Director, Regional Projects Department, South Asia	Suitbertus L. M. van der Meer
Director, Projects Advisory Staff	Herman G. van der Tak
Director, Country Programs Department, East Asia and Pacific	Gregory B. Votaw
Director, Regional Projects Department, Europe, Middle East and North Africa	Willi A. Wapenhans
Director, Country Programs Department II, Eastern Africa	Michael H. Wiehen
Director, Country Programs Department II, Latin America and the Caribbean	Gunter K. Wiese
Director, Operations Evaluation Department	Christopher R. Willoughb,
Director, Country Programs Department I, Western Africa	E. Peter Wright
Director, Agriculture and Rural Development Department	Montague Yudelman

World Bank Offices

Headquarters: 1818 H Street, N.W., Washington, D.C. 20433, U.S.A.

New York Offices: c/o United Nations, Room 2245, Secretariat Buildings, New York, N.Y. 10017
120 Broadway (15th Floor), New York, N.Y. 10005, U.S.A.

European Office: World Bank, 66, avenue d'Iéna, 75116 Paris, France

London Office: World Bank, New Zealand House (15th Floor), Haymarket, London, SW1 Y4TE, England

Tokyo Office: World Bank, Kokusai Building, 1-1 Marunouchi 3-chome, Chiyoda-ku, Tokyo 100, Japan

Eastern Africa: World Bank Regional Mission, Extelcoms House, Haile Selassie Avenue, Nairobi, Kenya; mailing address—P.O. Box 30577

Western Africa: World Bank Regional Mission, Immeuble Shell, 64, avenue Lamblin, Abidjan, Ivory Coast; mailing address—B.P. 1850

Afghanistan: World Bank Resident Mission, P.O. Box 211, Kabul, Afghanistan

Bangladesh: World Bank Resident Mission, Bangladesh Bank Building (4th Floor), Motijheel Commercial Area, G.P.O. Box 97, Dacca, Bangladesh

Cameroon: World Bank Resident Mission, B.P. 1128, Yaoundé, Cameroon

Colombia: Resident Mission Banco Mundial, Edificio Aseguradora del Valle, Carrera 10 No. 24-55, Piso 17, Bogotá D.E., Colombia

Ethiopia: World Bank Resident Mission, I.B.T.E. New Telecommunications Building (First Floor), Churchill Road, Addis Ababa, Ethiopia; mailing address—IBRD Mission, P.O. Box 5515

Ghana: World Bank Resident Mission, c/o Royal Guardian Exchange Assurance Building, Head Office, High Street (5th Floor), Accra, Ghana; mailing address—P.O. Box M27

India: World Bank Resident Mission, 53 Lodi Estate, New Delhi 3, India; mailing address—P.O. Box 416

Indonesia: World Bank Resident Staff, Jalan Wahid Hasyim 100/102, Jakarta, Indonesia; mailing address—P.O. Box 324/JKT

Nepal: World Bank (IBRD) Resident Mission, R.N.A.C. Building (First Floor), Kathmandu, Nepal; mailing address—P.O. Box 798

Nigeria: World Bank Resident Mission, 30 Macarthy Street, Lagos, Nigeria; mailing address—P.O. Box 127

Pakistan: World Bank Resident Mission, P.O. Box 1025, Islamabad, Pakistan

Sudan: World Bank Resident Mission, 28 Block 2H, Baladia Street, Khartoum, Sudan; mailing address—P.O. Box 2211

Tanzania: World Bank Resident Mission, N.I.C. Building (7th Floor, B), Dar es Salaam, Tanzania; mailing address—P.O. Box 2054

Thailand: World Bank Regional Mission, Udom Vidhya Building, 956 Rama IV Road, Sala Daengh, Bangkok 5, Thailand

Upper Volta: World Bank Resident Mission, B.P. 622, Ouagadougou, Upper Volta

Venezuela: World Bank Resident Mission, Centro Andres Bello, Avenida Andres Bello, 113-E, Mariperez, Caracas, Venezuela

Zaire: World Bank Resident Mission, Building UZB, avenue des Aviateurs, Kinshasa I, Republic of Zaire; mailing address—P.O. Box 14816

Zambia: World Bank Resident Mission, P.O. Box 4410, Lusaka, Zambia

World Bank
Headquarters:
1818 H Street, N.W.
Washington, D.C. 20433, U.S.A.
Telephone: (202) 393-6360
Cable Address: INTBAFRAD
WASHINGTONDC

The World Bank: A Financial Appraisal

By Eugene H. Rotberg
Treasurer, The World Bank

May 1976

THE WORLD BANK: A FINANCIAL APPRAISAL

By
Eugene H. Rotberg
Treasurer
The World Bank

May 1976

THE WORLD BANK: A FINANCIAL APPRAISAL*

The World Bank is looked upon by most observers as an international agency, owned by governments, whose function is to finance economic growth and productivity in its developing member countries. The Bank, formally known as the International Bank for Reconstruction and Development, primarily finances its lending operations through the offer and sale of its debt obligations to private investors, governments, and their instrumentalities. The Bank's capital, which is subscribed by member countries, its retained earnings, and the flow of repayments on its loans also substantially contribute to the Bank's resources.

From time to time, financial commentators have asked whether there is a conflict between the Bank's role as a development institution and its responsibilities to its creditors and to its member-country shareholders. The point of my remarks here is straightforward: Although the Bank has several "constituencies," there is no conflict between our development efforts on the one hand, and the interests of either our shareholders or bondholders on the other. Development requires that we have access to funds from governments and from the private market—in the form of paid-in capital, guarantees, and borrowed money.

The fact is that creditors and stockholders insist on prudent financial policies as a condition for the development efforts of the Bank. So do our borrowers. Viable projects, attention to creditworthiness, assessment of risk, adequate liquidity and reserves, are required by the management of the Bank and by its creditors and stockholders. There is nothing in that list which is inconsistent with our development efforts or with the needs or aspirations of the developing world. Thus, underlying the Bank's development activities is a market-based institution which attracts funds from governments and capital markets for projects that make sense in our less developed member countries.

In order to do its job, the Bank maintains financial and lending policies and practices that satisfy the demands of the marketplace. I would like to discuss four principal areas with you: first, our liquidity

*This pamphlet is a summary of informal remarks made in seminars and information meetings concerning the financial operations of the World Bank.

policy; second, our borrowing program; third, our capital structure; and, fourth, our lending policies. Finally, I will comment briefly on the role of our affiliate, the International Development Association (IDA).

Liquidity Policy

First, as to our liquidity: At December 31, 1975, the World Bank's short-term liquid assets—its "cash" position if you will—aggregated over $6 billion. That was equal to 45 percent of its then outstanding debt. It represented an increase of about $1.6 billion over similar holdings at the end of December 1974, when liquid assets equalled 41 percent of indebtedness. Eight years earlier, short-term liquid assets were about $1.2 billion and represented 31 percent of indebtedness at the time. The reason for the sizable liquid position and its increase is that the Bank wants to maintain short-term liquid assets at a level that can adequately meet all of its requirements, without the need to borrow new funds for prolonged periods of time—thus making it independent of adverse conditions in the capital market.

These short-term assets are primarily held in U.S. dollars. They are fully invested, liquid, and marketable. They include government and quasi-government obligations, along with certificates of deposit and time deposits with commercial banks throughout the world. All are readily available to meet financial requirements—both for the service on our debt and disbursements on loans, which together comprise the principal demand on the Bank's cash resources. The Bank contemplates that its liquidity will rise to between $7 billion and $8 billion by 1980.

The Bank systematically has built up its liquidity position by borrowing substantially in excess of its current requirements at times when funds were obtainable at what we considered reasonable costs and terms to maturity. Thus, the Bank borrows funds, when available, in anticipation of future requirements. We do not wait until we need resources to meet requirements. Rather, we anticipate our requirements and build up liquidity in anticipation of those requirements.

Questions have been raised concerning the costs of this policy and the reasons for it. The advantage is simply that if we do not wish to borrow resources because of the high level of interest rates or the maturities available, we would draw down our liquidity to meet our requirements until market conditions stabilized. In short, our liquidity position gives us the flexibility to decide where, how much, at what cost and on what terms to maturity we will borrow, rather than have our requirements leave us no alternative but to borrow. The cost of carrying liquidity represents the spread between the return on

these investments and our marginal borrowing costs. Suffice it to note here that the Bank's liquid investments are managed with a view to maximizing the overall financial return on the assets. Historically, that policy has resulted in a minimal cost of carrying liquidity.

If it appeared that because of an expectation of prolonged instability in world capital markets, our liquidity might decline to an unacceptable level, the Bank could reduce its lending program. While we would regard such action as inconsistent with our role as a development institution, the interests and protection of holders of our obligations would be of overriding importance. So far, no such measures have been required, nor do we expect that they will be needed in the future. The point, however, is that our first line of prudence is to have more—much more—liquid resources than we currently need which can be drawn down when market conditions are unstable. If instability were to continue for long periods, the Bank has and would use the option of reducing its commitments, i.e., its lending program.

Borrowing Program

The Bank's liquidity policy is closely linked to its borrowing program and policies. First, however, you may be interested in some facts and data. In the fiscal year 1967,* the Bank issued $729 million of its obligations. In fiscal 1975, the Bank issued five-fold that amount—$3.5 billion. Outstanding debt at December 31, 1975, was almost $13.7 billion, compared with about $3.8 billion eight years earlier. In fiscal 1976, the Bank will borrow approximately $4 billion and expects to borrow a similar amount in fiscal 1977.

In order to avoid undue dependence on one market, the Bank, over the years, has worked to make its obligations acceptable to investors all over the world. It has succeeded. Our issues are now held by investors in 91 countries in Africa, Asia, Australasia, Europe, the Middle East, and North and South America. The Bank is a major factor in world capital markets and is the largest nonresident borrower in virtually all countries where its issues are held.

When the Bank first borrowed in 1947, the only major market open to it was the United States. It was there that most borrowed funds were raised through the 1950s. Beginning in 1950, the Bank started to develop markets for its securities in other countries, and in that decade it raised funds in Belgium, Canada, Germany, the Netherlands, Switzerland, and the United Kingdom. As world trade and finance recovered from the effects of war and went on to expand, the Bank pressed in the 1960s to establish a substantial and widespread

*The Bank's fiscal year extends from July 1 to June 30.

market for its securities outside the United States—both with the traditional private institutional market and with governments and their agencies having funds to invest.

In the process, the Bank borrowed in countries that had surpluses in their balance of payments. It followed this practice because it was easier and less costly in nominal terms to raise funds under such circumstances. Thus, the shifting pattern of savings and foreign exchange since the mid-1960s was reflected in corresponding shifts in the major sources of funds for the Bank. Germany was the principal source in the late 1960s, Japan in the early 1970s, certain members of the Organization of Petroleum Exporting Countries (OPEC) in 1974, and the United States in 1975. Recently, substantial borrowings have been executed in Swiss francs, Deutsche mark, and Dutch guilders, reflecting the strength of those currencies in foreign exchange markets and therefore the demand of nonresident investors. In this connection, outstanding debt at December 31, 1975, in Swiss francs amounted to SwF2.4 billion ($924 million); in Deutsche mark to DM7.1 billion ($2.7 billion); and in Dutch guilders to f.473 million ($176 million). As you know, the Bank does not take a currency risk on its borrowings: developing countries repay loans in exactly the same currencies as they received when the loan was originally disbursed.

The diversity of the Bank's borrowings is impressive and unique. Since 1970 alone, the Bank has borrowed, through public issues or private placements, in Austria, Belgium, Canada, Italy, Lebanon, the Netherlands, Sweden, Switzerland, United Kingdom, United States, Federal Republic of Germany, Japan, France, and Yugoslavia, as well as from OPEC countries, about which I will have more to say later. In many, if not most, of these countries, the Bank has preferential access to markets beyond that accorded other nonresident borrowers.

The market for the Bank's obligations consists of two main categories: first, sales by placement directly with governments, their agencies, or central banks. This category is extensive. It includes governments and central banks in some 85 countries. Second, the private investment market, in which issues are offered to investors through the medium of investment banking firms, merchant banks, or commercial banks.

As to the first category: At December 31, 1975, the equivalent of $5.4 billion of our issues—about 40 percent of total outstanding debt—were held by "official" investors. Included were some $3 billion of obligations denominated in U.S. dollars, representing the foreign exchange holdings of central banks or governments invested in World Bank obligations.

Our initial approach to central banks was on a modest scale. In 1956, 16 central banks subscribed to a $75 million bond issue. As dollar reserves rose in the late 1950s and in the 1960s, we increased the number of such issues to four—two each year. The amounts offered were expanded and additional central banks and government agencies were included in the subscription list. These four outstanding Two-Year U.S. Dollar Bond issues now aggregate $1.1 billion. On their face, these issues are relatively short-term. However, they could be classified as long-term in view of the fact that each maturity has been successfully refunded and the replacement issues often oversubscribed in the 20 years since the first bonds were placed.

In addition to the Two-Year U.S. Dollar issues, the Bank has outstanding $4.4 billion equivalent of intermediate and long-term obligations with governments and central banks. These intermediate and longer-dated obligations were sold to governments or their agencies, including OPEC countries, through direct negotiation as to amount, interest, price, and term to maturity. They are denominated in dollars and a number of other currencies. Although the number of holders is few, in some instances the holdings are substantial, with more than $4 billion equivalent in the hands of six governments or central banks.

Placements of this type were initiated in June 1957, when the Deutsche Bundesbank purchased $100 million of Notes from the World Bank. From this beginning, the Deutsche Bundesbank—the German central bank—has become a major supplier of funds. The Bundesbank currently holds 17 Deutsche Mark Note issues aggregating almost DM2.5 billion, or almost $950 million equivalent in U.S. dollars. All have had maturities of 4.5 to five years. The interest rates are set comparable to those on German Government obligations of a similar maturity, or against the rate on a five-year U.S. Government obligation.

Commencing in 1970, the Bank established a similar financial relationship with the Bank of Japan. Thirty of our Serial Obligations amounting to ¥336 billion (over $1.1 billion) are now outstanding. The Bank of Japan is the largest single holder of World Bank securities. The average maturity at issue date was 6.5 years. The interest rates are set on a basis of yield to subscribers of Japanese Government-guaranteed bonds with comparable maturities at the time the obligations are issued.

As a group, the governments or agencies of seven members of OPEC purchased directly from us $2.2 billion equivalent of our obligations. Most of these transactions occurred in 1974, the year when the full impact of the increase in petroleum prices began to be felt. The Saudi Arabian Monetary Agency (SAMA) alone has purchased

directly the equivalent of almost $1.1 billion of our obligations. The Fondo de Inversiones de Venezuela, a government agency in Venezuela, lent the Bank the equivalent of $500 million in 1974 for 15 years. The Government of Iran made two loans amounting to $350 million in 1974. These were denominated in U.S. dollars and carried a 12-year maturity. The Government of Nigeria lent us $240 million in U.S. dollars in 1974, with maturities ranging from six to 15 years. A $30 million loan was received from the Sultanate of Oman. Abu Dhabi purchased UAE Dirhams 300 million ($76 million) of Fifteen-Year Bonds in 1974. In 1973, the Central Bank of Libya purchased LD 30 million ($101 million) of Ten-Year Bonds. In addition, the Bank has made numerous direct placements in Kuwait. From 1968 through 1973, six public issues were offered in Kuwaiti dinars in the aggregate principal amount of $443 million equivalent. The Bank also recently placed 400 million Deutsche mark notes in Kuwait. The amounts of these issues presently outstanding aggregate $558 million equivalent.

In addition to these long-term investments, seven OPEC members hold more than $350 million of the World Bank's Two-Year U.S. Dollar Bonds. Further, many OPEC members have purchased marketable World Bank issues in the secondary markets or as part of our public issues or private placements in world capital markets.

The widespread holdings of the Bank's obligations by member countries and their central banks reflect their support for our development activities and also their assessment of our credit. The diversification through direct placements with governments or central banks has given the Bank a flexibility in its borrowing program that is rarely matched by any financial institution or government body.

The financial support given by these official institutions has also laid the groundwork for the entry of the World Bank's issues in the public markets. In Germany, for example, within two years of the first placement with the Bundesbank in 1957, the World Bank was able to sell its first public issue—a public offering of DM200 million of Fifteen-Year Bonds. Since that offering in 1959, we have publicly offered or placed 16 issues through commercial banks and financial institutions. At December 31, 1975, 15 of these were outstanding in an amount of about DM3.3 billion. Further financial support for the World Bank in Germany has come from several "Girozentralen" and cooperative banking institutions which serve as regional banking and investment centers for the German savings institutions. Together they have purchased an aggregate of DM1.5 billion of the Bank's obligations.

The same process may be observed in Japan. Within a year and a half of our first placement with the Bank of Japan, the World Bank

made its first public offering of bonds on the Japanese investment market —¥11,000 million of Ten-Year Bonds. Thereafter, the Bank offered five public issues in Japan. All these issues were outstanding at the end of 1975 in an aggregate amount of ¥98 billion. The total amount outstanding is equivalent to $321 million. We estimate that individual subscriptions to most of these issues were made by 5,000 to 10,000 individual accounts. In addition, in 1973, the World Bank privately placed ¥10,000 million of Ten-Year Notes with 13 Japanese financial institutions.

The United States Government and institutional investors have given their support to the World Bank. It was the first country to open its market to our issues: that was in July 1947, when we sold $250 million of bonds, of which $150 million were Twenty-Five Year Bonds and $100 million were Ten-Year Bonds.

Public offerings of Bank bonds and notes in the United States from July 1947 to December 31, 1975, consisted of 34 issues amounting to $5.4 billion. All were sold by means of public offerings through syndicates of investment banking and dealer firms. Of these issues, 25 were outstanding, in whole or in part, in an aggregate of $4.2 billion at the end of 1975, including $3.9 billion held by investors in the U.S., and about $300 million which had been purchased by investors abroad. With almost $4 billion, equal to 28 percent of our outstanding debt, the U.S. investors are the largest holders of our bonds, though there are official non-U.S. holders who hold considerably larger amounts than the largest single U.S. investor.

The bulk of World Bank issues sold in the United States prior to 1971 were long-term bonds with maturities ranging from 15 to 30 years. Beginning in January 1971, the Bank, in recognition of changing investor preferences arising from monetary and other uncertainties, and also as a vehicle for tapping commercial bank funds, publicly offered an issue of Five-Year Notes. In all, the Bank has tapped the intermediate market in the U.S. with eight issues since 1971. These aggregate almost $2 billion and include five Five-Year Note issues amounting to $1.3 billion and three Ten-Year Note issues amounting to $650 million.

In this period, the Bank has not neglected opportunities to offer long-term bonds in the United States. It has made long-term issues on two occasions since 1971. $175 million of Twenty-Five Year Bonds in August 1971, and $250 million of Twenty-Five Year Bonds in December 1975. The latter were offered in conjunction with $250 million of Five-Year Notes and $250 million of Ten-Year Notes—a $750 million offering in all, and the largest public offering to date by any borrower, other than a government or its agency, in the U.S. capital market. I might note in reference to intermediate markets

that wherever and whenever we borrow in that maturity range, we do so only where there is a reasonable probability of refinancing based on the market structure or the category or type of lender.

The Bank's obligations carry a Triple A rating at the three principal bond rating services in the United States and move at prices and yields in the market parallel to those for the highest grade corporate obligations. Outside the United States, governments often prefer that sales of World Bank issues be set at yield levels that are comparable to those obtainable on government issues of similar maturity. Nevertheless, the Bank has been successful in selling its securities under such conditions. There is little doubt that the Bank's credit standing—and the fact that the income on its obligations is exempt from withholding in member countries and exempt from tax in the case of nonresidents—have contributed to this success.

I want now to make five points about our borrowing program and policies—in addition to the obvious and favorable implications of the diverse mix of our borrowings by country and currency.

First, the Bank's borrowings have been increasing in recent years, on both a net and a gross basis, as worldwide interest in these obligations has increased.

Second, the average cost of all outstanding borrowings is currently 7.4 percent. The Bank carefully monitors its borrowing costs—particularly the costs of the longest maturity obligations. It sets the interest rate on new loans so as to maintain a positive "spread" over its cost of borrowing with particular attention to the costs of its most recent longer-term borrowings. Thus, the costs of its new borrowings are reflected in the charges it levies on new loans.

Third, the average life of the Bank's entire outstanding debt is seven years. The average life of its public debt outstanding, however, approaches 10 years. It is the nonpublic borrowings from governments and central banks (specifically, the Bundesbank, the Bank of Japan, and our Two-Year Central Bank issues) which result in the overall outstanding debt having a maturity of seven years. That is not "short-term" borrowing. We do not issue certificates of deposit, commercial paper, or discount notes. We do not borrow at "floating" interest rates—of the sort in vogue in the Eurocredit market. And, if experience over the last 20 years is a fair guide, it is reasonable to expect that these two-year, five-year, and 6.5-year placements with central banks will be refinanced when they mature. I might add that they have been refinanced at interest rates for government obligations—a highly favorable rate for the Bank.

The maturity structure of our debt may be compared with the average life of our outstanding loans receivable, which is approximately 11 years. The Bank is a relatively long-term lender at fixed

interest rates. It finances that lending with debt of similar maturity. Indeed, when we recognize that our lending is also financed by about $5 billion of equity (which provides "infinite maturity" resources), the Bank's policy of matching the maturity of its loans and borrowings may be seen, if anything, as unnecessarily cautious. And, if intermediate or longer maturities were not available at rates compatible with our current lending rate, we would not take the easy way out by financing our lending program through short-term or floating-interest-rate debt. Rather, we would draw down our liquidity, as indicated before, until the market stabilized. And if it did not stabilize for a prolonged period of time—say, several years—we would use the further option of reducing our lending program, and thereby our future cash requirements. Alternatively, we would raise the interest rate on new loans to the point where we could prudently borrow intermediate and longer-term resources at higher cost. Indeed, recently the Bank decided to raise its lending rate to 8.85 percent for loans approved on or after June 1, 1976.

Fourth, I would observe that of the $6.5 billion of World Bank obligations which fall due in the five years beginning January 1, 1976, over $3 billion, or 47 percent, is held by governments or central banks who have consistently demonstrated their commitment to refinance maturing debt. I would suggest that there are few, if any, banks which have liquid resources equal to twice their public debt falling due in the next five years. This is the kind of flexibility which provides us with options, should capital markets deteriorate in quality or quantity. We seek to avoid the position that is faced often by many commercial institutions where tight money policy, deteriorating capital markets, and concentration on too few sources of funds, severely reduce profitability and flexibility.

Finally, I might observe that it is very much in the interests of our member governments, as well as the Bank, to support the kind of borrowing and liquidity policy I have described. Our member countries have a strong incentive to insure that the unpaid subscribed capital of the Bank, about which I will say more later, need never be called. And access to markets is consistent with that interest. As a condition for such access, however, member countries insist that the Bank's operations and policies are consistent with sound business practice and prudent management to insure that public capital markets will, in fact, accept our obligations without hesitation.

Thus, we operate the Bank as if that guarantee of callable capital did not exist. We are in a unique situation where the Bank's shareholders have an identity of interest with its bondholders because of the guarantee which, in effect, flows from the shareholders to the bondholders. That means that our policies concerning (a) liquidity,

(b) diversification of sources of borrowings, (c) the maturity mix of our debt, (d) our accumulation of reserves—all matters of proper concern to bondholders—are designed to insure that the callable capital need never be called. That is what I mean when I speak of an identity of interest between stockholders and bondholders.

Capital Structure

Now a word about the capitalization of the Bank—a frequently misunderstood but relatively straightforward aspect of its financial structure. The Bank started in 1946 with an authorized capital of $10 billion in terms of United States dollars of the weight and fineness as of July 1, 1944. Its subscribed capital is now $26 billion (in 1944 dollars), which is equivalent to almost $31 billion in current dollars. Of this sum, 10 percent, or about $3.1 billion, has been actually paid in to the Bank; for the most part, it was, and is, usable in the Bank's operations. The remaining 90 percent of capital subscriptions, equal to about $28 billion, is uncalled and can be employed *only* to meet the obligations of the Bank to holders of its securities. Recently, the Executive Directors of the Bank sent to the Bank's Governors resolutions which would increase the authorized capital of the Bank to accommodate individual increases of capital subscriptions of member countries by $8.3 billion. If fully taken up, the total subscribed capital of the Bank would rise to $39.2 billion.

Another important aspect of the Bank's capital structure is the limitation it imposes on the Bank's lending. Under its Articles of Agreement, the charter within which the Bank operates, the total amount of outstanding loans held by the Bank may never exceed the total of its subscribed capital, surplus, and reserves. The point here is that unlike private commercial institutions, there is an express provision limiting how much we can have outstanding in loans as compared with capital and reserves. That limitation is "one-to-one." I would suggest that is an extremely prudent proscription. How many commercial lending institutions limit their outstanding loans receivable to their capital and reserves?

Even if the Bank were to borrow, say, $10 billion a year, it could not lend and disburse those funds since the founders of the Bank made a conscious decision to restrict the Bank's lending operations *not* to how much it could borrow, but rather to its capital and reserves—and on a "one-to-one" basis. It remains for the Bank to finance the loans through borrowings in the marketplace. It needs that market acceptability since only 10 percent of the capital is paid in and usable in operations. As noted earlier, the remaining 90 percent cannot be used for administrative expenses or for lending or for disbursements. It is for the protection of the bondholder and cannot

be used for the conduct of operations.

Permit me to emphasize that only an unexpected and most severe chain of events, which I cannot now contemplate, could trigger a call on this unpaid capital. We must take into account the Bank's liquidity, its demonstrated borrowing capacity, the quality of its financial management, and the maturity structure of its debt. In this connection, I would emphasize that as long as the Bank remains current in debt service—whether through payments from liquid holdings or from calls on callable capital—there would be no acceleration of due dates on debt prior to contractual maturities. Consequently, the magnitude of a call or of calls would be related to the progression of the maturity schedule for the Bank's issues rather than to the total of outstanding debt. I must confess it is difficult to visualize the exact chain of events involved in a call on unpaid capital. First, management, on recognizing the prospect of a serious cash-flow shortage, extending beyond the time frame of its liquidity position, would most certainly reduce new lending and thereby reduce future cash needs. By the time it became necessary to call on unpaid capital, indebtedness would have been either reduced or refinanced, service on debt would be current, and the amount of a call on capital would be limited to the fraction of debt requiring servicing.

Since the only risk which can prompt even this situation is a failure to have access to markets and since access to public markets depends upon the market's perception of our financial integrity, we can see, again, why member stockholders who have unpaid capital at risk (a) have given us access to markets, and (b) have insisted, and will insist, that we conduct our affairs in such a way that we will remain a prime credit in the eyes of potential bondholders. Their job, and our job, is to maintain that condition. I suggest that if criticism is to be levied, it may be fairly said that still, after five years of a substantial acceleration in lending, we are "underleveraged" and indeed offer to bondholders protections not available elsewhere.

There are a few other points—which, though technical, bear reference here. The Bank's Articles of Agreement require that it call, to the extent necessary, callable capital if it is unable to meet its debt obligations, in full, out of its other assets. It has no choice. In the event of a call on capital, all members must meet it up to the full amount of the member's subscription. Failure by one or more members to honor the obligation to pay does not relieve any other member from its obligation to meet a call. Moreover, if the amount received on a call is insufficient to meet the Bank's obligations, then it must issue further calls until it has the necessary amount to satisfy the obligations.

In short, each member has an independent obligation to respond

to calls up to the full amount of its callable subscriptions. Happily, we have never had to call on unpaid subscriptions to capital. As long as we maintain sound financial and lending policies, we never will. Yet, it is reassuring to investors in our bonds and notes to know that this quite large pool of resources is available, that it cannot be used for any other purpose, and that the Articles impose a "ceiling"—a limit on our lending activities—dollar for dollar.

A further point regarding the status of the uncalled capital subscription in the Bank made by the United States. Under applicable legislation, the Secretary of the Treasury is authorized, without further recourse to Congress, to meet payment of the U.S. obligation. In this connection, aggregate unpaid capital subscriptions of all 127 member countries were more than twice the total outstanding indebtedness of the Bank at the end of 1975. Included was the unpaid U.S. subscription of approximately $7 billion, which equalled 98 percent of debt denominated in dollars but over 180 percent of obligations held in the United States. The 24 member countries of the Organisation for Economic Co-operation and Development (OECD), which includes most of the industrialized countries of the world, have an aggregate uncalled capital subscription of $19.8 billion.

One final and perhaps most fundamental point about the unpaid capital should be noted. Payments of calls on unpaid subscribed capital may be made at the member's option, either in gold, or in U.S. dollars, *or* in the currency or currencies needed to discharge the obligations for which the call was issued. The fact that our indebtedness is denominated in 17 currencies means that in the case of a country where the Bank has issued its obligations in that country's currency, a call on capital may not require a payment in foreign exchange to meet these obligations.

Paid-in Capital

Permit me now to turn to our paid-in capital: it costs us nothing and thus contributes materially to the net profits of the Bank. Since 1948, the Bank has made a profit in every single year. By December 31, 1975, it had accumulated earnings of almost $2 billion, which were added to our resources. This is a net amount, after approximately $1 billion in grants from the Bank's net income had been made to its affiliate, the International Development Association (IDA).

Thus, the sum of the Bank's paid-in capital and accumulated net profits—after grants to IDA—is almost $5 billion. The cost of all funds to the Bank, including borrowed funds, which cost 7.4 percent, is therefore reduced to 5.3 percent. The difference between this cost and the rate charged to borrowers on our outstanding loans has produced net profits in recent years of $215 million to $275 million

annually. It is expected that income will rise in future years, and by 1980 will exceed $300 million per year.

I would emphasize that no dividends have been paid to our stockholders. The cost-free funds are significant and provide considerable leverage and profit. The profit produces reserves and the Bank pays strict attention to these reserves—retained earnings, if you will—so that they will increase and provide further protection for bondholders. And, our profits are relatively predictable. Unilaterally, if we wish, we can, within reasonable limits, change our lending rate and by so doing produce a fairly predictable flow of increased earnings in future years. We will do so to the extent necessary to maintain our credit standing. We will not do so if it is unnecessary, since the costs are borne directly by our borrowers. But there should be no mistake on this point. This Bank grows as a development institution to the extent that bondholders and stockholders support it. Without their support, which in part is and should be based on our market acceptability, there are no development successes.

It is also interesting to set out the traditional debt-equity measurements for the World Bank. The total of paid-in capital, reserves, and net income for the first six months of fiscal 1976 was $5.2 billion (at December 31, 1975), and our outstanding debt was $13.7 billion. This provides a debt-equity ratio of 2.65:1. With the addition of $28 billion of uncalled capital available to protect the holder of Bank obligations, the equity rises to $33 billion, and therefore the debt-equity ratio to 1:2.40. Whichever capital base is used—and in the case of the Bank both are appropriate—the ratio of debt to equity is extraordinarily low as compared with commercial institutions which may have a debt-equity ratio of 20:1 and no limitations on their outstanding loans.

Lending Policies

I now wish to comment on the World Bank's lending policies. The financing of economic development is the principal purpose for which the Bank was established. The care employed in managing its finances and borrowings is directed toward insuring that the Bank will be able to raise sufficient funds to finance its development program. That is our basic job. The future of the Bank ultimately depends on the policies and practices that govern the quality of its lending. To maintain the continuing support of its member governments, its loans must stimulate economic growth in the less developed countries where it lends. It is true that the lending operations of the Bank are different from those of the private market. How are they different? Loans must be granted on a basis of sound financial and economic analysis; the projects must produce an acceptable rate

of return; and, in each case, the prospect for repayment must be apparent. Bluntly put, the Bank has proven to be a tougher, harder lender than many commercial institutions. It asks questions and receives answers on issues that are relevant to the making of loans but are rarely put by commercial institutions.

But, first, some data. Of the $29 billion equivalent in loans committed by the Bank over the last three decades, including the $2.5 billion sold to third parties, a total of almost $7 billion has been repaid. Disbursed and outstanding loans held by the Bank on December 31, 1975, amounted to over $12.6 billion and a further $9.4 billion of committed loans had not yet been disbursed. Over 90 percent of our loans are committed to the financing of specific development projects. The Bank does not lend in support of military or political objectives, or for the purpose of facilitating exports of any particular industrialized country.

A broad spectrum of projects is financed by the Bank. They are in such sectors as agriculture and rural development, industry, power, telecommunications, and transportation. Other sectors include education, urban development, and water supply and sewerage. Education, for example, is essential for raising the levels of competence and skills necessary for implementing economic development. Improvements, in urban areas, and in water supply and sewerage facilities, contribute to the health and well-being of people in developing countries and, therefore, to their productive capabilities.

Creditworthiness of Borrowers and Project Appraisal

Even while admitting this, it is reasonable for potential lenders to raise questions about the creditworthiness of the governments to which we lend. As you know, the World Bank makes loans to borrowers who cannot obtain the funds on reasonable terms elsewhere. I will not pretend that we can predict with certainty which borrowers 10, 15, or 20 years from now will be creditworthy. What I can do here is describe what the Bank's several hundred economists and financial analysts look at in evaluating the creditworthiness of a potential borrower.

The Bank's staff examines the country's per capita income, and its potential for the future. It looks at the country's population growth, its savings rate, and the vehicles through which savings occur. It examines the country's foreign exchange position, its sources of borrowing, its tax base, its terms of trade, and prospects for the future. In this connection, the Bank closely monitors the potential borrower's external debt—its interest and principal requirements for the immediate and foreseeable future. It studies the country's reliance on commodities, whether one or several. It prepares the economi-

analyses required to show how the country's exports could be affected by declines in international commodity prices. It examines the country's imports, and whether imports could be curtailed in order to conserve the necessary foreign exchange to meet debt obligations. It examines the country's tariff structure, its reliance on food and energy imports, its overall economic health, and the relative commitment of resources to productive and unproductive projects. The Bank insists and has the right to get this information. I would suggest to you that there are few commercial institutions or governments which are equipped to make this kind of creditworthiness study before making a loan.

There is no incentive to do other than make the right determination whether a country will be able to service its debt to the Bank. A significant portion of the Bank's staff is committed to that responsibility, and, if sufficient doubt exists, the country does not receive a Bank loan. The country may be eligible for concessional credits from the Bank's affiliate, IDA, about which I will say more later. The point is that a great deal of time, effort, energy, and intelligent thinking goes into making decisions which are for the benefit of both borrower and bondholder.

Nor is the Bank's interest limited only to questions of the creditworthiness of the potential borrower. The Bank's staff carefully appraises all projects for which a loan is proposed. This involves investigation of various aspects of the project: economic, technical, financial, organizational, managerial, and operational. Examination of the economic aspects include a determination of whether or not the benefits and rate of return will be worth the cost. The technical study involves investigation of the project's feasibility, its merits and shortcomings. The project must be of high priority to the economic growth of the country. If it is not, the Bank will not finance it.

We will also review with the government its long-term plans to determine whether the project, at a particular point in time, fits into its economic development program, whether it comes too early, or whether it simply will not work until other fundamental changes are first made in the country's economic or social structure. Here, too, there is no incentive other than to make the most meticulous technical analysis of the specifics of each project. The financial aspects are appraised with a view to insuring that the financial conditions for sound implementation and efficient operation can and will be met by the borrower. In appraising the organizational, managerial, and operational aspects of a project, the Bank is particularly interested in the competence of the management to implement the project and to operate it after completion. Ultimately, as you can appreciate, the willingness of a country to want to continue to meet its obligations

will depend on its evaluation of our intelligence and our objectivity, and on its desire to obtain our financial and technical assistance.

The Bank's interest in its loans does not dwindle down to collection of principal and interest once the loan contract is signed. The Bank is very much involved in ascertaining that the loan proceeds are spent efficiently and economically. To insure that borrowers obtain goods and services for Bank-assisted projects at reasonable prices and on favorable terms, we require that procurement be made through international competitive bidding by suppliers in member countries or Switzerland. The Bank is concerned that the projects it supports be soundly executed. Accordingly, it requires the borrower to submit reports on the progress of a project. Bank staff visit it periodically to examine physical construction or operations, the borrowers' accounts, the use and maintenance of equipment purchased with the proceeds of our loans, and the effectiveness of the project management. The point of all this is to be in a position to identify, at an early date, any problems that arise, and to discuss and resolve them with the borrower.

Disbursements of loan proceeds are carefully scrutinized and are made only on receipt of documentation that the goods and services being paid for are covered by the loan agreement, are reasonable in cost, and are of appropriate quality. The point is that the Bank controls the disbursements of the loan. It does not hand over the proceeds of the loan when it is signed. Rather the Bank maintains a staff to review all of the invoices for payments for goods and services bid under international competitive bidding (which is also supervised by the Bank) to see that the loan proceeds are used for the payment of the appropriate goods or services. A typical Bank loan takes seven years to disburse fully, during which period the Bank receives a commitment fee on the undisbursed balance. The Bank, therefore, reviews the invoices, pays them, and then notifies the borrower that disbursement has been made on the loan. Interest is payable on that portion of the loan from that point onward.

Unlike some commercial banks and bilateral lenders, we seek no political or trade commitment as the price for a loan. Admittedly, we have made mistakes and will make others. But they have stemmed from the human frailty of not knowing the optimum means to facilitate economic development, and not from a desire to control a country's political future. What I have just described takes considerable staff commitment, but that is what the Bank is all about. It commits 20 times more in staff time to evaluating countries and projects before, during, and after a loan is made, than it does to the raising of funds or the investment of our liquid resources. And that is the way it should be.

Now what has this produced? We have not had any losses on loans. We have never had a write-off of a loan. We have never had a nonaccruing loan. We have a firm policy against debt rescheduling. We do not tolerate late payments. In December 1975, on the occasion of our most recent public issue in the United States, of the $12.6 billion in loans then disbursed and outstanding, none was over 30 days late either in interest or principal. And while our financial statements include a "general reserve" (previously called "reserve against losses on loans"), that item constitutes, in fact, our accumulated retained earnings. We have no actuarial basis for our "reserves" simply because we have never had a bad loan. That is not to say that we never will have a "bad loan." But the point is that borrowers have seen fit to maintain impeccable financial relationships with us.

There are substantial pragmatic reasons why borrowers do not default on World Bank loans. In the event of a default, no further disbursement would be made on that loan or any other loan we had outstanding in the country. And, no new loans would be committed until the default had been cured. Borrowers know our policies in this regard, and given the substantial amount of our undisbursed loans, I suggest they would be extremely reluctant to take steps to jeopardize the transfer of future resources.

A default to the Bank also carries serious consequences which would affect the credit of the country involved, both with other countries and with commercial suppliers of resources. If, for example, principal and interest payments on loans are even 30 days late, the Executive Directors representing all 127 member governments are formally notified of the delinquency.

As noted, the Bank, after 30 years of lending, has yet to experience a write-off on a loan. We have seen numerous changes of governments in the countries where we have lent, including change by armed revolution, coup, or assassination. The successor government, however, has honored its predecessor's obligation to the Bank. This attitude, I believe, is engendered not only by the sanctions inherent in a default to the Bank, but also by the Bank's nonpolitical approach to the granting of loans, and by the fact that the projects we finance make sense in that they contribute materially to economic stability and growth in the countries where they are located.

I think it is fair to say that our borrowers trust the Bank. They trust its objectivity, its fairness, and its commitment simply to do the right thing. They want to maintain a relationship with an institution which does not attach political strings to loans and which has a competent body of professionals whose role is to make decisions on strictly economic and financial grounds. For some borrowers, I have no doubt that it is that pool of intelligence and objectivity which is as

important as the actual transfer of monetary resources. And the borrowers know that those resources will no longer be available to them should their relationships with the Bank become less than impeccable.

Nonetheless, I am asked sometimes what impact a default would have on the finances of the Bank and on its ability to meet service on its indebtedness. Let us take one exaggerated example. Assume that a sizable borrower repudiates all of its debt to the World Bank and stops payment of debt service immediately. The reasons may be irrational, but let us assume it happens. The effect of this action might be that the Bank incurs a loss against its current income.

As far as the ability of the Bank to meet service on its debt is concerned, however, the default would have little, if any, impact. In the immediate period following the default, our cash flow very likely would increase, since we would stop all disbursements on loans to the defaulting country. Further, since our debt structure consists primarily of long-term and intermediate-term obligations, the effect on the market for our outstanding obligations would be minimal. It would be a nonevent, in terms of its effect on our bondholders. Our reserves are adequate. Our capital is huge. And, most important for the bondholder, the very real and substantial liquid position of the Bank of over $6 billion, as well as its access to worldwide markets, afford protection not available elsewhere. The uncalled capital is merely icing on the cake. All of this is available, along with the cash flow from the repayments of the pool of disbursed loans, to support the credit of the Bank and the security of those who invest in its bonds and notes.

The Role of IDA

Now, a comment about the International Development Association (IDA). IDA was established in 1960. Its purpose is to assist in financing economic development in those developing countries whose ability usefully to employ externally borrowed funds exceeds their ability to service such borrowings on conventional terms, including the terms of World Bank loans.

Membership in IDA is open to all members of the World Bank and 116 of them have elected to join. Eligible recipients of credits, however, generally are those poorer developing countries which have an annual per capita gross national product of $375 or less. The funds employed by IDA in its credit operations—they totaled $11.5 billion at the end of 1975—come mostly from the 21 industrialized and highly developed members, including the United States. In addition an aggregate of $1.02 billion has been provided by the World Bank in the form of grants to IDA. These grants have been

made from the Bank's net income in each of the fiscal years 1964-75, after prudent allocation of net income to reserves. And only that portion is available to IDA which otherwise might have been appropriate for dividend payments.

IDA is administered by the same management and staff as the World Bank. The Association has been erroneously called "the World Bank's soft loan window." It is true that IDA's terms to its borrowers are highly concessional—50 years to final maturity and a service charge of only three-fourths of 1 percent a year—but there is nothing "soft-headed" about the credits themselves. We apply the same rigorous standards to appraising projects supported by IDA credits that we apply to projects supported by Bank loans. The difference is that we do not believe the countries are creditworthy for a loan on the Bank's conventional terms. Permit me to stress that if funds become unavailable for IDA operations, the World Bank will not lower its creditworthiness standards to make up the shortfall.

Though the same personnel administer both the World Bank and IDA, the two institutions are legally and financially separate entities. This includes separation in respect to assets, liabilities, and capitalization. The Bank's credit is in no way involved with IDA. The Bank cannot lend to IDA. Whatever financial questions might arise in connection with IDA, it is the Association's member governments that are at risk, not the World Bank or the investors in its securities. This means that institutions or individuals which lend to the Bank are not at risk by reason of IDA's activities. The poorest countries are primarily recipients of IDA credits. The credits extended to them in no way jeopardize the Bank itself. On the contrary, for those countries which have outstanding Bank loans and which now are receiving IDA credits, these credits enable them to obtain the services and experience of the Bank's staff and the planning, implementation, and financing of development at very low cost for 50 years.

Thus, there are substantial advantages from IDA accruing to the World Bank and its creditors, since Bank loans are reinforced by the financial and economic benefits flowing from IDA-supported projects. IDA's funds of course come, for the most part, from the taxes of the richer countries; to that extent, taxpayers have a major interest in its operations. IDA does cost something to taxpayers, but in no way does it add to their risk as World Bank bondholders. On the contrary, it reduces it. I would simply add a practical point here. Any of the poorer countries qualifying for IDA assistance which had an outstanding Bank loan would seriously hesitate before defaulting on it lest it jeopardize the interest-free 50-year development credits from IDA.

I wish to conclude my remarks with some reference to the environ-

ment in which we live as it affects the investment climate generally and the attitude of investors toward the World Bank. Despite the financial strength of the Bank and its commitment to prudent financial policies, I would be less than frank, and, indeed quite naive, if I assumed that it was universally recognized by the investment community in, say, the United States as the only premier credit in the marketplace. For example, we do not trade in the market at the same yield as direct obligations of the U.S. Government. We have neither taxing power nor the power of the printing press nor are we a household name. Few people understand what the Bank does, and fewer still have any conception of our financial structure or financial policies. Second, we are a fairly complicated institution and portfolio managers, given a bewildering variety of potential alternatives, sometimes feel more comfortable with an investment which they can clearly categorize as "government," or "foreign," or "utility," or "industrial." It is a sad, but I believe accurate, commentary that some investment managers cannot and do not explain the Bank to their Boards of Directors or their policy makers.

Ours is a complex institution and one which admittedly busy investment managers may not be familiar with. Further, the reaction of the financial community to exaggerated and often inaccurate public commentary about the problems of developing countries, defaults, possible debt reschedulings, expropriation of property, or political instability in some LDCs certainly does not contribute to a dispassionate evaluation of our credit. As overblown—possibly even irrelevant—as these matters might be to the financial strength of the Bank we consider the market's reaction to such talk in establishing our financial policies.

In a very real sense, our financial policies are based on the reality of our environment. We, therefore, conduct our operations and maintain financial policies which recognize that the Bank's financial structure and strength may not be fully understood; that questions have been raised about our lending policies which may be based on inaccurate perceptions of the operations of the Bank; and indeed that there may be some hostility even toward the role of the Bank. Despite our successes in coping with these sometimes subliminal, sometimes expressed concerns, we will not conduct ourselves as if our reputation and the perception of investors will always be rational and based upon a correct evaluation of the facts. We assume that both investment managers, and we ourselves will make mistakes. Therefore, our financial policies are designed to permit the flexibility necessary to operate successfully in difficult environments. That is why we have built the overwhelming financial strength that I have described to you today, and that is why we intend to keep it that

way and maintain our standing as one of the strongest financial institutions in the world. We are not a social welfare agency committed to making transfer payments to solve the problems of misery or poverty. We are a development bank using the most sophisticated techniques available to facilitate development while providing unmatched protection and strength for creditors and shareholders.

World Bank
Headquarters:
1818 H Street, N.W.
Washington, D.C. 20433, USA

Telephone: (202) 393-6360
Cable Address: INTBAFRAD
WASHINGTON, D.C.

WORLD BANK RESEARCH PROGRAM

Abstracts of Current Studies

October 1974

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FOREWORD

This publication provides an overview of the World Bank's research program and a brief description of projects currently in progress. Now in its fourth year, the program deals with general issues of development policy as well as specific sectoral problems of particular concern to the Bank's operations in developing countries.

The Bank's research is increasingly conducted in collaboration with scholars and research institutions in developing countries and is focused on problems of mutual concern. By distributing information on studies now under way, we hope to contribute to the international cooperation so greatly needed in the effort to learn more about the process of development.

Hollis B. Chenery
Vice President, Development Policy

INTRODUCTION

This compilation of Abstracts provides a summary view of work being carried out in the World Bank's central research program. Research has been an integral part of the Bank's economic work from the outset. Over the years, the Bank's research activities have been expanding in response to the growing diversification of Bank lending operations. In 1971, a Research Committee was established to review the Bank's principal research activities. This booklet describes the projects currently under way and includes almost all of the Bank's social science research. Some other research, related to specific projects, is undertaken in member countries and is financed by loans and credits to their governments.

Objectives of the Bank's Research Program

The main objectives of the Bank's research program are:

- To support all aspects of Bank operations, including the assessment of development progress in member countries.
- To broaden understanding of the development process.
- To improve the Bank's capacity to give policy advice to its members.
- To assist in developing indigenous research capacity in member countries.

In order to improve country economic analysis, the program contains projects to develop the data base, to improve the tools for analyzing national economies and sectors, and to extend the Bank's understanding in such important policy areas as rural development, industry, foreign trade, and the interrelationship of growth and social objectives.

While the principal purpose of the Bank's research program is to support its own activities, there are important secondary objectives. Most studies of importance to Bank operations are of equal relevance to planning and operational agencies in developing countries, as well as to other development finance agencies. Whether a study deals with capital/labor substitution in road construction or educational investment policies, the Bank's research program can have a much wider impact than the volume of direct Bank Group lending would indicate. Preparation and implementation of research studies can be used to build and strengthen indigenous research capacity in developing countries. The Bank, therefore, stresses collaborative research with individuals and institutes in those countries to reinforce its respective analytical expertise and understanding of development issues. In the long term, the Bank should be able increasingly to use studies done in member countries. Finally, the

Bank's research program can serve to stimulate others to finance studies on topics of major interest and to improve the coordination of such research.

The Current Research Program

The following pages briefly describe 68 projects now in the portfolio, of which 16 have been approved only in recent months. The studies are grouped in eight functional categories. The first category, *Development Policy and Planning*, represents the core of the effort to improve the Bank's capability in country economic analysis. The studies in this category include models designed to analyze the intersectoral linkages of economic decisions, the development of methodologies to use purchasing power parities rather than official exchange rates to obtain more realistic international comparisons of economic aggregates, and studies aimed at improving the Bank's ability to integrate redistribution and other social objectives into its techniques of project selection. The analysis of issues concerning the distribution of income are of primary importance in this category. The first priority in this area is the consolidation and extension of existing data and an assessment of the redistributive impact of public expenditures.

The second category, *International Trade and Finance*, principally consists of the studies on specific commodities that are traded internationally. The third category, *Agriculture and Rural Development*, has a high priority in the research program. It focuses on the design of rural development strategies, particularly on the problems of channeling resources to the rural poor and on the role of the small farmer. A major study in this category is an extensive evaluation of rural development experience in Africa. The emphasis on rural development is also reflected in several studies listed in other categories.

The fourth category, *Industry*, includes studies of industrialization policy in the context of international trade, the scope for increasing the level of capital utilization and the use of labor-intensive technologies in manufacturing.

The major studies in the fifth category, *Transportation*, are concerned with the measurement of road maintenance and user costs on different quality roads, the possibilities of using labor-intensive methods in civil construction and the developmental impact of feeder roads in rural areas. All of these studies are generating primary data of basic importance.

Research on *Public Utilities*, the sixth category, has concentrated mainly on the provision of tools for the analysis of investment and pricing policies in the power and telecommunications sectors, and on the measurement of the costs and benefits of bringing utilities to rural areas.

The studies in the seventh category, *Urbanization and Regional Development*, attempt to improve the data base for comparative urban analysis, develop a framework for the analysis of public finances in metropolitan areas and explore aspects of land-use policies and the design of site-and-services housing projects.

The eighth category, *Population and Human Resources,* includes several studies on education, labor markets and population growth. The studies on education are concerned with the problem of evaluation of the benefits from education projects and methods of education financing. The labor-market studies focus on the informal urban sector and its relation to rural-urban migration. The population studies focus on the determinants of fertility rates and the economics of household size.

Correspondence

Copies of this publication may be obtained by writing to:

Publications Unit
World Bank
1818 H Street, N.W.
Washington, D.C. 20433

World Bank
66, avenue d'Iéna
75116 Paris, France

This and all other publications of the World Bank Group released for general distribution are listed in the *World Bank Catalog,* which is available on request. The *Catalog* provides instructions on how to order copies of listed papers referred to in some of the Abstracts. Requests for unpublished papers or for information on specific research projects still in progress should be addressed to the Director of the responsible Department listed in the Abstracts in this publication.

Further information concerning the Bank's research activities may be obtained from the Secretary to the Research Committee, Office of the Vice President for Development Policy, World Bank.

LIST OF ABSTRACTS OF CURRENT STUDIES

[1] Each research project is assigned a code number which appears as a reference number in each Abstract.

I. DEVELOPMENT POLICY AND PLANNING

Development Strategies in Semi-Industrial Countries

A considerable volume of literature evaluates alternative strategies of economic development, particularly the relative merits of trade-oriented and import-substitution strategies. The starting point for this research project was the study of protection by Balassa and Associates, *The Structure of Protection in Developing Countries* (Baltimore and London: The Johns Hopkins University Press, 1971).

The purpose of the project is to enlarge the scope of this study by a detailed analysis of the effects of alternative incentive policies on resource allocation, trade and economic growth. In order to provide diversity in geographical terms as well as in regard to the policies followed, six countries were chosen: Argentina, Colombia, Israel, Korea, Singapore, and Taiwan. The first part of each country study outlines the historical development of the incentive systems, with separate treatments of tariffs, quantitative restrictions, export subsidies, exchange rates, credit, and taxes as well as various institutional factors. In the second part, each country's protective measures are quantified and used to devise indicators, such as the effective rate of subsidy, to express net incentives to individual industries, export and import activities and foreign investment. Finally, the effects of the incentive systems are analyzed in a comparative framework.

Responsibility: Development Research Center, in collaboration with consultants conducting the country studies. The comparative evaluation of the results will be prepared by Bela Balassa of the Center. (Ref. No. RPO 201)

Completion date: December 1974.

Patterns of Demand and Savings in the Development Process

Since the pioneering work of Kuznets and Houthakker on demand and savings patterns, the availability of data for developing countries has considerably improved and new techniques of econometric analysis have been developed. The Extended Linear Expenditure System (ELES) provides an integrated framework for the estimation of complete systems of demand equations and the associated savings function using either time series or cross-section data on households.

This study uses ELES estimation techniques to analyze how savings and the allocation of consumer expenditures change with income, prices, and socioeconomic variables in countries at different levels of

development. In particular, the following questions on household savings and allocation of expenditures are examined:

1. Can household savings behavior be characterized in terms of a relatively small number of socioeconomic variables and, in particular, do relative prices matter?
2. What are the key socioeconomic factors influencing the allocation of consumers' expenditures and, in particular, which price effects are quantitatively important?
3. Are there systematic patterns in savings behavior and in expenditure and price elasticities for an average consumer, at different levels of GNP per head?
4. How many consumer "types" (groups of homogeneous consumers with significant differences in expenditure and savings behavior) emerge in the analysis of particular countries?

These questions are being examined using national accounts data for 17 countries and cross-section budget data for Korea and Mexico.

Responsibility: Development Research Center—Constantino P. Lluch, A.A. Powell and Ross A. Williams, in collaboration with Secretaría de la Presidencia, Mexico, and the Bank of Korea. (Ref. No. RPO 203)

Completion date: The study is in its final phase; a monograph is being prepared.

Reports

Lluch, Constantino P. "Expenditure, Saving and Habit Formation." *International Economic Review* (October 1973).

_____. "The Extended Linear Expenditure System." *European Economic Review*, IV (1973): 21-32.

Powell, A.A. "An ELES Consumption Function for the United States." *The Economic Record* (September 1973): 337-357.

_____. "Estimation of Lluch's Extended Linear Expenditure System from Cross-Sectional Data." *Australian Journal of Statistics*, 15 (2) (1973): 111-117.

Multi-Level Planning: Case Studies in Ivory Coast

This is one of two case studies whose purpose is to develop and apply multi-level planning methods to country development programs. The first to be completed was published as *Multi-Level Planning: Case Studies in Mexico*, Louis M. Goreux and Alan S. Manne (eds.) (Amsterdam and London: North-Holland Publishing Company, 1973) (*see* RPO 216, page 30). The Ivory Coast study employs a set of dynamic programs to analyze policy options for the economy, incorporating linkages between projects, sectors and the total economy, as well as between regions, and between rural and urban areas.

Several dynamic linear programs have been constructed, for use both separately and as components of a unified central program for the Ivory Coast. The component models are:

1. Northern model, covering the problems of agricultural development in the Savannah zone.

2. Southwestern model, covering the problems of colonization in the forest area.
3. Southern model, covering the entire forest zone of the country.
4. Education model, linking labor requirements to supply by skill categories.
5. Urban model, consisting of 55 sectors.

The central model is a simplified combination of these separate models and includes additional public-sector relationships. The model can be solved for optimal combinations of policies subject to alternative saving and foreign lending constraints.

This comprehensive study addresses many of the critical issues of planning and economic decision making in the Ivory Coast. The individual models cover such problems as optimal investment planning in the large forest area in the Southwestern region where individual projects compete for common resources such as land, labor in peak periods and infrastructure; the effect of alternative educational policies (formal versus nonformal training) on the replacement of expatriate professionals and managers, and on the employment prospects of the newly educated; the scope for improving technology in the Savannah, and its relation to farm incomes, rural employment and the government budget.

The central model tests the sensitivity of the key economic variables to alternative development paths involving different types of foreign trade policies, different configurations of regional distribution of income and employment, and differential growth rates of overall employment.

The study has been conducted in close cooperation with the Government of the Ivory Coast, which has been of great assistance by providing data and by initiating further applications of the submodels. The French agency, Fonds d'Aide et de Coopération (FAC), and the Food and Agriculture Organization (FAO) have also expressed interest in extending the analysis, and in some cases applying it to other countries.

Responsibility: Development Research Center—Louis M. Goreux, in collaboration with consultants and assistance by FAO in data collection. (Ref. No. RPO 204)

Completion date: December 1974.

Reports

Condos, Apostolos, Goreux, Louis M., and Vaurs, R. *Agricultural Model from the Ivory Coast Programming Study.* Bank Staff Working Paper No. 125. March 1972. (Catalog No. 1/4)

Short-Run and Long-Run Influences upon Income Distribution

The project consists of an attempt to model the processes which determine the distribution of personal income within a country. At this stage, emphasis has been placed upon short-run influences. A model has been constructed and calibrated for Korea, and a similar model has been

specified for Yugoslavia. At present, estimation and simulation runs are being limited to the Korea Model.

The research effort focuses on the impact of policy intervention upon income distribution. A dynamic general equilibrium model has been specified for Korea, and estimates of the relevant parameters have been obtained from Korean data. The model attempts to link factor-price payments to consumer-demand patterns and output prices through a mechanism translating factor incomes into the personal distribution of income. The model is basically neoclassical with strong elements of disequilibrium behavior in the specification of dynamic properties.

Responsibility: Development Research Center—Montek S. Ahluwalia; the researchers are Irma Adelman, Laura d'Andrea Tyson and Sherman Robinson (consultants). (Ref. No. RPO 206)

Completion date: Korea model—January 1975.

Project Appraisal and Shadow Prices

Further research is needed in a number of areas to improve the methods of project evaluation. These include the consistent estimation of shadow prices, the implications for shadow prices of fiscal constraints, the policy environment and income distribution objectives, and project evaluation under economies of scale.

The major objective of this research project will be to provide criteria for the improvement of project appraisals carried out by the Bank. Several theoretical papers have been prepared. They pertain to:

1. The simultaneous derivation of shadow prices for unskilled labor, capital and foreign exchange in terms of a small economy-wide model with limited estimation requirements.
2. Theoretical and practical issues involved in the use of fiscal devices to make private market-based decisions correspond to shadow price-based decisions, in the presence of fiscal constraints.
3. A theoretically acceptable way of incorporating income distribution objectives in project appraisal.
4. Case studies of project evaluation methodology.

Responsibility: Central Projects Staff—Anandarup Ray; the researchers are staff members in the Development Research Center and Development Economics Department, in collaboration with Michael Bruno, Peter Diamond, Richard Eckaus, Arnold Harberger, Deepak Lal, Alan S. Manne, and James Mirrlees (consultants). (Ref. No. RPO 208)

Completion date: June 1975.

Reports

Balassa, Bela. *Estimating the Shadow Price of Foreign Exchange in Project Appraisal.* Bank Staff Working Paper No. 142. February 1973. (Catalog No. XII/117)

Blitzer, Charles R. *On the Social Rate of Discount and Price of Capital on Cost-Benefit Analysis.* Bank Staff Working Paper No. 144. February 1973. (Catalog No. II/24)

Bruno, M. "Planning Models, Shadow Prices, and Project Evaluation," in *Economy-Wide Models and Development Planning,* Charles R. Blitzer, P. Clark and L. Taylor (eds.). London: Oxford University Press (forthcoming).

_____. "Resource Allocation over Time and the Real Exchange Rate." *Proceedings of the International Meeting of Directors of Development Research and Training Institutes,* held in Belgrade, Yugoslavia (August 28-30, 1972).

Lal, Deepak. *Adjustments for Trade Distortions in Project Analysis.* Bank Staff Working Paper No. 128. March 1972. (Catalog No. II/26)

_____. *Employment, Income Distribution and a Poverty Reassessal Index.* Bank Staff Working Paper No. 129. March 1972. (Catalog No. VIII/90)

_____. *On Estimating Income Distribution Weights for Project Analysis.* Bank Staff Working Paper No. 130. March 1972. (Catalog No. II/27)

_____. *Methods of Project Analysis: A Review.* Baltimore and London: The Johns Hopkins University Press, 1974. World Bank Staff Occasional Papers No. 16. $3 paper. (Catalog No. II/254—available in bookstores or from the publisher.)

Size Distribution of Income

The development of quantitative guides which could be utilized in policy decisions has been hindered by the insufficient availability of reliable statistics on the size distribution of income. As a result, the United Nations Statistical Office developed a long-range program to improve their quality by strengthening the capabilities for collecting such statistics in developing countries. The UN Research Institute for Social Development also conducted a research project which included a study on size distribution of income.

The Bank project complements these efforts of the UN organizations. The original objective of this research project was to compile and evaluate the existing published data on the distribution of income in developing countries, and an extensive quantity of data was collected. As the study progressed, however, it became evident that a satisfactory evaluation of income distribution patterns could not be conducted on the basis of published data, but would require the use of original data tapes. This led to the development of additional research projects: "Evaluation of Latin American Data on Income Distribution" (RPO 283—*see* page 21) and "Evaluation of Asian Data on Income Distribution" (RPO 308—*see* page 25). Work on the compilation of existing data was nevertheless continued, and the data collected are currently being used to identify broad cross-country patterns.

Responsibility: Development Research Center—Montek S. Ahluwalia. (Ref. No. RPO 209)

Completion date: March 1975.

Reports

Jain, Shail, and Tiemann, A. *The Size Distribution of Income: A Compilation of Data.* Development Research Center Discussion Paper No. 4. August 1973.

Ahluwalia, Montek S. "Income Inequality: Some Dimensions of the Problem." Chapter I, *Redistribution with Growth,* Hollis B. Chenery, Montek S. Ahluwalia, C.L.G. Bell, John H. Duloy, and Richard Jolly. London: Oxford University Press, 1974. $16 cloth; $4.50 paper. (Catalog No. VIII/284—available in bookstores or from the publisher.)

Economy-wide Models and Development Planning

There is considerable interest in the utility of economy-wide planning, particularly the usefulness of multisector planning models. Various kinds of macroeconomic planning models have been built during the past 15 years for application in developing countries. However, no analysis has been made to determine whether the results of these exercises were worth the costs.

The purpose of this project is to analyze and evaluate the use of various types of macroeconomic modeling as an aid to development planning and decision making. The results are embodied in a volume of closely integrated review papers on different aspects of economy-wide planning. Emphasis was placed on multisector and medium-term approaches rather than an aggregate or short-term stabilization model.

Responsibility: Development Research Center, in collaboration with Michael Bruno, Mrinal Datta-Chaudhuri, Janos Kornai, T.N. Srinivasan, Lance Taylor, Tsunehiko Watanabe, and Larry Westphal (consultants). (Ref. No. RPO 210)

Completion date: Early 1975—to be published by the Oxford University Press, London.

International Comparison Project

Comparable data on the levels of production, consumption and capital formation are necessary tools for the analysis of economic and social development. Considerable progress has been made in the standardization of statistical methodologies for the estimation of national aggregates. But the conversion of national aggregates to a common international base of valuation is still being made at official exchange rates which do not satisfactorily reflect the relationships among national price levels.

This study was initiated by the United Nations in 1968 and s designed to provide detailed comparisons of national products, by expenditure categories, in terms of relative quantities and relative prices. The study uses a refined version of the methodology developed in earlier studies by Milton Gilbert and Irving Kravis.

Phase I of the project has been completed and provides detailed comparisons for ten countries (Colombia, France, Federal Republic of Germany, Hungary, India, Italy, Japan, Kenya, the United Kingdom, and

the United States). In subsequent phases, the objective is to extend the coverage of developing countries, modifying the methodology as necessary in response to the quality of statistical information. The second phase, now under way, covers seven developing countries (Argentina, Iran, Korea, Malaysia, Philippines, Thailand, and Venezuela). In the third phase of the research project an additional 14 to 16 countries will be studied, and the data for countries in the first two phases will be updated to a common reference year. The resulting data for more than 30 countries should provide a basis for evaluating shortcut methods and using them to extrapolate the results to a larger number of additional countries.

The data collected involve comparable prices for 500 to 1,000 individual commodities and comparable expenditure data for up to 160 expenditure groups in each country. The bulk of the data is being collected by the government statistical departments in each participating country, under the guidance of the United Nations Statistical Office.

Responsibility: Economic Analysis and Projections Department—Elinor Yudin. Professor Irving Kravis, University of Pennsylvania, is the Director of the project, Zoltan Kenessey, United Nations Statistical Office (UNSO), Associate Director, in collaboration with UNSO staff members. (Ref. No. RPO 268)

Completion date: A book on Phase I will be published by The Johns Hopkins University Press early 1975; Phase II—end of 1975; Phase III—1978.

Growth and Income Distribution in Brazil

Publications concerning the distribution of income in Brazil are numerous. However, work in this area has not been well integrated, and no analysis has been made of the difficulties faced by policy makers in implementing procedures to reverse the increasing concentration of incomes. The identification of a set of effective policy instruments for redistributing income has not yet been achieved.

Brazil has an efficient fiscal system which the Federal Government has used to distribute public investments and public expenditure programs among the states and municipalities. The Ministry of Finance in Brazil sought help from the Bank in developing a set of analytical studies to simulate the general equilibrium effects of the changing pattern of fiscal expenditures and the impact of new revenue policies.

The study is designed to examine the direct and indirect impact of policy instruments on growth and income distribution in Brazil, in terms of a general equilibrium planning model. In the first stage of the project, the research team identified and evaluated the statistical data required to estimate the econometric model which will be used to measure the probable macroeconomic effects of different policies designed to redistribute income. Work with the general equilibrium model will be developed in the second stage. This model will specify and integrate production relationships, links between factor payments and personal income distribution and expenditure patterns.

Responsibility: Development Research Center, in collaboration with Lance Taylor (consultant), and E. Bacha and Francisco Lopez of the economic research group, Federal University of Brasilia. (Ref. No. RPO 269).

Completion date: June 1975.

Evaluation of Latin American Data on Income Distribution

This research project, undertaken jointly by the Bank and the Economic Commission for Latin America (ECLA), is an outgrowth of an earlier project (RPO 209—*see* page 18) and is aimed at examining available data on income distribution in Latin American countries to which ECLA has access. The results of the research project will provide the Bank with better information on the profiles of distribution of income and poverty for many countries in Latin America.

The data consist of 31 surveys of household income for 13 countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Panama, Peru, Uruguay, and Venezuela). The major objective of the first stage is to prepare multiple tabulations of the data, accompanied by statements of their basic characteristics in order to assess comparability between countries.

Appropriate control devices will be developed for each country to check the consistency of the survey data with national accounts data on personal income, their origin by economic sectors and their components (e.g., wages and profits), and also with population and employment data.

In the second stage, the analysis of income distribution data will be extended to include other data sources. Methods will be developed for comparing income distribution data from household surveys with other primary data relating to income distribution, e.g., income tax and social security data, and data from agricultural and industrial censuses.

The third stage will be development of a research proposal for in-depth country case studies of factors affecting income distribution for one or more countries in the region.

Responsibility: Development Research Center, with research being conducted by Oscar Altimir (consultant) and ECLA staff in Santiago (Chile). (Ref. No. RPO 283)

Completion date: July 1975.

Reports

Altimir, Oscar. *A Data File on Income Distribution Based on Household Surveys in Latin American Countries.* Paper presented at a meeting of the International Association for Research on Income and Wealth (January 1974).

Growth, Employment and Size Distribution of Income

Extensive study of national data has given rise to the hypothesis that the size distribution of income appears to worsen as Gross National

Product (GNP) growth accelerates in developing countries. However, evidence from specific countries, such as Taiwan, leads some to dispute this hypothesis. Even if a negative historical relationship seems to exist between GNP growth rates and trends in the distribution of income, the issue still remains whether this relationship is inevitable or whether an effective development policy can reduce the conflict between growth and size distribution of income.

The objective of the study is to analyze the relationship between economic growth, governmental policies and income distribution in Taiwan, the Philippines and Colombia. The hypothesis underlying the study is that in a mixed economy the long-run trend in the distribution of income is determined by market forces, which reflect factor endowments, production conditions and technology, and are modified by government intervention.

The impact of various government policies on particular sectors will be examined in detail. The designated sectors are: in rural areas—(1) a subsistence, food-producing, agricultural sector, (2) a cash crop-producing, usually export-oriented, agricultural sector, and (3) the sector producing handicrafts and other nonagricultural goods; in urban areas—(4) a small- and medium-scale industrial sector, and (5) a services sector. A foreign-trade sector will also be included to allow for international movements of capital and technology in the analysis.

Responsibility: Development Research Center; the researchers are John C.H. Fei and Gustav Ranis of the Economic Growth Center, Yale University. (Ref. No. RPO 284)

Completion date: July 1975.

Reports

Fei, John C.H., and Fields, Gary S. *The Indexability of Ordinal Measures of Inequality.* Center Discussion Paper No. 205. May 1974. New Haven, Connecticut: Economic Growth Center, Yale University.

Fei, John C.H., and Ranis, Gustav. *Income Inequality by Additive Factor Components.* Center Discussion Paper No. 207. June 1974. New Haven, Connecticut: Economic Growth Center, Yale University.

Urban Income Distribution in Latin America

The analysis of issues concerning the distribution of income is greatly handicapped by the inadequacy of data. This research project supports a program to improve the data base, which is being undertaken by the member institutes of Estudios Conjuntos sobre Integración Económica Latino Americana (ECIEL).

The project will examine the nature of income distribution in 18 major urban areas in ten Latin American countries (Argentina: Buenos Aires; Bolivia: Cochabamba, La Paz; Brazil: Pôrto Alegre, Recife, Rio de Janeiro; Colombia: Barranquilla, Bogota, Cali, Medellin; Chile: Santiago; Ecuador: Guayaquil, Quito; Paraguay: Asunción; Peru: Lima; Uruguay: Montevideo; Venezuela: Caracas, Maracaibo). Three studies have been planned. The first concentrates on defining the nature of the

distribution of income in urban centers in Latin America. It will be based on household data accumulated by participating institutes of ECIEL between 1966 and 1972. The second study will be devoted to developing models to measure and characterize the distribution of income and relate them to other elements of the development process. The third study uses the results of the first two, in addition to new primary and secondary data to relate the behavior of individuals and households to the behavior of the economy as a whole.

Responsibility: Development Research Center—participation in the ECIEL seminars; the research is being carried out by the participating institutions of ECIEL. (Ref. No. RPO 285)

Completion: Draft of the first report—June 1975.

Prototype Models for Country Analysis

The Bank devotes a substantial amount of time and resources to models for country economic analysis. In general, the models use data from national accounts to project macroeconomic aggregates and examine creditworthiness. However, this methodology is not suitable for examining employment creation, income distribution, regional disparities, and other issues vital to economic development.

The study is intended to improve country modeling methodologies for analysis of a range of problems, relevant to policy and operational decisions, such as the effects of alternative development strategies on employment creation or income distribution and broad issues of investment allocation. A set of models appropriate for different economic structures will be constructed. These models will have a common core, with built-in capability to incorporate additional sets of equations or modules reflecting the degree of disaggregation feasible with the available data, including data outside the standard systems of national accounts.

The first stage, recently initiated, focuses on the preliminary evaluation of alternative methodological approaches and of data requirements. Pilot case studies are contemplated in the second stage.

Responsibility: Development Research Center and *Economic Analysis and Projections Department,* in collaboration with consultants, including Alan Brown and Erik Thorbecke, under the general direction of Hollis B. Chenery. (Ref. No. RPO 286)

Completion date: December 1975.

Employment and Income Distribution in Malaysia

Improving the distribution of income and generating more employment are major elements of the Malaysian strategy for economic development. Significant changes in land-settlement patterns have been initiated to increase the incomes of small farmers. Measures are being considered to diversify exports and to modify the industrial structure in order to increase employment.

The study examines patterns of income distribution in Malaysia and the impact of growth on distribution and employment in the medium term. There are two components: (1) an analysis of the pattern of income distribution using data from census and household surveys, and (2) projections of the employment implications of alternative growth patterns using a recent input-output table. The work on income distribution will examine sectoral, occupational, racial, and locational characteristics of distribution patterns and construct socioeconomic profiles of poverty. Employment projections will be based on sectoral output solutions derived from a static Leontief model.

Responsibility: Development Research Center—research under the direction of Montek S. Ahluwalia. (Ref. No. RPO 294)

Completion date: Draft of component (1)—January 1975; draft of component (2)—June 1975.

Distributive Impact of Public Expenditures

It is increasingly apparent that the benefits of economic development have been unevenly distributed, with the poor gaining the least. The alleviation of poverty calls for more direct measures, including the redistribution of income and wealth. Redistribution can be accomplished through a number of means, of which one would be the reallocation of government expenditures. Governments of developing countries typically mobilize and spend approximately 10-25 percent of the national income but information on the distributive impact of public expenditures is extremely meager.

The general objective of the project is to assess the impact of public expenditures on the distribution of income in two developing countries, Colombia and Malaysia. Specifically, the study will identify those major public expenditures allocable by specific households; describe the beneficiaries of those services by income distribution, ethnic group, geographical location, etc.; explore the factors determining the effective household demand for certain government services; and compare the results of the studies for the two countries.

The research team will reclassify government accounts into a format useful for economic analysis. It will select and study public spending programs for distribution analysis and develop estimates of unit costs of public subsidies for such programs.

Sample surveys will be used to study how services are distributed and to explore demand relationships for the various public outputs by socioeconomic characteristics of households. Not all spending items lend themselves to the sample survey technique. In such cases, a separate analysis will be conducted.

The Department of Statistics of the Malaysian Government has designed the sample for the survey. The Employees' Provident Fund has carried out a sample survey of its beneficiaries especially for the study.

Responsibility: Development Economics Department and *Development Research Center;* the principal researchers are Jacob Meerman and Marcelo Selowsky. The research on Malaysia is undertaken in collaboration

with Professor Lai ah Hoon of the University of Malaysia, Peter Heller of the University of Michigan, and the Eastern Market Assessment Surveys Company; the research on Colombia with Professor Manuel Ramirez of the University of the Andes, and the Colombian Data Company. (Ref. No. RPO 296)

Completion date: Malaysia—1975; Colombia, as well as a comparative analysis of both countries—1976.

Evaluation of Asian Data on Income Distribution

This joint research project by the Bank and the Economic and Social Commission for Asia and the Pacific (ESCAP) is patterned after a similar study with the Economic Commission for Latin America started in 1973, "Evaluation of Latin American Data on Income Distribution" (RPO 283—*see* page 21). Both are an outgrowth of an earlier project "Size Distribution of Income" (RPO 209—*see* page 18).

The objective of the project is to assess the availability, quality and comparability of data on income distribution in a number of Asian countries.

Initially, available data sources on income distribution for each country in the ECAFE region will be identified, and surveys to be included in the data file will be selected on the basis of a general evaluation of the quality of each source. This evaluation will include an analysis of general survey characteristics and also develop consistency checks among the survey data, national accounts data and demographic data. The methodology for applying such checks, currently being developed as part of the study on "Evaluation of Latin American Data on Income Distribution," will be applied with suitable modifications to each data source collected.

The data will be tabulated to present the socioeconomic characteristics of various income levels and to highlight patterns of income distribution within regions, in rural and urban areas separately, in other selected subgroups of the population, and in each of the major economic sectors.

Responsibility: Development Research Center, in collaboration with a Bank consultant and ESCAP staff in Bangkok. (Ref. No. RPO 308)

Completion date: A report documenting each data source—June 1975; tabulations—November 1975; final report—June 1976.

II. INTERNATIONAL FINANCE AND TRADE

Interrelated Economic Development of East and Southeast Asia in the Seventies

During the last two decades, Southeast Asian countries have shown rapid growth and an increasing orientation toward international trade. This growth has been accompanied by significant changes in their production structures which are leading to shifts in their comparative advantage.

The project will provide a consistent framework for the analysis and projections of trade between Japan and other Asian economies during the next decade. The research concentrates on the identification and examination of those industries most likely, in the changing patterns of the Japanese economy, to find it advantageous to shift all or part of their processing from Japan to East and Southeast Asian countries.

The study consists of two components. The first is largely macroeconomic in nature and involves projections, through 1980, of the structure of world trade between Japan and other major regions. The projections for the Japanese economy will be based on an existing long-term growth model which will be linked to a 40-sector input-output model.

In the second component, selected industries would be studied in more detail in order to identify the impact of a changing comparative advantage on the growth potential and viability of specific industries within the Japanese economy. The industries which may be used for this in-depth study include labor-intensive industries, such as plywood, toys, textiles, shipbuilding, and electrical machinery.

On the basis of these two components, conclusions will be drawn and recommendations made regarding the role of Japan in future regional economic growth.

Responsibility: East Asia and Pacific Regional Office—Parvez Hasan; the researchers are Saburo Okita and his associates in the International Development Center of Japan. (Ref. No. RPO 279)

Completion date: June 1975.

World Commodity Models

The turbulence in commodity markets in the last few years has heightened interest in analyzing the determinants of demand and supply of commodities in world trade. This is a complex area, especially since the markets for various commodities are interrelated, some natural resources are not renewable and some markets are dominated by a few producers or consumers. Nevertheless, a systematic framework for the compilation of data and analysis of commodity markets is needed for the Bank's regular evaluation of countries' economic situation and development prospects.

The research project involves the formulation and application of commodity models in selected areas. The ultimate objective of the research is to provide the analytical tools and the data format to analyze global supply and demand conditions of selected important commodities, including energy, natural resources and resource-based secondary commodities. Initially, the research will focus on energy. Subsequently, the research will be concerned with selected natural resources, such as bauxite, iron ore, copper, and forestry products. The secondary commodities on which attention will be focused next, are alumina, steel and pulp and paper. Optimizing and econometric analytical tools will be used to determine globally optimal output, investment and trade patterns. Such tools will also make it possible to assess the desirability and feasibility of collusive action by producers of these commodities in an effort to improve their terms of trade.

Responsibility: Development Research Center and *Economic Analysis and Projections Department,* in collaboration with consultants, including Dermot Gately, David Kendrick and Daniel Loucks, under the general direction of Everardus Stoutjesdijk of the Center. (Ref. No. RPO 309)

Completion date: Late 1977.

Promotion of Non-Traditional Exports

A number of Latin American countries have introduced incentive schemes to expand exports and promote investment in export-oriented industries. A comparative review of their experience is, therefore, desirable. Particular attention needs to be given to resource allocation effects, impact on income distribution, resource costs, and financial costs of the different export incentive schemes and the different techniques which have been used to minimize these costs.

The project will finance the preparation of about seven papers by consultants on the evaluation of strategies and policies for promotion of non-traditional exports in Latin American countries, especially Argentina, Brazil, Colombia, and Mexico. The papers will be discussed at a seminar scheduled in Chile in late 1975. The project will be carried out in cooperation with the Economic Commission for Latin America (ECLA) whose own staff will be preparing additional papers on the subject.

In addition to the evaluation of various aspects of export expansion policies and programs in Latin American countries, the seminar will also discuss the experience of countries in other regions of the world including India, Israel, Korea, and Yugoslavia.

Responsibility: Latin America and the Caribbean Regional Office—David Greene. Papers will be prepared and presented by consultants from Latin American countries as well as by staff members of ECLA. Bank staff members who may be participating in the conference, include Jean Baneth, Vinod Dubey, Michael Michaely, David Wall, and Larry Westphal. (Ref. No. RPO 310)

Completion date: The conference will take place in late 1975. The proceedings of the conference will be published shortly thereafter.

III. AGRICULTURE AND RURAL DEVELOPMENT

Reappraisal of Credits for Financing Farm Mechanization in Pakistan

This study examines the use and impact of International Development Association (IDA) credits to the Agricultural Development Bank of Pakistan (ADBP), which were granted for the purpose of financing farm mechanization, mainly tractors. The research project was prompted by concern about the social effects of farm mechanization, particularly the effects on agricultural employment.

The objectives of this study are to compare expectations with subsequent developments of mechanization and to assess the financial and economic benefits from farm mechanization in Pakistan. The evaluation of the impact of farm mechanization is based on a survey of 200 farms which received tractors in 1967. Data were collected on farm structure, resource use, production process, and output "before" and "after" the supply of tractors. The impact of tractors on income, labor employment, credit use, and tenurial arrangements is being examined.

Responsibility: Development Economics Department, in collaboration with Dr. J.P. McInerney of the University of Manchester (United Kingdom) and the Agricultural Development Bank of Pakistan (Karachi). (Ref. No. RPO 212)

Completion date: The field work and preliminary reports have been completed; the final report is being prepared.

Reports

Donaldson, G.E., and McInerney, J.P. "Changing Machinery Technology and Agricultural Adjustment." *Proceedings of the American Agricultural Economics Association* (August 1973).

Evaluation of Alternative Methods for Specifying Agriculture Sector Development Strategies: Portugal and Brazil

This project seeks to improve methods for defining integrated agricultural development strategies, on the basis of case studies in Brazil and Portugal.

The objective of the project is to develop integrated regional programming models for the purpose of evaluating the impact of alternative investments, such as forestry, irrigation, livestock, farm mechanization, and improved farm production practices. A regional programming model for the agriculture sector in each country has been tested and applied to produce information on such aspects as efficient production patterns, levels of prices and consumption, foreign trade in agricultural commodities, and employment and income levels.

The basic disaggregated models are costly to operate. Therefore, the study has also explored the use of more aggregated models and ways of dealing with the resulting aggregation bias.

Responsibility: Agriculture and Rural Development Department— Alvin C. Egbert, in collaboration with the Center for Agricultural Economic Studies, Gulbenkian Foundation of Portugal, and the Institute for Economics and Social Planning, Ministry of Planning and General Coordination (Brazil). (Ref No. RPO 213)

Completion date: Late 1974.

Reports:

"Analysis of Aggregation Errors in Linear Programming Planning Models," forthcoming in *American Journal of Agricultural Economics.*

Brazilian Agricultural Sector Planning Model—An Application of Mathematical Regional Programming. A Summary Report. Agriculture and Rural Development Department Working Paper No. 1. December 1973.

"Regional Agricultural Planning." *Proceedings of the Symposium on the Study of Agricultural Systems,* held at Reading (United Kingdom) (September 15-18, 1974).

"A Regional Planning Model for the Agricultural Sector of Portugal," in *Book of Linear Programming Studies,* B. Sabu and H.M. Salkin (eds.). Case Western Reserve University (forthcoming).

Agricultural Mechanization Study in India

The present study grew out of concern regarding the possible effects on farm employment of the mechanization components of agricultural credit projects. Various research studies have concluded that tractors have a favorable impact on agricultural output and do not decrease farm employment when they replace bullocks as a source of draft power. Research material has purported to show that tractors lead to (1) an expansion of the cropped area because of faster preparation of land for multiple cropping, (2) higher crop yields through more timely operation, and (3) a shift away from bullock fodder production to higher-value crops.

However, previous research projects were not designed to test these assumptions satisfactorily. In particular, analyses of past farm survey results have not been successful in separating the effects of tractors on employment from the effects of unrelated differences in cropping patterns, extent of irrigation and the like. It was, therefore, decided that the impact of tractors on employment needed much closer examination.

The study aims to measure the effects of tractors and tractor-drawn implements on farm and nonfarm employment and output in two states in India—Punjab and Gujarat. The objective is to test the hypothesis that tractors earn a high rate of return on their investment and do not displace farm labor under present conditions in India. Auxiliary hypotheses concerned with the ways in which tractors affect yields, cropping patterns and cropping intensity will also be tested.

Field survey data are collected from a sample of 600 farms in Punjab and Gujarat. Some of these use tractors and modern implements, while the remainder rely on bullocks and more traditional implements.

Responsibility: Agriculture and Rural Development Department— Paul Duane. The research is being undertaken by teams from the Indian Institute of Management in Gujarat, led by D.K. Desai, and the Punjab Agricultural University, led by A.S. Kahlon. (Ref. No. RPO 214)

Completion date: Late 1974.

The Agricultural Sector in Mexico

Since 1970, the Mexican Government and the World Bank have collaborated in the formulation and application of agricultural sector planning models. The work has been carried out in three phases: the first which continued up to early 1972, focused on developing a basic methodology and demonstrating illustrative numerical results for the planning models. The Bank of Mexico was the principal Mexican sponsoring institution in this first phase, which culminated in the drafting of the agricultural chapters of *Multi-level Planning: Case Studies in Mexico,* edited by Louis M. Goreux and Alan S. Manne.

At the conclusion of this demonstration phase, the Mexican Government broadened the scope of the work and invited one of the participating Bank staff members to reside in Mexico for two years and work in the Secretaría de la Presidencia in order to continue further development of the methods and also to assist in making concrete applications to Mexican agricultural policy questions. During this second phase, the model analyses served as the basis for a number of governmental policy papers on specific issues and for a more general plan document which has helped guide policy formulation in the present government.

In the third phase, the main thrust of the work has been carried on by the Mexican working group in the Secretaría, with a small amount of continuing collaboration by the World Bank.

The agricultural model (named Chac) describes both the local production conditions for all major producing localities in Mexico, and the sector-wide behavior of agricultural markets, in terms of equilibirum price levels and quantities marketed domestically and internationally. On the production side, the model is based on microeconomic farm production cost and input data, by crop and technique, for each locality. This feature makes it possible for agronomists and other field specialists to contribute directly to the specification and annual updating of the model's production relationships. On the market side, estimated consumer demand functions and export-import and transport cost parameters are utilized, and a linear programming solution algorithm is used to guarantee the appropriate market equilibrium points.

The purpose of the model is to provide a consistent framework for the analysis of policy issues in a complex environment. In making applications, the models were managed initially by a working group in the Mexican Secretaría de la Presidencia and later jointly by the Secretaría and a newly established Comisión Coordinadora del Sector Agropecuario. The

applications of Chac and its submodels primarily concerned the following areas:

1. overall sectoral strategies, in terms of output, employment, foreign trade, and associated investment requirements;
2. pricing policies for corn, wheat and other crops;
3. factor pricing, particularly for agricultural machinery and water;
4. export strategies to take account of comparative advantage rankings among crops;
5. project appraisal for irrigation works.

The models are now established and operating in Mexico. Further involvement of the Development Research Center will be limited primarily to compiling a collection of the planning studies for publication.

Responsibility: Development Research Center—John H. Duloy, Peter B.R. Hazell and Roger D. Norton, in collaboration with a team from the Secretaría de la Presidencia (Mexico) led by L. Solís. (Ref. No. RPO 216)

Completion date: A volume of working papers from the project will be ready for publication in early 1975.

Reports

Bassoco, Luz María, Norton, Roger D., and Silos, José S. "Appraisal of Irrigation Projects and Related Policies and Investments," forthcoming in *Water Resources Research* (December 1974).

Duloy, John H., Hazell, Peter B.R., and Norton, Roger D. *Agriculture and the Energy Crisis: A Case Study in Mexico.* Paper presented to the meetings of the American Agricultural Economics Association, Austin, Texas (August 1974).

Duloy, John H., and Norton, Roger D. *Competitive and Non-Competitive Demand Structures in Linear Programming Models.* DRC Discussion Paper No. 3. July 1973.

Goreux, Louis M., and Manne, Alan S. *Multi-level Planning: Case Studies in Mexico.* Amsterdam and London: North-Holland Publishing Company, 1973. $35 cloth; $19.75 paper. (Catalog No. II/210—available in bookstores or from the publisher.)

Hazell, Peter B.R., and Scandizzo, Pasquale L. "Competitive Demand Structure under Risk in Agricultural Linear Programming Models." *American Journal of Agricultural Economics* (May 1974).

Howell, Jr., Alfred H. *A Study of Capital-Labor Substitution in Mexican Agriculture.* Ph.D. thesis, University of Pennsylvania (August 1974).

Norton, Roger D., and Bassoco, Luz María. *A Quantitative Agricultural Planning Methodology.* Paper presented to the Sixth International Conference on Input-Output Techniques, Vienna (1974). Bank Staff Working Paper No. 180. (Catalog No. II/279)

Secretaría de la Presidencia, Mexico. *Lineamientos para el Programa de Desarrollo Económico y Social, 1974-80, Sector Agropecuario.* November 1973.

(Many of the above reports, plus several others, are scheduled to be published in a forthcoming book tentatively titled *Quantitative Studies in Mexican Agriculture,* Luz María Bassoco, Roger D. Norton, José S. Silos, and L. Solís (eds.). The Johns Hopkins University Press and Fondo de Cultura Económica.)

Rural Development in Africa

This study originated from the need to analyze the design of programs intended to reach large numbers of the rural population, requiring low financial inputs and trained manpower per capita. Several draft papers on rural development issues and research proposals were prepared and reviewed by Bank staff. As a result, it was decided to initiate this study in Africa.

Its purpose is to improve the basis for designing rural development projects in varying circumstances. The study is composed of two parts. The first part consists of rural sector surveys in Kenya and Tanzania which provide the basis for lending criteria for the rural sectors in the two countries. The second part consists of an analysis of the major elements involved in promoting the goals of rural development and evaluates 13 projects in Cameroon, Ethiopia, Kenya, Malawi, Mali, Nigeria, and Tanzania.

Projects were selected which represent diverse environments and project designs. All of the reviews are based on data which had already been collected. The analyses of secondary data are combined with field investigations which consist of interviews with persons involved in the design, implementation, supervision, and evaluation of the projects, as well as a search for additional sources of data. An extensive literature review has also been conducted to substantiate information gathered in the field investigations component.

Responsibility: Development Economics Department, in collaboration with staff from operational departments of the Bank, and from universities and government agencies in Africa, France, Federal Republic of Germany, the United Kingdom, and the United States. (Ref. No. RPO 218)

Completion date: The project reviews and sector surveys have been completed. The final report analyzing the results and discussing the implications for Bank policies is being prepared for publication.

Rural Development in Northeast Brazil

Inequitable development patterns have evolved in northeast Brazil with vast numbers of peasants living in feudal subsistence conditions alongside increasingly dynamic industrial sectors. This project has been designed partly to assist in developing the necessary informational and analytical base for regional development lending programs and, more generally, to provide an analytical framework for assessing the role of tenure reform, technological innovation and other elements of a development strategy for this kind of region.

The study has the following major research objectives:

1. to analyze at the microeconomic level the restrictions that prevent resources from being channeled to the rural poor;
2. to evaluate the efficiency of farms of different sizes and tenure arrangements under various technological, geographic and ecological conditions;

3. to provide an adequate data base to aid in the identification and implementation of rural development projects.

The methodology followed is to combine existing census data and special studies with an extensive rural survey of the northeast. The analysis will attempt to provide a reasonably complete picture of the tenure systems, farm sizes, farm organization and decision-making process, and the technical alternatives and operating costs of various farm types in a set of subregions in this area. A planning framework will be developed using econometric and programming techniques.

The project is comprised of two phases. Phase I places primary emphasis on the collection, organization and tabulation of the farm survey data base, and will be completed during 1974. Phase II will be concerned with the analytical work aimed at planning and project preparation issues.

Theoretical work is also being done on farm and microlevel regional models which will provide a framework for studying objectives (1) and (2) above. In particular, analyses have been undertaken of alternative tenure arrangements and of the impact of risk variables on the farm decision process.

Responsibility: Development Research Center, in collaboration with the Federal Ministry of Planning, the Superintendencia do Desenvolvimento do Nordeste (SUDENE) and the Federal University of Pernambuco (Brazil). Quirino Paris and Lee Bettis (consultants) participated in Phase I with a team of Bank staff members, one of whom, Pasquale Scandizzo, is resident in Recife (Brazil). (Ref. No. RPO 273)

Completion date: A report on the survey tabulations is expected in January 1975. Other studies will follow.

Comparative Experience with Land Reform in Latin America

A number of Latin American countries have carried out significant agrarian reform programs through land distribution and tenure reorganization. Land reforms have attempted to change the basic rural property and income distribution and to create new agrarian systems which give peasants greater employment and income opportunities and better access to resources and markets. Most of these programs, while massive, have been incomplete and partial, giving rise to a dualistic agrarian system. A great deal of controversy goes on regarding the relationship between land reform and development, and some disillusionment has set in, since reforms have not fulfilled all of the original expectations.

The principal objective of the project is to determine what role land reforms have played in reaching the basic development goals of raising output, achieving a more equitable distribution of income and creating employment opportunities, and how their effectiveness may be improved.

The specific problems to be analyzed are:

1. the role that distributive land reforms have played in the economic development process in Latin American countries;

2. the complementarities and trade-offs between growth-promoting and income-distributing effects of various kinds of reforms;
3. the types of reform policies that have raised productivity without unduly displacing workers;
4. the effect of reforms on economies of scale in production and services;
5. where and under what conditions cooperative, collective or group farming has worked satisfactorily;
6. possible strategies for using the impetus of land reform as a more effective tool for the redistribution of productive capacity, the expansion of employment opportunities and income generation;
7. ways in which land tenure changes can be employed as a basis or catalyst for "integrated smallholder development" programs.

A variety of land reform approaches and programs will be reviewed, focusing on the Mexican program which is the oldest and largest in the region, and on comparative material from Bolivia, Chile, Peru, and Venezuela. (The experience of other Latin American countries will be reviewed to a lesser extent.) It is expected that such comparative analysis will provide lessons for the design and implementation of future development programs for the rural poor.

Responsibility: Development Economics Department, in collaboration with the Land Tenure Center of the University of Wisconsin, the Centro de Investigaciones Agrarias (Mexico), the Centro de Estudios del Desarrollo (Venezuela), the Fundación para la Capacitación e Investigación Aplicada a la Reforma Agraria (Venezuela), and the Fundación para el Desarrollo Nacional (Peru). (Ref. No. RPO 280)

Completion date: February 1975.

Development Strategies for Smallholder Agriculture: A Case Study in Yugoslavia

Smallholder farming is the traditional and predominant form of agriculture in most developing countries. Accordingly, it is important to investigate the effects of policies, institutional arrangements and economic performance in this traditional farming subsector and its relationship to the growing modern large-scale farming subsector. Further analysis is necessary to determine the role that this traditional subsector can play in promoting both economic development and the well-being of rural people in the context of a rapidly modernizing and relatively developed market economy.

This study analyzes the effects of government policies, institutional arrangements and socioeconomic conditions on smallholder agriculture in Yugoslavia. The experience in three regions of Serbia (Vojvodina, Serbia proper and Kosovo) in different stages of development are being examined.

The first phase of the work consists of a cross-sectional analysis of 10,000 observations for the year 1972. For this purpose, the data for the three regions will be stratified into four farm types—industrial crops, livestock, mixed crops (including livestock), and mountain farms. The

analysis involves an estimation of production functions and an examination of the different kinds of linkages between the social and individual sectors.

A subsequent study of farm models will explore the impact on smallholders of the inputs associated with the linkages, using linear programming models of average farms. From these data, the costs, including opportunity costs and benefits of cooperation for the various categories of farms, can be highlighted. Data from secondary sources will also be utilized.

Responsibility: Agricultural and Rural Development Department—Graham Donaldson, in collaboration with the Institute of Agricultural Economics (Belgrade). (Ref. No. RPO 289)

Completion date: February 1975.

Evaluation of the Lilongwe Land Development Program

The Lilongwe Land Development Program (LLDP) in Malawi, one of the first rural development projects financed by the Bank, is an integrated, multifaceted project which affects a population of some 250,000 over an area of 450,000 acres. Its objectives are to increase the agricultural productivity of smallholders in the Central Region of Malawi through extension of a package of inputs, including seed and fertilizer, for the production of groundnuts, tobacco and maize, to improve management practices and provide marketing facilities. The program involves the construction of roads, ditches and boreholes for drinking water; soil conservation; the allocation of communally held land to family units; the establishment of growth centers and of a ranch for the production of beef cattle. Included is a component for the training of staff, farmers and rural leaders.

LLDP has been reviewed as part of another Bank research project, "Rural Development in Africa" (RPO 218—*see* page 32). The purpose of this additional research is to analyze in greater detail the distribution of the benefits of rural development activities between various socioeconomic groups, with special emphasis on the role of the delivery systems used.

The methodology will consist of the testing, by standard econometric techniques, of a series of hypotheses related to the levels and determinants of benefits at LLDP, supplemented by simple descriptive statistics.

Responsibility: Development Economics Department—Mark Leiserson; the researchers are Bill H. Kinsey and Robert Reader (consultants). (Ref. No. RPO 293)

Completion date: The analysis of the data has been completed; draft final report—late 1974.

Rural Savings and Investment

Information on savings behavior of different socioeconomic groups is a key input in many areas of analytical development research, e.g., proj-

ect analysis, models of growth and distribution, technology choice. Information on corporate and public savings is usually available from national accounts. Data on household savings, however, can only be obtained from household surveys. Since these are rarely conducted in rural areas, little research information exists regarding the savings behavior of rural households. The close direct link between savings and investment in rural households also poses conceptual problems in measurement.

The project is designed to take a first step in this inadequately researched field. The study will attempt to integrate an analysis of rural savings behavior with an examination of capital formation decisions—an essential approach for farm households which combine savings and investment functions in one decision-making unit.

The project constitutes a wide-ranging review of existing material in order to:

1. survey and clarify conceptual issues related to the identification, valuation and measurement of different forms of real and financial savings and investment undertaken by rural households;
2. search out and catalog a minimum inventory of farm/household survey data with relevant information on savings and capital formation;
3. survey and evaluate the fruitfulness of alternative analytical approaches which have been employed to study rural savings and investment, such as programming models, econometric models, village studies, and anthropological explanations.

Work on this project will be closely coordinated with the research for a companion project, "Analytics of Change in Rural Communities" (*see* RPO 317 below).

Responsibility: Development Research Center and *Development Economics Department*—Montek S. Ahluwalia and Shankar N. Acharya, in collaboration with consultants. (Ref. No. RPO 304).

Completion date: June 1975.

Analytics of Change in Rural Communities

The Bank has begun to devote substantial amounts of resources to lending for rural development projects. It has become apparent that problems of project design and implementation are more difficult in this area than in more traditional areas of Bank lending. This is due to the facts that (a) the aim of a project often is to initiate or redirect a process of change in rural communities, which raises problems of consistency with the goals of the community itself; and (b) rural development projects involve a variety of activities, some of which do not have any direct short-term economic returns.

The conceptual and information base for the design of rural development projects is still very weak. A great deal of fragmentary knowledge is available about the existing socioeconomic structures of rural communities, but there is relatively little indication of the change these structures would undergo in response to different kinds of intervention or about the way in which the results from specific village studies can be

applied to other villages or regions. The risks of failure are, therefore, greater in rural development projects than in some of the Bank's more traditional investments, and complicated problems of technology, organization, land tenure, and human motivation remain to be resolved.

The proposed study attempts to develop a rigorous framework for:

1. designing and evaluating key features of integrated rural development projects;
2. analyzing the effects on rural communities of different policy instruments;
3. helping to identify those features of successful projects which can be repeated in other rural areas;
4. providing, more generally, an efficient feedback system to enhance the value of project experience.

The research program comprises two preliminary and interdependent undertakings:

(a) the construction of socioeconomic models of two or three illustrative cases of rural communities undergoing change;
(b) the identification of key characteristics which determine how the model specification must vary for different types of communities.

The latter is an attempt to meet the concern about the possibilities of generalizing from particular village studies.

The empirical basis for the studies will consist of the following:

(i) 3,000 village studies which have been catalogued by the Institute of Development Studies at the University of Sussex;
(ii) the considerable amount of information that has been collected by the Bank in the course of its work in Indonesia, northeast Brazil, Mexico, and Yugoslavia;
(iii) the field surveys which have been completed in connection with the Muda River Irrigation Project in Malaysia, jointly by the Bank and FAO.

Responsibility: Development Research Center—Peter B.R. Hazell and Roger D. Norton, in collaboration with other departments of the Bank and with consultants. (Ref. No. RPO 317)

Completion date: The project has just started and is scheduled to be finished in two years. During the first year, the primary emphasis will be on a review of available data, and the solution and revision of preliminary models incorporating the key characteristics of rural communities.

IV. INDUSTRY

Scope for Capital-Labor Substitution in the Mechanical Engineering Industry

The Development Research Center has conducted two previous investigations of planning methodology in the mechanical engineering industries. One of the studies was concerned with a model for plant-level production decisions in the Mexican heavy electrical equipment industry. The other formulated a sectoral investment planning model for use in Korea. The principal aim of these studies was to demonstrate the feasibility of implementing a numerically solvable model for planning in the mechanical engineering sector. The present study extends this methodology to permit specification of alternative production techniques and incorporation of product differentiation.

The present project analyzes the scope for capital-labor substitution in the mechanical engineering industry and the substitution possibilities between locally produced and imported mechanical engineering products.

The study is divided into two parts. One is concerned with product differentiation in mechanical engineering products. It will highlight the identification of the major factors which result in the coexistence of a wide spectrum of different automations associated with mechanical engineering products in developing countries. The other aspect of the study is concerned with alternative production techniques of manufacturing selected mechanical engineering products for given product specifications. It will analyze the sensitivity of the optimal technique to such elements as factor prices, economies of scale, joint production and output mix, the sequential nature of production, and the degree of capacity utilization.

Responsibility: Development Research Center—Everardus Stoutjesdijk and Yung Rhee, in collaboration with Larry Westphal of the *Development Economics Department* and the Korea Institute of Science and Technology (Ref. No. RPO 223)

Completion date: June 1975.

Reports

Korea Institute of Science and Technology. *Final Report on a Study of the Scope for Capital-Labor Substitution in the Mechanical Engineering Sector.* February 1973.

Programming in the Manufacturing Sector

This project consists of several studies concerned with investment planning in the manufacturing sector. In particular, this research addresses a number of problems in connection with the selection of scale, timing, location, and technology of projects which exhibit economies of scale and are interdependent with other activities.

The first phase is completed. It consists of three studies:

1. an analysis of the optimal investment pattern for the fertilizer industry in the East African Economic Community;
2. a study of two large firms in Mexico, producing heavy electrical equipment;
3. a study on planning in the mechanical engineering sector in Korea.

The second phase of the project concerns multicountry investment planning for the Western Africa region. Extending the methodology used in the East African fertilizer study, multicountry investment planning models have been developed for the fertilizer as well as steel, forestry and cement industries in Western Africa. These are used to select attractive packages of investment projects to be established within the region. New solution procedures for mixed-integer programming models have been developed in collaboration with Glenn Martin (a consultant). The programming models are being tested.

An operational manual on project selection is being prepared for use in industrial project analysis. A detailed exposition of the methodology of process analysis will be followed by a number of case studies selected from actual Bank experience. A detailed case study of the Turkish forestry industry has already been completed. A similar study concerning a cement project in Togo is under way. These studies are being compiled as a monograph for publication.

Responsibility: Development Research Center—Everardus Stoutjesdijk, in collaboration with Larry Westphal of the *Development Economics Department*, and David Kendrick, Glenn Martin (consultants). (Ref. No. RPO 224)

Completion date: December 1974.

Utilization of Industrial Capacity in Five Latin American Countries

Abundant labor and scarcity of capital are industrial features found in Latin American countries. Presumably, the small capital stock would, therefore, be used as intensively as possible. However, preliminary data indicate that capacity utilization is not high and the single-shift day appears to be the rule. A multiple-shift structure would lead to better utilization of capital as well as alleviate unemployment problems.

The objective of this research is to examine the constraints on greater utilization of industrial capacity in Brazil, Chile, Colombia, Peru, and Venezuela. In particular, it focuses on the problems of increasing from one to two shifts per day in the manufacturing sectors of these countries. The study is designed to provide a basis for the formulation of a capital utilization policy which would specifically include incentives and changes in labor legislation allowing the five countries to raise their levels of output and employment.

Data for the study are being accumulated through in-depth interviews at selected firms in the five countries. These interviews will provide an insight into how to generalize on larger samples of industrial surveys or

input-output tables. Statistical data previously collected by the governments and research organizations of the five countries will be utilized.

Responsibility: Industrial Projects Department—Frederick Moore. The study is being directed by Paul N. Rosenstein-Rodan and Daniel Schydlowsky, Center of Latin American Development Studies at Boston University, in collaboration with several public agencies in the countries concerned. (Ref. No. RPO 225)

Completion date: Mid-1975.

Financing Small-Scale Industry

The promotion of small-scale enterprises is an important part of the long-run development strategy of many developing countries, primarily to stimulate employment, improve the distribution of income and widen the entrepreneurial base in the industrial sector.

The World Bank Group has not yet developed adequate financial instruments for financing small-scale industries. Direct financing by the Bank and its affiliate, the International Finance Corporation (IFC), can only reach large-scale operations. Some of the Development Finance Companies financed by the Bank handle smaller projects, but the bulk of the assistance goes to medium-size and large firms.

This project is concerned with the operational aspects of financing small-scale industries, with the purpose of examining the most appropriate lending and organizational measures the Bank might consider to facilitate the growth of this sector.

The study concentrates on an assessment of existing financing programs. Information on the more successful among them and the conditions they encounter, the method of operations employed, the activities and subprojects involved was gathered through personal interviews and documented materials.

The research team carried out surveys of small-scale industry financing and related programs in eight developing countries: Colombia, Guyana, Iran, Korea, Singapore, Trinidad and Tobago, Tunisia, and Zambia. They were selected on the basis of geographic dispersion, variation in size, difference in levels of development and industrialization, and the existence of promotional programs for small-scale industries. The summary report also draws on the research team's experience of small-scale industry financing programs in other developing and in developed countries.

Responsibility: Development Economics Department, in collaboration with the Swedish International Development Authority (SIDA). The research team led by David Kochav (consultant) includes Kathleen Di Tullio (Bank), Nurit Wahl (consultant), Holgar Bohlin and Ilmar Roostal (SIDA). (Ref. No. RPO 277)

Completion date: The final report and country annexes are finished; publication is under consideration.

Industrial Policies and Economic Integration in West Africa

Economies which rely heavily on the export of primary products have special problems in designing appropriate strategies for economic development. Further study of these problems was necessary to answer questions which have arisen in the Bank as regards economic integration, trade among developing countries and industrialization policies for such countries.

The study will evaluate the incentive schemes applied and the prospects for economic growth and industrial development under alternative policies, including economic integration in four West African countries. The countries, which represent a variety of economic structures, are Ghana, Ivory Coast, Mali, and Senegal.

An analysis will be made of the incentive systems of these countries as they affect particular industries, import and export substitution, domestic and foreign investment, and the size of industrial firms. Incentive measures, such as tariffs, quantitative restrictions, export taxes and subsidies, tax holidays, credit preferences, and government expenditures will be quantified and their joint effects on particular activities estimated. The data will also be used to assess the economic cost of the incentive scheme applied and to determine cost/benefit ratios for foreign investment in particular activities.

Information on incentives will be supplemented by data on major firms and industries to indicate their comparative cost positions among the four countries and in relation to other countries. Finally, the growth prospects of the individual countries will be appraised under alternative policies, including import substitution in a national framework, exports to countries outside the region and increased intraregional trade.

Responsibility: Development Research Center. The study, under the supervision of Bela Balassa, involves participation by staff from the Development Economics Department and general support from the Western Africa Regional Office, in collaboration with Scott Pearson, Louise Roden and Dick Stryker (consultants), and Centre Ivoirienne de Recherche Economique et Sociale (Ivory Coast) and Centre de Recherche d'Economie Appliquée (Senegal). (Ref. No. RPO 287)

Completion date: March 1975.

Industrial Capacity Utilization

The level of capital utilization in manufacturing is low in many developing countries despite the scarcity of capital and the low social cost of labor. A better understanding of the determinants of capital utilization could lead to a lowering of the average and marginal capital-labor ratios, thereby bringing the use of resources into a better relationship with social factor prices.

The objective of this study is to devise a policy framework to increase the utilization of capital. The study analyzes the extent and charac-

teristics of underutilization of fixed capital in the manufacturing industries in Colombia, Israel, Malaysia, and the Philippines.

A large number of industrial plants in selected manufacturing sectors in the four countries has been examined through personal interviews to ascertain:

1. plant and firm characteristics;
2. the basic facts about the amount of time capital stock is idle and the intensity of its use during operation;
3. demand characteristics, including market structures;
4. input price structures, including night-time wage/premia, seasonal price variations and managerial preferences.

Responsibility: Development Economics Department—Helen Hughes and Francisco Thoumi, in collaboration with David Lim and Gordon Winston (consultants). David Morawetz is participating in the Israeli study. Romeo Bautista is conducting the study in the Philippines. (Ref. No. RPO 295)

Completion date: All field work has been completed and the individual country studies have been reviewed. Final report—January 1975.

Reports

Winston, Gordon. *The Theory of Capital Utilization and Idleness.* Bank Staff Working Paper No. 176. April 1974. (Forthcoming in *Journal of Economic Literature.)* (Catalog No. XIII/275)

Patterns of Industrial Development

Empirical studies show that economic development, as measured by rising per capita income, is associated with systematic variations in the structure of the economy. Chenery and Taylor in "Development Patterns: among Countries and over Time" *(Review of Economics and Statistics,* November 1968) combined time-series and cross-country data in a multiple regression exercise to provide a disaggregated view of the production patterns of the industrial sectors of 50 countries for 1950-63.

Extending the Chenery and Taylor study, this research project will analyze the structural changes in manufacturing industry, trade in manufactures and industrial employment in about 100 countries. The study will use annual data on trade in manufactures for the period 1963-72, classified according to several alternative definitions, such as UNCTAD's "Total A" and "Total B," and SITC (Rev.) 5 to 8 and SITC (Rev.) 5 to 8 minus 68. The production and trade data will be combined to obtain the total supply and its disposition of selected manufacturing products and also according to the United Nations "Broad Economic Classifications."

Responsibility: Development Economics Department—Vinod Prakash. (Ref. No. RPO 305)

Completion date: Late 1975.

V. TRANSPORTATION

Substitution of Labor and Equipment in Civil Construction: Phase III

Relative labor abundance in many developing countries may make labor-intensive techniques more suitable for all kinds of civil construction, including dams and irrigation works, as well as highways. This research project is the third phase of a continuing study of the substitution of labor and equipment in civil construction. Phase I, completed in October 1971, established the technical feasibility of factor substitution for a wide range of construction activities. Specific physical, social and managerial parameters were found to be of critical importance in explaining the wide variation in productivity rates of labor and equipment. Phase II, completed in October 1973, focused on several road, dam and irrigation sites in India and Indonesia.

The principal conclusion from the analysis of field data has been that labor-intensive methods, as traditionally practiced in many developing countries, are not competitive with modern-equipment methods for most conceivable sets of factor prices. Yet, the creation of productive employment opportunities for large segments of unemployed and underemployed populations remains an important objective of economic development.

This concern has led to Phase III of the study which seeks to develop and demonstrate appropriate intermediate civil construction technologies suitable for labor-abundant economies, with field work being conducted in India and Indonesia. The emphasis in this phase of the study will be on the extent to which it is possible to increase the productivity of manual labor by—

1. improved tools and equipment;
2. improved organization and management techniques;
3. improved nutritional standards of the labor force.

Responsibility: Transportation and Urban Projects Department—Inder K. Sud. The consulting firm of Scott, Wilson, Kirkpatrick and Partners (United Kingdom) is conducting the study in association with Border Roads, the Ministry of Transport, the Central Water and Power Commission, and State Public Works Departments in India. In Indonesia, the Directorate of Water Resources Development and the Highways Department (Bina Marga) are collaborating in the study. (Ref. No. RPO 226)

Completion date: The Phase III study is a three-year effort expected to be finalized in 1977.

Reports

Basta, Samir, and Churchill, Anthony. *Iron Deficiency Anemia and the Productivity of Adult Males in Indonesia.* Bank Staff Working Paper No. 175. April 1974. (Catalog No. XXII/274)

Harral, Clell G., et al. *Study of the Substitution of Labor and Equipment in Civil Construction: Phase II Final Report.* Bank Staff Working Paper No. 172. January 1974. (Catalog No. XXII/266)

Karyadi, Darwin, M.D., and Basta, Samir. *Nutrition and Health of Indonesian Construction Workers: Endurance and Anemia.* Bank Staff Working Paper No. 152. April 1973. (Catalog No. XXII/218)

Study of the Substitution of Labor and Equipment in Road Construction: Phase I Final Report. October 1971.

Highway Design Study: Phase II

The costs of higher standards of highway design in North America and Europe are normally offset by savings in road-user and highway maintenance costs. The savings are large because of the high values attached to motorists' time and high traffic volume. The interest of the Bank, however, is often directed to low-volume roads in lower-income countries with capital scarcities, where the trade-offs between initial construction costs and future maintenance and road-user costs may dictate quite different highway design and maintenance strategies.

The Highway Design Study analyzes cost trade-offs for designing highways with low-volume traffic. Phase I of the study developed a methodological framework including a prototype simulation model delineating the underlying engineering relationships among construction standards, maintenance standards and vehicle operating costs. It was concluded at this phase of the research effort that sound empirical evidence is lacking for many of the technical relationships necessary for the determination of optimal design standards for low-volume roads.

Phase II of the study focuses on the collection of empirical data. Field studies are under way in Kenya and are being planned in Brazil and India. The field work includes surveys among transport firms and experimental measurements to establish vehicle operating costs as a function of road geometrics and surface conditions, and field measurement of the relationship of road deterioration and maintenance costs to design standards, maintenance standards, construction material, traffic usage, and climate. Results from these studies should provide a basis for project analysis under different conditions of terrain, geology and climate.

Two years of field observation have been completed in Kenya; a small team will continue long-term observations of pavement deterioration and conduct further experiments. Field studies in Brazil and India are expected to commence in 1975.

Responsibility: Transportation and Urban Projects Department—Clell G. Harral, Leon H. Miller and Inder K. Sud. Field work in Kenya was done by the Transport and Road Research Laboratory (United Kingdom), in collaboration with the Ministry of Works (Kenya). The Indian study will be conducted by the Central Road Research Institute (New Delhi). (Ref. No. RPO 227)

Completion date: Final report concerning the Kenya field work—December 1974.

Reports

Moavenzadeh, Fred, et al. *Highway Design Study, Phase I: The Model.* Bank Staff Working Paper No. 96. January 1971. (Catalog No. XXII/171)

Measurement of Road Width/Traffic Flow/Vehicle Speed Relationships

This project is complementary to the larger Highway Design Standards Study (RPO 227— page 44). It studies the influence of lane and shoulder widths of roads on the relationship between speed and traffic flows, which is one of the most important elements in determining optimum width of highways. The question of highway width is a frequent controversy in Bank project negotiations.

In addition to the primary interest of optimum highway width, the study is also designed to foster development of institutional capacity for highway research in developing countries. Three case studies are planned for Kenya, Brazil and India.

The Kenya study has been completed. The field work focused on the effect of road width on vehicle speeds under free-flowing traffic conditions. Field counts of traffic on level, straight road sections were made. Data on the composition of traffic and road characteristics were collected by observation teams at several points on the Kenya highway network. Multiple regression analyses were utilized to determine vehicle speed relationship as a function of road and shoulder width, traffic composition and volume. Similar studies in Brazil and India will focus on traffic composition and volume ranges of importance in those countries.

Responsibility: Transportation and Urban Projects Department. In Kenya, a Graduate Fellow, W. Kahoro, was appointed by the University of Nairobi to conduct the study, in collaboration with the Transport and Road Research Laboratory (United Kingdom). Mr. Kahoro simultaneously held a Unesco fellowship for one year, for the first half of the project. (Ref. No. RPO 228)

Completion date: Final report on the Kenya study—October 1974.

Yemen Arab Republic Feeder Road Study

At present, little or no systematic empirical data exist on the interrelationship between different levels of transportation investment on "farm to market" roads and agricultural production, especially in the traditional rural economies in developing countries.

This study is the first in a series of research projects undertaken by the Bank to develop systematic information for the evaluation of rural development projects involving feeder roads. The study areas comprise two regions of considerable agricultural potential in the Yemen Arab Republic which currently are served by low-standard transportation facilities—Taiz Turba region in the south and the Wadi-Mawr region in the north.

Research consists primarily of a series of regional surveys of specified subareas, within the area of influence of a Bank-financed project, before, during and after construction of the road. The study is designed to develop formulas relating the net value of agricultural production to varying levels of total investment in the study area, taking into consideration relevant socioeconomic, demographic and environmental factors. The initial surveys concentrate on collecting and analyzing data on land use, agricultural production costs, transportation characteristics and costs, local markets and their structure, demographic and labor-force characteristics, and other factors such as climate, geography and geology. Follow-up studies during construction and after completion of the road will monitor changes occurring in those areas and attempt to relate these to transportation investment.

Analysis of interview survey data from the base situation study of the Taiz Turba road is substantially completed and supplementary data on traffic and imports/exports from the area have been collected. Aerial photo interpretation for determination of overall land-use patterns in the road-influenced area has been carried out by the Geographical Institute of the University of Zurich. An attempt has also been made to analyze local cropping patterns using ERTS satellite images. Base situation interview surveys in the Wadi-Mawr region were undertaken between November 1973 and February 1974. Planned follow-up surveys will have to be deferred, however, as road construction has not yet started.

Responsibility: Transportation and Urban Projects Department—Brigitta Mitchell, in collaboration with the Swiss Federal Institute of Technology. A research team consisting of a senior researcher and three graduate students from the Institute and two Yemeni counterparts from the Central Planning Organization of the Yemen Arab Republic are conducting the field work. (Ref. No. RPO 229)

Completion date: Report covering the base period—March 1975.

Ethiopia Feeder Road Study

The Ethiopian road network is comprised of fairly adequate main roads but severely lacks low-cost rural roads. All-weather feeder roads constitute roughly five percent of all roads, while the comparative figure for the neighboring country of Kenya is approximately 90 percent. The development of an effective feeder-road construction program is of crucial importance for the success of Ethiopia's rural development effort.

This is the second in a series of research projects undertaken by the Bank in its evaluation of the impact of feeder roads. The research consists of a series of socioeconomic surveys of the area influenced by road development, before, during and after completion of the roads.

The first phase of the project will investigate the Agaro-Chira road, southwest of Jimma. The road is expected to open up an area to settlement and more systematic cultivation where hitherto only wild-growing coffee has been exploited. In subsequent phases of the study, it is envisaged to monitor two or more additional feeder-road projects in the highlands where subsistence agriculture predominates.

The initial surveys concentrate on establishing basic dat ..i the physical and social institutional resources of the region, in particular its demographic and labor-force characteristics, land-use patterns, agricultural production yields and costs, transportation characteristics and costs, and local markets and their structure. Repeat surveys during construction and after completion of the road will monitor changes occurring in the study areas and attempt to relate these to investments. It is expected that from this analysis formulas relating the net value of agricultural production to varying levels of total investments for areas of differing physical and social institutional endowments can be developed.

Responsibility: Transportation and Urban Projects Department—Brigitta Mitchell, in collaboration with the Institute of Development Research, Haile Selassie I University. Field work was carried out by a team of students under the supervision of a Senior Research Fellow of the Institute between December 1972 and April 1973. (Ref. No. RPO 271)

Completion date: The Agaro-Chira Area baseline socioeconomic survey is finished; the report is being prepared.

Economics of Containerization

The division of costs and benefits between a foreign and domestic economy is an important issue in the economic evaluation of port projects. It is becoming increasingly significant with the transition to container technology; unless specific measures are taken, it is not clear whether the less developed countries will gain from the transition to container services. Major problems occur in estimating the net benefits of port projects and in analyzing pricing and other policy options available to the developing countries.

The purpose of the study is to examine the economics of containerization projects in ports. Initiated in May 1974, the study will set up an economic framework within which to analyze the decisions a country may make on port investments, provisions of services, and fiscal and pricing policies. Alternative market conditions which a country faces in obtaining shipping services will be examined. The study will establish methods of analysis and identify major variables, with some typical orders of magnitude. A few prototype cases involving containerization projects are to be analyzed in order to work out procedures and tools of analysis which can be used in future appraisals and policy design studies for specific ports.

Responsibility: Transportation and Urban Projects Department—Clell G. Harral and Surendra K. Agarwal, in collaboration with Professors A.A. Walters and Esra Bennathan (consultants). (Ref. No. RPO 313)

Completion date: Final report—September 1975.

Malagasy Feeder Roads

In 1973, two research projects were i..tiated, one in the Yemen Arab Republic and the other in Ethiopia, to quantify the contribution of

feeder-road investments to rural developments (*see* RPO 229—page 45 and RPO 271—page 46). These projects will monitor, over a period of six to ten years, the impact of rural road projects on the small local economy they serve. The Malagasy Feeder Road project is the third in a series on this subject. However, since satisfactory baseline surveys already exist and the road has been completed, the study can go directly to the final phase of the evaluation.

The Andapa basin in northeast Malagasy was the subject of an extensive socioeconomic survey financed by the Fonds d'Aide et de Coopération (FAC) and conducted by the French consulting firm BCEOM between 1964-66. The study included surveys of household budgets and consumption, local trade and retailers, external trade, and agricultural production and productivity. Tabulations of all the data were prepared.

A road connecting the basin with a coastal highway was completed in 1970. Follow-up FAC/BCEOM studies planned after road completion have not been undertaken due to lack of funds.

The purpose of this research project is to present a comparative analysis of selected socioeconomic variables from 1964–66 to 1974–75. The analysis should yield insights into the traffic effects of the road as well as its developmental impact on the Andapa basin. Data will be collected on land use and productivity, population, household budgets and consumption patterns, and local and external trade. Interview surveys among farmers, traders and truckers will be conducted. Consumer and producer prices will be monitored and road traffic surveys taken.

Responsibility: Transportation and Urban Projects Department—Brigitta Mitchell, in collaboration with the Swiss Federal Institute of Technology and BCEOM. The survey work will be conducted by a team of graduates from the Swiss Federal Institute of Technology. Local counterparts, probably university students, will assist in the field work. (Ref. No. RPC 314)

Completion date: The project commences in November 1974. Final report—1976.

VI. PUBLIC UTILITIES

Analysis of Problems and Issues in Village Electrification

The Bank has not been very active, so far, in village electrification programs. The appraisal of these programs poses particular difficulties because of high capital costs of installation, high operating costs per unit, low load density, and low utilization. As a result, the annual financial return to the utility is low in the early years of these projects. The Bank is interested in developing village electrification investment standards in the context of its rural development activities.

The purpose of the study is to develop criteria for evaluating the scale and composition of village electrification programs. The research is intended to identify and measure their social costs and benefits. El Salvador was chosen for this study because its electrification program is well established and has several interesting features. The study is particularly concerned with the effects of providing electricity on agricultural and village industrial output, employment, wages and consumption patterns, social development, and migration from rural to urban areas. In addition, the importance of electricity will be examined in relation to infrastructure projects, such as water supplies, schools, feeder roads, and support programs for rural industries and agriculture.

Responsibility: Public Utilities Department—Dennis Anderson, in collaboration with a team from Universidad Centro Americana and with the cooperation of Comisión Ejecutiva del Río Lempa in El Salvador. (Ref. No. RPO 238)

Completion date: Final research report—December 1974.

Reports

Falla. "Costos y Benificios Sociales de la Electrificación Rural en El Salvador" (Study by an Anthropologist in a Village, Rosario de la Paz), *Journal of Universidad Centro Americana* (March 1973).

Public Utilities Department. *Issues in Rural Electrification.* June 1974.

Universidad Centro Americana. *Electrificación Rural.* April 1974.

Pricing and Investment in Electricity Supply

Investment and pricing decisions in the electric power sector are extremely complex and dominated by financial considerations. On the investment side, many interdependent investment and operating decisions have to be analyzed, requiring systems analysis. On the pricing side, economic issues relating to the rate of capacity expansion and the utilization of capacity need to be examined in addition to financial issues; also, social issues need to be considered. The Bank's research program includes work concerned with improving the criteria for invest-

ment and pricing in electric power; similar initiatives are being taken for telecommunications, and water supply and sewerage facilities (*see* RPO 238—page 49; RPO 276—page 51; RPO 311—page 52).

The purpose of this study is to analyze investment and pricing policies for one electric power sector. The research effort pertains to the problems of determining least-cost investment programs for given levels of demand as well as the pricing and investment rules relevant in the more general case when the optimal supply level has to be determined.

Three case studies have been undertaken—in Turkey, Sudan and Tunisia. A fourth case study of Thailand is still in the planning stages. The Turkish study uses linear programming models to analyze the least-cost investment program over a 35-year period and the associated optimum operating schedules. To test results, 50 sensitivities were run with varying data for shadow prices of capital, labor and foreign exchange; changes in capital and operating costs; changes in demand forecasts; changes in resource availability; and changes in a number of other economic and technical parameters. Computer printouts plot optimal investment and output patterns for various types of investments and operating costs. The program has also been used for the analysis of power projects under conditions of uncertainty brought about by cost escalation and changing oil prices. The studies undertaken in Sudan and Tunisia, and the one planned for Thailand deal with optimal pricing.

The research on optimum pricing extends peak-load pricing theory to include the effects of random changes in demand and supply conditions. Various problems, such as those connected with seasonality, indivisibility, choice of metering and tariff types are also being studied.

Responsibility: Public Utilities Department—Dennis Anderson, in collaboration with Ralph Turvey (consultant). (Ref. No. RPO 239)

Completion date: December 1974.

Reports

Anderson, Dennis. "Models for Determining Least-Cost Investment in Electricity Supply." Reprinted from the *Bell Journal of Economics and Management Science,* Vol. 3, No. 1 (Spring 1972). Reprint 2. (Catalog No. XVII/143)

Anderson, Dennis, and Tarkan, Orhan. *Optimum Development of the Electric Power Sector in Turkey—A Case Study in Linear Programming.* Bank Staff Working Paper No. 126. February-March 1972. (Catalog No. XVII/144)

Anderson, Dennis, and Turvey, Ralph. *An Introduction to Electricity Pricing.* Public Utility Research Note No. 1. January 1974.

Turvey, Ralph. *Framework for Electricity Tariff Studies.* Public Utility Research Note No. 3. March 1974.

Standards of Reliability of Urban Electricity Supply

This project was undertaken to determine whether significant reductions can be made in the cost of supplying electricity without reducing the benefits to the economy. Previous work in this area had been confined to the supply side of developed countries. Most work was con-

cerned with the cost of various margins of reserve generation plant capacity and the cost of various levels of total system reliability. Some work had also been done on the reliability of transmission systems. However, very little research has been devoted to the demand side of electric power and quantifying benefits foregone to the economy by a lower standard of reliability.

The study will explore the possibilities of reductions in the cost of urban electricity distribution in developing countries without reducing the benefits of supply to the consumer. It will provide guidelines for assessing the standards of supply most appropriate to prevailing conditions.

The research effort includes two components. The first is a review of the state of the art and an examination of the situation in Mexico. This has been accomplished. A seminar was held for Bank staff which also provided guidance for the completion of this research project. The second component will consist of a study of a large city in a developing country, where a proposed loan would finance a substantial investment in electricity distribution facilities.

Responsibility: Public Utilities Department—Richard Sheehan, in collaboration with the Overseas Consultancy Service (United Kingdom). (Ref. No RPO 267)

Completion date: Early 1976.

Pricing and Investment in Telecommunications

The technological complexities of telecommunication systems generate a number of problems with regard to developing acceptable economic criteria for the appraisal of telecommunications projects.

In 1971, it was decided that the Bank should initiate a program of research to determine what constitutes an appropriate allocation of scarce resources to telecommunications. The Bank's research began with three internal studies surveying the general area of telecommunications, and identifying those areas requiring further investigation.

The present effort, initiated in September 1973, consists of a case study of the economics of rural telephony. Other studies concerning efficient tariffs form part of general investigations in "Public Utility Pricing and Investment" (*see* RPO 311—page 52).

The purpose of this study is to develop a methodology for the economic appraisal of telecommunications projects, focusing particularly on the criteria for investment decisions in rural telephony.

The study is being conducted in Costa Rica where installation of rural telephones in small villages and towns is a recent development and 90 rural telephones provide the sample system. An objective of the research effort is to determine the economic benefits derived from rural telephones, and relate these to local socioeconomic patterns, industry and levels of employment. Another goal of the study is to determine the distribution of benefits between rural and urban areas, and between one area and another.

Responsibility: Public Utilities Department—Jeremy J. Warford, in collaboration with Stephen Littlechild (consultant). A team from the Uni-