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RYDELL

Mr. Elison

OFFICE MEMORANDUM

TO: Mr. Lars Lind

DATE: December 1, 1966

FROM: Barend A. de Vries *B.A.V.*SUBJECT: Paper on Accounting in Connection with Power Utility Construction

The paper on Accounting in Connection with Power Utility Construction appears to us an expert paper especially closely related to the institutional set-up in the United States. However, it has only a limited economic content. It does not seem suitable for consideration as an Occasional Paper.

cc: Messrs. Latimer
Rydell

*Mr. Rydell is trying
to place this piece in
an accounting journal*

— 174

OFFICE MEMORANDUM

TO: Mr. de Vries

DATE: November 9, 1966

FROM: Lars J. Lind *Lars J. Lind*SUBJECT: Paper on Accounting in connection with Power Utility Construction

I attach a paper written by Ferd Rydell in the Public Utilities Division of the Projects Department. Although the paper deals with accounting aspects of public utility enterprises you might wish to consider it for possible inclusion in the Staff Occasional Papers, as it would seem that the study would be of real interest to many of the Bank's clients. Mr. Ripman thinks well of the paper. If you don't feel that the paper fits into the new Bank series, efforts will be made to place it in a professional accountancy journal.

I am sending this paper directly to you as Mr. Latimer is on leave.

Attachment

cc: Mr. Latimer
Mr. Rydell

LJL/jsw

ACCOUNTING FOR INTEREST DURING CONSTRUCTION
WITH PARTICULAR RELEVANCY TO PUBLIC UTILITY ENTERPRISES



Introduction

Interest on funds used for constructing assets may be either capitalized or not capitalized during the construction period. Capitalization of interest is merely an accounting process whereby the construction work in progress account is charged with actual or imputed interest for the use of funds. Actual interest is the interest paid or accrued on the use of borrowed funds, and imputed interest is an amount calculated by applying an arbitrary interest rate to equity funds used for construction purposes. Capitalizing interest during construction increases the recorded cost of the work in progress which is ultimately reflected in the cost of fixed assets in operation. Yet the subject of interest during construction seems to be surrounded in an aura of confusion and misunderstanding.

In the privately owned public utility field in the United States, which is regulated by various governmental authorities, it is the generally accepted practice to charge as part of the construction costs the interest on all funds used for construction purposes. Capitalization of interest is not dependent on the particular sources from which the construction funds were derived, and it is not essential that such interest is actually paid. In industrial and commercial fields the practice of capitalizing interest on debt during the construction period is not too unusual, but it is a very rare occasion when interest on equity funds is capitalized. The reason utilities, such as electric power companies, capitalize interest on all funds used for construction is because governmental regulations limit the return that the utilities may earn on their investment. Their investment is primarily and directly related to the cost of their plant in service, which is the basis for establishing electricity rates. By including interest in the cost of work in progress, the permitted electricity rates chargeable to consumers will be somewhat increased after the facilities come on stream. The resulting increased revenues represent a form of compensation to the stockholders for the absence of a return on the use of their funds during the unproductive period when the assets were being constructed. Complete recovery of this return is only realized over a long period of time, which would correspond to the estimated useful life of the new assets. In non-regulated businesses the charging of interest to work in progress during the construction period does not automatically affect the sales price of the finished product. Sales prices, not being controlled by external regulatory bodies, are established largely by supply and demand and competitive conditions prevailing in markets.

Capitalizing interest has an important effect in relation to income taxes, depending on the type of organization concerned. In accordance with federal income tax regulations in the United States, private enterprise is granted the option of capitalizing or not capitalizing interest during construction, providing such interest only applies to interest on borrowed funds. Electing to capitalize this interest an income tax deduction is foregone, and net income and income taxes will be increased. In subsequent years, when the new assets will be in operation, income taxes will be somewhat reduced from what they would have been had interest not been capitalized, because of the allowance of greater depreciation charges due to the increased recorded cost of the fixed assets. Unless under unusual circumstances, such as a corporation desirous of reducing net operating loss carrybacks, or where it would appear advantageous to have larger income tax deductions in the future, private enterprise would have no incentive to capitalize interest and currently pay greater income taxes in order to

obtain relatively small annual tax savings spread over many years in the future. The situation is different in the electric utility field, since income taxes for such utilities are usually regarded as a cost of service and therefore would be recoverable through charges to consumers.

Interest during construction in the public utility field may initially seem unimportant, but in view of continuous expansion and increasing costs, the problems associated with such interest should not be overlooked. Statistics of the privately owned electric power industry, published by the United States Government, clearly indicate the magnitude of interest during construction charged to the cost of fixed assets. For example the following data applies to Class A and Class B privately owned electric utilities in the United States: 1/

1. Between 1952-1962 the annual average of capitalized interest was equivalent to about 5.5% of net income. 2/
2. During the same period capitalized interest averaged about 4.5% of the total cost of work in progress at the end of each year. 3/
3. In monetary terms capitalized interest during the three-year period, 1960-1962, averaged about \$91,000,000 annually. 2/

Federal Power Commission and Conflicting Opinions

In the United States privately owned electric public utilities are under the control of various state commissions and the Federal Power Commission. One of the basic requirements of these commissions is the installation and maintenance of a uniform system of accounts by these utilities. The Federal Power Commission has issued a comprehensive uniform system of accounts and because most state power commissions have adopted similar systems, the following comments on the Federal regulations apply generally to electric utilities throughout the country.

The Federal Power Commission's publication, "Uniform System of Accounts", includes what appears to be a succinct instruction pertaining to interest during construction which, in part, is as follows:

"Interest during construction" includes the net cost for the period of construction of borrowed funds used for construction purposes and a reasonable rate on other funds when so used. 4/

Again quoting from the same source a brief description is given for the use of the income account entitled, "432 Interest charged to construction - Cr." which follows:

-
- 1/ Class A and Class B utilities have annual electric operating revenues in excess of \$1,000,000.
 - 2/ Federal Power Commission, Statistics of Electric Utilities in the United States 1962, Privately Owned (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1964), Table 18, p. XXIX.
 - 3/ Ibid., Table 18, p. XXIX and Table 21, p. XXXIII.
 - 4/ Federal Power Commission, Uniform System of Accounts Prescribed for Public Utilities and Licensees (Class A and Class B), (Washington, D.C.: Superintendent of Documents, U.S. Government Printing Office, 1960), Electric Plant Instructions 3 (17), p.9.

This account shall include concurrent credits for interest charged to construction based upon the net cost for the period of construction of borrowed funds used for construction purposes and a reasonable rate upon other funds when so used. 5/

From the above brief instructions and descriptions it would seem that no problems should arise in accounting for this interest during construction, but this is far from the truth.

In accordance with the Federal Power Commission's regulations the actual interest on borrowed funds and a reasonable return on a company's own funds, such as those arising from the issuance of new capital stock or from accumulated retained earnings, are permitted as added charges to the cost of construction. Most of the difficulties and misunderstandings concerning interest during construction pertain to the allowance of a return on the equity funds used to finance construction costs. There is not, however, unanimity among various authorities in the public utility and industrial fields on the propriety of capitalizing interest on borrowed funds.

To quote a few conflicting opinions, Mr. W.F. Stanley, Vice President, Southwestern Public Service Company states:

From time immemorial it has been recognized that if anyone erected a building for business uses, the cost of the building included the taxes and interest they (sic) had to pay while the building was being constructed. This economic concept and the resulting treatment on the accounts were a recognition that all persons erecting business facilities would have to undergo these expenses and that, accordingly, it was fitting and proper that such expenses be included in the cost of construction; otherwise, the enterprise would show an operating loss before it was actually in operation, and on the other hand the facilities constructed would be carried at less than their true cost. 6/

Quoting from Messers. H.A. Finney and Herbert C. Miller, Certified Public Accountants:

Charging to construction the interest on securities issued by an industrial company to obtain funds for construction has little justification in theory. Some attempt has been made to justify it under the general theory that all costs during the construction period can be capitalized; but interest is a money cost, not a construction cost, and it can be avoided by an additional investment of proprietorship capital. The idea that interest can be capitalized in order to avoid showing an initial deficit is equivalent to saying that the value is added because it is embarrassing to recognize a loss. 7/

5/ Ibid., Income Accounts, 432, pp. 67, et. seq.

6/ W.F. Stanley, "New Light on Interest During Construction", Public Utilities Fortnightly, XLVI (6) September 14, 1950.

7/ H.A. Finney and Herbert E. Miller, Principles of Accounting-Intermediate (New York: Prentice Hall, Inc., 1951), p. 426.

John F. Kavanaugh points out:

It must be recognized that construction gives rise to capital costs of money, or so called "interest", which are as real as the costs of labor, material, and other factors of construction. From both a practical and equitable standpoint, such interest must be recognized in the setting of rates for utility services, and the most accurate and widely accepted procedure for giving effect to these costs is the capitalization of interest during construction. 8/

The Accountants' Handbook says that to many accountants, interest is not a cost, but a portion of the income paid to creditors. 9/

One final quotation from accounting authorities perhaps best sums up the overall attitude concerning the capitalization of interest as follows:

The most debatable practice in assigning costs to constructed assets is the allocation of interest expense to fixed asset cost. 10/

Accounting for Capitalized Interest on Borrowed and Equity Funds

Electric utilities have been capitalizing interest during construction even prior to the issuance of the first uniform systems of accounts, dating back to 1908 when the States of New York and Wisconsin first published such regulations. The enduring and widespread practice of capitalizing interest by public utilities gradually carried over into commercial accounting practices and it became an accepted procedure, but only insofar as it pertained to interest on debt. As stated in a recent research study published by the American Institute of Certified Public Accountants, "It is also the general practice of industrial companies, as distinguished from public utilities, to limit any interest capitalized to costs incurred on funds specifically borrowed for construction purposes." 11/

In most cases involving electric utilities, capitalized interest during construction is recorded as a charge to the fixed assets and as a credit on the income statement. In actual fact nothing has happened other than recording an accounting entry on the books of the company. From the utilities' standpoint this interest must be recorded as a capital cost and in this respect is no different from the recording of labor or material costs expended on new projects. Interest on equity funds must be recorded because, according to the usual argument, funds will not be invested "free" during the construction period, and if this interest is not recorded, a fair return on the true cost of the assets will never materialize. Not capitalizing interest on equity funds would place utilities in an unfavorable position to attract new equity capital. In proceedings before

8/ John F. Kavanaugh, "Accounting for Overhead Costs", Proceedings, National Conference of Electric and Gas Utility Accountants, (Edison Electric Institute and American Gas Association, 1959) pp. 431, et. seq.

9/ Accountants' Handbook, (New York: Ronald Press Company, 1956), Section 16, Buildings and Equipment, p. 5.

10/ C. Aubrey Smith and Jim G. Ashburne, Financial and Administrative Accounting, Second Edition, (New York: McGraw-Hill, 1960), p. 218.

11/ Paul Grady, Inventory of Generally Accepted Accounting Principles for Business Enterprises, Accounting Research Study No. 7 (New York: American Institute of Certified Public Accountants, 1965), p. 255.

the National Conference of Electric and Gas Utility Accountants, A.W. Hatch stated:

Unlike loss in operation, the loss of return during the construction period cannot be imposed on the investor, because such losses being certain with the investment of new money in the utility, would discourage and hamper its growth and extension of service. 12/

Unfortunately the Federal Power Commission and other power regulatory agencies have not issued detailed accounting instructions or procedures as guidelines to be followed in connection with accounting for interest during construction. Lacking detailed instructions from the regulatory authorities, and with only a limited amount of professional publications dealing with this subject, there developed, as could be expected, a wide variety of accounting procedures for recording capitalized interest. Detailed accounting records indeed become very involved because of the many complications, such as, rate of interest to apply to equity funds, computation of interest when only part of a new plant goes into operation, starting date for computing capitalized interest, exclusion of certain items of cost related to a new project, allocation of interest to various sections of a project which subsequently would require different depreciation rates, identification of the sources of funds carrying various interest rates used for construction expenditure, to mention just a few.

Nevertheless, momentarily overlooking these complicating aspects of interest during construction, which mostly involve the computation of the amount of such interest, the accounting procedures usually require a sequence of three basic accounting entries to record all the facts concerning interest on bonds. (A fourth entry would be required as of the end of each fiscal year or accounting period to record interest accrued since the last interest date). The first entry records the interest charged and establishes the liability for the payment due to the bondholders. The second entry records the cash payment and the discharge of the liability. The third entry charges the construction in progress account with the amount of interest to be capitalized and also credits a similar amount to an account that would appear on the income statement. This income account would be shown as an offset to, or reduction of, any previously recorded interest expense that was incurred during the period covered by the income statement. Imputed interest on equity funds allocated to new construction may or may not be recorded. If such interest is to be recorded only the third entry mentioned above is required. The credit amount would offset or reduce previously recorded interest charges, but if the income statement did not include any interest charges during the period, then the credit amount could be shown as an additional item of income. 13/

Effect of Capitalizing or Not Capitalizing
Interest During Construction

In the majority of cases the expansion of facilities of public utilities have usually been financed from a composite of funds including such sources as

12/ A.W. Hatch, "Interest During Construction," Proceedings, National Conference of Electric and Gas Utility Accountants, (Edison Electric Institute, 1952), p.328.

13/ Other methods of recording this credit amount are described in subsequent sections of this study.

new long-term debt, accumulated past earnings and new share capital. In order to more clearly illustrate the effect of capitalizing interest during construction the following paragraphs consider the construction of projects as being financed from only one source, either long-term debt or new equity funds.

If, in regard to bond interest, consideration is only given to the first two entries mentioned above (that is, if interest during the construction period is not capitalized) the net effect is that the final net income figure and the cash account have been reduced by the amount of the interest. Thus earnings per share have been correspondingly reduced and the fixed asset accounts have not been affected. The third entry, which capitalizes interest, materially alters the financial picture. Fixed asset accounts have been increased by the amount of the interest which in effect increases the basis for future rates. Furthermore the credit to the income statement offsets the charge for bond interest, resulting in an increase in net income which is ultimately reflected in the surplus account. Earnings per share would thus be restored to the level they would have been had the bonds not been issued in the first place. The following example illustrates these points. Column A shows the results assuming expansion did not take place; Columns B and C show the results assuming a \$100,000 expansion program completely financed by the issuance of bonds:

	A	B	C
	No Interest	Interest Paid But Not Capitalized	Interest Paid And Capitalized
<u>Income Statement</u>			
Operating revenues	\$100,000	\$100,000	\$100,000
Operating expenses	80,000	80,000	80,000
Operating income	<u>\$ 20,000</u>	<u>\$ 20,000</u>	<u>\$ 20,000</u>
Less interest charges		4,000	4,000
Interest charged to construction (credit)	-----	-----	<u>(4,000)</u>
Net Income	<u>\$ 20,000</u>	<u>\$ 16,000</u>	<u>\$ 20,000</u>
Earnings per share (10,000 shares)	<u>\$ 2.00</u>	<u>\$ 1.60</u>	<u>\$ 2.00</u>
<u>Balance Sheet Account</u>			
<u>Fixed Assets</u>			
Fixed assets in operation	\$500,000	\$500,000	\$500,000
Work in progress	-----	<u>100,000</u>	<u>104,000</u>
Total	<u>\$500,000</u>	<u>\$600,000</u>	<u>\$604,000</u>

Capitalizing interest on new equity funds produces a different result. Since a liability is not incurred and there will be no cash payout, only the entry to record the capitalization is required. A credit, therefore, appears on the income statement which increases total reported earnings. Inevitably the increase in earnings, attributable to capitalized interest on equity funds, creates considerable confusion about a company's operations and complicates the process of analyzing or evaluating the company by present stockholders or by prospective investors. The increased earnings do not represent an increase in cash or liquid assets, but rather they reflect a foregone return which the stockholders should recoup in the future by reason of the increased value assigned to the construction work in progress which eventually will be incorporated into the rate base after the project has been completed and the assets have been placed in operation.

In the case where construction is solely financed from the proceeds of a new capital stock issue, and imputed interest on these funds is capitalized, then net income will be correspondingly increased, but there will be an absolute decrease in earnings per share. This decrease results from the allocation of the net income to a greater number of shares outstanding. In the event that imputed interest on such new share capital is not capitalized, then the net income is not increased and the absolute decrease in earnings per share is considerably greater.

A more detailed analysis is shown in Annex I illustrating the effect of:

1. financing construction through the issuance of bonds and/or capital stock; and
2. capitalizing or not capitalizing interest during construction.

The annex covers a two-year period for an operating utility; the first year represents the construction period for a new plant facility, and the second year indicates the results of operations including the use of the additional facility. It has been assumed in Annex I that construction of a new plant was started on January 1, 1965 and completed on January 1, 1966, new bonds carried a 4% interest rate, a 6% rate of return on the net plant was allowed, and interest on equity funds was capitalized at 6%. In normal practice the total funds required for a capital project would probably be raised as they are needed in order to economize on interest charges. If the total required funds was raised in advance they would no doubt be temporarily reinvested in short-term securities to earn interest and such earnings would be recorded as an offset to the interest charges. This refinement has been ignored in the cases illustrated in the annex for purposes of simplicity, and interest is only capitalized during the period the funds are in use. During the first year, when the project is under construction, the effects of financing new construction using various combinations of sources of funds are summarized from Annex I as follows:

	<u>No New Plant</u>	<u>Additional Plant Constructed</u>			
		<u>Financed by Bonds</u>		<u>Financed by Stock</u>	
		<u>Interest</u>	<u>Interest</u>	<u>Interest</u>	<u>Interest</u>
		<u>Not</u>	<u>Capi-</u>	<u>Not</u>	<u>Capi-</u>
		<u>Capitalized</u>	<u>talized</u>	<u>Capitalized</u>	<u>talized</u>
	<u>Case I</u>	<u>Case II</u>	<u>Case III</u>	<u>Case IV</u>	<u>Case V</u>
Net Income to surplus (in thousands)	\$315	\$275	\$315	\$315	\$375
Earnings per common share	10.50	9.17	10.50	6.30	7.50
Book value per common share	123.33	122.00	123.33	114.00	115.20
Percentage of net income to common stock equity	8.5%	7.5%	8.5%	5.5%	6.5%

Note that Case I and Case III produce identical results. Also note that in comparison with Case I, Cases IV and V show the same or greater net income to surplus but earnings per common share, book value per common share, and percentage of net income to common stock equity are all considerably smaller because of the greater number of shares outstanding and because the rate used for capitalizing interest was limited to 6%. This raises a question as to what rate should be used for capitalizing interest on equity funds. While this subject, a very controversial point in rate cases, is not the purpose of this study, it should be noted that utilities strongly urge that the rate allowed for capitalizing interest on equity funds should be substantially higher than the rate of return permitted by regulatory bodies, in order to adequately compensate investors for the lack of actual return during the non-productive period. The application of a higher rate to equity funds in the cases illustrated in Annex I, would result in corresponding increases in the net income to surplus, earnings per common share, and book value per share.

Earnings per share in 1966, the first year the new plant is in operation, are greater in comparison with 1965 only in the case of financing the new plant entirely by debt, and this does not depend on capitalizing or not capitalizing interest during the construction period. This is because, as a cursory analysis of Annex I will show, the permitted return is greater than the interest paid on the bonds, and the increased net income resulting from the new plant will be allocated to the same number of common shares that were outstanding at the end of the previous year.

Annex I also illustrates the effect of constructing a new plant financed 50% by the sale of bonds and 50% by the sale of additional common stock (see Cases VI, VII and VIII). The results in these three cases are midway between the results of the cases when the new construction was completely financed by bonds (Cases II and III) or by capital stock (Cases IV and V).

An example of financing the new plant only through the use of equity funds, other than those obtained from the additional issue of capital shares, has

not been included in Annex I. It is evident, however, in all such cases, assuming the permitted rate of return was achieved, that the earnings per share would increase. Capitalizing interest always increases net income. Since additional capital shares would not have been issued in this particular case, the increased net income therefore would be allocated to the same number of original shares. The return on equity book value would also increase but the percentage of this increase would not be as great as the percentage of increase in earnings per share.

A certain amount of confusion seems to evolve around the term "capitalization" when used in conjunction with interest. From the point of view of various governmental regulatory commissions or agencies, financial analysts and accountants, it should be emphasized that capitalizing interest during construction simply means that such interest is charged to the construction work in progress account(s) thereby enhancing the book value of these assets and also the book value of the capital shares. From this standpoint it is therefore irrelevant whether such interest is actual or imputed interest, whether it is or is not to be paid in cash, whether or not such interest would be included as part of the principal of a loan incurred to finance the project, or whether or not new funds were infused into the enterprise. In regard to long-term debt it is essential that the borrower make timely interest payments, but imputed interest on equity funds involves no cash payment - this interest will never be paid as such, but rather will accrue to the stockholders in the form of increased earnings in future years and will be returned to them in the form of increased dividends, or else ploughed back into the business with the expectation of earning greater profits in the future, or used for other purposes, for example, retirement of debt. If accumulated past earnings had been used to finance 100 percent of the cost of a new project, it would be quite proper and legal (at least in many countries), to capitalize imputed interest on these funds, yet no new capital was added to the enterprise's coffers.

Considerable confusion prevails in respect to interest during construction and the inclusion or exclusion of such interest in the principal amount of a loan intended to finance the construction. Capitalizing or not capitalizing interest during construction is not the fundamental criterion for including or not including such interest in the amount of a loan. The determining factor is the lender's judgment of the expected ability of the borrower to meet the interest commitment during the construction period. If the borrower is a going concern and the financial forecast indicates that earnings would be adequate to meet the interest obligation throughout the construction period, then interest would normally be excluded from the principal amount of the loan. If the borrower were a newly established organization, then obviously there would be no earnings until after the construction period and the assets had been put into operation. Under these conditions, unless the borrower could obtain additional funds from other sources such as equity investments, grants, contributions, or other loans, it would be incapable of making the required cash interest payments. In such cases interest during the construction period would usually be included in the principal amount of the loan. In some cases involving national or international lending agencies, interest during construction has been included in loans, not because of the inability of the borrower to meet the obligations, but for extraneous reasons such as general economic conditions prevailing

within a country, the status of a country's balance of payments, and stimulation of exports from the lender's country. In all cases the deciding factor for including interest during construction in a loan is not the accounting treatment of such interest on the books of the borrower.

Source of Construction Funds

During 1963 electric companies in the United States expended about \$3.8 billion for new construction according to a research study published by Ebasco Services Incorporated. This study showed that these funds were derived from the following sources: 14/

<u>Item No.</u>	<u>Sources</u>	<u>Amount (Billions)</u>	<u>Percent</u>
1	Preferred Stock	\$.004	.1
2	Common Stock	.471	12.5
3	Long-term Debt	.716	19.0
4	Decrease in Working Capital	.324	8.6
5	Deferred Federal Income Tax	.117	3.1
6	Retained Earnings	.633	16.8
7	Depreciation and Amortization of Assets	1.504	39.9
	Total	\$ <u>3.769</u>	<u>100</u>

The above table indicates the greater portion of the financing was accomplished through the use of the companies' own funds (items 4 through 7). Of the total capital expenditure during 1963, \$2.578 billion, or about 68%, was financed from internal sources! In the public utility field, where it is an acceptable practice to capitalize interest on all funds used for construction purposes, the distribution of the sources of such funds as shown above has a material effect on earnings in relation to share capital as demonstrated in the preceding section. Since the majority of funds originated from equity funds other than new stock issues, and since new stock issues represented only a small portion of the total funds expended, the earnings per common share, book value per common share, and percentage of net income to common stock equity increased significantly from what they would have been if interest during construction had not been capitalized.

A look at the past history of the electric utility business reveals a continuous expansion of operating facilities to meet the growing demand for power. This growth is expected to continue. A special study issued by a leading stock brokerage firm states:

14/ Ebasco Services Incorporated, Business and Economic Charts, (New York, 1964), p. 17.

For as far ahead as almost anyone would dare to look, the investor-owned electric utility industry should maintain its pre-eminence as the most consistently growing business in the United States.

Other industries have grown faster in shorter periods of time but over a period of 60 years none can match the remarkable record of the electric utilities. This historical growth rate has been about 6% a year, one year after another. Even more impressive is the fact that since 1950 there has been an acceleration of this pace to a point where some utilities match or surpass the record of pace-setters in other industries. 15/

However, the mix of the sources of funds to finance this expected growth may change, as it has changed, even in the span of just a few years. For example, in comparison to the above table, in 1960 long-term debt represented 32% of the total expenditures, and depreciation plus amortization accounted for 32%. So long as the percentage of capital expenditures financed by additional common stock does not increase, then each year's capitalized interest will result in greater earnings per common share and an increase in book value per common share.

A question appropriately raised at this juncture would be: what is the effect when an individual company ceases expansion and the capitalized interest credit on the income statement disappears completely? Under ordinary circumstances this poses no particular problem because in subsequent years, when the new facilities are in operation and thus included in the rate base, increased earnings in the long-run should more than offset the elimination of this income credit. However, the investment firm, Goodbody & Co., reports that: "Sometimes a lag occurs so that earnings after the completion of a large unit and the elimination of the interest during construction do not fully equal the amount the company has been reporting with this credit. But gradually the earnings should move up and if they do not, the company would have to seek rate relief so as to show adequate earnings". 16/

The duration of a lag in earnings may vary from a relatively short period of time to one lasting several years because the increase in demand for power did not reach the expected levels due to such factors as unfavorable business and general economic conditions. The past record of continuous growth in the power field would suggest that expansion of plant facilities in a "mature" system should be fully utilized within a reasonable period of time, unless the company grossly erred in its projections and expanded too rapidly. For a utility carrying out a very large expansion program in comparison with existing fixed assets in operation, the effect of a lag in earnings would have a pronounced effect on net income and earnings per share. In such cases the capitalized interest credited to the income statement during the construction period could represent a substantial portion of the total net income, and undoubtedly during the first year when the new facilities are in operation net income would be decreased because of the absence of the capitalized interest credit and earnings per share would be significantly reduced.

15/ Merrill Lynch, Pierce, Fenner & Smith Inc., The Electric Utilities, (May 1963)p.1

16/ Goodbody & Co., Research Study - A Comparative Study of the Interest - During Construction Credit for 109 Electric Utility Companies (New York: Goodbody & Co. 1962) p.1.

Capitalizing Interest by New Companies

A different situation exists when a new organization is formed to construct and operate power facilities. In the examples that follow some of the complications are illustrated. In the first case assume a project is completely financed through long-term debt which included interest during construction in the principal amount of the loan. During the year the borrower draws down the funds as required to meet expenditures. In addition, the interest is assumed paid on the interest dates and the lender charges such amounts as drawings against the principal. The borrower records these amounts as interest and increases the amount of the outstanding loan liability accordingly. Capitalizing this interest, the borrower charges the work in progress account and credits the income account, Interest Charged to Construction - Credit, or some similar account. These credits offset the previously recorded interest charges resulting in a final net income of zero. The balance sheet would show the work in progress equal to the total debt outstanding. To illustrate, assume arrangements were made for a \$2,000,000 loan at 5½% for constructing a plant. If drawings on the loan were made evenly throughout the year, interest would be about \$55,000. Assuming the loan was fully utilized, cash drawings of \$1,945,000 would be charged to work in progress. Capitalizing the \$55,000 interest brings the work in progress account up to \$2,000,000, which is equivalent to the amount of the outstanding loan.

Frequently financial institutions, such as the World Bank, are involved in projects whereby they partially finance newly created power enterprises such as those established as agencies, corporations or authorities of foreign governments. Assume that a government contributes funds as its share of the project's cost in the form of equity and a bank loan represents the balance of the required funds as long-term debt. Interest on the bank's debt would have been charged as an interest expense, and would normally have been capitalized and included as a credit on the income statement. Imputed interest on the government's funds may have also been capitalized and credited to the income statement. To illustrate the effects of these transactions, assume a newly organized electric utility builds a plant in one year, which involves cash expenditures of \$1,972,500, excluding the interest during construction. \$1,000,000 is borrowed from a bank and the government contributes \$1,000,000 as an equity investment. Interest on the bank loan is paid in cash. Overhead expenditures are charged directly to work in progress. Interest is capitalized on all funds. These transactions would have resulted in the following income statement and balance sheet at the end of the first year:

Income Statement

Interest expense (assume bank loan of \$1 million at 5½% interest)	\$27,500	<u>17/</u>
Less Interest Charged to Construction-Cr.		
Interest on bank loan	\$27,500	<u>17/</u>
Interest on equity funds (assume \$1 million at 6%)	<u>\$30,000</u>	<u>17/</u> <u>\$57,500</u>
		<u>\$30,000</u>

Balance Sheet

<u>Assets</u>		<u>Equity and Liabilities</u>	
Construction Work in Progress	\$2,030,000	Common Stock	\$1,000,000
		Surplus	30,000
			<u>\$1,030,000</u>
		Bank Loan	1,000,000
	<u>\$2,030,000</u>		<u>\$2,030,000</u>

It may be argued that the above method of crediting capitalized interest on equity funds on the income statement is not proper because of the resulting net income. It is generally recognized that net income or profit can only be realized from sales transactions, but in this case the organization had not yet reached the operating stage when sales would be made. Therefore, as an alternative, instead of crediting the income statement with capitalized interest on equity funds, this amount could be credited to capital surplus (an account not representing earnings from operations). Following this procedure the income statement would result in a zero balance and the balance sheet would remain unchanged except for replacing the surplus account with a capital surplus account. As noted previously the income statement could be eliminated by charging the \$27,500 interest on debt directly to the construction in progress account.

Consider a situation where a new power utility is established to construct and operate a plant wholly financed by a \$1,000,000 stock issuance. Assume construction is completed in one year, cash expenditures total \$970,000 and capitalized interest amounts to \$30,000.

17/ Computation of interest (equivalent to one half year's interest on the gross amounts) was based on the assumption of level monthly expenditures throughout the year.

If capitalized interest is credited to capital surplus then these facts result in the following balance sheet:

Balance Sheet 18/

<u>Assets</u>		<u>Equity</u>	
Utility Plant	\$1,000,000	Common Stock	\$1,000,000
Net Working Capital	<u>30,000</u>	Capital Surplus	<u>30,000</u>
	<u>\$1,030,000</u>		<u>\$1,030,000</u>

During this year the stockholders have foregone a cash return on their investment. Supposedly this foregone return will materialize in subsequent years when higher electric rates are in effect based on the book value of the plant of \$1,000,000 rather than on the \$970,000 cash expended for the plant. An immediate question may be: what disposition can be made of the \$30,000 capital surplus? Based on this capital surplus, could a cash dividend be paid to the present stockholders or would it be possible to declare a stock dividend? Presumably, this would depend on the legal regulations in each individual country. It would appear, under these circumstances, that the payment of a cash dividend would in effect be a return of original investment because at this point the organization has no operating earnings from which to pay dividends. Apparently there would be less objection to the payment of a stock dividend since assets would not decrease, and, while the number of shares outstanding would be greater, total equity would remain unchanged but book value per share would decrease. Another alternative would be to avoid declarations and payments of any dividends to the extent of this \$30,000 balance and carry the capital surplus as a permanent equity account.

Case Illustrating Departure from Normal Accounting Procedures

Not long ago, in a case involving a WorldBank loan, an unusual accounting procedure was applied to capitalized interest on equity funds during the construction period. The legislation of the particular country concerned required the capitalization of interest on equity funds used for construction purposes at a 10% rate. The financial plan indicated that equity funds would be supplying over 70% of the cash requirements for a four-year hydroelectric project. Because the project was exceptionally large in relation to the borrower's existing plant facilities, and correspondingly the credit for capitalized interest was exceptionally large in relation to the estimated net income from operations during the construction period, the capitalization of interest at the liberal 10% rate resulted in very abnormal effects on the forecast income statements.

18/ In actual practice the unused balance of funds during the construction period ordinarily would have been invested in short-term securities to earn interest in which case the balance sheet would have shown an increase in net working capital and an offsetting amount classified as earned surplus.

This public utility had been operating for several years and paying interest on previous debt, but nevertheless, in computing the financial projections including the new plant, it was noted that the capitalized interest during the construction period would greatly exceed the total amount charged as interest expense. The effect was, that during these years, net interest income was added back to gross income which resulted in significant increases in net income. Furthermore, one of these years would have shown a loss but the credit for capitalized interest was sufficiently large enough to convert this loss into a final net income. In this case the projected annual earnings tended to be extremely misleading and confusing. As an alternative, total interest during construction was capitalized by charging the work in progress account but bond interest only was recorded in the interest charged to construction - cr. account which appeared on the income statement. Imputed interest on equity funds was credited to a special reserve account appearing on the balance sheet in the equity section. In the projections, after the project was completed and the plant was placed in operation, yearly transfers from this special reserve account to the surplus account were recorded in amounts computed by using the same rate as the average rate of depreciation. This was the equivalent to amortizing the special reserve over the estimated life of the assets and, furthermore, annual transfers from the special reserve increased surplus which would be available for dividends. Any increases in dividend payments attributable to the periodic transfers of the general reserve to the surplus account, might be considered as corresponding to the actual realization of the foregone return on invested capital during the construction period.

The method described above is in conflict with the opinion of W.F. Stanley who considers it mandatory that all capitalized interest on equity funds be credited to the income statement. Mr. Stanley states:

The accounting principal (crediting capitalized interest to income) is fundamentally the same whether the amount of the credit be large or small and whether it be a relatively high or relatively low proportion of the company's net income. Difference in the percentage of the credit to net income is not usually the result of a difference in accounting policy, but of a difference in the proportion of new construction to total plant; that is, difference in degree of expansion. 19/

It does not appear, however, that the accounting procedures as described in the preceding illustration could be justifiably challenged. Under normal practice the full amount of capitalized interest on equity funds is credited to the income statement in the year it occurred and is immediately transferred to surplus where it may become available for dividends. Obviously the only difference in these two situations is the time factor pertaining to the transfer of capitalized interest to the surplus account.

19/ Stanley, op. cit.

Other Variations for Recording Capitalized Interest

The customary entry for recording capitalized interest has been illustrated in previous sections of this report. In the past many variations of this accounting treatment have been used especially in respect to imputed interest on equity funds used for construction. For example, instead of recording capitalized interest on equity funds directly in the work in progress accounts, the charges could be recorded in temporary clearing or suspense accounts. Periodically, perhaps monthly, these charges would then be allocated, on some appropriate basis, either to the work in progress accounts or to the operating plant accounts. The ultimate effect of this procedure is the same as if the fixed plant accounts were charged directly with such interest. As mentioned earlier, some accountants disagree with the principle of increasing the cost of the plant assets by the amount of capitalized interest. The Accountants' Handbook, for instance, states that charging physical assets with capitalized interest is an unsatisfactory treatment because such charges represent a finance cost and not a cost of construction. This reference states that Paton and Paton (Asset Accounting), suggest that capitalized interest charges represent intangible assets similar to organization costs. In accordance with this theory, instead of becoming part of the fixed asset cost and subject to the depreciation process, these intangible costs would be considered as permanent assets so long as the enterprise continues as a successful operation, but that such costs should be amortized or written off whenever operations fall below normal. ^{20/} In actual practice organization costs are frequently written off during the early years of an enterprise, usually within two to five years, so presumably, considering capitalized interest as an asset similar to organization costs, it too would be written off within a relatively short period of time.

Another variation of the capitalized interest entry is directly crediting the earned surplus account or some other equity account instead of crediting an income account, providing such a procedure does not conflict with income tax laws. The final result is still the same as far as the balance sheet is concerned except for possibly a new account title appearing in the equity section. The income statement would have changed to the extent that net income would be lower by the amount of the excluded capitalized interest.

It is also possible to record the usual entry for capitalized interest on equity funds and then record an additional entry which in effect would wash out the capitalized interest on the income statement. This entry would consist of a debit to interest expense and a credit to an equity account. The charge to interest expense reduces net income, but the capitalized interest credit restores the full amount and the final net income figure would not be affected. Except perhaps for an additional account appearing in the equity section the balance sheet would still show the same totals as those resulting from following the usual method of capitalizing interest on equity funds. There seems to be no justification for this method as it produces an outright overstatement of total interest expense and therefore it is an unacceptable accounting procedure.

^{20/} Accountants' Handbook, op. cit., Section 19, Intangible Assets, pp. 21, et. seq.

Alternatives to Capitalizing Interest

The fundamental principles involving the capitalization of interest during construction are the recognition that interest on funds used for construction is not an expense or deduction from income but rather that it is part of the fixed plant cost, and the recognition of a return to stockholders for the use of their funds during the unproductive period.

Two other methods to compensate the investors for the use of their funds during the construction period have been used as substitutions for capitalization of interest. The feasibility of these alternative methods is discussed in an excellent booklet, "Principles Underlying the Capitalization of Interest During Construction", issued by Arthur Andersen and Company, Certified Public Accountants, including special reports by Professor James C. Bonbright of Columbia University. This study points out that regulatory commissions might permit a higher rate of return on a rate base which excluded interest during construction. Another method is the application of a rate of return to a rate base which included construction in progress. In either case the effect would be to increase the price of electricity to consumers and increase the return on the stockholders investment. There are, however, particular drawbacks to both methods. With many variations in the construction cycle over a period of years, the varying types and costs of capital invested in plant, and numerous other factors difficult to evaluate, the arbitrary increase in the rate of return places an unnecessary burden on those establishing the rate and introduces a judgment element in the place of one which can be measured with an acceptable degree of accuracy. To include work in progress in the rate base raises the problem of determining the amount to include. Because of fluctuations in the construction program, the amount so used must of necessity, be an average of the balance in the work in progress account and judgment must again be applied in determining the period to be used for computing this average for the rate making purposes. In any event neither method would be applicable with respect to investments in newly promoted enterprises which cannot enjoy an operating income until months or years after capital has been sunk in organization and construction costs. Furthermore, if either of these alternatives were applied to utilities already in operation, the present consumers would be penalized because of higher rates due to construction for which services will not be available until some time in the future and then such services would no doubt benefit future consumers. ^{21/} In such cases, irrespective of the sources of funds used for construction, the present stockholders would receive the benefit of a current return on funds invested in plant expansion, whereas if interest had been capitalized the return would be postponed and ultimately realized during the operating period of the new assets.

^{21/} Arthur Andersen & Co., Principles Underlying the Capitalization of Interest During Construction, Subject File No. In 420, Item 23, (Chicago: 1953), passim.

Other Considerations

Expansion of electric utility facilities is an ever continuing process and it is a rare occurrence when a particular plant is financed from only one source of funds. Financing utility expansion in most cases is accomplished by funds from retained earnings, funds resulting from depreciation, and funds from new capital by the issuance of bonds and other forms of indebtedness, preferred stock or common stock. All these funds are mixed in the general cash resources of the company: the dollars are not painted different colors depending on their source so that they may at all times be specifically identified when expended. Thus when construction expenditures are paid, even with detailed and complicated record-keeping systems, it is still practically impossible in most cases to compute exactly the amount of capitalized interest on bond funds and other funds. As a means of avoiding the problems associated with specific identification of funds used for constructing plant facilities, a method of applying a predetermined rate has become a general accepted practice in the United States. The above mentioned study by Arther Andersen and Company stated:

Principles must guide the computation of interest but should never lead it into a labyrinth of confused and confusing calculations. Despite its obvious theoretical shortcoming, the widely used method of applying a predetermined rate to the construction work in progress each month is probably the most simple and most accurate procedure to follow under these circumstances. 22/

The predetermined rate used for capitalizing interest in the United States electric power industry is generally limited to 6% as the Federal Power Commission and various state commissions have disallowed rates over 6% on the basis of being excessive. A project committee of the National Conference of Electric and Gas Utility Accountants made a comprehensive study in 1956-1957 of sixty-two electric and gas utility companies in regard to developments in accounting for overhead costs, with interest during construction as one of the important items included in this category. This committee's findings showed that 58% of the companies, included in the survey, capitalized interest on construction expenditures at a 6% rate, 25% of the companies used rates varying from 5% to 6%, and 9% of the companies used rates under 5%. 23/ No reasons were given as to why the remaining 8% of these companies did not capitalize interest during construction, but undoubtedly some of these companies were regulated by state commission which allowed the inclusion of work in progress in the rate base as a substitute for capitalization of interest.

The survey further indicated that interest was not capitalized on all expenditures for construction or expansion. Interest is normally not applied to expenditures for property ready for service when purchased such as meters, operating systems, etc. 24/ Another factor which determines whether or not interest is to be capitalized is the duration of the construction period.

22/ Arthur Andersen & Co., op. cit. p.15.

23/ Kavanaugh, op. cit. Appendix A.

24/ A.W. Hatch, op. cit., p. 331.

The survey showed that most of the companies capitalized interest only if the construction period exceeded one month. Only 3% of the companies capitalized interest if the construction period was fifteen days. Another limitation on capitalization of interest was the amount of expenditures involved. Interest was not capitalized for relatively low-cost projects. Many companies established a minimum amount below which interest was not capitalized, although there was no uniformity as to the amount. The minimum amounts ranged from \$500 to \$500,000 and undoubtedly varied in relation to the size of the companies. Minimum amounts were not established for 20% of the companies.

The rules set forth in regulatory agencies' uniform systems of accounts are clear and concise in respect to capitalized interest. Generally, however, wide discretion has been allowed in regard to the detailed procedures to be adopted because the rules themselves did not set forth the methods to be followed. As a result, a variety of accounting methods have developed producing different financial results. Mr. Kavanaugh says, "It seems that accounting as an art, adjustable and flexible, even under strict regulatory control, produces many variations as a result of managerial discretion". 25/

25/ Kavanaugh, op. cit.

CASES ILLUSTRATING EFFECT OF
INTEREST DURING CONSTRUCTION

ANNEX I

(in thousands \$)

Balance Sheets

	No New Plant Constructed		Additional Plant Constructed													
			Borrowed 2,000 at 4%				Sold Common Stock - 2,000				Borrowed 1,000 at 4% and Sold Common Stock 1,000					
			Interest Not Capitalized		Interest Capitalized		Interest Not Capitalized		Interest Capitalized		Interest Not Capitalized		Only Bond Interest Capitalized		All Interest Capitalized	
			CASE I		CASE III		CASE IV		CASE V		CASE VI		CASE VII		CASE VIII	
	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966		
Plant	12,500	12,500	12,500	14,500	12,500	14,540	12,500	14,500	12,500	14,560	12,500	14,500	12,500	14,520	12,500	14,550
Less reserve for depreciation	2,500	2,813	2,500	2,863	2,500	2,864	2,500	2,863	2,500	2,864	2,500	2,863	2,500	2,863	2,500	2,864
Net Plant	10,000	9,687	10,000	11,637	10,000	11,676	10,000	11,637	10,000	11,695	10,000	11,637	10,000	11,657	10,000	11,685
Work in progress 1/																
Working capital	700	1,309	660	1,356	660	1,360	700	1,476	700	1,481	680	1,416	680	1,417	680	1,420
Total Assets	10,700	10,996	12,660	12,993	12,700	13,036	12,700	13,113	12,760	13,177	12,680	13,053	12,700	13,074	12,730	13,106
Debt: 4% bonds	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
New 4% bonds			2,000	2,000	2,000	2,000					1,000	1,000	1,000	1,000	1,000	1,000
Stock - Preferred - 10,000 shares - par \$100 - 4-1/2%	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Common - 30,000 shares - par \$100	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
10,000 additional shares-par \$100 2/											1,000	1,000	1,000	1,000	1,000	1,000
20,000 additional shares-par \$100 2/							2,000	2,000	2,000	2,000						
Surplus	700	996	660	993	700	1,036	700	1,113	760	1,177	680	1,053	700	1,074	730	1,106
Total Liabilities and Equity	10,700	10,996	12,660	12,993	12,700	13,036	12,700	13,113	12,760	13,177	12,680	13,053	12,700	13,074	12,730	13,106

Income Statements

	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966	1965	1966
Total revenues less expenses excluding depreciation	913	894	913	1,061	913	1,065	913	1,063	913	1,066	913	1,061	913	1,062	913	1,065
Less depreciation 3/	313	313	313	363	313	364	313	363	313	364	313	363	313	363	313	364
Gross revenue 4/	600	581	600	698	600	701	600	698	600	702	600	698	600	699	600	701
Less interest																
Original debt	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Net debt			40 6/	80	40 6/	80					20 6/	40	20 6/	40	20 6/	40
Interest charged to construction - Cr.																
New debt					(40)								(20)		(20)	
New equity 5/									(60) 6/						(30) 6/	
Total net interest	240	240	280	320	240	320	240	240	180	240	260	280	240	280	210	280
Net income before preferred dividends	360	341	320	378	360	381	360	458	420	462	340	418	360	419	390	421
Less preferred dividends	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45
Net income to surplus	315	296	275	333	315	336	315	413	375	417	295	373	315	374	345	376
Earnings per common share	10.50	9.87	9.17	11.11	10.50	11.20	6.30	8.26	7.50	8.34	7.38	9.33	7.88	9.35	8.63	9.40
Book value per common share	123.33	133.20	122.00	133.10	123.33	134.53	114.00	122.26	115.20	123.54	117.00	126.33	117.50	126.65	118.25	127.65
Net income to common stock equity	8.5%	7.4%	7.5%	8.3%	8.5%	8.3%	5.5%	6.8%	6.5%	6.8%	6.3%	7.4%	6.7%	7.4%	7.2%	7.4%

Assumptions: 1/ Plant construction started 1/1/65; finished 1/1/66
 2/ New shares sold to present stockholders at par value
 3/ Depreciation - 2-1/2% on gross plant
 4/ 6% rate of return on net fixed assets in operation at end of year
 5/ Interest on equity funds used for construction capitalized at 6%
 6/ Interest based on level expenditures incurred monthly throughout 1965

October 4, 1966
 Frydell:ss

Precis

It is the purpose of this study, which has been assembled from many sources, to review and clarify some of the problems relating to interest during construction. It is not surprising that this subject is frequently misunderstood and misinterpreted. Even authorities in various fields are not in complete accord as to the proper procedure to follow in regard to accounting for such interest. The problems essentially arise from differences existing between public utilities and private enterprise, and the main issue involves the question of capitalizing or not capitalizing interest during construction. Because of governmental regulations under which public utilities function, interest during construction assumes a much greater importance in this field than it does in private enterprise. It is not uncommon for private enterprise to completely ignore the problems of interest during construction simply by recording only interest on borrowed funds and charging this as interest expense.

THE WORLD BANK
AND RESOURCES INVENTORIES

Address delivered at the Annual Meeting
of the Association of American Geographers
Middle Atlantic Division
At the National Academy of Sciences
Washington, D. C.

on

January 25, 1969

by

Ferd Rydell, Financial Analyst

of the

International Bank for Reconstruction and Development

The opportunity of appearing before the Association of American Geographers is most welcomed. When your chairman, Mr. Abbe, better known as "Whip," asked me to present a paper before your organization, I was a bit hesitant to accept the honor. My initial reaction was, "What possibly could I, in the field of banking, contribute to a distinguished group of geographers?" A few meetings with Mr. Abbe and some of his associates brought into focus the close link. As a world development agency we are in the business of financing development of resources -- material and human -- to usher in a better life to the people in less developed countries. Resources inventory is the starting point in our effort to facilitate economic growth.

First, may I draw your attention to a speech by Mr. Robert S. McNamara, President of the World Bank Group (I hope there was a copy for every one) which spells out the development strategy of the Bank in the years ahead. The World Bank Atlas distributed to you tells you another story - the growing gap between the rich and poor countries, and underlines the need to accelerate development in the less developed countries.

Before addressing ourselves to the subject of resources inventories, I would like to briefly identify the term "The World Bank Group." It consists of three institutions, the International Bank for Reconstruction and Development (IBRD), better known as the World Bank, the International Development Association (IDA) and the International Finance Corporation (IFC). All of these are devoted to promoting economic development.

The World Bank makes long-term loans at conventional interest rates to governments and their agencies and to private borrowers with government guarantees. Most of the loans are for infrastructure projects, such as power, transportation, and also for agriculture and industry, and more recently for education.

IDA financing, referred to as credits instead of loans, covers the same type projects, but they are made to countries that have reached their maximum capacity for incurring debt under conventional terms. These credits are for very long maturities, and are interest free although there is a small service charge.

IFC's operations are confined to the private sector. It provides funds without government guarantees by making long-term loans and equity investments, primarily in the industrial field, in conjunction with both foreign and local investors.

In June, 1946 the Bank was opened for business. In the early years the Bank's operations were limited to financing reconstruction in the war damaged Western European countries. After the Marshall Plan proposals led to the European Recovery Program, the Bank then turned to financing development programs and has followed this pattern ever since. By the end of 1968 the Bank had made 579 loans to 85 countries amounting to about \$11.6 billion.

How did the Bank raise this huge amount of funds? First, from its own capital stock subscriptions. The Bank was organized as a corporation and each member country subscribes to the capital stock in amounts determined by each country's relative economic strength. One-tenth of the subscriptions is paid in, and the remaining nine-tenths is subject to call should it ever be required to meet the obligations on the Bank's own borrowings or on loans guaranteed by it. Total authorized shares is \$24 billion, and paid-in capital is about \$2.3 billion. It might be of interest to know that as of June 30, 1968, the United States was the largest subscriber with 63,500 shares, representing 28% of the subscriptions. Gambia was the smallest stockholder with 53 shares and only .02% of the subscriptions.

The greatest source of Bank funds is from the sale of its own bonds and notes in the world's capital markets. The 90% unpaid capital subscriptions provides an important security behind Bank borrowings, and greatly facilitates the Bank's ability to market its own securities. By November 1968 the Bank had raised more than \$7 billion from the sale of its securities. Another source of funds is from the sale of portions of the Bank's own loans. Over \$2 billion has been obtained in this manner. Net earnings from operations have provided additional funds.

Financing projects or programs in developing countries presented many complicated problems not originally envisaged. In most of these countries there was, and still is, a shortage of skills - competent people were just not available. Development ideas were not properly crystallized, and in many cases there was little or no planning. It may sound ludicrous, but one visitor suggested to the Bank that his developing country would appreciate a \$250 million loan. When asked what the money would be used for, he conceded that he had no plans - he just wanted his country to get some of the Bank's money before it was all gone! Many requests for loans were received but when the Bank looked into them it found the projects to be completely impractical. For example, proposals for financing locomotives too heavy for the existing bridges or too fast for the roadbed, construction of a hydroelectric station where there was insufficient water, developing a product with poor marketability. Years ago former Bank President Eugene Black once said, "It came as a surprise to us to find that the tough problem wasn't going to be to raise the money for good projects, but to find projects good enough to warrant our lending." Over the years many improvements have

been made in preparing projects for financial consideration and probably one of the most important is in the area of resources inventories.

Before the Bank makes a loan, certain requirements must be met. First of all the funds must be used only for high-priority productive purposes. The project must be of such benefit to the economy so as to justify the investment required. The creditworthiness of the country is important, that is, it must be able to service its external debt without undue strain on its internal finances or its external balance of payments. Except in special circumstances, Bank funds may only be used to meet foreign exchange requirements. The Bank may only make a loan in cases where the country cannot obtain other funds on reasonable terms. Bank loans may not be tied loans - Bank funds may only be used for goods and services acquired through international competitive bidding.

The first two requirements above, high-priority productive projects and creditworthiness, are of prime importance, and can only be determined through economic analysis. It has frequently been said that economic analysis is at the core of the Bank's lending operations. To make a judgment regarding these requirements, the Bank seeks to acquire a comprehensive picture of the structure and development of a country's economy by assessing its industrial, agricultural, mineral and other natural resources, the state of its basic facilities such as education, transport and power, and quality and efficiency of public administration, the pattern of external trade and payments, and the condition of its internal economics and finance.

But how is it possible to acquire such a comprehensive picture? First of all, extensive ground work must be done, and one of the most important aspects of this is resources inventories. No doubt many of you members of the Association of American Geographers are currently involved in such work. Most developing countries need considerable assistance in regard to resources inventories and proper development planning.

The Bank, in various ways through its Development Services Department, frequently participates in studies relating to the development, utilization and conservation of a country's land, water and other natural resources. This has been accomplished by general survey missions, economic missions, sector and feasibility studies, resident and permanent missions, and functioning as executing agency for studies sponsored by other organizations.

The purpose of general survey missions is to make a broad, overall study which reviews and analyzes a country's development problems and potential, and to prepare a report embodying recommendations to guide the government. The team is composed of specialists from the Bank, as well as outside contracted personnel. The report is finally published in book form and is available to the public. About twenty-five studies have been published; the first in 1949 on Colombia and the last in 1965 on Morocco.

More recently the Bank's technical assistance has been directed towards assisting governments in the identification and preparation of projects. Project identification is the preliminary determination of the nature and size of potential projects and the establishment of the prima-facie priority of such project in a country's development. Project

preparation consists of the steps needed to bring a project to the point at which a determination can be made whether and how it can be carried out effectively and at a cost comparing favorably with the contribution it would be expected to make to development. Techniques employed for project preparation and identification are sector and feasibility studies, cooperative arrangements with the Food and Agricultural Organization of the UN (FAO) and UN Educational, Scientific and Cultural Organization (UNESCO), and the Bank's permanent missions in Africa. Project identification also may result from Bank economic missions, resident advisors, or in the course of appraisal and supervision of other projects.

A sector study is an analysis of a particular sector of the economy with a view to draw up a coordinated investment program in that sector and identifying projects within it. A feasibility study determines whether projects which have already been identified are technically feasible and economically justified. These studies are carried out by independent consultants under Bank supervision. Some of these studies have been financed by the Bank on a grant basis and others by the United Nations Development Program (UNDP) with the Bank acting as Executing Agency.

All the various Bank missions and studies are based on the available material in the country, and especially on the basic data, including resources inventories. If adequate information is not available then arrangements must be made to obtain such information through additional studies carried out by consultants or special agencies. This type of information is essential for economic studies involving development.

In many cases several years are required to reach a point where a definite decision can be made as to which project is justified and should be undertaken. For example, let us consider a particular project - the Kainji Dam and hydroelectric plant on the Niger River in Nigeria. As it happened, this was by far the largest project in Nigeria's long-range development plans. After various preliminary studies carried out in northern Nigeria, the Netherlands Engineering Consultants (NEDECO) was engaged in 1953 to make a detailed study of the Niger & Benue rivers for the purpose of improving river navigation. The report was completed in early 1959. In early 1958, Balfour, Beatty & Co. Ltd. was contracted to investigate the hydro potential of the Niger River. This included a study of other benefits that would result from the construction of a dam, such as flood control, improve navigation, fisheries, and transportation because of a new crossing of the Niger River. At the same time Sir Alexander Gibb & Partners was commissioned to investigate the hydroelectric potential of the Kaduna River, a tributary of the Niger River.

Merz and McLellan, a British consulting engineering firm, carried out a comprehensive market survey for power and issued its report in 1959. Later this same firm reappraised the power market and issued an updated report in 1962.

In December 1959 the United Nations Special Fund, now the UNDP, provided \$700,000 to carry out further engineering investigations of the Niger River. In this case the World Bank acted as Executing Agency and engaged NEDECO and Balfour Beatty as joint consultants to carry out this work. The study included aerial photography, mapping, geological

studies, analysis of river flows, silt content of the river, extent of evaporation, health problems, agricultural, navigation and irrigation benefits, resettlement problems, fishing potential, and soil studies. It also included the study of the transmission system alternatives and the possibility of a national grid. A detailed study of thermal versus hydro power was also made. This was essential, especially in view of the recently developed oil and gas fields in the southern delta area.

While this study was in progress, the Stanford Research Institute provided a team of experts to undertake an economic analysis of the Nigerian transport sector. This was primarily a study of river transport on the Niger River so as to assist the Government in providing an orderly development and coordination of all modes of transport, rail, water, roads, and air.

Cooper Brothers, a firm of chartered accountants of the UK was engaged in 1961 to review, analyze, and recalculate the estimated cost of the project. A US engineering firm, Stone & Webster, was commissioned to make a more detailed analysis of the thermal and hydro comparison. In the meantime a general survey mission from the World Bank had been in the field and this culminated in a comprehensive report on the Economy of Nigeria, published in October 1961. The outcome of all these reports was that the proposed hydro plant at Kainji was justified and the Bank authorized the first project appraisal mission in 1962. This resulted in a preliminary project appraisal report. In 1963, a second project appraisal mission was sent to Nigeria to up-date and finalize the appraisal report. The \$82 million loan was approved and finally signed in July 1964.

Incidentally the two maps you were provided with are examples of maps included in the Bank's appraisal reports. They are far from being the accurate and elaborate type maps used in connection with resources inventories. They are intended merely to present locations and give a bird's-eye view of the project.

The Niger Dam project required over ten years from the initial preliminary studies to the signing of the Bank loan and the start of construction! A significant portion of that time was devoted to studies and investigations necessary for reaching a conclusion that such a project was technically feasible and economically justified. This decision greatly depended on the basic data resulting from the various studies, with considerable emphasis on the extent of Nigeria's resources inventories. After the financial plan was drawn up, the project appraisal missions reconfirmed the conclusion that the hydro plant should be constructed.

In most other areas of development, the pattern would no doubt be similar. A considerable amount of time and expense must be provided for resources inventories studies and this is an area where geographers indeed play an important role. These form the foundation on which future development emerges. If more developing countries, especially the newly independent countries, placed more emphasis on, and use of, resources inventories, the problems of development would not be insurmountable, as they so frequently appear to be, and development would proceed as rapidly as possible accompanied by a gradual increase in the standard of living.