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The Mexican Tax-Benefit System

Carlos Absalón
y
Carlos M. Urzúa*

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Tecnológico de Monterrey, Campus Ciudad de México

*EGAP, Calle del Puente 222, Col. Ejidos de Huipulco, 14380 Tlalpan, México, DF, MÉXICO
E-mail: curzua@itesm.mx

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1. Basic information

After the economic crisis that erupted in 1994, extreme poverty in Mexico increased steadily until it ended up affecting more than one third of the population in 1996. Since then, the government has increased substantially social benefits, directing most of its efforts toward reducing poverty (the percentage of population living in poverty, although still high, is now lower than in the pre-crisis years). Regarding the tax system, in 2007 the Congress enacted several changes in the case of income taxes and some excise taxes. Thus, on both sides, benefits and taxes, there have been several recent reforms in Mexico that are worth to study in a micro-simulation framework. Also, micro-simulation can be of help in the search of better tax regimes.

1.1 Basic figures

According to the classical World Bank classification, Mexico is an upper-middle income country. It has one of the highest incomes per capita in Latin America, and its Gross Domestic Product (GDP) is, in the region, second only to Brazil's (which is about 12% higher in dollar terms). Nevertheless, its income per capita, measured in purchasing power parity terms, is one of the lowest among the average real incomes of the other members of the OECD. As shown in Table 1, during the period 2000-2005 the population rose from 97.5 to 103.3 million, representing a growth rate averaging 1.2 percent. Demographic trends show a decline in the percentage of the population under 18 years and an increase in the elderly. This fact is explained by a reduction in the fertility rate and life expectancy of the population. For its part, GDP per capita, measured in purchasing power terms, increased substantially (although the two numbers are not comparable since there was a methodological change in the way in which GDP is measured). The exchange rate depreciated from 9.82 to 10.78 pesos per dollar in that period. Since then, the peso has

become stronger against the dollar, mostly due to the wedge that exists in the interest rates in Mexico and the United States.

Table 1. Basic figures

	<i>Pop. (m.)</i>	<i>Pop. < 18 (%)</i>	<i>Pop. ≥ 65 (%)</i>	<i>Life expect. (years)</i>	<i>Fertility Rate</i>	<i>Unemp. Rate</i>	<i>GDP per head (PPP)</i>	<i>Currency Name</i>	<i>Exch. Rate ^[1]</i>
2000	97.5	39.7	4.9	74.0	2.7	2.2	9,733	Peso	9.82
2005	103.3	36.7	5.5	74.4	2.2	3.6	12,437	Peso	10.78

Source: INEGI (2001, 2006 and web site).

^[1] US\$ exchange rate on 30th of June.

1.2 Income measurement

The Consejo Nacional de Evaluación de la Política de Desarrollo Social (CONEVAL) is by law the only government agency that can provide official estimates of poverty. On the other hand, the closest to official inequality measures that one can get in Mexico are the Gini coefficients that are published by the Instituto Nacional de Estadística y Geografía (INEGI) when it releases its biannual income and expenditure survey *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH), a survey that is described in Section 3 below.

As far as poverty measurement is concerned, there are some basic points in the official methodology that one has to keep in mind (see also CONEVAL, 2007a, and references therein):

- The ENIGH is the only survey that is used for the computation of poverty statistics.
- Poverty statistics are based on absolute poverty lines (not relative poverty lines, as is the case in most industrialized countries).
- Welfare is always identified with income (not expenditure). The precise variable is total current income (*ingreso corriente total*), which is clearly defined by INEGI in each ENIGH (see also Table 2 below). Basically, it includes monetary and non-monetary current income, and it excludes sales of physical and financial assets.

Also, CONEVAL does not use the item “*otros ingresos no considerados en los anteriores*” (P046 in ENIGH 2008), which is a residual in the ENIGH.

- Actually, the variable that is employed by CONEVAL is net income, which is the result of subtracting from total current income all gifts (monetary and non-monetary) from the household to other households. Thus, in some rare cases net income could end up being negative, which could produce in turn some paradoxical results (see Sandoval and Urzúa, 2008).
- The income variable used when computing poverty statistics is always income per capita, since individuals (not households) are the units of assessment in official statistics.
- Poverty incidence (i.e., the head count ratio) is the only poverty statistics officially released. Dominance analysis and the computation of other measures of poverty, such as poverty intensity or the severity of poverty, are disregarded (see Urzúa, Macías y Sandoval, 2008, for a critical appraisal of this issue).

Regarding income inequality measures, and taking as a semi-official source the statistics published by INEGI, the following points are worth to keep in mind:

- The ENIGH is the only survey that is used for the computation of income inequality statistics.
- Starting in 2007, CONEVAL has published the following two statistics (which have become *de facto* the official ones): the Gini coefficient and the Dec10/Dec1 income ratio. (Note that this measure differs for the P90/P10 ratio used by some international organizations.)
- As we mentioned earlier in the case of poverty assessment, CONEVAL uses net income in per capita terms when computing the two income inequality measures.
- In few papers, such as in SHCP (2008), before computing the Gini coefficient the government makes an attempt to correct for the typical underestimation of capital income arising in surveys by making use of the data in national accounts.

1.2.1 Income definition for inequality and poverty assessment

Table 2 provides the ENIGH variables used by CONEVAL to define income for poverty assessment. As noted earlier, this is the same variable (*ingreso corriente total*) as the one typically used in the computation of income inequality measures, except that in the case of poverty assessment gifts are netted out, and the residual is not used.

1.2.2 Poverty line

CONEVAL uses three different poverty definitions: “food poverty”, when income is too low to cover basic food necessities; “capabilities poverty”, when income is insufficient to buy basic food, education and health necessities; and “assets poverty”, when income is too low to cover basic food, education, health, dressing, housing and public transportation necessities. For each of these three definitions there is a corresponding poverty line. Nevertheless, most of the times both academics and non-academics refer only to food poverty, which is also known as “extreme poverty”.

In such a case the corresponding poverty line is determined on the basis of the estimated cost of a basket of staple foods which meets nutritional requirements of the population. The basket is known as *Canasta INEGI-CEPAL 1992*, and its value is updated by CONEVAL after the release of a new ENIGH (the information is publicly available in its web). Thus, for the ENIGH 2008 (the latest available), the poverty lines for rural and urban areas were 706.69 and 949.38 pesos (as of August 2008). Note that since the ENIGH is designed to be representative not only nationwide, but also at the rural level (localities with less than 2500 inhabitants) and urban level, poverty rates are calculated nationwide and also at the rural-urban levels.

Poverty lines for the case of capabilities poverty and assets poverty are found indirectly. As is commonly done, the inverse of the Engel coefficients are used for the estimation of the non-food component of the poverty line. Returning to our example, in the case of capabilities poverty the inverse of the Engel coefficients for rural and urban areas are

estimated by CONEVAL as 1.1823 and 1.2265, while in the case of assets poverty the estimates for the rural and urban areas are 1.8146 and 2.0064, respectively.

1.2.3 Other relevant information

Aside from the use of the sample weighting factors, CONEVAL measures all income inequality coefficients and poverty rates without any other weighting factor.

Table 2. Treatment of income sources in ENIGH on national income definition

<i>Category</i>	<i>Variable label</i>	<i>Treatment</i>
Cash income	Gross wages and salaries	1
Cash income	Farm self-employment income	1
Cash income	Non-farm self-employment income	1
Cash income	Cash property income	1
Cash income	Sickness benefits	1
Cash income	Occupational injury and disease benefits	1
Cash income	Disability benefits	1
Cash income	State old-age and survivors benefits	1
Cash income	Child/family benefits	1
Cash income	Unemployment compensation benefits	0
Cash income	Maternity and other family leave benefits	1
Cash income	Military/veterans/war benefits	1
Cash income	Other social insurance benefits	1
Cash income	Social assistance cash benefits	1
Cash income	Private occupational and other pensions	1
Cash income	Public sector occupational pensions	1
Cash income	Alimony/child support	1
Cash income	Regular private transfers	1
Cash income	Other cash income	0
Imputed income	Imputed rent for owner-occupied housing	1
Lump sum income	Capital gains and losses	0
Lump sum income	Realized lump sum income	0
In-kind income	In-kind earnings	1
In-kind income	Value of home production for own use	1
In-kind income	Near-cash food benefits	1
In-kind income	Near-cash housing benefits	0
In-kind income	Near-cash medical benefits	1
In-kind income	Near-cash heating benefits	0
In-kind income	Near-cash education benefits	1
In-kind income	Near-cash child care benefits	0
In-kind income	Value of non-cash food benefits	1
In-kind income	Value of non-cash housing benefits	0
In-kind income	Value of non-cash medical benefits	1
In-kind income	Value of non-cash heating benefits	0
In-kind income	Value of non-cash education benefits	0
In-kind income	Value of non-cash child care benefits	0

Worker contribution	Mandatory contributions for self-employment	0
Worker contribution	Mandatory employee contributions	-1
Direct taxes	Income taxes	-1
Direct taxes	Property/wealth taxes	0
Direct taxes	Other direct taxes	0
Employer contribution	Mandatory employer contributions	0
Employer contribution	Non-mandatory employer contributions	0
Indirect taxes	Indirect taxes	0

Notes: “0”: not included, “1” added income, “-1” deducted income.

1.3 The tax-benefit system

The general government in Mexico is integrated by: the central government, composed by the federal government, social security institutions, PEMEX and other decentralized organisms; the state governments, conformed by 31 states and a federal district; and the local governments conformed by 2,438 municipalities. The information in Table 3 for both revenues and expenditures correspond to the general government sector. Likewise, the total tax receipts include estimates of the revenues collected by state and local governments, as well as social security contributions. The data for social protection are based in the OECD Social Expenditure Database (SOCX). This database includes in particular information on different social expenditures: old age, survivors, incapacity-related benefits, health, family, active labor market programs, unemployment, housing and other social policy areas.

Table 3. Tax-benefit system and government budget

	<i>Total general government revenue % of GDP</i>	<i>Total tax receipts^[1] % of GDP</i>	<i>Total general government expenditure % of GDP</i>	<i>Social protection % of GDP</i>
2000	19.7	18.5	17.7	5.8
2006	20.6	20.6	21.1	7.4 ^[1]

Source: OECD (2003, 2007a and 2007b).

^[1] Data available for 2005.

The two main social security institutions in Mexico are the Instituto Mexicano del Seguro Social (IMSS), for workers in the private sector, and the Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE), for workers in the public sector. There are some other social security systems at the federal level, such as the Military system and

the one for the workers in the oil company PEMEX, and some at the states level (specially in the case of public universities), but IMSS and ISSSTE are by far the most important providers of both pensions and medical services in Mexico, and so they are the only social security institutions that will be mentioned in this paper.

Regarding their role as pension systems (not as medical institutions), IMSS was a typical pay-as-you-go social security system until 1997, when compulsory individual pension savings were enacted (the pay-as-you-go component persists for earnings obtained until 1997). Something similar happened in the case of ISSSTE a decade later, in 2007. Nevertheless, as shown in Table 4, in both institutions pensions are not, at least not yet, the most important expenditure component.

Table 4. Social protection expenditure by function (% of total social protection expenditure)

	<i>Sickness/ health care</i>	<i>Disability</i>	<i>Old age</i>	<i>Survivors</i>	<i>Family/ Children</i>	<i>Unemployment</i>	<i>Housing</i>	<i>Other</i>
2000	44.8	1.7	10.3	5.2	12.1	-	15.5	10.4
2005	39.2	1.4	13.5	4.1	13.5	-	14.9	13.4

Source: OECD, *Social Expenditure Statistics* (OECD web site).

On the other hand, Table 5 presents information about the relative importance in federal government revenue of different taxes and duties: the personal income tax; the corporate income tax (whose figures includes the so-called corporate asset tax which was repealed in 2008, after the enactment of the new tax IETU as explained in Section 2.4 below); the social security contributions; the indirect taxes, which include the value added tax (VAT in English and IVA in Spanish), as well as some excise taxes on gasoline, cigarettes, and alcoholic beverages; and, finally, other taxes and duties, out of which the most important is by far the oil component.

Table 5. Taxation (as % of total federal government receipts)

	<i>Personal income tax</i>	<i>Corporate income tax</i>	<i>Social security contributions^[1]</i>	<i>Taxes on goods and services</i>	<i>Other taxes^[2]</i>
2000	14.6	11.9	19.3	27.8	28.7
2006	12.0	13.8	19.6	21.6	42.6

Source: SHCP (2001 and 2007).

^[1] Includes the contributions from both employees and employers, which are not available separately.

^[2] Includes oil revenue.

1.3.1 Some basic information about the tax-benefit system

- The most important social programs are implemented by the federal government, or by the states and municipalities using federal funding (through the so-called “Ramo 33” of the federal budget). The benefits granted by the state governments are not very significant (and in the case of the municipalities almost null). The most significant exception is a program for protection of the elderly implemented by the Mexico City Government since 2001. Currently, in the year 2008, it transfers 789 pesos a month to all persons living in Mexico City that are over 69 years old (about 420,000 adults), regardless of their income or wealth.
- The fiscal year in Mexico runs from January 1 to December 31.
- Personal income taxes have to be filled individually.
- Starting in 2008, a new tax, the *Impuesto Empresarial a Tasa Única* (described in Section 2.4 below), is complementary to the corporate income tax. This new tax also applies to income accruing from professional services or housing rents.
- All individual taxpayers need to fill in a tax return by April of the next fiscal year, except for workers earning wages from a single source and with earnings below 400,000 pesos.
- There were statutory indexing regimes for taxes (but not benefits) during the years of high inflation, but not anymore. (The inflation rate in Mexico is nowadays slightly above the one in the United States.)
- Lone parents or other socially protected groups do not have privileges for tax purposes, but do have benefits at the federal and state levels. For instance, the most important federal social program *Oportunidades* (see the next subsection) pays most

of its attention to children, and also, when possible, imposes the condition that women be the households responsible for managing the benefits. An example of a non-federal program is the case of a social program in Mexico City that provides a stipend to women that are lone parents.

- Means-tested benefits are assessed according to family income and characteristics.
- For the workers in the private sector (IMSS), the pension age is 65; although there can be an early retirement from age 60 under some conditions and a reduced rate of pension. For workers in the public sector (ISSSTE), the pension is given after a fixed number of years, 30 in the case of men and 28 in the case of women; although there can also be an early retirement from age 55 under some conditions and a reduced rate of pension.
- The minimum daily wage in 2000 was 37.90 pesos for the geographic area A, 35.10 pesos for area B, and 32.70 pesos for area C. In 2008 the minimum wages were, respectively, 52.59, 50.96 and 49.50 pesos for each area. The amounts and the municipalities that make up for each area are determined by the National Commission on Minimum Wages.
- Minimum school leaving age is 15 (since primary and secondary school are, in principle, mandatory). Dependent children are commonly defined as aged 14 or younger, although the legal working age starts also at 14.
- The equivalence between education level and years in formal education in Mexico, is showed in the following table:

Table 6. Equivalence between education level and years in formal education ^[1]

Year of Education	Education level	Typical starting age
1	Primary school	6
2	Primary school	7
3	Primary school	8
4	Primary school	9
5	Primary school	10
6	Primary school	11
7	Secondary school	12
8	Secondary school	13
9	Secondary school	14
10	High school	15
11	High school	16
12	High school	17

^[1] Pre-school education (e.g., nursery and kindergarten) not included.

1.3.2 Social benefits

A. Targeted social programs

- *Programa de desarrollo humano-Oportunidades*. Also known as *Oportunidades* (formerly *Progres*a). This is the most important social program from the part of the federal government. It promotes investment in human capital for the poorest. Among the benefits associated with the program, in the case of children there is a conditional income transfer through scholarships for education. There is also food support, especially in the case of small children, pregnant women, and the elderly. The cash and food supports are delivered bimonthly, as long as beneficiaries go to their medical appointments and send their children to school. *Oportunidades* reaches five million households in extreme poverty.
- *Programa de apoyos directos al campo (PROCAMPO)*. This program delivers subsidies to the rural sector as a compensation for the subsidies received by their foreign competitors. Currently PROCAMPO gives direct support to the incomes of about two and a half million farmers. Support is granted per hectare. Together with

Oportunidades these are the only two targeted programs which are explicitly recorded in the national income surveys.

- *Programa de desayunos escolares.* Health support including food for schoolchildren. The support is in kind; for instance, in the case of food the support is typically made of, a carton of milk, a cookie, and a dessert. Even though the menu is not always the same, one could furnish a rough estimate of the cash value of the benefit. Although it is not a universal program, about six million children in public primary schools benefit from it.
- *Programa de abasto social de leche.* Through this program milk is distributed in kind at subsidized prices to support the nutrition of the population in poor areas. It is mainly directed to children up to age 12. It is also directed to women in a state of gestation and lactation, and to chronically ill and disabled adults aged 60 years and older. It would not be possible to identify recipients using national household income surveys.
- *Programa 70 y más, adultos mayores.* It is focalized on poor adults 70 years and older who live in rural towns (of up to 2500 people), and who are not recipients of other similar programs. The current number of recipients is about one million. Each of them receives \$500 a month, and participates in workshops that promote personal and community development.
- *Programa de empleo temporal.* It tries to improve basic social and productive infrastructure in rural areas by using the workers that are unemployed. The payments include a daily wage equivalent to 90 percent of the minimum wage in the area. In 2006 about 172,000 unemployed workers benefited from the program.

There are several other programs that are not listed here due to at least one of the following three reasons: first, because of its small scale (like some day care services); second, because they are benefits that are just available to workers in a particular organization (like PEMEX or the Army); and third, because of the sui generis nature of several programs. To give four examples of the latter: *Programa de abasto rural*, which aims at lowering food prices in poor communities by helping them to distribute goods by themselves; *Programa de becas*

de capacitación a trabajadores desempleados, which aims at upgrading the skills of unemployed workers; *Programa tu casa*, whose objective is to improve the living conditions of the population through the issuance of a federal grant to acquire, build, expand or improve their housing or purchase a lot with services; and *Programa de atención a jornaleros agrícolas*, which seeks to improve the living and working conditions of agricultural workers who cultivate basic crops in low-productivity soil. Funds are granted to those that are not eligible for bank credits.

B. Social benefits linked to social security and related programs

- **IMSS Pension.** All active workers that were registered at IMSS for the first time before the new Social Security Law was enacted in July 1997 have the right to be pensioned under the rules of the old pay-as-you-go system and some extra provisions (details are given in subsection 2.2 below). New workers will be pensioned under the new system of compulsory individual pension savings. In this new system there is a minimum guaranteed pension of a minimum wage salary, provided some conditions are met. Note that it will not be until the next decade when workers will start to be pensioned under the new system.
- **ISSSTE Pension.** All active workers that were registered at ISSSTE for the first time before the new Social Security Law was enacted in March 2007, and apply for a pension before the end of 2009, will be pensioned under the rules of the old pay-as-you-go system. After that date, the retirement age will be gradually increased (details are given subsection 2.2 below). New workers will be pensioned under the new system of compulsory individual pension savings. In this new system there is a minimum guaranteed pension of a minimum wage salary, provided some conditions are met.
- **IMSS Widow(er) and Orphan Pensions.** The widow(er) of the insured person is entitled to a pension equal to 40% of the amount that would correspond to a worker in case of permanent disability. Each of the orphans under 16 years or with a disability to work receives a pension equivalent to 20% of that amount.

- IMSS Widow(er) and Orphan Pension Due to Work Injuries. Monthly cash benefits for widow(er)s and orphans of an insured worker who dies as a result of a work accident. The surviving widow(er) pension is equivalent to 90% and the orphan's pension is equal to 20% of which would have matched the insured in case of disability.
- ISSSTE Survivor Pension. Relatives of the deceased worker or pensioner are entitled to a pension equal to 100% of the amount that would correspond to a worker in case of permanent disability. This benefit cannot be greater than 10 minimum wages.
- IMSS Disability Pension. Monthly cash benefits for insured workers disabled due to injuries at work. The amount corresponds to the average salary earned during the last 52 weeks of work. The worker must buy out an insurance plan that in case of his death would give to his survivors the benefits to which they are entitled. If the disability is permanent, the worker receives a pension equivalent to 70% of the salary when the accident occurred.
- ISSSTE Disability Pension. Monthly cash benefits equal to 100% of the salary for insured workers disabled due to injuries at work (there is also a cash benefit for workers in the public sector who suffer impairments through cases unrelated to unemployment). If the disability is declared permanent, the worker receives a pension equivalent to his salary until the age of 65, and from then on he is entitled to a normal pension.
- IMSS Maternity Benefits (*Incapacidad por Maternidad*). IMSS pays 100% of the salary during the last 42 days previous to the child birth, and the next 42 days.
- ISSSTE Maternity Benefits (*Incapacidad por Maternidad*). ISSSTE pays 100% of the salary during the last 30 days previous to the child birth, and the next 60 days.
- IMSS Sickness Benefits (*Incapacidad por Enfermedad*). IMSS pays 60% of the salary for up to 52 weeks.
- ISSSTE Sickness Benefits (*Incapacidad por Enfermedad*). Depending on the number of years as a public worker ISSSTE pays 100% of the salary for up to x days and 50% of it for another x days at most. For instance a worker with at least 10

years of service gets 100% of the salary for up to 60 days, and 50% for another 60 days at most.

- Debt Mortgage Granting (INFONAVIT). Workers affiliated to IMSS can receive credits to buy, build or repair a house. The credits are granted by a fund contributed by the employer (5% of the worker's salary) to the Instituto del Fondo Nacional de la Vivienda para los Trabajadores. Note that if a worker does not use his/her fund, it becomes a part of the pension fund after retirement.
- Debt Mortgage Granting (FOVISSSTE). Public workers affiliated to ISSSTE can receive credits to buy, build or repair a house granted by a fund contributed by the government agency (5% of the worker's salary) to the Fondo de Vivienda del ISSSTE. Note that if a worker does not use his/her fund, it becomes a part of the pension fund after retirement.
- *Seguro Popular de Salud*. It is open to all Mexicans not enrolled in a social security system. It offers a package of family health services, covering up services included in a group of 266 clinical cases, and the corresponding medicines. The contributions are made according to the ability to pay of each family (determined by a socio-economic study). Persons in the last two deciles of the population may enter the program for free.

C. Other social benefits

- There are several social programs that are not part of the federal benefit system, but rather of systems at the state and municipality levels. These are of two kinds. The first group is made of social programs funded using federal participations (through the so-called *Ramo 33* in the federal budget). The group includes in particular the *Fondo de Aportaciones para la Infraestructura Social (FAIS)*, which is the most socially-oriented item, although it is geared to infrastructure rather than to individuals or families. The second group is made of social programs that are the creation of local governments. We have given before some examples in the case of the Mexico City government.

Table 7. Social benefits: recipients (as % of population)

	<i>2000</i>	<i>2006</i>
Desarrollo Humano – Oportunidades	13.7	24.2
Apoyos Directos al Campo (Procampo)	2.8	2.3
Programa de Desayunos Escolares	3.7	4.7
Programa de Abasto Social de Leche	12.3	5.9
Programa de Empleo Temporal	1.1	0.2
Seguro Popular ^[1]	0.0	24.7
Pensiones IMSS	1.9	2.3
Pensiones ISSSTE	0.4	0.5
Indemnizaciones Globales IMSS	0.01	0.01
Indemnizaciones Globales ISSSTE	0.005	0.005

Source: Presidencia de la República (2009).

^[1] It was created in 2002.

Table 8. Social benefits: expenditure (as % of total)

	<i>2000</i>	<i>2005</i>
<i>Annual expenditure (millions of pesos)</i>	<i>318,930.6</i>	<i>621,647.7</i>
Old age	11.1	13.8
Survivors	5.2	4.0
Incapacity-related benefits	1.3	0.9
Health	44.5	39.2
Family	12.4	13.5
Active labour market programmes	1.7	0.3
Housing	15.2	14.9
Other social policy areas	8.6	13.4

Source: OECD, *Social Expenditure Statistics* (OECD web site).

Table 9. Simulation of benefits

	<i>Treatment</i>	<i>Why not fully simulated?</i>
Desarrollo Humano-Oportunidades	S	
Apoyos Directos al Campo (Procampo)	S	
Programa Escolares Desayunos	I	Data can be imputed only approximately.
Programa de Abasto Social de Leche	E	Data is not available at the household or individual levels.
Programa de Empleo Temporal	E	Data is not available at the household or individual levels.
Pensiones IMSS	S	
Pensiones ISSSTE	S	
Pension de Viudez y Orfandad IMSS	E	Data is not available at the household or individual levels.
Pension de Viudez y Orfandad por Lesiones en el Trabajo IMSS	E	Data is not available at the household or individual levels.
Pensión a Sobrevivientes ISSSTE	E	Data is not available at the household or individual levels.
Pensión por Incapacidad IMSS	E	Data is not available at the household or individual levels.
Pensión por Incapacidad ISSSTE	E	Data is not available at the household or individual levels.
Incapacidad por Maternidad IMSS	E	Data is not available at the household or individual levels.
Incapacidad por Maternidad ISSSTE	E	Data is not available at the household or individual levels.
Incapacidad por Enfermedad IMSS	E	Data is not available at the household or individual levels.
Incapacidad por Enfermedad ISSSTE	E	Data is not available at the household or individual levels.
Créditos para Vivienda Infonavit	E	Data is not available at the household or individual levels.
Créditos para Vivienda Fovissste	E	Data is not available at the household or individual levels.
Seguro Popular de Salud	E	Data is not available at the household or individual levels.

Notes: “-”: policy did not exist in that year; “E”: *excluded* from the model as it is neither included in the micro-data nor simulated; “I”: *included* in the micro-data but not simulated; “PS” *partially simulated* as some of its relevant rules are not simulated; “S” *simulated* although some minor or very specific rules may not be simulated.

1.3.3 Social contributions

In Mexico, social security contributions (*cotizaciones a la seguridad social*) finance not only pensions, but also medical attention and medicines. This is the case for both IMSS and ISSSTE (described in Section 1.3 above), the two social security systems that will be considered in this study. It is important to stress that, except for the distinction between

workers in the private sector (IMSS) and workers in the public sector (ISSSTE), in Mexico there are *no* special regimes in either system.

**Table 10. Social contributions: Contributors
(as % of population)**

	2000	2006
Contributions	18.0	19.8
IMSS	15.6	17.5
ISSSTE	2.4	2.3

Source: Presidencia de la República (2006).

**Table 11. Social contributions: Revenue
(% of total)**

	2000	2006
Revenues (billions of pesos)	187	359
IMSS	75.6	69.2
ISSSTE	24.4	30.8

Source: SHCP (2001 and 2007).

Table 12. Simulation of social contributions

	<i>Treatment</i>	<i>Why not fully simulated?</i>
IMSS	S	
ISSSTE	S	

Notes: “-”: policy did not exist in that year; “E”: *excluded* from the model as it is neither included in the micro-data nor simulated; “I”: *included* in the micro-data but not simulated; “PS” *partially simulated* as some of its relevant rules are not simulated; “S” *simulated* although some minor or very specific rules may not be simulated.

1.3.4 Taxes

- Personal Income Tax (*Impuesto sobre la Renta de las Personas Físicas, ISR*). This is the typical income tax, as known in most countries. However, it should be noted that in Mexico it can be filled only individually, and its tax base is broad (two of the few deductions are medical services and donations, and exemptions are basically related to fringe benefits and pensions). Note that there is a fiscal subsidy, *subsidio al empleo*, that could make the final tax to be actually negative for low levels of income (see subsection 2.3.6 below).

- Corporate Income Tax (*Impuesto sobre la Renta de las Personas Morales*). This is the typical corporate income tax that one may find elsewhere, except for a number of exemptions in the case of special activities (e.g., farming), and a good number of deductions (e.g., depending on its type, an investment can be partly deducted). There is also a special regime (*régimen de pequeños contribuyentes*) for firms registering annual earnings below two million pesos. As one would expect from all those exemptions, deductions, and special regimes, revenues accruing from this tax are quite low for international standards. This is the reason for the introduction of a new tax on cash flow that is complementary to it starting in 2008 (see Section 2.4).
- Value Added Tax, VAT (*Impuesto al Valor Agregado, IVA*). Aside from the border towns, the general VAT rate is 15%. Exports, non-processed food and medicines have a zero tax rate, while education and agricultural activities are exempted.
- Excise Taxes (*Impuestos Especiales sobre Productos y Servicios, IEPS*): Different IEPS rates apply to specific products, such as gasoline, diesel, beer, alcoholic beverages, and cigarettes.
- Property Tax (*Impuesto Predial*). This tax, managed by the municipalities (with the exception of Mexico City where it is managed by the central government), is charged on individual property through a progressive tax schedule.
- Tax on Vehicle Ownership (*Impuesto sobre Tenencia o Uso de Vehículos*). A tax on the market value of a vehicle. Although this tax will be fully described in a later section, it is interesting to note here its two peculiarities: It is a federal tax, but state governments administer and collect the tax due. Furthermore, it is a tax that will disappear in 2012 to be replaced by an extra increment in the excise tax on gasoline.
- Import Taxes (*Aranceles*). Taxes on imports. They are apparent to the consumers only when they import directly the goods.

Table 13. Taxes: Registered taxpayers (in thousands)

	2000	2006
Total	7,003	22,273
Corporate taxpayers	503	693
Independent taxpayers	6,500	8,820
Wage earners	n.a.	12,760

Source: SAT (2007).

Table 14. Taxes: revenue

	2000	2006
Annual Revenue (billions of pesos,	591.6	908.2
Includes other taxes)		
Direct Taxes		
Personal Income Tax	19.7	22.9
Corporate Income Tax	24.1	26.4
Property Tax	1.7	2.0
Indirect Taxes		
VAT	32.0	41.9
Excise Taxes	13.8	-0.06
Tax on Vehicle Ownership	1.4	1.9
Import Taxes	5.5	3.5

Source: SHCP (2001 and 2007), and own calculations.

Table 15. Simulation of taxes

	<i>Treatment</i>	<i>Why not fully simulated?</i>
Direct Taxes		
Personal Income Tax	S	
Corporate Income Tax	E	No information available.
Property Tax	PS	There is information about the tax paid, but not on the property. In the case of individuals, not firms, such a value could be imputed by using a rent estimated that is registered in ENIGH.
Indirect Taxes		
VAT	PS	Assuming fixed amounts of the consumption goods, or fixed expenditure proportions, a VAT reform could be simulated.
Excise Taxes	PS	In the case of gasoline one could impute the excise tax.
Tax on Car Ownership	PS	Some information could be imputed. See subsection 3.4.3 below.
Import Taxes	E	No information available.

Notes: “-”: policy did not exist in that year; “E”: *excluded* from the model as it is neither included in the micro-data nor simulated; “I”: *included* in the micro-data but not simulated; “PS” *partially simulated* as some of its relevant rules are not simulated; “S” *simulated* although some minor or very specific rules may not be simulated.

2. Detailed description of taxes and benefits to be simulated

2.1 Social benefits

2.1.1 Programa de Desarrollo Humano-Oportunidades (formerly Progres)

The program supports families living in extreme poverty both in rural and urban areas by improving their choices in education, health and nutrition. It operates under the following components: a) Educational component: grants educational scholarships and support for the purchase of school supplies; b) Health component: the package provides basic health services, and alleviates malnutrition of children and pregnant or lactating women through the delivery of food supplements; c) Food component: direct monetary support to the beneficiary families to improve the quality of their food and raise their nutritional status; d) Patrimonial component: gives trainees attending secondary school an incentive to finish, by granting an economic benefit that accumulates gradually as fellows stay in school; and e) A component for seniors: monthly monetary support (given bimonthly) adults with an age of 70 or more.

- *Definitions*

The unit of assessment is the household, defined as all persons who are living together in the same dwelling, united by kinship or not.

- *Eligibility conditions*

The program is limited to five million households. New families are incorporated as others leave the program for some reason. The methodology for eligibility is based on discriminant analysis. Using this technique, a single numerical indicator is given as a measure of extreme poverty for each household in the sample, according to the status of rural-urban residence of families and their socio-economic conditions. (Originally the program was randomly assigned in the case of rural areas, while in the case of urban areas it was assigned among applying households according to some specific characteristics.) The ENIGH only records the amount of cash benefits (if any) received by each member of the household. There is, however, a public database containing information about the

recipients of the program. Using this particular data set, Freije, Bando and Arce (2006) simulate the potential impact on poverty of changes in the program design, taking into account the possibility of entry and exit from the part of the families as conditions change.

- *Income assessment*

As said before, income is just a variable among several others that are used in the simulation using discriminating analysis. The variable is based on monthly monetary income per capita, counting the members that are 15 years old or older. This figure is then compared with the monthly cost of a basic food basket known as *Canasta Normativa Alimentaria-COPLAMAR* (a value of which is publicly available at the *Oportunidades* web site). Two groups are then created: Households with incomes below (above) the cost of that basket are basically similar to those households (not) living in extreme poverty. The final classification is the result of applying discriminant analysis, and no longer depends on the income reported.

- *Benefit amount*

The monetary support is 180 pesos a month per family. For its part, scholarships vary according to the following classification: At primary level, students receive 125 pesos in third grade, 145 pesos in fourth grade, 185 pesos in fifth grade and 250 pesos in sixth grade. At the secondary level, boys receive 360 pesos in first grade, 385 pesos in second grade and 405 pesos in the third grade, while girls receive 385, 425 and 465 pesos. This pattern is repeated in the case of high school: Boys receive 610, 655 and 695 pesos, and girls 700, 745 and 790 pesos for first, second and third grade respectively. It also gives a monetary support of 165 pesos at the beginning of the new academic year, and 85 pesos in the middle of the academic year, for the purchase of school supplies, but this support is only for the students in between third and sixth grades of primary school. Monthly support for old adults, from age 70 on, is 260 pesos. The supports are given on a bimonthly basis.

- *Taxation and income testing*

The benefit would be in principle taxable, but not in practice (since, to start with, most of the beneficiaries are not even registered as tax payers). It is not part of the income test of other social benefits.

2.1.2 Programa de Apoyos Directos al Campo (Procampo)

The program gives subsidies to farmers as a compensation for the subsidies received by their foreign competitors. Currently PROCAMPO gives direct support to the incomes of about two and a half million farmers. The support is given to both individuals and firms.

- *Definitions*

The units of assessment are individuals or firms that possess land that had been planted with any (licit) crop during any agricultural cycle.

- *Eligibility conditions*

Producers, be them individuals or firms, that can show proof of ownership, tax compliance, and payment of duties for the use of water.

- *Income assessment*

There is no income assessment since it is a universal benefit for farmers.

- *Benefit amount*

In 2008, the amount per hectare (and agricultural cycle) is 1,160 pesos in the case of land that it is not irrigated, and 963 pesos for the rest. Only the producers during the spring-summer cycle and with tracts of land ranging from one to five acres are supported before the sowing period. Other producers, in both the spring-summer and the autumn-winter cycles, receive support after the sowing period, in line with the payment schedule established by the Secretary of Agriculture.

- *Taxation and income testing*

The benefit is taxable for all firms, and for individuals that happen to be tax payers. The benefit is not part of the income test of other social benefits.

2.2 Social contributions

Before listing the contributions given to the two main social security institutions, it is worth to keep in mind that in both cases, as explained in 1.3.2 above, there is an extra contribution that goes to INFONAVIT or FOVISSSTE. The contributions are composed of a bi-monthly fee paid to the social security institutions equivalent to 5% of the daily wage of the worker. Fees are paid by the employer, and the beneficiary receives 100% of the amount left when he/she is pensioned.

2.2.1 Instituto Mexicano del Seguro Social

The Instituto Mexicano del Seguro Social (IMSS) is a large social security institution, with about 48 million contributors and dependants in 2008. According to the *Ley del Seguro Social* (LSS from now on), medical assistance is given to workers and their families (including maternity leave and child care), pensioners, and persons voluntarily insured. As noted earlier, its pension subsystem is now privatized, so that the pension funds for workers that started to contribute under the new 1997 regime are now administered by private financial entities known as AFORES (*administradoras de fondos para el retiro*). The list of all contributions, as currently set in the law, is as follows:

- An employer's contribution of 2% of the worker's integrated salary to the AFORE, as well as a Federal Government's contribution of 5.5% of the minimum wage salary prevailing in Mexico City for each day of work (Art. 168, LSS). Thus if, say, a new worker enters the market it is likely that its private pension fund will receive contributions of more than 7% of his/her integrated salary annually, since most workers do not use their fund in INFONAVIT to buy or repair a dwelling.
- For unemployment in advanced age (when a worker is fired and has at least 60 years of age) and old age insurance, the employer's and employee's contributions are, respectively, 3.15% and 1.125% of the integrated salary, and the Federal

Government contributes with, respectively, 7.143% and 3% of the employer's contribution.

- For disability and life insurance, the employer pays 1.75% and the employee 0.625% of the integrated salary, while the Federal Government contributes with 7.143% of the employer's contribution.
- For sickness insurance and maternity leave, the employer pays 0.70%, the employee 0.25%, and the Federal Government 0.05% of the integrated salary.
- For benefits in kind in the case of retirement, disability, sickness, advance age and old age insurance, as well as maternity leave, the employer pays 1.05%, the employee 0.375%, and the Federal Government 0.075% of the integrated salary.
- For child care and social services the employer pays 1% of the integrated salary.
- To cover for in-kind expenses in the case of sickness and maternity leave, there is a flat fee contributed by the employer equivalent to 13.9% of a minimum wage salary; but if the worker earns more than three times the minimum wage, there are additional contributions from the employer and the employee of, respectively, 6% and 2% on the amount that such a salary exceeds three minimum wages.
- There is a contribution from the part of the employer that oscillates in between .5% and 15% of the integrated salary, according to a (very detailed) assessment of the working risk faced by the employee.
- There is no mandatory contribution for self-employed persons. Nevertheless they have the right to be incorporated to IMSS under diverse social security schemes. The daily contribution to be made by a self-employed person is equal to a minimum wage salary, and the total annual contribution has to be made in advance.
- Finally, there is no minimum contribution required to AFORES. However, workers have the right to make voluntary contributions to their individual account at any time, either through their employer or by themselves.

2.2.2 Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado

The Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE) is a social security system for civil servants in government agencies and entities, with about 11 million contributors and dependants. As noted earlier, starting in March 2007 the retirement component of the system was changed from a pay-as-you-go design to an individualized one. Although this makes for a retirement mechanism that is simple to model for new workers, there are more elaborated rules for the ones that were registered at ISSSTE before the new law was enacted and that will retire from January 2010 on (for new retirees that do so before the end of 2009, the old rules still apply). For instance, the minimum age for retirement, which was 55 under the old law, is increased to 56 for 2007-2008, 57 for 2009-2010, 58 2011-2012, 59 for 2013-2014, and 60 from then on. Turning now to the contributions as currently set in the ISSSTE law, they are as follows:

- The government agency (or entity) contributes 2% of the civil servant's integrated salary to an AFORE (if the worker has already one). Thus, the pension fund of a new public worker is likely to receive contributions of the order of 7% of his/her integrated salary annually (since most workers do not use their fund in FOVISSSTE to buy or repair a dwelling).
- For unemployment in advanced age and old age insurance, the worker contributes 4.025% in 2008 (a percentage that will increase each later year to 4.55%, 5.075%, 5.6% and, as a definite percentage from 2011 on, 6.125%). The government agency contributes with 3.175%, and an extra percentage that will gradually increase up to 1.5% (a so-called *cuota social*).
- For sickness insurance and maternity leave, the civil servant contributes 2.75% and the government entity 7.375%, as well as with an extra percentage that will gradually increase up to 3.5% (another *cuota social*).
- For disability and life insurance, the public servant pays 0.625% and the government agency 0.625%.
- For child care and social services the worker pays public servant pays 0.5% and the government agency 0.5%.

- In terms of health expenditure for pensioners, the employee contributes 0.625% of integrated salary.
- Finally, there is a .75% contribution from the part of the government agency for the working risk faced by the civil servant.

2.3 Personal income tax

2.3.1 Tax unit

The *Impuesto sobre la Renta de las Personas Físicas* law (LISR) establishes two criteria for the imposition of the personal income tax: residency and source of income. Mexican residents are taxed on all their income, from whatever source, and non-residents with a permanent establishment in Mexico are taxed on the income attributable to such permanent establishment. Non-residents with no permanent establishment are taxed on income attributable to Mexican sources. The ISR must be calculated and paid each fiscal year. However, taxpayers must also make provisional monthly payments, in case that part of their personal income comes from non-wage earnings. Of course, tax due on wage earnings are also paid indirectly each month by the corresponding firm that pays the worker (since the firm withholds his/her wage-earning tax).

2.3.2 Exemptions

The income tax law establishes the following exemptions for individuals:

- Earnings for overtime work. If the worker perceives at most the minimum wage salary, the exemption is 100%; otherwise is 50%. In the first case the exemption is valid provided the worker does not exceed, during the week, three hours of daily overtime for at most three days. In the second case, for workers the exemption is valid provided the worker does not exceed, during the week, three hours of daily overtime for at most three days and the exemption does not exceed five minimum wages salaries for the week. (As stated in 1.3.1 above, there are three geographical regions for the purpose of minimum wages.)

- Social security benefits from IMSS or ISSSTE. The benefits may include pensions, early retirement pensions, disability pensions, and widow(er) pensions. They are exempt as long the amount does not exceed nine times the (monthly) minimum wage salary. Any other social security benefit is exempt for, at most, a monthly minimum wage salary.
- Retirement and other associated benefits from the part of the employer. These once-and-for- all benefits are exempt provided they do not exceed 90 times the monthly minimum wage salary for each year of service.
- Profit sharing to employees (PTU) and vacation allowances are exempt for at most 15 days of the daily minimum wage salary.
- Annual bonuses. They are exempt if they don't exceed a monthly minimum wage salary.
- Interest paid on savings deposits is exempt.

2.3.3 Tax allowances

The allowances (which in this paper are synonymous of deductions) contemplated in the ISR law are: voluntary contributions to the AFORES, medical services, medical insurance, funeral expenses, donations (if the recipient is legally registered), and school bus transportation. The law sets some limits on the amount of deductions: Medical services paid by the taxpayer or their dependents are deductible if the income of the latter not to exceed a minimum wage in the year. In the same way, funeral expenses are deductible up to an amount equal to the minimum wage in the year. For their part, the donations and voluntary contributions are deductible up to an amount equal to 7% and 10% of the accumulated income of the taxpayer, respectively.

2.3.4 Tax base

It is important to understand that in Mexico the taxation of self-employment income and property income is treated differently from the taxation from wage earnings, because, to

start with, the former are subject to IETU (see section 2.4 below) while the latter is not. Thus, for the case of wage-earnings alone, the tax base (*TB*) is given by the expression:

$$TB = Y - A$$

where *Y* is taxable income, net of social security contributions, and *A* represents the tax allowances mentioned in 2.3.3. Taxable income is given by:

$$Y = W + K + R + B$$

where *W* is income from work (net of social contributions), *K* is capital income (except for interest payments on savings deposits which are exempt), *R* is replacement income (e.g., old-age or disability pensions, once they exceed the exemption level mentioned earlier), and *B* social benefits. Regarding this last variable, however, it should be apparent that in the case of Mexico almost all the individuals receiving some aid are not formal tax payers.

2.3.5 Tax schedule

The personal income tax schedule corresponding to 2008 is:

Table 16. Annual Personal Income Tax Schedule 2008

<i>From (pesos)</i>	<i>To (pesos)</i>	<i>Fixed amount</i>	<i>Rate to apply over difference</i>
0.01	5,952.84	0.00	1.92
5,952.85	50,524.92	114.24	6.40
50,524.93	88,793.04	2,966.76	10.88
88,793.05	103,218.00	7,130.88	16.00
103,218.01	123,580.20	9,438.60	17.92
123,580.21	249,243.48	13,087.44	19.94
249,243.49	392,841.96	38,139.60	21.95
392,841.97	>392,841.97	69,662.40	28.00

For instance, the tax to be paid by a person that earned 280,000 pesos is 44,890.65 pesos, calculated as 38,139.60 + (280,000 – 249,243.49) x .2195.

2.3.6 Tax credits and subsidies

If we define a tax credit as a deduction from tax due that is not refundable, then there are no tax credits in the current ISR tax law. But, alternatively, we can define a tax subsidy as a deduction from tax due that could be eventually partly refundable (from the part of the employer). If that is so, then for workers with low wage-earnings the corresponding income tax could turn out to be negative after subtracting from the tax due the *subsidio para el empleo* (subsidy for employment). In 2008, the monthly subsidy is calculated using the following table to the income base for calculating the ISR.

Table 17. Wage Earnings for Tax Base 2008

<i>From (pesos)</i>	<i>To (pesos)</i>	<i>Subsidy for employment</i>
0.01	1,768.96	407.02
1,768.97	2,653.38	406.83
2,653.39	3,472.84	406.62
3,472.85	3,537.87	392.77
3,537.88	4,446.15	382.46
4,446.16	4,717.18	354.23
4,717.19	5,335.42	324.87
5,335.43	6,224.67	294.63
6,224.68	7,113.90	253.54
7,113.91	7,382.33	217.61
7,382.34	>7,382.34	0.00

2.4 Other taxes

2.4.1 The new single rate business tax (IETU)

The *Impuesto Empresarial a Tasa Única*, which can be translated to English as the “Single Rate Business Tax”, or can be referred to simply as IETU (for its acronym in Spanish), was approved by the Mexican Congress at the end of 2007. At this point, it is complementary to the typical corporate income tax, but it might totally replace it by the year 2011, if not sooner. The so-called tax on corporate assets (*impuesto al activo de las empresas*) was, on the other hand, repealed with the enactment of the IETU.

All Mexican resident businesses are required to pay the higher of the current corporate income tax or the new IETU. If this yields a higher amount, the difference between the two is considered to be the IETU for the taxable year. The IETU base is calculated by netting the following inflows: cash collected from the sale of inventory or other assets, cash

collected from independent services, and cash collected from rental of property, from the following outflows: cash payments for purchases of assets, cash payments for services, and cash payments for the rental of property. For our purposes it is important to note that individuals that receive payments from professional services or from rents are also required to pay the new tax.

If the IETU base resulting from the calculation described above is a positive number, it has to be multiplied by the current IETU rate of 16.5% (17% for 2009 and 17.5% from 2010 on) and the result is the IETU amount. The method of accounting for the recognition of inclusions in, or reductions from, the IETU base is the cash-basis method. Dividends, capital gains and losses from the sale or transfer of shares and interest inflows and outflows are excluded from the computation of the IETU taxable income or loss. Salaries and wages do not reduce the IETU base, and no depreciation or amortization is allowed to reduce the IETU base either. However, a credit is permitted as a percentage of taxable salaries and wages, as long as the applicable payroll income tax withholding has been properly remitted to the government.

Can the IETU be credited for foreign tax credit purposes? All the countries with whom Mexico has a tax treaty have accepted the IETU as an income tax, except for the United States. In December 2007, the U.S. Internal Revenue Service announced that it is investigating whether the IETU is a creditable income tax under the U.S.-Mexico income tax treaty.

2.4.2 Tax on vehicle ownership

Owners of vehicles are required to pay this tax annually, during the first three months of the year. Vehicles can be of different types: automobiles; motorcycles; aircraft; and ships and vessels. Here we restrict the attention to the taxes on automobiles. If they are new and are designed to carry up to 15 passengers, the tax payment is the result of applying to the value of the vehicle the following rates:

Table 18. Rate on the value of new cars 2008

<i>From (pesos)</i>	<i>To (pesos)</i>	<i>Fixed amount</i>	<i>Rate to apply over difference</i>
0.01	428,768.31	0.00	3.0
428,768.32	825,140.79	12,863.05	8.7
825,140.80	1,109,080.70	47,347.45	13.3
1,109,080.71	1,393,020.60	85,111.46	16.8
1,393,020.61	>1,393,020.61	132,813.36	19.1

For the case of new automobiles that carry more than 15 passengers, as well as for public service cars (taxis), the rate is 0.245% of the total value of the car. In the case of used cars, the amount to be paid is obtained by multiplying the tax payment made a year before by the previous year's depreciation, according to the following table:

**Table 19. Rate of depreciation for used vehicles
2008**

<i>Years old</i>	<i>Automobiles for transport of up to 15 passengers</i>	<i>Other automobiles</i>
1	0.850	0.900
2	0.725	0.889
3	0.600	0.875
4	0.500	0.857
5	0.400	0.833
6	0.300	0.800
7	0.225	0.750
8	0.150	0.667
9	0.075	0.500
10 or more	0.000	0.000

There are exemptions in the following cases: electric vehicles of public transport, official vehicles for rescue services, patrols and vehicles for waste disposal, funeral service cars, ambulances, and cars used by diplomats.

3. Data

3.1 General description

The *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) is the most appropriate source of data for microsimulation. The survey is biannual since 1994 (with an exceptional survey in 2005), and the most recent one was taken in the third quarter of 2008 (INEGI, 2009). The ENIGH provides information on occupational and socio-demographic characteristics of household members and their housing and infrastructure equipment. It also contains information about 78 possible sources of incomes. On the expenditure side it covers more than 660 goods and services. Table 20 gives more details.

Table 20. Database description

<i>Original name</i>	<i>Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH).</i>
Provider	Instituto Nacional de Estadística, Geografía e Informática (INEGI).
Year of collection	2008
Conducted	Biannually
Publication	It is published about eight months after collection
Period of collection	Third quarter (21 th August-17 th November)
Income reference period	Month (the survey registers income for the last six months)
Sampling	Stratified by conglomerates across the country
Unit of assessment	Household
Coverage	National, private households, it does not cover individuals not living in households (e.g., homeless)
Other coverage	The survey is also representative at the urban and rural levels
Sample size, Households	29,468
Response rate	90.4% ^[1]

Source: INEGI (2009).

Note: ^[1] The non response rate of 9.6% includes incomplete interviews, and absence of households (see also section 3.3.2 below).

It is important to note that there are other surveys that may prove to be useful for a particular simulation. This is so because the ENIGH was not specifically designed to be representative of social programs (had that be so, the survey would be biased toward the rural sector). These are:

- *Encuesta de Evaluación Rural* (ENCEL), and a similar one for the urban sector. These surveys are specially designed to evaluate ex-post the success of the social program *Oportunidades*. As noted earlier, the database of all recipients of the program is publicly available.
- *Encuesta Nacional sobre Niveles de Vida de los Hogares* (ENNViH), a longitudinal database that is projected to span a period of at least 10 years for a better

understanding of the social, economic, demographic, and health transitions occurring in Mexico. There are at this point 2 data bases.

- *Encuesta Nacional de Empleo Urbano* (ENEU), the monthly national survey on urban employment.

3.2 Information available

The ENIGH 20086 contains information for 29,468 households. Without entering into much detail, these are the main variables considered in the survey:

- ***Socio-demographic***
 - Kinship among the head of the household and the other members (it is not possible to construct a relationship matrix)
 - Age
 - Gender
 - Marital status
 - Domestic workers
 - State of residence
 - Level of literacy
 - School attendance
 - School type
 - Scholarships
- ***Labour market***
 - Activity status
 - Occupation
 - Company size
 - Type of recruitment
 - Hours worked
 - Medical services (IMSS, ISSSTE, etc.)
 - Fringe benefits
- ***Income***

- Salary income
- Income from own business
- Income from participation in companies and cooperatives
- Income from renting houses and other assets
- Financial and capital perceptions
- Transfers (Oportunidades, Procampo)
- Perceptions in kind
- ***Expenditure***
 - Food
 - Beverages (non-alcoholic and alcoholic)
 - Cigarettes and tobacco
 - Public transport
 - Household services
 - Household supplies
 - Education, culture and recreation
 - Communication
 - Housing, water, electricity and gas
 - Clothing and footwear
 - Furnishings and household equipment
 - Health
 - Transport and vehicles
- ***Dwelling***
 - State and municipality
 - Urban or rural area
 - Tenure of dwelling
 - Type of construction materials
 - Running water, and frequency
 - Electricity
 - Garbage disposal
 - Drainage

3.3 Sample quality and weights

3.3.1 Weighting factors

The weights are values used to multiply the observations in a sample to better represent the whole population. The weights depend on the specific sample design, and have to take into account specific biases such as non-responses. INEGI takes into account those facts when estimating the weighting factors.

Table 21. Descriptive statistics of sample weighting factors

<i>ENIGH 2008</i>	
Number	29,468
Mean	907.18
Std. Dev.	924.81
Maximum	13,722
Minimum	10
Max/Min	1,372.20
Decile 1	915.33
Decile 9	924.39
Dec 9 / Dec1	1.01

Source: INEGI (2009) and own estimates.

3.3.2 Item non-response and under-reporting

The original unit of sampling design for INEGI is not the household per se, but rather housing units. Thus, there are several reasons for the overall attrition rate of 17.3% in the case of the 2008 survey: 8.7% of the households did not respond or gave an incomplete interview; 7.8% of the housing units were not occupied or were deemed to be unsuitable for living; and in the other 1.2% of the cases the purported housing units were not so.

As in the case of almost all surveys of this type, there is evidence (via National Accounts) of income under-reporting from the part of the households in the case of the ENIGHs, particularly in the case of corporate income and property income. If one can assume that this under-reporting is uniform across all households, as government agencies typically do, then one can adjust the under-reported income using the National Accounts. As an example, using the ENIGH and the National Accounts for the year 2006, the Secretaría de

Hacienda y Crédito Público (SHCP, 2008) has estimated the Altimir's adjustment factor needed to correct income under-reporting in the ENIGH 2006. The results obtained by that Ministry indicate an under-reporting in labour earnings of the order of 16% and in non-labour income of 92%. Given those percentages, the adjustment factor for labour income should be about 1.19 while for non-labour income should be around 13.65. In order to use it in the simulator, this factor was adjusted in line with inflation reported by the Bank of Mexico from December 2006 to August 2008.

3.4 Imputations and assumptions

3.4.1 Time period

Information on earnings (salary income, income from own business, transfers, etc.) is monthly for the past six months. This includes the benefits recorded as transfers. On the other hand, the information about consumption is given in the ENIGH using several time spans: Weekly, monthly and quarterly spending in the case of food, beverages and public transport; and monthly and quarterly spending in the case of other goods like house care, personal care, education, communications, vehicle services, housing expenses; clothing and footwear, domestic appliances, and medical care; domestic appliances, entertainment equipment, transport, and service payments.

3.4.2 Gross incomes

Incomes are net; that is, they are reported after taxes (and social security contributions, if any). In order to go from net to gross income one would use the corresponding tax rate to do a backward calculation. In the case of salary income, that should work quite well, but that would not be necessarily so in the case of the self-employed, given that non-labour income is grossly under-reported, as mentioned earlier.

3.4.3 Imputed variables

Depending on the specific micro-simulation, some variables would need to be imputed. For instance, the tax on car ownership is not recorded in the ENIGH, yet a proxy for the value of the car could be estimated by using the amount spent on car insurance. After that, one would need to apply the tax rate on the imputed value. In the case of no car insurance, one would impute just the flat lump sum tax that is used for old cars.

3.5 Updating

As pointed out earlier, our survey data corresponds to the year 2008, and can be traced back to a specific month in the case of income and most expenditure. For updating benefits, income, and expenditure to some other month in the future, our procedure will follow the official one in using the monthly national consumer price index (see CONEVAL 2007 and references therein).

3.6 Other simulation issues

3.6.1 Data ageing

The ENIGHs are collected each other year. The most recent survey was made in August-November 2006, and it was publicly available in mid-2007. Thus, the next survey is to be taken in August-November 2008, and it will be available in mid-2009. Given the stability of the Mexican economy during the last few years, we would not expect a lot of variation in the numbers coming from both ENIGHs.

3.6.2 Tax evasion

Tax evasion is widespread in Mexico, and it is certainly the highest among the countries that are members of the OECD. By law, the tax collecting agency, SAT (Servicio de Administración Tributaria), has to commission each year empirical studies on tax evasion. They are publicly available and can be found in the SAT web site (see Section 5 below). Out of some of those studies one can get the following tax evasion rates: Corporate Income

Tax, 33% (about 1.7% of GDP); Personal Income Tax (in the case of non salary income), 77% (about .8% of GDP); and Value Added Tax, 35% (about 1.9% of GDP).

3.6.3 Benefit take up and fraud

The presumption in the case of Mexico is that non take up could be significant, due to lack of information from the part of the beneficiaries or administrative errors. The rate of non take up should vary according to the program (in *Oportunidades* should be low, while in, say, a program that subsidise milk consumption should be high). Fraud should also be rampant. In some cases the fraud should come from the part of the beneficiary or his children (say, by not reporting a death of an elderly receiving transfers), in other cases from the part of government officials (stealing some or all of the transfers), and, finally, in yet another cases the fraud should be the making of both beneficiaries and officials (say, in the case of subsidies to agriculture production). We are not aware at this point of estimates (that are public, anyway) on non take up and fraud. We hope in the next iteration of this paper to have more information on this regard.

4. References and Abbreviations

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4.2 Web sites

CONEVAL, <http://www.coneval.gob.mx>

IMSS, <http://www.imss.gob.mx>

INEGI, <http://www.inegi.gob.mx/est>

ISSSTE, <http://www.issste.gob.mx>

OECD, <http://www.oecd.org/>

OPORTUNIDADES, <http://www.oportunidades.gob.mx>

SAT, <http://www.sat.gob.mx>

SEDESOL, <http://www.sedesol.gob.mx>

SHCP, <http://www.hacienda.gob.mx>

4.3 Abbreviations

AFORE, Administradora de Fondos para el Retiro (Retirement Funds Administrators)

CONEVAL, Consejo Nacional de Evaluación de la Política de Desarrollo Social (National Council for Evaluation of Social Development Policies)

DIF, Sistema Nacional para el Desarrollo Integral de la Familia (National System for Integral Family Development)

ENCEL, Encuesta de Evaluación Rural (Rural Assessment Survey)

ENEU, Encuesta Nacional de Empleo Urbano (National Survey of Urban Employment)

ENIGH, Encuesta Nacional de Ingresos y Gastos de los Hogares (National Survey of Income and Expenditure of Households)

ENNViH, Encuesta Nacional sobre Niveles de Vida de los Hogares (National Survey Households Standards Living)

FOVISSSTE, Fondo de la Vivienda del Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (Housing Fund of the Institute of Social Security and Services for Government Workers)

IMSS, Instituto Mexicano del Seguro Social (Mexican Institute of Social Security)

IETU, Impuesto Empresarial a Tasa Única (Single Rate Business Tax)

INEGI, Instituto Nacional de Estadística y Geografía (National Institute of Statistics and Geography)

INFONAVIT, Instituto del Fondo Nacional de la Vivienda para los Trabajadores (Housing Found for Workers)

ISR, Impuesto sobre la Renta (Income Tax)

ISSSTE, Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado
(Institute of Social Security and Services for Government Workers)

IVA, Impuesto al valor Agregado (Value Added Tax)

Oportunidades, Programa de Desarrollo Humano-Oportunidades (known as PROGRESA
in the late 1990's)

PEMEX, Petróleos Mexicanos (Mexican Petroleum Company)

PROBECAT, Programa de Becas de Capacitación a los Trabajadores Desempleados
(Labour Retraining Programme)

PROCAMPO, Programa de Apoyos Directos al Campo (Subsidies to Agriculture
Programme)

PROGRESA, Programa Nacional de Educación, Salud y Alimentación (National
Programme of Education, Health and Feeding)

SAGARPA, Secretaría de Agricultura, Ganadería y Desarrollo Rural (Secretary of
Agriculture, Cattle Raising and Rural Development)

SAT, Servicio de Administración Tributaria (Agency of Tax Administration)

SEDESOL, Secretaría de Desarrollo Social (Secretary of Social Development)

SHCP, Secretaría de Hacienda y Crédito Público (Secretary of Finance).