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DIM PROSPECTS FOR MEXICAN HIGH TECHNOLOGY

SUMMARY

Mexico City has expressed a desire to obtain and develop high technology, but its overall policies do not bode well for attaining the level of competitiveness needed to move swiftly into the ranks of LDC competitors. Mexico's electronic and computer plans are essentially nationalistic, protectionist, and interventionist and aim to foster the growth of local industries by promoting import substitution. Measures designed to push Mexican industries to substitute domestic components for foreign inputs are likely to make Mexican products less attractive because Mexican component quality is generally poor. Restrictive investment guidelines, unprotected intellectual property rights, and cumbersome bureaucratic procedures will, in general, hold foreign investment down and deter foreign firms from transferring technology that Mexico lacks. [Redacted]

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Mexico City has expressed a desire to obtain and develop high technology, but its overall policies tend to discourage foreign investment and technology transfer. [Redacted]

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[Redacted]

This memorandum was prepared by [Redacted] Mexico Branch, Middle America-Caribbean Division, Office of African and Latin American Analysis, at the request of Ann Hughes, Deputy Assistant Secretary for the Western Hemisphere at the Department of Commerce. Questions and comments may be directed to the Chief, Mexico Branch [Redacted]

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[Redacted] To date, the only specific programs the Mexicans have drawn up and implemented have been for computers, electronics, and alternative energy. [Redacted]

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Mexico's electronic and computer plans are essentially nationalistic, protectionist, and interventionist and aim to foster the growth of local industries by promoting import substitution. While the government will allow some foreign majority-owned projects in these fields, foreign investors are subject to a number of restrictions to limit foreign domination of the domestic market, a recurring Mexican concern. Restrictive investment guidelines, unprotected intellectual property rights, and cumbersome bureaucratic procedures will, in general, hold foreign investment down and deter foreign firms from transferring technology Mexico needs to attain international competitiveness. [Redacted]

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Budgetary and credit constraints are likely to limit expenditures on research and development and new investments. Mexico currently spends 0.6 percent of its GDP on research and development, well below world leaders who spend 2 to 5 percent of their GDP. We see little chance that Mexico could increase its R&D effort in the near term given the fact that collapsing oil prices have cut Mexico's tax revenues. At the same time, government borrowing to finance the swelling budget deficit probably will continue to crowd out any significant investment-originated R&D. [Redacted]

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Mexico's Infrastructure

Mexico's high technology sector is essentially limited to a small electronics sector that is still highly dependent on imported technology and inputs. The industry is comprised of 747 firms employing more than 48,000 workers--only 0.9 percent of industrial employment. According to press reports, 90 percent of these firms are assembly plants. The other 10 percent are mainly majority Mexican-owned manufacturers. Low labor costs and an exemption from foreign investment laws limiting foreign ownership to 49 percent elsewhere have prompted a number of multinationals to establish assembly plants in Mexico, including Honeywell, Apple, Hewlett-Packard, IBM, Sperry, Zenith, Ericsson, Tandy, and Sony. [Redacted]

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Within the electronics sector, telecommunications and informatics sales have grown about 30 percent per year during the last five years, according to Mexican estimates. These firms together represent one-third of the total number of firms in this sector in Mexico and similar percentages of electronics production and exports. The boom probably reflects the dynamism of multinational firms, which dominate the telecommunications and informatics markets. [Redacted]

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[Redacted] In addition to lacking technological know-how, Mexican industries suffer from high production costs associated with imported electronic components. Without protective trade barriers, many of Mexico's small and inefficient firms probably could not stay afloat. [Redacted]

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Mexico's current deficiencies in technological education and shortages of skilled labor pose additional constraints on the expansion of its high tech sector. [Redacted] manufacturing firms have hired unskilled workers because of difficulties in matching their needs to available workers. Indications that skilled, middle class workers are emigrating suggest that this problem will not be solved anytime soon. [Redacted]

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Weak Intellectual Property Rights

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Mexico has revised a 1976 patent and trademark law specifically excluding a number of products from patent rights. [Redacted] however, [Redacted] Mexico has not met US demands for adequate patent protection within two years. The new law calls for a 10-year waiting period before providing product patent protection to pharmaceuticals, alloys, and chemicals and process patent protection to biotechnology. [Redacted]

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Tech transfer regulations are still a source of friction with the United States and other industrialized countries. In contrast to the US practice of allowing companies to determine royalty payments freely, Mexican law specifies that foreign companies may charge no more than 6 percent of sales in royalty payments. In return, they must incur substantial costs to provide scholarships, high quality technology and improved technical aid. Furthermore, these companies are expected to support projects that enhance Mexican R&D and that promote import substitution and exports. Mexican law stipulates trade secrets will be kept for only ten years, unless it is in Mexico's interest to extend that period. [Redacted]

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Key Programs

The Computer Plan. The objectives of the plan, put into place in 1981, are to create import substituting industries, hike local content up to 70 percent by 1987 for the industry as a whole, and increase employment, exports, and R&D. The plan provides a number of protective measures and benefits to majority Mexican-owned firms, including:

- import quotas based on expected market share
- 15- to 30-percent tariffs
- 15-to 20-percent tax credits for expanding plant capacity, creating new jobs, and buying Mexican-made components and
- a 30-percent discount on energy costs.

Several regulations introduced in the plan hamper the activities of foreign-owned assembly plants. These plants are required to export at least 75 percent of production, meet local content requirements, sell in Mexico only products approved by the government, and show a net trade balance at least three times greater than import receipts. [Redacted]

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The Electronics Program. This program, established in 1985, is an offshoot of the computer plan. Like its predecessor, the electronics program is designed to spur exports

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and create jobs. The primary areas approved for foreign investment include VCRs, macrocomputers, audio and video equipment, semiconductors, and automated electronic equipment. Incentives to electronics development available to majority Mexican-owned firms include project financing through the Industrial Equipment Fund, access to the National Council on Science and Technology's shared risk program, tax breaks on R&D costs, preferential import tariffs, loans at preferential interest rates, and special deals for buying priority electronic goods produced in Mexico. [Redacted]

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The electronics program, nevertheless, contains a number of protective measures that could hamper the development of a competitive domestic industry. Domestic content requirements and import licensing requirements and tariffs ranging from 5 to 59 percent will shield infant industries and push Mexican industries to substitute domestic components for foreign imports. These measures are likely to make Mexican products less attractive because Mexican component quality is generally poor. [Redacted]

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Overall, Mexico intends to maintain restrictions on foreign investment to ensure it will focus on exports and not drive domestic firms out of the Mexican market. The Mexicans will limit the establishment of majority foreign-owned companies primarily to sectors of no strategic importance, where local firms have little chance of competing on the world market, and where local firms lack the necessary technology. Majority foreign ownership will be permitted in other sectors, but only on a case-by-case basis after an assessment is made that it will not distort the domestic market or displace domestic firms without offering gains in jobs, exports, or technology. Mexico's flip-flopping on IBM's application to establish a wholly-owned subsidiary suggests that political factors and domestic business groups will also play an important role in government approvals of foreign investment. [Redacted]

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Alternative Energy. The National Energy Plan unveiled in 1984 calls for the diversification of energy resources away from hydrocarbons, increased ability to design and construct power plants based on alternative sources, and the development of thermoelectric facilities that can operate on alternative fuels. The alternative sources of energy cited in the plan are hydroenergy, coal, and nuclear, geothermal, solar, wind and biomass power. The Embassy reports that Mexico added seven electric plants in 1984, of which two were geothermal plants, four were steam plants fueled with oil, and one was a gas plant. Mexico's plan called for opening another 23 plants during 1985 and 1986, including nine hydroelectric plants, two geothermal plants, two coal plants, nine steam plants fueled with oil, and one gas plant. One major roadblock is that petroleum products are more abundant and less expensive, making the development of alternative energy impractical. Another obstacle is the weak financial position of the Federal Electricity Commission, which is operating in the red and has built up a large debt. [Redacted]

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Developments in Other Sectors

Telecommunications. Two Mexican satellites manufactured by a US company were launched in 1985 by NASA. The satellites are to be used for domestic television, telephone, telex, and telefax transmissions. [Redacted]

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Outlook

We see little chance that the Mexicans will acquire sufficient expertise or capital to propel their industry into high technology in the near term. Mexico's gains from promoting electronics assembly operations probably will remain largely confined to new job creation and foreign exchange earnings. The assembly plants import components from the US and export semi-finished products back to the US market, without a noticeable transfer of technology to Mexico. The current environment for foreign investment and intellectual property rights does not bode well for obtaining foreign know-how and the swift movement of Mexico into the ranks of LDC competitors. [Redacted]

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We judge the electronics sector to be too small and inefficient to pick up the slack from other sectors, either in providing employment for some of the 800,000 jobseekers who enter the labor market each year or in diversifying Mexican exports away from petroleum products. In fact, the computer and telecommunications sectors' shares of the US market--their most important export outlet--have eroded. Mexico's share of US imports of computers shrank from 10.5 percent to 0.1 percent during 1975-85 while its share of US telecommunications imports declined from 22.9 percent to 9.6 percent. [Redacted]

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Implications for the United States

Mexican producers are unlikely to pose a significant challenge to US firms on the world market in the foreseeable future. Mexican efforts to defend its own industry, however, present important adverse trade effects. Mexico represents the third largest market for US electronic manufactures, amounting to \$2.8 billion, or 8.2 percent of total US exports of these commodities. In the macrocomputer sector, steps to foster import substitution have been particularly damaging to US firms, which are Mexico's only suppliers. Last year, Mexico cancelled import permits for input/output equipment. Under the rules introduced last year, equipment imports will not be authorized if there are local manufactures which can be substituted. Because there are two Mexican producers of terminals and two Mexican producers of printers, the new measure effectively shuts out foreign competitors. [Redacted]

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