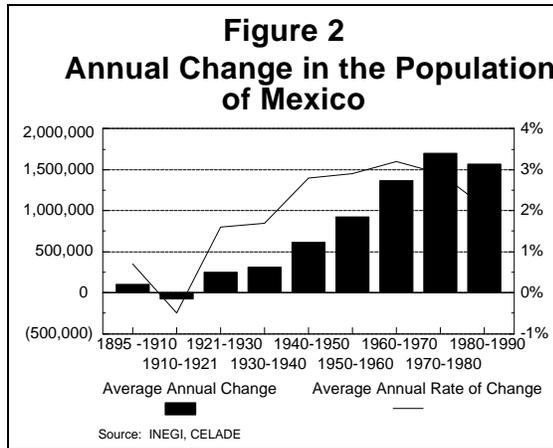
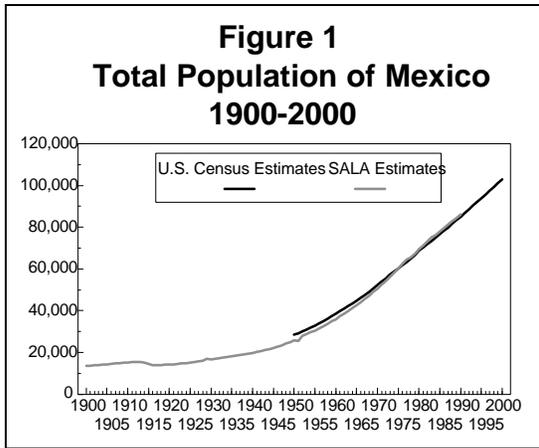


APPENDIX 1: A BRIEF DEMOGRAPHY OF MEXICO

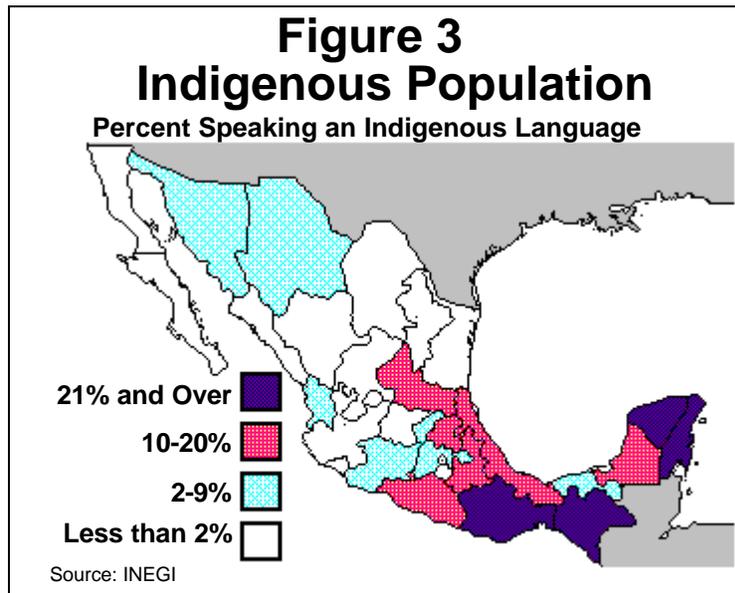
By Hans Johnson

With a 1994 population estimated by the United Nations at over 90 million, Mexico is the eleventh most populous country in the world. Mexico's population has increased dramatically over the past few decades, doubling within the past 30 years (Figure 1). As recently as 1970, Mexico's population was just over 50 million. While birth rates have declined substantially over the past couple of decades, the absolute increases to the country's population remain substantial (Figure 2).

Mexico's population is diverse. The Inter-American Indian Institute estimated that Mexico's indigenous population comprised 12.4 percent of the country's total population



in 1978. In its decennial censuses, the Mexican government does not collect information on race or ethnicity. However, information on language spoken is collected. According to the 1990 census, 7.5 percent of Mexico's population over the age of 5 speaks an indigenous language.²⁹ The indigenous population of Mexico is concentrated in

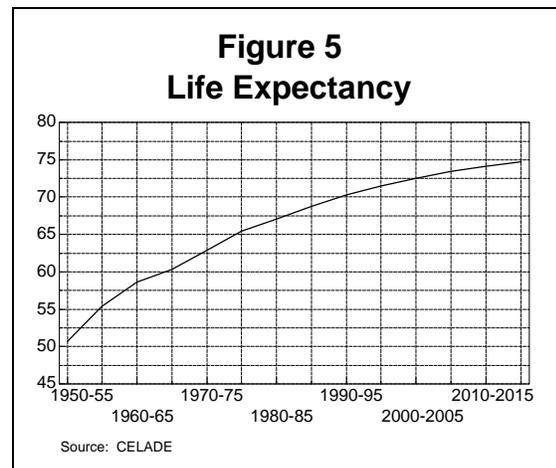
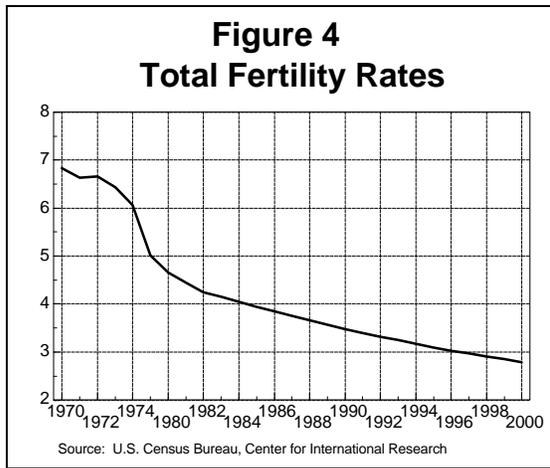


²⁹ The United States Census Bureau estimates that the undercount rate in Mexico's 1990 census was slightly over 4 percent. It is reasonable to assume that the undercount rate was highest in rural and indigenous areas of the country.

the southern and central states (Figure 3).

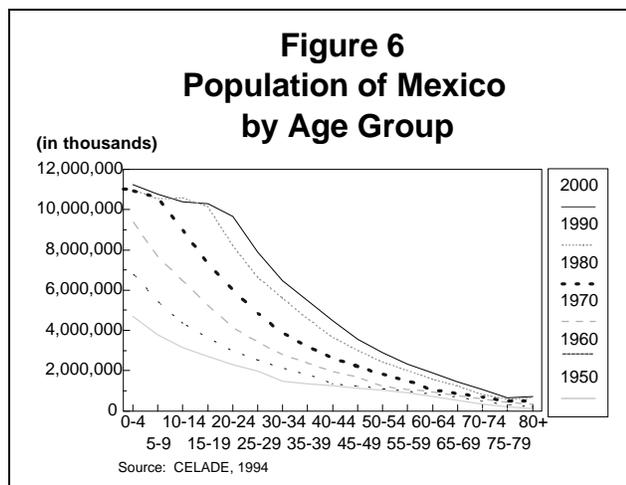
The slowing of Mexico's rapid rate of population growth over the past couple decades is due primarily to a dramatic decline in fertility rates. Mexico's total fertility rate has declined from over six children per woman in the early 1970s to just over three children per woman by the early 1990s (Figure 4).³⁰ The World Bank projects that by the year 2010 Mexico's total fertility rate will decline to the replacement level of 2.1 children per woman.

Life expectancy has increased dramatically in Mexico over the past few decades (Figure 5). Infant mortality rates have declined from 74 per 1000 births in 1960 to 24 per 1000 births in 1990. Greatly improved mortality rates since 1950 reflect public investments in sanitation and health services.



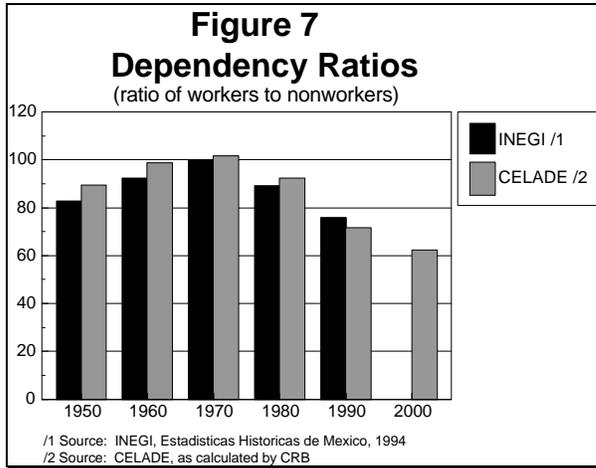
Despite the rapidly declining fertility rates in Mexico, the cohort of women of childbearing age is continuing to increase due to the high fertility rates between 15 and 44 years ago. This fact, coupled with declining mortality rates, means that the crude rates of natural increase of Mexico's population have not declined nearly so dramatically as have fertility rates.

One consequence of Mexico's historically high fertility rates is a very young population. Over half of the population is less than 20 years of age. As shown in Figure 6, with the notable exception of the youngest cohorts for 1990 and projected to 2000, the population at each age group has been



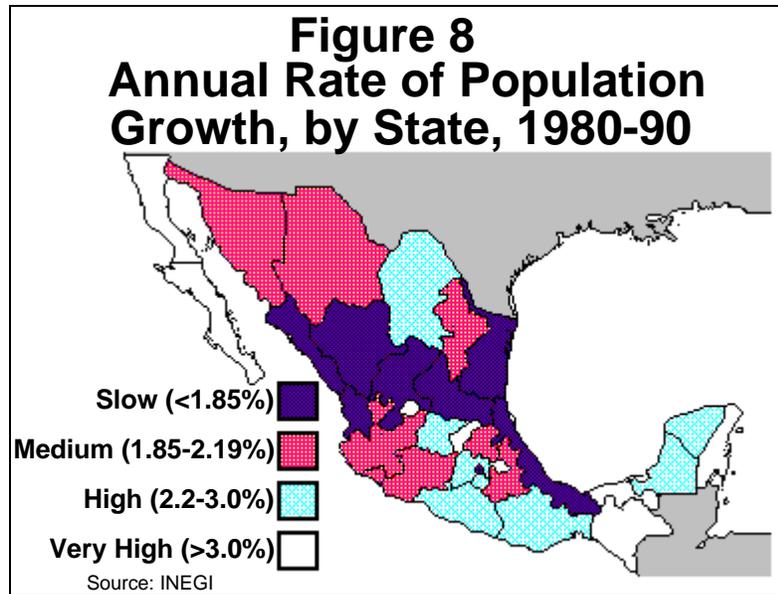
³⁰ Total fertility rate is the average number of children a woman will have in her lifetime given the prevailing age specific fertility rates.

increasing for some time. New entrants to the labor force, comprised primarily of persons between the ages of 15 and 24, will continue to increase in absolute numbers throughout this decade.



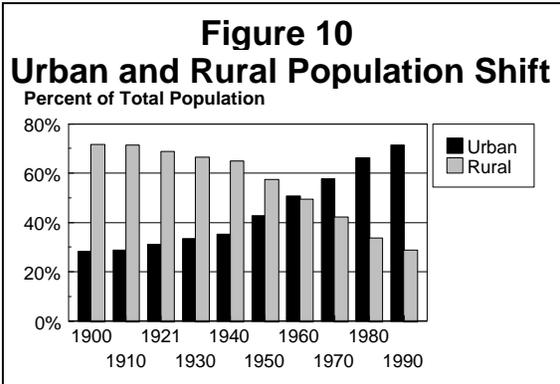
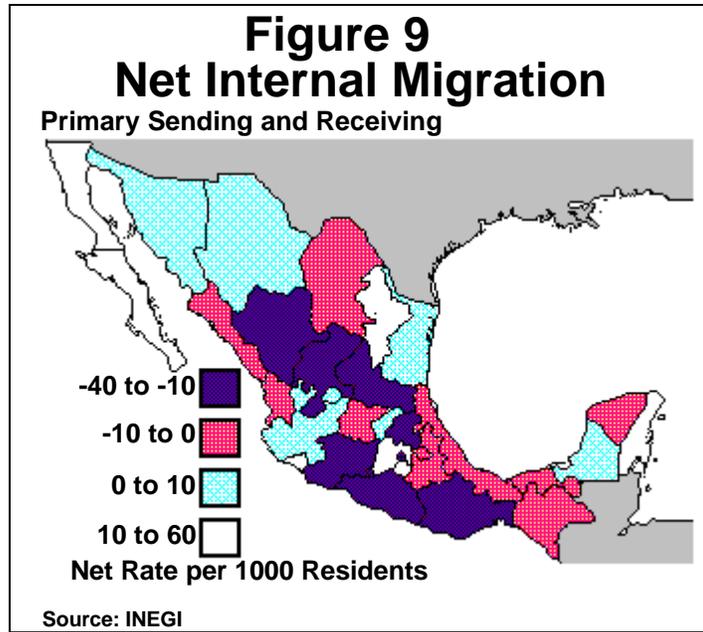
While increasing numbers of new entrants to the labor market will continue to require substantial job creation by the Mexican economy, declining dependency ratios (which measure a population's ability to support nonworkers)³¹ will be a positive economic consequence of the changing age structure in Mexico. Dependency ratios in Mexico peaked around 1970, and are projected to continue declining throughout the 1990s (Figure 7).

Population growth in Mexico varies tremendously by state. The fastest growing states during the 1980s were in the south and northwest (Figure 8). The southern states grew rapidly primarily because of high birth rates.³² The two fastest growing northwest states, Baja California and Baja California Sur, grew rapidly because of high rates of internal migration to those states (Figure 9). Birth rates are quite low in the northwestern states, with Baja California experiencing the lowest crude birth rates of any Mexican state in 1990.



³¹ The dependency ratio is a measure of a population's ability to support nonworking people. It is the number of children (less than 16 years old) and elderly persons (aged 65 and over) per 100 individuals of working age who can support the younger and older nonworkers.
³² Quintana Roo, with its Caribbean resort areas of Cancun and Cozumel, was the fastest growing state in Mexico during the 1980s. Unlike the other southern states, most of the population increase in Quintana Roo was fueled by migration. Like other southern states, Quintana Roo also has high birth rates.

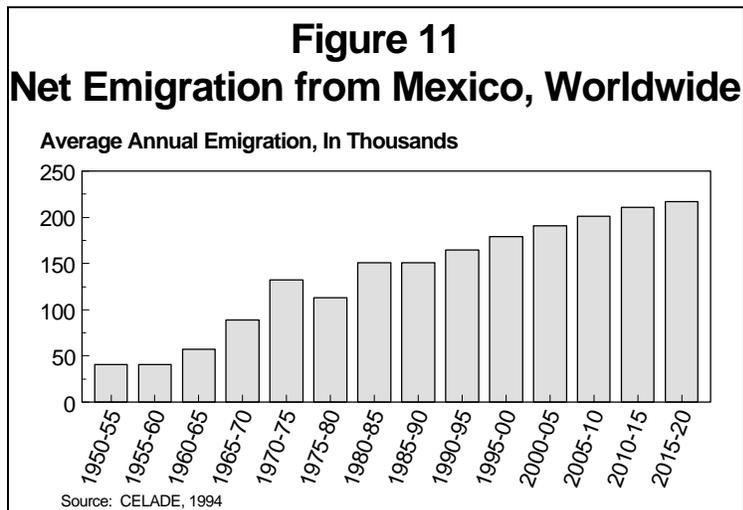
In terms of absolute changes, the greatest population growth in Mexico has been in the urban states. In particular, the metropolitan areas of Mexico City, Guadalajara, and Monterrey have grown tremendously over the past few decades. Migration from rural to urban areas has been a long-standing trend in Mexico (Figure 10), and the country's population is almost as urbanized as that of the United States. Mexico City is one of the largest urban agglomerations in the world,



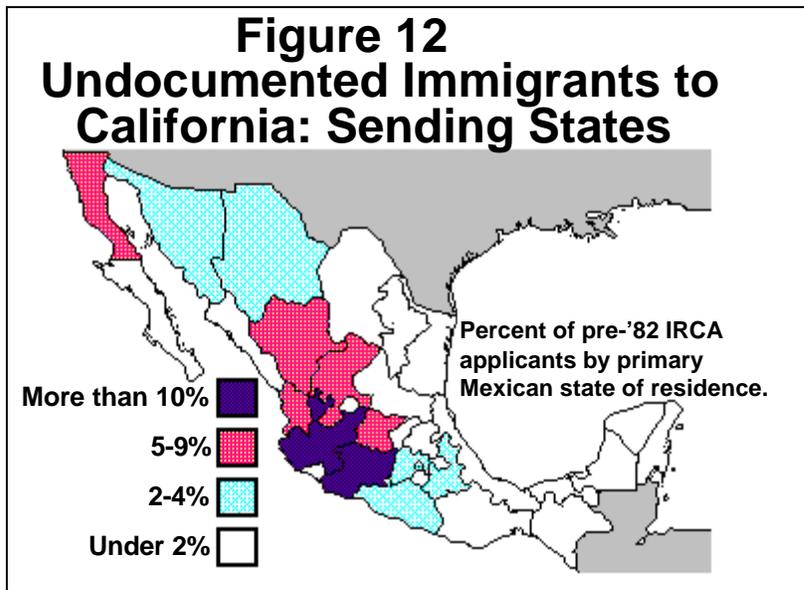
and is the leading destination for internal migrants within Mexico. Almost 1 in every 4 residents of Mexico lives in the Distrito Federal or the adjacent state of Mexico. Between 1980 and 1990, the state of Mexico experienced the greatest absolute population increase of any state in Mexico, with an increase of over two million persons.

emigrants from Mexico settle in the United States. Because a substantial number of emigrants from Mexico are undocumented, it is difficult to measure the flow of emigrants with much precision. The Centro Latinoamericano de Demografía has estimated that net emigration from Mexico averaged 150,000 per year during the 1980s, and projects that emigration from Mexico will continue to increase over the next few decades (Figure 11).

Mexico is perhaps the world's largest source of emigrants. The vast majority of

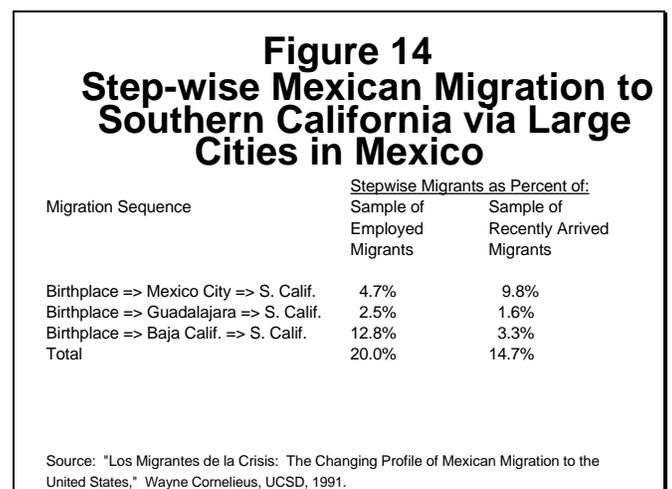
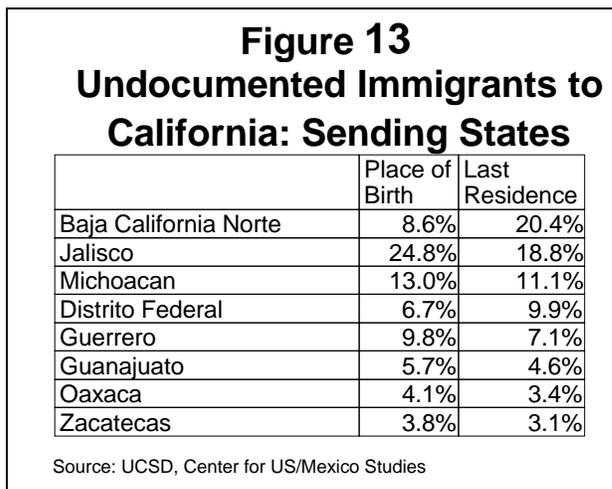


The majority of undocumented immigrants from Mexico to California have traditionally originated in only a few central states. According to a 1989 survey of undocumented immigrants in California who had applied for amnesty under the provisions of the Immigration Reform and Control Act, over half of the respondents were born in either Jalisco, Michoacan, or Zacatecas. Only 2 percent were born in the Distrito Federal (Mexico City).



Recent anecdotal data indicate that Mexico City may be an increasing source of undocumented immigrants to California. Personal interviews with Mexican-born workers employed in 100 "immigrant dependent" firms in San Diego, Orange, and Los Angeles counties, conducted in 1987-88 by the Center for U.S.-

Mexican Studies suggest that almost 7 percent of the immigrants were from the Distrito Federal (Figure 13). Data from the same sample suggest that a substantial proportion of the immigrants migrate in a step-wise fashion. Baja California, Mexico City, and Guadalajara are frequent stopping points and staging areas for migrants from other locales within Mexico before their eventual migration to California.



References

Centro Latinoamericano de Demografía (CELADE). 1994. "Boletín Demográfico." Santiago, Chile: CELADE.

Comprehensive Adult Student Assessment System. 1989. "A Survey of Newly Legalized Persons in California." Report prepared for the California Health and Welfare Agency; San Diego: CASAS.

Cornelius, Wayne. 1991. "Los Migrantes de la Crisis: The Changing Profile of Mexican Migration to the United States." San Diego: Center for U.S.-Mexican Studies.

Dowall, David and David Wilk. 1989. "Population Growth, Land Development, and Housing in Mexico City." University of California, Berkeley, Institute of Urban and Regional Development, Working Paper 502, October 1989.

Fleck, S. and C. Sorrentino. 1994. "Employment and Unemployment in Mexico's Labor Force." Monthly Labor Review, November 1994.

Instituto Nacional de Estadística, Geografía e Información. 1993. "Anuario Estadístico de los Estados Unidos Mexicanos." Aguascalientes: INEGI.

Instituto Nacional de Estadística, Geografía e Información. Various dates. "Censos de Población II al XI." Aguascalientes: INEGI.

Instituto Nacional de Estadística, Geografía e Información, "Estadísticas Históricas de México," Volume 1, 1994.

United Nations. 1989. "Population and Vital Statistics Report." United Nations Department of Economic and Social Affairs.

United States Bureau of the Census, Center for International Research, International Data Base. 1995. Unpublished tables.

United States Bureau of the Census. 1989. "World Population Profile: 1985." Washington, D.C.: Government Printing Office.

World Bank. 1994. "World Development Report 1994." New York: Oxford University Press.

Wilkie, James W. and Carlos Alberto Contreras, editors. 1993. "Statistical Abstract of Latin America." Los Angeles: UCLA Latin American Center Publications.

APPENDIX 2: EDUCATION IN MEXICO: PRESCHOOL THROUGH HIGH SCHOOL

By David Illig, Ph.D.

This discussion outlines Mexico's preschool to high school educational system. It examines the Mexican government's efforts to expand access to education, to improve educational attainment and to make the system more effective. Although Mexico has made significant strides in each of these areas, the difficult economic and social status of many of its people creates great challenges for the government.

A fairly typical family economic strategy among Mexico's poor is for the older children to leave school to work at a young age, in order to support the education of younger children. In many rural and indigenous areas, the competing demands of subsistence farming and the absence of links to the formal employment sector leave families with a lack of understanding about or empathy for the importance of education. In addition, rural and indigenous areas disproportionately have inadequate or poor quality facilities and teachers.

The World Bank, the International Monetary Fund, and the United Nations place great emphasis on improving education in developing countries. Education is widely believed to be one of the primary factors allowing a country to achieve economic maturity and to improve economic well-being for its people. Increasing educational attainment of women also is considered to be an important factor in moderating population growth.

Overview of the System

Article 13 of the Mexican Constitution guarantees the right to a free secular education for all Mexicans through middle school. Prior to 1993, this guarantee extended only through primary school.

Education in Mexico is highly centralized. Over 75 percent of school funding is provided by the federal government and curriculum is developed by the federal Secretary of Education. Textbooks are written, printed and distributed by the federal government and all schools -- both public and private -- use these books. All public school teachers are members of or are represented by the national teachers union (SNTE). The SNTE negotiates all contracts with the Secretary of Education.

The federal government has, since the 1970s, expressed an interest in decentralizing elementary education. The most recent, and perhaps the most significant, effort began in the early 1990s. This effort has begun shifting funding for elementary and middle schools to state education agencies. Nevertheless, many decisions remain centralized and the teachers union remains a major part of education policy making.

School construction is funded primarily by the federal government, although state and local governments also provide some facilities. All facility maintenance (including

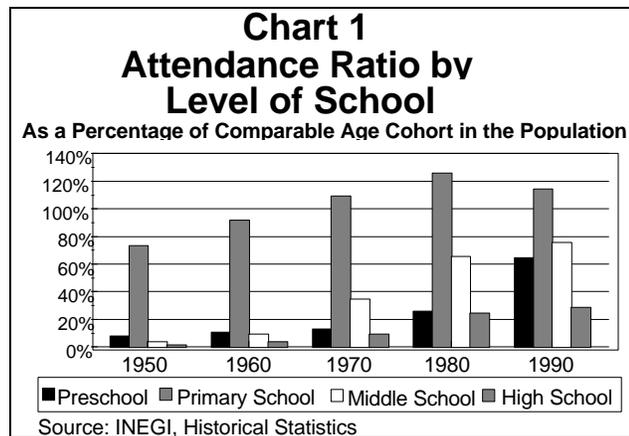
janitorial services) and supplies, and most repairs are provided by local parent groups organized by each school. Schools in poor communities where parents are unable to provide funds for supplies, maintenance and repairs must make do with whatever in-kind aid they can develop locally.

School facilities show marked differences in quality, with indigenous areas (generally the southern tier of states) and poor urban areas having the worst facilities. Further, rural areas typically have fewer and less-well-prepared teachers. As we see below, adults in rural and indigenous areas tend to have lower literacy rates and to complete fewer years of school.

Mexican schools require students to pass an examination at the end of each school year in order to move on to the next grade. These exams are mandated by the federal government but are composed, administered and scored locally. In addition, in many urban areas a national examination is given to all primary school graduates before enrollment in middle school. These exams are used to "stream" students by determining which school they can attend and for which periods of the day.

Structure of the School System

There are four basic levels of education in Mexico, roughly similar to those in the U.S.: preschool, primary school, middle school, and high school. Chart 1 provides an historical overview of school attendance by children in the relevant age groups. (The more than 100 percent attendance figures for primary school include children outside the regular age groups who are repeating or returning to school. The 1990 figure suggests a declining number of older returning primary school students.)



Early Childhood Education and Preschool. The Mexican government has placed great emphasis on improving access to preschool education. Increasing access to early childhood education and kindergarten is thought to be the single most important investment that developing countries can make to assure that children will be prepared for and continue in school.

Early childhood education in Mexico involves children from several months to four years old. Historically, these programs were privately operated, however, since the early 1980s, the federal and state governments have been expanding funding for these programs. Originally these programs were similar to U.S. day care centers and were somewhat informal. Increasingly, they have included child cognitive development and parent

education components. Child development centers funded by the government generally are located at large businesses or government agency employment centers.

Kindergarten is a legal right for children ages 4 and 5. The government has placed great emphasis on increasing access to kindergarten (see Chart 1). Overall preschool enrollment has gone from about 13 percent of the relevant age group in 1970 to about 65 percent in 1990 -- representing enrollment of about 2.7 million children. Efforts to increase kindergarten enrollment have been concentrated on rural and indigenous states and in poor suburbs of larger cities.

Primary Schools. Primary schools provide the basic education program for children. They generally offer six grades and operate 10 months per year (with vacations in December and April) for six hours per day. Virtually all children have access to primary schooling, although a significant number end school before completing all six grades (particularly in rural areas). However, although primary schools are, in principle, available to all children ages six to eleven, the World Bank estimated that in 1989 over 300,000 children were not attending school.

Primary schools experience significant repetition (11 percent) and dropout (6 percent) rates. There is significant variation among states. For example, in 1988-89, the southern, rural and indigenous state of Chiapas reported the highest state dropout rate -- almost 16 percent -- while the Federal District reported one of the lowest -- 2 percent. Similarly, repetition rates were about 15 percent for Chiapas and 6 percent for the Federal District.

The quality of school facilities also differs substantially by region and by urban-rural breakouts. Many rural schools are the equivalent of one room schools or offer only some of the primary grades (so-called partial schools). For example, in the 1988-89 school year, Chiapas in the far south reported that about 29 percent of all schools were one-room schools and an additional 44 percent were partial schools. In contrast, the Federal District (Mexico City) reported no one-room schools and only 3 percent partial schools.

Middle School. About 4.6 million children attended middle school in 1990, nearly 75 percent of the total relevant age group of about 6.1 million children. This is a significant improvement over the 35 percent who attended middle school in 1970. Attendance rates vary significantly by state, with relatively rural and indigenous states having the lowest attendance. The drop-off is most extreme in the poorest southern states such as Chiapas and Oaxaca.

There are two kinds of middle school in Mexico. First is the general middle school, which serves as the primary link to high school and serves nearly 75 percent of middle school children. The second is a so-called "terminal" middle school which ends with entry to the work force and provides vocational training to children who do not expect to attend high school. About 25 percent of children were in these schools.

Special Programs. The Mexican government has made significant efforts over the last 25 years to make primary and middle school available to all children. As part of this effort

the federal government has created several specialized programs in order to reach children in more rural areas of the country, and for children in newly suburbanized areas around major cities.

These programs include: (1) bilingual/indigenous language instruction for areas with high concentrations of non-Spanish speaking people; (2) tele-secondary instruction for middle school children in remote locations (using specially designed workbooks and trained facilitators to work with small groups of children in conjunction with instruction broadcast over television); and (3) "community schools" which offer three grades of instruction and use high school graduates to teach small groups of preschool and primary school children using special textbooks. These programs suffer from problems that include budget constraints, difficulties in distribution of materials, poor broadcast quality, lack of sufficient teachers and facilitators, and poor access and facilities in rural areas.

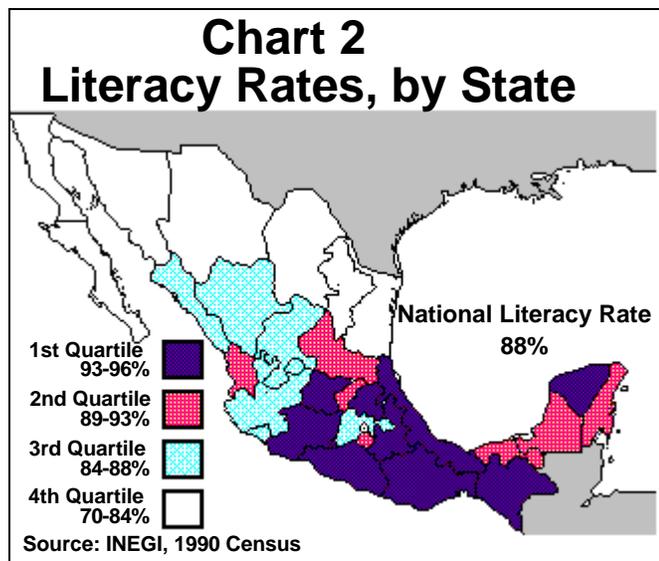
Several specialized programs are directed at adult literacy and vocational education. Finally, the government is beginning programs for gifted students (primarily in large cities) and special education classes in some schools for children with learning problems.

High School. Children who complete the general middle school curriculum are eligible to attend high school. About 2.2 million, or 29 percent, of the 7.7 million children in the relevant age group attended high school in 1990. Again, this is a significant improvement over the less than 10 percent of children who attended high school in 1970.

Children can choose from one of three basic high school tracks. The professional/vocational track is a four year program which terminates in employment. These schools provide training in business-related fields such as bookkeeping, computer operations, and computer programming. Two tracks result in a baccalaureate degree which allows graduates to continue on to college: a technical track (which is four years in length) and a basic track (which is three years in length). Many high schools are affiliated with or are operated by universities.

Literacy and School Completion

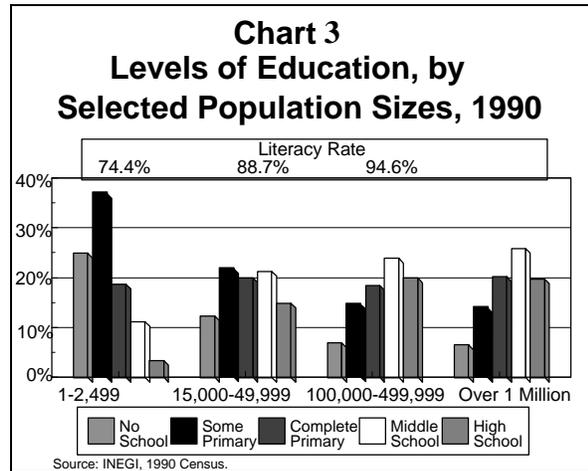
Literacy. Chart 2 shows literacy rates³³ by state in 1990 for the population age 10 and older. As can be seen, literacy rates vary significantly by state and region.



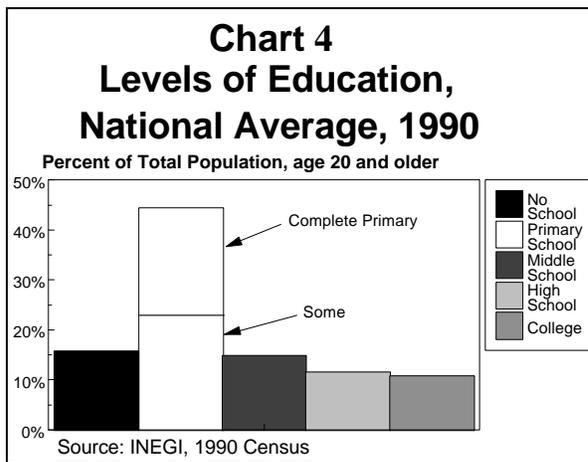
³³ Literacy rates reported here are taken from national census data and are self-reported. Generally, literacy in Mexico represents a basic ability to read and write and is achieved after about four years of schooling.

The national average literacy rate in 1990 was 88 percent, a significant improvement from the 57 percent rate in 1950. The southern and central states generally have lower literacy rates than the northern states and the Federal District. For example, Chiapas, in the far south, has an average literacy rate of under 70 percent, in contrast to the Federal District's rate of nearly 96 percent and Baja California's rate of 95 percent. In 1950, these rates were 35 percent, 82 percent and 81 percent respectively.

Two additional literacy trends are of note. First, younger age groups have significantly higher literacy rates than older age groups. For example in 1990, youth between the ages of 15 and 19 reported a literacy rate of 96 percent compared to individuals over age 65, who reported a rate of about 63 percent. Second, as shown in Chart 3, there is a marked difference in literacy rates between large urban areas as compared to rural areas. For example, in urban areas with populations over one million persons, the literacy rate is about 95 percent while for rural areas with fewer than 2,500 persons, the literacy rate is about 74 percent.



Literacy rates mirror other educational differences between states. For example, states with low school dropout rates have higher literacy rates overall than states with high dropout rates.



School Completion. Chart 4 shows school completion for individuals over age 19 at the time of the 1990 census. About 60 percent of the population over age 19 had not received any schooling beyond primary school. There are wide variations between regions and between large metropolitan and rural areas. First, in the poorest, rural, indigenous, and southern state of Chiapas, almost 74 percent of the population reported either no schooling (29 percent), some primary school (31 percent) or completed only

primary school (14 percent). In large metropolitan areas only 41 percent reported no more than a primary school education, while 6 percent reported no schooling. In contrast, in rural areas the comparable numbers are over 80 percent with no more than a primary school education and 25 percent with no schooling.

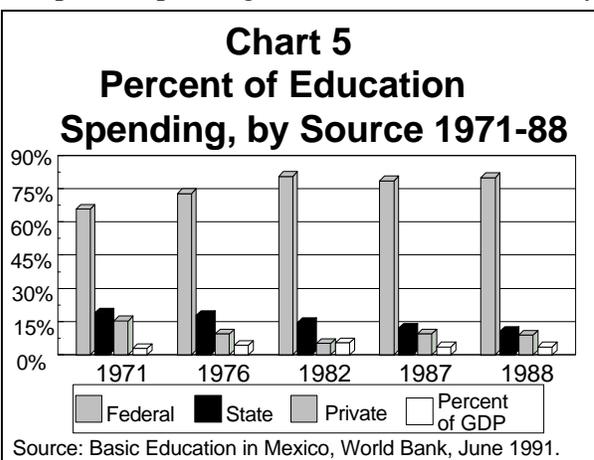
Other Factors. A number of other factors affect literacy rates and school completion rates and contribute to variations between states. The rural states contain the highest proportion of indigenous language speakers, have the highest concentration of "community schools," and make the greatest use of tele-secondary education. Anecdotal evidence suggests that while many rural areas have at least rudimentary educational facilities, teaching is uneven. For example, teachers often leave the community for several days each pay period to cash their paychecks. In addition, rural areas draw the most inexperienced teachers, resulting in significant teacher turnover. Further, many teachers lack specialized training in the teaching methods needed to be effective in one-room or partial schools -- especially those with large concentrations of non-Spanish speakers.

School Finance

Chart 5 provides an overview of education financing in Mexico during the 1970s and 1980s. Federal funding clearly predominates while the states reduced their share of funding.

Prior to Mexico's debt crisis in late 1982, the share of GDP for education was increasing -- reflecting the importance placed on education as a central component of economic development. Beginning in 1983, however, the share of GDP for education decreased and remained lower throughout the decade. (The debt crises of 1982 and 1986 forced many reductions in public spending.)

In spite of spending reductions, the availability of education continued to expand



throughout the 1980s. Two factors appear to have allowed this to occur. First, teacher salaries declined significantly in purchasing power. Second, the federal government reduced funding for teacher training colleges to shrink the supply of teachers. After 1988, when President Salinas came to power, spending on education began to increase again, as did teacher salaries.

Efforts to Decentralize Education.

Beginning in 1978, the federal

government undertook a series of efforts to decentralize education and make it more responsive to local needs. State offices of the Secretary of Education (SEP) were created to oversee pre- and primary schools. Some planning and resource allocation decisions also were moved as were some decisions about teacher placement and conditions of employment. These changes may have reduced the influence of Mexico's teachers union -- the largest in Latin America.

Beginning in 1992, the federal government made additional efforts to decentralize education, most significantly by moving responsibility and funding for preschools and primary schools to state governments. It is too early to determine how well this will work in practice. State offices also were given more responsibility to oversee local school staffing, collect statistical data and monitor the supply of textbooks.

Solidarity. The Solidarity program begun in 1989 by President Salinas provided some funds for repair and construction of schools. Funds were to be primarily allocated to poor rural areas and to poor suburbs of larger cities, although this did not always occur. Solidarity also provided scholarships to children at risk of dropping out during their first three years of primary school. These scholarships included small cash grants, food, small household goods, and access to medical care and were predicated on continued attendance and progress in school.

Sources

Abeledo, Carlos and others, "Science and Technology Program: Loan Proposal," Inter-American Development Bank (circa late 1993).

Carlson, Sam and Juan Prawda, "Basic Education in Mexico: Trends, Issues, and Policy Recommendations," The World Bank (June 1991).

Cornelius, Wayne, Ann Craig, and Jonathan Fox, eds, Transforming State-Society Relations in Mexico: The National Solidarity Strategy, Center for U.S.-Mexican Studies, San Diego (1994).

de Moya, M. Martin and others, "Integrated Compensatory Education Program: Loan Proposal," Inter-American Development Bank (circa late 1994).

Duran, Clemente, Rosalba Licea, and Enrique Durazo, "Sistemas De Bienestar Social en Norte America Analisis Comparado," Secretaria De Desarrollo Social (SEDESOL) 1994.

Gershberg, Alex, "Distributing Resources in the Education Sector: Solidarity's Escuela Digna Program," in Cornelius, Wayne, Ann Craig, and Jonathan Fox, eds, Transforming State-Society Relations in Mexico: The National Solidarity Strategy, Center for U.S.-Mexican Studies, San Diego (1994).

Gill, Clark C., "The Educational System of Mexico," US Department of Health, Education, and Welfare (circa 1975).

Hayes-Bautista, David E., Werner O. Schink and Chapa Jorge, The Burden of Support: Young Latinos in an Aging Society, Stanford University Press (1988).

INEGI, Anuario Estadístico de los Estados Unidos Mexicanos, Instituto Nacional de Estadística, Geografía e Informática (1991).

Lorey, David E., "Education and the Challenges of Mexican Development," Challenge (March-April 1995).

Lustig, Nora, Mexico: The Remaking of an Economy, The Brookings Institute (1992).

Martin, Christopher J., Schooling in Mexico: Staying In or Dropping Out, Avebury (1994).

Medina, Alberto Hernandez and Manzoor Ahmed, Education and Youth Employment in Less Developed Countries: Mexico and South Asia, Carnegie Council on Policy Studies in Higher Education, The Carnegie Foundation (1978).

Morales-Gomez, Daniel A., and Carlos Alberto Torres, The State, Corporatist Politics, and Educational Policy Making in Mexico, Praeger (1990).

Myers, Charles Nash, "Education and National Development in Mexico," Industrial Relations Section, Department of Economics, Princeton University (1965).

Ornelas, Carlos, "The Decentralization of Education in Mexico," 18 Prospects no. 1 (1988).

Palafox, Juan Carlos, Juan Prawda and Eduardo Velez, "Primary School Quality in Mexico," 38 Comparative Education Review no. 2 (1994).

Prawda, Juan and George Psacharopoulos, "Educational Development and Costing in Mexico, 1977 - 1990: A Cross-State Time-Series Analysis," 13 Educational Development no. 1 (1993).

Psacharopoulos, George and Harry Patrinos, Indigenous People and Poverty in Latin America: An Empirical Analysis, World Bank (1994).

Reimers, Fernando, "The Role of Organisation and Politics in Government Financing of Education: The Effects of 'Structural Adjustment' in Latin America," 27 Comparative Education no. 1 (1991).

Reimers, Fernando, "The Impact of Economic Stabilization and Adjustment on Education in Latin America," 35 Comparative Education Review no. 2 (1991).

Reimers, Fernando, "The Challenges for Early Education Policy in Latin America and the Caribbean," 13 International Journal of Educational Development no. 4 (1993).

Riding, Alan, Distant Neighbors: A Portrait of the Mexicans, Vintage Books (1989).

Rippberger, Susan J., "Ideological Shifts in Bilingual Education: Mexico and the United States," 37 Comparative Education Review no. 1 (1993).

Schiefelbein, Ernesto, The State of Education in Latin America and the Caribbean, 1980 - 1989, Regional Office for Education in Latin America and the Caribbean, UNESCO (circa 1992).

Schiefelbein, Ernesto and Laurence Wolff, "Repetition and Inadequate Achievement in Latin America's Primary Schools: A Review of Magnitudes, Causes, Relationships and Strategies," Human Resources Division, Technical Department Latin America and the Caribbean Region, The World Bank (August 1992).

Thompson, Debra M. and Janel Saenz, "Gifted Education Moves Ahead in Mexico," GCT (September/October 1990).

Torres, Carlos Alberto and Daniel Schugurensky, "The Politics of Adult Education in Comparative Perspective: Models, Rationalities and Adult Education Policy Implementation in Canada, Mexico, and Tanzania," 30 Comparative Education no. 2 (1994).

UNESCO, Statistical Yearbook, UNESCO, United Nations (various years).

Varese, Stefano, "Challenges and Prospects for Indian Education in Mexico," 20 Prospects no. 3 (1990).

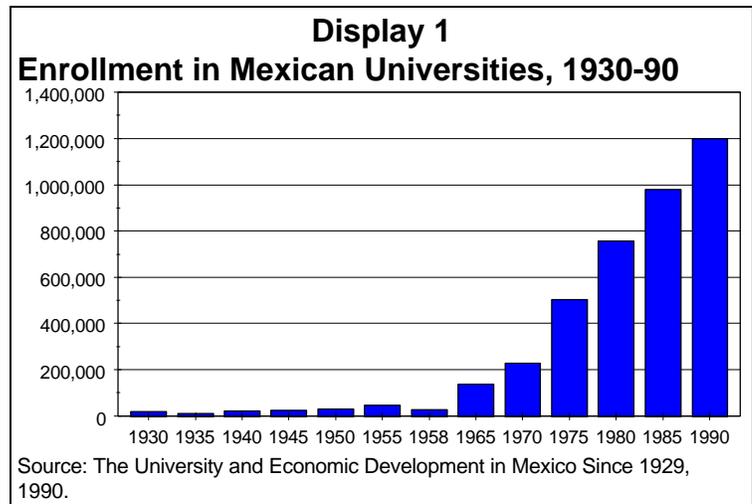
APPENDIX 3: HIGHER EDUCATION IN MEXICO

By Kirk Knutsen

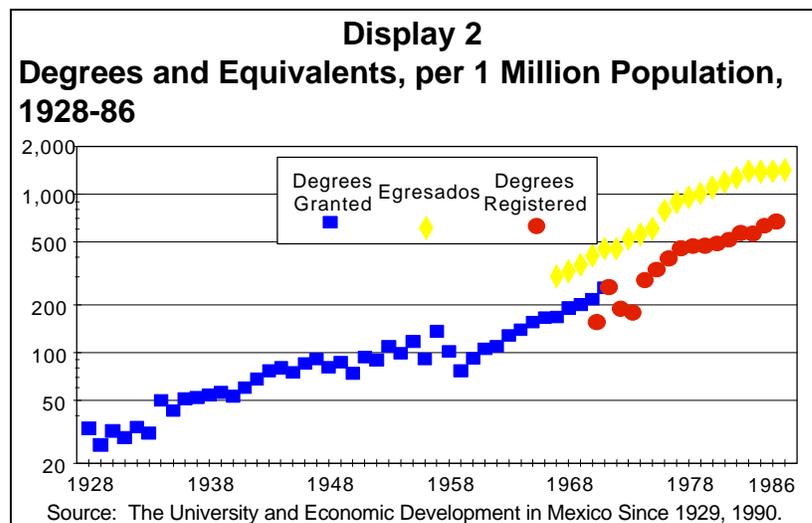
Much of Mexico's hope for upward social and economic mobility has been vested in the nation's higher education system. However, expectations for Mexican higher education have almost always exceeded the reality (Lorey; 1990). Nevertheless, by many measures significant progress has been made in Mexican higher education over the past 65 years.

Massification

Since higher education is a major mechanism for achieving social and economic mobility, it is not surprising that there has been persistent pressure over the decades to increase access to colleges and universities for the middle and lower classes. These pressures reached a peak in the late 1960s, when major student riots erupted in Mexico City over the issue of access to the universities. In response, undergraduate enrollment skyrocketed (See Display 1). Most observers believe that the most important development in Mexican higher education has been its "massification", with enrollment increasing from under 30,000 students in 1958 to over 1.2 million students in 1990.



This enrollment growth has resulted in increases in degree production. As shown in Display 2, college degree holders increased from approximately 35 per million in 1928 to over 750 per million in 1986. In addition to formal degree recipients, by 1986 the number of *egresados*³⁴ had increased to over 1,500 per million.



³⁴ *Egresados* are students who have completed all requirements for a college degree except the final thesis. They often fill technical positions.

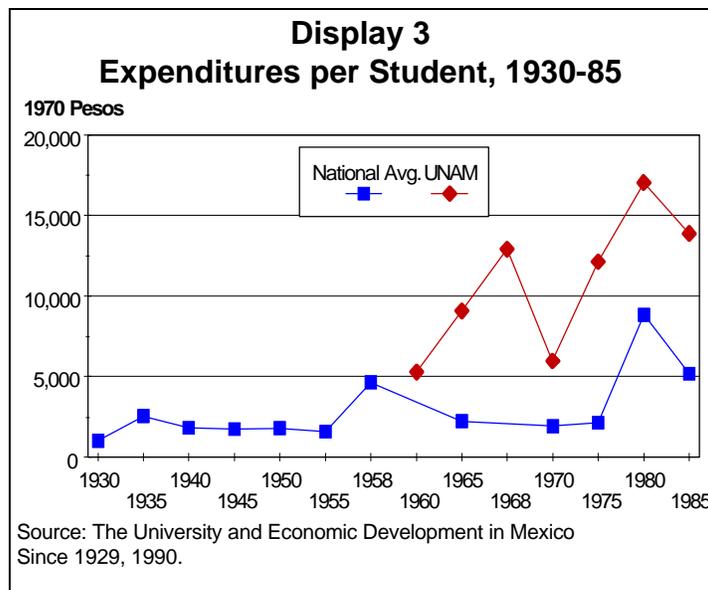
Quality and Growth in the Private Sector

Some analysts have criticized the effect that this rapid growth has had on the quality of Mexican public higher education. Concurrently, a vibrant system of private higher education has developed over the years and now competes quite effectively with public universities. In 1987, there were 362 universities in Mexico, of which 191 were private institutions. While there are numerous exceptions to the rule, faculty in the large public universities are generally associated with Marxist analysis, while private faculty are seen as having more of a free market orientation. Not coincidentally, graduates of the public universities are seen by most analysts as filling out the ranks of the government bureaucracy, while the private institutions serve many of the needs of the scientific and business communities (Camp; 1993).

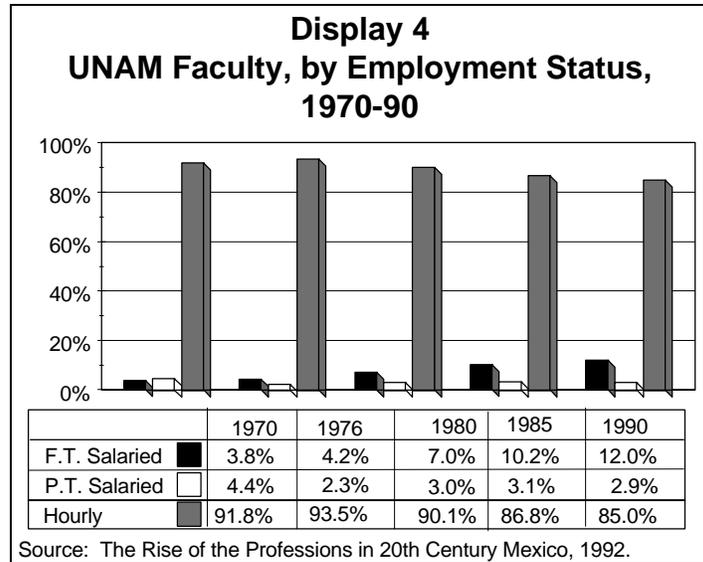
The National Autonomous University of Mexico (UNAM) in Mexico City and the National Polytechnic Institute (IPN) are the public flagship universities, while the Monterrey Technical Institute (modeled after MIT) and the Colegio de Mexico in Mexico City are among the most prestigious private institutions. By international measures, Mexican higher education is plagued by chronic underfunding and low standards. As a result, many of the elite in Mexico receive their collegiate training in the United States.

Indices of Educational Quality

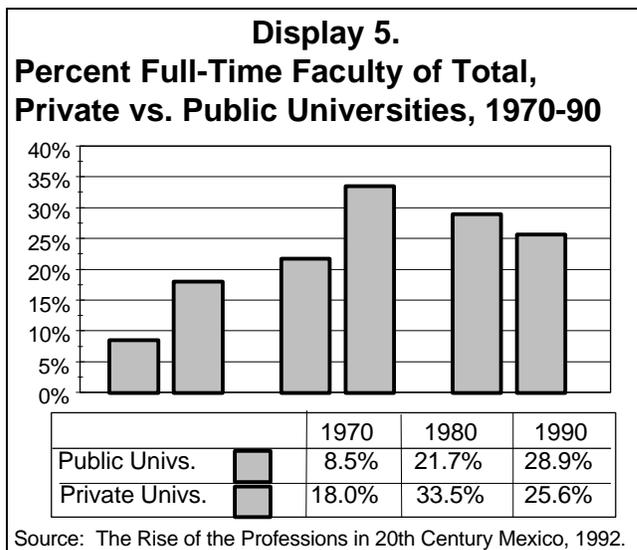
Expenditures per student is one common measure for estimating institutional quality, and as shown in Display 3, expenditures for Mexican higher education have grown over the years (although per student spending remains only a small fraction of the expenditures in American and European universities). In addition, spending has been highly erratic, swinging wildly in reaction to political and economic changes within Mexico. This unpredictability compounds the problem of underfunding because it makes meaningful long-range planning extremely difficult for educational leaders.



The employment status of the faculty is another important indicator of the quality of a college or university. As shown in Display 4, the proportion of UNAM faculty who are salaried full-time employees more than tripled between 1970 and 1990, moving from 3.8 percent of the faculty to 12 percent. This is significant progress, yet over 87 percent of the UNAM faculty remain either part-time salaried or hourly employees.



Display 5 shows that Mexican public universities generally have more full-time faculty than private universities.



Student-faculty ratios are another important indicator of institutional quality, and in this area the data are extremely informative in comparing public and private institutions. Student-faculty ratios at public universities increased from 10:1 in 1970 to only 13:1 in 1990, despite the enormous enrollment growth discussed earlier. Similarly, the ratios at private universities increased from 8:1 to 10:1 over the same period. By international standards, these data compare favorably to student-faculty ratios at colleges and universities anywhere in the world.

However, a different picture emerges when examining Students per *Full-Time Faculty Equivalent* (FTFE) (Display 6). This measure controls for the fact that the vast majority of faculty work part-time, and results in dramatically higher student-faculty ratios. Student-FTFE ratio in public universities in 1970 (just two years after the student riots) was a whopping 205:1. This period was characterized by massive enrollment growth and an inability on the part of public universities to hire enough faculty. Private universities flourished, while public universities were widely criticized for sacrificing quality in order to accommodate enrollment growth. The Student-FTFE ratio was only 85:1 in private universities in 1970 -- high by international standards, but less than half the ratio in the

public universities. Since that time, public universities have made significant progress, reducing their Student-FTFE ratio from 205:1 to 52:1, while private universities lowered their Student-FTFE ratio to 67:1.

Diversifying Access to Higher Education

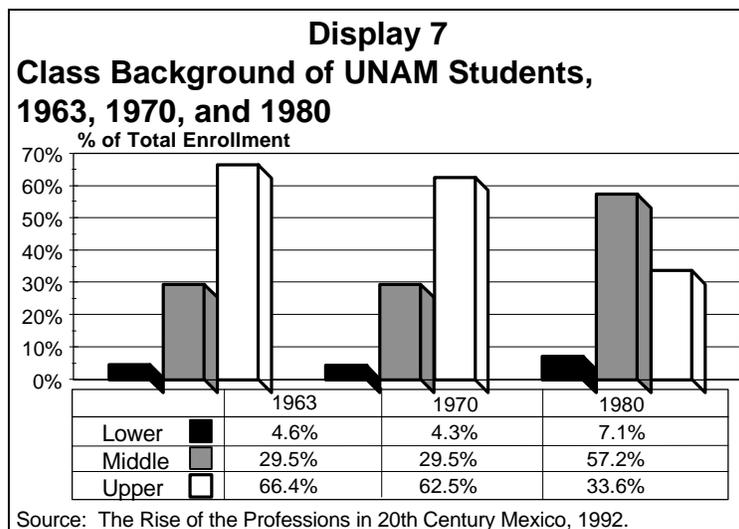
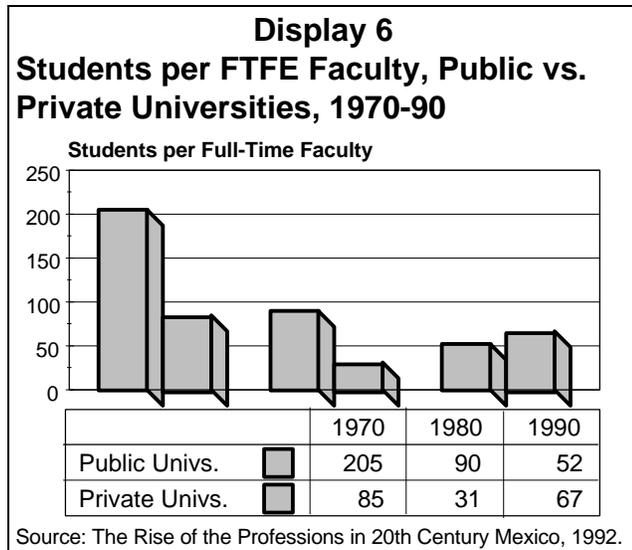
As noted earlier, an important goal for the public universities has been to provide upward mobility for the middle and lower classes.

While data are limited for the educational system as a whole, data available from UNAM indicate some progress. Specifically, UNAM students identified as “upper class” have been cut in half, dropping from 66 percent of total students in 1963 to 34 percent in 1980 (the last year for which data are available). Conversely, over the same period students from “lower class”

backgrounds increased from 5 percent to 7 percent, and “middle class” students increased from 30 percent to 57 percent (See Display 7). This might be the result of the large increase in enrollment noted above, the disproportionate transfer of wealthy students to private universities, or some combination of these and other factors.

Summary

Overall, the data assessing the quality of Mexican higher education are sporadic and should be treated with caution. Nevertheless, when taken together, the data do show three fairly consistent patterns: 1) there have been dramatic increases in both access and degree production in Mexican higher education; 2) as measured by traditional indices, there has been much slower improvement in the quality of both the public and private universities; and 3) despite these improvements, in all measures examined (access, degree production, and quality), Mexican higher education still lags far behind colleges and universities in more developed nations.



Bibliography

- Altbach, Philip G., "NAFTA and Higher Education; The Cultural and Educational Dimensions of Trade," *Change*, v.26, p.48 (2), July-August, 1994.
- Camp, Roderic A. "The Rise of the Professions in the Twentieth-Century Mexico: University Graduates and Occupational Change Since 1929 (book reviews)," *Journal of Latin American Studies*, v.25, n.2, p.412 (2), May 1993.
- "Country Fact Sheet: Mexico," (US-Mexico Binational Commission Meeting: Mexico City, May 8-9, 1994) *U.S. Dept. of State Dispatch*, v.5, nsupp-3, p.19 (5), May 1994.
- Desruisseaux, Paul. "Promoting Collaboration in North America: (Cooperation among institutions of higher education in the US, Canada, and Mexico)," *Chronicle of Higher Education*, v.40, n.41, p.A36 (2), June 15, 1994.
- Hausman, Fay. "Mexican Giants Stumble (criticism of Mexican universities)," *Times Higher Education Supplement*, n.1005, p.8 (1), February 7, 1992.
- Lopez, Rhona Statland de. "Leaders of Mexican Higher Education Fear Reform Movement is Losing its Momentum," *Chronicle of Higher Education*, v.40, n.50, p.A33 (1), August 17, 1994.
- Lopez, Rhona Statland de. "Innovations Help Mexico's Universities Circumvent Poor Communications Links," *Chronicle of Higher Education*, v.39, n.31, p.A36 (2), April 7, 1993.
- Lorey, David E. "The University and Economic Development in Mexico Since 1929," (Los Angeles: UCLA) doctoral dissertation, 1990.
- Monaghan, Peter. "North American Academic Cooperation Becomes a Higher Education Goal," *Chronicle of Higher Education*, v.40, n.5, p.A37 (2), September 22, 1993.
- Ornelas, Carlos; Post, David. "Recent University Reform in Mexico (focus on higher education)," *Comparative Education Review*, v.36, n.3, p.278 (20), August 1992.
- Pipho, Chris. "Reform is Coming to Higher Education," *Phi Delta Kappan*, v.75, n.9, p.662 (2), May 1994.
- Tangeman, Mike. "Campaign to Tap More Private Funds for Universities in Mexico Called a Threat to Their Independence," *Chronicle of Higher Education*, v.37, n.29, p.A35 (2), April 3, 1991.
- Tangeman, Mike. "University Rectors in Mexico Back Government Evaluation Plan but Fear Financial Effects," *Chronicle of Higher Education*, v.36, n.46, p.A31 (1), August 1, 1990.
- Wegman, Myron E. "Social Origins, Medical Education, and Medical Practice," *American Journal of Public Health*, v.81, n.1, p.13 (2), January 1991.
- Williams, Mary. "Mexican Voters Review Salinas's Achievements: Higher Education in Mexico Under Carlos Salinas," *Times Higher Education Supplement*, n1137, p.9 (1), August 19, 1994.

APPENDIX 4: MEXICAN AGRICULTURE

By Kenneth W. Umbach, Ph.D.

In any discussion of Mexican agriculture--and perhaps any discussion of Mexican *anything*--it is important to recognize that *Mexico is a nation of wide contrasts*. As Paul Lamartine Yates has noted, "although for many purposes we are obliged to discuss changes in terms of national averages we should never forget the tremendous contrasts from region to region in the character and tempo of development."³⁵ Not only do landforms and climates vary, so do social structures, land ownership, racial/cultural origin, and language. In short, any attempt at a national summary must greatly oversimplify. The reader should bear this in mind in considering what follows.

Introduction

Early in the 20th Century, Mexico was a predominantly rural nation. About three-quarters of the nation's population of about 20 million was rural, and the remaining quarter was urban. Since then, Mexico's population has grown to around 90 million, about three quarters of whom are urban dwellers and only one quarter rural. (Mexico City *alone* now encompasses about as many people as were in all of Mexico at the end of the Revolution in 1917.) Although the ratio of urban to rural dwellers has reversed, the total number of rural dwellers has increased. The cities have grown, but in growing they have not drained the countryside of its population.

Now as in past generations, the predominant occupation of rural Mexico is agriculture. An estimated 21 percent of Mexico's labor force is engaged in agriculture, but only about 7.4 percent of Mexico's gross domestic product derives from agriculture. This disparity helps to explain the deep, wide poverty of rural Mexico.

Land-Holding Traditions and Institutions Affect Mexican Agriculture

Agriculture in Mexico is intimately connected with a complex history of land tenure. This history draws from ancient indigenous ("Indian") traditions and from practices imposed by the conquering Spaniards. The right to hold and use land has been a vexing matter throughout Mexico's history and prehistory, and defies a full accounting in the short space of this report.³⁶ Suffice it to say that land ownership has alternately been distributed, concentrated, redistributed, and reconcentrated over the years, and that inequities in land distribution were at the heart of the long and bloody Mexican Revolution. Land

³⁵ *Mexico's Agricultural Dilemma* (Tucson, Arizona: University of Arizona Press, 1981), p. 15.

³⁶ See George McCutchen McBride, *The Land Systems of Mexico* (N.Y.: American Geographical Society, 1923), for a thorough review of the background. Also see Tom Barry, *Zapata's Revenge: Free Trade and the Farm Crisis in Mexico* (Boston: South End Press, 1995), *passim*.

redistribution was both a rallying cry and a tool for manipulating the peasantry for more than half a century after the Revolution.

Most Mexican agricultural land is not owned outright. Rather, individuals or groups are granted the right to use the land (usufruct). They cannot sell it, rent it, or sharecrop it legally, although under-the-table arrangements frequently circumvent these restrictions. Over a period of several decades after the Mexican Revolution, land seized from large haciendas was distributed to peasants under these restrictive conditions. Recipients were required to farm the land or lose it.

Some of the land, established as *ejidos*,³⁷ was treated as collective, some was parceled out to individuals. The quality of the land distributed under land reforms has varied from quite good (for example, much that was redistributed under the Cardenas administration, 1934-40) to essentially worthless desert. The pace of distribution waxed and waned over the years, but the process has now been declared officially at an end.

Hanging over all land rights in Mexico is the chaotic condition of records and demarcations. Much (possibly most) Mexican land has never been surveyed and recorded. For this and other reasons (difficulty of the terrain, corruption, illegal or undocumented transfers, and the chaos of the Revolution, among others), titles are often, if not generally, uncertain.

The rules of land-holding have been highly problematical:

Since ejidatarios do not possess title to their holdings, they cannot sell them. Nor can they retain the right to use this land if they do not cultivate it. Nevertheless, these farmers have found ways of avoiding active cultivation of their land so that they are free to seek off-farm employment. The practice of sharecropping is becoming more widespread. A certain amount of renting of ejido land is also believed to be taking place; however, since the practice is illegal, it is impossible to obtain estimates of its incidence.³⁸

Revisions to Article 27 of the Constitution, effective in 1992, are changing the meaning of land-holding in Mexico. Ejidatarios will be able to rent or sell their land, and (presumably)

³⁷ "Ejidos are groups of twenty or more farmers (ejidatarios) who organized to petition for, receive, and work land redistributed during the agrarian reform. In most ejidos, arable land plots were allocated to farmers who cultivated them individually. Pasture, forest, and other lands not apt for cultivation are common lands of the ejido. Few ejidos work arable land communally." Billie R. DeWalt and Martha W. Rees, with Arthur D. Murphy, *The End of the Agrarian Reform in Mexico: Past Lessons, Future Prospects* (Transformation of Rural Mexico, Number 3). San Diego: Ejido Reform Research Project, Center for U.S.-Mexican Studies, UCSD, 1994, p. 2 (note). Ejidos are distinguished from "agrarian communities," or *comunidades agrarias*, which "are based on land tenure forms from the colonial period." (*Ibid.*, p. 14.) For convenience, the words "ejido" and "ejidatario" are not italicized below in this report except where italicized in direct quotations.

³⁸ Peter Gregory, *The Myth of Market Failure: Employment and the Labor Market in Mexico* (Baltimore: Johns Hopkins University Press, 1986), p. 106.

divide it among offspring (although the small size of typical holdings makes the latter untenable). Under the revised law, ejidatarios have recognizable ownership of their land, not just limited rights to use the land. However, *in order for the new law to take real effect, the land must be accurately surveyed and recorded.* This will be a daunting task, extending through the Zedillo administration (ending in the year 2000) and probably beyond.

Ejidos' Role in Agricultural Production

Although ejidos are extensive, their productivity is less than commensurate with the expanses of land they encompass. In summary, "Ejidos occupy 43% of Mexican farmland and comprise well over 60% of the nation's farmers. Yet they produce less than 10% of the country's [agricultural] output."³⁹

Ejido land is predominantly devoted to small-scale production of commodities for domestic use, and often for use by the farmers themselves. The generally poor quality of ejido land and the numerous constraints on the use of the land, ranging from legal restrictions to lack of financing, limit production.

For Many, Agriculture is a Part-time Occupation

Because of the difficulty of making a living from the available land, and because working that land does not require the full time of the farmers, many rural Mexican families combine other kinds of work with farming.⁴⁰ A family might operate a crafts business, for example. Family members might hire out to work on other properties. Often, one or more members of a family migrate to Mexican cities or to the United States to work, often for only part of the year when their labor is not needed on the farm. The migrants remit a portion of their pay to help support the family or to aid the family in acquiring farm equipment or starting or expanding a business.

Mexico's Agricultural Products, Exports, and Imports

Mexico is large and diverse, with many climate and topographical zones capable of growing many products. Mexican agricultural production can vary considerably from year to year, depending on weather, international markets, financial conditions, and government interventions in the market, including price supports.⁴¹ Crops leading 1993 production

³⁹ Quoted, from an incompletely specified source, by Victor Quintana, in the paper, "The Impact of SAPS [Structural Adjustment Policies] on Agriculture in Chihuahua," reprinted in Congressional subcommittee hearing of October 28, 1993, "Mexican Agricultural Policies: an Immigration Generator?" p. 17.

⁴⁰ For a discussion of this point, see Merilee S. Grindle, *Searching for Rural Development: Labor Migration and Employment in Mexico* (Ithaca, N.Y.: Cornell University Press, 1988).

⁴¹ All Mexican agricultural statistics need to be read with some caution. As one summary put it, "There are wide discrepancies between private and government estimates of agricultural statistics." (Walden Country Reports, Mexico, February 27, 1995, p. 31.) *El Financiero International Edition* for January 8-14, 1996, reports that estimates of the value of Mexican tomato exports to the United States "vary all the way from 2 million dollars to 196 million," a variation that does not inspire confidence. Paul Lamartine

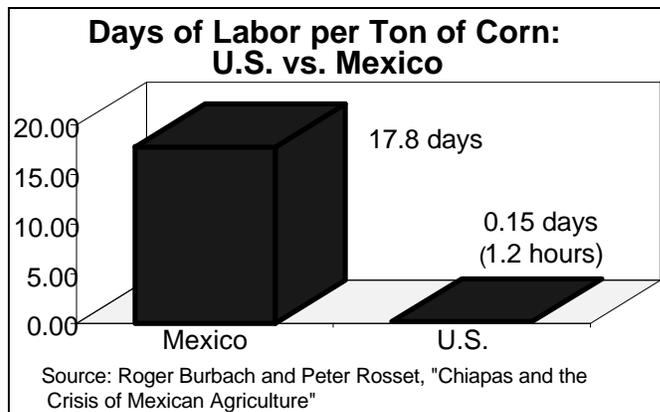
were sugarcane, corn (maize), wheat, sorghum, oranges, bananas, mangoes, dry beans, lemons, cantaloupes, apples, and barley.⁴² At nearly 42 million metric tons, sugarcane was by far the largest in volume, followed by corn, at under 19 million metric tons. Wheat, the next largest in volume, stood at under 4 million metric tons. Mexico also produces cattle and other livestock, wood and wood products, and fish.

Mexico exports a variety of fresh and processed agricultural products. Nearly half of agricultural exports in 1993 (in terms of value) were made up of fresh tomatoes and other fresh fruits and vegetables, melons, and coffee in various forms.⁴³ Mexico's large sugarcane crop, however, is used domestically, not exported.

Mexico also imports numerous agricultural products, although the "peso crisis" is likely to result in substantially reduced import volume. In 1993, leading imports, by value, included soybeans, sorghum, oilseeds and cottonseed, wheat, fresh and dried fruits, corn, and rubber.⁴⁴

Mexico's Domestic Agriculture is Labor-intensive

According to one report, nearly 19 days of labor are required to produce a ton of corn in Mexico, in contrast to a fraction of a day in the United States. This contrast, a ratio of 119 to 1, reflects many aspects of rural Mexico and the domestic (non-export) sector of Mexican agriculture.



The contrast between Mexico and the U.S. is, of course, far larger than the contrast between Mexico and other *developing* nations. The U.S. has excellent climate and topography for agriculture, large, highly mechanized farms, extensive transportation and storage facilities, and an extensive system of agricultural finance, all of which contribute to productivity and reduce the relative requirement for labor. Mexico is much more

productive (in labor terms) in its modern *export* agricultural sector, which emphasizes fruit and vegetables, than it is in its *domestic* agricultural sector. By U.S. standards the production of the most basic Mexican crops - corn and beans - is labor-intensive and

Yates devotes much of his book *Mexico's Agricultural Dilemma* to describing and attempting to sort out discrepancies and errors in official Mexican agricultural statistics.

⁴² Data from *Britannica World Data Annual*, 1995 edition.

⁴³ Coffee exports dropped substantially from the 1989 figure of \$625 million. In contrast, vegetable exports rose sharply from the 1989 figure of \$196 million. Both long-term trends and short-term influences affect production, export, and import figures.

⁴⁴ Summarized from American Embassy, 1994 Agricultural Situation Report for Mexico, Table 6.

sparse. The chart shows the disparity for production of corn; a similar disparity exists for beans, another staple of the Mexican diet.

Many factors, some of which overlap or affect one another, contribute to the comparatively high labor requirement in Mexican staple crop production:

- Rugged topography and inadequate soil;
- A short growing season in large parts of the country;
- Small size of most farm plots, and historical communal land ownership patterns;
- Lack of farm machinery and capital, and limited use of fertilizer;
- Necessity to grow food for family use;
- Inadequate markets, storage, and transportation facilities;
- Land policies and practices that have discouraged consolidation, modernization, and investment; and
- Lack of irrigation for basic crops.

Mexico Has Relatively Little Arable Land

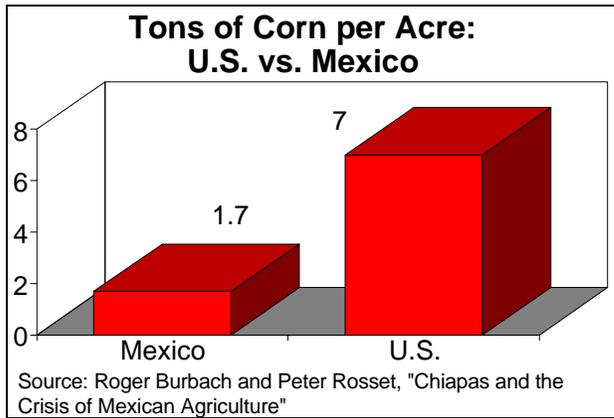
Mexico has little first-class agricultural land, especially in comparison to its population. The country is ruggedly contoured, divided into many climate areas, and chronically short of water. Only 15 percent of the country's land area is well suited to the growing of crops, according to some estimates. Investment in agriculture is concentrated in large farms producing for export and for Mexican urban areas.

Alan Riding summarized Mexico's agricultural problem in his wide-ranging study of Mexico:

Mexico is highly unsuitable for agriculture. Much of the north is desert, two mountain ranges run the length of the country. Tropical jungles cover the southern region of Chiapas, while the topsoil in the Yucatán Peninsula is so thin that little can grow. The shortage of water is particularly acute: the runoff from the Mississippi River alone is greater than that of all of Mexico's rivers. Put differently, 52 percent of Mexican territory is arid, 32.5 percent is semi-arid, 10.5 percent is semi-humid and 7 percent is humid [*sic* -- this totals 102 percent], while about 50 percent is too steep for cultivation and only 15 percent is considered ideal arable land. "Water," [former Mexican president] De la Madrid once noted, "is one of the principal limitations on our development." This is dramatically evident in agriculture: rich farmers are rich principally because they have water, while

plots distributed under the agrarian reform are usually too dry, too rocky or too eroded to farm well.⁴⁵

As a result of poor soil in much of Mexico (thin, rocky, on slopes, or simply exhausted of nutrients) and other factors, average production per acre falls substantially below that in the U.S.

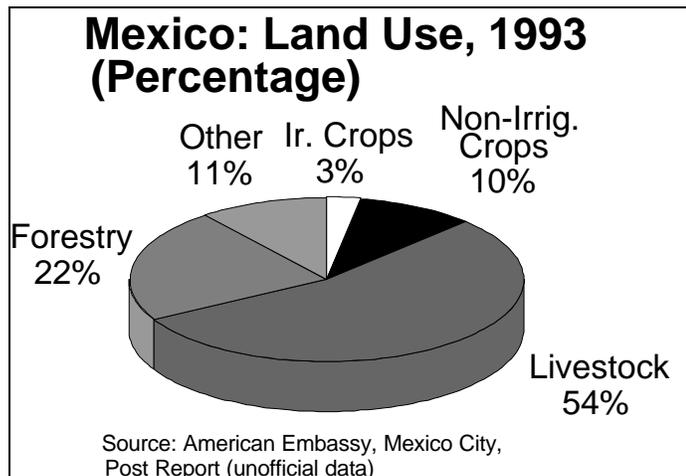


After reducing the labor ratio to reflect the tons-per-acre ratio, in essence factoring out differences in soil quality, water availability, and so on, the result is an adjusted ratio of 29 to 1, rather than the approximately 119 to 1 of the first chart. This is still a large difference, reflecting the contrast between a labor-intensive, small farm domestic agricultural sector in Mexico and a far more mechanized, large-farm agricultural sector in the United States.

Much Mexican agriculture is of a subsistence type, small family plots producing corn, beans, squash, and chili peppers, all of which are long-time staples of the rural Mexican diet. Both by virtue of topography and land ownership patterns, mechanization of this type of farming is often impractical or prohibitively expensive. As a result, preparing the soil, planting, and harvesting require much manual or animal-aided labor.

Vast areas of Mexico are suited only to use as rangeland. Vegetation is relatively sparse on that land. Much cattle raised on Mexican ranges is shipped to the United States for fattening in feedlots. Some areas of Mexico (especially in the south) are jungle, not suited to the growing of basic crops by virtue of inadequate soil and inappropriate climate, even after clearing of the land. Efforts to convert jungle land to crops or grazing have met with mixed results, and some areas have reverted to jungle growth.

Rangeland encompasses large expanses in most Mexican states. This is not the result of extraordinary value of the land for that purpose; more often grazing is the *de facto* use of land that has little other value and many acres of which are required to support a single head of cattle.



⁴⁵ Alan Riding, *Distant Neighbors: A Portrait of the Mexicans* (N.Y.: Vintage, 1989), pp. 189-90.

Unfortunately, necessity may dictate that poor land be forced into crop production:

Because of tradition or lack of viable alternatives, peasants in central Mexico farm very poor, rocky, rough semidesert land that is better suited for raising cattle, goats, or sheep. On a national or international scale the land clearly should be in livestock, but people cannot be moved around like pawns on a chessboard. Thus, if farmers have little alternative use for their family's labor, a higher total net return can be realized from cropping than from cattle raising. The return per hour of time invested will probably be lower from cropping than from cattle raising, but the total return will be higher.⁴⁶

Domestic vs. Export Agriculture

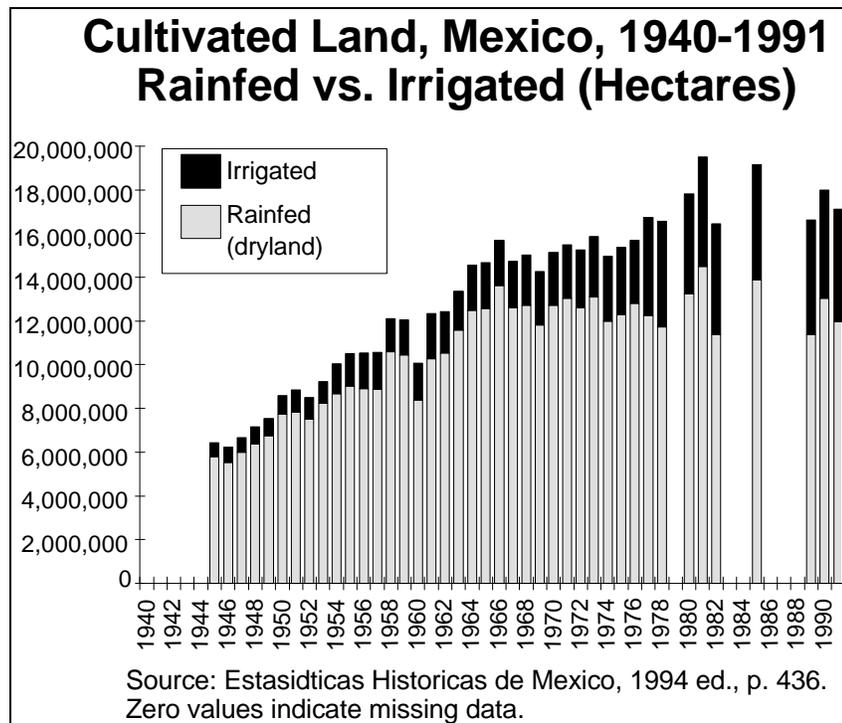
Mexican agriculture encompasses two distinct sides:

- a domestic sector, predominantly producing basic crops for consumption in rural and urban Mexico, and
- an export sector producing more valuable crops, primarily fruits and vegetables, for export and to meet demand of the tourist trade and upper-income urbanites.

Mexico has emphasized the export sector through subsidies - especially via irrigation projects - to the detriment of the domestic sector.

The large majority of Mexico's farmers do not benefit from irrigation projects, and many are unable to produce sufficient crops to support themselves, let alone produce a profitable surplus.

Although the data are not necessarily reliable (note, for example, the sometimes large year-to-year

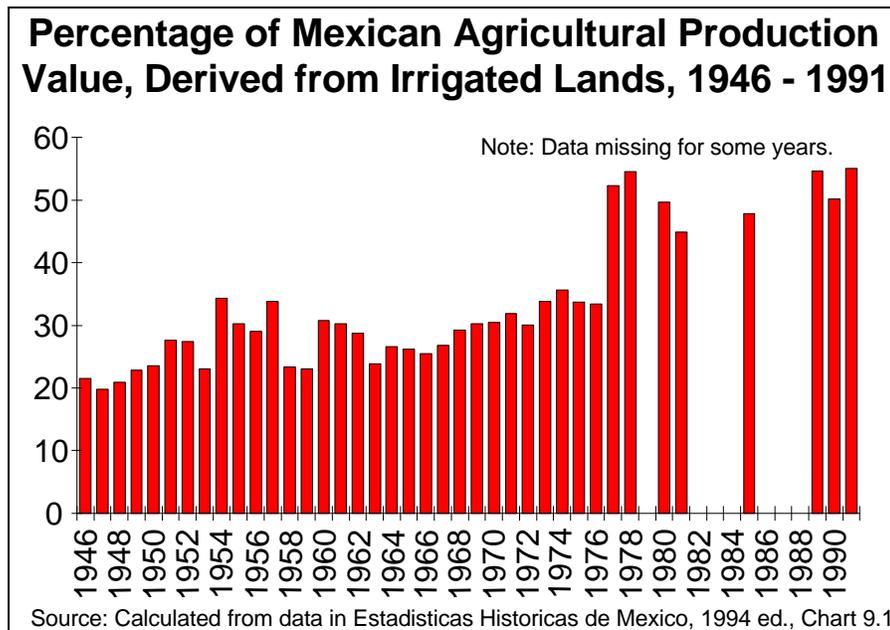


⁴⁶ James R. Simpson and Donald E. Farris, *The World's Beef Business* (Ames: Iowa State University Press, 1982), p. 67.

fluctuations in cultivated land), there was a long-term trend toward increased irrigation. That trend, however, reached its peak by about 1980.

Mexico's irrigated land is far more productive than rainfed land. This is the result of both better water availability for irrigated crops and the fact that the better land is irrigated. Irrigated land is predominantly used for export crops and for crops directed to urban areas. Dryland farmers who depend on timely rain may invest work, seed, and fertilizer only to lose much or all of their crops when rain is late or sparse. An estimated 40 percent of Mexican cropland is devoted to growing corn.⁴⁷ Countless private and communal plots across Mexico produce beans, squash, and peppers. Those basic crops must depend on much unirrigated and relatively poor land.

In recent years, more than half of agricultural production value has been derived from the small proportion of cropland (less than a third) that is irrigated. This reflects both higher productivity of the irrigated land and the use of irrigated land for production of relatively high value crops, such as fruits and vegetables.



Feed Crop Production Reduces Capacity to Produce Food for People

Significant Mexican agricultural resources are devoted to raising feed crops, such as sorghum, for cattle. The cattle are exported or converted into meat for more affluent Mexicans and for tourists. In short, Mexico is unable to feed itself adequately at least in part as a result of choices made by the Mexican government and the agribusiness sector. According to a 1990 OECD report, "It has been estimated that up to one half of Mexico's farmland currently produces grain for livestock ([citing] DeWalt 1985)."⁴⁸ Yet Mexico *imports* additional sorghum to support its cattle industry. Adelman and Taylor conclude:

Significantly, had Mexico's per capita demand for grain remained constant from 1940 to 1979, the substantial progress in agricultural productivity in Mexico could

⁴⁷ Dan Looker, "Mexico's New Farm Revolution," *Successful Farming*, September 1993, p. 31.

⁴⁸ Irma Adelman and J. Edward Taylor, *Changing Comparative Advantage in Food and Agriculture: Lessons from Mexico* (Paris: Organization for Economic Cooperation and Development, 1990), p. 20.

easily have met the demands of the growing population. *Current food shortages are the result of a major shift in the tastes and effective demand of middle and upperclass consumers towards meat consumption, combined with the relative inefficiency of meat in converting grains into calories* [emphasis added].⁴⁹

Mexican Agriculture in Transition

In recent years, Mexico has overhauled its system of agricultural subsidies and price supports, phasing out supports for basic crops (both guaranteed prices and subsidies on crop inputs) in favor of per-hectare supports independent of crop grown.⁵⁰ The impact of this change remains to be seen, but may be substantial. OECD views the reforms as favorable for "small producers who benefited little from the guaranteed price scheme."⁵¹ At the same time, restrictions on sale, rental, and ownership of ejido land have been removed. This change is very threatening to many Mexican farmers, who fear the twin hazards of reconcentration of land ownership and the rigors of international competition, especially as augmented by the North American Free Trade Agreement (NAFTA), which is phasing out protections against the large and efficient U.S. farm sector. At the same time, however, removal of land-use and transfer restrictions could encourage investment in domestic agriculture and allow more efficient farmers to enlarge their holdings and enable those who prefer to leave farming to sell their holdings.

The Peso Crisis

Mexico's current economic difficulties are damaging agricultural production indirectly through higher costs for supplies, loss of financing, and reduced prices for crops, as well as making agricultural imports more costly.

The dramatic drop in the value of the peso (over half since December 1, 1994) makes imported agricultural equipment and supplies (such as pesticides, fertilizer, tractors) correspondingly more expensive, and quite possibly thus priced out of reach. On the other hand, the peso's drop in value makes Mexico's agricultural exports more affordable to other nations, including the United States. Unfortunately, between the high cost of imported agricultural equipment and supplies and the damage caused by last year's drought, Mexico may be in a poor position to capitalize immediately on a potentially expanded export market.

⁴⁹ Ibid.

⁵⁰ For a concise overview of the changes, see Organization of Cooperation and Development, *OECD Economic Surveys, 1994-1995: Mexico* (Paris, OECD, 1995), pp. 89-92.

⁵¹ Ibid., p. 91.

Selected Sources and Further Reading

The following are recommended for those who would like further information on Mexican agriculture and rural affairs.

Adelman, Irma, and J. Edward Taylor. *Changing Comparative Advantage in Food and Agriculture: Lessons from Mexico*. Paris: Organization for Economic Cooperation and Development, 1990.

Barry, Tom. *Zapata's Revenge: Free Trade and the Farm Crisis in Mexico*. Boston: South End Press, 1995. This is a wide-ranging, well documented overview of Mexican agriculture and land, in context of international trade and Mexican culture and history.

DeWalt, Billie R. and Martha W. Rees, with Arthur D. Murphy. *The End of the Agrarian Reform in Mexico: Past Lessons, Future Prospects* (Transformation of Rural Mexico, Number 3). San Diego: Ejido Reform Research Project, Center for U.S.-Mexican Studies, UCSD, 1994.

Grindle, Merilee S. *Searching for Rural Development: Labor Migration and Employment in Mexico*. Ithaca, N.Y.: Cornell University Press, 1988.

Lamartine Yates, Paul. *Mexico's Agricultural Dilemma*. Tucson, Arizona: University of Arizona Press, 1981. This appears to be the definitive account of Mexican agriculture to that date, and is a fascinating source of information on the peculiarities that plague Mexican agricultural statistics.

Riding, Alan. *Distant Neighbors: A Portrait of the Mexicans*. N.Y.: Vintage Books (Random House), 1989 (copyright 1984 and 1985). Readable and informative overview of Mexican history, culture, and institutions. Note especially Chapter 9, "Land Sí, Liberty No."

Sanderson, Steven E. *The Transformation of Mexican Agriculture: Internal Structure and the Politics of Rural Change*. Princeton, N.J.: Princeton University Press, 1986. Examines the international role and relationships of Mexican agriculture. In short, Mexican agriculture and its development in recent years cannot be understood outside of the international context. The book includes discussion of the short-lived "Mexican Food System" (*Sistema Alimentario Mexicano*: SAM).

Whetten, Nathan L. *Rural Mexico*. Chicago: University of Chicago Press, 1948. Detailed overview of the land and people as of the 1940s. The population has increased substantially since then, and some parts of the country have changed as a result of deforestation and other human interventions, but the basic regions, contours, and climates are unchanged.

APPENDIX 5: OVERVIEW OF THE MEXICAN ECONOMY

By Rosa Maria Moller, Ph.D.

The Mexican Economy has Historically Been Characterized by Structural Factors That Impede Rapid Economic Growth

Numerous structural factors in the Mexican economy have prevented rapid economic growth. The most important factors are:

- An insufficient domestic demand for industrial products due to the low income levels of the majority of the population.
- The Mexican economy is very dependent on direct and indirect foreign investment because the domestic savings rate is too low to sustain the level of internal investment necessary for high growth.
- Mexico's industrialization process is dependent on imports of capital goods and technology of higher value added than the country's exports, creating an imbalance.
- Industries have typically provided consumer rather than capital goods, and of a quality and price that sometimes does not compete well in a free trade environment.
- Many years of government protectionism, subsidies, and public ownership has led to an inefficient allocation of resources.
- The agricultural sector is stagnant and in many areas is inefficient and unproductive.
- High population growth is beyond the economy's capacity to absorb.
- The workforce is characterized by low levels of literacy and technical expertise.

Per Capita Economic Growth in Mexico Slowed Down Significantly During the Last Decade

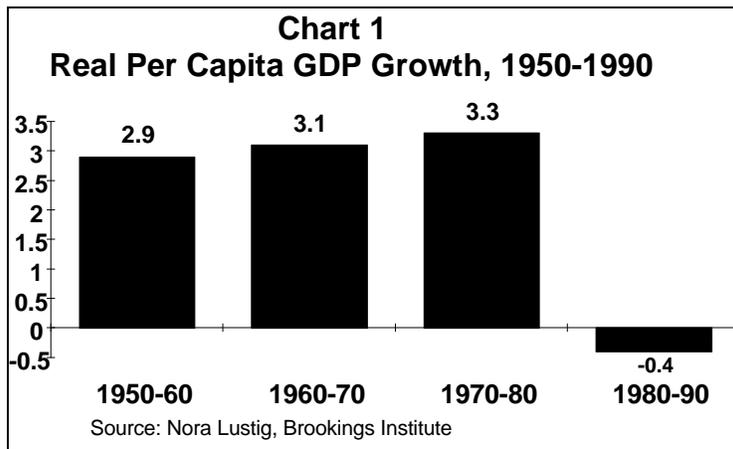
Table 1 below shows the evolution of real per capita GDP growth and population growth in Mexico since the 1950s. Between the 1950s through mid 1970s both economic activity and population grew rapidly. Despite a 1976 recession, the economy also grew rapidly between 1970 and 1980. In this period, the per capita growth rate averaged 3.3 percent due to massive oil discoveries and a decrease in population growth.

The 1960s were a period of increasing social demands from broad sectors of the population, with concerns about guerrilla activity. In an attempt to meet these social demands, the Mexican government financed numerous public social programs. In the 1970s this public spending began to affect the fiscal budget balance.

The inflationary pressures derived from an increased budget deficit together with the 1973 oil price shock hurt the economy.⁵² By 1976, high inflation and a balance of payment crisis led to a short recession. From 1978 onward, massive oil discoveries brought about unprecedented economic growth. Oil, controlled by PEMEX (the state oil company), generated considerable state

Year	Real per Capita GDP Growth (Percent)	Population Growth (Percent)
1950-60	2.9	3.1
1960-70	3.1	3.3
1970-80	3.3	3.2
1980-90	-0.4	2.0

Source: Nora Lustig, Brookings Institute



revenues. Subsequent increases in oil prices and new oil discoveries in 1979 led to a new acceleration of public and private investment.

In the early 1980s, the Mexican current account balance was increasingly affected by oil price fluctuations. Mexico, relying upon its oil, was also borrowing heavily in world capital markets and pursuing

over-expansive policies. In 1981, falling oil prices together with a lack of public confidence in government policies led to a sharp acceleration of capital outflow. By mid-1982, Mexico faced a deep economic crisis as the price of oil continued to fall, and world interest rates increased Mexico's high level of indebtedness. The Mexican economy experienced a large devaluation of the peso, chaos in the financial market, a contraction of output (-0.6 percent) and an acceleration of inflation (98.8 percent). In September 1982, the administration imposed capital flow controls and nationalized the banking system.

After 1982, the government focused on restoring price and financial stability, increasing domestic savings, deregulating the economy, and increasing its competitiveness. However, the effort failed. Inflation accelerated and output fell. The 1985 Mexico City earthquake caused further deterioration in the economy.

In December 1987, the Mexican government announced an *Economic Solidarity Pact* which promised to reduce inflation to about 2 percent per year. The Pact was signed by the government and formal representatives of the business community and labor unions. The Pact's goals were to cut the fiscal deficit, tighten monetary policy, liberalize trade, and establish income policies (such as increases in the minimum wage). The Pact was

⁵² In 1973 Mexico was a net importer of oil.

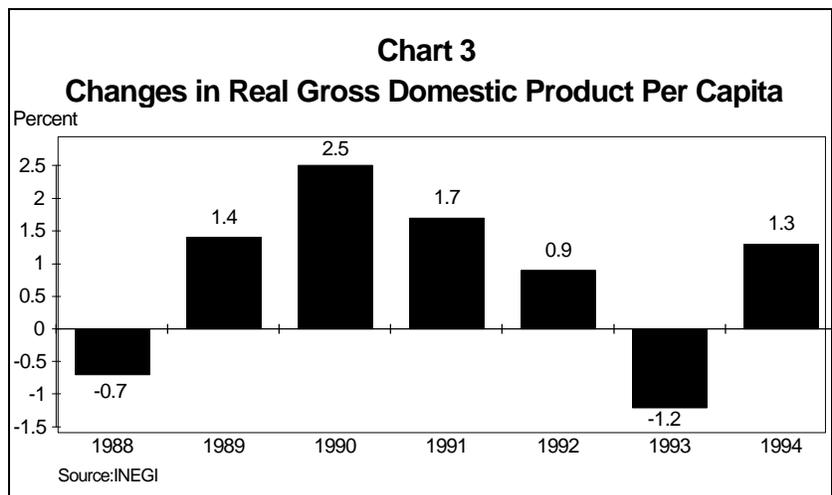
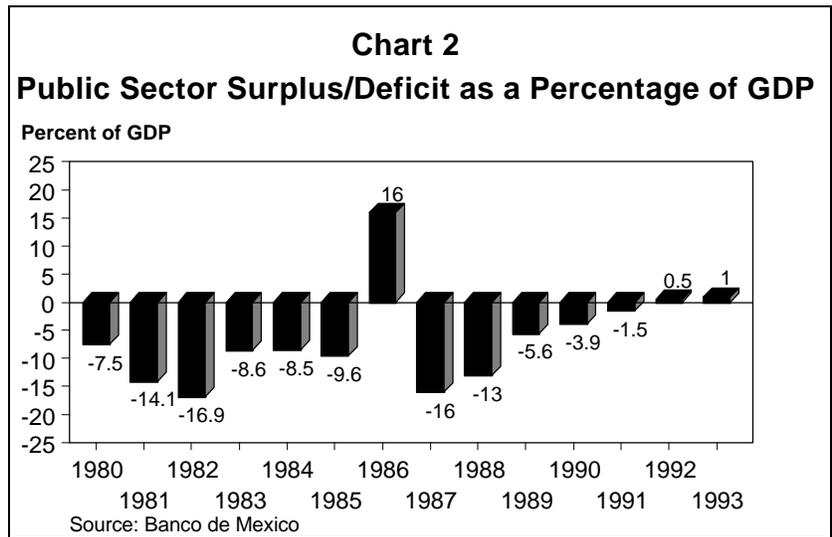
successful, creating a model for future government/private sector agreements. (The 17th Pact, for 1997, was announced by the Zedillo Administration in November 1996.)

The Salinas Administration, which began in 1988, emphasized stability and growth, particularly reducing the burden of debt servicing, encouraging capital repatriation, and attracting new foreign investment. Privatization of public enterprises gained momentum. There were more than 1,000 public enterprises at the end of 1982; by 1993 there were only 210. Two important events increased foreign investor confidence: a 1992 decision to reprivatize the banks and the prospect of a free trade agreement with the U.S. These measures increased the inflow of foreign capital into Mexico and led international agencies to increase their support. For example, in 1989, the International Monetary Fund (IMF), the World Bank and the Inter-American Development Bank (IDB) all increased their lending to Mexico.

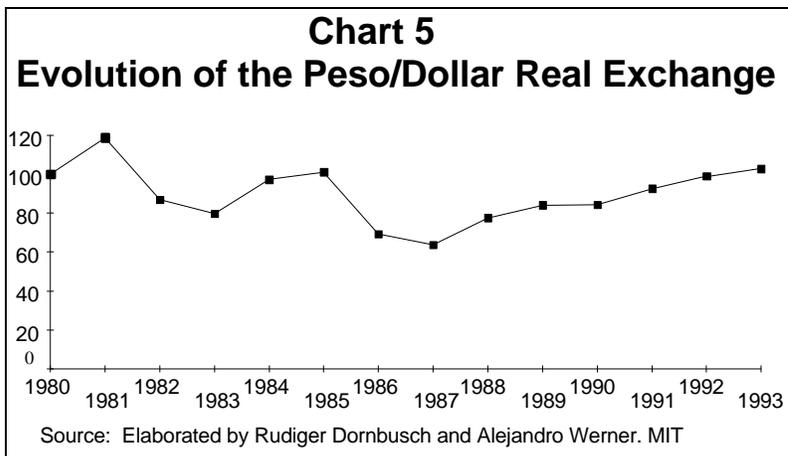
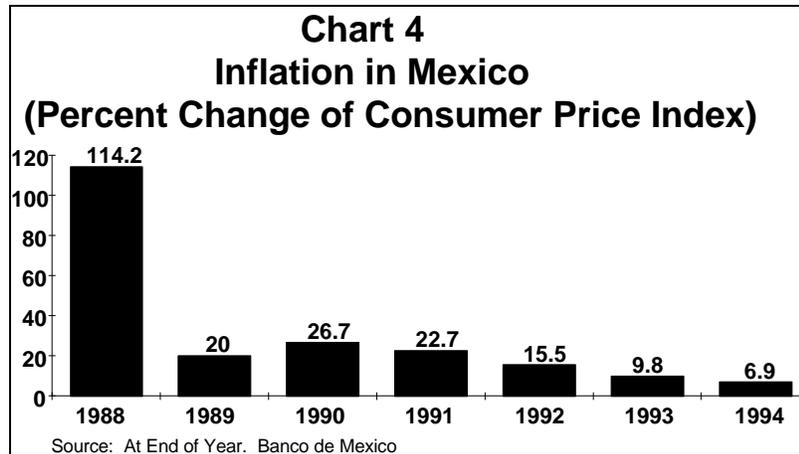
In the early 1990s, Mexico gained increased recognition as a country that was successfully managing economic adjustment and reform. After years of persistent deficits, the budget was balanced in 1992 and 1993 (see Chart 2).

However, the reduction in public spending decreased public investment and employment.

Chart 3 illustrates the roller-coaster ride that per capita economic growth experienced between 1988 and 1994. In 1988, the economy grew by only 1.2 percent, or per capita growth of -0.7 percent. In 1990, the economy grew at an annual rate of 4.4 percent, or a per capita growth rate of 2.5 percent. However, economic growth decelerated in 1992, and in 1993 the economy was almost stagnant, with an annual rate of growth of 0.4 percent, or a decrease of GDP per capita of 1.2 percent.

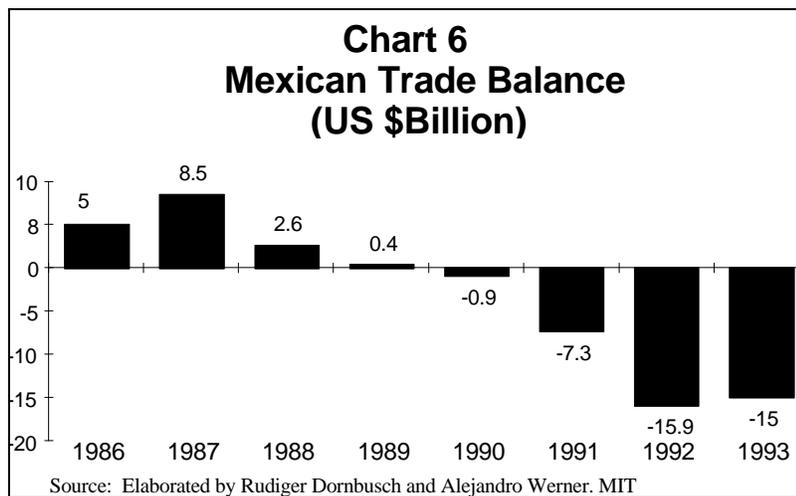


By the beginning of 1994, Mexico's stabilization policies appeared to be successful, with a decrease in the deficit and lower inflation (Chart 4). The government's policies were also helped by the reduction of worldwide inflation, keeping import



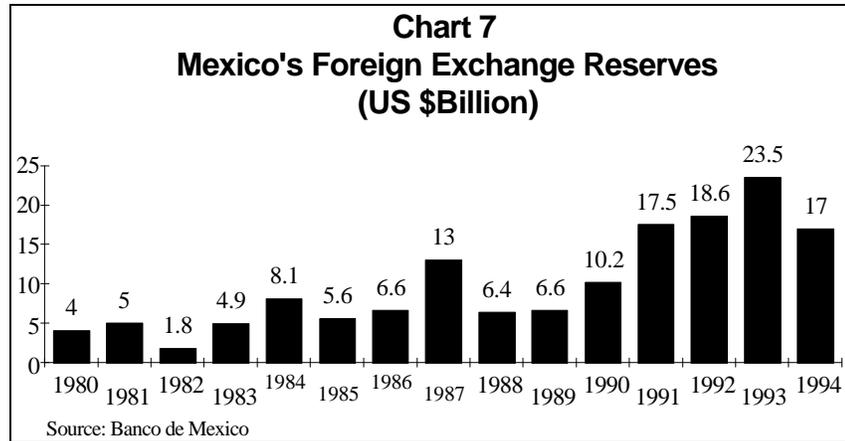
prices low. An overvaluation of the peso's dollar exchange rate created a precarious financial situation in 1994 (Chart 5). The real appreciation of the exchange rate together with trade liberalization under NAFTA increased imports and restricted export expansion (Chart 6).

The economic situation continued to worsen throughout 1994. Foreign capital inflows were financing a high level of consumption and intermediate goods imports instead of investing in plants and equipment. Political crises, violence and assassinations shook investor confidence.



Election year's imperatives encouraged the government to lend money through state development banks and increase the currency supply. The large and increasing external deficit led to decreased investment.

Finally, on December 20 of 1994, the government adjusted the exchange rate. The devaluation of the peso led to capital flight and an acute financial crisis.



Mexico's Deep Recession After the 1994 Peso Devaluation

Mexican gross domestic product declined by about 7 percent during 1995. Year-over-year output declined by 10.9 percent in the second-quarter, the worst decline for any quarter on record. The peso lost over half its value. Domestic demand reduced drastically. Nonperforming loans exceeded net capitalization for most Mexican banks, many of which required a substantial infusion of public funds to avoid failure (leading to criticism of the 1992 banking privatization and its inattention to the banking experience of the successful bidders). The government has responded with tough austerity measures, tight fiscal and monetary policies, and increases in external borrowing.

As a result of these stabilization policies, inflation decreased from an annual rate of more than 200 percent in April 1995, to 52 percent at the end of the year. The Mexican trade account improved during the year. However wages decreased sharply (inflation-adjusted wages in 1994 were already below their pre-1982 levels). An accompanying deterioration in social conditions has led to serious social tensions. Crime has risen considerably. Mexico does not have general unemployment insurance nor a social assistance safety net.

By the end of 1995, the economy seemed to have bottomed out. However, the harsh effects of the austere economic policies have depressed internal markets sharply. The government's economic policies appear to have restored the confidence of foreign investors. The current account (trade balance) has improved and the peso has stabilized. It is now relatively cheap to invest in Mexico (in terms of dollars and other foreign currencies). Proposed privatization of national railroads, ports, telecommunications, and financial institutions should improve the economic outlook, but are proving controversial.

Economic predictions for 1996 estimate a growth in GDP of over 3 percent, with an inflation rate of about 25 percent and therefore high interest rates.

Labor Markets in Mexico

Hidden Unemployment is High, and the Official Unemployment Rate Does not Reflect Actual Unemployment

The official unemployment rates in Mexico do not reflect actual levels of unemployment because of the way that employment is defined. The official urban unemployment rate has been consistently low since 1983, reaching 2.6 percent in 1991. In 1993 and early 1994, the rate rose, but still remained under 4 percent. Even after the devaluation of December 1994, official unemployment was about 6 percent.

In a mature developed economy like the U.S., a low urban unemployment rate describes an economy at full employment. In Mexico and other developing countries, low unemployment rates are not an indication of low unemployment because of the restricted definition of employment. "Hidden" forms of unemployment in the urban sector include various unstable, low productive, marginal jobs that are generated as a survival strategy by people who cannot find a formal job. For example, in Mexico a street vendor is counted as employed as long as the person devotes at least 1 hour a month to this activity. Mexican employment surveys also report as employed a significant number of unpaid family members who work few or no hours during the surveyed week (as long as they expect to return to work in one month).

Paradoxically, Mexican unemployment rates count only those who have the resources to be able to allocate considerable time searching for work, and who have the skills and characteristics to be hired into modern sector urban economic activities. They tend to be younger and better educated than the rest of the population.

Analysts follow several approaches to identify "hidden unemployment." In the rural markets, hidden unemployment is found in the traditional or subsistence agricultural sector, where labor and land productivity are very low. The rural traditional sector provides employment to almost 50 percent of the agricultural labor force. About one quarter of Mexico's population lives in the rural agricultural sector and produces only about 7 percent of the nation's GDP.

The notion of an informal labor sector was first introduced by experts from the International Labor Office in the early 1970s. The existence of a dual nonfarm labor market (with a formal and an informal sector) results from the coexistence of highly productive modern industries with traditional industries that have old technologies and low productivity.

The formal labor market in Mexico includes the public sector, public corporations (energy, communications and transport), and large scale manufacturing and modern services. Given the existence of a large pool of unskilled labor, employment in the formal sector is

determined completely by demand. Legal labor protection applies only to workers belonging to labor unions of the larger enterprises.

The informal sector is difficult to identify and different authors use different definitions. Informal activities are characterized by ease of entry into the market, small size operations, scarcity of capital, low productivity, family ownership of businesses, and lack of coverage by labor laws. Economic activities with the highest informality rates are domestic services, repair services, retail trade, cleaning services, hotels and restaurants, and manufacturers of furniture, mattresses, and doors. Mexico's service sector includes a large proportion of personal services and informal activities because the industrial and agricultural sector are unable to absorb the rapidly growing labor force. Rural migrants and unskilled labor are predominant.

The informal sector provides nearly 40 percent of total employment in Mexico.⁵³ However, informal workers only contribute 10 percent of the GDP. The largest concentrations of informal workers are found in the Federal District (Mexico City) and the states of Mexico, Veracruz, Jalisco, Puebla, and Michoacan. In the poorest states (Chiapas and Oaxaca), where there is a large Indian population and a high rate of employment in handicraft activities, more than 50 percent of the urban labor force is employed in informal activities.

The ability of Mexico's informal sector to absorb increases in the rapidly growing labor force is increasingly being questioned. Emigration appears to be one result of the lack of economic opportunities.

Real Wages Have Declined Sharply Since 1983

The Mexican government's economic stabilization policies over the last 15 years have led to a sharp decline in real wages. Nominal wages are set by a national commission comprising the government, the confederation of labor unions (most of which are affiliated with the ruling PRI party), and representatives of the business community. The minimum wage is the lowest salary for nonskilled labor. However, a high proportion of workers receive wages below the official minimum wage.

The minimum wage is important because it serves as a standard for setting wages. Between 1983 and 1988, minimum wages fell by more than 40 percent. The sharpest declines took place during the two years of deepest economic contraction: 1983 and 1986. When inflation is taken into account, the minimum wage in 1993 was only 40 percent of the 1980 level, and 66 percent of the 1987 level (Table 2).

⁵³ Carlos Marquez and Jaime Ros (1990). "Segmentacion del Mercado de Trabajo y Desarrollo Economico en Mexico (Labor Market Segmentation and Economic Development in Mexico). *El Trimestre Economico*, (2): 226 (Apr-Jun). Marquez estimates that there were 3.3 million employed in the informal sector in 1980 or 40.6 percent of overall employment.

In 1988, nearly 70 percent of all urban workers received income less than twice the minimum wage. Yet it required nearly five times the minimum wage to purchase a standard market basket of necessities.

The income of workers in the informal sector has deteriorated dramatically.⁵⁴ In 1992, the average monthly pay for informal workers was only 65 percent of the average monthly pay for production workers. More than one-fifth of informal workers earned the minimum wage or less, compared to 8 percent of the total urban population.

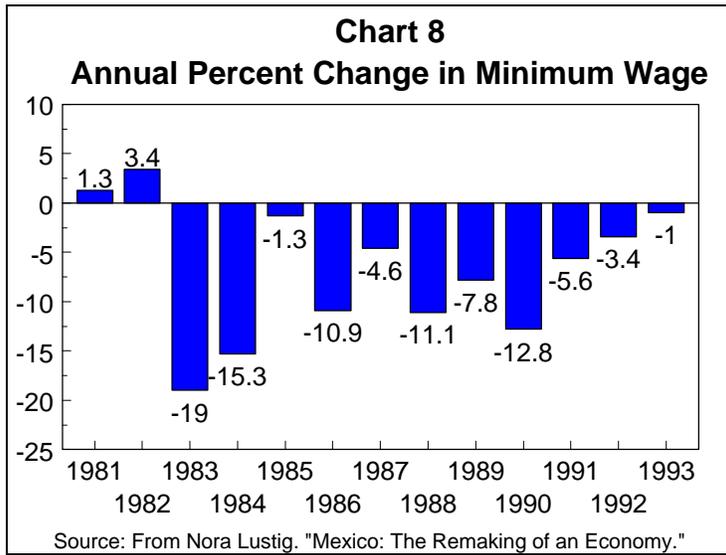


Table 2
Official Daily Minimum Wage in Mexico 1980-1994

	In Current Pesos	Real In 1987 Pesos
1980	141.000	6.130
1981	183.000	6.560
1982	257.000	5.841
1983	432.000	4.854
1984	666.000	4.531
1985	1.036	4.466
1986	1.769	4.104
1987	3.855	3.855
1988	7.218	3.370
1989	8.133	3.165
1990	9.414	2.892
1991	11.017	2.759
1992	12.084	2.620
1993	13.060	3.258
1994	13.970	2.516

Source: Mexican Statistical Institute

Poverty in Mexico

About One Fifth of the Mexican Population is Extremely Poor

A study conducted by Santiago Levy in 1991, found that 19 percent of the Mexican population is so poor that they are at risk of malnutrition, with higher morbidity and below-standard height and weight characteristics. Most of the extremely poor live in the rural areas and have large households with many children and higher dependency ratios.

The main factors determining poverty in Mexico are:

- Extremely limited social mobility and highly unequal distribution of income.
- Landownership patterns, lack of credit and government policies that inhibit increase in agricultural output, thereby depressing the return on land and the demand for unskilled labor.

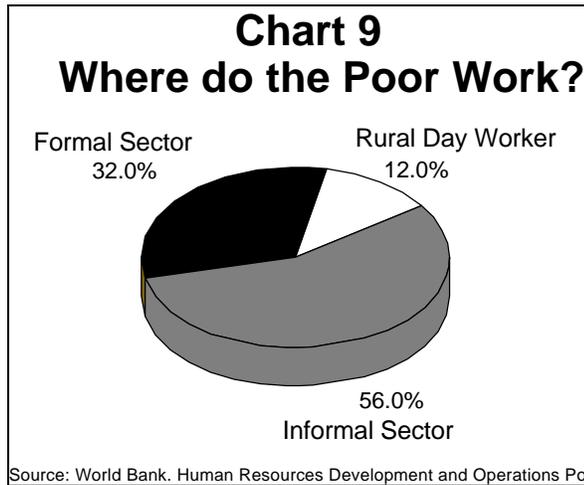
⁵⁴ According to a National Survey of micro-enterprises in 1992.

- Urban bias in the allocation of social and infrastructure spending (such as education and health) that reduces the rural poor's ability to increase their human capital.
- Tight stabilization policies that have depressed the permanent demand for unskilled labor, lowered wages and reduced social spending.
- Racial discrimination against indigenous peoples (see OECD).

Social conditions in urban areas have deteriorated in the last decade, particularly due to the reduction of real wages. Although the number of workers per family increased from 1.59 in 1984 to 1.63 in 1989, family income declined.

Most of the Mexican Poor Work in the Informal Sector

The informal sector is associated with unemployment and poverty, two factors that have sharply increased during the economic crisis. Most of the Mexican poor work in the informal sector. Poverty rates in the informal sector are more than double those found in the formal sector and are also more severe (Chart 9).



Bibliography

Banco de Mexico. **The Mexican Economy 1994. Economic and Financial Developments in 1993. Policies for 1994.**

Dornbusch, Rudiger and Alejandro Werner. "**Mexico: Stabilization, Reform, and No Growth.** *Brookings Papers on Economic Activity*, 1:1994.

El Financiero International. Various issues.

Federal Reserve Bank of San Francisco. Moreno, Ramon. Mexico and the Peso. *Weekly Letter.* Number 95-10, March 10, 1995.

Fleck, Susan and Constance Sorrentino. "**Employment and Unemployment in Mexico's Labor Force.**" *Monthly Labor Review.* November 1994.

Garcia, Norberto E. "**Ajuste Estructural y Mercado de Trabajo. Mexico 1981-91.**" 1992.

Jusidman, Clara. **The Informal Sector in Mexico.** *Occasional Paper No 1.* Secretaria Trabajo y Prevision Social de Mexico and U.S. Department of Labor. September 1992.

Levy, Santiago. **Poverty Alleviation in Mexico.** The World Bank. *Working Papers,* May 1991. WPS 679.

Looney, Robert E. **Economic Policymaking in Mexico.** Duke Press Policy Studies. Durham, NC 1985.

Lustig, Nora. Mexico, **The Remaking of an Economy.** The Brookings Institute. Washington, D.C. 1992

Lustig, Nora. **The Outbreak of Pesophobia.** *The Brookings Review.* Spring 1995.

Marquez, Carlos y Jaime Ros, **Segmentacion del Mercado de Trabajo y Desarrollo Economico en Mexico.** *El Trimestre Economico.* Vol. LVII (2) Num 226. Mexico, Abril-Junio de 1990.

U.S. Embassy in Mexico. **Mexico, Economic and Financial Report.** Winter 1994.

World Bank, Human Resources Development and Operations Policy. **Poverty, Deregulation and Microfirms. Part II: The Case of Mexico.** *HRO Dissemination Notes.* Number 39. December 12, 1994.

Contacts

American University. Dennis Solowsky. (202) 885 2521.

Berkeley. Giannini Foundation. De Janvry.

Brooking Institute. Nora Lustig. (202) 797 6000.

CELADE Latin American Demographic Centre. Santiago, Chile. Dr. Miguel Villa. (562) 210 2090.

CENEDIS (Centro Nacional de Informacion y Documentacion en Salud). Dra. Gladys Faba. (525) 598 2002.

CEPAL, (Economic Commission for Latin America). Mexico. Director. Horacio Santa Maria. (525) 250 1256.

CEPAL, (Economic Commission for Latin America). New York. Director. Isaac Cohen. (202) 955 5613.

CEPAL. (Economic Commission for Latin America). Santiago, Chile. Dr. Joseph Ramos. (562) 210 2000.

Dornbusch, Rugider. **MIT.** (617) 253 3648.

ILO, Santiago, Chile. Jaime Mezzera. (562) 210 2000.

Interamerican Development Bank. Juan Manuel Farinas. (202) 623 1918.

Jusidman, Clara. Consultora en Desarrollo Social. Mexico. (525)520 8782.

Lagos, Carmelo Mesa. University of Florida. (305) 864 7205 (home).

U.C. San Diego. Centre for U.S. American Studies. David Myhre. (619) 534 4681.

UNESCO. Director Regional. Dr. Ernesto Schiefelbein. (562) 204 9032.

WORLD BANK. Ayo Hainek. (202) 458 5190. Bill Malooney. (202) 473 5112.