

# MEXICO'S **LABOR LAW AND LABOR UNIONS** **IN THE 1990'S**

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## **Abstract**

In this study we analyzed some of the factors that seemly prevented Mexican labor markets from the adjustment that was supposed to bring forth high rates of employment, productivity enhancements, and well-remunerated wages and salaries. In particular, we analyzed Mexico's labor law and the country's labor unions. Our foremost conclusion is that Mexico should make a decisive effort to bring the nation's labor legislation in line with market conditions. Finally, at the aggregate level, we performed an econometric analysis from 1960 to 1995, which suggests that Mexican labor unions impinge on the country's economic growth. The new human capital and growth theory provided the framework for the econometric estimation.

**Keywords:** Labor law, Mexico, unions, and production function estimation.

**Clasificación JPL: K31, J51, J30, and C92**

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## **Introduction**

In recent years, much attention has been devoted to the functioning of the labor markets of Latin America. Particularly interesting has been the analysis of the effects that globalization has imposed on traditionally inward-looking economies.<sup>1</sup> As a number of structural reforms swept the region, considerable improvements to the reforming economies were expected. In Mexico, contrary to expectations, social indicators showed a severe deterioration throughout the 1980s and 1990s. Although an initial deterioration was expected, it was anticipated that labor markets would eventually adjust, bringing about high rates of employment, productivity enhancements and well-remunerated wages and salaries.

In this paper we analyzed the role that Mexico's labor law and labor unions played in the economic developments of the 1980 and 1990s. During these decades the authorities adopted numerous adjustment and structural reforms including and ambitious trade policy and the privatization of a large number of public firms. The analysis indicates that the Mexican labor law, which dates back to the 1930s, is outdated, restricts the private sector operations, and confers labor unions enormous legal rights. In addition, it seems that the largely interpretative nature of the law allows the government to exert influence over the country's unions. Thus, Mexico's labor unions are state-controlled.

Moreover, Mexican labor unions, whose membership reaches about 70% of the working population, have a very significant effect on Mexican affairs. Unions restrict the operations of the private sector and have been instrumental in the implementation of the draconian and failed policies that the government adopted in the 1980s and 1990s. We emphasize that Mexican unions contributed to the deterioration of real wages by helping the government to implement incomes policies, which required fixing wages at the time when inflation reached double digits. The close relationship that exists between unions and the government made possible such adoption preventing wages from adjusting to market levels. Although Mexican real wages have improved in recent years, they

<sup>1</sup> See World Bank (1994), Inter-American Development Bank (1995), Rodrik (1997), and Feliciano (2001).



still lag behind those from more than 10 years ago. Current labor legislation is largely interpretative in nature allowing a great deal of discretion in its application. Thus, the prevailing law fosters that very close relationship between the government and unions, which the government utilizes effectively.

Finally, our statistical analysis suggests that output growth has been hampered by the activities of unions. We obtained this result by estimating an aggregate production function for Mexico and modeled the activities of labor unions within the new human capital growth theory. It is clear that at the firm's level union strikes will cause output to fall, but our statistical evidence suggests that at the aggregate the country's output also experiences such effects. We found those effects to be statistically significant. In other words, the activities of unions have detrimental effects not only at the firm's levels but at aggregate level as well.

This paper focuses on some of the factors that seem to have inhibited the adjustment of Mexico's labor markets. In particular, we study Mexico's labor law and its labor unions. In section II, we discuss the country's labor institutions; in section III, we deal with Mexico's labor law; and in section IV, we analyze the role of labor unions including and econometric estimation of their influence on the Mexican economy. Finally, section V presents some conclusions and recommendations. The main conclusion of the study is that Mexico should make a decisive effort to bring the nation's labor legislation in line with current market conditions. Current labor legislation favors unions, which exert substantial negative effects on Mexican firms, as well as on the entire economy. The government, in turn, controls Mexican labor unions.

### Labor Market Institutions

The government's authority for Mexico's labor affairs is the Secretariat of Labor and Social Security, (Secretaría de Trabajo y Previsión Social), or STPS. It was created in 1931, with the promulgation of the Federal Labor Law, (Ley Federal del Trabajo), or LFT. The

secretary of labor oversees three under-secretaries in charge of legal matters including the registration of unions and labor inspection; the coordination of labor policies, including employment, and training policies; and the administration of STPS offices located in each of the Mexican states. This office also publishes labor statistics and research. In addition, this office elaborates the budget for the entire Secretariat of Labor, coordinates the work of arbitrators, and oversees the Federal Tribunal for the defense of Labor (Procuraduría de Defensa del Trabajador), see Zapata (1996).

The Secretary of Labor presides over important organizations such as the National Commission of Minimum Salaries (Comisión Nacional de Salarios Mínimos), or CNSM; the National Commission for the Protection of Salary (Comisión Nacional Mixta para la Protección del Salario), or CONAMPROS; and the Federal Boards for Conciliation and Arbitration (Juntas Federales de Conciliación y Arbitraje), or JFCA. The JFCA's main responsibility is to oversee the negotiation of collective contracts of federal jurisdiction.<sup>2</sup> Additional organizations presided over by the Secretary of Labor include: the Fund for the Development and Guarantee of Worker Consumption (Fondo de Fomento y Garantía para el Consumo de los Trabajadores), FONACOT; and the Joint Commission of the Textile Industry (Comisión Mixta de la Industria Textil del Algodón), COMIXTA.

In summary, Mexico's Secretariat of Labor plays a significantly decisive role in the regulation and implementation of labor policies concerning labor unions, employment, training, health and safety, minimum wages, collective bargaining at the federal level, and judicial matters in the defense of workers and the provision of some benefits such as credit under softer conditions.

### Mexico's Labor Legislation

The fundamental basis of Mexico's labor legal framework is Article 123 of the Constitution of the Mexican States

<sup>2</sup> According to the Federal Labor Law, activities under federal jurisdiction include oil, electricity, railroads, communications, radio and television, and mining and the metallurgical sector.



of 1917, see Estados Unidos Mexicanos (1995). It enacts the basic rights of workers mandating minimum wages, severance compensation, and the reinstalling of a worker if his dismissal is considered “illegal”.

Originally promulgated in 1931 and amended in 1970, the completing cornerstone of Mexico's labor legislation is the Federal Labor Law, or Ley Federal del Trabajo (LFT), see Trueba and Trueba (1996). The LFT is based on Article 123 of the Constitution. The LFT establishes the rights and obligations of workers and employers, as well as the basic principles governing labor relations and working conditions. Supplementing Article 123 and the LFT, three more laws form an integral part of the Mexican legal framework for labor affairs: the Social Security Law (Ley del Seguro Social, 1943), the Federal Law for State Employees (Ley Federal de los Trabajadores del Estado, 1960), and the Social Security Law for State Employees (Ley del ISSTE, 1960).

The main provisions of the Federal Labor Law regulate: (1) minimum wages; (2) job security and severance compensations, (3) employee benefits; (4) hiring, seniority, and promotion; and (5) job ladders and jobs assignments.

*Minimum Wages.* Minimum wages are mandated by Article 123 of the Constitution, whereas the basis of their determination is provided by the LFT (Articles 90-97). According to this legislation, a minimum wage must be sufficient to provide for the satisfaction of basic needs, material, social, and cultural, of a family while furnishing education for the family's children, (LFT, Article 90). This legality vanishes as the LFT provides the criteria to calculate the minimum wage based on various benchmarks including “any other criteria”, (LFT, Articles 83, 84, and 85).<sup>3</sup> Thus, the LFT allows for full flexibility in minimum wage determination. In practice, however, the National Commission of Minimum Wages (CNSM)

–that groups representatives of workers, the private sector, and the government– determines minimum wages through some form of negotiation.

During the last 20 years, the CNSM has aligned with the government's adjustment programs, resulting in substantial losses of purchasing power of workers' earnings, as legally mandated minimum wages have lagged far behind price increases. Since the early 1980s, real minimum wages and general real wages have declined dramatically (in excess of 60%). Likewise, wages subject to collective contracts have also declined substantially, particularly since 1988, when the government began to adopt some incomes policy measures. In these developments the participation of labor unions was instrumental.

*Job security and severance compensations.* Mexican legislation guarantees job security by establishing that, with the exception of temporary workers and those hired to perform a specific task, the job relationship is permanent, as long as the subject matter for which the worker was hired exists within the firm (LFT, Article 39). However, the firm enjoys some degree of flexibility in the legal dismissal of workers, due to the largely interpretative nature of the 14 reasons the law provides to justify a dismissal without responsibility to the employer. These 14 reasons that regulate the behavior of the employee include violent or disruptive behavior, lack of honesty, intentionally damaging of tools, machinery and equipment, compromising the security of the working place, immoral behavior, etc., (LFT, Article 47). Here, however, the burden of proof regarding an employee's unacceptable behavior lies with the employer. Such a task can be overwhelmingly expensive and time consuming as the hearing period could take many years.

For instance, in the event that a worker that has been fired successfully appeals to the labor courts, he can be awarded his constitutional right to be reinstated, in addition to the restitution of all wages not paid during the hearing period. Alternatively, he can opt instead for severance payments, which consist of three months of

<sup>3</sup> Also, according to the LFT minimum wages can be established as “general” by geographic economic areas, or by profession. Currently, there are three minimum wage areas. In January 2001, the average minimum wage rate per day was 37.57 pesos equivalent to about 4.00 US dollars.



salary, plus 20 days per year of service; in addition to 12 days per year of service if the worker had 14 or more years of seniority, plus Christmas bonus and vacation compensation (LFT, Article 48).

The hearing period lasts from a minimum average of about two years to an occasional term that lasts somewhere between 6 and 8 years. Thus, it would seem that the nation's labor legislation is designed to persuade employers to avoid the dismissal of workers in response to economic downturns. One may even venture to say that this legislation attempts to compensate workers for losing their jobs, as Mexico does not have an unemployment insurance system.

In practice, the legality of the permanent nature of the work relationship between workers and firms is less stringent because of the largely interpretative nature of the law; the absence of unions demanding the enforcement of the law; and the burden of proof regarding the permanent nature of a job, which rests on the individual worker, see Bensusan (1994). In addition, firms can hire personnel who can be legally dismissed without significant costs, namely temporary workers and non-unionized "white-collar" workers (defined by LFT as "personal de confianza", Article 185). Also, firms can make use of sub-contracting –hiring personnel through an employment agency.

*Employee Benefits.* Mexican labor legislation establishes a number of minimum benefits to which all employees are entitled. They include Christmas bonuses (Aguinaldo); employer-housing contributions, profit sharing, employer contributions to social security, paid maternity leave, and paid holidays and vacation premium. Let us describe some of these benefits.

*Christmas Bonus (Aguinaldo).* This bonus is an annual payment equivalent to at least 15 days of wages, payable before December 20 of each year, (LFT, Article 87).

*Employer Housing Contribution.* Under the law, every employer is responsible for providing housing to his workers. To comply with this responsibility, employers

must pay the amount equivalent to 5% of every worker's daily wages to the Federal Housing Fund, INFONAVIT, (LFT, Article 136). Employees, in turn may obtain low-interest mortgages from INFONAVIT, particularly unionized workers.

*Profit Sharing.* Employees are entitled to an amount at least equal to 10% of the employer's pre-tax profit, (LFT, Article 117). The method used to distribute this 10% takes into consideration the number of days worked and the worker's salary, (LFT, Article 123). Some large firms have included in their collective contracts a given number of days instead. In such a case, firms pay out regardless of whether or not they have profits or losses.

*Employer Contribution to Social Security.* The Social Security Law (Ley del Seguro Social) states that all employers must register their workers with the Mexican Social Security Institute, (Instituto Mexicano del Seguro Social) or IMSS. It relieves employers from any liability of job-related illnesses or accidents. It does not provide for unemployment insurance resulting from economic cycles. Mexico does not have this type of unemployment protection at all. Instead, the IMSS provides various benefits to employees and their relatives, including the following five types of insurance: disability; medical and hospitalization for job-related accidents, illness, and maternity; unemployment during old age and death; child care; and, since 1992, retirement. The retirement insurance alone accounts for about 2% of worker's wages. All together, the five insurance programs of the IMSS amount to about 17% of employee's wages see Bensusan (1994), and Zapata (1996). Finally, the coverage of the IMSS reaches about 16% of the total population (about 13 million), which is equivalent to less than 60% of total employment. But all together, including members and their families, the IMSS covers about 50 million people.

Although contributions to IMSS vary depending upon the firm's specific business activity, taken together the contributions to IMSS, INFONAVIT, and to the retirement fund amount to about 27% of employees' wages, see Hernández Laos (1997). All firms must pay regardless



of the size and number of employees of the firm. This may not be a hurdle for large firms but for micro and small enterprises it is because record keeping is time consuming and contributions are expensive.

*Hiring, Seniority, and Promotion.* Many of the obstructions to the firm's endeavor to raise efficiency and productivity are related to hiring, seniority, and promotion. Hiring is particularly restrictive when collective contracts include a clause stating that firms can only hire union-members, who are subject to dismissal if they cease union membership, (LFT, Article 395). Unions, therefore, are granted significant legal rights, which in turn are used to influence the firms' business affairs as well as the workers behavior. Recently, however, this influence has somehow diminished because such a clause, known as the "exclusion clause" (cláusula de exclusión), has been omitted from some of the collective contracts.

The LFT favors promotion based on seniority and not on skill. A promotion will go to the employee with the most seniority, and if more than one is at the same level of seniority, the employee with a family to support will be promoted. Otherwise, the promotion will be awarded to the employee that "proves aptitude for the job" (LFT, Article 159). Although promotion based on seniority is declining, currently it is still widely practiced. Therefore, productivity growth is likely to be inhibited, as rewards for individual performance are rare.

*Job Ladders and Jobs Assignments.* In practice, the firm's policies to modify and design job ladders and assignments have been influenced by clauses included in collective bargaining contracts. Although the LFT does not legislate job ladders and job assignments directly, collective contracts have traditionally included clauses that restrict the mobility of workers across plants, departments, lines of production, and restrict their assignment to activities different to what workers were originally hired for, see Hernandez Laos (1991). This is because the LFT allows for a great deal of flexibility in the negotiation process in addition to granting unions significant rights.

In conclusion, Mexican labor legislation dates back to 1931 and is based on Article 123 of Mexico's Constitution of 1917. It grants significant rights to labor unions, which allows them to significantly influence firms and workers alike inhibiting the efficiency and productivity that characterizes free markets. The Federal Labor Law, largely interpretative in nature, makes the dismissal of workers extremely expensive in terms of time and money. Moreover, Mexico's labor legislation does not provide unemployment insurance of any sort. Finally, wages and salaries are determined not by market conditions but by negotiations in which unions and the government play a critical role. Given that real wages decreased about 60% during the 1980s and 1990s, one may question the role that unions played during those decades.

### **The Role of Labor Unions**

In addition to possibly contribute to the economic and social development of a nation, *free* labor unions are key to maintaining a balance between the enterprise's objectives to remain competitive in the market place and the worker's goals of improving their wages and working conditions, see World Bank (1995). However, nations that limit the operation of *free* labor unions, usually for political reasons, deprive *both workers and firms* of a mechanism to negotiate working conditions and wages under equitable terms. This usually results in excessive government intervention by means of state-controlled unions. Unions can also have negative economic effects when they behave as monopolies protecting small groups while reducing employment opportunities. This is because unions prevent non-union highly skilled workers from being hired. In addition, unions may inhibit productivity and efficiency gains when their participation limits the flexibility the firm requires to face market fluctuations. Therefore, whether labor unions promote or inhibit economic development and the efficient functioning of labor markets depends on the regulatory environment they face, combined with the government economic and political policies. On a case by case basis, this question needs to be answered empirically. Unfortunately, to Mexico the answer is unquestionably discouraging. One



instance of unions' adverse interventions is the deterioration of real wages, which resulted from the flawed policies that the government has been able to impose only with the help of Mexican unions.

### **Positive Effects of Labor Unions**

Free labor unions are likely to contribute to higher efficiency and productivity. At the plant level, unions provide workers with a collective voice limiting employer behavior that is arbitrary, exploitative and retaliatory. At the same time, unions can reduce turnover and promote stability in the work force, which may be conducive to enhancements in worker's productivity, see World Bank (1995). In addition, in many instances where worker's knowledge and skills are better than those of the management about how to improve productivity, the presence of unions, together with firm's management, can facilitate the development of a more productive and profitable organization.

A unique example that illustrates the beneficial effects of this type of unionism in Mexico is the mining company Cananea, see Zapata (1995a). In March of 1993, after its privatization, union and management together agreed on the implementation of a productivity enhancement program that set specific production targets.<sup>4</sup> Reaching those targets required a 24-hour full capacity utilization all year around. The Cananea union engaged the program proposing larger production targets than those suggested by the management. The result was that total production met and exceeded expected levels. This meant larger bonuses for all workers of the mine, as productivity increases turned out larger profits to the firm. Here, the productivity agreement, negotiated free of government intervention, benefited both workers and owners of Cananea.

In addition, the participation of the union of Cananea was key in the introduction of new technology to the

mine. As Zapata (1995a) explains, management recognition of worker's experience and skills came about when management alone, without consultation with the union, introduced new technology that caused delays in production. That happened because new technology and existing equipment did not work well together. In that instance the union provided the management with a set of corrective measures that took care of the problem. Afterwards, both parties agreed on mutual consultation when updating or modernizing equipment was under consideration. Also, the union reduced turnover and absenteeism by almost a half, while negotiated higher wages for its members. The Cananea example shows the potential mutual gains that could be achieved if unions and management are left to operate without government intervention. Unfortunately, in Mexico such cases are rare. Instead, it seems that throughout the country the unbeneficial effects of unions and the influence of the government prevail.

### **Negative Effects of Labor Unions**

First, labor unions can behave as monopolists, rising wages and improving working conditions at the expense of capital owners, consumers, and nonunion labor of both the formal and informal sectors.<sup>5</sup> Higher wages lead unionized firms to hire fewer workers. This in turn increases labor supply and lowers wages in the nonunion sector. In Mexico, wage differentials for some sectors favor union workers by about 15%. In other countries the differential is higher. For instance in the US the wage differential reaches 20%, see World Bank (1995). Note that although Mexican real wages are higher for union workers, overall wages, including union wages, lost more than one-half of their purchasing power during the 1980s and 1990s.

Second, in Mexico labor unions are state-controlled but enjoy great influence on the firm's hiring decisions. They are also protected under the country's labor law, which allows unionized workers to enjoy a great deal of protection under current labor legislation. Also, it is costly,

<sup>4</sup> The privatization of Cananea was part of a program undertaken during the 1988-1994 Administration that resulted in about 20 billion dollars from sales of state-owned enterprises.

<sup>5</sup> As pointed out by an anonymous referee unions have not behaved as monopolists.



in terms of money and time, to fire workers. Therefore, the very existence of Mexican labor unions in its current form is detrimental to the private sector's productivity enhancements, making them less competitive in the market place.

*State-Controlled Labor Unions.* At the center of Mexico's highly centralized political system is the Institutional Revolutionary Party or PRI as it is commonly known. Although the PRI has managed to remain in power and to rule the country for more than 60 years, it has not been until recently that the opposition has made some significant progress.<sup>6</sup> Currently, the PRI's political system exerts its control through various labor organizations that group all types of workers: white collar, blue collar, and peasants. Of these the Confederation of Mexican Workers (Confederación de Trabajadores Mexicanos) or CTM plays a predominant role. Here, the PRI's political system allows labor unions and the government to negotiate mutual demands. This very close relationship permits them to reconcile any disagreement among their different groups, see Zapata (1996).

This deliberate relationship is mutually advantageous and fosters the participation of government officials and union leaders in each other's institutions. For example, the CTM secretary general participates in many of the government's sectors, whereas other union leaders hold positions in the Mexican Congress and in rural municipalities. Traditionally, the PRI has allowed for about 20% of elected officials to be labor union leaders, see Zapata (1995b and 1996). This government control over labor unions has played a crucial role in the implementation of draconian adjustment programs called social pacts, particularly since 1987.<sup>7</sup> In their implementation, the state-controlled union movement helped to "eschew general strikes against restructuring measures aimed at increasing the outward orientation

and privatization of industry when the result is likely to reduce the relative wages of its members", see World Bank (1995, page 84). Indeed, in Mexico real wages fell by about 60% during the last 20 years. In addition, unemployment reached levels of historical proportions.

Other structural reforms and stabilization programs that were adopted with the help of labor unions are linked to what is termed the "neoliberal model". The policy objectives of these reforms were to promote economic growth and price stability while making Mexico more open and competitive. Indeed since 1986, when Mexico joined the GATT, the country has continuously lowered its import tariffs and formalized economic ties with other countries.<sup>8</sup> In 2002 Mexico had 32 free trade agreements with various countries and regions including North America, the US and Canada, and the European Union. Other structural reforms include the privatization of numerous public firms including TELMEX (the Mexican telephone monopoly) and the commercial banks. Furthermore, an amendment to Article 27 of the constitution allows for a new land tenure system, in which landowners (ejidatarios) can lease or transfer their property rights. Contrary to what was expected, the higher competition from abroad, the privatization programs, and the social pacts have brought massive layoffs and lower real wages. In the implementation of these reforms the organized labor played an instrumentally decisive role.

*Union Membership.* Membership in labor unions in Mexico is significant. As a share of the labor force, union membership is more than 30%, see World Bank (1995). This coefficient rises substantially to more than 70%, when population 14 years and older that is actually employed is considered instead, see Bensusan (1994). Although in recent years union membership has diminished, the latter measurement of unionism provides a good idea of the substantial influence that unions exert in Mexico under the current legal framework. The Federal Labor Law (LFT) empowers unions because they

<sup>6</sup> In 2000, for the first time in modern history, Mexicans elected President Vicente Fox, a candidate from the opposition.

<sup>7</sup> See Banco de México's Mexican Economy, various issues, for the specifics of the structural reforms and numerous social, solidarity, and stability pacts signed by the government and labor unions from 1987 to 1995.

<sup>8</sup> In 1986 the average Mexico's ad-valorem tariff was 18.5, whereas in May 1996 it averaged 5.91.



have the right to: (1) require union membership prior to employment, and in case of membership withdrawal, dismiss the worker (LFT, Article 395); (2) impose a collective contract upon employers, (LFT Article 384); and (3) declare a strike as a result of majority vote, in which the enterprise cannot hire new workers or continue normal operations with non-striking employees, (LFT, Article 447).

The government's legislation that allows it to exert control over unions is also based on three factors: (1) every union must obtain a government's certification to be legally recognized; (2) collective contracts must be submitted to the government in order to become legal, (LFT Article 390); and (3) in order for a strike to be legal, unions must obtain the government's approval, (LFT, Articles 920-938). Therefore, the current legal framework reinforces the close existing relationship between the labor union movement and the government, in which the government has a great deal of discretionary control.

Within this legal and political environment, the private sector faces significant challenges to modernize, enhance productivity, and become more efficient. Top among those challenges are those that restrict firms to hire and move employees within the plant, deny the firm the right to assign tasks different than those which the worker was hired for, limit or regulate work loads, establish promotion by seniority, as opposed to by skills or knowledge, and require enterprises to pact with unions the adoption of new technology or new administration methods. Thus, the government has a great deal of discretionary control over labor unions, which in turn exercise a great deal of influence on business affairs and their workers. In this environment the Mexican government seems to have all means to exert its influence in a system characterized by the absence of checks and balances.

### **Econometric Evidence of Unions' Influence**

Our previous discussion suggests that unionism has a significant effect on Mexico's economy. To determine

empirically whether that effect is beneficial or not we estimated a production function for the entire economy. In the traditional production function literature, labor and capital are expected to explain most of output's behavior but there remains an unexplained portion or residual. The unexplained portion or "residual" has been modeled as a function of technology, human capital, trade policy, and other factors, see Griliches (1996) for a summary of the literature. Following the same line of reasoning, namely that the residual can be explained by other factors, we could treat institutions such as labor unions, law enforcement, and the legislative framework, among others, as potentially important in explaining economic growth. The recent literature stresses these factors in what is called "social infrastructure", a term that is meant to capture institutional factors of societies, as well as governmental policies, see Hall and Jones (1999). Here, we focused on the activities of Mexican labor unions by testing such activities for their statistical significance in explaining the country's growth. We do the testing in a traditional aggregate production function for output growth as a function of capital, labor, and a residual.

The literature on economic growth and human capital allows us to derive our growth equation as a fairly traditional aggregate production function, see Solow (1956), Lucas (1998), Romer (1990), Barro (1991), Mankiw, Romer, and Weil (1992) and King and Levine (1993). We begin with the general aggregate production function:

$$Y = A \cdot F(K, L) \quad [1]$$

where  $Y$  is potential output;  $A$  is the residual embodying all factors, other than  $K$  and  $L$ , that affect output including measures of social infrastructure, human capital, and trade policy such as labor unions, education, and the real exchange rate;  $K$  is physical capital stock; and  $L$  is the labor force. Notice that  $Y$ , potential output, not actual output, is the proper measurement of output because  $K$  is the capital stock. Since  $K$  is not utilized capital,  $Y$  is the amount of output that could be produced if the capital stock and other resources were fully utilized.





Next, we totally differentiate (1) and then divide through by  $Y$  to get the growth rate of potential output,  $\frac{dY}{Y}$ , equation (2):

$$\frac{dY}{Y} = \frac{dA}{A} + \left( \frac{\partial Y}{\partial K} \right) \frac{dK}{Y} + \left( \frac{\partial Y}{\partial L} \cdot \frac{L}{Y} \right) \frac{dL}{L} \quad [2]$$

Letting  $G$  stand for the growth rate operator, i.e.  $GY = \frac{dY}{Y}$ , equation (2) can be rewritten as:

$$GY = GA + (ICOR) \frac{I_{NET}}{Y} + (s)GL \quad [3]$$

where  $ICOR$  is the incremental output capital ratio, is real Gross Domestic Investment adjusted for depreciation, and  $s$  is the wage share of total output. This equation is the basis for the econometric estimation. However, there are some important observations to discuss before we undertake the econometrics of the study. First, in empirical research it is customary to assume  $ICOR$  to be constant but that is questionable if we look at Mexico's historical data. One way to allow our  $ICOR$  to change is to obtain the variables that affect  $\left( \frac{\partial Y}{\partial K} \right)$ . Following Romer (1990) and many others we assume a Cobb-Douglas production function of the form:

$$Y = AL^\alpha K^\beta \quad [4]$$

Now, we can obtain  $ICOR$  by taking  $\left( \frac{\partial Y}{\partial K} \right)$  of (4), which results in equation (5):

$$ICOR = \left( \frac{\partial Y}{\partial K} \right) = A\beta L^\alpha K^{\beta-1} \quad [5]$$

Since data for  $K$ , the stock of capital is either unavailable or unreliable; we solve for  $K$  in (4) and substitute the result into (5). After rearranging terms we get equation (6):

$$ICOR = \left( \frac{\partial Y}{\partial K} \right) = \beta A \frac{1}{\beta} \left( \frac{Y}{L} \right)^{-\frac{\alpha}{\beta}} Y^{\frac{(\alpha+\beta-1)}{\beta}} \quad [6]$$

Finally, assuming, along the neoclassical model, that  $\forall + \exists = 1$ , we obtain:

$$\left( \frac{\partial Y}{\partial K} \right) = ICOR = (1 - \alpha) A^{1/(1-\alpha)} \left( \frac{Y}{L} \right)^{\alpha/(\alpha-1)} \quad [7]$$

One convenient result of (7) is that  $\left( \frac{\partial Y}{\partial K} \right)$ , our  $ICOR$ , is only a function of the ratio of output to labor,  $\left( \frac{Y}{L} \right)$ , in addition to the variables that explain the residual  $A$ . To simplify the econometric estimation we assume that the residual term,  $A$ , is a Cobb-Douglas function of the individual variables, human capital, real exchange rate, and labor unions. Consequently, our  $ICOR$  and our growth equation (3) are linear in the natural logarithm of the dependent and independent variables. Thus, we can estimate our growth equation, which is loglinear and a function of  $\frac{I_{NET}}{Y}$ , or  $\frac{Y}{L} \cdot \frac{I_{NET}}{Y}$ ,  $GL$ , and the natural logarithms of the variables in  $A$ .

Secondly, to obtain equation (3) we need to assume the competitive condition that the marginal productivity of labor  $\left( \frac{\partial Y}{\partial L} \right)$  equals the real wage  $\left( \frac{W}{P} \right)$ , so that the expression  $\left( \frac{\partial Y}{\partial L} \right) \left( \frac{L}{Y} \right)$  in (2) becomes  $s$  in (3). We, therefore, can assume  $s$  to be constant. To get  $s$  constant it is sufficient for the marginal productivity of labor to be proportional to the real wage rate. Alternatively, we could take the marginal and average productivities to be proportional, with  $s$  being the constant of proportionality; that is  $\frac{\partial Y}{\partial L} = s \left( \frac{Y}{L} \right)$ , see Feder (1982) and Bruno (1968).

We carried out the estimation of our aggregate output equation (3) with annual data for the period 1960-1995 using the two stages least-squares (2SLS) method. We used 2SLS given that the dependent and several independent variables in these regressions are determined simultaneously. In all regressions the dependent variable was the growth rate of  $Y$ ,  $GY$ , the real potential output or real potential Gross Domestic Product. We calculated potential output at the one-digit level using the International Standard for Industrial Classification (ISIC) and then added up each sector to obtain  $Y$  as follows. First, we plotted each one-digit ISIC sector's real output (real GDP by sector) against time and identified the years of full capacity output by consulting with experts from



the department of National Income and Product Accounts (NIPA) of the Banco de México.<sup>9</sup> Next, we connected these peaks of full plant and equipment utilization with straight lines, which give us the values of potential output. Finally, we added the sectoral potential output levels in each year to obtain  $Y$ . Our methodology differs from the peak-to-peak and the convex hull methods used by Lau, Jamison, and Louat (1991), and the World Bank (1991) in that our method considers disaggregated data at the one-digit ISIC sector and the help of experts on NIPA, while the mentioned methods rely on a mechanical methodology. We obtained data for each of the sectors' output,  $I_{NET}$ , and  $L$  from Indicadores Económicos and Acervo Histórico of Banco de México and the NIPA of INEGI.

Although in recent years there has emerged a debate on the impact of trade policy openness on growth, see for instance Rodríguez and Rodrik (2000), we included the natural logarithm of a real exchange rate,  $Rer$ , in our regressions. In many instances,  $Rer$  reflects tariff and non-tariff protection. As trade barriers are reduced, the real effective exchange rate tends to depreciate to offset the loss in protection. In Mexico, this was particularly evident after 1986, when tariffs and other trade barriers fell and the real exchange rate depreciated. The real exchange rate,  $Rer$ , is measured as a trade-weighted geometric average obtained from the World Bank's Development Report of 1991 and from Indicadores Económicos from the Banco de México. Here an increase in  $Rer$  indicates real a real appreciation.

The new theory on economic growth emphasizes human capital formation on development, see Romer (1986) and Lucas (1988). Thus, we included the natural logarithm of the average years of education,  $Educ$ , as a measurement of human capital. We constructed  $Educ$  using data from all population censuses from 1960 to 1995 to obtain average years of schooling of the population aged 15 and up. Next, we obtained our annual data by interpolating from the census data using year-

to-year changes in the annual series from the World Bank data. The data from the World Bank and Mexico's census were obtained from Nehru, Swanson, and Dubey (1993) and INEGI various years.

To account for the structural feature of the economy or the social infrastructure of Mexico that we are interested in analyzing, we include three measurements of labor unions.<sup>10</sup> Union 1 is the number of annual actual strikes (huelgas estalladas) in natural logarithms. Union 2 is the percentage change in annual actual strikes. And Union 3 is the ratio of annual actual strikes to legally registered strikes (demandas de huelgas registradas). We also tried the number of strike citations (emplazamientos a huelgas) but the results obtained were similar and are omitted here. The data for all measurements of unionism in Mexico were obtained from Segundo Informe de Gobierno, Anexo (1996), Sexto Informe de Gobierno (1994), and Anuario Estadístico de los Estados Unidos Mexicanos, various years. In the estimation we used 2SLS because the dependent variable  $GY$  and some of the independent variables are determined simultaneously. We take as endogenous  $Rer$ ,  $\frac{I_{NET}}{Y}$ , and  $\frac{Y}{L} \cdot \frac{I_{NET}}{Y}$ . The estimation was performed using the econometrics software TSP 4.4 and we report the results in Table 1.

From the econometric estimation we find all coefficients with the expected sign. The coefficients of the ratios of net investment,  $\frac{I_{NET}}{Y}$ , and the investment productivity,  $\frac{Y}{L} \cdot \frac{I_{NET}}{Y}$ , are positive and significant at, at least the 7.5% level of significance, and so is the labor productivity coefficient for  $GL$ . Real appreciation, an increase in  $Rer$ , has a negative impact on output but the size of its coefficient implies a smaller effect. It is also less significant and in some instances it fails the test. As Rodríguez and Rodrik (2000) suggests this may be due to a measurement concept or specification of trade

<sup>9</sup> Thank Mr. Eliseo Vargas from the Banco de México for his help in identifying the years of full capacity output.

<sup>10</sup> See Hall and Jones (1999) for a discussion on social infrastructure.

**Table 1**  
**Regression results with the dependent variable output growth,  $gy$**

Independent Variable	Equation Number					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Constant</i>	-0.228 (-1.26)	-0.3602 (-1.98)	-0.3698 (-2.04)	-0.2521 (-1.57)	-0.3319 (-1.95)	-0.3995 (-2.35)
<i>Union 1</i>	-0.0191 (-2.36)			-0.0199 (-2.45)		
<i>Union 2</i>		-0.0041 (-1.87)			-0.0043 (-2.30)	
<i>Union 3</i>			-0.0123 (-1.79)			-0.0132 (-2.03)
<i>Educ</i>	0.0104 (1.84)	0.01253 (2.00)	0.0136 (2.29)	0.0122 (2.53)	0.0130 (2.18)	0.0160 (2.82)
<i>Rer</i>	-0.0048 (-1.49)	-0.0056 (-1.58)	-0.0063 (-1.61)	-0.0049 (-1.56)	-0.0057 (-1.83)	-0.0070 (-1.84)
<i>GL</i>	0.4519 (1.97)	0.4342 (1.82)	0.4281 (1.79)	0.4305 (1.91)	0.3228 (1.78)	0.3803 (1.69)
$\frac{I_{NET}}{Y}$	0.2807 (1.81)	0.3863 (1.93)	0.4377 (1.99)			
$\frac{Y}{L} \cdot \frac{I_{NET}}{Y}$				0.1154 (1.90)	0.1656 (2.35)	0.1942 (2.29)
corrected $R^2$	.85	.83	.82	.83	.85	.83
<i>DW</i>	1.87	2.04	1.92	1.89	2.14	1.99
Number of Observations	33	33	33	33	33	33

The variables  $GY$  and  $GL$  are the rates of growth of potential GDP and the labor force, respectively;  $I_{net}/Y$  is the ratio of net domestic investment to potential GDP;  $Educ$  is a measurement of education attainment;  $Rer$  is the real exchange rate;  $Union1$  is the number of annual strikes;  $Union 2$  is the percentage change in annual strikes; and  $Union 3$  is the ratio of annual strikes to officially announced strikes; The numbers in parenthesis are t-statistics. And  $DW$  is the Durbin-Watson statistic. The data sources and their methodology are described in the text.



policy. In most cases education, *Educ*, our measurement of human capital formation, is significant at the 2.5% level. This finding is in line with most studies of human capital and growth.

Finally, the coefficients of our labor unions measurements are, in 4 out of 6 cases, significant at the 2.5% level and show up with negative signs. In the other two cases they are significant at the 5%. This supports our earlier assertion that labor unions played a significant role in Mexican economic affairs. In other words, we find the coefficient on labor unions providing us with statistical evidence that for the entire economy, unions do indeed have a detrimental effect on Mexico's economic growth. This result is consistent with other studies in which deregulation of the labor market, i.e. reducing unionized labor, may increase output, see Norbäck (2001).

## Conclusions

One important obstacle to the economic growth of Mexico is the outdated labor legislation dating back to the 1930s. In its current form, the Federal Labor Law restrains the flexibility that firms must enjoy to respond swiftly and efficiently to the ever changing conditions of markets, both national and international. The flexibility found in Mexico's labor legislation is due to the largely interpretative nature of the law, and to the overburdened and inefficient labor courts. In addition, the nation's labor legislation and institutions confer significant rights to labor unions in the negotiation of collective contracts. Consequently, traditional negotiation has allowed Mexican unions to include, in collective contracts, clauses that restrict firms to hire and move employees within the plant; deny firms the right to assign tasks different than those which workers were hired for; limit or regulate work loads; establish promotion by seniority, as opposed to by skills or knowledge; and require firms to pact with unions for the adoption of new technology or new administration methods.

In Mexico labor unions matter but are state-controlled. As a share of the labor force, union membership amounts

to more than 30% but as a proportion of employment it reaches about 70%. Furthermore, the empirical evidence of this study suggests that, for the economy as whole, unions have detrimental effects on Mexico's economic growth. High unionism is not by itself an obstacle to development, efficiency, or productivity as some instances in Mexico and Japan attest. Labor unions can have positive effects on the economy but must be freed from state control. The Cananea mining company illustrates such a unique case of the positive effect of unions in Mexico. Other examples supporting this view come from Japan where "enterprise unions have been heralded as one of the pillars of industrial relations supporting Japan's economic achievements", see World Bank (1995, page 83).

Unfortunately, state-controlled labor unions in Mexico have, and will continue to have, a pervasive negative impact on the economic activity of the country, as both current legislation and political structure provide unions with significant legal rights. Thus, it is unlikely that even if the current trend in political changes continues, unless there is a substantial reformulation of the Federal Labor Law, labor market conditions will continue to restrict the development of the private sector and thus the country as a whole. More importantly, the government, with the help of Mexican unions, will continue to implement its economic policies, which so far have been nothing but an astonishing failure.

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