

# **REDISTRIBUTIVE IMPACT AND EFFICIENCY OF MEXICO'S FISCAL SYSTEM**

## **ABSTRACT**

A comprehensive tax and benefit incidence analysis is presented covering the redistributive fiscal instruments implemented in Mexico in 2008 and 2010, representative of the urban and rural sectors, as well as nationally. The expansion of basic social programs and effectively targeted direct monetary transfers have increased the progressivity of Mexico's fiscal system in recent years. However, the overall redistributive impact of this system is limited by a comparatively unproductive tax system, a comparatively small share of resources allocated to direct transfers, and a significant share of spending tied to instruments with low redistributive effectiveness (subsidies to contributory social security systems, generalized consumer subsidies, tertiary public education). The transition to a more effective and equitable fiscal system will require a comprehensive tax-benefits reform designed to improve tax productivity and benefit equity, combining a broad tax base with universally accessible public services and social protection.

Keywords: tax-benefit incidence analysis, social spending, inequality, poverty, Mexico

JEL: I3, H2, H5

## 1. INTRODUCTION

The article presents the results of a comprehensive tax and benefit incidence analysis covering the principal redistributive instruments implemented in Mexico in 2008 and 2010, with results representative of the urban and rural sectors, as well as nationally. The analysis covers the principal cash and in-kind social transfers, representing 91.7 percent and 87.4 percent (in 2008 and 2010, respectively) of social spending in Mexico (using the official federal budgetary classification, plus state spending on health and education, minus contributory pensions). Together with the consumer subsidies analyzed, the total resources whose incidence is analyzed represent, respectively, 51 percent and 42.6 percent of primary public spending in 2008 and 2010.

The principal contributions of this analysis are several. First, there is a *common methodology*. The use of a common methodology shared by the other studies in this volume allows a *consistent comparative analysis* covering a significant and growing number of countries (Lustig, Pessino and Scott 2013). Second, there is an *urban-rural analysis*. A disaggregated incidence analysis of urban and rural populations (2,500 inhabitants or less) is of particular interest in the case of Mexico, as it reveals large gaps in living standards between urban and rural populations and wide differences in the coverage of the tax-benefit system between the two populations. These gaps are closely interrelated. The rural sector accounts for 23 percent of the national population, dispersed in more than 188 thousand localities, but includes 46 percent (national income poverty lines) to 66 percent (2.5 USD poverty line) of the extreme poor. Finally, the paper considers *recent changes in the tax-benefit system*. The coverage of the tax-benefit system in 2008 and 2010 is of interest because it captures the response of Mexico's fiscal system to the recent food/energy prices and financial crisis, which involved the expansion of generalized consumption subsidies and targeted transfers, as well as an increase in the VAT rate from 15 to 16 percent.

The study is structured as follows. Section 2 reviews the principal elements of Mexico's tax and benefit system and its evolution in recent years. Section 3 presents the data sources and specific assumptions used in the analysis. Section 4 presents the principal results. Section 5 presents a general interpretation of the status quo and the required policy reforms.

## **2. SOCIAL SPENDING AND TAXES: OVERVIEW**

For the purposes of this study *social transfers* are defined to include public spending on education, health, direct cash transfers, and smaller in-kind transfers (food programs and day care centers). These programs represented 8.7 percent of GDP in 2010. Mexico's official functional classification of social spending includes, in addition to the above, spending on contributory pensions, housing, and water and sewage. The latter two are not analyzed here for lack of the required information. The distribution of subsidies to the contributory pension systems is analyzed, but not included as a social transfer in the benchmark analysis. A sensitivity analysis is included treating total pension income as a cash transfer. Consumer (energy) subsidies are also analyzed and included in the estimation of post-fiscal spending.

The benefits and taxes analyzed are summarized in table 1 for 2008 and 2010, which also shows the distribution of these benefits and burdens between the urban and rural populations, estimated from the incidence analysis.

*In-kind transfers* account for the bulk of social transfers. Public education absorbs 4.5 percent of GDP in 2010, with most of this going to basic (primary and lower secondary) education (3 percent). Public health spending represents 3.1 percent of GDP, divided between health services provided by the contributory social security institutions (1.7 percent) and health services for the uninsured (1.3 percent). *Direct cash transfers* represent only 0.96 percent of GDP in 2010, and 0.7 percent in 2008.<sup>1</sup> Public spending on contributory public pension systems serving private (IMSS)

and public sector workers (ISSSTE, PEMEX) absorbed 2.6 percent of GDP in 2010, of which 1.9 percent of GDP represent public subsidies.<sup>2</sup> Generalized consumer subsidies (domestic electricity, petrol and diesel, and LP gas) have varied sharply in recent years as a function of international oil prices: they reached a historical maximum of 2.8 percent of GDP in 2008 when domestic gasoline prices were frozen in the context of rising international gasoline prices, fell by a half in 2010, but climbed back to an estimated 2.7 percent of GDP in 2012 (Scott 2013).

Overall, social transfers are pro-rural, allocating 26.7 percent of spending to the rural population (representing 23.2 percent of the total population) in 2010. Direct transfers (with the exception of non-Oportunidades scholarships), basic health services for the uninsured, and in-kind food programs are highly pro-rural. This has not always been the case, but is the achievement of a series of spending reforms implemented in the 1990s that had the effect of reversing a strong urban bias in the allocation of public services and food subsidies. These include an expansion in the rural coverage of basic health and education services and the introduction of innovative and effectively targeted programs benefiting the rural poor, most notably *Oportunidades*, originally as the *Programa de Educación, Salud y Alimentación* (PROGRESA) introduced in 1997. More recently, the *Seguro Popular* program, created in 2004, has extended non-contributory health insurance to most of the noninsured.

In contrast to the latter benefits reforms, recurring tax reform initiatives over the last three decades have failed to increase Mexico's fiscal capacity: non-oil tax revenues have remained stagnant at close to 10 percent of GDP over the last thirty-five years. By comparison, tax revenues in the LAC region increased on average from 13 to 19 percent of GDP over the last decade (CEPAL 2010). A large fraction of public spending is thus financed through oil revenues obtained from the state-owned oil company PEMEX. The present analysis considers the effect of taxes representing approximately 80 percent of non-oil tax revenues, but only one-third of total public revenues.<sup>3</sup>

The historic limitation of tax revenues does not arise from exceptionally low tax rates, but from low tax levels of tax productivity, in turn explained by multiple exemptions and ineffective tax administration. Some exemptions are designed to benefit specific groups (e.g. income tax exemptions on all agricultural producers), but the principal ones were introduced to make the tax system more progressive. This includes VAT exemptions on food and medicines and a negative petrol tax. These tax expenditures and subsidies make the tax system more progressive not only at the cost of lower tax productivity, but also, paradoxically, of lower redistributive impact of the tax-benefit system as a whole. The redistributive gains obtained from the tax system through these generalized fiscal expenditures pale in comparison to the redistributive opportunity costs on the benefits side (see below, section 4). These include the static cost associated with the shift of resources from efficient to inefficient instruments, but also the dynamic costs associated with a fiscal system trapped in a low-revenue-low-benefits equilibrium.

### **3. DATA AND ASSUMPTIONS**

The general methodology used in this study is described in Lustig, Pessino, and Scott (2013). The principal data source used to estimate the distribution and incidence of taxes and benefits at the household level is the *Encuesta Nacional de Ingresos y Gastos de los Hogares* (ENIGH) (National Survey of Household Income and Spending) for 2008 and 2010, the most detailed and complete survey available in Mexico for distributive analysis of household income (including direct transfers), expenditures, and in-kind transfers.<sup>4</sup> The ENIGH reports incomes and expenditures *after taxes* and does not report direct or indirect taxes directly. Hence, in this exercise taxes and social security contributions are imputed at the household level as a function of the household's characteristics, using estimates published by Mexico's Finance Ministry (SHCP 2010, 2012).<sup>5</sup>

The ENIGH reports the principal direct cash transfers implemented by the federal government: *Oportunidades*, *PROCAMPO*, non-contributory pensions, non-*Oportunidades* scholarships, the *Programa Alimentario*, the *Programa de Empleo Temporal*, and "other social programs" as a general category. The distribution of smaller in-kind targeted social programs is obtained from a special *Module of Social Programs* commissioned by the Social Development Ministry as part of the ENIGH for selected years, including 2010.<sup>6</sup>

The monetary value of in-kind transfers is assumed to be equal to the cost of provision as reported in the Public Accounts of the federal government for the relevant years. For health services I also use the *National and State Health Accounts* published by the Health Ministry, which includes spending by state governments. In the case of education, federal spending per student is obtained from the Education Ministry, and spending by the states is estimated from federal per student spending rates and the coverage of state financed schools reported by the Education Ministry (SEP 2011).<sup>7</sup> The total value of energy subsidies is obtained from official estimates.<sup>8</sup>

As with most household income surveys, the ENIGH underreports total household income by a significant factor with respect to the nearest equivalent concept, Mexico's National Accounts (NA). The NA/ENIGH factor is 2.09 and 2.23 in 2008 and 2010, respectively. To avoid over-estimating the size of public transfers (as reported in the public accounts) in relation to household's market income (as reported in the survey), and therefore the redistributive impact of these transfers, it is necessary to apply this factor to all market incomes from the ENIGH. In the case of direct cash transfers reported in the ENIGH, spending reported in the public accounts is used to adjust the transfers reported in the survey.<sup>9</sup> In the case of "other scholarships," "other social programs," and non-contributory state pensions, where this information is not available, the common NA adjustment factor is used. The imputation methods applied for in-kind transfers, consumption

subsidies, and pension subsidies at the household level using the ENIGH survey are described in note 11.<sup>10</sup>

Changes in poverty are presented using the 2.5 USD (PPP) international poverty line as well as a national poverty line, which is the income component in Mexico's official multidimensional poverty measure. This is called the *Línea de Bienestar Mínimo* (LBM), and for 2010 has values of 3.6 and 2.5 USD (PPP) in urban and rural areas, respectively.

#### **4. REDISTRIBUTIVE IMPACT AND EFFICIENCY OF MEXICO'S FISCAL SYSTEM:**

##### **MAIN RESULTS**

##### 4.1 Effects on Inequality and Poverty: 2008 and 2010

Table 2 presents the estimated changes in income inequality and poverty generated by the taxes, transfers, and subsidies analyzed, with respect to market income inequality. The combined effect on inequality is a decline in the final income Gini of 15.3 percent in 2008 and 15.9 percent in 2010. In-kind transfers in education and health account for the largest part of this effect. Direct taxes and direct transfers reduce inequality by a relatively modest 3.8 and 4.5 percent in 2008 and 2010, respectively. Adding the effect of indirect taxes and subsidies, the decline equals 5.5 to 5.8 percent in 2008 and 2010, respectively.

Direct taxes and social security contributions imply only a marginal increase in extreme poverty. This effect is due to contributions to social security exclusively, as the direct personal income tax is not only zero for poor workers but includes a negative tax component for low income workers. Adding direct transfers, the net effect on disposable income is to reduce the poverty headcount by 11.2 percent and 15 percent in 2008 and 2010, respectively (using the 2.5 USD poverty line). Adding indirect taxes and subsidies reduces poverty by a further 5 percentage points in 2008, but the effect becomes marginal in 2010 with the same poverty line, and poverty actually *increases* by

2.5 percentage points using the LBM poverty line (as it does with the 4 USD poverty line). This reflects the fact that in 2010 indirect subsidies net of indirect taxes become negative after the first decile (Table 3).

Direct transfers and transfers in-kind have a much larger effect within the rural sector than in the urban sector, with a total inequality reduction of 24.4 percent (final income) in 2010. Post-fiscal income reduces extreme poverty in the rural sector by 15.5 percent, and the poverty gap and squared poverty gap by 28 and 37.2 percent, respectively (2.5 USD line).

Treating pension income as transfers (sensitivity analysis) rather than as market income has little effect on inequality, but makes a significant difference on market and net market income poverty. Disposable income extreme poverty (LBM) falls by 10.3 percent in the benchmark scenario, but by 15 percent in this sensitivity analysis. This difference is due mainly to the effect of pension income, as a transfer, on the urban poor. However, when pension income is considered a transfer the effectiveness of direct and total transfers is reduced sharply.

Comparing 2008 and 2010, these results imply that despite the large reduction of indirect subsidies (by 1.4 percentage points of GDP), compensated for by only a modest expansion of direct transfers (0.2 points of GDP), the effect of the fiscal system in reducing inequality increased slightly between these two years. This reflects the low redistributive efficiency of indirect subsidies when compared to direct transfers. On the other hand, as reported above, the reduction of indirect subsidies did imply a slight reduction in the redistributive impact on extreme poverty from 16.2 percent in 2008 to 15.1 percent in 2010 (2.5 USD poverty line).

Another way of analyzing this difference is by comparing the change in post-fiscal inequality and poverty between 2008 and 2010 attributable to redistribution through the fiscal system: 11 percent of the reduction in the post-fiscal Gini coefficient between the two years can be attributed to changes in redistributive policies, while 13 percent of the *increase* in the national poverty

headcount can be attributed to the changes in redistributive policies.<sup>11</sup> In other words, the compositional shift from indirect subsidies to direct transfers increased the overall efficiency of the fiscal system, and the slight increase in direct transfers was sufficient to maintain the inequality reducing effect, but insufficient to compensate the poor for the cut in net post-fiscal benefits. The gap in redistributive efficiency between indirect subsidies and direct transfers means that each peso shifted from the former to the latter significantly increased the impact of fiscal resources on poverty per peso spent, but the reduction of indirect subsidies without a sufficient compensation through direct transfers clearly harmed the poor.

#### 4.2 Incidence of Taxes, Transfers, and Subsidies at the National, Rural, and Urban Levels: 2008 and 2010

Table 3 presents the incidence of taxes and transfers nationally by decile with respect to market income in 2010. Direct taxes are highly progressive, reflecting the first exemption of workers in the first four deciles from personal income taxes (PIT) and the effect of the negative income tax. To test different assumptions on the incidence of indirect taxes, two scenarios are estimated. In the *Benchmark*, all rural consumption and urban consumption in informal markets are assumed to evade indirect taxes. This is the assumption used in the SHCP (2012) estimates for the incidence of VAT. Under these assumptions, indirect taxes are close to neutral, reflecting both the informality assumptions and a *zero VAT rate* on foods and medicines (plus *exemptions* on health, education, public transport services). To test for the sensitivity to the informality assumptions, table 3 also presents results assuming that there are no informal all consumers are subject to VAT (maintaining the zero rate and exemptions). In this case indirect taxes become regressive.

The tax system overall nationally is mildly progressive in the Benchmark scenario, but regressive at the bottom half of the distribution in the sensitivity analysis.

Transfers are highly progressive overall, and households in the first decile receive on average net monetary benefits equivalent to 32 percent of their market income, and net total (cash and in-kind) benefits representing 138 percent in the Benchmark scenario. However, net monetary benefits are significantly less progressive in the sensitivity analysis, and households become net contributors on average from the second decile, instead of the fourth decile.

As noted before, transfers in-kind account for the bulk of the redistributive incidence of the fiscal system, reflecting their budgetary weight and redistributive efficiency. Despite their small share of fiscal resources, direct transfers are also very important for the poorest deciles. Indirect subsidies represent a relatively small share of benefits for the poorest deciles, but despite their reduction in 2010, they become more important than direct transfers from the third decile.

There are additional important differences between urban and rural populations (not shown in the table). Net monetary benefits increase market income by only 8.3 percent for the poorest urban decile, and become negative by the third urban decile. In contrast, rural areas are estimated to obtain net monetary and total benefits equivalent to 97 and 373 percent of market income, respectively. Relaxing the strong VAT informality assumption of the benchmark analysis (not shown in the table) has the effect of turning the highly progressive rural tax incidence into a regressive one: the average tax burden for the poorest rural decile jumps from 1.4 to 10.7 percent of market income. Even in this scenario, however, after all monetary taxes benefits (post-fiscal income), rural households still only become net contributors by the 9th rural decile.

Indirect subsidies overcompensated the poorest 40 percent for indirect taxes in 2008, and reduce the net effect of indirect taxes significantly even for higher income households, while in 2010 the indirect tax burden surpassed subsidies in all but the first decile.

#### 4.3 Distribution of Benefits

Figure 1 presents the concentration coefficients for all benefits analyzed in 2010, calculated at the national, urban, and rural levels. Nationally, the coefficients for transfers vary from -0.54 (*Oportunidades*) to 0.68 (fiscal subsidy on private school tuition). The most progressive include targeted transfers and food programs, health services for the uninsured, and primary education; all these are progressive in absolute terms (see Diagram 2 in methodological chapter). Those that are only progressive in relative terms include subsidies to contributory social security pensions, indirect subsidies, and tertiary education. The only unequalizing (regressive) transfers are subsidies to the social security systems for public sector workers and private education deductions. When contributory pensions are considered a government transfer (and households are initially ranked by market income without contributory pensions), they are progressive in relative terms: the concentration coefficient equals 0.26 nationally in the sensitivity analysis. However, contributory pensions become regressive when they are treated as a component of market income (the benchmark scenario), with a (national) concentration coefficient of 0.70. The wide difference between the two coefficients reflects the dependence of many pensioners on their pension as their primary income source (so that without their pension they would fall considerably in the income distribution), but it also shows that access to contributory pensions is concentrated on relatively high income workers.

We observe an interesting contrast between the rural distributions of individual transfers, which are almost invariably less progressive than the national or urban distributions. Even *Oportunidades* is only moderately progressive in absolute terms in the rural sector, and *70 y más* is only progressive in relative terms. The contributory social security systems have minimal rural coverage, and these benefits are regressive within the rural sector. These results do not imply that transfers are less well targeted in rural than in urban areas, but reflect rather the large differences in income levels and poverty rates between the two sectors. Only 5.6 percent of the urban population is extremely

poor (2.5 USD poverty line; table 2), and these receive 14 percent and 6.4 percent of direct and total urban transfers, respectively. On the other hand, the extreme rural poor represent 35.6 percent of the rural population, receiving 43.8 percent and 38.6 percent of direct and total rural transfers, respectively. Transfers per capita are larger for the rural than for the urban extreme poor: direct (total) yearly transfers represent 195 (1,231) USD PPP per capita for the urban poor, but 451 (1,421) for the rural poor.

Despite the differences in overall progressivity, when all cash and in-kind transfers are added up ("Total social transfers CEQ"), the concentration coefficients are similar at the national, rural, and urban levels. This is explained by the differences in the relative weights of transfers within each sector: the lower progressivity of transfers within the rural sector is compensated by the larger rural share in the more progressive transfers. Direct transfers are significantly less progressive within either sector than they are nationally, which implies that this level of national progressivity arises largely from the pro-rural allocation of these transfers.

A significant fraction of programs concentrates resources disproportionately on non-poor population, who, using the upper national poverty line (*línea de bienestar*), represent 48 percent of the population. For example, the extreme poor, representing 19.4 percent of the population, obtain only 7.4 percent of the benefits from non-contributory day care centers (*Estancias Sedesol*), 6.6 percent of gasoline subsidies, 6.2 percent of public tertiary education, 1.6 percent of IMSS pension subsidies, and 0 percent of IMSS day care centers. Even in the case of Oportunidades, which was originally designed to provide a basic floor of human capital to the extreme poor in the poorest rural communities, and as is shown here is still among the most effectively targeted, 46 percent of its resources do not benefit this group.

Coverage rates of the extreme poor (2.5 USD PPP) by the principal direct transfers in 2010 are as follows: *Oportunidades* (64.5 percent), *PROCAMPO* (17.7), *70 y más* (10.2), *Programa Alimentario*

(PAL) (2.3), *Empleo Temporal* (PET) (0.7), other scholarships (4.1), other non-contributive pensions (2.3), other social transfers (2.5), at least one of the above (73.3). *Seguro Popular* covers 73 percent of the extreme poor, contributory health services covers 9.1 percent, contributory pension subsidies (to active workers as well as pensioners) cover only 2.5 percent, and public university services covers just 1.9 percent.

## 5. CONCLUSIONS, CAVEATS, AND POLICY IMPLICATIONS

This paper has analyzed the redistributive effects and efficiency of Mexico's fiscal system, in its principal instruments and in the aggregate, nationally as well as within Mexico's highly differentiated urban and rural sectors. Two caveats are in order before interpreting and drawing policy conclusions from these results. First, the interest of this analysis does not assume that redistribution is the only, or even the principal, objective of all these tax and spending instruments. But many fiscal instruments have redistributive objectives, among other possible functions, and all fiscal instruments, whatever their objectives or classification, have redistributive effects. These effects often generate intensive public interest and political debate without rigorous empirical evidence to back them up.

Secondly, the paper has not tried to evaluate the *impact* of the instruments analyzed on households' welfare. This would require the application of either experimental or quasi-experimental evaluation methodologies, which are obviously unfeasible for the large-scale, wide-coverage, and long-established interventions analyzed here (national public education, health, and social security systems), or ex-ante microsimulation methodologies, which are beyond the scope of the present study (but would be a natural future extension). There are four well-known factors that are of particular relevance here: behavioral effects (e.g., labor, savings, intra- and inter-household transfers, fertility); indirect effects through the market system (general equilibrium) or external to it

(externalities); combined effects of multiple interventions; and quality and household valuation of in-kind transfers.

For these reasons the results presented here should be interpreted as the *potential* rather than actual redistributive impact of Mexico's fiscal system. This is especially true for the large and comparatively efficient redistributive effects associated with in-kind transfers. These result from an increase in resources allocated to these transfers as well as the expansion in the coverage of education and health services over the last two decades. There is much evidence, however, that as basic services have achieved or are approaching universal coverage, the quality of these services has become the more relevant unequalizing factor. Since these services are universally accessible, especially to urban and upper income groups facing less geographic or economic barriers to access, their high degree of progressivity is in itself strong evidence of their low quality: as households rise in the income ranking they opt out of the public system in favor of costly private services.

With these caveats in mind, there are three principal reform implications of this analysis:

- *Redistributive opportunity costs and reform opportunities.* The wide range of concentration coefficients across as well as within the principal policy dimensions analyzed (education, health, social security, income support, food programs), and the large differences in the redistributive efficiency of the principal fiscal instruments reveal significant opportunities to improve the system's redistributive impact.
- *Integral tax-benefit reform.* Fiscal reforms should be conceived and implemented integrally everywhere (Mirrlees et al. 2011), but especially in the context of Mexico's low revenue/high inequality fiscal equilibrium. A broad tax base (free of redistributively inefficient tax subsidies) and an effective, universal, and well-funded system of benefits should be pursued as a single renewed fiscal contract. Increasing the overall redistributive impact of the fiscal system does not require increasing the progressivity of each of its components. Given the

common trade-offs between tax progressivity and tax efficiency, a concern for tax progressivity can be counter-productive in redistributive terms. The results presented here show that redistributive efficiency could be increased significantly by shifting resources from indirect tax spending instruments to direct transfers, and the provision of a universal non-contributive social protection floor.

- *Political, economic, and geographic barriers.* The present analysis has documented but not explained the persistence of inefficient redistributive instruments. In some cases, these reflect capture of rents by organized interest groups. This includes unfunded public sector social security benefits that are well above those available to formal private sector workers, as well as agricultural subsidies. In most other cases the explanation involves a simple inequality trap: in a context of high (market) income inequality, poor households cannot afford to incur the costs that are often associated with access to public benefits. These include explicit or implicit user fees (especially in higher education and hospital services), social security contributions, labor opportunity costs in attending tertiary education, and purchasing power to access subsidized goods and services. Finally, geography and population dispersion, which is exceptionally high in Mexico, acts as a third type of barrier contributing to both income and fiscal inequality. In this context, social policy must be explicitly designed to minimize these costs, by minimizing user fees and contributions in favor of general tax finance, by shifting from broad supply side subsidies to well-targeted scholarships, and by shifting from generalized indirect subsidies to direct transfers.

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## ENDNOTES

<sup>1</sup> Direct transfers analyzed include five programs: (1) *Oportunidades*, Mexico's largest anti-poverty program introduced in 1997 (as *PROGRESA*), a conditional cash transfer covering 5.8 million

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households in 2011, with 6 million scholarships (average monthly transfer per beneficiary family in 2011: 776 pesos, or 85 USD PPP); (2) *Programa de Apoyos Directos al Campo* (PROCAMPO), a yearly cash transfer of 1,300 pesos per hectare to small-holders (under five hectares) and 963 pesos to the rest, covering 2.65 million agricultural producers in 2011, introduced in 1994 to compensate agricultural workers for the opening up of agricultural markets under the North American Free Trade Treaty (average monthly transfer per beneficiary producer in 2011: 437 pesos, or 48 USD PPP); (3) *70 y más*, a federal non-contributive program offering 500 pesos monthly to all the non-insured aged seventy or more in localities with fewer than 30,000 inhabitants, with 2.15 million beneficiaries in 2011. It was extended to all localities in 2012, and the age limit was lowered to 65 years in 2013, with substantial budgetary expansions (average monthly transfer per beneficiary in 2011: 500 pesos, or 55 USD PPP); (4) *Programa Alimentario* (PAL), introduced in 2006 to reach the extreme poor in remote localities not reached by Oportunidades, covering 674 thousand families in 2011 (average monthly transfer per beneficiary family in 2011: 524 pesos, or 58 USD PPP); and (5) *Programa de Empleo Temporal*, a basic workfare program created in 1995, providing a maximum of eighty-eight days of work for low wage (originally 90 percent of the minimum wage, at present 99 percent) and covering in 2011 1.1 million beneficiaries with a total budget of 2.9 billion pesos (average monthly transfer per beneficiary worker in 2011: 224 pesos, or 25 USD PPP). The analysis also covers three transfer categories reported in the ENIGH survey without identifying specific programs: (1) other (state) non-contributory pensions; (2) other public scholarships; and (3) other social transfers. For a detailed analysis of the evolution of direct cash transfers over the last two decades, see Scott (2012).

<sup>2</sup> These subsidies are of three types: (1) statutory government contributions to individual pension accounts (*Cuota Social*): imputed to active, affiliated workers; (2) transitory subsidies financing

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reforms from PYGO to fully-funded pensions (1997 in IMSS, 2010 in ISSSTE); and (3) yearly deficits of the still unreformed PYGO systems, mainly in public enterprises (PEMEX, CFE, IMSS as employer).

<sup>3</sup> The principal exclusions are corporate income taxes, which cannot be adequately imputed to households because of limitations in the capital income data reported in the ENIGH survey, and oil revenues. Oil rents are not only a non-renewable, unstable, and declining revenue source, but also represent a highly regressive source of public finance, arguably equivalent to a "poll tax" in the context of Mexico's constitutionally established common property rights on oil resources (Segal 2011).

<sup>4</sup> The survey sample for 2010 (2008) consisted of 30,169 (35,146) households, and is representative of the national population, as well as the rural (2,500 inhabitants or fewer) and urban populations. The methodological documents and data for the ENIGH surveys can be found in the following link:

<http://www.inegi.org.mx/est/contenidos/proyectos/encuestas/hogares/regulares/enigh/default.aspx>

<sup>5</sup> These estimates use the same database (ENIGH) and a methodology consistent with the present study. The results obtained by SHCP by deciles are used to define the distribution to each population decile, but the distribution within deciles is estimated using the relevant household characteristics used in the SHCP study (income, expenditure, and formality/informality proxies based on contributory social security coverage, size of locality, and place of purchase).

<sup>6</sup> This module reports beneficiaries for the following programs: (1) *Piso Firme* provides material inputs to build cement floors for houses with dirt floors in poor rural localities; (2) *Desayunos escolares* and *Despensas* are school-breakfast and food basket programs, respectively; (3) *Liconsa* is a targeted milk-subsidy, serving mainly urban areas; (4) *Diconsa* is a rural network of subsidized stores providing basic food products; and (5) IMSS and *Sedesol daycare center* (Estancias Infantiles) are provided to the population covered by IMSS, the principal social security institution, and to the uninsured, respectively. The distribution of these

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programs is estimated assuming that transfers per beneficiary are homogeneous, which is a reasonable approximation in all these cases. These programs are not separately identified in 2008 because the module was not included in the year's survey, though they should be partially captured in the general category of "other programs."

<sup>7</sup> Public spending levels per beneficiary in education and health in 2010 in PPP USD are: Pre-school (1,607); Primary (1,460); Lower-secondary (2,252); Upper-secondary (2,772); Tertiary (6,201); Services provided by contributive social security (515); Services for the uninsured (345).

<sup>8</sup> The value of domestic electricity subsidies is obtained from *Statistical Annex, Informe de Gobierno, Poder Ejecutivo, 2012*. Gasoline subsidies are reported as a negative special tax on gasolines (IEPS) in SHCP (2008, 2010). The LP gas subsidy is reported by PEMEX in the following link:

<http://www.gas.pemex.com/PGPB/Productos+y+servicios/Gas+licuado/Mercado+gas+LP/Subsidio/>

<sup>9</sup> For the largest transfer programs, underreporting is significantly lower than for general income, with the following adjustment factors: *Oportunidades* (1.45), *PROCAMPO* (1.47), *70 y Más* (1.24). The form of underreporting varies by program. In the case of *Oportunidades*, it is due mainly to underreporting of benefits, while in the case of *PROCAMPO*, *70 y Más*, and the smaller transfer programs (*PAL*, *PET*) the main factor is underreporting of beneficiaries, rather than benefits per beneficiary. Underreporting of beneficiaries may in turn be due to different causes, including program expansions concentrated towards the end the year (the survey's fieldwork takes place mostly in the third quarter) and errors in the administrative records (for example, in the case of older programs, like *PROCAMPO*, failure to adjust for exits from the program). No attempt is made to correct for underreporting in the survey by imputing beneficiaries based on administrative records and program rules, both because administrative records may not always be more accurate and because this would defeat an important purpose of the incidence

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analysis, which is to evaluate the success of the program in implementing the relevant identification and allocation rules.

<sup>10</sup> *Education services*: student enrollment in public schools by school level. *Health services*: use of services by institution. *Seguro Popular* (non-contributory health insurance): affiliation to the program. *Contributory Pension income*: all reported pension income is classified under market income in the benchmark scenario and as a government transfer in the sensitivity analysis (the survey does not identify the institutional source of pensions). *Subsidies to contributory pension systems* (IMSS, ISSSTE): components imputed separately to active workers and current pensioners using reported affiliation to social security institutions. *Electricity subsidy*: based on a previous study by the author (Annex 5 in Komives et al. 2009) using the tariff structure and household spending reported in ENIGH 2006. *Gasoline subsidy*: imputed on the basis of reported household spending on gasoline, distinguishing public and private transportation (the share allocated to each type is obtained from the *Report on Fiscal Spending 2008, SHCP*). *LP Gas subsidy*: imputed on the basis of household LP gas consumption. *Negative PIT (employment subsidy)*: imputation is based on the relevant fiscal law (Ley del ISR), applied to salaried incomes of formal sector workers (identified through reported affiliation to contributory social security institutions or to the *Retirement Savings System* in ENIGH). *Fiscal deductions for tuition in private schools*: obtained from CIEP (2011).

<sup>11</sup> See a brief description of this decomposition method in Lustig, Pessino, and Scott (2013).

## REFERENCES

- CEPAL. 2010. La hora de la igualdad: brechas por cerrar, caminos por abrir. Santiago, Chile.
- Centro de Investigación Económica y Presupuestaria (CIEP). 2011. Deducibilidad de colegiaturas. CIEP Ingresos e Impuestos boletín. Mexico.
- Komives, Kristin, Todd M. Johnson, Jonathan D. Halpern, Jose Luis Aburto, and John Scott. 2009. Residential Electricity Subsidies in Mexico. Exploring Options for Reform and for Enhancing the Impact on the Poor World Bank Working Paper, Washington, DC.
- Lustig, Nora, Carola Pessino, and John Scott. 2013. The impact of taxes and social spending on inequality and poverty in Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay: An Overview. *Public Finance Review*, this issue.
- Scott, John. 2012. Fiscal Policy, Urban-Rural Inequality and Rural Poverty in Mexico. IFAD (International Fund for Agricultural Development) Report. Rome, Italy.
- Scott, John. 2013. *Redistribución de los subsidios a los combustibles en México: Oportunidades de Reforma*, Reserach and Policy Report financed by *Climate Works Foundation*, Grant # 12-0441.
- Segal, Paul. 2011. El petróleo es nuestro: the distribution of oil revenues in Mexico. James A. Baker III Institute for Public Policy Working Paper, Houston, TX. The Mexican Programme at Nuffield College Working Paper. Oxford, UK.
- SEP. 2011. Principales Cifras Ciclo Escolar 2010-2011. Available online at: [http://www.dgpp.sep.gob.mx/Estadi/principales\\_cifras\\_2010\\_2011.pdf](http://www.dgpp.sep.gob.mx/Estadi/principales_cifras_2010_2011.pdf).
- SHCP. 2008. Informes sobre la Situación Económica, las Finanzas Públicas y la Deuda Pública: Cuarto Trimestre, 2008. Mexico.
- SHCP. 2010. Informes sobre la Situación Económica, las Finanzas Públicas y la Deuda Pública: Cuarto Trimestre, 2010. Mexico.

Table 1

## Resources Allocated to Taxes and Benefits in 2008 and 2010, and Urban/Rural Distribution

	2008		2010			
	Total	In Incidence Analysis	Total	In Incidence Analysis	Inter-sectoral distribution <sup>h</sup>	
					Urban	Rural
<b>Gross Nat Inc/capita (PPP US\$)</b>	<b>14,520</b>		<b>14,390</b>			
<b>Total Government Spending<sup>a</sup></b>	<b>23.9%</b>		<b>25.7%</b>			
<b>Primary Government Spending<sup>b</sup></b>	<b>22.0%</b>		<b>23.7%</b>			
<b>Social Spending<sup>c</sup></b>	<b>9.1%</b>	<b>8.4%</b>	<b>10.0%</b>	<b>8.7%</b>	<b>73.3%</b>	<b>26.7%</b>
<b>Total Cash Transfers</b>	<b>0.7%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>1.0%</b>	<b>47.9%</b>	<b>52.1%</b>
Cash Transfers excl. NC Pensions	0.6%	0.6%	0.8%	0.8%		
Non-Contributory Pensions <sup>d</sup>	0.1%	0.1%	0.2%	0.2%	60.3%	39.7%
<b>Total In Kind Transfers</b>	<b>7.6%</b>	<b>7.6%</b>	<b>7.7%</b>	<b>7.7%</b>	<b>56.2%</b>	<b>43.8%</b>
Education	4.7%	4.7%	4.5%	4.5%	76.2%	23.8%
of which Tertiary Education	0.9%	0.9%	0.8%	0.8%	90.7%	9.3%
Health	2.9%	2.9%	3.1%	3.1%	76.8%	23.2%
Contributory	1.6%	1.6%	1.7%	1.7%	90.1%	9.9%
Noncontributory	1.3%	1.3%	1.3%	1.3%	59.8%	40.2%
<b>Other Social Spending</b>	<b>0.8%</b>		<b>1.3%</b>			
<b>Non-Social Spending<sup>e</sup></b>	<b>12.9%</b>	<b>2.8%</b>	<b>13.7%</b>	<b>1.4%</b>	<b>84.3%</b>	<b>15.7%</b>
Indirect Subsidies	2.8%	2.8%	1.4%	1.4%	84.3%	15.7%
Other Non-Social Spending	10.0%		12.3%			
Total Pension Income (reported by HHs) <sup>f</sup>	3.1%	3.1%	3.7%	3.7%	94.6%	5.4%
Public Spending on Contrib. Pensions <sup>g</sup>	2.2%		2.6%		92.5%	7.5%
Contributory Pension subsidies <sup>g</sup>	1.3%		1.9%		92.5%	7.5%
Debt Servicing	1.9%		2.0%			
<b>Total Revenue</b>	<b>23.5%</b>		<b>22.6%</b>			
<b>Taxes</b>	<b>11.6%</b>	<b>8.6%</b>	<b>11.8%</b>	<b>8.9%</b>	<b>96.8%</b>	<b>3.2%</b>
Direct Taxes	5.2%	2.2%	5.2%	2.3%	94.3%	5.7%
Personal Income Tax	2.2%	2.2%	2.3%	2.3%	94.3%	5.7%
Corporate Income Tax	3.0%		2.9%			
VAT and Other Indirect Taxes	4.2%	4.2%	4.3%	4.3%	99.0%	1.0%
S. S. Contrib. w/o Pensions	1.5%	1.5%	1.6%	1.6%	92.2%	7.8%
Other Taxes	2.2%	2.2%	2.3%	2.3%	92.2%	7.8%
of which S. S. Contrib. with Pensions (in sensitivity analysis)	2.2%	2.2%	2.3%	2.3%	92.2%	7.8%
	11.9%		10.8%			

Source: ENIGH 2008, 2010, and Cuenta Pública 2008, 2010. *Sistema de Cuentas Nacionales y Estatales de Salud* (Secretaría de Salud). *Sistema Educativo de los Estados Unidos Mexicanos, principales cifras (ciclo escolares 2008-2010)*, Secretaría de Educación Pública.

- a. Total Government Spending equals Primary Government Spending plus Debt Services (interests and amortizations).
- b. Primary Government Spending equals Social Spending (without Contributory Pensions) plus Non-Social Spending (without Contributory Pensions) plus Contributory Pensions.
- c. Social Spending equals Social Spending (as defined in Mexico's official budgetary classification) less Spending on Contributive Pensions plus local government Spending on Education and Health Services.
- d. Non-contributory Pensions include the federal "70 y Más" program as well as Mexico City's "Adultos Mayores" and other local government non-contributory pension programs.
- e. Non-Social Spending equals Primary Spending less Social Spending.
- f. Total pension income is treated as market income in the benchmark scenario and as a transfer in the simulation scenario. The ENIGH survey does not identify the source of pension incomes, and thus does not distinguish between contributive public pensions and private pensions.
- g. The distribution of subsidies to public spending on contributory pensions is analyzed by social security institution (IMSS, ISSSTE), but is not included as part of social spending except as part of total pension income in the simulation scenario.
- h. The inter-sectoral distribution is derived from the incidence analysis using ENIGH.

Table 2  
Redistributive Effects and Effectiveness of the Fiscal System:  
Gini Coefficient and Extreme Poverty Headcount Index

	Gini				Poverty Headcount Index						
					2.5 USD PPP				LBM		
	2008	2010			2008	2010			2010		
	Nat.	Nat.	Urban	Rural	Nat.	Nat.	Urban	Rural	Nat.	Urban	Rural
Market income	0.5293	0.5107	0.4806	0.5197	12.2%	12.6%	5.6%	35.6%	18.3%	12.9%	36.1%
Net Mkt Income	0.5171	0.4975	0.4666	0.5123	12.4%	12.6%	5.7%	35.8%	18.4%	13.0%	36.2%
Disposable Income	0.5094	0.4876	0.4622	0.4810	10.8%	10.7%	4.8%	30.2%	16.4%	12.0%	30.9%
Post-fiscal Income	0.5002	0.4809	0.4590	0.4761	10.2%	10.7%	4.8%	30.1%	16.9%	12.6%	30.9%
Final Income	0.4481	0.4294	0.4149	0.3930	--	--					
<b>Change with respect to Market Income</b>											
Net Mkt Income	-2.3%	-2.6%	-2.9%	-1.4%	1.4%	0.6%	1.2%	0.3%	0.5%	0.9%	0.1%
Disposable Income	-3.8%	-4.5%	-3.8%	-7.4%	-11.2%	-14.9%	-14.6%	-15.1%	-10.3%	-6.8%	-14.5%
Post-fiscal Income	-5.5%	-5.8%	-4.5%	-8.4%	-16.2%	-15.1%	-14.5%	-15.5%	-7.8%	-2.2%	-14.3%
Final Income	-15.3%	-15.9%	-13.7%	-24.4%							
<b>Effectiveness<sup>a</sup></b>											
Direct transfers	1.99	2.05			16.67	16.04			11.23		
Total transfers	1.42	1.39			--	--					

Source: Author's estimates using data from ENIGH 2008, 2010, and Cuenta Pública 2008, 2010.

a. Effectiveness is defined as the change in net market Gini associated with transfer divided by transfer share in GDP.

Table 3  
Incidence of Taxes, Monetary and In-kind Transfers, and Indirect Subsidies by Decile Nationally  
(with Respect to Market Income): 2010

	Deciles	Net benefits		Taxes			Benefits		
		Total	Monetary <sup>a</sup>	Total	Direct <sup>b</sup>	Indirect <sup>c,d</sup>	Indirect Subsidies	Direct Transfers	In-kind Transfers
Benchmark : informal consumption	1	137.9	32.1	-6.4	-0.1	-6.3	7.2	31.4	105.8
	2	54.0	8.1	-5.1	-0.4	-4.8	4.6	8.6	45.9
	3	35.3	2.6	-6.1	-0.7	-5.4	3.6	5.1	32.8
	4	25.1	0.0	-6.3	-0.8	-5.4	3.4	2.8	25.1
	5	17.5	-2.8	-7.8	-1.6	-6.2	3.0	1.9	20.3
	6	12.1	-4.2	-8.2	-2.1	-6.1	2.7	1.3	16.3
	7	6.5	-5.7	-8.9	-2.9	-6	2.4	0.9	12.2
	8	1.6	-7.5	-10.3	-4	-6.3	2.2	0.6	9.0
	9	-3.2	-9.4	-11.6	-5.4	-6.2	1.7	0.4	6.3
	10	-10.5	-12.7	-14	-7.9	-6	1.0	0.2	2.2
	All	3.1	-7.7	-11	-5	-6	2.0	1.3	10.8
Sensitivity analysis: no informality <sup>d</sup>	1	128.1	22.4	-16.1		-16.0			
	2	49.3	3.4	-9.8		-9.4			
	3	32.3	-0.4	-9.1		-8.5			
	4	22.9	-2.2	-8.5		-7.6			
	5	16.3	-4.0	-9.0		-7.4			
	6	11.2	-5.1	-9.1		-7.0			
	7	5.9	-6.3	-9.5		-6.6			
	8	1.5	-7.6	-10.4		-6.4			
	9	-3.0	-9.2	-11.3		-6.0			
	10	-9.7	-11.9	-13.1		-5.2			
	All	2.8	-8.0	-11.3		-6.3			

*Source:* Author's estimates using data from ENIGH 2008, Cuenta Pública 2008, SHCP (2010, 2012).

a. Net monetary benefits are direct transfers and indirect subsidies net of direct and indirect taxes.

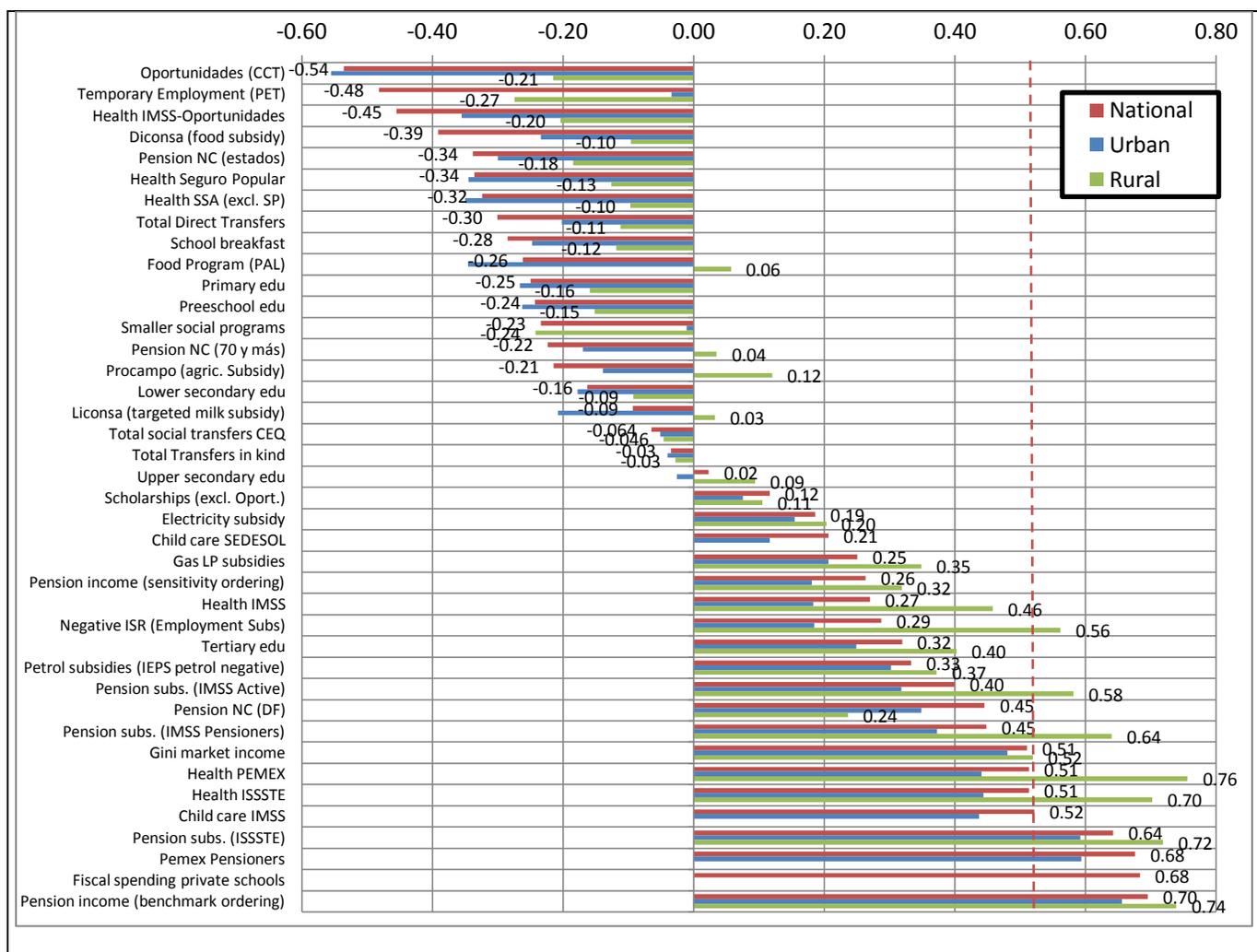
b. Direct taxes include contributions to social security.

c. *Benchmark:* all rural consumption and informal urban consumption (informal markets) is assumed not to pay indirect taxes. VAT and excise taxes are imputed based on the SHCP (2012) decile estimates using this definition of informality.

d. *Indirect tax sensitivity analysis:* all consumers are assumed to pay indirect taxes. VAT, excise taxes, and two special taxes on cars (Tenencia, ISAN) are imputed separately based on the SHCP (2012) decile estimates without assuming informality.

Figure 1

Concentration Coefficients of Public Benefits: National, Urban, Rural, 2010<sup>a</sup>



Source: Author's estimates using data from ENIGH 2008, 2010, and Cuenta Pública 2008, 2010.

a. Coefficients are calculated with population ordered by per capita household *net market income* including pensions (benchmark), except for "Pension income (sensitivity)", which is based on net market income *excluding* pension income (treated as a transfer).