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THE BAUXITE CARTEL IN THE NEW INTERNATIONAL ECONOMIC ORDER

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ABSTRACT

The "New Economic Order" (NEO) proposals of the Third World and the United Nations are characterized in this paper. They are revolutionary doctrines, which are inconsistent with existing market concepts of international economic trade, investment and relations. The International Bauxite Association (IBA) cartel has been formed based on NEO concepts to emulate the OPEC cartel. IBA is unlikely to be as successful as OPEC over a significant period. Relative to bauxite needs, there are too many alternative sources and supplies of bauxite, and also of alternative aluminous ores, for the cartel to control supply and price.

The Bauxite Cartel in the New International Economic Order

1.New Economic Order. A New International Order has been emerging since World War II, especially in more recent years. In the less developed countries (LDCs) the world over, by coups and revolutions, and less frequently by democratic voting processes, new governments, usually with right or radical left (mostly left) views, have taken over--in Africa, Asia, and Latin America. Resident colonial powers have voluntarily departed or have been evicted. The super powers have usually not interfered greatly with this process, primarily because of stalemate and detente.

New nations joined the UN, and began to exercise their UN powers of expression and to vote. They formed coalitions under such names as Third World and Non-aligned Nations. They began to express themselves in concert, in the UN Assembly or at other conferences. They represent a vast majority of the UN General Assembly. Their basic thrust is that they want an end to the present international order of unequal political and economic power among nations. They want a redistribution of power and wealth. Their justification is suggested by the terms they use, such as fairness, justice, equity and morality. The existing evil is suggested by such terms as power, imperialism, colonialism, exploitation, and unequal exchange.

In 1973-1974, the New Economic Order (NEO), the major element of the New International Order, received great impetus. It was given specificity, form, and force in the exercise of strong cartel power by OPEC, the cartel organization of the Petroleum Exporting Countries. Here, starkly visible to the Less Developed Countries (LDCs), was evidence that they were not engaged merely in wishful thinking. They could demand and, by political and economic action with respect to their natural resources, force the redistribution of economic power and wealth to which they aspired.

2.Declarations. In political concert, following the demonstration of OPEC power, the LDCs and the DCs who followed them gleefully or unhappily acted in the General Assembly. They adopted the Charter of Economic Rights and Duties of States* on December 12, 1974, by a vote of 120 in favor and six against, with 10 abstentions. I quote, emphasizing resources provisions:

* Resolution 3281, 29th UN General Assembly, 12 December 1974.

> "...it is a fundamental purpose of this Charter to promote the establishment of the new international economic order... Every State has and shall freely exercise full permanent sovereignty, including possession, use and disposal, over all its wealth, natural resources and economic activities. Each State has the right: (a) To regulate and exercise authority over foreign investment... (b) To regulate and supervise the activities of transnational corporations... (c) To nationalize, expropriate, or transfer ownership of foreign property, in which case appropriate compensation should be paid by the State adopting such measures, taking into account its relevant laws and regulations and all circumstances that the State considers pertinent. In any case where the question of compensation gives rise to a controversy, it shall be settled under the domestic laws of the nationalizing State and by its tribunals... All States have the right to associate in organizations of primary commodity producers... Correspondingly all States have the duty to respect that right... States shall take measures aimed at securing additional benefits for the international trade of developing countries...a balance more favorable to developing countries...measures designed to attain stable, equitable, and remunerative prices for primary products."

The "Dakar Declaration" of the February 3 - 8, 1975, Conference of Developing Countries on Raw Materials states:*

> "...1. The present structure of international trade, which had its origins in imperialist and colonialist exploitation, and which has continued in force up to the present day... needs to be replaced by a new international economic order... A powerful weapon which the developing countries can use to change this state of affairs is to defend their natural resources...by combining their forces....
> 22. The inequities and weaknesses of the present economic system are particularly glaring in the conduct of world trade in raw materials. Those who control the levers of the price mechanism have successfully denied to the producers of a number of raw materials their due profit from their labor and from

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* in: UN-ECOSOC document E/AC.62/6 of 15 April 1975

their natural endowment, while they themselves have continued to make excessive profits by charging high prices for the finished products."

There have been further declarations, meetings, and institutions. At present there are four Conferences on International Economic Cooperation (CIEC) meeting in Paris and elsewhere, until the end of 1976, concerned with energy, raw materials, finance, and development.

The Nairobi Conference completed in May 1976 has had statements that natural resources are to be used to redistribute the world's wealth and income, promote justice and equity, bring fairness to the conduct of economic trade, etc. The US Secretary of State has proposed an International Resources Bank to provide investment funds to the LDCs for their natural resources. Other measures are to provide for moratoria or cancellation of LDC debts, which have shot upward due to five-fold increases in oil prices and inflation; to finance buffer stocks, in order to improve markets for LDC exporters of raw materials; and to transfer technology to the LDCs.

Let us consider the simple magnitude of the OPEC achievement. In 1974, the OPEC LDCs produced and exported about 11 billion barrels of oil. At this output level and the prices and terms of 1972, the gross royalties, taxes, levies, and wage payments to the LDCs--i.e., the OPEC national gross benefits--would have totaled perhaps $11 billions.* In 1974, the actual figure exceeded $100 billions. The OPEC nations simply raised net selling prices of oil from about $2 to about $12 and retained the gain.

Moreover, the OPEC members have used small amounts of their revenue gains to buy out the oil companies at net book value or less, far, far below market value. At this point, the multinational companies (MNCs) produce and buy the oil at about $12 a barrel, for a profit much below $1 a barrel. The remainder of the sales revenues of more than $11 a barrel flows to the oil exporting nations. A figure of less than $1 a barrel covers the domestic cost of exploration, development, and production to the OPEC members on their nationalized properties.

The 10-fold increase in oil revenues which flow to the respective governments could radically improve capital investments in infrastructure, producer durables, education, military strength, and other things which the LDCs desire.

It is this demonstration of "raw materials power" which is exciting and driving the governments of the materials-exporting LDCs. In a single year, following the 1973 and 1974 oil price

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* All dollar figures in the paper are US.

rises, some of the oil producing LDC nations have jumped over most of the world to join the rich nations.

3. IBA Formation. In this context of OPEC example and New Economic Order thrust, commodity cartels have burst into being or been renewed: copper, coffee, tin, bauxite, and others. Among these is the International Bauxite Association (IBA), which is headquartered in Jamaica. We are concerned here with the impact on aluminum and bauxite markets of the IBA cartel and its members on the developed countries. The IBA was formed in 1974 by Jamaica, Surinam, Guinea, Guyana, Australia, Sierra Leone and Yugoslavia. Subsequently it has enrolled Dominican Republic, Haiti, Ghana, and Indonesia. The IBA and its members have the objective of controlling raw material supplies and greatly increasing their national returns.

The cartel members produce 85% of the world's market supply of tropical bauxite, the ore from which aluminum is currently produced. A two-stage process (bauxite ore to alumina, alumina to aluminum) reduces 4 or 5 tons of ore to 1 ton of aluminum. Other somewhat less concentrated aluminous ores, not now in significant use, are alternatives to tropical bauxite. Among these are anorthosite, alunite, dawsonite, kaolin clay, and laterite bauxite.

4. Bauxite Market. The economic magnitudes in the bauxite and aluminum industries are not large enough for similar enormous transfers of wealth from the DCs to the IBA cartel members. The IBA members produce about 60 million tons of the bauxite a year. This is about 85 percent of the supply to all of the market economies of the world. Before cartel interventions, the value (f.o.b.) was about $0.6 billion. This compared with the value of oil exported by OPEC countries before their 1973 cartel intervention of more than $20 billion, more than 30 times as large. Measured in any meaningful economic way, the OPEC output and economic opportunity dwarf the IBA. A view that an IBA cartel might produce effects comparable in magnitude to OPEC's achievement is inconsistent with the relative values of petroleum and bauxite.

However, if we put aside such grandiose notions, we are left with quite important questions on recent and prospective effects of the bauxite cartel.

5. Bauxite Cartel. We immediately rule out questions of economic warfare in the form of total embargoes, which would create major short-term supply disruptions of more than momentary nature to the developed countries. Embargoes would be economically senseless, indeed counter-productive.

The sources of 1974 bauxite production are shown in the following table. Australia would not engage in such behavior; it goes beyond the bounds of cartel manipulation to raise prices and revenues, and results in zero revenues.

Bauxite Production, 1974

In million metric tons

Cartel members:		
Australia		20.1
Jamaica		15.3
Surinam		7.1
Guinea		6.6
Guyana		3.2
Yugoslavia		2.4
Dominican Republic		1.4
Indonesia		1.3
Sierra Leone		.7
Haiti		.7
Ghana		.4
	subtotal	59.2
Other market countries:		
USA		2.0
France		2.9
Greece		3.0
India		1.1
Brazil		.7
Malaysia		.9
Other		.5
	subtotal	11.1
	subtotal market countries	70.3
Non-market countries		
USSR		4.3
China		.6
Hungary		2.8
Romania		.3
	subtotal	8.0
	Total world	78.3

Few if any LDC countries could delude themselves that an embargo, during which revenues fell to zero, could be economically useful. (During the oil "embargo" no-one shut down output. It was only the Arab countries which reduced output slightly or moderately, and then for political purposes.)

It would be economically suicidal for any LDCs that did embargo. The aluminum companies have large stocks and so does the US government and perhaps other governments. As discussed below there are alternative sources of supplies. These include increased supplies from other countries not engaged in embargo; increased output from US bauxite reserves; emergency use of US laterite bauxite; accelerated scrap collection; temporary substitutions for aluminum in common end products such as building materials, containers, wrappings. I do not say that industry and government officials should not undertake economical preparatory measures which are appropriate for estimated short-term supply contingencies, however unlikely. However, this is not my interest here.

6. Cartel Member Actions. Jamaica emerged as the leader. Immediately following cartel formation in early 1974, and after several months of fruitless negotiations with reluctant companies, Jamaica took unilateral "new economic order" actions. It nationalized all land and also other aluminum company properties which were not currently being utilized in bauxite or alumina production or transportation; nationalized 51 percent of the bauxite-alumina companies; paid for these with low-interest serial notes, which are to be paid from company revenues; took control of bauxite prices; and imposed bauxite tax levies indexed to aluminum ingot prices in the US, retroactive to the beginning of 1974. The other LDCs quickly followed Jamaica's lead in imposing a levy and some of them on other measures as well. This all occurred without formal actions by or agreements within IBA.

It should be noted that Jamaica is by far the largest supplier of bauxite (in form of bauxite and processed into alumina) to the US. US dependence on Jamaica and on the Caribbean countries is very high.

One major effect of these actions was a very large gain in revenues by the LDC cartel members, from imposition of the levy. If previously the tax was $1 to $2½ a ton, it has now gone to $6 to $15 a ton. If the levy gain as actually enforced is an average of $8 a ton, then the LDC bauxite producers are receiving more than $300 million a year from users of bauxite in the DCs. Beyond this, the LDCs have cut themselves in on a profit stream, which may total another $50 million or possibly more.

7. Bauxite Markets. The classic cartel problem is to raise prices and then amicably to share the sales. The cartel, formally or informally, or by following a leader, creates a higher price level. At this higher price level, some of the members would like to sell more than they are selling. Also, the non-cartel fringe suppliers would like to sell more. They can do this only by "shading" the price or levy or other terms. Such price shading, however, cuts into the sales volume of the other cartel members. If the cartel leaders accept the reductions in their sales, they preserve the cartel. If they cut prices to try to maintain volume and others also cut, a price war may develop, and the cartel fails.

What has happened to prices and sales of bauxite is not easy to determine. There is no significant spot market for bauxite. The real-life situation is complicated by long-term contracts with quite complicated price formulae, penalties, bonuses, offsets, tax levies and incentives, etc. The bauxite market is a long-term contract market, in part because the alumina plants are specialized to one or another of two main types of bauxite, and are further adapted to characteristics of the particular bauxite within each type. Further, the bauxite real-life situation has the bauxite buyer in the position of owner-investor in the bauxite mine. The buyer who has sunk investment in a bauxite mine feels less free to buy cheaper elsewhere, particularly if he is holding serial notes whose interest and liquidation payments depend on his company sales. These complications make the economic data and analytical task more difficult than if the market were spot and prices easily visible.

8. Bauxite Prices. The price evidence which I have been able to find is that price shading relative to Jamaica's lead is occurring in several forms. The tax levy which Guinea has imposed is \$6.50 a ton, relative to \$15 a ton in the Jamaica formula. Guinea's bauxite is higher grade than Caribbean, but more distant from the US. Guinea's levy represents price shading relative to the situation before Jamaica made its leadership move.

Australia, the most distant supplier, but the world's largest of lesser grade bauxites, is price-shading in the same sense, since it has no levy (although one of its bauxite states, Queensland, has a levy of \$.50 to \$1.50 a ton). Guyana has two government-owned mines (nationalized from Alcan in 1971 and Reynolds in 1974). These do not pay a levy and there is evidence that the delivered prices to US ports are lower. A recent percentage levy agreement announced by Alcoa and Surinam is 6% of the US realized aluminum price, as compared with 7½% to 8% in the Jamaica formula. Indonesia appears to have shaded price to Japan. Jamaica's previously announced levy was 8% for this year, but there have been reports that Jamaica has been shading its own figure. So much for my detective work on prices.

9. Sales. What has happened to sales, present and future? Large actual reduction of output in some cartel members because of increases in others is not likely in bauxite. As noted the companies have sunk investments in the several countries, their alumina plants are adapted to feed stock, and the practice in the aluminum industry is long-term supply contracts. However, small declines are possible. And, more important, we should see the cartel and its leaders in difficulty if we see sales and supply expansion (that is incremental supply and construction of new capacity) occurring in patterns different from the prior sales and existing capacity. Such evidence, in fact, is apparent.

The evidence on supply changes is flimsy but suggestive. In 1975, Jamaica appears to have suffered minor output decline, despite government efforts to prevent it by specifying minimum output for tax purposes. This was partly related to the recession and decline in aluminum demand that year, but also partly to disaffection by several of the aluminum companies over what they considered arbitrary government behavior. In Jamaica, the Revere plant was closed for a lengthy period (and may still be). Alcoa was shut down for a while, only partly for the ostensible reason of worker disorder in the plant.

10. Capacities. What about capacity expansion? If this is not in the pattern of existing capacities, then it tells us that some countries are gaining, other countries are not, and the former are relatively undercutting the latter in some way. The only major expansions programed and planned from 1973 to 1979, and further expansion contemplated for those countries beyond that date, are described below (in metric tons of bauxite per annum):

Guinea:	
1973	4,055,000
1976	9,155,000
1979	12,155,000
Contemplated further	+ 13,000,000
Australia:	
1973	17,750,000
1976	20,065,000*
1979	20,065,000*
Contemplated for 1980	+ 11,200,000
Contemplated, no date	+ 2,500,000

* Production in 1974

Brazil:

1973	805,000
1976	1,126,000
1979	4,376,000
Contemplated	+ 6,000,000

In Jamaica (and the remainder of the Caribbean), which took the lead in the cartel and the new economic order impositions on the multinational companies (MNCs), no expansion is programed, planned, or contemplated. The favored areas are two other cartel members, Guinea and Australia, and a non-member, Brazil. Even if we add the LDC cases of substantial contemplated expansion where there are no programs and plans actually in place, we only have (metric tons of bauxite per annum):

Sierra Leone:	contemplated	+ 1,200
Indonesia:	"	+ 2,000
British Solomon Islands:	"	+ 1,200

11. Company Investment Criteria. Things seem not too ideal for the oligopoly leaders. We are led to believe that the MNCs view capacity expansion in Jamaica and perhaps other Caribbean countries unfavorably; and that they view capacity expansion in Guinea, Australia, and Brazil favorably. Can we construct an explanation, additional to price shading, of why and what this means relative to the cartel and its leading nations? We try to do this by comparing conditions for expansion of capacity and supply from Jamaica, on the one hand, with conditions for Guinea, Australia, and Brazil on the other.

Apart from price, the companies' interests in investment can be summarized in the following two propositions:

(a) Low risk. They want assurance or security--i.e., low risk--with respect to future bauxite supply and their investments.

(b) Low investment. All industrial companies are experiencing stringency in capital funds. The companies want to minimize drain on their capital for these new investments.

12. Risk concerning supply and investments. For the major companies and their very large bauxite needs there is no practical spot market. The concern for assured long-term supply rests on the enormous "downstream" investments and economic activity in

alumina, aluminum, fabricating, etc. All of these pivot on the availability of the bauxite input. The smooth working of several thousand dollars of downstream investment and more than a thousand dollars of downstream value added depend upon each ton of aluminum content in ore, which costs less than $50 to produce.

The concern for lowering risk on investment is obvious. The US companies are now highly concentrated in dependence on Jamaica for supply. They already have some hundreds of millions of dollars invested in Jamaica bauxite facilities. Recently the companies have learned that their foreign long-term supply contracts and investments from LDCs have a much higher risk element than they had thought before. If all foreign countries were equal in risk, they would now want to diversify their supply capacities and investments. Relatively, their bauxite investments in Guinea and Brazil are far smaller than in Jamaica. If there is risk of breakage, not all the eggs should be in one basket.

Apart from diversification, Guinea, Brazil, and Australia might be viewed as less risky than Jamaica. Politically, Jamaica is a young democracy in political unrest, tending toward Latin American style. Companies are uncertain where the political pressures from new economic order excitement and other forces will push the leaders. Guinea is one-party Marxist and Brazil one-party, military Conservative. Both may be more stable politically than Jamaica, and less forced by political pressures in bauxite decisions. Australia, of course, is neither LDC nor a new economic order free swinger. It has discarded the Socialist government which was in power when Australia joined the cartel. In general, the MNCs view it as much safer in their supply planning and investment, second only to the United States itself.

Economically, Jamaica has already shown a belief that her economic interest is to squeeze more revenue from bauxite by limiting supply. The other three countries have much larger reserves of bauxite, iron, and other resources. They are embarked on decades-long programs for expansion in these varied minerals and other natural resources, dependent in significant degree on a continuing inflow of secure foreign capital. They depend on continuing MNC belief that the investment climate is favorable.

13. Investment. The consortia activities in Guinea, Australia, and Brazil offer attractive opportunities for the individual aluminum MNCs to economize on investment, as well as improve safety. The use of larger consortia has increased in recent years, reducing size of individual investments and risk. The enormous size of the bauxite reserves in the three countries permits the consortia larger-scale, economical operations. In Brazil, the government is putting in quite large investment funds itself, thus adding to security and

also reducing individual MNC investment. It has just been announced that Brazil and Japan will jointly invest in a 51-49% arrangement for a $1.4 billion complex of bauxite-alumina-aluminum in the Amazon jungle. In Australia, also, local funds are being invested with the same effects. In all the countries, the international banking community and institutions--World Bank-IFC, Export-Import Bank, European finances, etc.--have been brought in. They provide funds and their presence gives assurances against improper or arbitrary take-overs. They provide a "good housekeeping" seal of approval for MNC investors. Insurance from Overseas Private Investment Corporation (OPIC) is available for Guinea and Brazil bauxite investments, and is not for Jamaica at present. The aggregate investment over long-term purchase contract arrangements in Guinea, Brazil and Australia appear to offer more attractive investment conditions, as well as long-term supply security, than Jamaica following its recent take-over and levy orders.

14.Options. There is some evidence that the companies are increasing their options, beyond the above diversification. In each of the initial arrangements in Guinea, Brazil, and Australia, further stages of expansion are contemplated. Very large, economical expansions in future capacities are possible in these countries. In numerous other countries, the companies are engaged in less intensive exploration and negotiation. We have found press or journal reports of possible future developments in France, Greece, Yugoslavia, Cameroon, Ghana, Guinea, Malagasy, Malawi, Mali, Sierra Leone, India, Indonesia, the Philippines, Turkey, Costa Rica, Dominican Republic, Haiti, US, Brazil, French Guiana, Guyana, Australia, British Solomon Islands, and Fiji.

15.Non-bauxitic Ores. The world volume of high quality bauxite reserves is very large--hundreds of years supply at present rates of use. The world volume of aluminum in other ores and clays is a hundred times greater. America is lavishly endowed with these ores. A single leasehold of anorthosite which Alcoa recently acquired in Wyoming is said to contain enough aluminum to satisfy world demand for more than 50 years. Techniques for extracting aluminum from alternative ores are well known. The Soviet Union produces some of its aluminum from one of these ores.

The cartel problem is that such ores are another limitation on cartel ability to raise bauxite prices without losing market.

Until the recent doubling or trebling of bauxite prices, bauxite had a clear advantage in cost to produce alumina. This is why the MNCs have preferred bauxite over other ores. Now, at present bauxite prices, the other aluminum ores are becoming competitive in cost. All of the companies are now developing knowledge on the economics of refining alumina from alternative ores. In addition, the US Bureau of Mines is testing out six processes in a joint research venture, partly financed by the companies. Several of the company efforts are at sizes just below small commercial scale. A full-size plant to produce 400,000 tons of alumina a year plus 500,000 tons of fertilizer from alunite is planned to be put into construction this year or next.

The London-based Commodities Research Unit (CRU) has estimated, in a November 1974 document for OPIC, that there will be several US alumina plants in operation by 1980, based on alternative ores, and that thereafter domestic non-bauxite capacity will increase rapidly. CRU also stated that Pechiney will probably switch to alternative ores for all new capacities in France by 1980 if their H+ process test plants (joint with Alcan) are successful.

My own observation is that firms are reluctant to make definite decisions at this time to go to full-size plants for utilization of ores alternative to bauxite. I hesitate to differ with CRU which has close communication with and deep understanding of the aluminum industry. But so it appears to me.

While the techniques for producing from other ores are known, the economics of commercial production in large-scale plants is not. To learn this it is necessary to build very small-scale plants, then larger ones, then full-size commercial plants. It is a big commitment.

Continued reliance on bauxite offers companies three big advantages. Alumina from bauxite still seems to be cheaper even though much higher than before 1974. Over a decade or more, as experience is gained with non-bauxitic ores on the "learning curve," cost to produce alumina might fall below cost from bauxite. But for the first "generation" of ore and alumina facilities, the cost is likely to be moderately higher. Provided it does not get caught in a bauxite price squeeze, the longer a firm can wait, the better, particularly if it can learn from the development efforts of Bureau of Mines, Alcoa, Pechiney, Alcan, and National Southwire-Earth Sciences. Second, the new process alumina plants and non-bauxite facilities would require considerably larger investment funds than continued reliance on bauxite, and capital funds are short. Third, the cartel and its members may weaken, and the future prices and tax levies of bauxite may not only not increase but may fall from present levels.

With respect to non-bauxite sources, my observation is that the companies in general are trying to "stay loose" and flexible. There are variations among them, reflecting their bauxite positions, geography, capital availability, technological character, industry position, and expectations. Some are developing mini-commercial plants, others not. Some are acquiring properties. Except for Earth Sciences-National Southwire, none has yet made a major plant investment decision. And in that case, the interest is as much in fertilizer products from the joint process as in alumina; and actual construction has not started.

16. US Oil and Coal Deposits. A research associate (Benjamin Woodbury) and I have done a preliminary, brief investigation related to US non-bauxitic ores in the Western states. We identified some of these ores as located near cheap Western coal. We conceived the hypothesis that, for new supplies of aluminum, an energy cost advantage of adjacent cheap coal for alumina refining and aluminum smelting might overcome a cost disadvantage of non-bauxitic ores. This possible energy-ore location advantage has been strengthened by energy changes (great increase in oil prices, the disappearance of incremental cheap hydroelectric power in Pacific Northwest and TVA areas, disappearance of cheap gas in the Gulf Coast area, and large price increases in environmentally acceptable Eastern coal), by bauxite price increases, and by increased risks in foreign investments in LDCs.

If or when US firms do move to utilization of non-bauxitic US ores, it seems to us that location of some of the alumina and aluminum facilities at places of favorable coal, ore, and transportation will become economically advantageous. If this occurred, it would be a major relative shift of aluminum smelting facilities, which until recently have been located in the Pacific Northwest, Gulf Coast, and Ohio Valley. They were oriented to cheap power and convenience for receipt of Australian and Caribbean bauxite or alumina. Optimal locations for incremental facilities in the aluminum industry are changing.

17. Summary. Without formal cartel action, but with cartel communication and spirit, the LDC members have strongly followed Jamaica leadership in revising bauxite taxes upward and in other new economic order measures. The result has been to double delivered bauxite prices and double to treble f.o.b. prices. The levies and other measures now return to the governments amounts equal to 100% to 200% of the costs of production. Further, the tax is "indexed" (proportioned) to a DC industrial goods price (aluminum ingot), and in principle provides some inflation protection. In effect, a parameter or convention in the bauxite market place has been changed. Formerly, the conventional tax was $1 or $2 a ton of bauxite. Now it has become $6 to $12, except in Australia. Overall, this would appear to be a significant cartel group success.

However, there are clouds on the cartel horizon. The absence of levy in Australia has moved Australia from competitive disadvantage because of transport distance to advantage in supply of alumina. Guinea also has acquired competitive advantage by imposing a smaller levy. Both Australia and Guinea are increasing sales and relative share of the market, while the Caribbean members have, approximately, constant sales and declining market share. Further, very large new reserves are being developed for supply in Brazil, which is not a member of the cartel and whose objective is large expansions of minerals capacities and supplies. And in the wings is Cameroon, a potential Guinea-type competitor. In these circumstances Caribbean desires for further increases in levies and expansions of output are likely to be frustrated, and markets for some of the countries may even decline. Under these pressures, levies may erode, if the countries try to hold or improve sales.

In summary, levies are likely to stay where they are. If they do not, it is more probable that they will decline than increase. Cartel or oligopoly price discipline seems very weak. The cartel may have already had its great days.

18. Conclusion. The essential question is as follows:

(i) assume the present cartel-led levies and prices;

(ii) assume growth in demand;

(iii) assume fringe suppliers and some cartel members who are increasing output and, if necessary, will shade price significantly in order to sell; and

(iv) assume cartel leaders who are trying to maintain the price, and are willing to reduce output to do so.

Will the cartel leaders reduce output sufficiently (iv) so that the fringe and other member suppliers can clear their outputs without shading price significantly (iii)?

- If the answer is yes, the price and the cartel will hold firm.
- If the answer is no, then competitive price declines will occur; and, if not rectified with a more stable price in a reasonable time, cartel power and influence will dissolve.

In the petroleum case, it has been true for several years and appears likely for a few more that Saudi Arabia, Kuwait and others are willing to reduce output sufficiently (iv) to permit other oil supply and competitive fuels to sell out, at present cartel prices or only moderately lower. In fact, the cartel real price of oil has been eroded by a third by inflation. But the cartel is holding at the money price.

In the bauxite case, already other suppliers--Guinea, Australia, Brazil, Guyana, and Indonesia--have undercut Jamaica. And already Jamaica has apparently reduced its levy in an effort to hold volume. The prospects are for more supply increases than the leaders can absorb in output reduction. There is too much bauxite reserve, at too many places, producible at too low costs, in too many nations which want revenues--to contain supply at Jamaica's announced tax levies. It is beginning to appear that there may be too much bauxite available even to contain supply at moderately lower levies. And looming in the background are the mammoth resources of non-bauxitic aluminous ores, some of them located near low-cost energy resources.

In conclusion, the bauxite producing countries are better off than they were formerly in that improved tax levies have now become somewhat conventional. The cartel itself, however, seems to be relatively ineffective and possibly crumbling.

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