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MINERAL RESOURCES IN THE PACIFIC AREA

Summary and
Abstracts of Papers

MINERAL RESOURCES IN THE PACIFIC AREA

PUBLICATION NOTE

The Pacific area's mineral resources, and their relationship to global economics and politics, constituted the major topics of discussion at the Ninth Pacific Trade and Development Conference, which was held August 22-26, 1977 at the Federal Reserve Bank of San Francisco. The participants included about 40 policy-oriented academic and business economists and government officials (in their private capacities) representing a wide range of resource-rich and resource-poor Pacific Basin countries. The conference was organized by a U.S. steering committee consisting of Michael W. Keran (Federal Reserve Bank of San Francisco), Lawrence B. Krause (Brookings Institution), and Hugh T. Patrick (Yale University).

This publication contains a summary of the conference prepared by Lawrence B. Krause, and abstracts of the individual authors' papers. The full proceedings, including all the conference papers and discussion notes, will be published early in 1978 by the Federal Reserve Bank of San Francisco. Reply cards are included with this publication for those readers who are interested in obtaining copies of the complete proceedings.

Summary of Conference

Lawrence B. Krause*

The Ninth Pacific Trade and Development Conference held at the Federal Reserve Bank of San Francisco, August 22-26, 1977, was directed to the theme of mineral resources in the Pacific area. Thirteen papers were prepared for the conference organized as follows: the economics and politics of natural resources; national case studies in natural resource problems; and the political economy of mineral resources (policy alternatives).

The Economics and Politics of Natural Resources

I. *The Raw Material Cycle*—Stephen P. Magee and Norman I. Robins (United States).

The paper presents an interesting extension of the dynamic theory of international trade and adds to our understanding of shifting comparative advantage. The theory answers in part the question, "What comparative advantage will be found in developed countries after labor intensive manufactures are established in and aging technology-intensive products are transferred to developing countries?" The answer is new production of synthetics that replace raw materials.

The theory envisions an evolution in stages in the spirit of Raymond Vernon's product cycle for manufactures. A stage theory formulation can easily be misunderstood and misused. It need not apply to all commodities nor inevitably follow the stage sequence as presented, and thus counter examples are not damaging to the theory. Rather the theory is a conceptualization of forces that should follow one another, and the fact that some empirical verification has been uncovered (in particular for rubber, tin, and industrial diamonds) is evidence that the theory is useful. It does not attempt to explain all of reality, but merely adds to our understanding of some of it.

The first stage is characterized by a boom in demand for natural resources derived from a new end-use, possibly resulting from technological developments. Increased demand leads to a rise in relative prices because of the inelasticity of the old supply schedule and the new demand curve. World trade patterns are altered as old and new producers of the product increase production and exporters cash in on the economic rents created.

The second stage is marked by the beginning of an adjustment as the higher relative price leads to conservation in the use of raw materials and to the expansion of nontraditional sources of supply. Thus trade patterns might shift further. At this point relative prices might stabilize or even decline somewhat.

In the third stage the market is disturbed again in a movement counter to stage one as research and development set off by the high relative price succeeds in sharply reduced need or outright replacement of the raw material by a synthetic. Then relative prices decline sharply. Such an adjustment process has likely started in response to the jump in petroleum prices.

It follows, therefore, that (1) concern over eventual exhaustion of raw materials is misplaced, (2) technological change is the significant factor determining relative raw material prices, (3) there is a tendency for long-run

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constancy of raw material terms of trade, (4) technological change may be anti-trade biased and (5) there is continuity of change from one product cycle to the next because technological change is endogenously determined.

Discussant: Narongchai Akrasanee (Thailand). The theory is not very comforting from the point of view of LDCs because of the bias in advanced countries towards synthetics which hurts LDC exporters. Also the theory does not deal with short-run price instability questions, which are of great concern in addition to the long-term trend of prices.

Discussant: Danny Leipziger (AID). Welfare and policy implications cannot be determined until the theory is extended to include factor requirements and availabilities. As a general rule, any disturbance that requires adjustment may injure LDCs because of their lack of diversification, which gives them less ability to adjust. This last proposition, however, overlooks the fact that LDCs also lack the resources to avoid adjustment, and thus do relatively rather well in response to external shocks.

General discussion. The theory in stage two lumps together conservation in use and expansion of supplies, but the former reduces pressure for R and D while the latter does not. Furthermore R and D may be generated within the natural resource industry to reduce the cost of the natural product, as with rubber. Also the anti-trade observation may seem to imply a lessening of the long term gains from international trade, but the inference is incorrect since R and D efforts themselves need a large market to be profitable, which suggests that the cost of autarchy (or self sufficiency) is still great. Concentrating on technological change implies that the net barter terms of trade is not a significant concept for measuring welfare gains from trade and that its long-term trend is of little interest. In any event, the paper opened up many new avenues for future economic research.

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II. *Mineral Trade and Investment Patterns in the Pacific Area*—Nickolas M. Switucha (Canada).

The paper is extremely comprehensive in its coverage and amassing of useful information concerning mineral industries. The characteristics common to recent mineral development include the need for increasingly larger capital expenditures and greater dependence on complex and advanced management, technology and marketing skills. The role of government is becoming greater, both singly and in combination in producers associations. New government policies are being formed by consuming nations; interferences by host countries in production are increasing; and governments are even involved in direct investment abroad, particularly in Canada. An implication of this is the creation of a significant deterrent to new investment of private enterprises and redirection of investment to developed countries, which are now getting 70 to 80 percent of all new exploration and development expenditures.

Discussant: Francis Chan (Singapore). The paper does not include technical factors in the discussion of anticipated changes in trade patterns. Nor are the prospects for resource poor LDCs (like Singapore) addressed. Such prospects are not very attractive. The paper does not properly recognize the importance of tin in Malaysia because tin production has high labor content.

Discussant: Sirman Widiatmo (Indonesia). The paper fails to appreciate the destabilizing effects of the U.S. stockpile program and policies for metals. Barriers in LDCs for new investment are not very severe. Some deterrent to new investment comes from uncertainties caused by substitutes and technological changes.

General discussion. Governments not only are, but should be involved in minerals development. Technical characteristics of mining prevent competitive market solutions, and thus the resulting oligopolistic structures of industries require government oversight to bring about closer-to-competitive solutions.

Furthermore there are obvious external economies such as the creation of infrastructure, and diseconomies such as pollution, which should be dealt with by government. Finally the existence of economic rent not only provides an opportunity for distortion-free taxation, but often requires such taxation to avoid resource misallocation. But just establishing the existence of a role for government, does not ensure that the role will be well exercised. Through ignorance and misdirected political pressures, governments often make mistakes. They can dissipate rents in inefficiency, let them be captured by labor groups, or waste them in indulgent expenditures. Furthermore actual taxation may well distort investment and production, even though it need not have that result.

A question arises as to where to process raw materials, and many variables are involved in the determination. They include certain technical considerations of the size and quality of the ore body in relation to scale requirements in production; costs and availabilities of factors of production, broadly considered to include labor, capital, management and technical skills, energy, and transportation; the structure of the industry, including ownership patterns and the existence, location and capacity of installed facilities; the tariff structure of importing countries; and the tax and subsidy provisions of exporting countries. Because of the complexity of the question, research is required to answer the normative question of where processing should occur. It is certain that the naive view, that the more value added the better for a country, is incorrect given the capital intensity of the processing stage.

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III. *Resource Trade and the Development Process in Developing Countries*—Ross Garnaut (Australia).

Garnaut's analysis has particular relevance for Southeast Asian countries with low levels of industrial production relative to natural resource endowment. The phenomenon investigated is the general development process resulting from natural resource development. The process is initiated when new export possibilities of natural resources cause a constructive disturbance, which results in domestic growth but which will be limited by certain constraints. Certain functional relations come to light as follows: the more isolated the ore deposit, the larger the scale needed for development; the higher the capital intensity, the larger the share of overhead in total costs and the greater the scope for price instability; and the greater the discontinuity of the investment process and the wider the fluctuations in export prices and volumes, the greater the instability of incomes and domestic activity.

The paper noted that new resource development will require import of skills from abroad since they will not be available locally. But since they are likely to be expensive on the outside, they will reduce the amount of economic rent. This observation may require an adjustment in the theory of exhaustible resources as it applies to the optimum time for a country to exploit its resources. Up to now it was considered a question of the social rate of discount in relation to the expected rise in prices of the output, but this paper suggests that the expected supply schedule of complementary skills should also be considered.

There are direct linkages to domestic growth via payment for locally supplied factor inputs, the production of social overhead facilities, the supplying of locally produced food and building materials, and the possibility of forward linkages via processing activities. Nevertheless these are of lesser importance. Rather it is on the indirect linkages from larger incomes and the creation of rents that greater stress is laid. Thus much of the paper is devoted to a discussion of potential rents and how they might be dissipated, and to realized rents and how they can be identified, measured, increased and efficiently taxed. The most important factor in the process of growth is the ability of the government to maximize its receipts from economic rent and then spend them in a growth promoting fashion.

Discussant: Kuo-shu Liang (Taiwan). Mineral production may create too great an export orientation to the detriment of manufactures in a developing country. The most important factor for success in mineral based development is the wisdom of the government, and it would be wise for governments not to demand local processing now in view of current excess supply conditions.

Discussant: Anthony Scott (Canada). Mineral resources do get exhausted, and thus some recognition need be made of the ultimate decline and closure of mineral developments. The paper should be extended to cover the variance of openings and closing of mines, factors affecting the economic life of mines, and the various technological options that exist in mining.

General Discussion. There are actual cases of the dissipation of economic rent by host developing countries, so the theory has some relevance for the real world. Instability may be particularly hard on private domestic firms in LDCs operating in minerals production, which points up the importance of improving the performance of capital markets if long-term damage is to be avoided.

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IV. *Ocean Mining in the Pacific Basin: Stimulus and Response*—Michael Gorham (United States).

Seabed mining is of particular importance now since it is holding up agreement in the Law-of-the-Sea Conference. Interest in seabed mining has increased because of both a rise in potential revenues due to price increases and a decline in the expected costs of mining the ocean floor. Increases in sovereign risk of land-based natural resource development is also an element promoting seabed development.

Some technical issues are important, including the composition of nodules and the high ratio of fixed to variable costs in their mining. The economic consequences for the four major mineral markets were found to be greatest for cobalt, manganese and nickel and decidedly less for copper. The manganese result is somewhat uncertain due to the technical difficulty of separating out the manganese from the nodule.

A further technical factor of some significance is that nodules are not exhaustible but are reproducible. The benefits of nodule mining in the absence of new institutional rules would flow primarily to industrial countries having the technological skills to undertake the mining. The adjustment problems of existing land based mines should not be difficult, since they could be anticipated and phased out gradually.

Whether an international regime can be created to permit seabed mining depends on the political circumstances involved. Three types of countries are identified: advanced countries with strong positive interest; land-based mining countries with a modest negative interest; and all others, who should be neutral but could be made supporters if cut in for part of the economic rent.

Discussant: Leslie V. Castle (New Zealand). The paper is too optimistic concerning the possibilities for seabed mining, given the manifold uncertainities of production costs, political support and institutional framework. Furthermore, the negative effects on existing producers may be more than transitory, which is not an argument against exploitation, but rather one for adjustment assistance. The equity reason for sharing economic rents arising from the seabed among all nations is rather weak. Taxing should be left up to the governments of the countries of the developers.

Discussant: David Hudson (United States). Taxation of seabed mining could deter its development in view of the massive learning costs to be covered, and the risks of overruns on implementation of new as well as old technology. The benefits of seabed mining in terms of cost reductions will be passed on to all consumers, including those in developed and developing countries alike.

General Discussion. The effects of any tax may be uncertain in real life, but a tax on rent

in theory cannot be distorting by definition. Existing production from land-based mining is already being distorted by taxes, and an efficient tax should improve the competitive position from new investment. Negotiations in the Law-of-the-Sea Conference involve cross-issue bargaining which may not appear rational from the viewpoint of a single issue.

National Case Studies in Natural Resource Problems

V. *Australia: Resource-Rich Developed Country*—Ben Smith (Australia).

The paper is very comprehensive and highlights many problems that arose from the rapid development of Australia's mineral resources. The pace had to be rapid because it had to keep up with Japanese demand or run the risk of not being economically viable. The strains created in Australia related to domestic income distribution, degree and form of foreign involvement, participation in producer cartels, barriers to trade in processed minerals, environment and resource conservation issues, plus questions of State and Commonwealth government relations.

Discussant: Hang-Sheng Cheng (U.S.A.). The macro-adjustment problem of Australia — commonly identified as the Gregory thesis — is that rapid growth of mineral exports developed through capital inflow creates a balance-of-payments surplus and a policy dilemma. Either the currency could be upvalued, resulting in undermining the competitiveness of secondary manufacturing (which is more labor intensive than mineral production) — or the surplus could be absorbed in the expansion of central bank reserves, which would lead to excessive money creation and domestic inflation, again undermining secondary manufacturing. One alternative rejected by both Cheng and Smith was a barrier to further mineral development. Another alternative, partially endorsed by Smith, was encouragement of capital outflow to build up a stock of foreign assets. Cheng's preferred alternative was further liberalization to permit more efficient resource allocation — which, when combined with capital inflow, should not only maximize growth, but should also benefit the least favored factor of production, labor in secondary manufacturing. If adjustment assistance is necessary, it should be provided to the disadvantaged factor.

General Discussion A. While this approach contains strong economic logic, it remains politically unsatisfying, and economists ought to re-examine their analysis to see whether they are missing something. The Smith-Cheng thesis comes from the economic calculus of marginal change, but the rapid growth of Australian minerals may constitute a structural change — a type of discontinuity not suited to calculus. Economics does not easily handle structural alternatives, and most of the papers of this Conference (with one important exception) do not focus on this level of analysis. What is missing in the Australian analysis is an answer to the question: If labor adjustment is required, adjustment to what? The answer is surely not minerals production, which absorbs little labor relative to the amount displaced. What is missing is a view of the kind of society Australia should become; how the rents from mineral production should be utilized; and what contribution the displaced labor can make to the new societal structure. It has been learned in the United States that if adjustment assistance is nothing more than a bribe to become unemployed, then the society will suffer and the political process will not let the situation continue.

Discussant: H. Edward English (Canada). Domestic inflation is a much worse alternative than currency appreciation, because inflation contains its own internal dynamics that cause more problems than they solve. Taxation questions cannot be answered by a country without considering the tax policies of other

countries, since competition exists in product markets and will affect the allocation of investment. [Smith responded that Australia would not enter a tax competition and would accept foreign government tax concessions as the equivalent of cheaper costs abroad, which Australian policy cannot and should not influence.]

General Discussion B. Resource-rich countries seem to have great problems, but these problems appear easy to a country like Japan without natural resources. Of course resource-richness is a relative term, and an apparent resource-rich country may only be one that hasn't developed its own industry sufficiently to absorb locally available raw materials.

Transfer pricing by multinational corporations may or may not be a serious problem. Smith's paper suggests the problem could be difficult, but capable public administrators can police the transfer price policy, and the problem is easier to handle in raw material trade than in manufacturing. Weak administration is likely to be unable to capture economic rents, and transfer pricing is only one of many possibly confusing devices.

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VI. *Japan: Resource-Poor Developed Country.* — Yasuhiro Murota (Japan).

This paper defined three polar options for Japan and examined them in historical perspective. Option one is to buy natural resources on the world market, which maximizes the GNP of Japan. This option, followed since the Second World War, has helped Japan achieve the goal set for it at the time of the Meiji Restoration — catching up with the West. But difficulties have resulted both externally and internally. Externally, Japan has become extremely dependent on other countries, subject to external shocks like the oil crisis or soybean embargo. Japan also faces a difficult situation with resource nationalism abroad and possible worldwide shortages. Even the strategy of diversifying sources of supply can't provide security if Japan continues to increase its already-large share of world raw material imports. Internally there seem to be no good reasons for pursuing the policies of the past and some reasons not to, as Japan has sacrificed much of its culture and quality of life to pursue economic growth. More importance attaches to the internal than to the external constraint.

A second option for Japan is to obtain access to raw materials from other countries by the exercise of geo-political and military power. This was the option followed in the 1930's and it turned out disastrously. The option has to be rejected out-of-hand.

The third option is to accept and promote economic stagnation and even decline. Japan would then not require greater imports of raw materials and could concentrate on reasserting its own true culture, which is different from the West. The true choice lies between option one and option three, and on balance the author prefers three.

Discussant: Laurence L.C. Chau (Hong Kong). Japan's choice between options one and three has implications for developing countries. Maybe option one has caused problems for Japan and possibly LDC's could learn from this, but the undesirability of this option cannot be accepted without much greater evidence. Furthermore, option three would not help LDC's as suggested in the paper. Rather it would create unemployed resources in some LDC raw material producers, and reduce the income of other LDC's so they couldn't buy more resources or anything else. There are more than two options for Japan which should be explored.

Discussant: Hugh Patrick (United States). Option three is not a happy one for Japan since it would cause societal strife. The whole world would be worse off with a no-growth Japan. The only thing worse than Japan growing too fast is Japan growing too slow. Japan is concerned about the long-run energy problem, which is the cause of much deep-seated pessimism in Japan.

General discussion. Option three may exist

only in the minds of intellectuals, while Japanese businesses are still pushing as hard as ever, possibly making an adjustment by increasing direct investment. The actual macro adjustment might involve lower, less resource-intensive growth. Europe also seems to be choosing option three, to the detriment of itself and others. There has been active and widespread discussion of option three in the popular press of Japan, but it is unlikely to be chosen. Japan requires further growth to raise the material living standards of the lower-middle class, and growth will likely continue above the levels of other industrial countries, although much slower than Japan's own previous record.

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VII. *Chile: Resource-Rich Developing Country*. — Ernesto Tironi (Chile).

This paper assumes the goal of Chile to be the maximization of growth from natural resources. In the immediate future Chile might rely excessively on such development, which could cause structural imbalances, external dependencies and an unstable economy. Natural resource development may be a siren song, since it makes the economic growth of a country depend on factors other than its own activity. Export instability is a serious consequence of such activity. In the absence of new external methods for stabilization, certain internal measures should be tried, such as a variable tariff on certain imports inversely related to the price of copper. The economic problem of instability comes from the rigidity and lack of adjustment capacity to alter structures of the economy, and an even worse problem is the political instability that is created. The Chilean government progressively has taken over more of the copper industry and has satisfactorily demonstrated its ability to operate the mines. Some uncertainty concerning the technical efficiency of the mines still remains. Furthermore, nationalization was a political necessity and could not have been avoided once the political dynamics had been set in place.

Discussant: Romeo Bautista (Philippines). The small-scale copper industry in Chile has expanded faster than the large-scale industry. Small producers sell ore rather than processed copper, for which there has been a growing market, particularly in Japan. They are responsive to increases in the copper price, but they have also contracted faster as the copper price has declined. The only realistic option for Chile has been to slow down new investment, not to close down copper production. The variable tariff proposal is not likely to reduce instability and would introduce bias into the incentive structure, since it wouldn't apply to capital goods.

Discussant: Danny Leipziger (AID). The copper sector was analyzed in the paper independent of overall development policy. Significant questions relate to the use of foreign exchange and government expenditures. The problem of instability is serious since transitory income is always spent — often in higher government wages. Furthermore, the alternative use of capital needs to be faced — possibly in processing copper — and if not, it would be interesting to know why.

General Discussion. Insufficient attention was given to indirect linkages to growth. The stabilization problem might best be handled by government expenditures averaging over time, with variable tariffs used only as a back-up policy.

A more optimistic view of the immediate future of Chile is possible. Chile is rich in many resources which may become competitive for exports, now that the irrational import-replacement policy has been ended. Furthermore, CIPEC can play a long-run stabilizing role.

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VIII. *Korea: Resource-Poor Developing Country* — Wontack Hong (Korea).

There are few serious natural resource problems in Korea. Korea has successfully followed an export-oriented growth policy and attained rapid growth. Thus, from a modest

exporter of natural resources in the 1950s, Korea became a significant importer by the 1970s. No problems were encountered in importing minerals until recently during the oil crisis. Korea anticipates rapid growth in her future demand for imported mineral resources, and anticipates paying for those resources by rapid growth of exports, similar to the way the oil crisis was overcome. In that case, Korea merely passed the price rise along in higher export prices. Korea should be all right as long as she has access to markets on a non-discriminatory basis and the advanced countries follow sensible policies, including avoiding protectionism and resource nationalism. Another raw-material price boom might be difficult to adjust to, but would not be insurmountable. Korea (like Japan) does have a balance of payments surplus problem.

Discussant: Francis Chan (Singapore). The paper may well be too optimistic. More difficulties might be encountered as Korea's dependency rises. Small countries have no bargaining power, and regional groupings may be desirable to offset this disadvantage.

Discussant: Yashichi Ohata (Japan). Korea was lucky to be small and able to buy resources without upsetting the spot market. Korea's problems could increase as it grows. There is danger in excessive export-oriented growth, which could create structural distortions, such as discouraging agriculture. The energy price rise in Japan separated industry into profitable and unprofitable groups, and Korea could face the same problem when rising wages inhibit Korea's ability to adjust.

General Discussion. Korea seems to show similarities to Japan's earlier experience. Korea should avoid one of Japan's mistakes of protecting processing industries. In fact, resource-poor countries gain some economic security by importing processed raw materials rather than ores, since producing countries are less likely to want to take the large economic loss involved in stopping the export of metal.

Political Economy of Mineral Resources: Policy Alternatives

IX. *The Wider Context of Bilateral Resource Exploitation: Arrangements Between the LDCs and the DCs.* — Miguel Wionczek (Mexico)

Four questions were addressed in the paper and answered as follows: (1) there will be no global shortages of raw materials, (2) there will not be a serious problem of access to LDC minerals for developed countries, although not such free access as in the past, (3) there is no basic conflict between the resource needs of an expanding world economy and the New International Economic Order (NIEO), and (4) relations between LDCs and developed countries, which have been changing over the past 20 years, should be able to accommodate future changes.

It will be desirable to break the link between exploration and ownership of natural resources. Technology is no longer the exclusive preserve of multinational corporations (MNCs), but can be purchased in the market. What remains in the hands of developed countries are capital resources, but even that situation is changing. Income instability problems of LDC raw material exporters are serious because they lead to political instability. Thus, achieving stabilization agreements is most important.

Discussant: Romeo Bautista (Philippines). It is doubtful that the LDCs have the upper hand in dealing with MNCs, particularly in Africa and Asia. The opportunity costs of using capital in minerals might be so great as to make it unwise for LDCs to invest their own capital in mineral development. Greater access to information by the LDCs does improve their bargaining position with MNCs,

thus efforts should be made to obtain more information.

Discussant: H. Edward English (Canada). Departures from pure competition are not new, but there is greater recognition now by governments of market imperfections. There is frequent confusion of redistribution objectives in the NIEO. Great difficulty exists in negotiating a package approach to new commodity arrangements and — other than OPEC — little opportunity exists for producers to manipulate markets. Regional approaches should be considered as a possible alternative.

General Discussion. All the views of developing countries are not alike, and Asian views in particular differ from those in Latin America. Export instability has been greater in Asia than in Latin America, yet Asians worry less about it. Presumably income instability is less a political problem in Asia. It may not be wise for LDCs to pay for mineral exploration, since the risk is greatest at that stage and the risk might better be shouldered by others.

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X. *Commodity Trade from a North-South Perspective.* — Jose Piñera (Chile).

The paper examines the free market regime, the price-raising regime, the cartel regime and the commodity agreements regime. The free trade regime appears to be difficult because of lack of competition and because of a possibly unfair distribution of gains. The price-raising regime would be hopeful if prices were to be raised only to a competitive-equilibrium level, but would fail if pushed beyond that level. Cartel regimes might work in the short run, but might redistribute income improperly — that is, from the poor to the rich — and would always contain substantial efficiency costs. The commodity agreements regime would be hopeful if stabilization goals, which are attainable, are separated from redistributive goals, which are not. Aid transfers are still the best method of international redistribution. Futures markets for commodities have not succeeded in stabilizing resource prices. Futures markets have short horizons since performance cannot be guaranteed on a long term contract. Competitive markets might be possible, but are unlikely because of unequal bargaining power between MNCs and LDCs.

Discussion: Seiji Naya (United States). The paper has a moderate tone; however, the discussion of the distribution problem, the export instability problem and market performance are not well integrated. Furthermore, little empirical reality is included. Studies have shown that export instability is not all that serious for LDCs, which is true if economic growth is the sole measure to be used.

Discussant: Norman I. Robins (United States). The question of technology transfer is absent from the paper. Substitutes for raw materials can be developed, which is a further reason to disbelieve that price raising schemes would be successful. However, an alliance between LDCs and MNCs might work. Price instability might not be bad for LDC resource exporters, since it might hold down production and raise long-term prices.

General Discussion. Long-term prices might be raised by instability, but instability is not a good thing for exporters because it results from insufficient investment. Price instability may distort investment timing, but not necessarily reduce it, since periods of excessively low prices when investment is deterred are followed by periods of above average prices when investment is excessively encouraged. Instability may deter investment more in LDCs than in developed countries that have controlled markets, such as for copper in the United States.

Commodity markets have been politicized, and stabilization agreements might be the most efficient channel to direct this political activity since they contain the potential of benefitting all countries. Government intervention may well continue but it need not be successful. Just because the potential exists for efficiency gains under an international agreement is no assurance that the gains will actu-

ally be realized. Politicization of economic markets may result from a lack of awareness by economists of how their policy recommendations strain the political system. The point has further relevance in international relations. Demands by one country on another, no matter how justified, may turn out to be counterproductive if they overload the other country's political system. Insistence on nothing but free trade or massive economic stimulation may be current examples.

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XI. *Japan's Resource Security and Foreign Investment in the Pacific: A Case Study*— Kiyoshi Kojima (Japan).

The paper focused on the desirability of different forms of developing natural resources and arranging for their production and sale abroad (a subject also discussed by Ben Smith). The device strongly favored is the development-cum-long-term contract. This device originated when companies found they needed firm contracts in order to obtain financing to develop large-scale mineral projects. The agreement entered into at the outset of a new development fixes a sales contract for exports to Japan for a number of years at more-or-less fixed prices and quantities. In fact the agreement is a flexible document that really only guarantees that the buyer and seller will continue to do business with each other on mutually satisfactory terms — which highlights the question of bargaining power over time. The assurance of markets permits capital to be raised and efficiency to be achieved by exploiting economies of scale in production and transportation. The advantages seen for this device are (1) efficiency gains in production and transportation, (2) the ability to meet resource nationalism objectives of host countries since equity investment by Japan is not necessary — although Australia found that foreign direct investment was still required (as noted in the Smith paper), (3) the stabilization of prices to the dominant purchaser, Japan, which can still diversify its imports by purchasing from other suppliers. The bargaining position of the supplier is greatest before the development is undertaken, but bargaining power then shifts to the Japanese buyers acting as a consortium monopsonist in dealings with various suppliers.

Discussant: Michael Keran (United States) The long-term contract essentially extends the futures market and the bilateral contract is a way of reducing uncertainty. If renegotiation is frequent, then the less economically unique is this form, but it may still be a superior way of resolving differences between parties in the event of a change in circumstances.

Discussant: Kuo-shu Liang (Taiwan). With this form of contract, prices are indeterminant within the bargaining range, which implies that a disproportionate share of the efficiency gains could be captured by the party in the best position. Other significant questions such as conservation, protection of environment and reinvestment of earnings are not covered by the contract. Furthermore, the kind of internal buffer stock operated by Japan may not be stabilizing to world prices, as witness the effects of Japanese trading companies in pushing up raw material prices in 1972-73.

General Discussion. If one had a really conspiratorial view of the world, one might argue that the Japanese, after securing stable and low prices for themselves, enter the spot market to force up the world price to the disadvantage of their competitors. While this may be fanciful, the concern of competitor countries, such as Korea, is real. If Japan obtains advantages through stable low prices of raw materials that are not available to other countries, then Japan obtains a competitive advantage. Furthermore, the renegotiation at times of crisis may obtain stability for the two countries involved, but only by increasing instability in the rest of the market. Canadian experience with such agreements with Japan has been less successful than Australia's experience.

By way of contrast to the development-cum-long-term contract device, the approach supposedly preferred by MNCs would have the MNCs control the resources and utilize

them internally in the firm through vertical integration. The bargaining power of the host government is least before the investment is made, but grows after the MNC has invested substantial capital. Furthermore, the MNC might be relatively indifferent to which country processes its ore, while the only rationale for the Japanese is to bring the ore to Japan to process there. While certain difficulties might be recognized with the long term contract device, given large Japanese purchases, it is hard to imagine a preferred alternative from the point of view of other countries.

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XII. *International Commodity Control – The Tin Experience* — Mohamed Ariff (Malaysia).

All the tin agreements were reviewed from their inception in the 1930s through their five reincarnations. In recent years the scheme has operated a buffer stock, but has also relied on export quota controls to help defend the floor price. The agreements were judged to have been more successful in defending the floor than the ceiling, since there was no device comparable to the quota to keep prices from rising in the face of tin shortages. Thus the agreement was judged to have a producer's bias, which is understandable since consumer countries such as the United States had refused to cooperate until quite recently.

Tin prices have been pushed up over time, but the potential gains to producers have probably been dissipated by inefficiency. The agreement may have reduced price fluctuations marginally below what they would otherwise have been, although the evidence is very weak on this score. Furthermore, export earnings were not stabilized, and may have been destabilized by the agreement. This point relates to the long-term operation of the agreement, since quota restraints reduce incentives to invest and make tin unavailable. When demand expands, prices increase, thus encouraging substitution and replacement.

Discussant: Laurence L.D. Chau (Hong Kong). The tin agreement was mainly successful in reaching the targets set out. Export earnings may not have been more unstable because of the agreement than they would have been otherwise. Furthermore, the concept of a long run equilibrium price is itself uncertain, and the agreement may merely have had a redistributive effect toward the LDC producers.

Discussant: Kenji Takeuchi (World Bank). The agreement should be credited with saving the industry in the 1930s and working to the advantage of consumers. If there are difficulties with the agreement, then improvement can be made.

General Discussion. The price range is also a significant instrument in operating the agreement and must be included in the analysis. Care must be taken in adopting any new device to help the agreement defend the ceiling price. Any tin supplies diverted because of the agreement at times of shortage are not going to help the situation unless the tin would not otherwise have been marketed — a possibility that would occur only if the tin came from the U.S. stockpile. This possibility is thought to be unlikely in view of Congressional control.

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XIII. *An Organization for Pacific Trade, Aid and Development: Regional Arrangements for the Resource Trade* — Peter Drysdale (Australia).

The paper traces the development of the OPTAD idea, which is closely bound to the history of the Pacific Trade and Development Conference itself. The interest in the idea of a regional organization arises from the growing economic power of the region and the spectacular growth of trade among the Pacific countries. It is striking that 90 percent of all resource trade (oil aside) arises from within the region itself, indicating the importance of the regional perspective. In an era of concern over resource security, including most notably energy, a regional organization could reduce the uncertainty very considerably.

While the interest in an organization arose in Australia in response to a Japanese initia-

tive, it spread to the other advanced countries of the Pacific. But in no sense is it confined to the Pacific Five — rather it encompasses the developing countries of the region as well. Only a loosely knit, unbureaucratized organization was being contemplated. The guide for such an organization might be the OECD in Europe, but it would not be an exact copy of the OECD.

A device that could help to reinforce the resource base interest in such an organization would be a Pacific Resources Bank that would provide funds for resource development in the region. The device as described is less of a bank and more of a consortium of lenders. The institution would help overcome the segmentation of capital markets that exists with respect to official lending agencies providing concessionary loans.

Discussant: Seiji Naya (United States). The OPTAD proposal should be worthwhile from the point of view of the developing countries in the Pacific. Much of the paper is devoted to the problems of the developing countries and is a recognition of their importance. The advantages identified for the developing countries in the proposal included promoting research and devising solutions for the problems of protectionism and energy.

Discussant: Saburo Okita (Japan). The proposal is worthy of support from the point of view of Japan. Some factors point, however, in a less promising direction. These include the series of economic summits which emphasize Japan's global rather than regional role, as well as the new consultations with ASEAN, which appear to serve the same purpose as OPTAD for Japanese relations with the developing countries and permit Japan to sustain the low-profile role so congenial to its style of diplomacy. On the more positive side is the proposed means for dealing with the energy problem, which remains of paramount concern to Japan. To the degree that petroleum will be replaced in Japan, it will be from imports of liquified natural gas and coal and from the production of nuclear power. At least coal and uranium could come principally from within the region, reinforcing the focus needed for OPTAD.

Discussant: Hugh Patrick (United States). From the perspective of the United States the proposal deserves to be supported, but the idea might not attract much attention in Washington. This is part of the vestige of Washington's viewing the Pacific only through a geo-political, military prism and ignoring the economic importance of the region. Furthermore, the U.S. concept of its global role will stand in the way of regional commitments.

General Discussion. The proposal could ultimately have to face many difficult questions and criticisms. What role is contemplated for the micro-mini states of the South Pacific? The organization might be too powerful to simply concentrate on research, but not powerful enough to bring about structural accommodations among countries. Canada's interest in diluting its U.S. connection might make the OPTAD idea attractive to it, and Europe may become so inward looking and protectionist as to force Pacific countries interested in expanding trade into a closer embrace.

The dilemma of Pacific economic relations was brought out by the discussion. The economic interests within the region are great but often unappreciated. An organization dramatic enough to capture the imagination and generate regional interest is also likely to scare the members of the region because of the obligations that might follow and the implicit discrimination against non-regional countries. The search for a pragmatic middle ground must continue and the Drysdale paper is an important contribution to this end.

Policy Conclusions

During the course of the conference it became clear that a degree of agreement existed among the participants concerning some important policy issues. It was thought worthwhile to pass these ideas along to policy makers.

There was almost a unanimous view that the world did not face a general shortage of raw materials. Both natural resources and technologically inspired synthetics would provide adequately for the world's needs. Nevertheless, there is a problem of energy which is very concerning to many countries. Any threats to existing energy supplies or barriers to new sources of energy, such as nuclear power, are likely to cause pessimistic reactions in the economies of energy dependent countries beyond what one might expect. This reality should be kept in mind by those making energy policy.

Resource producing and exporting countries are seriously and increasingly affected by the instability of resource markets. That instability arises from the bunching and then the dearth of investment, as well as price and volume fluctuations in exports. The resulting income and balance-of-payments fluctuations cause economic and, even more serious, political problems. Countries will attempt to deal with this problem through internal policies, but they will either fail or succeed only by exporting the instability to others. The best way to solve the problem is through international stabilization commodity agreements. This choice was made not because such agreements are thought easy to negotiate and operate. Quite the contrary, such agreements are very difficult to design properly, as the history of the tin agreement indicates. Rather, the importance of the issue, plus the fact that all countries would benefit from a successful agreement, dictates that great efforts be made.

International commodity agreements should not attempt to redistribute income. Income redistribution is a legitimate goal but cannot be achieved by raising commodity prices. The traditional method of aid transfers is still the best.

Countries dependent on imports of natural resources have a legitimate interest in obtaining stable and reasonable prices as well as assured access to supply. The development contract combined with a long term sales contract has proven to be a useful device for large resource sellers such as Australia and large buyers such as Japan. The interests of small importing developing countries must also be considered so that they can obtain access on a non-discriminatory basis. Reasonable policies by the advanced countries of the region should provide such assurance to them.

All countries were cautioned against relying excessively on export-led growth, regardless of whether it is based on natural resources or on manufactured products. Domestic economic structures can be distorted if proper development of domestic markets is overlooked, and problems can be caused for trading partners as well.

Note was taken of the trend toward protectionism in many countries to forestall painful adjustments. Countries need to be reminded that adjustments are especially beneficial to a country when growth rates are low. Adjustment assistance policies may be required, and countries are reminded that the best aid to adjustment is adequate aggregate demand.

Countries were urged to take a more relaxed view toward demands for a New International Economic Order. Views of developing countries in various regions differ quite considerably, and truly radical ideas that would destroy efficient markets are unlikely to gain widespread support. Furthermore, the relationship between developed and developing countries has been changing constantly over the last twenty years, and with reasonable effort further changes can be accommodated without serious disruption.

Finally, policy makers of Pacific Basin countries were implored not to be blind to economic developments in the region. Of course many so-called "high politics" issues must be addressed by governments, but attention only to those issues will be a serious mistake. The economic reality is that the Pacific Basin is the fastest growing area of the world and the economic interests of the region's countries are growing closer together. Economic policy on a regional basis deserves close attention, and if properly handled can provide substantial and mutual benefits for all countries.

Abstracts of Papers

A. The Economics and Politics of Natural Resources

The Raw Material Cycle

Stephen P. Magee and Norman I. Robins

This paper presents a life cycle for raw materials, based upon historical regularities observed in the behavior of one renewable material (rubber) and two nonrenewable materials (tin and diamonds). We have focused primarily on materials located in developing countries which have gone through periods of shortage in the past. Stage I in this process may be labeled as "derived demand boom"; Stage II as "diffusion of supply sources and substitution in demand"; and Stage III as "synthetic and/or R and D incursion."

Stage I of the cycle is characterized by a surge in demand for a final product which requires large amounts of a specific raw material. The development of the automobile caused a 78-percent rise in the price of rubber between 1900 and 1910. The development of automatic canning machinery caused tin prices to rise 144 percent from 1895 to 1910. The demand for carbide cutting tools, which use diamonds as the cutting surface, increased 50-fold between 1936 and 1942.

Stage II is characterized by major shifts in the location of raw material production as marginal suppliers enter the market, as possibly cheaper sources are discovered, and as the original sources of non-renewable materials are economically exhausted. For tin, Britain, Malaya/Singapore and Indonesia provided 95 percent of world supplies in 1895 but only 36 percent in 1936, reflecting the rise of new suppliers in Bolivia, Thailand and Australia. For rubber, Brazil and India provided 61 percent of world supplies in 1910 but hardly any in 1930, when Malaya, Ceylon and Indonesia captured 92 percent of the market.

Again, in the second stage, consuming industries make two adjustments in the use of the raw material. The first involves supply modifications. For rubber, inputs were reduced through recapping, reclamation and oil dilution, while the development of radial ply tires and other innovations increased tire life from 10,000 miles to 50,000 miles. For tin, secondary recovery increased from 18 percent to 33 percent of consumption between 1936 and 1945, largely stimulated by wartime shortages. For industrial diamonds, electrostatic separation processes saved about 10 percent of consumption in 1962 through the recovery of diamonds from old cutters.

Stage II also involves a switch to alternative materials. Tin users switched to containers made of glass and paper, and later switched to laboratory-developed items such as aluminum, plastics and low-corrosion tin-free steels. Diamond users switched to synthesized nitrate and alternative cutting materials, as well as ultrasonic abrasive grinding materials.

Finally, Stage III involves a major R & D breakthrough which permits economizing on the use of the primary material. Examples include the development of the electrolytic-plating process in the early 1940s for tin, or the commercialization of a synthetic as in the case of diamonds in 1955 and rubber in the 1940s.

We draw several implications from our analysis of the raw-material cycle. First, physical exhaustion of a primary raw material does not mean that society will lose the services which the material provided, because the development of substitutes and R & D breakthroughs provide new alternatives. Second, raw-material shortages can impose painful ad-

justments in the short- and medium-run but are not a worrisome prospect in the long-run. Third, R & D provides developed countries with an important substitute for raw-material trade during embargoes, war periods, or cartel restrictions on trade. Fourth, the terms of trade of raw-material suppliers rise in Stage I of the cycle, are constant or declining during Stage II, and probably fall during Stage III. Fifth, world production is centered in the developing countries in Stage I, spreads to other developing countries in Stage II, and spreads into developed countries in Stage III with the increase in production of synthetics. This is exactly the reverse of the movement of new manufactured-goods production described in Vernon's product cycle. Finally, the new synthetic material may start through a Vernon cycle of its own, generating a new raw-material cycle for the item used in the synthetic.

Mineral Trade and Investment Patterns in the Pacific Area

Nickolas M. Switucha

This study reviews the rapid growth of mineral production and trade in fifteen Pacific Rim countries over the past twenty years. It focuses on fourteen ferrous and non-ferrous metals and minerals that are of major economic or technological importance in the world economy.

The study surveys these developments against the background of changing investment policies of resource-producing countries and of a changing international trading environment. It deals with the growing tendency of resource-producing countries to establish producers' and exporters' associations in an attempt to influence international mineral markets.

Concurrently, the study focuses on the growing role of governments in determining national mineral policies and in attempting to influence mineral investment and trade flows. It describes the consuming nations' concerns over long-term security of supply, and the producing nations' desires to increase their export returns by exporting metal and mineral commodities in a higher-processed form. It highlights the interdependence made inevitable by the uneven distribution of mineral resources among Pacific Rim countries.

While the developing countries of the Pacific, as a group, are the dominant source of tin and important producers of copper, nickel, lead, zinc and tungsten, the two industrialized countries of Canada and Australia play a much more significant role and, in most cases, compete for the same markets. Canada and Australia are likely to enhance their roles even further, given their large supply potential for most major minerals and a generally favorable investment climate.

The study emphasizes the importance of the United States and Japan as major consuming nations and as sources of debt or equity investment capital, along with their growing mineral supply dependence and resulting preoccupation with the problems of supply continuity and diversification of sources. These factors will, in the future, be even more important in determining Pacific mineral investment trends and world-wide mineral trade patterns.

Finally, the study notes the constraints on future capital flows into large integrated mining-smelting-refining projects, which are imposed by the higher risk factors arising from higher costs, lower profitability and a more complex investment climate. However, on balance, Pacific Rim countries will continue to play a large role — in some cases the dominant role — in world mineral production and trade.

Resource Trade and the Development Process in Developing Countries

Ross Garnaut

Rapid world industrial growth through the sixties and early seventies, and the concentration of a large part of that growth in Japan, created many new opportunities for the expansion of resource-intensive exports from countries in the Western Pacific region. In response, there was a marked change in the pattern of export specialization of countries in Southeast Asia and Melanesia, and in Australia and New Zealand.

The "rent for surplus" models developed by Caves and others provide a useful framework within which to examine some important aspects of export-led growth of the type experienced by Western Pacific countries in recent years. However, the "rent for surplus" literature draws the conclusion that the process of growth depends on the particular nature of the linkages between an export industry and the domestic economy, without generalizing about these linkages and their effects. We need to examine the relevant linkages in some detail.

The characteristics of minerals and energy industries in the Western Pacific region have made *direct* linkages relatively unimportant. These industries tend to use complex technology, and to require highly sophisticated business organization. They usually require the involvement of foreign enterprise, through direct investment or conceptually similar production sharing arrangements. They are typically highly capital-intensive, using little labor or other inputs that can be supplied domestically in non-industrial economies.

The most important linkages are the indirect effects associated with the receipt of resource rents, especially by the national government. Expanded government revenues loosen the balance of payments and budgetary constraints on domestic expenditure. The amount and distribution of resource rents depend upon fiscal policy, in ways that are discussed in the full paper.

Resource investments can favorably affect the balance of payments, employment, and the sectoral composition of activity in the economy as a whole. These effects depend critically on labor market conditions. Three types of labor market conditions are examined in the paper: the case in which the supply of labor to the modern sector of the economy is infinitely elastic; the case where the supply of labor to the modern sector is elastic but less than infinitely so; and the case where the supply of labor to the modern sector is inelastic. Increased domestic expenditure associated with successful resource investments is likely to force major structural changes in the second and third of these cases. Apart from frictional and structural unemployment of a temporary kind, there will be no increase in unemployment in any of these cases so long as no large increases in institutionally set minimum wages are associated with the strong resources-exporting performance.

The tendency for resource investments to come in waves associated with high levels of world industrial activity creates problems for the efficient use of opportunities for increased domestic expenditure. Fluctuations in the price of resource-intensive commodities also create major macroeconomic problems, which can be reduced but not eliminated through good national economic management.

Ocean Mining in the Pacific Basin: Stimulus and Response

Michael Gorham

Commercial mining for seabed nodules containing at least four industrially important minerals (nickel, copper, cobalt and manganese) will probably begin in the Pacific Ocean in the early 1980's. This paper explores the reasons for the shift from land to ocean mining, the likely international distribution of the benefits and costs resulting from such a shift, and the considerations involved in designing a compromise international agreement covering the allocation of rights to use the ocean as a mineral source.

The existence of seabed nodules of minerals has been known for over a century, but these resources have never been commercially exploited because of the high cost of ocean production, especially when compared to the relatively low cost of producing minerals from relatively abundant land-based ores. However, over the past decade the value of the metals contained in nodules has more than doubled, rising 50 percent more rapidly than either the U.S. wholesale-price index or the I.M.F. index of world-traded goods. At the same time, technology has improved to the point where efficient ocean-mining techniques could be devised, based upon techniques developed by the rapidly growing offshore-oil industry.

Yet while ocean mining has become potentially cheaper, land-based mining has become increasingly expensive, due to dramatic declines in ore quality and accessibility and also to increased infra-structure costs related to the development of more isolated land-based deposits. The convergence of these factors has made ocean mining increasingly more attractive over time. According to one recent survey, the average pre-tax rate of return to ocean mining might be roughly twice the average 27-percent rate of return to U.S. mining companies in 1974-75.

While any resource-saving technological change creates the potential for increasing world output, political considerations involving the distribution of the costs and benefits associated with that change can impede the employment of the new technology. Thus, despite the attractive profitability calculations and the relatively large expenditures of private capital on ocean-mining R&D, commercial seabed mining is now being delayed because of disagreements in the political sphere. The perceived distribution of costs and benefits occurring under the traditional free-access approach to the use of the ocean has created demands for changing that traditional approach, and has led to several years of unsuccessful negotiations in the continuing Law of the Sea Conference.

On the basis of certain assumptions about the magnitude of ocean-mining output (4 to 12 million metric tons of seabed nodules) and the location of ocean-mineral processing (mainly the United States), it does not appear that many countries would suffer from a free-access approach to seabed mining. In those worst-case situations where a single country's exports to the U.S. are totally displaced by seabed production, the following temporary declines in export earnings could be observed: 8 percent for the Dominican Republic and New Caledonia (due to displaced nickel), 8 percent for Peru (due to displaced copper), 6 percent for Gabon (due to displaced manganese) and 4 percent for Zaire (due to displaced cobalt).

While the greatest costs initially would be borne by the developing countries, the benefits would likely be skewed heavily toward

the industrialized countries, since their consumption patterns are considerably more mineral intensive than those of developing countries. A more equal distribution of costs and benefits might be devised, however, with the industrialized countries receiving the bulk of the increased consumer surplus generated by ocean mining, and the developing countries taking (through an international tax) the bulk of the economic rent created. This taxed rent could in turn be used, in part, for compensation to those countries whose export earnings suffer from a decline in their land-based production.

However, a number of theoretical and administrative considerations could impede the implementation of such a compromise. These include: the impact of a tax or rent on output decisions; the harmonization of the ocean-mining tax with other taxes; the inadequacy of a competitive bidding approach to mine-site allocation because of the small number of potential bidders; the influence of the intra-firm pricing behavior of vertically-integrated mining firms on the choice of tax rate; and the higher production costs likely to be incurred by an international agency as opposed to private mining companies.

B. National Case Studies In Natural Resource Problems

Australia: Resource-Rich Developed Country

Ben Smith

Australia's rise to prominence as a minerals producer has been very rapid and really only commenced in the early 1960s. Although mining is dominated by direct foreign investment, this has come mostly from European and American companies. Relatively little has come from Japan, despite the fact that Japan purchases half of Australia's exports of minerals and primary metal. Security for the large investments in new mine developments has been provided by long-term contracts with Japanese customers.Recent accelerated inflation, more frequent exchange-rate changes, and commodity market uncertainties have reduced the security value provided by contracts. While recognizing that long term stability and security in the trade requires that contractual obligations should be interpreted flexibly, the paper suggests that formal contract prices should be set in *real* terms, in order to reduce the need for frequent price renegotiations and in order to set a relatively neutral frame of reference for future price discussions.

Growth in minerals production has created, and will continue to create, pressures on the balance of payments, resolution of which has adverse effects on other traded-goods activities. The contractual nature of the minerals trade whould allow much of the payments pressures to be anticipated and seen in a long-term context. It should be possible for exchange-rate responses to be more rapid than in the past, so that inflationary pressures can be minimised. There is an important need to examine methods of smoothing the resulting structural-adjustment problems, but the emphasis should be on promoting change, with appropriate assistance to those affected adversely, rather than on reducing the pressures for change. There may be some case for "recycling" a portion of external surpluses resulting from mineral export growth if the pressures for structural change cannot be met, or if

future income payable overseas is expected to result in smaller long-term need for adjustment.

The nature of Federal/State relations creates several problems for the management of Australia's resources. In general, there is a need to develop a uniformity of treatment of environmental, infrastructure and taxation issues, which would require substantially more cooperation between the Commonwealth and States than presently exists. Of major importance is the need to develop taxation arrangements which do not distort investment decisions in exploration and mining, but which ensure that the rents from exploitation of mineral resources accrue to the community at large. Such taxation arrangements are particularly desirable given the large share of foreign equity in the Australian minerals industry. The major problem in introducing any Resource Rent Tax arrangement is that the States will be reluctant to surrender their rights to tax minerals exploitation. Although the Commonwealth could introduce such a tax without the consent of the States, the latter could set royalty rates to ensure that the Rent Tax earned no revenue, and this would have severe efficiency effects on the mining industry. Given the general financial powers of the Commonwealth, it is likely that a struggle over resource rents would eventually be won by the Commonwealth, but the disruption could be substantial and the States might well be able to muster sufficient electoral support to redress the situation.

The major problems relating to foreign investment and trade involve setting appropriate taxation arrangements for company profits and ensuring that commodities are exported at "fair and reasonable" prices. In only a few products are there problems in policing transfers within multinational companies, and it is probably sensible to attempt to administer policy on foreign ownership so that control of minerals production does not lie in the hands of the purchasers of the output. The major policy goal in determining prices for arms-length transactions should be to ensure that Australian exporters do not operate in a market framework which places them at a bargaining disadvantage relative to overseas purchasers. Given the consortium purchasing policies of many Japanese consumers, there is a need to bring Australian exporters into a relatively united bargaining stance. However, it is important that this should be done consistently and quietly, and that it should not have the effect (or be perceived to have the effect) of shifting trade bargaining away from the essential commercial framework.

Japan: Resource-Poor Developed Country

Yasuhiro Murota

For a country like Japan that lacks natural resources and possesses a large population, there are three broad options possible in relation to the resource problem: Buying resources from resource rich countries; controlling resources by military power; or having slow, or zero, industrial growth and a steady-state economy.

In the 1930s when the world was divided into separate blocs, Japan chose the second option. However, this rebounded on Japan in the form of complete economic collapse through defeat in World War II.

Postwar, the first option had been adopted. This, under the stable international environment, brought great success and prosperity to Japan. As a result, Japan became an economic giant without an army.

Since the beginning of the 1970s international relations have progressively become more unstable (e.g. the emergence of nationalism in the resource rich-countries).

However, the Japanese Government continues to pursue the first option, at least for the time being.

Examined from a long-term viewpoint, I doubt whether Japan can continue to choose the first option. Taking into account the fact Japan's share in consumption of the world supply of resources is already very high and the international situation is rather unstable, continuation of this policy increases the possibility Japan could be driven into catastrophe. Recognizing the disadvantages that have accompanied economic growth (urban crowding and worker alienation, etc.), it follows that the rationale of pursuing continued growth should be questioned. It should also be recognized resources can be more profitably used by those countries which are beginning to industrialize rather than by a Japan which has already become a wasteful society.

Such negative and altruistic concerns, however, are not the main reason the third option is considered a viable one. Japan already is enjoying the material benefits of an affluent society, and can begin to consider other aspects of "the good life." There is a long aesthetic tradition in Japan's cultural heritage which Westernization and growth have at times submerged, but which continues to exert an influence. The paper does not advocate a renunciation of the benefits of technology and past growth, but rather their integration into a more humanistic scheme, with growth slowing during the remainder of this century to a zero rate in the 21st century. The results of this are considered strong positive reasons for pursuing the third option even if the first option continues to be viable.

The population growth rate of Japan is projected to become zero by the beginning of the 21st century, a factor upon which lower economic growth could be hinged. A policy which can support this low economic growth in terms of resource supply is recycling.

The coming decade can be the turning point for transition from the first to the third option. Therefore, policies on natural resources should be worked out in recognition of this aim.

Chile: Resource-Rich Developing Country

Ernesto Tironi

This paper first analyzes the role of economic policies in maximizing the contribution of natural resources to the growth of less-developed countries. Secondly, it analyzes the pros and cons of a general development strategy based on the intensive exploitation of natural resources, specifically in reference to Chile's experience with copper.

Section 1 briefly describes general problems of natural resource development, and presents the pros and cons of resource-based development strategies. Section 2 describes the characteristics and importance of copper in the Chilean economy. Section 3 analyzes the main copper-mining policies followed in Chile since World War II and the lessons derived from that experience. The major point is that appropriate government policies can support the contribution of natural resources to economic devlopment, whether or not the firms involved are foreign or domestic, private or public. In contrast, *laissez faire* or free-trade policies can barely maximize that contribution, and inadequate policies can considerably reduce it. Finally, section 4 discusses some of the questions raised in connection with the increased exploitation of a natural re-

source (such as copper) and its impact upon the long-run development of a small country (such as Chile).

The main problem a small country encounters with a natural resource-based development strategy is the tendency to end up with a highly unstable and structurally unbalanced economy, very dependent on external conditions outside its control. In that sense, the availability of substantial amounts of natural resources has often been, and still is, a mixed blessing — not because economic development could have been greater without those resources, but because their exploitation may have prevented a more systematic and balanced domestic development effort. A nation's attitude towards work probably is different when it sees that progress is the result of its own productive efforts rather than forces outside its control.

The instability of natural-resource prices in world markets poses very serious problems for developing countries. A strong and continuous development effort is often jeopardized by a sudden fall in export revenues, because the latter finances most investment (in LDCs the export sector is implicitly the capital-goods sector) and provides a large fraction of Government revenues.

The last section of this paper analyzes several proposals designed to cope with the negative effects of export instability. These include external actions aimed at reducing price fluctuations as well as internal policies aimed at compensating for the domestic effects of external price instability.

Korea: Resource-Poor Developing Country

Wontack Hong

Due to a successful export-oriented growth policy, Korea was able to achieve one of the highest growth rates in the world during the 1962-76 period. In the fifties, mineral ores and concentrates accounted for close to half of total commodity exports. With the rapid expansion of manufactured exports, however, mineral exports became insignificant by the seventies. As for imports, non-oil minerals had been unimportant until quite recently, whereas crude oil increased from about 3 percent of total imports in 1964 to 6 percent in 1973 and then, due to the oil crisis, jumped to 18 percent in 1976. Previously, given Korea's stage of industrialization, most of the demand for minerals could be satisfied by direct imports of processed mineral products. Ferrous, nonferrous and nonmetallic mineral products amounted to around 5 percent of total commodity imports during 1953-61 and around 10 percent thereafter.

Since the Fourth Five-Year Plan (1977-81) emphasizes structural changes in output and export patterns towards so-called heavy and chemical industries — all relatively heavy users of minerals — total demand for minerals is expected to grow more rapidly than before. Furthermore, since the domestic supply is rather limited, the import demand for minerals should grow fairly rapidly. Of the $14-billion projected total of commodity imports in 1981 (in 1975 prices), crude oil should account for $2.5 billion and other minerals for $1.4 billion. The latter would include about $0.8 billion in mineral inputs for the steel industry, and about $0.6 billion in phosphate, asbestos, sulphur, copper ore, manganese ore, titanium ore and tin ore, plus copper, aluminum, zinc and nickel scrap.

Korea was able to surmount the 1974 oil crisis with a 10-percent growth rate of real GNP and a 20-percent growth rate of real

commodity exports over the following two years. A resource-poor developing country like Korea, which has to depend heavily on imported raw materials for its own consumption and export production, can survive and even prosper if it continues to adapt quickly to changing circumstances, for example, by shifting inflation in imported raw-material prices to its export prices. But in view of the steadily increasing share of minerals in total commodity imports, which is expected to increase to 30 percent by 1981, it may become more difficult for the Korean economy to adapt to another round of drastic oil and mineral price increases. However, if resource-rich countries like the United States, Canada and Australia avoid trade policies which exploit the resource-poor developing countries, and if these and other advanced countries refrain from ultra-protectionist policies, there would not appear to be an imminent danger for the South Korean economy — other than the ever-present threat of invasion from the North.

C. Political Economy of Mineral Resources: Policy Alternatives

The Wider Context of Bilateral Resource Exploitation: Arrangements Between the LDCs and DCs

Miguel Wionczek

This paper reaches the following conclusions:

a) There is no growing global scarcity of mineral resources;
b) The problem of access to LDC mineral resources can be meaningfully discussed only in terms of changing conditions of access and not of free unconditional access;
c) Developing countries' views regarding the future use of LDC mineral resources do not conflict with the needs of an expanding international economy, and the proposals contained in the agenda of the "new international economic order" are hardly revolutionary;
d) The contractual relations between most LDC resource-holders and DC resource-users changed substantially over the past twenty years, and these changes began long before the LDCs coined the concept of the "new international economic order" in 1974.

Future bilateral resource arrangements will be the result of a continuous process of mutual adjustments interwoven with momentary conflicts of interest. These conflicts will not degenerate into a 'resource war' unless, of course, the world economy drifts into another crisis similar to that of the thirties.

It is quite probable that major changes will take place at *both* ends of the large spectrum of interrelated activities of LDC resource holders and DC resource users. At one end of the spectrum, exploration activities may become completely divorced from the exploitation-processing-marketing sequence. Also, LDCs may demand an increased degree of local processing. Finally, LDCs may exert increas-

ingly strong pressures to enter as partners into marketing activities and to buy into downstream operations whenever the resources trade does not take place under arms-length conditions. In the first instance, the LDCs' objective is to increase their share of profits by utilizing information about pricing arrangements and practices at the free end of the market. In the second case, LDCs attempt to participate in profits arising from the transfer-pricing process — an objective which is practically unattainable through fiscal measures.

Apart from any financial arrangements incorporated in future bilateral resource agreements, problems may arise involving the acquisition and pricing of technology, either when standing alone or when tied to foreign investment.

In the light of all these considerations, future bilateral resource contracts should contain clear, unequivocal and fairly detailed review clauses, permitting periodic adjustments which reflect changing conditions in natural-resource industries.

Commodity Trade from a North-South Perspective

Jose Piñera

Trade in commodities can be conducted under different "rules of the game" — or trade regimes — which will accomplish, in varying degrees, such goals of international order as efficiency, income redistribution, stability and economic security. In this paper, I trace out the consequences, in terms of these goals, of some broad categories of commodity-trade arrangements.

Both cartels and redistributive commodity agreements aim to transfer real resources from inporting to exporting nations through monopolistic pricing of primary commodities. They differ in that a cartel involves an attempt by exporting countries to implement such schemes unilaterally, while a redistributive commodity agreement requires importing countries to collaborate with exporters in devising and implementing price-raising schemes.

A cartel regime may generate, especially in the short run, substantial resource transfers to Southern commodity-exporting nations. However, it may also cause large transfers from poor Southern importing nations to richer exporters. In a well-designed price-raising cartel, world efficiency costs may not be very large in view of the short-run inelasticities of the system. The real threat is the escalation of the conflict through retaliation especially if it expands beyond the commodity arena. Such a confrontation scenario heightens instability and does not fulfill the goal of economic security. Decoupling strategies will be too costly and will lead to further fragmentation of the world.

I distinguish between redistributive commodity agreements devised primarily to transfer real resources from DC importers to LDC exporters, and stabilization agreements designed only to smooth short-run price fluctuations around the long-run trend. Redistributive commodity agreements involve an attempt by exporting and importing countries to compromise on a price between the optimum monopolistic price and the competitive long-run marginal cost price, but they are extremely difficult to operate in an efficient way. Moreover, they are highly imperfect substitutes for direct lump-sum transfers by the North, while requiring the same political will for the redistribution of income.

Commodity markets normally are subject to wide price fluctuations as a result of large

shifts in both demand and supply, given the low short-run elasticities involved. Private arbitrage and speculation are unable to reduce these price fluctuations to an acceptable degree. Price fluctuations originating in demand shifts — a common case in minerals — destabilize the export earnings of those Southern countries which are heavily dependent on commodity exports, and significantly impede the orderly development of their economies.

Stabilization commodity agreements may reduce this price instability through the utilization of buffer stocks or other means. Earnings stabilization is a useful approach since it is costless from a global perspective. The redistributive and stabilization features of agreements should be kept clearly separate to improve the chances for successful agreements. Generalized commodity agreements may lead to a highly visible — and possibly political — manipulation of markets, with negative consequences on sovereignty.

Exporting countries tend to restrict exports as part of their price-raising efforts, on the assumption that the original prices were in fact competitive. But there is an important (yet almost ignored) situation where both higher producer prices and higher exports are possible because the original prices were below competitive levels. In fact, the present free-trade regime exhibits major departures from the competitive free-market norm, and thus tends to bias the terms of trade against Southern exports. Oligopolistic, vertically-integrated transnational firms that operate in commodity markets tend to depress the prices received by producing nations in order to capture oligopolistic rents. Information technology also allows these firms to capture quasi-rents in the marketing and distribution processes. Transfer pricing practices, by permitting tax avoidance, exacerbate the losses to exporting countries. Moreover, some governments of importing countries exercise monopsony power by imposing import and excise taxes on commodities with inelastic demand schedules, thus increasing the prices paid by consumers and lowering those received by producers. So the present regime is not neutral with regard to the competitive solution, but entails redistributive transfers from Southern exporters to Northern importing nations.

Improvements can be made along the following lines: a) eliminating non-tariff barriers to commodity trade imposed by governments of importing countries; b) utilizing the funds obtained through the DCs' import taxes on commodities for transfers to LDCs through multilateral institutions; c) strengthening private buffer activity through organized futures trading, although with greater use of long-term contracts; d) improving and enlarging financial schemes for earnings stabilization; e) eliminating barriers (such as escalating tariffs) which impede exports of processed raw materials.

Commodity trade should be conducted in competitive markets, but I believe that such a system cannot be reached without a more symmetrical structure of market power. An asymmetrical situation now exists between the few multinationals and the fragmented exporting countries, so a prerequisite for change may be the creation of producer associations that would increase the exporters' bargaining power. A new commodity trade regime should also provide for guaranteed DC access to supplies, and guaranteed LDC access to the markets of DCs for their manufactured exports.

In short, I propose a movement toward more competitive markets through better-balanced bargaining power between North and South, meaningful earnings-stabilization schemes, modest international intervention to stabilize prices, and new rules to heighten economic security. But to be acceptable to Southern countries, this commodity regime should include a substantial increase in the volume of lump-sum transfers from rich to poor nations, perhaps in the form of a progressive international income tax.

The South cannot impose its goal of a more equitable world order on the North. The South's producer power is asymmetrical: it can damage the North substantially in the

short run through interruptions to supply, but it cannot unilaterally obtain a superior position for itself in the long run. This situation, where the threat is stronger than the execution, creates a scenario more suited to negotiation than to confrontation. Whatever power Southern nations may harness from their control of natural resources should be employed to bring about a more equitable international economic order.

Japan's Resource Security and Foreign Investment in the Pacific

Kiyoshi Kojima

This paper concludes that Japan's resource security is built around an approach which combines development contracts with long-term sales contracts. Despite the widespread belief that Japan was forced to adopt this approach because she lacked capital and was a latecomer in buying and developing resources, it is a uniquely appropriate method for resource security in the new international political environment. In this respect, it is much better than the method of captive development and vertical integration utilized by the European and American multi-national firms.

The merits of the Japanese approach are illustrated by the successful case of iron-ore trade between Japan and Australia. This method provides assurances for meeting lumpy, large increases in Japanese demand, and also encourages large-scale development of Australian mineral resources. As a result, producer and buyer can share in the huge economies of scale obtained in production, transportation, and other transaction costs. This method of development satisfies the resource nationalism of the host country, for Japan's main interests are not in ownership and profits in upstream operations, but rather in the importing of products at a reasonable price.

However, in order to achieve resource security for Japan and the entire Pacific Area, Japan should respect the role of the resource-holding countries, and at the same time, recognize the important virtues of the international joint-venture approach, based on American multinationals' capital, technology, and vigorous entrepreneurship, and on Japanese equity participation as well as discontinuous sharp increases in demand. Cooperation of all concerned is indispensable. In fact, a cooperative relationship such as this ought to be extended to Latin America also.

The Japanese approach of long-term import contracts creates a "dominant buyer-major suppliers" relationship. In other words, each supplier sends Japan more than 50 percent of the total amount it exports of each product, but Japan diversifies over three-fourths of her imports among three or four sources of supply, in such minerals as iron ore, coking coal, copper, nickel, bauxite, lead, zinc, manganese and cromium. (This is not true, however, in the case of refined metals.) This type of relationship gives Japan a favorable bargaining position in negotiating contract prices, and at the same time contributes to the stabilization of world prices of resources because of the institution of fixed contract prices and buffer stocks.

The best way for Japan and other advanced Pacific countries to secure important mineral resources in the years ahead is to extend the combined approach of development contracts and long-term sales contracts throughout the Pacific region. We investigated the means utilized in 1973 by the five Pacific advanced countries, especially Japan and the U.S.A., to obtain mineral ores and products. We showed

that, given appropriate cooperation among the nations concerned, more than 90 percent of required resources would be available from the Pacific region — except oil, which involves a different approach to security of supply. For this reason, the establishment of some group such as the Organization for Pacific Trade, Aid and Development (OPTAD) is highly desirable.

International Commodity Control — The Tin Experience

Mohamed K.M. Ariff

So far, eight international tin agreements — four in the pre-war period and four in the post-war era — have run their full course. The present agreement, the ninth in the series, has been provisionally in force since July 1, 1976.

International tin control, which has historically been considered a weapon against "burdensome surpluses," has now assumed a price-stabilizing role, relying on export-control and buffer-stock operations. Despite equal consumer representation in the International Tin Council (ITC), there is evidence of built-in bias in favor of producers.

The two basic criteria against which the performance of international commodity agreements may be gauged are the size of surplus tin supplies and the degree of price stability. Judged by the first criterion, international tin agreements appear to have been fairly successful in dealing with surplus situations. Based on the stability criterion, however, the performance of these agreements has not been very impressive. The agreements have been unable to maintain prices within the official price range, but the impact has been rather asymmetrical because price ceilings could not be defended as effectively as price floors. In fact, ITC has passively reacted to rising prices by adjusting the official price range upward to follow market prices. Ironically, international tin control has tended to destabilize output, employment and export proceeds, mainly because of quota variations under export controls.

The main objection to the quantitative-control approach is that it entails disruptive adjustments in productive capacity, and accordingly appears to be a less desirable device than the buffer-stock mechanism, which tends to react quickly to market changes without interfering too much with the market mechanism. However, considerable skepticism exists concerning the buffer-stock approach, because of its inability to protect the price ceiling and its tendency to create results like a profit-maximizing pure speculator. This probably explains why consuming nations have been reluctant to make sizeable contributions to tin buffer stocks.

Consuming countries might be more willing to contribute to the buffer stock if its structure could be changed to eliminate "producer-bias", which in practical terms means an assurance that the price ceiling will be defended as well as the price floor. A radical measure would be to set up twin buffer stocks within the international tin agreement, one for consumers and one for producers, subject of course to coordination and supervision by the ITC.

International commodity control apparently is not the best means of transferring resources from rich consuming countries to poor producing countries. Commodity control might be more effective if its traditional price-stabilizing objective were pursued through the elimination of short-term fluctuations than through attempts at price support in the form of implicit subsidies.

An Organization for Pacific Trade, Aid and Development: Regional Arrangements for the Resource Trade

Peter Drysdale

The Organization for Pacific Trade Aid and Development had its genesis in the debate over the desirability of creating a Pacific free-trade area, which was originally raised at the First Pacific Trade and Development Conference in 1968. Trade in resources typifies the high degree of economic interdependence obtained among Pacific countries. Those countries draw over 90 percent of their basic mineral supplies, apart from oil, from the Pacific region, with the Pacific Five (Australia, Japan, Canada, the United States and New Zealand) accounting for over 50 percent of the total. For non-oil energy materials, such as coal and uranium, the Pacific focus is strong. And significantly, Japan's resource-policy interests are heavily directed towards the Pacific.

This paper suggests that the establishment of an Organization for Pacific Trade Aid and Development (OPTAD) could help provide the framework for broadening and strengthening Asian-Pacific economic cooperation. Priority must be assigned to those initiatives which would help secure the interests of both consumers and suppliers in the resource trade.

The creation of OPTAD would not imply the need for any new and elaborate institutional arrangements. Rather, it would simply provide an ongoing framework and point of reference for handling Pacific economic relationships.

In the field of trade, OPTAD could play a helpful role in several areas. The first relates to the issue of access to markets for producers and security of supplies for consumers. The second relates to the special problems of the security of energy supplies, with economic and strategic questions being interwoven in a complex and special way. The third relates to the terms upon which Pacific resource development can take place, in both developing countries and developed countries. (Developing countries encounter problems both in the structure of concessional financial flows and in the impact of private capital-market imperfections on supply availabilities.) The fourth point relates to the instability of earnings associated with the resource trade. The fifth point relates to the means of bringing about policy change, to reduce those market imperfections which prevent the efficient relocation of processing activities.

The paper sets out the following agenda:

1. Energy security — consultation on energy policy issues by the Pacific Five in the form of an Energy Consultative Group;
2. Resource security — access to markets and raw materials under stable long-term arrangements;
3. Resource development — untying of development finance, under arrangements with individual states or with groups like the ASEAN group, and improved access to capital markets through the establishment of a Pacific Resources Bank (or Association of Bankers);
4. Commodity market stabilization — introduction of an arrangement to insulate against variable export earnings in developing countries.
5. Trade re-structuring — promotion of resource- and energy-saving industrial relocation, through such crucial means as the development of a foreign-investment code that would encourage non-bilateral investment ties.