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MANUFACTURE FOR EXPORT IN FREE ZONES IN MEXICO[1]

by

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It is indeed a privilege for me to appear before you in the city of Juarez/El Paso where the maquiladora program of Mexico began. It was eleven years ago that the Mexican Government selected this area for a pilot study by Arthur D. Little, Inc. seeking to relieve unemployment in the border region. That study recommended the maquiladora program (the toll manufacture of labor-intensive goods for export); it defined and developed the twin-plant concept; and it suggested the use of industrial parks and free zones under fiscal control as focus for development effort.

The program was begun here a year later by private initiative with the support of the Government of Mexico, the State of Chihuahua, and the cities of El Paso and Juarez. It soon spread to Baja California, Sonora, Coahintry and Tamaulipas as well as later to the interior of Mexico.

In following years it enjoyed great success based on a low minimum wage of 60 cents/hour (US$), nearness to the United States, a simple program, and organizational competence at places like Juarez and Nogales. The doubling of the minimum wage which occurred in about 13 months beginning in September 1973 has reduced the incentive to establish new maquiladoras in Mexico dramatically and has caused a number of them to leave Mexico.

The problem has been compounded by the recent inflation-recession in the United States which has hit the electronics industry particularly hard and forced drastic cutbacks in manpower around the world.

We are gathered here to analyze the present situation, become aware of the benefits which have accrued to both nations and their peoples from the program, and perhaps suggest solutions which may help to preserve and enhance the program. To these ends my task is to assess the competitive situation in which Mexico finds itself as it seeks to continue to expand the maquiladora program, and to examine the costs and benefits of the program thus far to Mexico.

I intend to show how Mexico during the past decade became the only developing nation in this hemisphere to take significant advantage of the U.S. need for unskilled labor values, how other nearby countries are beginning to give Mexico competition for this market, how 70,000 jobs in maquiladoras has been created by the end of 1973, why many of these jobs may be lost, how one peso invested in maquiladoras has resulted in the annual return of 4 pesos of payroll, 6 pesos of exports, and 12 pesos of Gross National Product, and finally, how the Government of Mexico achieved one billion pesos of tax income from the maquiladora program during 1973.

The purpose of my explaining all this is to show that:

1. Maquiladoras are in trouble in Mexico today,
2. Competition is strong and growing in other countries for new maquiladora investment,
3. Mexico benefits from maquiladoras way out of proportion to what it invests,
4. The need for action by Mexico, the U.S., and all of us interested in the industry is urgent,
5. A quantitative framework for describing the problems and opportunities is available against which we can measure the possible solutions we may come to.

Having said this, let me now proceed:

Figure I shows how Less Developed Countries shared in the U.S. market for labor-intensive goods as measured by U.S. imports under Tariff Article 807 between 1970 and 1973. Under this article U.S. components are shipped abroad for assembly and return, paying duty only on value added abroad as measured by the difference in the value of the article when returned and the value of the U.S. components shipped out. Developed nations also use Article 807, but for different reasons—only the Less Developed Countries use it for labor-intensive goods—therefore, we find it a convenient and accurate measure of the international trade between the U.S. and the developing nations. That trade has been expanding at a very high rate—nearly 50% per year over the four year period as measured by the increase in dutiable value or value added abroad. And Mexico has been dominating that trade and leading its growth, followed closely by Taiwan and the rest of Asia. Mexico enjoyed 37% of the U.S. market in 1973 followed by four Asian countries with a total

Figure I

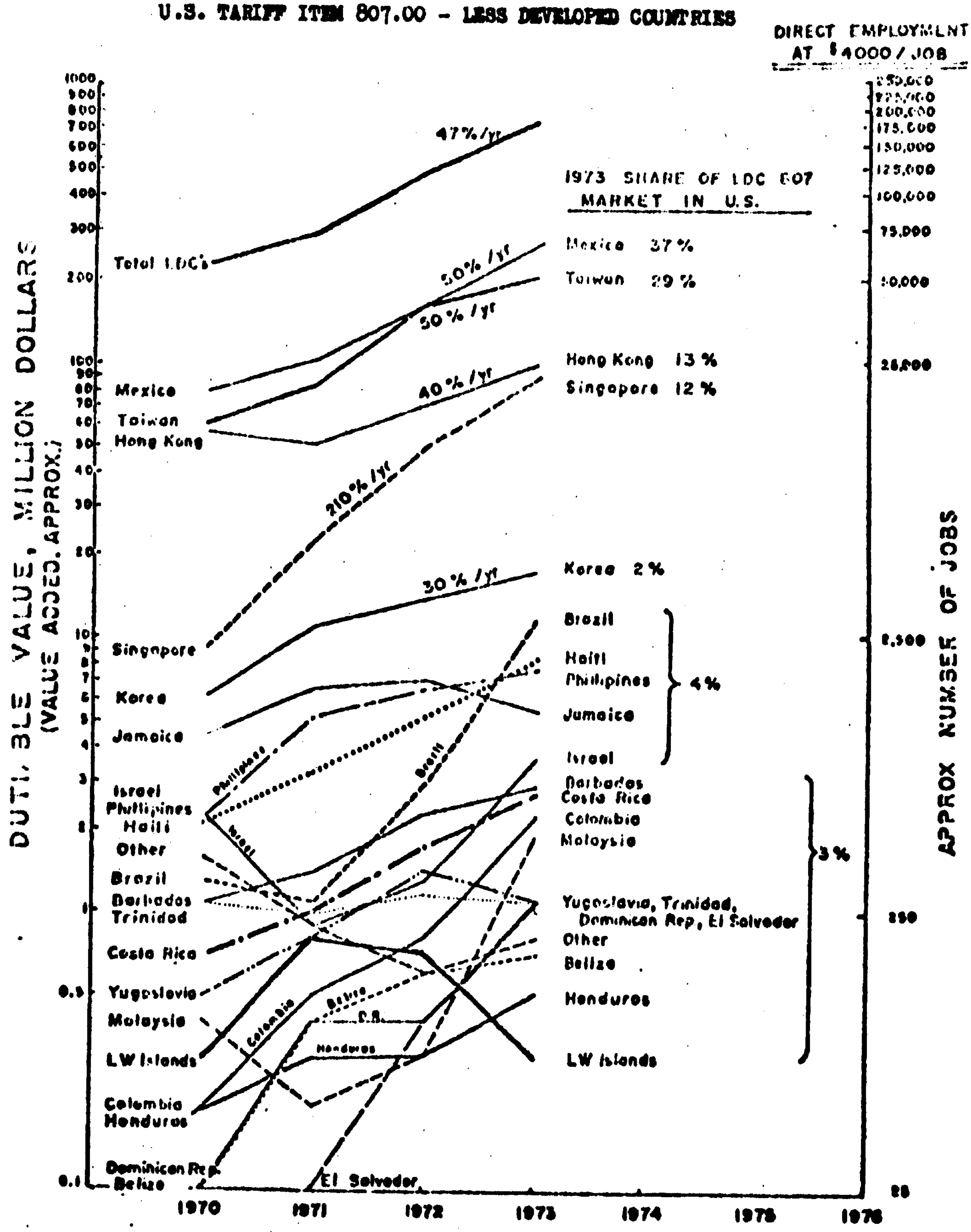

U.S. TARIFF ITEM 807.00 - LESS DEVELOPED COUNTRIES
DIRECT EMPLOYMENT AT $4000/JOB
DUTIABLE VALUE, MILLION DOLLARS (VALUE ADDED, APPROX.)
APPROX NUMBER OF JOBS
1973 SHARE OF LDC 807 MARKET IN U.S.
Mexico 37 %
Taiwan 29 %
Hong Kong 13 %
Singapore 12 %
Korea 2 %
Brazil
Haiti
Philipines
Jamaica
Israel
4 %
Barbados
Costa Rica
Colombia
Malaysia
Yugoslavia, Trinidad, Dominican Rep, El Salvador
Other
Belize
Honduras
LW Islands
3 %
47%/yr
50%/yr
50%/yr
40%/yr
210%/yr
30%/yr
Total LDC's
Mexico
Taiwan
Hong Kong
Singapore
Korea
Jamaica
Israel
Phillipines
Haiti
Other
Brazil
Barbados
Trinidad
Costa Rica
Yugoslavia
Malaysia
LW Islands
Colombia
Honduras
Dominican Rep.
Belize
El Salvador
1970
1971
1972
1973
1974
1975
1976

Table I

FORECAST OF IMPACT OF U.S. 807 IMPORTS ON EMPLOYMENT

	1973	1978
In Less Developed Countries	182,000	400,000
In Mexico	70,000	?
In the United States	23,000	37,000

NOTE: Ratio of jobs created in the United States to jobs created in Less Developed Countries is 1 : 8 at the present level of operation of Article 807 (and 806.30) of 56%. Twelve other developing countries in this hemisphere participated in the U.S. market, but their share, in total, was no more than 5%. Thus, Mexico has established a new business in the hemisphere in a very short time--while its sister republics have done little so far to compete with Asia even though the opportunity to do so has existed all along.

The benefits of pursuing maquiladora business in terms of employment are also shown in Fig. I in the right hand column. Based on Mexican experience we estimate that about $4000 of value added is created by one new direct job in a maquiladora. The approximate number of jobs created by the U.S. 807 market in Mexico was 70,000 at the end of 1973, in Taiwan it was 50,000, and in Hong Kong and Singapore about 25,000 each.

Table I shows my estimate of 1978 employment in Less Developed Countries assuming a compounded 17% per year growth from 1973—much lower than before because of the inflation-recession problems we are experiencing. It is very difficult to forecast the 1978 level of maquiladora jobs in Mexico at this time.

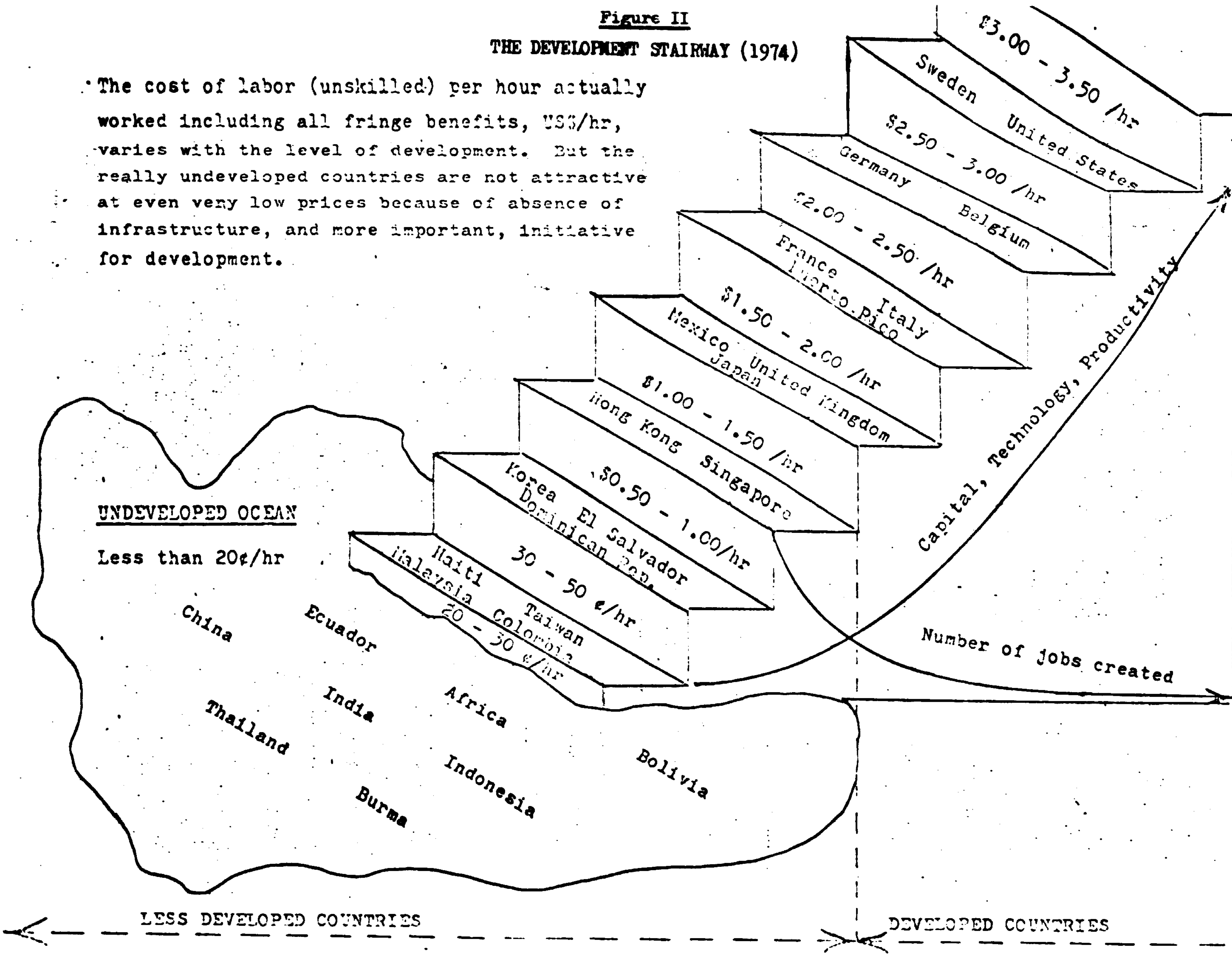
Table I also gives us a rough estimate of the number of jobs created in the U.S. by the program—each job resulting from the production of $25,000 of components. About 8 jobs are created in Less Developed Countries for each job created in the U.S. under the program, based on Mexico experience. Let me say here that these estimates about employment are reasonably accurate with respect to Mexico but may be quite different in other countries where capital, technology, and transport factors must be considered in arriving at $4000 of value added abroad.

Figure II shows the Stairway of Economic Development rising out of the Undeveloped Ocean. The ocean contains many countries which have not yet taken the first step to organize themselves for international business—where the cost of labor is extremely low, but also where the cost of doing business can be very high because of the lack of infrastructure, high risk, and the need to do everything for yourself. Each year the number of countries emerging from the Undeveloped Ocean to the first step of development increases

Figure II

THE DEVELOPMENT STAIRWAY (1974)

The cost of labor (unskilled) per hour actually worked including all fringe benefits, US$/hr, varies with the level of development. But the really undeveloped countries are not attractive at even very low prices because of absence of infrastructure, and more important, initiative for development.



pushing from below on the ones which have already emerged in a continuous pressure of competition.

Each step in the Stairway represents a range of cost of unskilled labor per hour actually worked including fringe benefits. Several countries representative of each level of cost are shown on each step. Also shown are curves on the side of the stairway representing trends in other factors as the price of unskilled labor rises. Capital, technology, and individual productivity also rise as the price of labor rises--but the number of jobs created per year drops. Thus Mexico in 1965 used to be on the same 30-50 cent step where Korea and El Salvador now are; in 1968 it moved up to the $0.50-$1.00 step where Hong Kong is, and proceeded to create 70,000 jobs in a few years. Recently it increased wages to the $1.00-1.50 step where Japan and the United Kingdom are. By so doing, it reduced the number of jobs its maquiladora program could create each year and, more significantly, moved up to a level where countries have tended to change from accepting maquiladoras to creating them elsewhere. As examples--Japan is a major creator of maquiladoras in Taiwan, Singapore, Korea, Hong Kong and Ciudad Juarez. The United Kingdom is creating maquiladoras in Eastern Europe and Africa. Mexico may well emulate their example.

The upward pressure of wages on the Development Stairway is the most significant single item in the worldwide competition for maquiladoras. Years ago, one could safely hide behind a transportation advantage and increase wages significantly due to inefficiencies of transport. This is no longer true as much as it once was. The reduction in cost and increase in frequency of air transport service has led a revolution in transport in the last two decades. Most important, the development of roll-on, roll-off and container service permitting surface movement of trucks throughout the world at a low cost and high reliability is really changing the pattern of trade for many labor-intensive goods. As an example, let us examine Table II: Here we show how Mexico was highly competitive in 1973 in producing and marketing a pound of calculators--but now it is at a disadvantage of $1 per pound in 1975--merely because

Table II

KEY FACTORS : LABOR COST AND DISTANCE

EXAMPLE : HAND-HELD CALCULATORS -- COST OF LABOR, FREIGHT, AND INTEREST (U.S.$ PER POUND)

COUNTRY	COST OF TWO HOURS LABOR, U.S.$	FREIGHT COST ROUND TRIP TO/FROM CHICAGO		12% INTEREST ON $30 OF GOODS IN TRANSIT				TOTAL COST	
		AIR (Gen.Cargo)	TRUCK (Own)	AIR		TRUCK		AIR	TRUCK
				Days	$	Days	$	$/lb.	$/lb.
MEXICO 1973	1.20	0.40	0.06	2	0.02	7	0.07	1.62	1.33
MEXICO 1975	2.25	0.40	0.06	2	0.02	7	0.07	2.66	2.38
TAIWAN 1975	0.50	3.74	0.30-(est)	4	0.04	50	0.50	4.28	1.30
EL SALVADOR 1975	1.00	1.06	0.20	2	0.02	15	0.15	2.08	1.35

CONCLUSIONS : MEXICO HIGHLY COMPETITIVE IN 1973

MEXICO AT A DISADVANTAGE OF $1.08 PER POUND IN 1975

ASSUMPTIONS: 4 Calculators weigh one pound and have a value of $40 f.o.b. plant.

Value of components for 4 calculators shipped abroad is assumed at $20/lb.

Therefore, average shipping value is $30/lb.

of the increase in wages. Taiwan was always able to compete based on its really low wage, even though it must absorb the high cost of inventory on the high seas for so many days--but its freight cost is only 5 times that of Mexico. El Salvador, a newcomer to the maquiladora competition, can also compete because of its low wage even though it is more distant from Chicago than Mexico and must pay 3 times the cost of Mexico to deliver the goods.

To create new maquiladora jobs means convincing the management of companies that it is to their advantage to locate new maquiladoras in Mexico. Wage levels are, as we have said, the most important single factor in this decision but there are other cost factors and business climate factors which taken together play an important part in the competition to attract maquiladoras. In Table III we show a comparison of these other factors between Mexico and the newcomer, El Salvador, at the present time. We can conclude that as more newcomers try to break into the market, Mexico will find it more difficult to grow as rapidly as in the past. Not only is its cost of labor high, but it offers few incentives to attract industry in comparison with other countries. We in Chihuahua who are trying to promote a new maquiladora development throughout the State can tell you of our chagrin when Texas Instruments told us they had not even considered Mexico in their decision to locate a plant of 3600 employees in El Salvador in December 1973.

Now, let us return to the situation as it was in 1973 when the wage was 60 cents an hour in Mexico and review my analysis of the costs and benefits of the maquiladora program in Mexico as shown in Table IV.

Development Economists use a rule of thumb that one new manufacturing job created in a developing economy results in two new indirect jobs, making a total of three jobs in all with a contribution to Gross National Product of twice that of the new manufacturing job. Retail sales turnover in a community is roughly 5 times payroll. Taxes are 4% of retail sales and 26% of payroll, as shown. The investment in the maquiladora program has come principally from the Private Sector and is approximately as shown, based on

Table III

COMPARISON OF INCENTIVES - 1975

	MEXICO (Nogales)	EL SALVADOR
Cost of unskilled labor per hour actually worked including fringe benefits, US$/hour	1.13	0.50
Duty free import of machinery, equipment, and raw materials for export industries	yes	yes
Unrestricted remission of profits generated by exports	yes	yes
For U.S. companies, guarantee against loss by expropriation or inconvertibility	no	yes
Industrial Free Zone	no	yes
Internal market access, paying duty on imported components only	variable	20% of prior year production
Rental cost of simple industrial building without air conditioning, $/ft^2	1.50	1.07
Ten year exemption from income and capital taxes for company	no	yes
Ten year exemption from income tax on dividends paid to shareholders	no	yes

Table IV

THE COST/BENEFIT OF MAQUILADORA JOBS TO MEXICO

Basis: 1973 wages of US$0.60 per hour

		ONE JOB (Pesos)	70,000 JOBS (Million Pesos)
THE BENEFITS			
Direct Payroll including fringes		16,525	1,157
Indirect payroll (2 additional jobs)		16,525	1,157
Total Payroll		33,050 (3 jobs)	2,314 (210,000 jobs)
Retail Sales (5 x Payroll)		165,250	11,568
GNP Contribution (Value Added)			
1 Maquiladora Job	50,000		
2 Indirect jobs	50,000		
Total	100,000	100,000	7,000
Exports 1 Maquiladora Job		50,000	3,500
Tax income to Government			
On Retail Sales (4%)		6,610	463
On Payroll			
5% income tax		1,653	116
15% Social Security		4,958	347
1% Education		331	23
5% INFONAVIT		1,653	116
Total Taxes		15,205	1,065
THE COSTS			
Investment			
Private Sector:			
Land 60 M^2 @ $50/$M^2$		3,000	210
Buildings 15 M^2 @ $750/$M^2$		11,250	788
Promotion		2,000	140
Total Private Sector		16,250	1,138
Annual Cost			
Public Sector:			
Estimated added personnel cost			20
Estimated added infrastructure cost			100
Total Public Sector			120

Cont'd.

Table IV (Continued)

COMPARISON OF COSTS AND BENEFITS

Tax return to Government as per cent of Annual Cost:

$$100 \times \frac{\text{Annual Tax Income}}{\text{Annual Public Sector Cost}} = 100 \times \frac{1,065}{120} = 888\ \%/\text{year}$$

Return on Investment

Private Sector Investment	1,138
Five years Public Sector Cost	600
Total National Input	1,738 million

$$\text{Investment per job} = \frac{1,738 \text{ million}}{210,000 \text{ jobs}} = 8,276 \text{ pesos}$$
(US$662)

$$\text{GNP per peso of investment} = \frac{100,000}{8,276} = 12 \text{ pesos}$$

$$\text{Exports per peso of investment} = \frac{50,000}{8,276} = 6 \text{ pesos}$$

$$\text{Payroll per peso of investment} = \frac{33,050}{8,276} = 4 \text{ pesos}$$

experience at Nogales and in Chihuahua. This investment is paid for by the maquiladoras as rent, or through the purchase of buildings. The Public Sector investment has been small and appears principally as an annual operating cost for increased personnel to process maquiladora activities in Customs, Treasury, and Industry and Commerce as well as certain infrastructure investments in cities where maquiladoras operate. I have not measured these Public Sector investments, but believe the figures shown are correct as to order of magnitude. The comparison of cost and benefit shows that the Government Tax return due to maquiladoras is nearly 9 times what it spends on maquiladora activities during the year.

If we consider the total Private Sector investment plus 5 years of Government investment in the program, the total cost to the economy of creating a new job must be among the lowest in the country at 8276 pesos ($662). Further, the return per peso invested must be one of the highest in terms of 4 pesos each year of salary, 6 pesos each year of exports, and 12 pesos each year of GNP.

With these benefits to Mexico come parallel benefits to the U.S.--particularly the border cities where the industry has concentrated. About 80% of the employment generated in Mexico by the program was located between Juarez and Tijuana at the end of 1973--or to put it another way, between El Paso and San Diego. The impulse of increased payroll and commercial transactions from twin plants spills across the border in both directions. It is therefore to our common interest to see that the program is sustained and enhanced--a few suggestions:

Concentrate on the attraction of rapidly changing production systems which depend on the excellent transport and communications network the border provides. (Such as high-technology systems, high fashion systems where instant response to change is required)

Concentrate on lower value per pound items where trucks have an advantage and through-service unit loads can be sustained

(Metal-mechanical items such as chain saws and garage door openers are examples).

Seek understanding by the Mexican Government that maquiladoras require special attention and consideration in labor law and practice as well as in export incentives.

Seek support of the U.S. Government to minimize application of quotas and restrictions to the growth of trade under Articles 806.30 and 807 which are so beneficial in creating high-quality skilled jobs in the U.S. and in increasing exports of high-technology labor-intensive manufactured goods through the Mexican Springboard effect to Europe and Asia.

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