INTRODUCTION

The text of this paper is concerned with a critical analysis of the method and techniques used by the International Bank for Development and Reconstruction(hereafter referred to as the Bank)to appraise projects the financing of which it is asked to provide.In this case the application for a loans of $10 million is submitted by ht Kobe Stell Work Ltd in Japan to finance its blast furnace project.

This paper will be broken down into two parts:

Part I will deal with the function and the purpose of the Bank,more specifically with its lending policy.

Part II is an anlysis of the techniques used by the Bank to appraise Kobe's project and will be further subdivided into four parts:

a-Japan's economy with reference to her balance of payments during the period prior to Kobe's application for the loan in question.

b-A brief survey of the Japanese steel industry.

c-Report # To-181a prepared by the Bank 's staff which is actually the appraisal of Kobe's project

d- and finally a critical examination of the techniques used by the Bank to determine the viability of the loan.

Over since the Bank was founded at the Bretton Woods Conference in 1944 a good deal has been written on its purpose and functions and the result obtained by the Bank's activities. The bulk of the litterature is repetitive, except that figures of total loans, repayments, interests and incomes change every year. The main reason is perhaps that the lending policy adopted from the day of its birth has remained substantially unchanged in spite of the changing circumstances.

A specialized agency of the United Nations, the Bank is an international institution whose main function is to channel capital from the richer countries to the poorer ones on an international scale. This process does not imply that the former have not imported capital or tthe latter have not exported their capital, but the flow seems to indicate that the direction is from the have to the have not.

Secondly, it is a development bank engaged in promoting development by supplying long term capital. from its standing as a lender it has built up a special expertise in engineering, economic and administrative skill necessary for the appraisal and supervision of large projects of construction. Its experience lead members countries to turn to the Bank, not only foe finance but also for advise and guidance while the Bank has come to think of itself as a consultant quite as much as a financial institution.

Although the Bank's policy has remained unchanged the direction and composition of its loans have changed. The flow of its lonas has shifted from the advanced

It is not unusual for the Bank to determine,on behalf of the borrowing country whether a new road has to be bulit or the old road be repaired,or whether a railway is prefera - ble to a highway,or whether a hydroelectrk power station is preferable to a thermal plant.In this the Bank as well as the borrowing country are involved in the technique of capi- tal budgeting,involving the comparison of alternative invest- ments.

The Bank's task is less delicate and arduous when the borrowing country is more advanced industrially like Japan for instanceBut it does not mean that the Bank will not make a thorough investigation on the proposed projets though the emphasis is different.In the more advanced countries,favoura- ble social,political and economic factors are usually present to make the loan viable from the lender's point of view.More- over the loan is always guaranteed by the government of the borrowing country,and in the form of debt which has priority claim over assets in case of liquidation.In the case of Kobe's blast furnace project,the Japanese government asked the Bank to lend to the Japan Development Bank $10 million equivalent to be relent to Kobe.Here there was ,so to speak,a double line of protection:first the guarantee provided by the Japa- nese Government and second the guarantee provided by the Japan Development Bank .One would think that such guarantees were more than sufficient to insure the servicing of the debt, and effort to investigate further into this application was not only costly and time consuming but might even be irrita- ting to the borrower.Such consideration did not however have much weight with the Bank,and in 1957 it sent to Japan a team to make a study on the spot.Again this reflects the un-

countries, generally in Europe, during the early years of its operations to the less developed countries in the latter years, mainly the countries in South East Asia. The change in the direction of the flow of the Bank's loans reveals some significant facts:

First, this show that advanced countries have become more self supporting and their problems of foreign exchange and balance of payments have become less acute. Therefore, there have been fewer applications for Bank loans. It might be also that, though applications are still coming from the richer countries the Bank chooses to think that loans to more advanced countries are at this stage less essential to their economic development than to the poorer members countries elsewhere. How much this consideration is weighted in its decision to grant loans is difficult to assess. The fact is that the standards applied by the Bank to appraise projects remain as rigid now as in the past and there is no indication they will be relaxed in spite of frequent critism both from abroad and inside the U S A.

Second, the Bank's measure of credit worthiness remaining rigorous the change in both the direction and volume of the flow of loans shows that the under developed countries have acquired, despite tremendous obstacles, certain prerequisites for economic development which they were lacking a few years ago, and thereby rendering loan consideration by the Bank a feasible proposition.

There are certain characteristics of the Bank's lending policy that are worth mentioning because these have

always attracted numerous criticism.

The Bank always takes great care when examining the projects submitted for financial support and causes de - lay that prolonged examination entails. It insists that the loans cannot be treated as isolated transactions and that the projects must be examined in relation to the rest of the development effort of the borrower. It constantly em - phasises the value of a development program into which the major projects are fitted. In its annual reports, the same general theme appears again and again: the limited value of additional finance if othe institutional factors are not propitious; the importance of good planning of individual projects and of good management in the conduct of a nation's affairs; the need to encourage initiative, enterprise and the will to develop. Thus the Bank has found itself involved in working out a philosophy of development of its own.

Another criticism has been directed to the two condi - tions governing the Bank's lending policy, namely that the Bank normally lends only against specific projects and con- fines its participation to financing the foreign exchange components, i.e. payments for imported equipment, technical services provided by foreigners. Those conditions were in- troduced at Bretton Woods with a view to preventing un - productive borrowing and also discouraging borrowing coun- tries from assuming too large a burden of foreign indebted - ness in relation to their earning of foreign exchange.

Entering into the arguments for and against this policy will take us too far afield, suffice to say that the Bank's attitude is rarely resented because many of the under -

developed countries prefer to have technical assistance and foreign capital wrapped up together and supplied by the Bank. For the Bank wants not only to ensure eventual repay - ment but also to see to it that the borrower will make the best use of the capital. It comes near to taking for granted that the Bank is a more reliable champion of the borrower's best interest than the borrower itself.

The composition of the loans reflects the purpose for which the Bank has set for itself. Out of the total loans of $3,800 million (cumulative to June 1958) two thirds have been for power and transport ; of the loans made to industry nearly half has gone to iron and steel, leaving only $300 million for all other industries. The Bank therefore limits its loans to projects which are directly related to productive capacity, to the exclusion of social projects such as schools, housing, hospitals.

A significant fact in the pattern of the Bank's lending policy is that it supplies loan capital rather then equity capital. this provided a partial explanation of the Bank's concentration on financing public utilities whose capital is constituted mainly by debt financing while indus - tries rely heavily on share capital in which the Bank refuses to participate

The cost of the loans made is worked out a commer cial basis and therefore is in close relationship with the bond rate in the international money markets. The rate of interest charged by the Bank is the rate that the Bank would itself have to pay currently if it were to make a bond issue of similar maturity in Wall Street, London or Zurich. To this is added I percent commission charge and ½ percent to cover its administrative costs. The result is that the same rate

of interest is charged to all the borrowing countries irrespective of any difference in credit ratings. That this is a good course to follow may be judged from the fact that so far no Bank's loans have ever been in default in more than a technical sense. Thus, the interest rate charged by the Bank varies from period to period, reflecting changes in the financial market. Interest on loans of 20 years went down to 4% in 1950, then rose to 5 % in 1953, 4.75% in 1954 and 5 5/8% at the end of 1957 and was 5.3/8 % in April 1958.

The Bank's interest policy is signficant in two ways: First, though it is considered as an investment bank its main concern is not profit making. If this is not so it would have charged a different rate of interest to each different borrowing country according to the letter's creditworthiness. And the less developed and the poorer the country the higher is the charge it would have to bear, a situation similar to that of a small firm seeking funds in a money market. This would go against a provision contained in its charter whereby the Bank must be satisfied, before making any loans, that in the prevailing market conditions the borrower would be unable to obtain capital from private sources under reasonable terms. Secondly, being a non profit minded institution The Bank would not relaxe its standards in time of high internal liquidity nor would it change its interest charge for the same reason. The behavior of an ordinary development bank is just the reverse.

Because the Bank looks upon its loans both from the point of view of the lender and borrower, each loans can be considered as a kind of direct investment by the Bank, the failure or success of which would affect the Bank as much as

changing policy of the Bank, that is the viability of a loan is a necessary condition but not a sufficient one. To be acceptable a proposed project should not only be potentially profitable to the investing firm but should also be viable to the economy as a whole.

The analysis of a project turns on four major points:

a-the economic prospect, that is the degree of priority assigned to the project in competition with other projects

b-the technical prospect, that is whether the said project is suitably engineered ans whether it is expected to perform th job for which it is designed.

c-the financial appraisal, which seeks to answer three interlocking questions:

-How much will the project cost and when will the money be needed?

-Where will the money come from and its impact on th e capital structure of the firm?

-Is the project viable, in other words, what will be the rate of return to cover the payment of expenses, interest and taxes and leave a margin of profit. The viability studies necessitate the study of financial forecasts for periods between five to ten years. Financial studies also require the establishement of cash flow for the same period

-Finally the management propect, that is, the quality of the management, previous experience, financial integrity and so on.

The financial studies serve to formulate conditions applicable to each loan. The conditions vary with each

loan and country, however the purpose is the same: to limit the debt of the borrower and to preserve sufficient working capital. The following conditions, extracted from several loans, will explain:

1. The borrower will not contract further long-term debt until full repayment of the Bank's loan.

2. The ratio of long-term debt to capital will be maintained to a given percentage. This condition may impose limitations on dividends or on the increase of capital prior to contracting new debt, but it does not prevent the borrower from financing expansion and working capital by short-term borrowing.

3. Long-term debt will be limited to a given fraction of new investment or to a given fraction of total capital.

4. Interest charges on long-term debt must be covered a certain number of times by gross profits. This condition is useful in the case of government-owned institutions, but it does not prevent short term loans

5. Long-term debt servicing (interest plus principal) must remain of a given fraction of net profits plus depreciation.

The economy of Japan.-Any study of the Japanese economy must take into account four important facts:

- The smallness of the country of about 142.640 square miles,or the size of the state of California,with only 15% arable land.

-A population of 90 million.

-A poverty of natural resources,even of raw materials such as raw cotton essential for the manufactu - ring of textile of which she is hte leading exporting coun - try.Also a leading stell producer in Asia,Japan lacks coking coal and has little iron ore.

-and finally her unique and increasing depen- dence on foreign trade.

Post war Japan's economy is characterized by her amasing recovery.By 1950,all branches of activities,even in the field of agriculture where growth of output is usually slow,surpassed the prewar level;by 1956 manufacturing out - put were 180 percent above prewar level.Real national income surpassed the prewar level by 50% in 1956 and real income per capita rose 46% between 1950 and 1956,and by 1956 was 10% above prewar level.

Three factors account importantly for this specta- cular recovery :

-First the six billion dollars of the U.S. funds poured into Japan during the postwar decade and acted as pump priming of a major scale .At the same time,a large number of economic measures were undertaken by the Occupation ranging from direct aid to currency reform,tax revision,and the establishment of a counterpart fund,the proceeds of which were to be used for the rehabilitation of Japanese industry.

Second, it was a decade of expanding world recovery and prosperity characterized by high and rapidly growing world trade which Japan shared and benefited from.

Third and perhaps the most basic factor in Japan's recovery was the high rate of capital investment combined with the knowhow and the firm determination of the Japanese people to overcome poverty, and their familiarity with industrial process and the techniques of foreign trade.

Yet though Japan's industrial output rose even faster than West Germany by 1956(International Financial Statistics, June 1957.-With 1953:100, Japan's industrial output reached 146 in 1956 and Gemany, 140) her volume of export failed to expand with the same rate. Japanses businesses did better in the domestic than foreign market because of the vast inflation during most of the postwar decade, and Japanese businessmen found it was more profitable to sell at home and abroad. Production costs, particularly in heavy goods, chemicals were higher than those of competitors abroad owing in part to obsolete techniques anf equipment. By the end of 1956 exports stood at 85 percent of the 1937 figure on a volume basis while industrial output was 172 percent(International Financial Statistics, May 1957)

Hoe did this situation reflect on Japan's balance of trade? Every year from 1945 through 1956 Japan had an unfavourable balance of trade. Its exports increased but its imports rose faster. The total trade gap ove 11 year period amounted to $6016 million, a deficit which Japan would have been unable to incur had it not been for U.S. aid and "special procurement" Over the same period these amounted to $6233 million, just covering the trade gap

Despite a series of annual deficits in both trade and normal invisible items Japan achieved a surplus in its balance of payments from 1950 to 1956, except for 1953. Special procurement constituted the largest component of invisible receipts. When the World Bank sent a team in 1957 to make a prelimenary study on the Kobe's project Japan had over $1,1 billion in foreign exchange reserve out of which $750 million in US dollars, a situation which was viewed favourably by the Bank.

The Steel Industry. In contrast with its overall advantageous cost position in textile and other light goods Japan is a high cost producer of iron and steel, metal products and machines, higher cost producer than its international competitors. In June 1956 rolled steel bars were quoted at $124 per ton in Japan, $102.50 in the U.S., $96 in the U.K., $105 in Belgium, $89.70 in West Germany, (Bank of Tokyo, July 1956). Of the total value of Japanese metal output in the portwar period pig iron, steel ingot and rolled steel formed nearly 50 percent. In 1956 Japan's steel industry produced 5,7 million tons of pig iron, 11,1 million tons of steel ingots and 7,8 million tons of ordinary rolled steel.

Why are the Japanese higher cost steel producers then other major nations? Why cann't a high labor input industry compete with the same industry in the much higher wage countries?

It is not due to the structure of the industry, for steel is one of the large scale industries in Japan with 77 percent output concentrated in 10 firms. The six biggest firms: Yawata, Fuji, Nippon Steel, Simitone, Kawasaki and Kobe Steel accounted for 75 percent of the total ingot

output.

Three basic reasons suggest themselves to explain this situation, though doubtless there are others:

First between 1946 and 1956 operations in the iron and steel industry have never been at more than two-thirds of capacity. Thus the economies of large scale operation could not be fully achieved. During 1955 when the pig iron output was 5,2 million tons, capacity was 7,7 million tons.

Second a substantial part of the iron ore, coking coal and scrap iron used must be imported. This means higher raw material and freight costs than those of competitor nations. Japan obtains 90 percent of its coking coal from the U.S., the freight cost exceeds the cost of coal. In the case of iron ore 60 percent of Japan's imports in 1955 came from lower cost countries such as Malaya and the Philippines and 37 percent from India, Goa, the U.S. and Canada combined. Scrap has now become the most costly of all steel raw materials for Japan.

The third factor and perhaps the most important was the lag in production techniques and the continued use of obsolete machinery. Aware of this the leading steel companies launched in 1951, what they called a rehabilitation and rationalization program involving an expenditure of $345 million over 4 years the purpose of which was to raise the productivity of the industry. According to the Japanese Iron and Steel Federation labor productivity, from an index base of 100 in fiscal 1951 rose to 175 in October 1956. The average time required for manufacturing one ton of pig iron by blast furnace was reduced from 10.34 hours in 1951 to 7.74 hours in 1956.

Yet despite these improvements, Japan Economic Agency estimated that Japan still needs twice as many man-hours to

turn out a ton of pig-iron as Britain. Thus even with much lower wages in Japan labor cost per ton was still greater than in Britain. It was therefore thought desirable to launch a second rationalization program in 1955. Kobe's application for $10 million loan to the World Bank was part of this modernization and expansion program.

In the Bank's fourteenth annual report for the fiscal year July 1,1958 to June 30,1959 the following announcement is printed on page 23:

$10 million 15-year 5 3/8 % loan of August 15,1958.

Borrower. Japan Development Bank

The Bank funds are being relent to the Kobe Steel workLtd the sixth largest steel maker in Japan, to assist a program designed to increased Kobe's annual production capacity of steel ingots from about 524,000 to 640,000 tons and finished steel products from 534,000 to about 600,000 tons, as well as to raise its non ferrous metal and machinery-making capacity. The Bank loan will be used to build a new blast furnace and related facilities. The furnace will have an output of 288,000 tons of pig iron a year and will provide the Kobe company with its own source of this material. The project will also include the construction of harbor installations at Nadahama, in Kobe, unloading and yard facilities for iron and coke, a sintering plant and a 16,400-kilowatt thermoelectric power plant. The loan will also help to finance the remodeling of two open hearth furnaces at the Wakinohama steel plant in Kobe and to install a new mixer there to receive pig iron from Nadahama.

Participation . The First National City Bank of Newyork, Berliner Handels-Gesellschaft of Frankfurt-am-Main and Vereinsbank of Hamburg are participating in the loan in an amount totaling the equivalent of $784,800.

The decision to grant $10 million loan to Kobe was taken after a year-study made by the Bank's staff. The result of this study is summarized in a 31 page report called Report No-181a. The importance of this report is obvious for the fate of the loan depends on the conclusion reached and recommendations made by this committee .

The report is divided into 6 parts:

1-The company

2-The market

3-The project

4-Assumption for future demand and prices

5-Benefits resulting from the expansion

6-Financial plan and Prospects

The company .Kobe was established in 1911;its main products weresteel,non-ferrous metal and electric and other machinery.It had no blast furnace before the war,obtained its pig iron from Fuji Steel company until 1954 when it had an opportunity to acquire control of Amatetsu which owned a 400 ton a day blast furnace.Kobe began immediately to build a second blast furnace with a capacity of 600 tons a day which was blown in May 1957.By acquiring Amatetsu Kobe gained control of an important source of pig iron, however, because this pig iron must be carried 12 miles from Amagasaki to Kobe by barge it must be used cold.The to cast,transport and remelt in the open hearth furnace makes it more expensive than if the pig iron is produced close to the stell mill.For this reason Kobe decided to build a 800 tons per day blast furnace within its vicinity of its works at Kobe.It was for this project that Kobe had applied for a Bank loan.

The company had a capital of $22 million(Y7986 million) which was widely distributed among 34,000 shareholders.Kobe was the sixth largest stell producer in Japan ,had 12 subsidiaries which were mainly suppliers of raw materials.

Sales,net profits(after taxes,interest and depreciation) and dividends payments are given as follow:

	1954	1955	1956	1957
	Yens Million			
Sales	23,248	24,703	40,069	42,772
Net profits	969	1230	1,737	1,618

	1954	1955	1956	1957
		Yens Million		
Dividends	455	432	444	797
Annual rate od dividends on par value of shares	12%	12%	12%	12%
Percentage of net profits retained	53%	65%	84%	51%

The main reason given for this big jump in sales between 1955 and 1956 was that the average price of Kobe steel products was increased by 37% while their volume was increased by more than 20%.

The period covered by the report is only 4 years too short to enable us to make generelizations. All we can say is that dividend payout is stable during those years. The rate is somewhat lower than the national average dividend rates. The tokyo Stock Exchange publishes the following costs of funds in Japan:

	Discounts	Mort. Bonds	Debentures	Av. Dividend rate
April 1955	8.76	10.26	11.07	17.87
April 1956	8.40	10.23	8.80	16.78
Luly 1957	8:03	9.49	7.89	15.70

Though lower than the national average dividend rate Kobe dividend was higher than the average yield of debentures and bonds.

The percentage of net profits retained appears to be reasonnably high, in this Kobe follows quite closely the American steel compagnies' practice. A study made by Gertrude G. Schroeder on the growth of 15 major steel compagnies (Armco, Bethlehem, Crucible, Inland, Jones & Laughin, National, Pittburg, Republic, Sharon, US Steel, Wheeling and Youngstown) over a period of 50 years, from 1900 to 1950 reaches the following conclusion: In the early years of the compagnies existence, retained earning were much more important then

depreciation accruals.However as the fixed assets of the companies increased depreciation accruals,as a percentage of the total source of funds increased both relatively and absolutely compared with retained earnings.Depreciation accruals and retained earnings,taken together provided more than half of the funds the 12 companies used for internal investment by the end of 1950.

From March 1954 to March 1957 Kobe invested $36,5 million which came from the following sources:

	$ million	Percentage
Depreciation Accruals	9.2	24.0
Retained Earnings	12.4	32.1
Capital increase	6.4	16.7
Long term loans	10.5	27.2
	38.5	100.0

56% of this requirements for new funds were met by Depreciation accruals and retained earnings,a percentage very close to that adopted by the American Steel companies under consideration,which is a very interesting fact indeed.

To assess Kobe's financial position the Bank uses two ratios:The current ratio to measure the immediate solvency or debt paying ability,and the equity ratio which is a ratio of long-term debt/equity to measure the long-run solvency.But in the opinion of Guthmann in his Analysis of Financial Statement,there is no hard and fast rules as to what the proper proportions of debt to net worth are. "The general principle to be kept in mind is that debt should be kept within such limits that the corporation can confidently face the adverse possibility of a business recession without fear of insolvency"(Guthmann)To the Bank the ratio of long-term debt/equity around one-third is acceptable.In this the Bank follows the common emperical

rules of the investment market according to which industrial capital structures are not expected to show more than one-third of the total funded debt.

Though a better ratio is the ratio between debt nad supporting assets the Bank did not use it perhaps because it is easier to derive the debt/equity ratio from the firm's balance sheet, and perhaps also it would be more difficult to assess the resale value of such specialized equipment and plant as Kobe had.

From March 1955 to March 1958 the Bank found both ratios satisfactory. The company's balance sheet is summarised as follows:

	1955	1956	1957	1958
	¥ Million			
Current Assets	11,753	11,495	17,882	19041
Net fixed assets	7549	7617	9548	12789
Investments	1355	2267	2929	3963
	20,657	21,379	30,359	36,193
Current Liabilities	7,304	8,100	12,943	13,857
Long-term debt	3,671	3,457	4,070	5,410
Capital stock	3,600	3,600	3,984	7,968
Surplus & Reserve	6,042	6,222	9,362	9,958
	20,657	21,379	30,359	36,193
Current ratio	1.60:1	1.42:1	1.38:1	1.51:1
Equity ratio	28:72	26:74	23:77	23:77

The Bank came to this conclusion: "The current ratio is satisfactory and the proportion of debt to equity is not high". We notice that, with working capital respectively at ¥4,939 million in 1957 and of ¥6,564 million in 1958, the two years of rapid expansion, long-term debt was well covered by the working capital position.

If we apply the rule that earnings after taxes in the years immediately prior to the date of financing should be equal to at least three times the interest charges to

be assumed, 1956 and 1957's earnings appear to be satisfactory but not 1954 and 1955's earnings.

Net earnings after taxes are as follow:

	Yens million		
1954	1955	1956	1957
431	487	1303	1351

Interest payable on $15 million loan @ 53/8% would be $806,200 per annum or Y285 million equivalent or less than one third of the earnings in 1956 and 1957.

Having satisfied with Kobe's past and present performance, the Bank turns to the task of estimating the future earnings of the company. It starts with the study of the market.

The market. Kobe produced machinery and non ferrous metal products as well as steel, but its steel division accounts for over half of its sales. In recent years, its has been expanding its production of high quality steel products, the demand for which has been growing much more rapidly than the demand for ordinary steel bars and rods which account for 20% of Kobe's production.

Kobe's capacity for thses products is considerably in excess of demand at present, and though the proposed expansion is modest, capacity seems to continue to exceed demand substantially throughout the next five years. However, in the opinion of the Bank the overcapacity is and would be theoritical rather than actual. "A large fraction of the existing capacity is obsolete and uneconomic, and is ordinarily operated only in boom times".

The market prospectsfor high quality bars and rods appear particularly promising, in the Bank opinion. Demand for these products seems likely continue growing

more rapidly than demand for ordinary steel bars and rods. Kobe, whose products have an excellent reputation forquality, should have no difficulty in increasing its sales.

Assumptions for future demand and price. Future demand for steel was estimated at 20-15 million tons by fiscal 1962. This estimate was made by the Japanese Ministry of Industry And Trade. But the Bank's economists arrived at a more conservative estimate, they believed that demand for crude steel might amount to only 16-17 million ton by 1962, as against the actual demand for 11.7 million tons in 1956.

Kobe with its excellent reputation fot quality was believed to have no difficulty in increasing its sales. It was further assumed that the company, with new facilities producing at low cost, would be likely to increase its share of the market, with obsolete equipment becoming idle.

With respect to prices, it was assumed that for most products, these would remain about the present level. The Bank thought that this was a conservative assumption since the level of domestic prices was low in 1957.

The Project. As mentioned above, Kobe was carrying out a 3 year construction program from March 1957 to March 1960. About 85% of its planned expenditure were for investment in the General Steel Division, the rest was for the improvement of facilities in the General Machinery and Non-Ferrous Metal Division.

The major item in the Steel Division program was a 800 tons per day blast furnace to be built at 15 miles from the existing open hearth furnaces: the distance was short enough to make possible the transportation of

molten pig-iron to the steel making shop.

The cost of the program was estimated at $36 million with the following break downs:

	Y Million	$million equivalent
Project proposed as a basis for a Bank loan:		
Blast furnace & related facilities	8556	23.8
Contingency fund	505	1.4
Sub-total	9061	25.2
Rest of the construction program:		
Other investments in the Gen. Steel Div.	2016	5.6
Improvements in the Gen Mach Div.	1660	4.6
Improv. in Non-Ferrous Div.	1783	4.9
Housing & Lab.	494	1.4
	15014	41.7
Less: Expenditure in 1956	2098	5.8
Bal. from March 1957 to Mar. 60	12916	35.9

The proposed Bank loan :

Kobe applied to the Bank for a $10 million loan which would cover $0.6 million for imported equipment and $9.4 million for local currency expen - ditures.

The loan represented 27.6% of the company's total planned expenditures for the three year construction program and 40% of the expenditures for the blast furnace over the same period

Benefit resulting from this expansion. The Bank indicated that the construction of the blast furnace would enable the company to decrease its annual scrap purchases from the present level of 311,000 tons to 209,000 tons in 1960, and would increase its annual production of steel ingots from about 524,000 tons to nearly 640,000 tons during the same period. If the blast furnace were not constructed the company's annual scrap purchases would have to increase to 370,000 tons

during the same period to cope with increase in the demand for its products.

On the assumptions that:

-Kobe's market share would increase

-Prices in the next three years would remain stable for most steel products except for some products whose prices were relatively high in 1956 and therefore were assumed to fall the level of June 1956.

the Bank made the following sales forecast:

	1956	1958	1960
		¥ million	
Sales-Steel Division	21,704	19,428	24,251
Less:Operating costs including depreciations	18,667	17,611	20,170
Gross Profit	3,037	1,861	4,081
Return on sales	14%	9.7%	16.8%

The forecast decline in the return on sales from 1956 to 1958 was attributable to an assumed decline in prices. The increase in sales to 1960 was attributable mainly to the operation of the blast furnace which was expected to be completed in early 1959.

On the basis of this forecast the Bank came to the following conclusion: "The ¥2,200 million increase in gross profit from 1958 to 1960 represents a fair annual return on the ¥11,077 million to be invested in the Steel Division." This is as far as the Bank goes in working out the rate of return. From the point of view of the company making this investment, this approach is inadequate. In the balance sheet and Income Statement forecasts, the Bank is mainly interested in finding out the company's current and equity ratios, the times total interest

would be covered and the times long-term debt service would be covered. This attitude on the part of the Bank is understandable enough for once the Bank is satisfied that the project has a high priority in the economy and that the investment will be profitable, both for the company and the country, the Bank turns its attention to the ways and means to insure creditworthiness of the company during the life of the loan. The financial conditions relating to this loan are not made public, however the Report recommends that Kobe's freedom to incur debt "should be limited with reference to a proportion between total debt and equity to be determined in the course of negociations". In order to avoid depletion of its cash resources during the construction period, "Kobe should obtain the permission of the Bank and the Japan Development Bank for any investment in or loan to other companies during two years ending March 31, 1960 in excess of an amount amount to be agreed during negociations".

How much those conditions would cost to Kobe in term of limitation on its freedom of action is difficult to assess. What is easier to assess is the opportunity cost Kobe would have to consider if it were to issue bonds of equivalent value in the Tokyo money market. The interest charged by the Bank being 5 3/8%, Kobe would have to pay betwwen 3 and 4 percent more on mortgage loans in Japan which yielded between 9 and 10 percent in 1957.

There is no indication in the Report the rate of return worked out by Kobe. For our purpose we will apply the present worth method to find the rate of

return of this invest.

First we have to find the average cost of capital.

Kobe finances the construction program costing Y12,916 million from the following sources:

	Y million	
Retained Earnings & Depreciation	6,236	78.2%
Share issue	3,150	
I B R D Loan	3,600	21.8
	12,916	100.0

To 5 3/8% charged by the Bank we must add .3% charged by the Japan Development Bank for providing its guarantee, making the total annual interest of 5.375% . Since corporate taxes in Japan was at the rate of 45% on net profit after depreciation and interest, the effective interest cost is 5.375% x .55: 2.96%

With respect to Kobe's dividend policy in future years we will makethe same assumption as the Bank, that is a stable rate of 12% will be paid on outstanding shares.

Using the method suggested by Bierman & Smidt, we estimate the average cost of capital for Kobe as follows:

Equity :	.782	x	.12	: .09384
Debt	.218	x	.0296:	.00645
Total average cost of capital				.10029 or 10% in round figure

We will use 10% average cost of capital to discount the flow of cash proceeds given in the projected cash flow table.

Cash Proceeds. We obtain cash proceeds from the cash flow table by adding depreciation to Profit for the year(Profit before depreciation, taxes, interest and dividends)From this total corporate tax will be deducted.

We will have to make a number of assumptions, since the Cash flow table gives the figures of Profit for the Year for both current and new investment.

As the blast furnace is expected to be completed in early 1959,we will assume that any increase in Profit from April 1959 to March 1964 - period covered by the table- be attributed to the operation of the blast furnace.

As base year from which deduction will be made to obtain the increase in profit attributable to the blast furnce, we will use the average profit made in 1957 and 1958. This is clearly unadequate,but we cannot do better because of the lack of dates.

The average profit before the blast furnace comes into operation is: $\frac{3518 + 3633}{2}$: Y 3575,5 million

Increase in Profit for the year(before taxes,interest and dividends but after depreciation)

From April to March of the following year

Y million

	1959-60	1960-61	1961-62	1962-63	1963-64
Profit for the year	5157	6313	7895	9046	9066
less	3573,5	3575,5	3575,5	3575,5	3575,5
	1581,5	2737,5	4319,5	5470,5	5490,5
less 45% taxes	711,7	1231,9	1943,8	2461,7	2470,7
	869,8	1505,6	2375,7	3008,8	3019,8
plus ordinary Depreciation	712	712	712	712	712
plus extraordinary depreciation	900	556			
	2481,8	2773,6	3087,7	3720,8	3731,8

With respect to depreciation we note there is a jump from Y913 million in 1959 to Y1,625 in 1960,we attribute this increase in depreciation to the fixed assets of the new furnace.The increase is Y 712 million.If we assume that kobe adopt the straight line method,it will take 18 years from 1959 for the blast furnace to be fully depreciated.

At the same time Kobe will have to spend Y 300 million a year from 1960 onwards for repair and maintenance including relining(see Cash Flow Table)

In addition the company is benefited from the extraordinary depreciation allowed by the Japanese Government

The total extraordinary depreciation is Y 1456 million and represents roughly 2 years of ordinary depreciation proceeds. Since the ordinary depreciation rate will have to be reduced in the latter years to cover the extraordinary depreciation allowes during the first two years of its operation, we simplify the problem by shortening the life of the blast furnace by 2 years, making it lasting only 16 years.

The projected cash flow is made only for five years, from April 1959 to March 1964, Kobe fiscal year. It is now necessary for us to make the unrealistic assumption that the cash inflow of Y3731 million in year 1963 will remain constant for the next 11 years, that is until 1973.

The present worth of this income stream is computed as follows:

Year	Cash inflow Y million	P.W Of $1@10%	Present value of the cash proceeds
1959	2,481,8	.9091	2,256,2
1960	2,773,6	.8264	2,292,1
1961	3,087,7	.7513	2,319,8
1962	3,720,8	.6830	2,541,3
1963	3731	.6209	
1964	3,731	.5645	
1965	3,731	.5132	
1966	3,731	.4665	
1967	3,731	.4241	
1968	3,731	.3855	
1969	3,731	.3505	
1970	3,731	.3186	
1971	3,731	.2897	
1972	3,731	.2633	
1973	3,731	.2394	17,344.6
1974	3 731	2176	
Total of the present value of the cash proceeds			26,754. million Yens.

The cash outflow during that period is the value of the initial investment of Y 12,916 million; to this we will add Y 300 million a year for repairs and maintenance for 15 years, (there is no repairs and maintenance in the

first year of the blast furnace 's life.

The present value of an annuity of ¥ 300 million @ 10% for 15 years is: ¥ 300 million x 7.6061 = 2,282 million.

The total present value of the investment is ¥15,198 million compared with ¥ 26,754 million present value of the cash proceeds.

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The present value of the same cash proceeds over a period of 16 years at 20% equals ¥ 15,565 million, just slightly over the present value of theinvestment ¥ 15,198 million.