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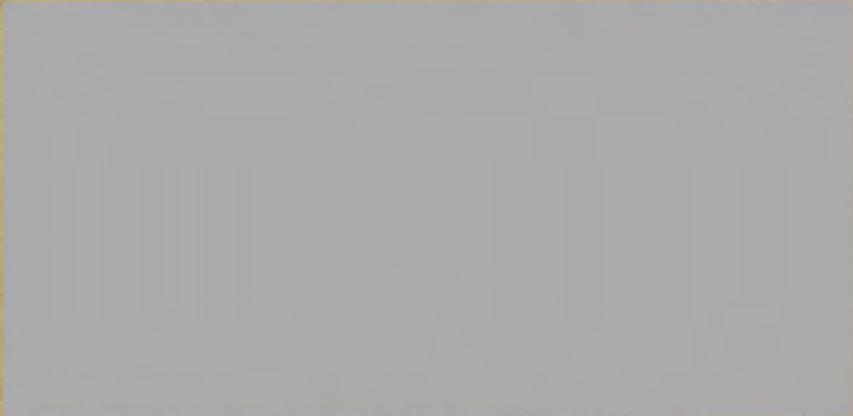


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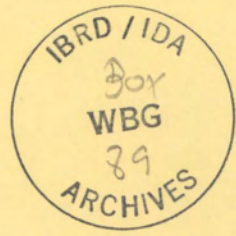


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LIPKOWITZ

SCRAP AND THE MARKETS

Address of Samuel Lipkowitz
Economist and Metals Specialist, The World Bank
to the 35th Annual Convention
Institute of Scrap Iron & Steel
January 21, 1963 - New York City



In 1960, when I first offered a forecast on scrap markets, I suggested that scrap prices were then relatively low and could be expected to rise from below \$30 to about a \$35 average in 1961. Happily, they rose even more. It is clear now that export demand, particularly from Japan, was largely responsible.

Last year I went out on the limb and predicted, accurately, there would be no long steel strike. I did overestimate steel output, along with many others, and I underestimated the drop in scrap exports. Prices fell below the 1960 lows, which I failed to anticipate.

Later that year I emphasized there would be a dull period for scrap, especially since iron ore prices had been reduced somewhat unexpectedly. I also suggested pig iron prices might be cut. That happened this past Fall.

With this mixed forecasting record, I offer these thoughts on 1963's outlook, and let me emphasize that this year, as on past occasions, what I have to say is purely a personal opinion and does not necessarily reflect the view of my employer, the World Bank.

SUMMARY

Essentially, my views are what they were two years ago on the long-range outlook. Scrap demand is low for a variety of reasons. These include lower rate of economic growth in the U. S. than in other industrialized areas. Durable goods output has lagged behind national product. Steel demand has lagged behind durable goods.

Lighter-weight steels have replaced heavier products and steel prices have, at least until 1962, been a factor in encouraging substitution of aluminum, reinforced concrete and plastics for steel.

Finally, pig iron is encroaching on scrap in steelmaking. Most oxygen converter processes require more pig and less scrap than the open hearth. With experience, scrap charges in converters, particularly the Stora-Kaldo type, may rise but this will take time since other converters constitute the bulk of those presently on order.

On the outlook for 1963, I project steel ingot output at 105 million tons, pig iron at about 70 million tons and an average price of about \$30 for the three city composite for No. 1 heavy melting scrap. I don't anticipate a range of more than \$10 between the high and low for 1963, unless there is a serious international crisis, a protracted steel strike or an export demand higher than 1960. None of these seems likely to come to pass this year.

For my reasons, I shall start with our international economic position because it has a strong influence on our economy, our price and wage levels and our monetary and tax policies. The link is not always direct and clear but it is significant. It has more long-range than short-range importance, but it can assume major proportions if our national economic policies are faulty.

PLEASE TURN OVER

Let us not forget that 30 years ago the New Deal felt it necessary to cut our links with gold and other currencies to insure freedom of action in meeting a major economic crisis. This does not imply that our present situation requires or would benefit from similar action now. It is cited only to indicate that under certain circumstances, such action may appear preferable to other alternatives to some Governments. If and when this occurred, a major reappraisal would be necessary. Unless our liquidity position in international payments improves we may again face such an urgent choice in the next few years.

INTERNATIONAL ECONOMIC POSITION OF U. S.

Two years ago, at the bottom of the last business cycle, I felt we had come to the end of an era. Foreign competition was more evident and intense. To maintain world financial stability it was necessary for other prosperous countries to make a larger contribution to foreign aid and lending programs. I also noted that the whole aid apparatus and its assumptions would be questioned increasingly. I think events in the past two years have confirmed these views.

In this period our gold stock has dropped about \$1.5 billion, and net short-term claims against us have risen another \$2.5 billion. Our net liquidity has thus dropped about \$4 billion. Our net long-term claims on others and our overall net foreign position have improved. You might say, in business terms, our net worth has improved but our liquidity has deteriorated.

We find that some of our assets, particularly the increasing amount of claims denominated in local currencies of underdeveloped countries, are of doubtful value. We have seen some of our claims lose their value overnight in the case of Cuba. An objective observer must place more reliance on liquidity than on net worth, particularly when some long-term claims may prove to require a partial or complete writeoff.

Earlier, Administration spokesmen were confident that this liquidity aspect of our international balance of payments problem would be solved by the end of 1963. It was expected that the gold outflow would come to a halt this year, because our trade surplus would rise, foreign aid and defense expenditures would be held down and private capital outflow to Europe would dwindle as more large firms had established positions within the various rival European markets.

But now, the prospect for 1963 is a continued liquidity deficit, which may mean a further gold outflow. Chairman Martin of the Federal Reserve Board has already warned of this prospect and others who had been more optimistic earlier are less vocal or strangely silent now.

Our trade balance surplus rose from \$1 billion in 1959 to \$5 billion in 1961. It was slightly less in 1962 and seems likely to decline further in 1963, as our agricultural exports to Western Europe drop, barring bad crops there due to weather factors. Unless our net foreign outlays on military and economic aid are substantially reduced, the drain on our liquidity will continue. Prepayments of foreign debts by France and Germany may cushion the drain but only at the expense of selling sound assets. A reduction of our annual expenditures would be preferable from our standpoint. Negotiations are proceeding with various NATO countries but substantial savings are still not definite.

As to economic aid to underdeveloped countries, I think some savings could be achieved without undermining the basic aims of the program. In some of the large aid-receiving countries, the time has come to shift the emphasis from financing new projects to helping them get fuller and more efficient use of

existing facilities. I know that such a suggestion won't endear me to such equipment suppliers. A shift to supplying raw materials, components and bottleneck equipment items would be more effective in raising output there in the next year or two and less costly to the U.S.A.

Such a shift might also help indirectly some other underdeveloped areas which supply raw materials.

Finally, it might convince skeptics in aid-receiving countries that our Government means what it says when we urge them to budget their resources wisely. This is an opportunity for the Clay Committee to perform a service to both underdeveloped countries and the American taxpayer. However, I am far from confident that such potential foreign aid economies will, in fact, be achieved.

The net effect of all of this is that our policies on money rates, taxes, wages and prices will be affected by the attitudes of foreign fundholders, private and governmental. This is why more stress is being placed on tax reduction and reform than on easy money.

Two years ago Western Europe and Japan were in the midst of a boom. A year ago there was some evidence of the boom there topping out. Now it is clear that it has. These areas are now experiencing creeping inflation caused by wage increases in excess of productivity rises. Demand for consumer goods and services are rising but capital goods industries, like machinery and steel are experiencing a lull. They (just as we) experienced sharp drops in stock prices in the two middle quarters of 1962, reflecting the fact that profit expectations were disappointing.

What seemed unthinkable a few years ago has become a routine affair. Prices of steel, aluminum, chemicals, pulp and paper, and fuels have declined. Prices of iron ore and pig iron were reduced this year for the first time since the War, not only in the U. S. but in Europe and elsewhere. Corporate capital expenditure policy is stressing cost reduction rather than capacity increases. Wage bargains are being fought more strenuously. Marginal plants are being closed. Capital losses are being recognized. Reappraisal of all management policies is the order of the day, here and in Japan, England and some parts of the Continent.

Per Jacobbsen, head of the International Monetary Fund, who a few years ago correctly anticipated the end of American inflation, recently warned that deflation may set in unless concerted international action is taken. There are a few signs that his warning is being heeded. Already, the U. S., Canada, Japan and the United Kingdom have taken coordinated actions along these lines. The big question is whether Continental powers like Germany, France and Italy will collaborate or act as preversely as they did in the early and middle '30's, when they prolonged world deflation by their inaction. While I am confident that they will not repeat that error, no one can offer guarantees on that score. We shall not have long to wait, I think.

PAST PRICE RELATIONSHIPS BETWEEN SCRAP AND IRON ORE

No. 1 scrap last year sold at the lowest prices since Korea. The three-city composite in 1962 fell below \$30 for the first time since 1949 on an annual basis. A more realistic comparison is to take account also of what happened to competing materials--iron ore and pig iron.

Very little pig iron is sold to or by steelmakers and hot metal offers heat economies over cold scrap. Iron ore is more widely traded and steel companies here and overseas import substantial tonnages.

Iron ore prices afford a more relevant comparison, especially when steelmakers have substantial excess blast furnace capacity.

Scrap prices are compared with iron ore prices in Table 1. Note that in 1949, 1954, and from 1958 on, scrap has been below two times the price of two gross tons of 51.5% ore, the approximate amount needed to produce a gross ton of pig iron. In 1962, the average ratio was 1.35, the lowest ratio for the whole post-war period. This is about the same as in 1938, and higher than in 1931-35, inclusive. In all those depressed years in the '30's, pig iron output was under 45% capacity and as low as 17% in 1932.

Why should scrap again sell at so low a price relative to iron ore? After all, pig iron output was over 60% of capacity in 1962, not greatly different than in 1958-61 or 1927, 1930, 1936 and 1939, but prices were relatively much lower.

Let's compare 1962 with 1960 in detail. The scrap composite was almost \$5 per ton lower. Between these two years, iron ore prices were reduced 80 cents per ton, so that scrap prices should have been \$31 at the 1960 scrap-ore price ratio instead of \$28.50.

Scrap demand at home was not greatly different than 1960. Steel output was about 1% less and foundry output was about the same as in 1960. The two-million ton drop in exports between 1960 and 1962 triggered the extra price drop. A similar comparison between 1961 and 1962 would show that the export drop of four million tons accounts for most of the \$8 price decline.

In the light of the foregoing, it is obvious that the major factors affecting the scrap outlook for 1963 are (1) the level of domestic steel output (2) the level of scrap exports and (3) prices of competitive products like iron ore and pig iron.

PRICE CHANGES IN COMPETITIVE PRODUCTS

Iron ore prices are still vulnerable despite the early 1962 cut of 80 cents per ton. Swedish ore prices were cut recently by 7% after a similar cut at the beginning of 1962. African and Canadian ores are coming on the market in increasing volume and both Japanese and European buyers are trying to reduce delivered costs.

In the present weak market their massed purchasing power may well find reflection in lower prices for Western Hemisphere ores of high iron content. There is reason to believe that such reductions would not be unwelcome to steel companies with diverse interests who can anticipate reduced property taxes in Lake states as a result.

It would not be surprising if domestic iron ore price were further reduced before the season opens on Lake shipping. If such a cut occurs, scrap prices would be adversely affected directly in case of non-integrated mills and indirectly in the case of others. In any event, I would consider it prudent to take such a probable cut into account in your operations.

SCRAP EXPORT PROSPECTS

Scrap exports in the past few years have been largely dominated by the swings in the trade with Japan and with European countries other than Italy. The trade with Italy has been quite steady on a rising level (from one to 1.5 million tons) in the last four years. Trade with other European countries has dwindled sharply as these countries have expanded their iron-making capacity and access to overseas ore supplies. Scrap supplies and prices in these areas have become easier and freer, reducing their need to import from here. In fact, in 1962 they became competitive suppliers of some types.

Japanese trade has fluctuated more sharply, rising from less than one million tons in 1958, when Japan was living on inventories and was short of foreign exchange, to over six million tons in 1961. In 1962 exports to Japan fell to about 2.5 million tons.

This decline in 1962 is partly related to the drop in steel output, but the major reason is the displacement of open hearth by oxygen converter steel. In the first nine months of 1962, Japan's output was 20.7 million tons, 1% above the same period in 1961. Open hearth output was down almost two million tons, converter output rose by 2.1 million tons and electric furnace output was unchanged. This displacement alone probably reduced scrap use by a half-million tons.

With pig iron output two million tons higher in the 1962 period, steel companies increased their hot metal charge and reduced their scrap charge. I estimate that scrap use in Japan will be at least three million tons less in 1962 than in 1961, since steel output in the last quarter will probably be about two million tons less than in the record fourth quarter in 1961 when it was 7.8 million metric tons.

With inventories of scrap probably being reduced in contrast to increases in 1961, the cut in Japanese imports of scrap from the U. S. of over three million tons is not surprising. After all, other sources of scrap in Europe and Australia have become newly available in 1962 at competitive prices.

Scrap exports to Japan are unlikely to increase appreciably in the first half of 1963, but may rise in the second half if industrial recovery signs are confirmed by events. I would suggest that this is one area which members and the Institute should watch carefully and regularly.

It is premature to estimate Japanese steel output for 1964 now. Some calculations will show that even if output rises to 30 million tons in that year, total imports are likely to be at least one million tons less than in 1961 and imports from U. S. down even more. By that time 40-45% of the output would be from oxygen converters as against less than 20% in 1961.

Exports to areas other than Japan are even less likely to attain the levels of 1960-61 of 3.5 million net tons. The 1962 total to these areas was about 2.5 million. It seems reasonable to conclude that in 1963, total scrap exports will be about the same as in 1962.

DOMESTIC DEMAND

Foundry demand may rise somewhat over 1963 but the likelihood of major increases is dimmed when we realize that a main source of demand for foundry

PLEASE TURN OVER.

products, the automotive industry, had a good 1962 which was better than most other metal-using industries. The main source of increased demand must be the steel industry, so let us examine its prospects for 1963.

The Census Bureau of the U. S. Department of Commerce has been issuing a new report since early 1962 on steel inventories in the hands of manufacturing consumers, service centers and steel mills. For the first time we now have monthly reports on inventories, authoritative figures available with only one month's lag. From now on, the kind of misjudgment which occurred in 1960 on inventories need not happen. I say this because I also overestimated the drop in inventories then. It offers a reliable benchmark for estimating consumption in the past few years against availabilities.

In Table 2 steel availabilities (mill shipments plus imports minus exports) are compared with the newly revised Federal Reserve Board index of durable goods (1957-59 = 100) between 1954 and the present. Steel availability per unit of durable goods produced fell about 10% between 1954 and 1961. We know that 1954 was a year characterized by heavy inventory reductions, but there are no authoritative tonnage figures for steel inventory changes. There was also some decline in 1961, but it was probably much smaller.

If we use a figure of 15%, which implies a four to five million ton greater reduction in steel inventories in 1954 than in 1961, we get an annual reduction of over 2% per year. Because steel prices continued to rise in 1958 after competitive prices fell and because developments like compact cars and thin tinplate came in the latter period, we have arbitrarily allocated the drop in the consumption coefficient (the use of steel per unit of durable goods produced) at 2% per year between 1954 and 1957 and 2.5% thereafter.

Neither these nor any other estimates can be closely confirmed because no definitive inventory figures for consumers existed. Their reliability can only be checked against observable tendencies in inventories generally and trade knowledge. But for 1962 and future years the census data will give us a check on the reliability of estimates.^{1/}

In 1962 mill shipments are estimated at 71.3 million tons of finished steel. Imports of about four million tons less exports of 1.9 million result in net imports of 2.1 million, making total availabilities of 73.4 million. On the basis of the method described above, consumption is calculated at 74.3 million or about 900,000 tons more than availabilities.

According to census data, the decline in reported consumer inventories (covering 70% of total use) was 500,000 tons in the 11 months ended November 30, 1962, plus about 100,000 tons at service centers. Thus, our estimate squares pretty closely with the census data.

The 1962 unemployment average of 5.6% is about the same as in 1960. Between these two years, real national product (after allowing for price changes) rose 3.5% per year, while durable goods output rose 4.5% per year. If the 1963 rise is no better than the average for 1961-62, our real Gross National Product will rise about \$20 billion and our durable goods output index should reach 123.

^{1/} These estimates are uniformly lower than those given in past economic letters by about $1\frac{1}{2}$ million finished tons, because those estimates implied greater inventory cut than seems to have occurred in retrospect.

The big question mark for 1963 is whether the Congress will enact a substantial tax cut as sought by the Administration. I think that, since depreciation allowances were substantially liberalized last year, a balanced tax cut of even \$4-5 billion net will prove stimulating to business and the national economy.

Whether Congress will go along and how quickly is an open question. There are some signs the Administration is lining up support inside and outside the legislative bodies, but the nature of the necessary compromises is still unclear. Early decisive action may make our estimate unduly pessimistic. For the present, I can't justify a higher estimate.

A durable goods index of 123 for 1963 implies steel consumption of 75.5 million tons, two million higher than in 1962. If net imports are two million, as in 1962, this leaves 73.5 million for domestic mills, assuming inventories all along the line remain unchanged.

I consider it probable that consumer inventories will be one million tons higher than at the end of 1962, if my general business forecast works out. A long steel strike would probably cause an unwanted cut, but this is unlikely. Thus mill shipments should be between 74 and 75 million tons, up 2.5-3.5 million tons in 1962.

Mill inventories, which were built up heavily in 1961, perhaps four million tons were cut in 1962 by at least two million tons. They were 2.1 million tons below December, 1961, levels on November 30, 1962. They are unlikely to be reduced further in 1963, except for a temporary period in anticipation of an unlikely industry-wide walkout. Year-end 1963 inventories will be as high or higher than at the end of 1962, but no major changes seem likely.

Production of 75 million finished tons will require about 105 million ingot tons, a yield of about 71%. This is consistent with the recent trend toward a larger proportion of thin flat products. Before 1960, the 72% yield was due to a higher proportion of plates, structurals and rails, which have a higher yield from ingots.

The time distribution of production and shipments during the year depends on your guess as to consumer attitudes toward inventory building. I don't think it will affect scrap demand or prices very much this year.

SCRAP PRICE PROSPECTS

With an estimated ingot output of 105 million tons in 1963, steel mill demand for purchased scrap will exceed 1962, especially since mill inventories of scrap were probably lower than at the end of 1961. In 1963 the importance of oxygen converter steel will increase to probably 10% of the total from under 6% in 1962. Over half the increase in output will be in converter steel. Between 1961 and 1963, open hearth output will remain about unchanged and converter steel will account for almost the whole increase, aside from a small increase in electric furnace output.

As to scrap use, I estimate purchase scrap use will rise only about one to 1.5 million tons between 1962 and 1963. Under these circumstances, the three-city composite is unlikely to rise appreciably above \$30 on a sustained basis, unless export demand centered on both coasts rises sharply and exerts an upward push on interior scrap prices. I have already indicated I think this unlikely, certainly in the first half.

PLEASE TURN OVER

A yearly average can be meaningless if prices fluctuate widely. A steady market at \$30 say, is much different than a market which fluctuates between \$22 and \$38. In 1963, I doubt that the range in interior markets will be as wide as \$10. I base this on the fact that the industry has ample blast furnace capacity to produce at least eight million tons per month.

In November, 1962, it produced a little over five million. Since then, several additional furnaces have been started up. I venture that the industry will keep iron output high enough in the first half of 1963 to keep purchase scrap requirements slightly above 1960-62 levels.

In recent years a close estimate of steel purchase scrap requirements could be made by the following formula: Subtract 90% of blast furnace output from 80% of ingot output. From 1960 to 1962 requirements thus computed were 19-20 million net tons. If ingot output in 1963 is 105 million tons, purchase requirements could be kept at 21 million tons by producing 70 million tons of pig and blast furnace alloys.

To keep purchase scrap requirements at 20% of ingot output in 1963 would mean that blast furnace output had to be kept at just two-thirds of ingot production. This can be done at least until ingot output reaches 12 million tons per month, a rate never yet reached and unlikely to be required in 1963.

This calculation illustrates that the four-million-ton drop in scrap exports in 1962 was equivalent, under present circumstances, to a 20-million-ton drop in ingot output. By the same token, a 20-million-ton increase in steel output on an annual rate, if it occurred due to stockpiling against a strike the first half of 1963, would impel the mills to run down their stocks of scrap or increase their hot metal charge. They could do this for a short period, if the upsurge in demand was temporary, but not if it were likely to be sustained over a long period.

This makes it clear why a sustained rise in exports would be a better support for higher scrap prices than a temporary bulge in steel demand attributable to consumer stocking in anticipation of a strike. In these circumstances, steel-makers have no incentive to maintain high stocks of scrap, ore, coke, pig or even steel, which will remain tied up for the duration of a strike.

Consequently, I don't look for wide fluctuations in scrap prices. There may be some flurries of local demand because of unbalanced stocks. If there were a strike, the demand for electric furnace bundles by the few mills continuing to operate would command some premium. But apart from these possibilities, the scrap outlook is for a steady scrap market in a narrow price range around \$30 for the three city composite, unless export demand unexpectedly increases substantially.

Over the longer term, the scrap industry must face the fact that oxygen converter steel will steadily displace open hearth steel. This pace is rising rapidly. Oxygen converter steel accounted for 4% in 1961, over 5.5% this year, 7.2% in November 1962. I expect it to account for 10% in 1963 and 15% or more by 1965.

Even though business in general should improve in 1963, the outlook for scrap volume and prices is only for small improvement and the longer term trend depends heavily on exports. I repeat, trends in this field will warrant close study.

How this general picture applies to your own operation you alone can judge. What I have done, and all I could do is give you my best estimates and my reasons for them. You must decide whether and how far they apply in your case.

TABLE 1

SCRAP-IRON ORE PRICE RELATIONSHIPS

Year	Scrap Composite	Ore* Price	Scrap to Ore Ratio	Percent Blast Furnace Capacity
1927	\$14.0	\$ 8.5	1.6	69.4
1928	14.3	8.5	1.7	75.2
1929	16.3	9.0	1.8	82.8
1930	13.5	9.0	1.5	61.1
1931	9.8	9.0	1.1	34.7
1932	7.5	9.0	0.8	16.8
1933	9.5	9.0	1.1	26.2
1934	11.0	9.0	1.2	31.3
1935	11.9	9.0	1.3	41.5
1936	14.8	9.0	1.6	61.7
1937	18.0	9.9	1.9	74.1
1938	13.5	9.9	1.35	37.3
1939	16.4	9.9	1.7	62.8
1940	18.8	8.9	2.1	84.3
1947	35.6	11.1	3.2	90.3
1948	41.6	12.4	3.3	90.5
1949	27.5	14.4	1.9	76.8
1950	35.3	15.4	2.3	91.4
1951	43.1	16.6	2.6	98.3
1952	41.9	16.6	2.5	84.2
1953	39.9	19.8	2.0	95.6
1954	28.7	19.8	1.45	71.6
1955	39.8	20.2	2.0	92.6
1956	53.5	21.7	2.5	88.9
1957	47.1	22.9	2.1	91.4
1958	37.8	22.9	1.7	63.5
1959	37.7	22.9	1.7	64.3
1960	33.2	22.9	1.45	69.7
1961	36.4	22.9	1.6	65 est.
1962 est.	28.5	21.3	1.35	65 est.

*Mesabi non-Bessemer

TABLE 2

DURABLE GOODS, OUTPUT AND STEEL AVAILABILITIES,
CONSUMPTION AND INVENTORY

Year	Durable Goods (1957-9 = 100)	Steel			Inventory Change (Million Tons)
		Availabilities (Million Tons)	Estimated Coefficient of Consumption	Calculated Consumption (Million Tons)	
1954	88.4	61.1	76	67.2	- 6.1
1955	101.9	81.6	74.5	75.9	+ 5.7
1956	104.0	80.2	73-	75.9	+ 4.3
1957	104.0	75.7	71.5	74.4	+ 1.3
1958	90.3	58.8	69.7	62.9	- 4.1
1959	105.6	72.1	68-	71.8	+ 0.3
1960	108.5	71.5	66.3	71.9	- 0.4
1961	107.0	67.3	64.6	69.1	- 1.8
1962 est.	118	73.4	63-	74.3	- 0.9
1963 proj.	123	76.5	61.4	75.5	+ 1.0

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FINANCING OF ELECTRIC POWER DEVELOPMENT
CONSIDERATIONS BY IBRD

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Note: The views expressed are those of the writer and not necessarily
of the International Bank

THE WORLD BANK

The record of the World Bank on lending for electric power projects is hard evidence of the importance it attaches to the role of electric power in economic development. Since its formation in 1946 to mid 1963 the Bank has made over 340 development loans^{1/} for a total of \$6,500 million equivalent. Thirty-six percent of this impressive total, or \$2,300 million was for electric power, the largest single category.

Total loans to areas in Africa exceeded \$900 million of which over \$250 million or 27% was for electric power. In both Africa and Asia loans for transport were greater than for electric power, whereas in the Western Hemisphere and Europe, the reverse has been true.

Before discussing in detail the major factors taken into consideration by the Bank in financing power projects it may be useful to give you some background on the Bank. The Bank is a membership organization, the members being sovereign governments. Membership involves a subscription^{2/} to the capital stock of the Bank,^{3/} payable to the extent of 1% of the subscription in gold or dollars and 9% in the member's own currency. The Bank may under its Charter lend only to member countries, or enterprises or agencies in the member country provided the member guarantees such loans if made other than directly to the Government.

The Bank has lent more than 3 times the capital paid in by members. This was made possible by the fact that the Bank borrows in various financial markets on its own credit. In doing so it has, of course, been greatly aided by the fact that it could demonstrate to its creditors that it had the power to raise additional resources (in the form of calls on member governments for the unpaid balance of subscribed capital to the extent necessary to pay its debts).

In its early years, the bulk of the Bank's borrowing was done in the USA, where the right to call on the USA was its major selling point. As other members have grown more affluent, borrowing has also taken place in other markets. The security value of the subscription calls on such countries has undoubtedly come to be appraised more highly by our creditors in the last decade. From the beginning loans made by the Bank have been untied--that is machinery, equipment, etc. could be purchased in any member country,^{4/} a factor which permits our borrowers to shop around for the most favourable terms available in purchases of

^{1/} Excluded from the total are 3 reconstruction loans in 1947 to France, Netherlands and Denmark.

^{2/} The amount of the subscription is based on a calculation which takes into account various economic criteria for each country.

^{3/} The total authorized capital is \$21,000 million.

^{4/} Switzerland is a non-member which is afforded the same status in this connection probably because it has facilitated Bank borrowing in that country.

machinery, equipment, technical services, etc. In fact Bank practice is to require international competition.

Partly because the Bank is dependent on borrowed funds, but also because it is concerned with avoiding loss of capital, the Bank has followed a policy of appraising each borrowing country's credit-worthiness--its ability to repay debts. For this purpose, it is customary to send an economic mission to the applicant country to survey the overall economy and appraise its credit-worthiness as a prerequisite to a study of the specific project for which a Bank loan is sought. In practice as the Bank has gained experience and familiarity with the economies of member countries, economic and project missions have been sent simultaneously to an applicant country.

It would be beyond the scope of this paper to describe our procedures on national credit-worthiness appraisal, but they are noted here to indicate the great importance the Bank attaches to this aspect of lending. The fact that most of this paper is devoted to project appraisal should not connote to the reader that national credit-worthiness appraisal is unimportant. It is highly important and is indeed a prerequisite to project appraisal, in Bank practice.

In 1960 an affiliate, the International Development Association (IDA) was founded to make credits on easier financial terms. While Bank loans are made at interest rates which reflect the cost of borrowed capital to the Bank, a reserve for bad debts and an allowance for costs of operations, resulting currently in a 5½% interest rate, IDA's credits bear only a 3¼% charge on amounts outstanding, to meet its administrative costs.

Bank loans have been made for varying terms of 2 to 25 years, a period related both to the estimated useful life of the equipment financed and to the maturities of the Bank's borrowings in various capital markets. Periods of grace before amortization begins are usually determined by the estimated construction period of the project. By contrast, IDA has to date granted credits only to 50 years maturity, with a 10 year grace period.

IDA had granted 39 credits to 18 countries by mid 1963. Of total credits of \$495 million, \$57 million were for power projects. Africa accounted for \$34 million or 7% of IDA credits, all for projects in sectors other than power (irrigation, school construction and highways).

The easier terms under IDA credits are intended for the benefit of the national economies and are not necessarily extended to the entities or agencies operating the projects. The terms (interest rates, maturities, grace periods, etc) on which the IDA credit proceeds are passed along to the project entity are intended to impose on the agency executing the project a normal financial discipline with regards to rates and charges in the case of revenue earning projects. Consequently, a project submitted for IDA financing is expected to meet the same technical, economic, and financial and administrative standards as if the project

were being financed by a conventional Bank loan.

ASPECTS OF POWER PROJECT APPRAISAL

Now let us proceed to the major aspects of appraisal power projects, as practised by the Bank (and IDA). Obviously there are many considerations which are common to appraisal of any kind of project, such as market, management, financing and economic benefits. The emphasis may differ. For example, competition from other local producers or from imports may be more important in agricultural and industrial projects than in power;^{1/} the extent of government control may differ. The list could be extended. These remarks should not necessarily be construed as applying in equal degree to other sectors of the economy.

The main factors taken into account are:

- (1) the present and prospective power supply and demand situation;
- (2) the size, type and timing of new facilities;
- (3) the financial viability of the project and of the power system of which it is to form a part;
- (4) the economic justification of the project from the standpoint of both the enterprise or agency undertaking the project and the national economy in which it is located.
- (5) the organizational and managerial competence already available or to be engaged in connection with the engineering and construction of the project and its operation;

It is obvious that each of the five major factors outlined above would alone furnish scope for a lengthy paper. Here only a few salient features under each of these heads are discussed with emphasis on their importance from the standpoint of Bank's practice. They are equally important to the economy of the country in which the project is proposed, although the weights applied in practice by others may differ somewhat.

Before discussing these factors, your attention is called to Annex I of this paper entitled:

"Summary of Information Needed for Power Project Appraisals"

As the annex indicates, it was prepared as an internal document in the Bank for the use of staff members to serve "only as a check list of categories of information to be obtained and reviewed during project appraisals". It specifically states, moreover, that "it is not intended to serve as a questionnaire or for use by others". The purpose in making this document more widely available through your conference is to provide a broad and minimum indication of the kinds of information which our staff are enjoined to collect and evaluate in the course of power project appraisal.

^{1/} In Africa, there were significant power exports from Congo, Leopoldville to North Rhodesia before Kariba was put on stream and Uganda has a power contract with a Kenya power enterprise

In practice the staff often prepares a specific questionnaire tailored to the project under study. The depth of analysis and the emphasis placed on specific items is, I think rightly, left to the judgment of the men in the field, who must in the last analysis report their conclusions and prepare recommendations for review and action at various levels of the Bank's management and finally for decision and ratification by the Board of Executive Directors.

It should be evident that a study of this kind requires skills in various disciplines, such as engineering, accounting, economics etc. Frequently, the project team includes two or more individuals specializing in separate fields; some of our more experienced staff, while qualified by education and experience in one discipline, have acquired competence in other disciplines as well. In any event, in the review process the data, assumptions, estimates and conclusions are checked with other staff members to provide assurance to the Bank's management that, so far as is possible, aspects which may have been overlooked or slighted in the field are given adequate consideration. Where unusual or special problems arise and it is felt our staff is not sufficiently expert, or the press of competing claims on staff is too great, use is made of outside consultants.

It is frequently found that insufficient attention has been paid in project preparation to the need for applying in a coordinated fashion the skills of different disciplines to projects (be it in electric power or other economic sectors). The reasons for this lack may vary but the problem remains. Perhaps the check-list in Annex I will help to highlight the need for appropriate action to remedy this deficiency. In any event, it lists many more factors ordinarily worthy of analysis than are discussed in this brief paper.

D) POWER DEMAND AND SUPPLY - PRESENT AND PROSPECTIVE

A major consideration in appraising a power project is its priority ranking vis-a-vis other sectors in a country's economic development. Because power consumption in most countries is growing rapidly, at a rate frequently in excess of overall economic growth, the need over time for increased facilities is rather general. In fact, it has been strongly argued that electric power is a growth industry par excellence both in developed and underdeveloped countries.

Of more significance for project appraisal is the pattern of growth and whether it is characterized by a steady recurring rise or whether growth occurs at widely varying rates from year to year. Changes in the rate of growth may depend on a number of factors such as (1) whether there has been a recent shortage of capacity causing power use to be rationed and thereby creating a backlog of demand waiting to be satisfied or (2) whether new intensive power using facilities (e.g. cement, electrolytic refining of metals, pulp) are being installed. In the latter case large increases in demand may be bunched in particular periods, at rates not maintainable over a longer period, a not infrequent situation in underdeveloped areas.

A colleague^{1/} on another occasion had this to say on the market forecasting problem:

"A forecast of the size and character of the power market, on which the planning of new power facilities has to be based in the first instance, is always more difficult to establish in an underdeveloped area than in a developed area.

"For a public utility in a developed area the point of departure usually is an already high level of consumption, large existing facilities and detailed statistics. The future residential demand can usually be predicted for several years quite accurately on the basis of recent trends, and of analyses of such new developments as the use of electricity for air-conditioning, heating or cooking. Some utilities have actually established for their areas fairly reliable correlations between the growth of income per capita and the growth of electric power consumption per capita. Such data supplemented by a study of population trends and movements in or out of the area, together with a study of the trend in industrial development, usually provide an adequate basis for forecasting the power market. And in a sense a utility in a developed area can more easily "afford" an error in its forecasts, than one in an underdeveloped area, because in case it should find itself with a temporary shortage or excess, it can often correct this condition at least in part, by exchange arrangements with inter-connected neighboring utilities.

"The planners for underdeveloped areas usually find themselves in a very different position. Consumption of electric power is low, the existing facilities are small and rudimentary, and statistical data are often incomplete or otherwise unsuitable for forecasting. Sometimes there is a substantial unsatisfied backlog of demand due to shortage of capacity which is difficult to determine exactly (especially if, as a consequence, industrial consumers have built their own plants that may or may not be continued in operation when more reliable public power becomes available).

"In such situations the planners are often tempted to resort to short-cuts, such as using recent rates of growth of total demand or average consumption per capita of "comparable areas". The fallacy of the first technique is that the different sectors of consumers invariably have different rates of growth, and the fallacy of the latter is, of course, that there are no comparable areas. Such market forecasts can be very far off in the mark in either direction.

"There are no general solutions to this question, or even general trends. For each area the market analysis has to be adapted to the characteristics of that area and the forecast has to be built up from the forecasts of the peak load and of the consumption of each major sector of consumers. In cases where

^{1/} Alfred E. Matter - Some Aspects of the Appraisal of Electric Power Projects in Less Developed Countries.

the basic data are so uncertain that the forecasts have a large inherent margin of error, it is preferable to establish upper and lower limits for both the future peakload and the consumption, and to plan the size, type and timing of new generating facilities accordingly."

Every so often a colleague comes upon a case where the justifications for projected power use are slim indeed and rest more upon the supply expected to be available from the project under consideration than on any objective analysis of the growth in demand based on the detailed study of factors affecting power use. This is especially likely in the case of hydro power projects where capital costs bulk larger than in thermal projects. One can understand the motivations of these individuals or agencies pushing special projects. However, from the standpoint of the economy, such projects may entail a premature or excessive application of scarce capital resources to a particular use as compared to alternative uses of such capital. Indeed, once the investment has been begun on any substantial scale, it frequently becomes less wasteful to complete it than to leave it incomplete and unusable.

The importance of an objective and accurate estimate of the power market thus rests on the obvious desirability of avoiding unnecessary or premature investment of capital. It is mainly from this standpoint that the size, type and timing of power installations must be analyzed.

2) SIZE, TYPE AND TIMING OF NEW FACILITIES

In our experience, studies of this kind are often incomplete, in that the various feasible alternatives are not studied with sufficient care. Rather the alternative which carries greater political support may be favored consciously or unconsciously. The result is that the decision makers are not given objective and truly comparable data on which a rational decision might be made but are instead fed selected and partial data designed to confirm preconceived ideas. The implicit economic assumptions are often not made sufficiently explicit. One of my colleagues (Mr. Matter) in a talk to a Latin American power conference had these comments to make:

"The first question to be resolved in such comparative studies is the basis on which to compare the various solutions. Different planners prefer quite different bases such as the cost per kw installed, or the cost per kwh sold, or the return on additional investment of say a hydro project compared to a thermal project. None of these is, however, completely satisfactory, because each compares different plants or programs only at one given point in time, such as at the start of operation of say the first unit or the first plant, and does not take into account the fact that the first step in an expansion program as a rule affects very much the following steps. For instance a first plant on a river may involve reservoir capacity for a number of further plants below, and thereby reduce their costs, which should somehow be taken into account in the comparisons. In other words the above yardsticks do not take into

account the cost of investment plus operation of one program as compared to another over a period of time.

"A yardstick which does take this into account is the "present worth" of the total cost of meeting the system load, i.e. the cost of investment plus operation over a period of time. (The "present worth" or "discounted worth" of an investment or expense to be made say x years hence, is the amount which, if invested at the present date and at a given interest rate, would at the end of the x years accrue to the amount of that investment or expense). This technique is increasingly used by large industrial concerns in comparing alternative investment opportunities."

Now let us turn to the problem of making such estimates. In practice, one alternative may have been studied more carefully than another, so that construction costs and even operating costs may be more subject to variation in one case than in another. The comparative dependability and capability of two different types of plant may be difficult to assess because, for example, past river flow data may not cover a sufficiently long period to estimate closely the frequency, quantity and duration of extremely low flows. There are others here who can and undoubtedly will cover these matters in greater detail.

There are two other aspects worthy of discussion. The first is the period taken for comparison. This should be sufficiently long, preferably the longest useful life among the alternatives, to bring out all dimensions of the estimating problem. Unless this is done, the assumptions implicit in a shorter comparison are not always clear to those reviewing the project and may even be misinterpreted by the promoter himself. Let me illustrate.

Suppose the comparison is limited to the first 5 years of operation of each of 2 alternatives. One problem to be faced is the allocation of charges for depreciation for each of the fixed investments. Should you use a straight line, declining balance, sinking-fund or percentage of use method in calculating depreciation costs? Will not the choice of methods, even though consistently applied as between the alternatives, bias the results? Applying one method to one alternative and another to the other can frequently distort the comparison so as to fit the desired choice.

The advantage of the discounted cash flow or present worth method is that it sidesteps these problems. What is compared are the cash outlays over the life of the projects, discounted by an appropriate interest rate. It makes clear that an investment once made has required a surrender of resources and can be recouped only out of the product revenues yielding by the investment. If for any reason, a new more productive technique becomes available before the estimated useful life is actually realized in practice, this method makes more explicit the losses which would result from such obsolescence.

Now the key question of course is the appropriate rate by which to discount future earnings to the present.

On this question, there is no unique appropriate figure for projects in any country at a given time. It may vary over time in a particular country, it may vary as between countries at a given point in time. In a sense, it is easier to describe what it is not. It is not necessarily the interest rate the enterprise or agency pays as prescribed by statute. Such an administratively determined rate may not reflect the real cost of capital to the economy, although it fixes the rate which the enterprise pays to the lender. It is not necessarily the rate of interest which the central government pays on its borrowings. This latter measure may be inappropriate because such a rate often reflects more the coercive power of the government than the free interplay of demand for and supply of capital.^{1/} There is of course the need to adjust such nominal rates by an appropriate amount, to reflect such factors, usually in an upward direction. On the other hand, in a country, where price inflation is rampant interest rates may well be above the real cost of capital, reflecting fear of potential capital depreciation. These and other relevant factors need to be taken into account in determining an appropriate rate for discounting future revenues to present worth.

3) FINANCIAL VIABILITY

The Bank's emphasis has been on project lending. Long ago it decided it was not appropriate to make a loan for a project of doubtful merit merely because the loan would be guaranteed by a government which we deemed credit-worthy. The Bank has felt that revenue-earning projects should be financially viable, that is that the investment should yield an appropriate financial return and that the enterprise or agency administering it should be financially self-supporting.

Most electric power enterprises (public or private) are usually characterized by growing cash requirements for investment in additional capacity for generation, transmission and distribution. They may at times find themselves in the paradoxical position of showing an adequate rate of book return on invested capital even after appropriate charges for depreciation and yet be short of funds for making the necessary timely investments to meet the growth in demand. In an industry where total capital investment is universally a multiple of three or more times gross revenue, cash requirements for new investment will frequently exceed the cash available to the enterprise from its operations. In this respect an electric power enterprise is similar to a rapidly growing private firm in any other capital intensive industry whose capital requirements have outrun the sources immediately available to its small ceterie of owners.

A private electric power company would raise additional capital either by borrowing or by selling equity participation. The terms would ordinarily conform to the conditions prevailing in the capital markets to which it has access. It would have to manage its financial affairs so as to inspire confidence of its creditors in its ability to meet its obligations or risk the likelihood that its plans will be delayed or thwarted by lack of finance.

^{1/} Some examples may illustrate this point. The central government may sell securities (1) with greater tax immunities than private firms (2) with other privileges for holders, such as valuation at par or issue price for financial regulatory purposes or with special rediscount facilities at the central bank or as security for government contracts. These distinguishing features are not valid benchmarks of the real cost of capital in a truly competitive market precisely because they improve the selling price and thereby reduce the interest cost to the issuer.

A governmentally-owned power enterprise (central, provincial or local) will face similar problems, except that its course may appear to be smoothed by some administrative device, such as budgetary allocation, special financing privileges etc. However, this often means that while the governmental power enterprise is apparently assured of preferential access to capital, the financing burden is transferred to the governmental structure as a whole. In capital short countries greater preference to one government agency connotes lesser preference or lack of preference to other agencies. The problem of raising capital is thus transferred from the market arena to the political arena. Whether electric power will be accorded such preference in fact will depend as much on non-economic as on economic factors.

A public power enterprise has certain advantages over non-revenue earning operations conducted by governments. It has at least the possibility of covering a larger share of its investment fund requirements out of revenues.^{1/}

It is at this point that practice in many countries, both developed and under-developed, fails to take full advantage of an opportunity for financing economic development. Professor W. Arthur Lewis, the renowned West Indian economist, who has had extensive experience on several continents published an article entitled "The Price Policy of Public Corporations"^{2/} which reviewed the argument pro and con on this subject. He found that public enterprises in which average revenues did not cover average costs were likely to be a factor retarding economic development by misallocation of resources.

His approach is I think verified by current Soviet practice outlined in a recent article by an American economist.^{3/} There it is pointed out that electric power was the most profitable heavy industry in the Soviet Union. While its price in 1963 was lowered, prices of fuels and metals were raised. The effect of these revisions was to leave profitability of electricity at 12%, rising to 22% in 1965 as against nearly 40% before the price revision. Coal and metal prices were to be raised largely to wipe out losses and to place prices at a minimum profitability level. The new prices "are intended to enable heavy industry as a whole (though not each branch separately) to 'accumulate' in profits and turnover taxes, an amount sufficient to finance planned expansion of its fixed and working capital".

I infer from the foregoing that Soviet electricity prices (including turnover taxes) prior to these revisions were more than sufficient to finance expansion, and that their reduction will not endanger continuing expansion.

^{1/} Of course, where all revenues of the enterprise are paid into general public revenues, and all costs are paid out of public appropriations this would not apply.

^{2/} The Political Quarterly, Vol. XXI, No. 2 (Edinburgh, Scotland) April-June 1950.

^{3/} Morris Bornstein, The 1963 Soviet Industrial Price Revision, in Soviet Studies, Vol. XV, No. 1. July 1963 edited at the University of Glasgow.

Yet in many countries, both developed and underdeveloped, there persists the belief that low, subsidized prices for electricity are necessarily beneficial to economic development. In fact, in most industries electricity represents a small portion of total production costs and any reasonable subsidy is unlikely to reduce unit production costs appreciably other than for a few intensive power use industries such as electrolysis of metals. In household use, changes in income levels are often likely to have much more impact on electricity usage through providing the wherewithal to buy appliances than changes in rates for electricity. There may be some cases where household demand is more price elastic than here inferred but they are rare in our experience. Any programs based on highly price-elastic demand should be carefully scrutinized for their implications as to consumer investment in power using equipment and their implications for national savings and the trade and payments balance, particularly in less developed areas. In the last analysis, the facts and circumstances in the particular area must be subjected to critical review to determine the scope and sensitivity of demand to rate changes.

In some areas where private power companies operate, governments have levied electrification taxes designed to finance growth in power capacity.^{1/} This is merely an aspect of the more general problem of income distribution, national savings and tax incidence. Its purpose is to channel funds to the government, rather than leave the consumer free to spend them where he chooses or permit funds to accrue to a privately owned enterprise, which may or may not invest them. It is not our purpose here to judge the desirability of such a tax either generally or in a particular case. It is however a significant fact which affects the financial viability problem in cases which have come to our attention and needs to be recognized as such, wherever it exists.

This discussion of adequate electricity charges (rates plus taxes) as a major means of achieving viable expansion is not intended to indicate that the total cash needs of expansion should necessarily be generated within the electricity enterprise. Thus it is apparent that both Soviet and Western electrical enterprises owned by public bodies, especially in periods of rapid expansion of facilities, are dependent on governmental funds (sometimes through earmarked turnover or electrification taxes). Privately owned electric utilities almost invariably need access to private capital markets to finance their growth. Our purpose has been rather to emphasize that it is desirable that the power enterprise (be it publicly or privately owned) should earn an adequate return on its investment so that it can finance part of its future capital needs from international generation. There is no magic fraction (of total requirements) which can be advanced as the appropriate percentage for enterprise self-financing in all countries at all times; much depends on the terms on which funds are available within the country and/or by foreign investors, private or governmental, and especially upon the rate of growth.

^{1/} These types are earmarked for public investment in electric power or for loans to private power companies

It is obviously preferable to do long-term financing for long-lived assets^{1/} but such sources are not always available. On occasion, and far too frequently in our experience, short-term financing is entered into which complicates life for both the lender and the borrower, or for the governmental bodies to which one or the other may transfer the ultimate burden. The equipment supplier or the power enterprise, for example, may be more concerned with the short-term benefits of a sale or with the need for new capacity regardless of the ultimate economic burdens on their respective governments. Here lie the seeds of conflict for example between a power agency and a finance ministry in a borrowing country or between a private supplier and a government agency guaranteeing export credits.

It is for these reasons that our missions make an intensive analysis, not only of revenues, costs and profitability, but also of sources and uses of cash, including future investment funds requirements, debt-service requirements and sources of finance. It is in this field of financial planning and budgeting that we have found notable deficiencies in some cases.

Where replacement involves higher cost per unit of capacity than originally incurred, the financing problem is made more difficult. Most of Africa has not experienced the sharp price-inflation which has been registered in other less-developed areas. In a few countries on other continents where prices have regularly risen 20% a year or more the problems of rate revision and financial planning have been permitted to become major political symbols where passions now so cloud the issue as to retard significantly the pace of economic development. Fortunately, your continent, till now at least, seems to have been spared such excesses.

4) ECONOMIC JUSTIFICATION OF THE PROJECT

The Bank, as an inter-governmental organization, is rightly concerned not only with the financial viability of the enterprise but also with the economic impact of its project financing on the national economy. It is evident that by various forms of preferences often accorded by Governments to enterprises, a particular project may be rendered financially viable. Restraints on competition, such as monopolistic pricing powers, and tax foregiveness may place an enterprise (public or private) in position to show a high rate of financial return on investment.^{2/} But an analysis based on the cost to the economy may indicate that an alternative project or an alternative means of producing the product could result in less burden on the economy as a whole.

For example, a thermal plant may result in less overall cost of power than a hydro plant in a given country, if the cost of imported fuel to the economy is reckoned without import duties or excise taxes. Yet the thermal enterprise may become burdened with high fuel costs because of taxes or import levies at levels

^{1/} In theory, some borrowers may choose to borrow at short-term in the hope of long-term funding at lower cost at a later date. At least one African country has discovered that its venture into such interest rates speculation turned out to be costly indeed.

^{2/} In sectors outside of power import restrictions may be even more important.

much higher than those of other commodities, perhaps originally motivated by reasons of ease of collection. In such a case, rates of return on investment based on costs including such high taxes may indicate that the hydro enterprise will involve less total cost^{1/} than the thermal enterprise. However if the calculations took account of the fact that the excessive tax on import levy was no cost to the economy as a whole but merely a device to transfer income from the electricity enterprise to the central government, the gap in cost between thermal and hydro would be less great than shown by enterprise accounts. In fact it might conceivably indicate that thermal was less costly than hydro in a given instance.

This type of problem arises in many countries also in road-rail comparisons when gasoline taxes are relatively much higher than those on diesel fuel, coal or electricity. If railway enterprises pay heavy taxes while roads do not, the comparison is distorted. Many other examples could be cited.

In one African nation where the Bank has participated in financing a power project, the problem of measuring national economic benefits was complicated by the fact that the bulk of the power, at least in the early years was to be used by a large foreign-owned metals concern and that the project was manifestly uneconomic unless a large investment was made by the metals concern to utilize the potential power. The terms on which power were to be made available to this major consumer were crucial in project appraisal because in this particular industry, electric power costs are a major cost factor. But the revenues from other users would also have to be taken into account in analyzing the financial viability of the project and the economic benefits to the nation.

How then measure the economic benefits for the project from sales to indigenous captive consumers? If the price charged to the general consumer exceeded the price necessary to cover the full costs (including an appropriate return on investment) of power produced by thermal plants designed merely to meet indigenous demand (excluding the metals plant induced by the low rates made possible by hydro development), the excessive price was merely a reflection of the government's taxing power and could have been exercised without building the hydro plant. For this reason, it was concluded that for the purpose of measuring economic benefits, revenues from sales other than to the large metals concerns and a few other smaller users who had alternative facilities should be calculated on the basis of rates designed to yield an appropriate rate of return on alternative thermal plants.

You will note that by definition, the calculated charges to all except a few consumers are identical with those which would yield an appropriate return from a thermal plant, a point made many times in discussion with representatives

^{1/} Both streams of costs would be discounted to the present at an appropriate rate.

of the country concerned and explicitly made in the Bank's report. Yet the press in that country, and on occasion elsewhere, persist in saying this hydro project will bring cheaper power to consumers in that land. My concern is not with an occasional exaggeration in the press, which can be found almost everywhere but rather with the ultimate consequences arising from the probable failure to realize unwarranted and unsupportable expectations.

On the other hand when power enterprises (private or governmental) charge excessive rates they may encourage some large users to build their own power facilities. Here the private advantage to the larger user may be significant but may involve excess costs to the economy, because certain economies of scale and system coordination may be lost. Wherever such economies can be achieved, we feel constrained to recommend action to that end.

It must be recognized however, that users in a position to finance self-generation of power may feel impelled to do so because they feel far more certain of continuing adequate supplies of power, where self-generated, than from public sources. In other words they are often prepared to pay an insurance premium in the form of higher costs to be assured of continuous adequacy of supply, a factor of particular importance in industries where power is an indispensable item but where its proportion of total cost is small. Both these users and most householders in the last analysis tend to value more highly continuing adequate supplies at full or even perhaps somewhat excessive prices to low-priced but uncertain and possibly inadequate supplies.

Thus while it is desirable to achieve economies of scale and of system coordination, policies followed in practice may have the effect of thwarting their realization of this aim. Our experience indicates that a policy of adequate and timely financial planning will be of considerable help in making possible better utilization of capital facilities both in electric power and in industries using electricity.

5) ORGANIZATION AND MANAGERIAL COMPETENCE

This is an age-old problem in every field of human activity. Given a choice, each of us prefers to buy a familiar, tested product in preference to the unfamiliar and untested one. For such a preference, we must pay a price and decide whether the premium paid offsets the reduction in risk. When an employer hires a worker, he prefers the experienced man to the unexperienced. No one wants to be a new doctor's first patient.

This kind of problem arises in every enterprise, electric power or other. Most of us can acquire a smattering of knowledge on any subject, by reading but our initial knowledge is limited to the points of view, aspects and emphasis advanced by the writer whose work we are reading. Is his view representative, up-to-date and well-rounded or biased, obsolete and one-sided? One learns the need to question, to explore alternatives, and most importantly, in my view to

appreciate the limitations of general views in their application to specific situations. There is not and there cannot be any end to this search for improved data, knowledge and understanding. But in a pragmatic world, decision is required to implement ideas. Some one must take the responsibility for deciding that further study beyond a given point is unlikely to yield enough benefit to repay the added cost involved in further delay.

Where enterprises are insufficiently experienced in the problem they are coping with, it is only prudent to obtain outside assistance. In our experience, we often find that one or another kind of organizational or managerial competence is seriously lacking and that, most importantly, this deficiency is not recognized by the potential borrower. The reasons for the lack vary, but quite frequently nationalistic considerations cloud the judgment of those involved. This being essentially a problem of human relations, there can be no single simple solution to such a problem. I wish merely at this point to record that as an international institution, in contrast with many national organizations, we have had somewhat greater success in convincing our clients of the need for realistic appraisal of problems in this sphere. We have not always succeeded, but we have made some progress toward meeting such problems as "face" in setting up satisfactory organizations in helping to recruit key foreign personnel, where needed.

In the last analysis, our interests and those of the borrower are in harmony on this matter. We as well as they can derive no benefit from a premature or ill-conceived project, or from a project, which however well adapted to the market and the terrain is poorly equipped or inefficiently constructed or operated. Such results yield less than appropriate returns for the enterprise, may endanger its solvency and could cause unnecessary burdens to its employees, its customers, its owner (be it private or governmental) and its creditors. The fact that particular governmental arrangements may shift the burden from one group in society to another does not in the slightest alter the hard fact that the national economy is thereby unnecessarily burdened. We conceive our task as (1) to anticipate organizational and management problems, and (2) to take steps in concert and agreement with our borrowers to forestall their occurrence. True, like all mortals our foresight is far from perfect and our actions may, at times, leave much to be desired.

Yet, on a number of occasions, we have had the rewarding experience that some of our borrowers who opposed our suggestions for organizational change and managerial policies, and at times quite vigorously, have later come to thank us for our insistence on this score. There have been occasions when our suggestions were inwardly welcomed although outwardly opposed by those who had the responsibility for project implementation, but who were being urged to follow policies designed more for gaining political plaudits than for achieving economic development.

May I conclude by indicating that such action by an international organization like our own is often less subject to suspicion that our proposals are designed to favor outside interests than if they were advanced by an agency of any single government. Perhaps this accounts for our relative success in this area and in others.

regard for him and his forecasts. During the past year, Mr. Lipkowitz has provided Institute members with a quarterly analysis and market forecast. In my opinion, this is a most valuable service to the Institute. At present Mr. Lipkowitz is a member of a very selective faculty. It's a pleasure to welcome Samuel Lipkowitz. [Applause]

MR. SAMUEL LIPKOWITZ [Economist, International Bank for Reconstruction and Development]: Mr. Moskowitz and Members of the Institute: It's very flattering to be asked back a third time. Sometimes I wonder when one has enough. Anyway, let me tell you what I think of the situation currently, but let me briefly review what's happened in the last two years.

Two years ago, when I first offered a forecast on scrap markets, I suggested that scrap prices were then relatively low and could be expected to rise from below \$30 to about a \$35 average in 1961. Happily, they rose even more. It is clear now that the export demand, particularly from Japan, was largely responsible.

As Manny just said, last year I went out on the limb and predicted, accurately, there would be no long steel strike. I did overestimate steel output, I had lots of company, and I underestimated the drop in scrap exports. Prices

fell below the 1960 lows, which I failed to anticipate.

In a special interview after the steel-labor agreement was signed, I emphasized there would be a dull period for scrap, especially since iron ore prices had been reduced somewhat unexpectedly. I also suggested pig iron prices might be cut. That happened this past fall.

With this mixed forecasting record, I offer these thoughts on 1963's outlook and let me emphasize that this year, as on past occasions, what I have to say is purely a personal opinion and does not necessarily reflect the view of my employer, the World Bank--unlike Mr. Goldy.

Essentially my views are what they were two years ago on the long-range outlook. Scrap demand is low for a variety of reasons. Reason A, lower rate of economic growth in the United States than in other industrialized areas.

B, durable goods output has lagged behind national product, and C, steel demand has lagged behind durable goods.

Lighter weight steels have replaced heavier products and steel prices have, at least until 1962, been a factor in encouraging substitution of aluminum, reinforced concrete, and plastics for steel. Finally, pig iron is encroaching on scrap in steelmaking, because most oxygen converter processes require more pig and less scrap than the open hearth. With