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INVESTMENT PROMOTION AND FINANCING  
OF MINING IN LATIN AMERICA ★/

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## INVESTMENT PROMOTION AND FINANCING

### OF MINING IN LATIN AMERICA <sup>1/</sup>

#### I. INTRODUCTION

Latin America is one of the world's largest producers of major commercial minerals and contains a substantial portion of related reserves. This includes widely used base metals such as iron ore, bauxite, copper, lead, zinc and tin; several ferroalloy elements such as niobium, tantalum, molybdenum, tungsten, manganese and nickel; precious metals such as silver and, to a lesser extent, gold; and various industrial metals such as strontium, bismuth, arsenic, antimony, rhenium, beryllium, as well as indium, tellurium, yttrium, selenium, cadmium and lithium. In the field of non-metallic minerals, the region shows a favorable position with respect to the production and reserves of a broad range of substances used in all productive sectors. They refer to quartz, iodine, fluorspar, sodium sulfate, graphite, barite and also boron, sulfur, feldspar, lime, gypsum and mica, among others.

Although mining accounts for less than 2 per cent of Latin America's GDP, its share is much higher in several countries and ranges

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<sup>1/</sup> This paper deals essentially with non-fuel minerals, excluding common building materials. However, much of its contents apply to the rest of the mining sector as well.

between 5 and 10 per cent in Bolivia, Chile, Guyana, Jamaica, Peru and Suriname. Brazil and Mexico also have a large mineral production, but it represents only a small part of their sizeable economies. The contribution of the mining sector to the regional balance of payment is striking; it generates about 20 per cent of overall foreign exchange earnings from merchandise exports, and an even higher proportion (40-80 per cent) in the traditional mining countries and in some bauxite producing countries of the Caribbean. Lastly, mining activities are an important source of tax revenue and can also facilitate the development of isolated areas through the provision of related infrastructure.

In view of these facts, the performance of the mining sector in the region is a matter of serious concern. Its growth rate has slowed steadily, from an annual average of 6 per cent in the 1960's to about 3 per cent in the 1970's and only 1.5 per cent in the past four years (see Table 1). Its share in GDP has fallen as a result. This trend has been accompanied by a decline in investment, especially from foreign sources.

The depressive conditions prevailing in the sector can be attributed, in some measure, to the uncertainties generated by the shifting patterns of mineral development and to various shortcomings in mining legislation and policies. What they reflect above all, though, are escalating costs of mining projects, higher interest rates and considerably weakened world mineral markets since 1974. The impact of these factors undoubtedly has been accentuated since 1981, due to the economic recession and external debt crisis of the countries of the region.

Given the economic recovery underway in the world, increased efforts should be devoted to reviving the Latin American mining industry, so that it can make an effective contribution to the reactivation of the regional economy and the process of adjustment of the latter to the internal and external constraints affecting its future development. In this context, recent investment trends and their implications are reviewed briefly below, after which there is an assessment of medium term investment needs and priorities. Investment promotion policies are then discussed followed by a consideration of possible sources and methods of financing.

## II. Mining Investment Trends

The availability of aggregate data on capital formation and capital expenditure in the mining sector of the various countries is very scant. It is known, though, that the large state mining enterprises and large private foreign or mixed mining companies operating in the sector account for the bulk of investment expenditures. Among the state mining enterprises, even those with greater financial strength (CVRD, CODELCO, CENTROMIN) have had to postpone or stretch out various of their planned investments, which also is true of the foreign companies. This has been due to lower profits, the increasing cost and difficulties of raising external funds, the cloudy outlook for mineral prices and, in the case of the state mining enterprises in particular, the high external indebtedness of the countries themselves.

Actually, very few large mining projects have been undertaken in the region since the mid-1970's, with the exception of the Carajas complex now under construction in Brazil and the El Indio (gold and copper) and Cerro Matoso (nickel) mines in Chile and Colombia, respectively. The huge Carajas project (iron ore, copper, manganese, aluminum, nickel, gold and tin), with an initial cost of some \$20 billion, has been rescaled on a more modest basis. Broadly speaking, it can be said that not only has investment in large-scale state and private mining declined in the last years, but that such investment as has been made, has been allocated mainly to the modernization of equipment and processes and small additions to mining and processing capacity. Indeed, there seems at present to be a significant underutilization of mining capacity in the region for iron ore, copper, tin and nickel.

A review of foreign investment from the United States (which predominates in the mining sector) provides a quantitative illustration of the trends indicated above. As can be seen from Table 2, the book value of United States direct investment in Latin American mining and smelting increased from \$1,155 million to \$2,071 million from 1960 to 1970, that is by 79 per cent, but fell to \$1,695 in 1980, which corresponds to a decrease of 21 per cent. Although the book value of investment had regained its 1970 level by 1983, this was probably the result of difficulties encountered in repatriating funds. It is also notable that capital expenditures of United States foreign subsidiaries in the region's mining and smelting operations declined from an average level of approximately \$200 million annually during the period 1966-1974



to \$175 million during 1975-1979, and have remained more or less the same from 1980 to 1983. Given that the figures cited are in current dollars, these reductions were significantly larger in real terms.

Even more importantly, both the stock and flow data on investment show a certain shift from Latin America and other developing countries to the developed countries over the period 1970-1983. This movement despite its possible reversal in 1984, is disturbing, since it implies that a number of obstacles or drawbacks that can offset the strong competitive advantages of the region's mining sector may still be present.

The declining investment trends in mining are a constraining factor for the mineral-rich countries of Latin America that are looking to an expanding mining sector to support their economic reactivation and development programs. At the same time, there is a risk that production capacity may be inadequate to meet increased demand when the recovery of the regional and world economy gets into full swing, given the long lead times of mining projects. In this respect, before considering investment possibilities, it might be useful to discuss further two major factors that may have contributed to discourage mining investment in the region: the perception of high risks and market uncertainties.

Mineral investment and development patterns have undergone radical changes in Latin America in the past decades. The almost complete dominance of foreign mining companies over the ownership, financing and management of the mines has given way to an active participation and

increasing control by the countries of the region. This process has materialized through the "unbundling" of the projects and the utilization of know-how from independent sources. It has also been facilitated by the escalating costs of the projects, the growing use of debt capital and the emergence of the eurodollar market.

The changes that took place included increased taxation, the separation of exploration and production rights, the renegotiation of contracts, and the nationalization of mining properties. The increased perceptions of risk arising from these changes may have contributed to a shift in the allocation of investment funds, inasmuch as the multinational mining companies attempted to expand their operations in the industrialized mining countries, particularly in Australia, Canada, the United States, Ireland and South Africa. However, the investment climate has improved substantially in Latin America, and more flexible conditions are also available for foreign investments. A number of investment methods and arrangements are being used nowadays, especially in the traditional mining countries (direct concessions, joint-ventures, production sharing, service contracts, etc.), which can accommodate the various objectives of all participants. In contrast, it is interesting to note that investment terms in the developed countries have hardened, owing to higher taxes and pollution control requirements.

The uncertainties regarding future world market conditions for the major minerals produced in the region raises a more complicated issue. Since the 1975 oil crisis and the ensuing slow-down of the international economy, the consumption of these commodities has dropped sharply. For

example, with respect to historical growth rates <sup>2/</sup>, the annual rates of increase of consumption during the period 1974-1983 have decreased from 7 per cent to 1 per cent for aluminum; from 4 per cent to 1 per cent for copper; from 1 per cent to -1 per cent (negative) for nickel; and from 6 per cent to -2 per cent (negative) for tin. The same trends can be observed in the case of iron and various ferroalloys. Moreover, the recovery in progress in the United States and Japan since last year has elicited only a weak response from the mineral markets and prices.

Although this situation is certainly the result, to a large degree, of temporary economic conditions, namely the severity of the recession, bulging inventories and the lack of buoyancy of the European economies, some structural factors with far-reaching implications seem to be at work. The highly developed countries appear to be experimenting a "saturation effect" in terms of per capital metal consumption.<sup>3/</sup> The latter is due mainly to lower infrastructure and other construction needs, and to the recycling of materials. This trend has not been counterbalanced by the more rapid expansion of consumption in the less developed countries, owing to their relatively small weight. The demand for a number of metals has also been affected by a strong process of substitution, not only among metals but also between them and abundant

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<sup>2/</sup> Using as a base period the 1950's or 1960's up to the mid-1970's.

<sup>3/</sup> The Japanese Iron and Steel Institute estimates this level of saturation for steel consumption to be around 5 tons per capita. This is already being approached in the United States, Japan and many countries of Western Europe.

non-metallic minerals, synthetic materials and renewable resources. In addition, there are cases of increasing elimination or reductions in the use of certain minerals in various products and processes, which may or may not be offset by the development of new uses. In a way, this is a special form of substitution of capital and technology for materials. The combined effects of all these forces has brought about a significant reduction in the use intensity of several minerals. <sup>4/</sup>

For these reasons although the demand for the principal minerals of the region (iron ore, aluminum, copper, lead, zinc, tin and nickel) can be expected to pick up as the world economy recovers more fully, it will probably grow at a much slower pace than previously. This new reality has strong implications for the mining sector's investment priorities and financing prospects.

### III. Investment Needs and Priorities

Capital costs for mineral development (exploration, mine development, mining and processing) differ markedly, depending upon geological conditions, the type of minerals, the deposits' shape and location, the nature and size of the operations and other variables. In this regard, the Latin American mining sector covers a wide spectrum that includes numerous metallic and non metallic substances, underground

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<sup>4/</sup> For example, the overall use intensity of copper (tons used per \$ million of gross product) in the world fell by 30 per cent between 1960 and 1983.

and surface works and operations ranging from artisan mining to large, highly mechanized mines.

For the major commodities of interest to the region, estimates made in various countries during the 1970's <sup>5/</sup> show that the typical costs per ton of capacity (including mining, smelting and refining) were about \$2,200 for lead, \$2,700 for zinc, \$10,900 for copper and \$31,000 for nickel, all expressed in 1983 dollars. For iron ore, mining capacity costs were about \$350 per ton. For bauxite, alumina and aluminum, the respective costs were about \$160, \$940 and \$3,700 per ton. These figures refer to new capacity, the cost of expanding existing facilities being generally lower by 25-40 per cent.

It can be safely assumed that actual costs are now even higher than those indicated because of the trend towards larger scales of operation and higher expenditures for infrastructure. Moreover, the financial costs accumulating between the start of construction and the sale of output have increased as higher interest rates have raised even further the cost of the projects. As a result, it is not at all difficult to find several mining ventures in the region that have investment requirements on the order of \$200-500 million and, in some instances, even more than \$1 billion, with large import components.

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<sup>5/</sup> Marian Radetzki and Stephen Zorn. The Financing of Mining Projects in Developing Countries, 1979.

According to a study prepared by the Inter-American Development Bank in 1980<sup>6/</sup>, investment requirements for non-fuel minerals in Latin America during the current decade could total some \$3.6 billion annually, at 1983 prices. Approximately 70 per cent of such an amount would consist of foreign exchange costs and would be expected to come from abroad. These estimates were based on projections of world consumption of the major minerals derived from expected growth rates of GDP in the OECD countries; additional production capacity needed world-wide; the probable share of Latin America in that expansion; and relevant capacity costs. It should be pointed out, however, that actual investment needs will probably be significantly below the sums indicated. The reason is that the growth of the world economy is likely to be lower than anticipated.

The review of a recent listing of major mining projects under implementation or in the pipeline world-wide <sup>7/</sup> reveals that investments committed and budgeted in Latin America for the period 1983-1989 amount to approximately \$25 billion. This total excludes the large Carajas project but includes others under construction for which funds have already been expended. Because of that, it does not truly reflect the sector's investment needs. Nonetheless, it may be useful to note that investment plans for new projects scheduled to be started between 1983

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<sup>6/</sup> IDB. Investment and Financing Requirements for Energy and Minerals in Latin America, 1981.

<sup>7/</sup> Engineering and Mining Journal, Survey of Mine and Plant Expansion, 1983.

and 1989 represent about \$14 billion, not counting some \$4 billion for postponed projects that could materialize should market conditions improve.

Although the magnitude of the investments needs that can reasonably be expected does not appear to be inordinate, a careful review of mineral development priorities is called for, in view of the current economic and financial crisis of the region and the uncertainties concerning the world market. The priorities will vary among countries, of course, but some basic criteria can be indicated.

In general, the relatively more developed countries that consume large amounts of mineral commodities and even have significant imports of the latter should continue to allocate investment resources to increase their mining and metallurgical capacity and meet domestic market needs. On the other hand, the smaller and relatively less developed countries that are not mineral exporters should focus investment efforts on improving the operational efficiency and productivity of their mining activities, in order to strengthen their competitive advantage. Moreover, processing capacity and levels should be increased to produce larger value added and foreign exchange earnings.

In all instances, the project selected should show high economic and financial rates of return, on the basis of realistic market appraisals. In addition, it would be desirable to give preference to

projects for the expansion of existing mining and processing facilities because of their lower investment costs and shorter pay-back periods.

Latin America also needs to diversify its mineral production, which shows an impressive degree of concentration, given its large and diverse resource endowment. In the field of metals, just eight commodities account for the bulk of the region's mineral output, which, in turn, is highly specialized at the country level. This situation contributes to both to the vulnerability of the mining sector to market fluctuations and to higher investment risks as well. In many cases, there are good opportunities for diversification on the basis of high-grade, medium-size deposits containing polymetallic minerals and precious metals. Moreover, efforts should be made to promote the exploitation for the domestic market and for export of the wide array of non-metallic minerals which are found in abundance in the region. These products have a large number of uses in agriculture, mining itself, metallurgy, the chemical industry and other productive activities.

At the same time, the development of medium-scale mining should be actively encouraged. This subsector tends to have a lower capital intensity and can facilitate mineral diversification, while making an efficient use of investment resources. It also can help achieve a better integration of the mining sector with the rest of the national economy and contribute substantially to the expansion of technical and managerial skills.



With respect to investments of a general nature, support for exploration, geological and mining studies, technological research and infrastructure should be geared more selectively to the priorities indicated. However, basic geological surveys and resource assessments should continue to be carried out. Lastly, technical and professional training in the fields of geology, mining, metallurgy and mining project management should be strengthened.

#### IV. Investment Promotion Policies

The basic conditions and measures that can stimulate mining investment cover a broad field, including general economic policies, sector-specific policies, the legal and institutional framework, direct incentives to domestic and foreign investment and trade and cooperation arrangements. Some selected topics (not dealt with elsewhere in the meeting's program) are discussed briefly below. They are grouped under three headings: general promotion measures, special measures to promote foreign investment, and special measures to promote medium- and small-scale mining. Because of the very nature of the subject matter, these measures refer essentially to private investment.

##### A. General Promotion Measures

###### 1) Geological and Mining Information

Adequate availability of information concerning a country's mineral resources is a fundamental requirement to attract investments in the

mining sector. In this regard, knowledge about the mineral potential of Latin America is incipient and only small parts of its territory have been thoroughly explored. Moreover, existing data tend to be of uneven quality, scattered, not easily accessible and not very reliable. Most of the countries possess basic geological maps on scales of 1:5,000,000 and 1:1,000,000. There has been also progress, especially in the mining-oriented countries, in the identification of major deposits and the preparation of related metallogenic maps.

To encourage mining investments, public funds must be allocated to increase regional exploration by means of traditional geophysical and geochemical methods, new techniques such as airborne geophysics and remote sensing using radar and satellite images, and the reinterpretation of some geological phenomena. The detailed study of the anomalies and prospects detected, that of known deposits, and the preparation of detailed maps are also important. Such activities should be part of a continuous process including the establishment of a well-organized geological and mining data bank, together with the regular updating and dissemination of information, to facilitate the generation of projects.

These activities might be sufficient to create investor interest, particularly in the countries with mining experience. Should commercial possibilities exist, the investors could be expected to undertake the detailed exploration work and feasibility studies required. However, it will be necessary, in many cases, for the appropriate Government agencies to formulate specific projects and, afterwards, invite

investment through promotion and competitive bidding. The objective of these additional steps would be to convert mining prospects or deposits into concrete investment opportunities that can provide reasonable profit expectations to potential investors and become bankable projects.

The tasks involved usually include the proving up of minimum reserves and the preliminary evaluation of mining and metallurgical methods (or other forms of processing), marketing and related project infrastructure. Because of cost considerations, the degree of detail in defining such projects should not exceed that which is required to support the initial investment decision. The promotion and competitive bidding process should be directed at the widest audience possible, both in the country and abroad, in order to enhance the chances of success and the bargaining power of the host country.

## 2) The Legal Framework

Another basic requirement for stimulating the flow of investment into the mining sector is legislation adequate for its needs. The legal framework for mining encompasses a vast body of laws and regulations dealing with general tax, foreign exchange, trade, credit and labor matters, among others, and special provisions regarding investment and export promotion, foreign investment and state enterprises. It includes, more specifically, the mining statutes or codes that govern the ownership of mineral resources, the conditions for their exploration and exploitation, the related rights and obligations, the regulation of mining activities and other aspects. It also include the special

mineral development agreements typically negotiated with foreign investors. Given the complexity of this field, only a few comments will be made on the most relevant issues.

Although mining laws depend upon the objectives and the political and economic system of the country in question, they must establish a set of relationships between the State and the investors that create enough confidence for investment and allow profitable operations. This requires taking into account the special characteristics of mining, defining precisely the respective rights and obligations, providing secure and stable legal conditions and establishing clear and expeditious procedures.

For example, irrespective of the method of granting exploration or exploitation rights, access to them should be as wide as possible. This implies reducing to a minimum the substances, deposits or areas reserved for the Government and for state mining companies, or not eligible for foreign investment. Likewise, it is obvious that exploration rights should be exclusive and that the holder of such rights, if he makes a discovery, should be automatically allowed to secure the related production rights under preset conditions. Moreover, the investor should be able to maintain his rights if he fulfills the prescribed obligations. They usually include the requirement that a minimum amount of investment be made or amount of exploration or mining work be carried out.

3) The Tax System

Mining taxation tends to rely mainly on royalties and other direct or indirect charges on production such as export taxes, differential exchange rates and others. As is well known, production taxes tend to discourage mining investment, inasmuch as they increase project risks at the initial stages and make the exploitation of moderate and low-grade deposits less attractive. For that reason, the most desirable tax instrument would be the income tax. Yet, it is little used in practice because of problems in defining production costs and, in some instances, the relevant market prices. As an alternative, windfall profits taxes used appropriately in combination with lower production taxes could represent an interesting solution. Various fiscal incentives can also be employed to spur investment, such as tax holidays and accelerated depreciation. Unfortunately, they may sometimes also encourage the adoption of undesirable mining methods (high-grading). The taxation of foreign investment raises additional issues, some of which will be mentioned latter.

To summarize, mining taxation should recognize the high risks, long gestation periods and cyclical nature of mining activities, as well as the depletable character of the deposits, so that the investor can recover his investment and make a profit. In addition, it should also take into account the impact of taxes on the efficiency of mining operations and public revenues.

4) The Institutional Framework

The improvement of institutional capabilities should not be forgotten among the basic measures to facilitate mining investment. The efficiency of mining institutions should be increased in order to provide all the support services required by the process of investment. This calls for the appropriate structuring of the institutional framework, definition of the functions of the various agencies and coordination of their activities, together with the provision of adequate personnel and budgetary resources.

Institutional arrangements vary from country to country, but the role of the Ministry of Mines deserve attention in regard to each of the following: policy formulation; the definition and application of laws and regulations; the promotion of projects; the review and negotiation investment proposals; and the overall coordination of public sector activities. The activities of the Geological and Mining Services are also important in the areas of mineral resources studies, evaluation of deposits and collection and dissemination of information. The institutes carrying out mining metallurgical and technological research and the technical and professional training institutions both provide valuable support services. The development banks and specialized mining credit agencies foster mining investment directly by helping to identify projects, prepare feasibility studies and also by making technical and financial assistance available. Lastly, in the private sector, the mining chambers of commerce and trade associations should be mentioned

on account of their involvement in promoting mining activities and providing information to their affiliates.

B. Special Measures to Promote Foreign Investment

Foreign investment plays a critical function in the development of the mining sector in Latin America, especially in large-scale operations, because of its ability to provide risk capital and mobilize the additional funds required, its contribution of know-how and skills and its access to the international marketing networks. Moreover, through the participation of foreign investment, not only can a broader diversification of risk be achieved, but also scarce public resources can be freed and allocated to other urgent economic and social development needs.

The foreign mining investor is typically a multinational company interested in large projects which can yield an acceptable return over a long enough period to justify the investment and attendant risks. At the same time, these projects are usually of national importance to the host countries. As a consequence, foreign investments are frequently subject to a specific legal regime that adjusts the key variables (investment schedule, management control, taxes, economic development obligations) to the particular characteristics of the project and the investors. This type of arrangement may take any of several forms, notably concession contracts, joint-ventures agreements and operation or service contracts. The latter have not been used for non fuel minerals in the region.

By and large, the principal requirements of foreign investors in relation to their participation in such schemes are:

- 1) An equity interest in the project and control over decisions concerning investment, financing, production, procurement, marketing, depreciation and profit distribution.
- 2) The inclusion in the investment agreements or joint-venture company by-laws of provisions giving the investor an effective control over business decisions (veto rights in the board of directors, appointment of the general manager, etc.), should the host country legislation require majority state ownership.
- 3) Stable tax provision which permit the recovery of investment over the contract period and also take into account the tax system in the investor's home country.
- 4) Foreign exchange provisions which ensure the repatriation of funds and, if necessary, authorize arrangements to open trust accounts abroad for that purpose.
- 5) Exemption from import and export controls.
- 6) Assurances against expropriation, including "creeping expropriation", and against forced renegotiations of contracts.



- 7) The right of recourse to international arbitration to settle investment disputes. This last point can be in conflict with the prevailing legislation in most of Latin America (Calvo Doctrine).

In addition, it would be desirable to try to promote foreign investment in medium-scale mining, particularly in partnership with domestic private capital. This may require special incentives and promotional steps aimed at attracting smaller foreign investors. Given the high exposure of such investors to risk, support from investment insurance and guarantee schemes may be necessary.

C. Special Measures to Promote Medium- and Small-Scale Mining

Within the mining sector, medium- and small-scale mining is the only activity accessible to private national capital. The importance of that activity is rather limited in Latin America, except in the traditional mining countries: Bolivia, Chile, Mexico and Peru and also in Brazil.

Private domestic investment has shied away from mining because of its lack of familiarity with the sector, large risks and heavy taxation. In fact, the bulk of investment in medium- and small-scale mining comes from within the subsector itself, although its profitability is not very high.

In this respect, the broader diffusion of information on mining investment opportunities to potential investors, especially in industrial and commercial circles, could be a means of promoting domestic private investment in the sector. Moreover, the strengthening of securities markets would be desirable, in particular through the involvement of local development banks as underwriters and guarantors for stock issued by medium- and small-scale mining companies.

Measures to improve the profitability of medium- and small-scale mining represent another important means of attracting private domestic investment into that activity. A number of tax incentives could be used to that end such as the elimination or reduction of import and export taxes, accelerated depreciation and income tax relief. In addition, the provision of credit and technical assistance on favorable terms would be needed. Lastly, the organization of central procurement, processing and marketing services and the provision of the required infrastructure should receive special attention.

#### V. Methods and Sources of Financing

The current economic and financial crisis of Latin America has given rise to various concerns regarding the possibilities of mobilizing the domestic and external financing required by the mining sector. The principal financing methods and the major internal and external sources of funds are examined below, followed by a discussion of investment insurance and guarantee schemes.

A. Financing Methods

The patterns of mineral financing show considerable differences depending on the size of the operations. For large-scale mining, the traditional methods of funding through equity capital and off-balance-sheet financing from multinational mining companies have been displaced by increasing reliance on debt capital from other sources. A parallel trend has been the development of "project financing" techniques under which debt financing is secured by the cash flow expected to be generated by the project itself, rather than by the creditworthiness of its sponsors.

As a consequence of these changes, the financing of large mining projects now includes small contributions of risk capital from the mining companies and Governments, and a high proportion of external debt capital. This latter category encompasses suppliers' and export credit, bank loans, consumer credits and, in some cases, funds provided by multilateral development agencies. Furthermore, the financial packages are almost always backed by export credit insurance and, sometimes, investment guaranties.

In a similar fashion, the financing of medium-scale mining operations also depends significantly on external debt capital such as suppliers' and export credits and purchasers' credits. In addition, such financing makes a substantial use of internal debt capital supplied by local commercial banks and development banks. It is usually very

difficult for the mining firms in that category to obtain risk capital, except in a few countries with relatively developed capital markets.

The access of small-scale mining to institutional credit is minimal, although some countries in the region have specialized agencies for that purpose, and a number of international development institutions have extended some financial support.

#### B. Internal Sources of Financing

The capacity of the Latin American countries to satisfy the internal domestic needs of the mining sectors is quite limited, not only because of the current economic situation, but mainly because of the high costs and risks of the large mining projects that account for the bulk of the investments in the sector.

Among the major internal sources of risk-capital, the difficulties of obtaining private equity were stressed earlier. This is because of the thinness of capital markets and the small surpluses generated by medium- and small-scale mining. There are, of course, very large state mining enterprises in the region (CVRD, CODELCO, CENTROMIN) and other of lesser importance (COMIBOL, ENAMI, ECOMINAS) which are generally profitable and could contribute risk capital. However, their surpluses are strongly affected by market fluctuations and some dividends also must be paid to the Government. As a result, these enterprises must rely on external financing to carry out their own projects. The Government, of course, could provide equity through direct budgetary allocations, but

this would mean diverting funds from other economic and social priorities to funnel them into high-risk mining ventures, not even to mention the large current fiscal deficits.

The internal sources of debt-capital are also in short supply. Local commercial banks normally provide little financing to mining activities and their principal role has been to serve as intermediary for external credits. This is due principally to their operating standards, which require short maturities and large collateral guarantees. Such conditions are not consistent with the characteristics of mining projects. Nonetheless, local commercial banks can help finance the working capital needs of medium- and small-scale mines. As regards to other domestic financial institutions, the type of operations they make are not applicable to mining and, consequently, their involvement in that sector is negligible.

Development banks and mining banks have undoubtedly made efforts to provide financial assistance to medium- and small-scale mining. These institutions rely upon funds provided by the Government and, in many cases, by multilateral development agencies. Their activities in this area have been constrained by their modest resources and rigid financial procedures. They could play very useful role as catalysts, by helping to mobilize credit from other internal and external sources and by financing some of the contingencies of mining projects such as interest payments during the project implementation period and possible cost overruns.

C. Traditional Sources of External Financing

The crucial role of external financing in the mining sector and, especially, large-scale mining has been pointed out before. There is a wide range of sources of external financing that can be used, individually or in combination, and through "project financing" techniques, to help satisfy the expected needs.

Risk capital that can be provided by foreign mining companies has also been the subject of earlier comments. Their function is not only to contribute equity funds, but also to facilitate the flow of debt capital from other external sources. This is due to the fact that lenders usually insist on the participation of a highly qualified technical partner in large-scale projects. They may also require that such partner provide completion guarantees and cost overrun guarantees.

Loans from international mining companies have tended to decline in the last years because of their reduced profit levels. It is difficult to foresee a significant availability of initial funds from this source in the near future, with the exception of loans from oil companies which have recently diversified into non-fuel mining.

Supplier and Export Credits are probably now the largest source of external financing for mining projects in the region. These credits are granted directly by the official agencies of the exporting country or, sometimes, by the supplier itself with the guarantee of such agencies. The latter operate practically in all the industrialized countries

(EXIMBANK in the United States and in Japan, ECGD in Great Britain, ECD in Canada, KFW in the Federal Republic of Germany, etc.). There are several ways of providing export credits, depending on the agency and type of project in question: direct credit to the exporter or purchaser; refinancing or discounting loans made to either party by commercial banks; interest rate subsidies for such loans; and guarantees or insurance for credits given by the exporter to the purchaser or those granted by commercial banks to either of them. As the result of a "gentlemen's agreement" between the industrialized countries, the credit terms are similar. A typical export credit loan for a mining project, for example, would involve a cash down-payment of 15 per cent on the export contract value, a fixed interest rate of 8,75 per cent and maturities of 8,5 years.

Export credits are supported by the commercial objectives of the industrialized countries and offer significant advantages to mining projects in the region, because of their abundant supply, flexibility and timely availability. Moreover, given the intense competition among exporting countries, even more favorable terms can be expected in the future. Their main drawback is that they are tied to a particular source of procurement. This may well increase their real cost and discourage the domestic production of mining equipment and supplies.

Loans from international commercial banks are a traditional source of external finance for mining projects and are next in importance to export credits. These loans have been channelled, directly or through the eurodollar market, to large mining projects in the region and, in

very small amounts, to medium- and small-scale mining enterprises through local commercial banks. In addition, international commercial banks have pioneered the use of the "project financing" techniques referred to earlier.

In the current situation of the financial markets, the loans are granted at relatively high interest rates, that float over Libor or over the prime rate. However, in recent years, there were cases in which such loans were made at fixed interest rates, and in the past funds have been provided for 10 years and up to 15 years at floating rates. Present concerns about the high external indebtedness of Latin America are probably the major constraint on the availability of these loans. For these reasons, it is probable that well-conceived projects for exports with sound marketing plans are those the most likely to have access to such financing.

Credits from consuming countries represent a type of financing which had some success in the past, when official financing agencies in some industrialized countries made funds available for large mining projects in Latin America, in order to help secure a source of minerals supply for their industries. Examples of such entities include Kreditanstalt fur Wiederaufbau (KfW) in the Federal Republic of Germany, the Overseas Private Investment Corporation (OPIC) in the United States and the Overseas Mineral Development Corporation (OMDC) in Japan. Consumer credits can be very attractive in terms of rates and maturities and, therefore, can contribute to the financial viability of a project. In view of the excess supply conditions prevailing in the minerals



markets, it is doubtful that this type of funds will be available in large amounts in the period ahead, although they might favor particular commodities on a selective basis.

D. Non-Traditional Sources of External Financing

There are various non-traditional sources of external financing for mining projects, which have emerged recently or have been used in the developed countries, but not in Latin America. Of considerable importance among them are insurance companies and large pension funds in the United States and Great Britain. These institutions generally lend on a long-term basis and at fixed rates and have enormous funds at their disposal. This matches perfectly the needs of large mining projects.

However, they have been unwilling, so far, to invest substantially in Latin America, because of lack of familiarity with the countries and the strict regulations governing their operations. While it is difficult, in the present situation, to envision a substantial availability of funds from such institutions, there are circumstances under which they could be attracted to participate in certain projects. This might be the case in cofinancing arrangements with the IDB or the World Bank, secured by an international mining company and offering, perhaps, a share of the profits of the project.

The major international oil companies have attempted to invest the huge revenues generated by the oil boom, partly by diversifying their operations. They are already active in the Latin American mining

sector, having acquired existing mining companies and individual mining concessions. Their incursions in the field of non-fuel minerals have generally not been very successful. In addition, oil company profits have decreased recently because of lower oil prices. Nevertheless, they offer an attractive potential, since they have considerable resources and are accustomed to high-risk operations and flexible investment arrangements.

Trading companies have entered the field of mineral finance by providing credit against future deliveries, either as bridge loans before long-term financing or to cover working capital needs. They have carried out these operations in various countries of the region, in particular Bolivia, Brazil, Chile and Peru. Their resources are more modest than those of the insurance and oil companies, and their financing role has been hampered by their need to have a contract before hand with the final consumer. However, trading companies are expected to become more active in the mining sector because of their unique advantage in combining marketing skills and finance.

Lastly, two other possible non-traditional sources of external financing deserve to be mentioned. Although frequently used in the developed countries, they have not been applied yet in Latin America. The first is leasing which has been included in some of the programs of local development banks for medium- and small-scale mining, but has not been used as a vehicle for raising external funds. The second relates to production payment financing under which funds are advanced by a lender against the security of minerals in the ground, which are pledged

or assigned for his benefit. It should be possible to adapt these concepts to the specific conditions of Latin America.

E. Investment Insurance and Guarantee Schemes

Most of the industrialized countries have established mechanisms to insure or guarantee the investments made by their companies abroad and, especially, in the developing countries. Among the agencies involved are the Overseas Private Insurance Corporation (OPIC) created in the United States in 1948 and institutions set up afterwards in Great Britain (ECGD), the Federal Republic of Germany (Truearbeit), Canada (ECD), France (COFACE), Japan (MITI) and other countries.

Generally speaking, these programs issue insurance or guarantees for foreign investments from their home countries --including equity, related loans and advances, technical services, licenses and royalties-- for periods of up to 15 to 20 years. Three categories of risks are covered: war and revolution, expropriation and restrictions on transfers of funds. As a rule, coverage is applicable only within the framework of bilateral agreements, with global limits world-wide and by country. In addition, risk cover is partial in most cases (90 percent or less), limited to new investment and subject to write-down provisions over time.

Insurance and guarantee schemes are particularly important for large mining projects with high risk and long pay-back periods, in which the participation of international mining companies is usually required.

Often, there may be perceptions of high "political risks" with respect to possible modifications of investment contract terms, that may alter the economic and financial results of the projects.

The experience with these schemes in the mining sector has been less favorable than expected, from the point of view of both the investors and the host countries. Some of the principal problems encountered have been the inability of individual schemes to cope with very large projects or with multinational investments and their short coverage in relation to typical pay-back periods. Also to be mentioned are their relative ineffectiveness in the case of "creeping expropriation" and their tendency to convert investment disputes into intergovernmental issues.

In Latin America, a further drawback has been the requirement in the above mentioned schemes for international arbitration to settle investment disputes. The legislation of most of the countries of the region includes principles related to the Calvo doctrine, that makes it difficult to accept ex-ante the jurisdiction of a foreign tribunal and the exercise of subrogation rights by the investment insurance agency. As a consequence, investment insurance and guarantee facilities have rarely been used in the region.

Several industrialized countries are adjusting their bilateral programs to the needs of the mining industry, mainly by extending full coverage for longer periods of time and by establishing procedures for dealing with "creeping expropriation." Another approach being

considered in Western Europe is that of supplementing national programs with a multinational scheme covering the whole EEC. This would increase available resources and provide more adequate coverage for multinational investment by European mining companies and lenders.

F. Bilateral and Multilateral Cooperation

To complete the discussion of major sources of external financing for the mining sector in Latin America, mention should be made of bilateral and multilateral cooperation.

Bilateral cooperation from the developed countries in the area of mineral financing has been quite limited. In most cases, support has been given for geological surveys, resource assessment and training activities. The agencies involved, mainly from the United States, Canada and Western Europe, have usually insisted on the participation of international mining companies in the more advanced phases of the projects, except for Japan's OMDC referred to earlier.

As part of their assistance programs, bilateral cooperation agencies could provide soft loans to help finance certain components of mining projects, and especially their infrastructure. However, given the relatively high income levels in Latin America, the availability of these funds for mining projects would be limited to only a few countries.

Multilateral cooperation for mineral development financing has also been modest compared to the related needs. In some cases, by focusing on specific countries and projects, this support has had a significant impact. In other cases, it has acted as a catalyst by stimulating contributions from other external sources.

In the field of preinvestment, since the early 1960's the United Nations Development Program has been financing exploration activities and feasibility studies, as well as technical assistance, training and institution building projects in the areas of geology, mining and metallurgy. More recently, the United Nations Revolving Fund for Natural Resources Exploration, has started a program of exploration on a contingent basis, at no risk for the beneficiary countries. The expenses are reimbursed only if a discovery of commercial value is made. The resources of these agencies which consist of budget allocations are very small.

The World Bank has provided a significant amount of long-term financing for the mineral sector of the region through loans for mining, processing and related infrastructure. At the same time, the International Finance Corporation, an affiliate of the Bank, has assisted various medium-scale mining projects by helping to organize them and providing loans and equity funds.

The Inter-American Development Bank, which provides long-term financing for high-priority investment projects in Latin America, has authorized 32 mining loans amounting to \$850 million since its creation

in 1959 to date. These loans have included financial support for mining and processing activities (86 per cent of the total), for medium- and small-scale mining credit (13 per cent) and for exploration and feasibility studies (1 per cent). A list of the loans is shown in Table 3. The Bank has also financed some technical cooperation activities in the sector, mostly for the institutional strengthening of borrowing agencies and for mineral resources assessment.

In addition, the Bank is now in the process of setting up an affiliate, the Inter-American Investment Corporation. Through this new facility, the Bank will be in a position to play a more effective role in the promotion of investment in medium- and small-scale mining, through support for project identification and feasibility studies, equity and loan funding and the promotion of joint ventures.

## VI. Conclusions

The acceleration of the development of the mining sector in Latin America is of vital importance for the economic and social progress of the region and also for the growth of the world economy, which is dependent upon an ample and stable supply of mineral commodities. Despite the current crisis of the sector, its long-term prospects are secured by a huge mineral resources endowment and significant competitive advantages.

The channelling of larger amounts of investment in the mining sector represents a serious challenge under the present circumstances.

This is due to the severe economic and financial crisis in the region, its high external indebtedness and the uncertainties surrounding international mineral markets. In this regard, efforts should be made to enhance the attractiveness of mining investment by making the necessary adjustments in the legal, institutional and tax systems of the various countries, and by providing the required incentives.

The possibilities of increased investment in Latin American mining also depend on the policies of the developed nations, the attitudes of the multinational mining companies and the overall balance of supply and demand for minerals in the world. As a result, a broad consensus between the major participants will have to be pursued through active collaboration at the regional and international level.

External financing available from various sources will continue to be a key factor in the region's mineral development, though it will be desirable to encourage higher levels of domestic financing. The external financing requirements anticipated for the mining sector in the period ahead do not appear to exceed the capacity of the international financial system. However, given the precarious financial situation of the countries, larger amounts of equity capital will have especially to be raised, to facilitate the mobilization of external credit. The multilateral development financing agencies can help in this task, through cofinancing operations and other promotional activities.

Finally, mining investment typically entails long lead times. Several years usually elapse between the decision to undertake a project



and its completion. Thus, in order to help meet future mineral consumption needs in the region and in the world, appropriate action should be taken now to step up the pace of expansion and diversification of the Latin American mining sector.



Table 1  
Latin America: Annual Growth of  
Value Added in Mining and  
Share in GDP, 1970-1983

(Percentages)

	<u>1970-74</u>	<u>1975-79</u>	<u>1980-83</u>
<u>Growth Rate of Mining</u>			
Oil producers <u>a/</u>	2.2	1.8	2.9
Non-oil producers	4.0	2.5	1.4
Latin America	3.5	2.2	2.4
<u>Share in GDP</u>			
Oil producers <u>a/</u>	2.0	1.5	1.6
Non-oil producers	1.5	1.3	1.3
Latin America	3.5	2.8	2.9

a/ Includes Ecuador, Mexico, Venezuela and Trinidad and Tobago.

Source: IDB, based on official data of member countries.

Table 2

United States: Direct Investments Abroad  
in Mining and Smelting, 1960-1984 a/

(Million of Current Dollars)

	<u>Latin</u> <u>America</u>	<u>Other Developing</u> <u>Countries</u>	<u>Developed</u> <u>Countries</u>	<u>Latin America</u> <u>% of</u> <u>World Total</u>
<u>Book Value</u>				
1960	1,155	447	1,411	38.3
1965	1,114	700	1,971	29.4
1970	2,071	451	3,647	33.6
1975	1,476	674	4,398	22.5
1980	1,625	591	4,539	24.1
1983	2,177	603	3,962	32.3
<u>Capital Expenditures</u> <u>b/</u> (Annual average)				
1966-69	237	20	492	31.7
1970-74	214	76	878	18.3
1975-79	172	50	583	21.4
1980-83	180	52	685	19.6
1984 <u>c/</u>	171	46	230	38.3

a/ Refers to all solid minerals including coal and uranium.

b/ Capital expenditures on plant and equipment by United States majority-owned affiliates.

c/ Programed expenditures.

Source: United States Department of Commerce, Survey of Current Business (several issues).

Table 3

Latin America: Summary of IDB Loans to the  
Mining Sector, 1961-1984

(US\$ million)

<u>Year</u>	<u>Borrower and Purpose</u>	<u>Fund a/</u>	<u>Amount</u>
<u>1. Loans for Exploration and Feasibility Studies</u>			
1964	Argentina - (MISIPA) Feasibility study - iron ore	FSO	0.1
1974	Brazil - Regional exploration	OC	4.3
1977	Colombia - Feasibility study - phosphate	FSO	1.7
1980	Guyana - Feasibility study - kaolin	FSO	0.1
1984	Honduras - Inventory of mineral resources <u>b/</u>	FSO	1.2
	<u>Subtotal</u>		<u>7.4</u>
<u>2. Mining Loans</u>			
1961	Bolivia - (COMIBOL) Mine rehabilitation - tin	FSO	4.5
1963	Bolivia - (COMIBOL) Mine rehabilitation - tin	FSO	4.9
1964	Brazil - (CVRD) Mine expansion - iron and steel	OC	0.0
1966	Bolivia - (COMIBOL) Mine rehabilitation - tin	FSO	2.5
1968	Brazil - (CVRD) Mine expansion - iron ore	OC	11.5
1972	Argentina - (HIPASAN) Mine development - iron ore	OC	32.0
1976	Peru - (CENTROMIN) Mine expansion - copper	IC	33.4
1977	Brazil - (CARAIBA METAIS) Mining and processing - copper	OC	63.2
1978	Mexico - (NAFINSA-MICARE) Mine development and construction - coal	IC	140.0
1979	Peru - (CENTROMIN) Mine expansion - copper	OC	33.0
1980	Brazil - (CRM) Mine development and construction - coal	IC	75.0
1981	Peru - (CENTROMIN) Mine expansion - lead, zinc, silver	OC	33.0
1983	Chile - (CODELCO) Mining and metallurgical projects - copper	IC	268.0
	<u>Subtotal</u>		<u>731.0</u>
<u>3. Global Loans for Small and Medium-Scale Mining</u>			
1961	Bolivia - CBF	FSO	1.6 <u>c/</u>
1961	Argentina - Provincial Banks	OC	0.3 <u>c/</u>
1961	Chile - CORFO	OC	1.0 <u>c/</u>
1964	Chile - CORFO	OC	0.8 <u>c/</u>
1966	Bolivia - CBF	FSO	5.0 <u>c/</u>
1968	Chile - CORFO	OC	1.8 <u>c/</u>
1973	Peru - Banco Minero	OC	6.0
1976	Regional - Banco Centroamericano de Integración Económica	FSO	2.3 <u>c/</u>
1978	Peru - Banco Minero	OC/FSO	7.0
1980	Peru - COFIDE	OC	2.5 <u>c/</u>
1980	Peru - Banco Minero	OC	20.5
1982	Chile - CORFO	IC	18.0 <u>c/</u>
1983	Peru - Banco Minero	OC	20.0
1984	Bolivia - Banco Central	OC	25.0
	<u>Subtotal</u>		<u>111.3</u>
	<u>Total Mining Sector</u>		<u>849.7</u>

a/ Fund for Special Operations (FSO); Ordinary Capital (OC); Interregional Capital (IC).

b/ Non-reimbursable technical cooperation.

c/ Mining component of multisectoral credit.

