Jorge N. Valero-Gil
Universidad Autónoma de Nuevo León

José A. Tijerina-Guajardo
Universidad Autónoma de Nuevo León

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Resumen

El presente artículo examina el efecto de las tasas marginales del impuesto sobre la renta en el mercado laboral en México, utilizando una versión modificada del modelo de tributación sobre la renta personal de Rosen (1976). El estudio analiza las reaccciones de los trabajadores asalariados del sector formal ante los cambios en la tasa marginal del impuesto sobre la renta. Prestamos especial antención a la muestra, con el fin de controlar en nuestros cálculos el problema del alto índice de evasión fiscal en México. Comprobamos como las horas de trabajo disminuyen cuando las tasas marginales del impuesto sobre la renta aumentan.

Abstract

This paper examines the effect of marginal income tax rates on labor supply in Mexico using a modified version of Rosen´s (1976) personal income taxation model. The study analyzes how salaried workers of the formal sector react to changes in the marginal income tax rate. Special attention is given to the sample, in order to control the problem of the high level of tax evasion in Mexico in our estimation. We find evidence that hours of work diminish when marginal income tax rates increase.

1. Introduction

The analysis of the behavioral response to taxation is a subject of great importance for policy makers. Taxation may affect the choice between work and leisure, occupation, savings, among others. These decisions affect revenue collection and social welfare evaluation (Triest, 1998).

Reliable estimates of how taxes affect behavior are useful for undertaking tax policy and social welfare estimation. Most theoretical models, however, are silent about how taxation affects the desired hours of work since hours worked depend on the magnitude of the substitution and income effects (Slemrod, 1998).1

Estimates of the elasticity of labor supply to income tax rate changes show that its magnitude is small, with a consensus elasticity of about -0.1 for males [see Hausman (1985), MaCurdy, et. al. (1990), and Triest (1998)]. This elasticity implies that a 10 percent increase in net wage, leads, on average, to a one percent decline in hours worked. On the other hand, for aggregate data, Mendoza, et al. (1993) have found a significant effect of income taxes on hours worked for United States, United Kingdom and Japan.

For developing countries, as far as we know, most estimates have been performed using aggregate data. The estimations show that hours of work are not sensitive to tax

rate changes (Gandhi, 1987). Using data at the firm level Gruber (1997) finds little effect of payroll taxation on employment in Chile.

In Mexico, the only attempt to measure this sort of distortion, to our knowledge, has been done by Meléndez (1996). The study estimated elasticities for the Metropolitan Area of Monterrey, the second largest city in Mexico. His results show that income tax rates do not have any significant effect on hours of work for married men, women or housewives.

This finding is interesting in light of recent changes in the income tax code of Mexico. During the last decade, personal income tax policy was aimed at reducing the top marginal tax rate on income, reducing the number of tax brackets, and broadening the income tax base. The marginal tax rate went from 55 percent in 1980 to 35 percent in 1990, remaining at this level until 1998. The number of income brackets was reduced from 26 to 8 and, at the same time, some personal income tax deductions were eliminated (Aspe, 1993; Tijerina and Medellín, 1999).

However, in January 1999, the Mexican income tax code moved in the opposite direction. Personal income was subjected to two more income tax brackets for those with high incomes (i.e., 37.5 and 40 percent marginal tax rates). The rationale behind this increase was the need to increase tax revenues, in addition to the implicit assumption that welfare loss was minimal (Secretaría de Gobierno, 1998). Nonetheless, as argued above, the magnitude of the welfare loss derived from higher marginal tax rates on income depends critically on the estimation of the effect of income taxation on labor supply.2

The objective of this paper is to estimate the effect of marginal tax rates on personal income on labor supply by "formal" salaried workers in Mexico during the third quarter of 1997, using the National Urban Employment Survey conducted by INEGI and Secretaría del Trabajo y Previsión Social (INEGI and STPS, 1998). Given the high level of estimated tax evasion in Mexico, we only included formal salaried workers. Firms hiring these workers must withhold their taxes, and act as a third party collecting revenue on behalf of the federal government. In this sense, formal workers are less prone to tax evasion. We have excluded workers in the informal sector because by definition they do not pay income taxes. In other words, we are working with a sample of individuals whose labor supply is suspected to be highly inelastic, since their options may be limited to work in the informal sector or being unemployed under a system where social security for the unemployed is not available.

The paper proceeds as follows: section 2 presents the theoretical model applied in our estimation, which rest on a variation of Rosen (1976). Section 3 estimates the model and presents the results. We find that marginal tax rates on personal income have a small but adverse effect on labor supply for salaried workers in the formal sector of the economy. The estimated elasticity of hours of work with respect to the marginal tax rate ranges from -0.025 to -0.021. Also, a model that attempts to capture the effect of progresivity of the income tax rates on hours fo work is estimated. The results confirm that higher marginal income tax rates are associated with larger distortions in the time allocated to work. The elasticity varies from -0.10 for a tax rate of 0.17, to -0.283 for the top marginal tax rate of 0.35. Section 4 concludes with some comments and suggestions for further research in this area for Mexico.

2. Theoretical model

Progressive income tax rates are common in most countries (see some evidence in Shome, 1995). Although there are different forms of measuring progressivity, the practice usually defines it as increasing marginal tax rates as taxable income rises (Musgrave and Musgrave, 1992). The progressive structure of most personal income tax schemes might impose important distortions on labor supply depending on the magnitude of the substitution and income effects. A particular case is the effect of marginal income tax rates on desired hours of work and leisure. That is, eventhough a

change in marginal income tax rates does not lead to a change in the labor status of the worker (i.e. empolyed vs. unemployed), it may significantly change the hours devoted to work *vis-a-vis* leisure time.

For that purpose, we follow Rosen´s model (1976). Formally, the model states that the problem of a typical consumer is:

$$(1) \qquad \text{Max } U=U(C, H;Z)$$

$$\text{subject to} \qquad C = w(H,X) \cdot H \cdot [1-T(H,X)] + Y$$

where U is ordinal utility; C is consumption; H is hours of work; and Z is a vector of parameters that affect the tradeoff between income and non-market activity. w is the wage rate per hour that depends on H and X, where X is a vector of characteristics that determines the value of the wage per hour at any number of hours; (H,X) is the average tax rate as a function of H and X; and Y is net of taxes non-labor income.

Several important facts derive from this model as discussed by Rosen (1976). First, the slope of the budget line is not w, but w(H)+H*w´(H). 3Second, an interior solution requires not only that the utility function be convex, but that its curvature be "sharper" than that of the budget line. Third, it is possible that the decision about the number of hours of two individuals be the same, but their non-labor income differ among them; that is, they have the same slope, but different intercept. This feature leads to a correction in the budget line in the empirical implementation of the model as explained by Rosen (1976).

The equations to estimate for wages (w) and hours of work (H) proposed by Rosen (1976) are:

$$(2) \qquad \ln w_j = \beta_1 H_j + \beta_i X'_{ij} + u_j$$

$$(3) \qquad H_j = \delta_1 (1-t_j) ME_j + \delta_i Z'_{ij} + \varepsilon_j, \text{ with } i \neq 1.$$

$$(4) \qquad ME_j = \partial(e^{\beta_i X'_{ij}} e^{\beta_1 H_j} H_j) / \partial H_j = e^{\beta_i X'_{ij}} e^{\beta_1 H_j} (1+\beta_1 H_j) \quad \text{for j=1,2,3,...,N.}$$

.

MEj is marginal earnings $(\equiv \partial(w(H,X))*H)/\partial H)$, and can be interpreted as the wage rate per hour, adjusted by the number of hours of work. tj is the effective tax rate and uj and ε_j are random errors. Xij is a (N x K) matrix of explanatory variables including a constant, and Zij is a (N x M) matrix of explanatory variables for hours of work, both including a constant. $\beta_1, \beta_i, \delta_1$ and δ_i are parameters to estimate, where β_i and δ_i are 1 x K and 1 x M row vectors. Equation (2) is an ordinary earnings function plus a variable for hours of work, and equation (3) shows the dependence of hours of work on marginal earnings and other characteristics associated with the individual. Since the effective tax rate tj is unobservable to us, we use instead the marginal tax rate (j) administered by the government.4 Thus, we can rewrite equation (3) as:

$$(5) \qquad H_j = \delta_1 ME_j - \delta_2 \tau_j ME_j + \delta_i Z'_{ij} + \varepsilon_j \qquad \text{for j=1,2,3,...,N}$$

Note that this formulation explicitly assumes that the marginal tax rate affects hours of work and gives us a meaningful way to test whether the marginal rate has any distortionary effect in the allocation of hours of work.

We also estimated a variation of Rosen´s model that assumes that wage per hour is independent of hours of work. As can be easily shown, equation (4) reduces to the estimated w. In order to capture if there is an increasing distortion in labor allocation as the marginal tax rate on personal income rises, we estimate equation (5) including the square of the marginal tax rate. This formulation resembles closely the derivation of the deadweight loss estimation of taxes in most public finance textbooks (Atkinson and Stiglitz, 1980).

3. Empirical implementation

This section estimates equations (2) and (5). Available surveys in Mexico that analyze the labor market do not deal directly with tax questions; thus, we had to generate some of the variables for our analysis.

Data and estimation of the variables

We use data for the third quarter of 1997 from the National Urban Employment Survey, conducted by INEGI and Secretaría del Trabajo y Previsión Social (INEGI and STPS, 1998).

We focus on salaried workers which are subject to increasing tax rates on personal income, and whose income tax is withheld by their employers. We also limit the sample to those who work in the formal sector. In our case, a worker is employed in the formal sector if he/she works in a business that is registered at the tax authority and/or has a name.5 Workers in the informal sector are excluded because -by definition- they do not pay personal income taxes (Mourmouras and Tijerina, 1999; and Pagán and Tijerina, 2000)6. Finally, we restricted the sample to those workers who worked less than 90 hours per week because this variable is top-coded and there were only a few cases of individuals registered at that limit. In addition, the Mexican Labor code establishes a work shift of 48 hours per week (Secretaría del Trabajo y Prevision Social, 1998).7

Since the survey reflects the earnings of workers net of taxes, we have to estimate gross earnings. Appendix 1 shows the procedure employed to estimate gross earnings.

Information about net non-labor income is not available in the survey. Therefore, we proxy this variable with total net income of the spouse and direct descendents (sons and daughters).8

The rest of the variables used like age, years of education, gender, marital status, size of the firm, and so on, are readily available from the survey. In total, we have 71,756 observations.

Estimation procedure

As argued by Rosen (1976), in order to estimate equations (2), (4) and (5) we need to evaluate the functions at some "standard number of hours". We have chosen 46 hours because this cutoff corresponds to the average number of work hours of the sample. Evaluating at this number of hours of work, this procedure attempts to control for the endogeneity of the marginal tax rate and income. Since Xij is exogenous, and MEj and $\tau_j \cdot ME_j$ are evaluated at the "standard" number of hours, there is not correlation between these variables and the error term ε_j, and equation (5) can be estimated by ordinary least squares.9

Upon estimation of equation (2) by the instrumental variables method, we found that the estimated β_1 was sensible not only to the choice of vector X but also to the instruments used.

Given these results, we experimented with a different version of Rosen´s (1976) model, and estimated equation (2) as a simple earnings function, that as explained above, implies that the ME function reduces to the estimated wage rate. We retained his specification about the evaluation of ME at a standard number of hours of work ir order to control for the endogeneity problem. Thus, we estimate the log of the wage per hour as a function of education, experience and experience squared. A "border" dummy variable was also included to account for location within the U.S.-Mexico border given that hourly wages tend to be higher in this area. In order to improve the estimation results we added the following variables: education squared, experience cubic, male, married and employed in a large firm.10 The procedure involves estimating equation (2)´ and (5) by ordinary least squares (OLS):

$$(2)' \qquad \ln w_j = X_{ij}\,\beta_i' + u_j$$

$$\text{with } ME_j = \partial(e^{X\beta'} \bullet H)/\partial H_j = e^{X\beta'}.$$

Results

The estimation of equations (2) and (2)´ are shown in Table 1. Notice that the coefficients have the expected sign. From these parameters, we estimated MEj following equations (4) and (4)´. Once we had (2), (2)´, (4) and (4)´, we proceeded to estimate equation (5) for each case.

Table 1. Dependent Variable: ln w_j

	Estimation by Instrumental Variables		Estimation by OLS	
	(1)	(2)	(3)	(4)
Variable	Coefficient (Rosen model)[1]		Coefficient	
Constant	0.0775 (0.005)	4.086 (0.021)	0.760 (0.001)	1.233 (0.002)
Years of education	0.137 (0.0001)	-0.018 (0.0005)	0.137 (0.0001)	0.013 (0.0003)
Years of education squared		0.005 (0.00002)		0.005 (0.00001)
Experience	0.054 (0.0001)	0.088 (0.00063)	0.054 (0.0001)	0.063 (0.0001)
Experience squared	-0.007 (0.00001)	-0.028 (0.0001)	-0.007 (0.00001)	-0.016 (0.0001)
Experience cubic		0.026 (0.0002)		0.014 (0.0001)
Border	0.196 (0.001)	0.158 (0.001)	0.196 (0.0005)	0.169 (0.001)
Male		0.408 (0.002)		0.114 (0.001)
Married		0.100 (0.001)		0.104 (0.001)
Large firm		0. 179 (0.001)		0.282 (0.0005)
Hours of work	-0.015 (0.0001)	-0.077 (0.0005)	-0.015 (0.00002)	-0.015 (0.00002)
	N = 61,828	N = 61,828	N = 61,828	N = 61,828
	R^2 = 0.491	R^2 = n.a.	R^2 = 0.492	R^2 = 0.543

1 The instrumental variables in column (1) used are: male, married, other income and size of business. In column (2) we use size of business, other income and experience quartic.
Standard error in parentheses and absolute values. All coefficients are statistically different from zero at the 95% level of confidence.

The variables included in the regression for hours of work were MEj, $\tau_j \, ME_j$, border, gender, marital status, size of the firm, non-labor income (NLI) and non-labor income of married men (NLIMM). This last variable is included to avoid a bias in the estimated parameters because most of the married men are almost always in the labor force and we expect lower income elasticities for them than for married women or for single men..

We now turn our attention to estimating equation (5). The regression results are shown in column (1) of Table 2 for Rosen´s model. The coefficients for marginal earnings (ME) and marginal taxes $(\tau_j * ME)$ have the expected sign and are statistically significant. The observed elasticities of hours of work with respect to the marginal income tax rate (evaluated at 0.10, the median value of the sample) is very small, -0.042. If we do not include the variable NLIMM the elasticity obtained is about the same, implying that there is not a significant difference between married and single workers. The elasticities of hours of work with respect to marginal wage are around 0.002 and 0.008, and the compensated elasticities are around 0.057 (columm 2 in table 2) and 0.066 (columm 1).

These elasticities are much more smaller than the elasticity found in the U.S. (Hausman, 1985; MaCurdy, et. al., 1990; and Triest, 1998). However, it is worth noticing that it is significant in a sample of individuals whose labor supply was suspected to be more inelastic.

We also estimated a model that attempts to capture the greater distortions on labor allocation atributed to higher marginal income tax rates (see Musgrave and Musgrave, 1992; Atkinson and Siglitz, 1980). The model includes the variable $\tau_j^2 ME_j$ to reflect the formulation of the deadweight loss estimation of taxes. The results are shown in column (5) of table 2, and all variables have the expected signs. The elasticity of hours of work with respect to the mean income tax rate changes to -0.125 showing the importance of the tax sctructure.

Table 2. Hours equation. Dependent Variable: H_j

Estimation by Ordinary Least Square

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	Coefficients (Rosen procedure)		Mean of the variables	Coefficients (variation of Rosen model)	Coefficients (variation of Rosen model: progresivity)	Mean of the variables
.Constant	43.318 (0.154)	42.372 (0.143)		43.317 (0.015)	42.920 (0.154)	
ME	0.501 (0.039)	0.564 (0.039)	3.972	0.473 (0.004)	2.088 (0.080)	4.200
τ_j*ME	-3.323 (0.112)	-3.290 (0.112)	0.704	-3.139 (0.011)	-20.622 (0.776)	0.745
τ_j^2*ME					39.043 (1.717)	0.171
NLI	-0.001 (0.0001)	-0.001 (0.0001)	896.769	-0.001 (0.0001)	-0.001 (0.0001)	895.354
NLIMM	0.002 (0.0001)		285.625	0.002 (0.00001)	0.002 (0.0001)	284.935
Border	0.184 (0.103)	0.172 (0.103)	0.250	0.184 (0.010)	0.067 (0.102)	0.250
Male	4.018 (0.107)	4.769 (0.097)	0.655	4.019 (0.010)	4.024 (0.107)	0.655
Married	-0.543 (0.110)	0.332 (0.096)	0.520	-0.541 (0.011)	-0.398 (0.110)	0.520
Micro	1.457 (0.113)	1.452 (0.114)	0.245	1.458 (0.011)	1.179 (0.113)	0.245
Small	1.618 (0.122)	1.617 (0.122)	0.183	1.618 (0.012)	1.466 (0.122)	0.183
Medium	2.209 (0.200)	2.191 (0.200)	0.054	2.209 (0.019)	2.041 (0.199)	0.054
se						
Number of Observations	61,828	61,828		62,482	62,482	
R^2	0.091	0.087		0.091	0.099	

ME and τ_j•ME for the Rosen model are estimated from the equation in column (1) of Table 1. ME and τ_j•ME for the variations of Rosen model come from column (3) of Table 1. Standard errors in parentheses. All coefficients, except Border in columns (1), (2) and (5) are statistically different from zero at the 95% level of confidence.

The estimated elasticities of hours of work with respect to marginal income tax rates at their different levels are presented in Table 2. The results reflect the quadratic nature of the estimated equation. The elasticity grows with the marginal tax rate level. Notice that the elasticity at the top marginal income tax rate is -1.858, indicating that high income earners are more sensitive to marginal income tax rate changes than workers subject to lower marginal income tax rates. Those workers are going to spend more hours on other activities such as leisure.

Table 3. Sensitivity analysis for marginal rates of taxes

	Marginal income tax rates							
	0.03	0.10	0.17	0.25	0.32	0.33	0.34	0.35
Mean hourly wage in current pesos of 1997	2.16	6.69	15.26	20.92	24.19	34.40	58.42	112.66
Hours worked	49.76	47.62	42.76	41.51	40.04	39.07	40.56	40.30
Mean hourly wage in current pesos of 1997	2.23	3.24	5.44	6.70	7.42	8.50	9.80	10.34
Tax elasticity of hours of work	-0.025	-0.143	-0.446	-0.832	-1.223	-1.480	-1.690	-1.858

Thus, although politically it seems acceptable that higher marginal tax rates on top income earners is the solution to increase government revenue, our results show that this type of policy leads to a large distortion -reduction- in the desired hours of work of high income earners in Mexico. What this finding points out, is that if the objective is to increase government revenues in Mexico, there may be more efficient ways of doing so, such as broadening tax bases, specially on consumption, where it has been documented that there exist large exemptions and preferential treatments (OECD, 1999).

4. Final comments

This paper attempts to estimate the sensitivity of hours of work to changes in personal income tax rates for Mexico. The sample consists of salaried workers in the formal sector of the economy. The data set used comes from the National Urban Employment Survey for the third quarter of 1997. Using a modified version of the model by Rosen (1976), we find that marginal income tax rates have an important but small adverse effect on the hours of work supplied by individuals. The elasticity of hours of work with respect to the marginal tax rate is in the order of -0.042 for the average individual. This value is below the range obtained in different studies for developed countries.

However, when we take into account the progressivity of the marginal tax rate imbedded in the personal income tax code, we estimate an average tax elasticity of -0.125. When we estimate the elasticities by tax brackets we find that this elasticity increases up to -1.858 for the top marginal rate of 35 percent.

This is an important finding for the design of tax policy making, and specially when one considers that our estimation includes only a group of workers whose response to tax changes is expected to be low. In this sense, it is possible to argue that increasing

marginal income tax rates might have significant distortionary effects on the allocation of labor in Mexico, specially on top income earners.

In this sense, if the objective is to increase government revenues in Mexico, there appear to be better alternatives ways of doing so. In particular, resorting to a broadening of the tax base on consumption could be a more efficient tax policy, amid the political effect of such a policy.

The estimation is an initial step towards a more complete study of the effect of taxes on labor supply in Mexico. Future research must consider estimating not only the effect of taxes on desired hours of work of salaried workers, but labor participation in different sectors such as the informal sector or self-employment.

Appendix 1. Estimation of gross earnings

This appendix estimates gross earnings for the individuals of our sample. Since net earnings are recorded in the survey, the procedure involves going from net earnings backwards to estimates gross earnings. This is done using the tariff, subsidy, and credit tables for 1997 (articles 80, 80-A and 80-B of the income tax code; see Themis, 1997).

The income tax code contains eight income brackets, with marginal tax rates increasing with taxable income.11 Marginal tax rates ranged from 3 percent to 35 percent. This is the first component of the calculation for the tax due. The second component is the estimation of the subsidy, which is more complex.12 First, the proportion of the monetary benefit to total earnings (including monetary and non-monetary such as meals and transportation offered by the firm to its employees,) is estimated for each employee. Then, the mean value of this proportion, called "p", is calculated for all workers within a firm. Since the survey does not contain this sort of information, we assumed that the proportion equals 75 percent. Thus, the allowance amounts to about half of the subsidy that would be transferred if there were no non-monetary benefits. The third component is the credit. As legislation establishes, the amount of the credit decreases as taxable income increases.

More formally, monthly net earnings are:

(A1) $Wn = Wb - T1 + T2 + T3$,

where Wn is monthly earnings net of taxes, Wb is monthly gross taxable earnings, and T1, T2 and T3 are as explained below.

T1 refers to the application of the marginal tax rate depending upon the income tax bracket of the taxpayer, and a fixed quota:

(A2) $T1 = (Wb - Wbmin) * mgtax + FQ1$

where Wbmin is the monthly gross minimum taxable earnings at the corresponding income tax bracket; mgtax is the marginal tax rate applicable to all income in excess of the minimum taxable income for each bracket, and FQ1 is a fix quota that decreases as taxable income rises as established in the income tax code. In 1997 there were 8 income brackets.

T2 refers to the subsidy, which as explained, depends on the ratio of non-monetary benefits provided by the firm to its employees to total earnings. The higher this benefit, the lower the subsidy:

(A3) $T2 = S - 2*S*(1-p) = S*[2*p - 1]$

where S stands for the amount of the subsidy. The subsidy is adjusted by "p" (called also de the "employer p"). p is defined as the ratio of monetary earnings to total

earnings. In our estimation, as we mentioned, we set p=3/4, that is, 25 percent of total earnings is obtained in terms of fringe benefits. Further, the subsidy is defined as:

(A4) S = (Wbs - Wbsmin) * mgtaxs * mgtax + FQs

where Wbs is monthly gross earnings used to calculate the subsidy and Wbsmin is the minimum monthly gross earnings needed to qualify for a subsidy. mgtaxs is the marginal tax rate applicable to monthly gross earnings above Wbsmin, and FQs is a fixed quota as described in the income tax code. In 1997, there were 10 brackets.

The credit is also a fixed amount. In 1997 there were three income brackets for the application of this credit. In our notation, this would be:

(A5) T3 = Cr

Column 11 in Table A1 presents the personal tax income due in 1997 according to the income tax code, while column 12 gives us net earnings. Gross earnings are then obtained by solving Wb from equation (A1).

Table A1. Personal Income Tax Code in México, 1997

(monthly 1997 pesos)

Upper Limit (W_b)[1]	Lower Limit (W_{bmin})	Marginal Tax Rate (mgtax)	Fixed Quota (FQ1)	Tax (T1)	Lower Limit (W_{bmin})	Fix Quota (FQ_s)	Marginal Tax Rate ($mgtax_s$)	Subsidy (T2)[2]	Credit (T3)	Sum (T1-T2-T3)	Net earnings (W_n)[3]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
274.52	0.01	3	0.00	8.24	0.01	0	50	68.63	225.18	-285.6	560
2329.97	274.53	10	8.24	213.78	274.53	4.11	50	515.92	211.59	-513.7	2844
4094.71	2329.98	17	213.77	513.77	2329.98	106.89	50	494.63	98.37	-79.2	4174
4759.94	4094.72	25	513.79	680.10	4094.72	256.88	50	294.75	98.37	287.0	4473
5698.93	4759.95	32	680.08	980.55	4759.95	340.06	50	404.78	98.37	477.4	5222
11493.94	5698.94	33	980.57	2892.92	5698.94	490.27	40	1404.14	98.37	1390.4	10104
18116.04	11493.95	34	2892.91	5144.42	11493.95	1255.21	30	1620.92	98.37	3425.1	14691
22987.87	18116.05	35	5144.41	6849.55	18116.05	1,930.66	20	1452.51	98.37	5298.7	17689
27585.41	18116.05	35	5144.41	8458.69	22987.88	2271.71	10	1365.73	98.37	6994.6	20591
35000	18116.05	35	5144.41	11053.79	27585.42	2432.61	0	1216.31	98.37	9739.1	25261

1 Note that we have divided the income tax bracket into three parts at the marginal tax rate of 35%; the reason for this division is that the marginal tax rate of the subsidy and the fixed quota vary in the range shown. We have assumed for the sake of illustration that the maximum taxable gross income is 35,000 pesos; nonetheless, we did not assume that in the empirical analysis. 2 We have assumed that the proportion of monetary earnings to total earnings is ¾. 3 Refers to the maximum net income to be included in that bracket.
Source: Elaborated with information of "Ley del ISR" in Themis (1997).

Footnotes

1 Few authors have attempted to sign the total tax effect using the level of government services provided; see Conway (1997).

2 We should point that this policy also affects capital income, since both taxes are fully intergrated. For a review of different income tax systems see Shome (1995).

3 See Rosen (1976) for the motivation as to why hours of work and wage per hour may not be independent.

4 We should note that we are not trying to test whether individuals look at the marginal income tax rate or the effective tax rate in making their decisions about labor supply.

Rather, we are interested in estimating whether or not the marginal tax rate on income has any effect on hours of work supplied.

5 This definition is due to Roubaud (1995).

6 We also believe the informal sector merits itself a separate analysis, since its size amounts up to 20 percent of the labor force employed, plus the fact that existent empirical work does not conclude if the informal sector is a safety net against unmeployment. See for instance, Guergil (1988) and Jusidman (1993).

7 Refer to articles 61 and 69 of the Federal Labor Law in Mexico.

8 We also used total net income of the persons living in the same house. The estimation results did not change significatively, and are available upon request to the authors.

9 Estimating MEj at 46 hours per week, implied reestimating the marginal tax rate aplicable to monthly earnings at H=46.

10 The definition of firm´s size is as follows. Large: more than 250 workers; medium: 101 - 250 workers; small: 16 -100 workers; micro: 1 - 15 workers.

11 Taxable income is similar to all income from work since there are very few deductions allowed, like medical and funeral expenses. Other income, such as interest earnings, are taxed at the source.

12 The idea of the subsidy is to compensate to those individuals that did not receive non monetary benefits from their employer..

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About the authors:

Autor: Jorge N. Valero-Gil
Dirección: Facultad de Economía.Universidad Autónoma de Nuevo León. Loma Redonda 1515-A Pte. Col. Loma Larga Monterrey, NL, México CP 64710 Tel. and Fax: (8) 345-5018
Correo electrónico: jvalero@faeco.uanl.mx

Autor: José A. Tijerina-Guajardo
Dirección: Facultad de Economía.Universidad Autónoma de Nuevo León. Loma Redonda 1515-A Pte. Col. Loma Larga Monterrey, NL, México CP 64710 Tel. and Fax: (8) 345-5018
Correo electrónico: alfredo.tijerina@sat.gob.mx