

**ASSOCIATIONS OF RAW MATERIALS PRODUCERS:
THE DESIRABLE AND CONDITIONS FOR THE POSSIBLE***

by

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1. The Problem

Following the successes of OPEC in 1973 and 1974, the question was asked as to whether the less developed countries (LDC), who are producers of raw materials other than oil, might be able to emulate the exploits of the Vienna-based Organization.

The replies given to this question were very divergent. For some, (KRASNER, 1974; TREZISE 1974; MIKESELL, 1974), oil is an exception and such a special case that there is practically no danger of seeing its example followed with any reasonable chance of success for other raw materials. According to this viewpoint, the minimum conditions which at least determine the durability of producers' associations similar to OPEC, if not their creation, do not appear to exist for products such as bauxite, copper, coffee and cocoa.

In the view of others, (BERGSTEN, 1973 and 1974) the extension of the OPEC model is not only possible but will become an increasingly threatening reality with the continued growth of demand for raw materials from the industrialized countries and the LDC and with the general acceptance of the principle of the sovereignty of each country over its natural resources. This argument is implicitly derived from the ideas put forward in the first report of the Club of Rome on the unavoidable increasing scarcity of resources, leaving aside technological progress and the phenomenon of substitution.

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Available empirical studies provide arguments for both of these opposing theses. In JURA's view (1977), a strong "monopolist surge" seems impossible in the medium term for most raw materials. On the other hand, the work of R.S. PINDYCK (1978) slightly corrects this very categorical result, at least as far as bauxite is concerned. In fact, the author has demonstrated quantitatively, using a model based on the determination of a ceiling price for a non-renewable resource under market forces, that the cartelization of bauxite may in fact increase profits across the whole price range over time. Conversely, in the case of copper, for example, the very slight gains expected from cartelization greatly reduce producers' incentives to coordinate their respective output and price strategies. Despite the existence of CIPEC, such collusion would seem admissible if one is aware of the difficulties which this body has had in increasing its members revenues.

The empirical analysis leads to two conclusions: first of all that petroleum may not be the exception to the rule and, secondly, that it is very difficult, and even very risky, to draw general conclusions only on the basis of OPEC. In order to arrive at such general conclusions, we would not only have to carry out even more detailed empirical studies, but above all, begin by analysing the theoretical conditions which determine the creation and stability of producers' associations. We have chosen to turn our attention to these very conditions in this paper. Even if it is true that these were covered for a long time by the economic theory of the firm, it is nevertheless fairly evident that their application to a varied number of products and situations calls for a new interpretation.

The first point to make is that of the necessary distinction to be made between the desirability and the feasibility of raw materials cartels (Section 2). Once this distinction has been made, we will then look at the kinds of problems raised by the application of general theoretical conditions of cartelization on non-renewable natural resources (Section 3). The third and last point which will be examined is that of the internal stability of raw materials cartels and the role which the "leader" or "dominant" firm can play (Section 4).

2. The Desirable

Let us suppose, for the sake of this analysis, that the main conditions for the creation of a producers' association are met; the question then is to decide if, and in what sense, such an association may be considered as desirable. The answer to this question depends directly, and above all other considerations, on the goals which are being sought through such an association. In their turn, these goals depend on the problems facing the developing countries which are producers

of raw materials, as regards the determination and evolution of the prices of their products on the international market and in the context of North-South relations. If we sum these points up, we can point to three possible objectives corresponding to the three real problems of these countries.

- a) The first problem is that of the instability of exported raw materials prices which should be firmly distinguished from export earnings. Although there might be unanimity among economists on the factor of price instability, divergences often show themselves when attempts are made to establish a negative correlation between this instability and economic growth. The main reason for this divergence stems from the absence of a commonly accepted empirical test ascribing the weakness of observed growth rates to the instability of prices. Nevertheless, it is still obvious that the uncertain nature of the future evolution in prices prevents any planning, however rigorous and continuous, of the national economy (S. CHAKRVARTY, 1977). Not less evident is the fact that cartelization does not as such regulate the phenomenon of instability since the essential objective of a cartel should in principle consist of action on the relative prices of exported products to ensure a continued increase in real terms. Consequently, the cartel acts, or should in particular act, on export earnings through fluctuations in the rate of increase in real prices. It may be possible, however, to programme the conditions and level of this increase in advance, thereby greatly reducing the uncertainty mentioned above. However, this programming demands specific agreements between the group of exporting countries and the group of importing countries.

- b) Secondly, although the cartel may effectively regulate the problem of the short-term maximization of export earnings, it does raise indirectly, as a consequence, the question of the in situ processing of raw materials. Now, this is a problem of key importance which OPEC Countries, for example, are now aware of, as they try to launch themselves into the petrochemicals sector. Consequently, it is better not to be motivated uniquely by the idea of recovering the monopoly rent and losing sight of the principal objective which is the integrated development of the national economy. Under very special conditions, raw materials cartels may, it is true, ensure an increase in export receipts for the participating producer countries. However, that is a condition, which although necessary, is not really sufficient for developing their economies. In the final analysis, everything depends on the way in which they spend these receipts and the conditions under which the expenditure is undertaken. In this respect, it should be noted that the monopolization of technology by the industrialized countries

constitutes a major constraint on the realization of the objective of processing in situ raw materials which are currently exported in their raw state. Moreover, this monopolization may in turn be considered as an extra incentive for the LDCs to monopolize their raw materials in order to transform the situation into a bilateral monopoly (A. AYOUB, 1977).

- c) Thirdly and finally, and given the monopoly over technology as mentioned above, it is very possible that the producing countries may add to the classic objective of cartels, which is the maximization of profits, a more ambitious and more strategic objective. This is, in fact, to use the cartel as an instrument of pressure to encourage the industrialized countries to accept negotiations on the ground rules of international economic relations. This is what OPEC Countries tried to do by accepting a North-South negotiating formula which went beyond the strict framework of oil and energy, and encompassed all the issues which are now generally summed up under the heading of the "New International Economic Order". Cartelization in this sense acquires a new strategic character which renders it similar to trade unionism in the industrialized countries. The objective of the LDCs would then be the signing of a sort of "collective agreement" at the world level which would not only sanction the real transfer of resources from the countries of the North to the countries of the South but also to establish the mechanisms and criteria for this transfer.

To sum up, therefore, if the cartelization succeeds, it provides its members not only with important supplementary gains, but also gives them a non-negligible instrument of pressure to get the industrialized countries to negotiate the whole range of rules and international trade issues as well as North-South relations. Is this the only way to reach these objectives? The ultra-liberal current in North America and elsewhere believes on the contrary that the challenge of the LDCs is not the creation of new raw materials cartels but the liberalization of international markets for manufactured goods (HUFBAUER in his reply to C. DIAZ-ALEJANDRO, 1978). Consequently, the objective which the Group of 77 should fix itself, according to this current of opinion, should not be the creation of a "New International Economic Order" but the vigorous defence of the old "natural" order which would be based on competition and laissez-faire.

Even if pure economic theory (the concepts of the world optimum, the efficient allocation of resources . . . etc.) continues to provide "disincarnate" arguments to support this point of view, it would, however, be legitimate not to forget completely the conditions under which international economic relations are today, and were in the past, carried out. In fact, it is at least just as important to ask

oneself who can force respect for the rules of the free market as it is to disclaim continuously the optimality of these rules. Consequently, it is not enough for the LDCs to produce at lower cost to be able to invade the markets of industrialized countries. The latter must also accept the invasion of these products which not only destructure their economies, but above all, threaten the equilibrium of their internal revenue distribution system. Now, this system is based on permanent bargaining between organized pressure groups and not on automatic market action. Under these conditions, the goal sought by the LDCs is nothing more than to duplicate this bargaining at the internal level with bargaining at the international level. Cartelization may be considered as a powerful means for increasing the contractual force of the raw materials producing countries. This force may be used either to push forward the negotiations or to bring them to a conclusion. In this respect it is very important to note that the North-South negotiations, even if they did end in failure, could not have taken place, had it not been for the emergence of the new power of OPEC, at a time when the question of the stabilization of raw materials prices had been on the agenda since the end of the Second World War, with the industrialized countries doing little more than multiplying studies and reports on the subject.

In a word, the main problem of North-South relations is one of the distribution of revenues on a world scale, under concrete and hypothetical conditions of the balance of power. Given the absence at the international level of a public authority able to play the role of arbitrator and to constrain the players to respect the rules of the free market, one can well imagine that negotiations on this distribution constitute the most peaceful way towards a solution. Indeed, simple commonsense requires that such negotiations be undertaken by trying to accumulate the maximum number of trump cards on one's own side. In this sense, a successful cartel has without doubt an important trump card.

3. Conditions for the Possible

However, it is not enough to desire the creation of raw materials cartels, it is also necessary for precise and often difficult economic conditions to be realized to reach this objective. Moreover, it is this difficulty which often leads economists to consider that the lifespan of a cartel is by necessity ephemeral. This is also why a number of them periodically predict the collapse of OPEC (T. MORAN, 1978) without, of course, being able to determine the date of this collapse. It is still a fact, however, that OPEC, despite the sometimes serious tensions among its members, does not seem to be showing any sign of an early demise. What then are the conditions favourable to collusion among producers in general (RADETZKI, 1976) Are there specific observations to be made concerning their application to non-renewable natural resources?

a) Although it may be relatively easy to enumerate the factors favourable to cartel creation, it is none the less true that the exact analysis of their respective effects on this creation is extremely risky. Market control is in the last analysis an art and not a science. Consequently, there are always disturbing elements coming into play, which make any prediction of these effects extremely complicated. Nevertheless, it is possible to point to the effects of the two conditions which seem to us to be the most important:

- The first of these is the elasticity of demand to price. The generally held view on this is that the more consumers cut back on their purchases in response to a price increase, the greater the likelihood of success for a coalition of producers. The direct effect of a fall in total demand following a price increase, in a case where production costs remain constant, will very definitely be to sow discord among the producers in the coalition. For, each of them, by trying to keep intact its original share of the market, will try with whatever means at its disposal to make its partners and competitors bear the brunt of the loss in demand. The result would be an underground struggle among the members via sales discounts or other easy sales terms. Competition of this kind always signals the death-knell of any coalition.

There is no doubt then that a strong elasticity of demand relative to price is a negative factor which has to be taken into account when calculating the chances of a coalition to form and to last. This strong elasticity may in general result either from a high degree of substitution for the product or from a strong substitution among the producers in the coalition and those remaining outside it. The market share controlled by each group may provide a direct idea of the possibilities for substitution between these two groups. Even if the concept of elasticity, as summed up above, is a relatively simple one to understand, it remains true that its empirical determination raises difficult problems, given the permanent changes in tastes and the continuous irruptions of technical discoveries. We may mention, by way of example only, a few results of the work of HOUTHAKER and MAGEE (1969) on the elasticities of certain products imported by the United States (cocoa 0.41, tea 0.05-0.25, coffee 0.25-0.44, copper 0.10-0.30). These coefficients clearly indicate, all other things being equal, that all these products have an elasticity below unity and often nearer to zero than to unity. This is certainly a favourable indication for cartelization, provided that the other factors act in the same way.

- The second condition for the success of a coalition is the importance of barriers to entry, that is to say of the elasticity of supply to price. In effect, the more rapidly a price increase leads to an increase in supply of the product in question or the supply of a product which can be substituted, the more difficult it will be to maintain the coalition. In other words, supply elasticity is a function of the speed with which the supply of the product under the cartel or its substitutes can adjust to the price increase.

As far as the supply of the product itself is concerned, the degree of the reaction depends directly on three factors. The first is the share of the production controlled by the cartel compared with total production. The larger this share, the more efficient is market control. In the case of a product primarily designed for export, as is the case with all raw materials produced by the LDCs, it is the share of the exports controlled by the cartel out of total exports which must be the object of attention. The second factor affecting the reaction of a product's supply to price is the degree of cohesion and discipline within the cartel. We will have the opportunity later to return to this point in more detail. Let us just note for the moment that the generally accepted criterion is that the smaller the number of producers, the more internal discipline will be supervised and respected. The third and last factor which affects the reaction of the supply of the product to price changes is the existence or absence of buffer stocks under control of the consumers. This is, of course, a two-edged sword, since storage costs may prove higher on a unit basis than the price increase.

As far as the rate of substitution between the product sold by the cartel and products which might be comparable with it are concerned, it depends above all and essentially on the weather, which as it happens, is the perfect rare factor. In fact, all constraints of a technological, financial, industrial or environmental order may reasonably be considered as destined to disappear one day. The problem, however, is to know just when this will be. Because the longer it takes to defeat these constraints, the more the cartel product acquires a strategic importance which will reduce its elasticity of demand by as much. This is especially true if the product in question is a non-renewable resource whose scarcity increases as it is exhausted. The very important point that should be stressed is that investment in substitute products does not depend simply on the actual level of the cartel product but on the most exact knowledge possible of the future evolution of the prices. In fact, the investment does not all take place at the margin, as the simple theory would have it: corresponding to each increase in price would be an increase in investment in substitutes. Quite on the contrary, in the majority of cases it

may well be imperative to make massive "en bloc" investments immediately to make sure that the substitute arrives on the market before, or at worst, at the moment when the resource becomes exhausted. It is a rare thing, therefore, for producers to take such enormous financial risks if they do not have credible assurances about the future price levels of the product in question. Now, the competitive market price, which by definition undergoes fluctuations, is an insufficient indicator for the intertemporal allocation of non-renewable resources. The monopoly, on the other hand, may be considered as the most adequate market structure for the planning of future production and present investment in substitutes.

b) The point we have developed above constitutes all in all a good introduction to the following specific question: Should the fact that a resource is exhaustible and non-renewable be considered as sufficient reason to produce a cartel? The reply to this question, taking into account the principal results of recent economic writings on the theory of non-renewable resources (see a full synthesis in PETERSON and FISHER, 1977), may be summed up in the following points:

- It has been demonstrated by STIGLITZ (1976) and SWEENY (1975) that if extraction costs are positive and/or if the elasticity of demand is rising, monopoly prices will be higher at the outset and weaker as the resource approaches exhaustion, than prices resulting from a competitive market. From this it can be deduced that the monopoly generally conserves the resource better than the competitive market does. The difference over time between monopoly prices and competitive prices would essentially be a function on the one hand of the rate of change in the elasticity of demand, and on the other hand of the level of the increase in extraction costs in line with the exhaustion of the resource.
- The second argument acts not only in favour of the monopoly but also in favour of a public monopoly over the resource. For, it is generally accepted that the evolutionary path of the price of a non-renewable resource depends, as much under monopoly as in a competitive market, on the actualization rate chosen by the producer. If this rate is high, current production will be large and exhaustion of the resource rapid. On the other hand if this rate is low, current production will be weak (conservation effect) and exhaustion will be delayed. Now, it is quite possible that a private enterprise will prefer to chose a high rate of actualization, especially when it exploits a mine under concession in a foreign country. Its general behaviour would then be to exploit the mine as rapidly as possible, that is, to speed up exhaustion for fear of being nationalized before the end of the concession period.

This difference in the chosen actualization rate is based on reasoning even more general than the fear felt by the private firm of nationalization or expropriation. In fact, the value which the firm attaches to the loss of a given quantity of a mineral, which has been produced and consumed, may not today be identical to that which future generations might attach one day to the same quantity. Here also, it is not certain that the "invisible hand" can reconcile the interests of the producer today with the interests of consumers in the future. One possible solution would be to consider the State as the permanent element of the social structure and make it the depository of these generations' interests. We may easily deduce two policies from this solution. The first is the rigorous application of the principle of the sovereignty of each country over its natural resources. The second is the introduction by the State of a royalty for the extraction of natural resources. This royalty may then be regarded as the property right of the society, represented by the State, over the lost future use through extraction of a unit of the resource. Moreover, this is a rapid definition of the concept of user cost which appears in much recent literature. The automatic determination of the value of this cost could be envisaged if futures markets existed for these resources, which would then sanction the anticipatory action (or speculation) of the producers. But in the absence of such markets, it behoves the State to determine approximately the value of the user cost or of the royalty. It is true that the decisions of the State in this regard may be tainted with arbitrariness, but there is nothing to show that the situation would be any better without its intervention.

All of these arguments in favour of the monopoly by public authorities over non-renewable natural resources in no way remove all the constraints posed by the general conditions set out above, which affect the demand and supply elasticities of the resource. Consequently, they can only be considered as complementary or additional to these conditions.

4. Conclusions: Stability of the Coalition

In conclusion, it would seem necessary to draw attention to one final condition which impinges upon the stability of a coalition of producers. The only proposal which economic theory offers on this subject can be summed up in a few words. On the basis of the hypothesis that each member of a coalition is always motivated by the maximization of its individual profit, expressed in measurable, monetary terms, we may generally deduce that any imperfection in the market or non-competitive equilibrium is doomed from its inception to be unstable and to fail eventually. This is the well known theory of the "congenital" instability of any coalition and of the inevitable return to competition after a more or less short period, (A. AYOUB, 1976).

While admitting the incontestable fact of the existence of permanent centrifugal tensions among the members of a coalition, the following two observations may be made:

- a) It would be wrong to reduce the behaviour of each of the members of the coalition to that of the maximization of its profit or monetary revenue at the moment when it can, in fact, seek to maximize its profit or its total revenues, be they monetary or non-monetary. The fact that the latter is difficult to measure does not, however, imply that it does not exist.

In the case of a coalition or even relations among states or among state companies, this kind of behaviour is easily observable and verifiable. As an example of behaviour by a state which is not uniquely motivated by monetary gain, we can cite the phenomenon of aid from the industrialized countries to the Third World to 'buy', amongst other things, their position at the national or international level. Without underestimating the play of economic forces which, in the last analysis, fix a floor and a ceiling on the decisions which any coalition is able to take, the integration in the analysis of the behaviour of the members of the coalition of political factors seems to be necessary. Moreover, this integration will enable it to be shown how an association can survive the difficult economic tensions or even how an association can form without the economic conditions for its creation being realized, or not all realized to the maximum.

- b) The final observation to be made on the subject of the stability of state cartels concerns the major role the existence of a "swing" producer can play on behalf of this stability. By playing the role of "marginal supplier", this producer may in effect increase or decrease its own production to meet the demands of the market and thus prevent the loss of discipline among members of the association. The most striking example of this strategy is without doubt that of Saudi Arabia within OPEC. However, it is true that such a strategy requires conditions which are not to be found in other associations whether existing or future. In effect, the leader-member needs to have the largest percentage of reserves or production capacity at its disposal, while at the same time not being too dependent on expected receipts. These are two conditions which, although being difficult to find outside the petroleum sector, clearly indicate that the problem of the stability of a coalition may go beyond the calculation of short-term elasticities.

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