REDISTRIBUTIVE IMPACT AND EFFICIENCY OF MEXICO'S FISCAL SYSTEM

John Scott

REDISTRIBUTIVE IMPACT AND EFFICIENCY OF MEXICO'S FISCAL SYSTEM

John Scott[*]

CEQ Working Paper No. 8

JANUARY 2013

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, but redistributive impact is limited by a comparatively ineffective tax system and a significant share of resources tied to instruments with limited redistributive effectiveness, including subsidies to contributory social security systems, large exemptions in direct and indirect taxes, energy subsidies, and access to public tertiary 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 Codes: I3, H2, H5

[*] John Scott is Professor-Research in the Department of Economics at the Centro de Investigación y Docencia Económic (CIDE), Mexico. The author is grateful for excellent research assistance in data processing provided by Francisco Islas. The paper has benefited from detailed comments by Nora Lustig.

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 programs analyzed include the principal cash and in-kind social transfers, representing 83.3 and 77.1 percent (in 2008 and 2010, respectively) of social spending as defined in Mexico's official classification in these years (91.4 percent and 87.6 percent respectively excluding contributory pensions from the official definition). Together with the consumer subsidies analyzed, the total resources whose incidence is analyzed represent, respectively, 56.8 percent and 50.6 percent of primary public spending in 2008 and 2010.

The principal contributions of this analysis are the following:

1) *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 (see Lustig, Pessino and Scott 2012).
2) *Urban-rural analysis.* A disaggregated incidence analysis of the urban and rural sectors is of particular relevance in the case of Mexico, for two main reasons: (1) the large gaps in living-standards still prevailing between urban and rural populations, and (2) the large differences in the coverage of the tax-benefit system between the two populations. These gaps are closely interrelated. The rural sector represents 23 percent of the national population, dispersed in more than 188 thousand localities of fewer than 2,500 inhabitants, but accounts for 60 percent of the extreme poor, a proportion which has remained constant over the last two decades (Scott 2012a). This level of geographic dispersion has historically limited the access of the poor to markets, as well as to basic public benefits.
3) *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 benefiting future (in pre-funded systems) and current pensioners is analyzed,

but not added to social transfers. Total pension income is included as a cash transfer in a sensitivity analysis. Finally, indirect subsidies are also analyzed, and included in post-fiscal spending.

The resources allocated to benefits and tax burdens analyzed are presented in table 1, for 2008 and 2010. The table also shows the distribution of these benefits and burdens between the urban and rural populations, derived from the household level 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 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, despite a 30 percent increase with respect to 2008. These programs are described in note 1.[1] Public spending on contributory 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 represented public subsidies. [2] Indirect generalized energy subsidies (on domestic electricity, fossil fuels, 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 2.3 percent of GDP in 2011 (Scott 2012b).

Overall, social transfers are pro-rural, allocating 26.7 percent of spending to the 23.2 percent of the national population living in rural localities 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 so, but is the achievement of a series of social spending reforms implemented in the 1990s which reversed 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.

---

[1] *Oportunidades,* Mexico's largest anti-poverty program introduced in 1997 *(as PROGRESA),* a conditional cash transfer covering 5.8 million households in 2011, with 6 million scholarships (average monthly transfer per beneficiary family in 2011: 776 pesos, or 85 USD PPP). *Programa de Apoyos Directos al Campo* (PROCAMPO), a yearly cash transfer of 1,300 pesos per hectare to small-holders (under five has) and 963 pesos to the rest, introduced in 1994 to compensate agricultural workers for the opening up of agricultural markets under the North American Free Trade Treaty. It covers 2.65 million agricultural producers in 2011 (average monthly transfer per beneficiary producer in 2011: 437 pesos, or 48 USD PPP). *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 has been extended to all localities in 2012, with a substantial budgetary expansion (average monthly transfer per beneficiary in 2011: 500 pesos, or 55 USD PPP). *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). *Programa de Enpleo 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). In 2009 and 2010 it was expanded as a response to the 2009 crisis (after having been reduced significantly over 2000-2006): in 2011 it covered 1.1 million beneficiaries with a total budget of 2.9 billion pesos (average monthly transfer per beneficiary in 2011: 224 pesos, or 25 USD PPP). The analysis also covers three broader transfer categories reported in the ENIGH survey without identifying specific programs: a) other non-contributory pensions, b) other public scholarships, and other social transfers. For a more detailed analysis of the evolution of direct cash transfers over the last two decades, see Scott (2012a).

[2] These are the three types of contributory pension subsidies: (1) statutory government contributions to individual pension accounts (*Cuota Social*): imputed to active, affiliated workers, (2) transitory subsidies financing reforms from PYGO to fully-funded pensions (1997 in IMSS, 2010 in ISSSTE); and (3) deficits of unreformed PYGO public sector systems.

In contrast to these reforms on the benefits side, repeated tax reform efforts 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.[3]

The chronic limitation of tax revenues does not arise from exceptionally low tax rates, but rather from low tax productivity, in turn explained by multiple exemptions and ineffective tax collection. Some exemptions are designed to benefit specific groups (e.g. income tax exemptions on agricultural producers), but the principal ones were introduced to make the tax system more progressive. This includes VAT exemptions on food and medicines and the gasoline subsidy. These tax expenditures make the tax system more progressive at the cost not only of lower tax productivity, but also, paradoxically, of lower redistributive impact of the tax-benefit system. The results presented here reveal that 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. 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] The principal exclusions are corporate income taxes, which cannot be adequately imputed at the household level because capital income is not well reported in the ENIGH survey, and oil revenues. Oil rents are not only a non-renewable, unstable and declining revenue source, but can also be analyzed as a highly regressive source of public revenues in the context of Mexico's constitutionally established common property rights on oil resources (Segal 2011).

TABLE 1: RESOURCES ALLOCATED TO TAXES AND BENEFITS IN 2008 AND 2010, AND URBAN/RURAL DISTRIBUTION

	2008	2010	*Change*	Distribution in 2010 derived from ENIGH	
			2008/2010	Urban	Rural
Population (million)	106.7	112.6	5.50%	76.80%	23.20%
GDP (Billion pesos)	12,130	13,076	7.80%	N.A.	N.A.
Gross Nat Inc/capita (PPP US$)	14,520	14,390	-0.90%		
Disposable Income [a] NA (Billion pesos, year)	8,249	9,086	10.10%	N.A.	N.A.
Disposable Income ENIGH (Billion pesos, year)	3,947	4,071	3.10%	88.00%	12.00%
Adjustment Factor NA/ENIGH	2.09	2.23	6.70%	N.A.	N.A.
Market Income (Billion pesos, year, adj. to NA)	8,546	9,384	9.80%	88.90%	11.10%
Total Government Spending	23.76	25.63%	7.90%	N.A.	N.A.
Primary Government Spending	21.99%	23.68%	7.70%	N.A.	N.A.
Social Spending[b]	**9.14%**	**9.94%**	8.70%	N.A.	N.A.
Social spending analyzed (A+B)	**8.36%**	**8.71%**	4.20%	73.30%	26.70%
A) Total Direct Transfers (cash)	**0.74%**	**0.96%**	29.70%	47.90%	52.10%
Scholarships (excl. Oport.)	0.12%	0.14%	15.50%	87.30%	12.70%
Oportunidades total CCT	0.34%	0.44%	27.90%	38.20%	61.80%
Procampo (agric. Subsidy)	0.12%	0.12%	-1.20%	18.30%	81.70%
Non-contributory pensions	0.11%	0.17%	49.10%	60.30%	39.70%
Smaller social programs [c]	0.05%	0.10%	104.60%	47.70%	52.30%
B) Transfers in-kind	**7.61%**	**7.74%**	1.70%	56.20%	43.80%
B1) Health services	**2.94%**	**3.06%**	4.00%	76.80%	23.20%
Health services for uninsured	1.30%	1.34%	3.40%	59.80%	40.20%
Health services social security	1.64%	1.71%	4.50%	90.10%	9.90%
B2) Education	**4.70%**	**4.54%**	-3.30%	76.20%	23.80%
Basic	3.06%	3.04%	-0.80%	71.20%	28.80%
Secondary	0.70%	0.68%	-3.60%	81.30%	18.70%
Tertiary	0.93%	0.83%	-11.50%	90.70%	9.30%
B3) Day care centers (IMSS, Sedesol)		**0.07%**		94.10%	5.90%
B4) In-kind food programs [d]		**0.07%**		60.40%	39.60%
Indirect subsidies analized	**2.83%**	**1.41%**	-50.00%	84.30%	15.70%
Electricity subsidy	0.82%	0.64%	-22.30%	83.50%	16.50%
Gasoline subsidies	1.79%	0.59%	-67.00%	85.10%	14.90%
Gas LP subsidies	0.22%	0.18%	-14.50%	84.40%	15.60%
Contributory pension income[e]	**3.13%**	**3.74%**	19.70%	94.60%	5.40%
Public spending on contributory pensions[f]	**2.15%**	**2.58%**	20.00%	92.50%	7.50%
Total Revenue	23.50%	22.60%	-3.80%	N.A.	N.A.
Taxes	**8.15%**	**9.59%**	17.70%	N.A.	N.A.
Taxes analyzed[g]	**6.10%**	**6.34%**	3.90%	96.80%	3.20%
Direct taxes	**1.92%**	**2.02%**	5.20%	94.30%	5.70%
Indirect taxes	**4.18%**	**4.32%**	3.30%	99.00%	1.00%
Non-Tax Revenues	15.35%	13.01%	-15.20%	N.A.	N.A.
Social security contributions	**2.21%**	**2.25%**	1.80%	92.20%	7.80%
Other Non-Tax Revenue	13.14%	10.76%	-18.10%	N.A.	N.A.

Source: ENIGH 2008, 2010, and Cuenta Pública 2008, 2010.

Notes:
a. All income concepts refer to household income.

b. Social spending is defined as Mexico's official budgetary classification, but *excluding* spending on contributive pensions, and *adding* local-government spending on education and health services.
c. Includes "Other social programs" as reportes in ENIGH, and in 2010 also Programa Alimentario (PAL) and Temporary Employment Program.
d. School breakfast, Liconsa and Diconsa.
e. Contributory pension income is treated as market income in the benchmark scenario and as a transfer in the simulation scenario.
f. The distribution of public spending on contributory pensions is analyzed by social security institution (IMSS, ISSSTE) as individual public spending programs, but not included as part of social spending except in the simulation scenario, where this spending is partially captured by pension income.
g. Taxes analyzed include Personal Income Tax, VAT tax and special taxes on certain goods and services. They exclude Corporate Income Tax.

3. DATA AND ASSUMPTIONS

The general methodology used in this study is described in Lustig, Pessino, and Scott (2012) in this volume. 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.[4] The ENIGH reports incomes and expenditures *after taxes*, and does not report direct or indirect taxes separately. 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 the Finance Ministry (SHCP 2008, 2010).[5]

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.[6]

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*

[4] 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.
[5] 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 household 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).
[6] 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; (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 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."

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).[7] The value of energy subsidies is obtained from official estimates.[8]

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).[9] 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, program spending reported in the public accounts is used to adjust the transfers reported in the survey (*Oportunidades*, *Procampo*, *70 y más*, *Empleo Temporal*, *Programa Alimentario*, DF non-contributory pension[10]). In the case of "non-Oportunidades 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.[11]

In addition to the 2.5 and 4 USD (PPP) international poverty lines, this study uses two national poverty lines, which are the (income) poverty lines used in Mexico's official multidimensional poverty measure. These are the *Línea de Bienestar Mínimo* (LBM), with a value for 2010 of 3.6 and 2.5 USD (PPP) in urban and rural areas, respectively, and the *Línea de Bienestar* (LB), with a value of 7.9 and 4.9 USD (PPP) in urban and rural areas, respectively. For the purposes of the present study the populations identified by the LBM and LB lines will be referred to as "extreme poor" and "moderate poor," respectively.[12]

---

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

[8] The value of domestic electricity subsidies is obtained from p. 285 of *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/.

[9] Disposable net income, SCNM, Cuentas por Sectores Institucionales S.14 Hogares.

[10] State and DF pension programs are reported in the ENIGH 2010 in a general category ("Programas de Adultos Mayores"), but beneficiaries of local programs can be identified from the residence information.

[11] *Education services*: reported student enrollment in public schools by school level. *Health services*: reported use of services by institution. *Seguro Popular* (non-contributory health insurance): reported 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 the 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. *Gasoline subsidy*: imputed on the basis of reported household spending on gasoline, differentiating between public and private transportation (share absorbed by each type of transportation 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).

[12] This definition does not correspond precisely to Mexico's official definition of extreme and moderate poverty, which includes the subset of the population under these lines which also have one (moderate) or three (extreme) social deprivations in the specified non-monetary dimensions.

4. REDISTRIBUTIVE IMPACT AND EFFICIENCY OF MEXICO'S FISCAL SYSTEM: MAIN RESULTS

i 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 here. The combined effect on inequality is a decline in the final income Gini (with respect to the market income Gini) of 15.1 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 3.5 and 4.5 percent in 2008 and 2010, respectively. Adding the effect of indirect taxes and subsidies, the decline equals 5.2 to 5.8 percent in 2008 and 2010, respectively.

Direct taxes increase extreme poverty rates slightly (national LBM line), but by adding direct transfers the net effect is to reduce the poverty headcount by 7.0 percent in 2008, and by 10.3 percent in 2010. Adding indirect taxes and subsidies has the effect of further reducing poverty by 3.8 percentage points in 2008, but *increasing* it by 2.5 percentage points (with respect to disposable income) in 2010. Using the international 2.5 USD line the total post-fiscal (that is, incomes that include direct taxes and transfers and indirect taxes and subsidies) reduction in poverty is 16.2 and 15.1 percent in 2008 and 2010, respectively. In terms of the poverty gap (FGT1) and squared poverty gap (FGT2), post-fiscal extreme poverty (national LBM line) falls by 20.6 (25) and 29.9 (35.3) percent, respectively, in 2010 (2008).

Direct transfers and in-kind transfers 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. The post-fiscal extreme poverty rate in the rural sector is reduced by 15.1 percent, and the poverty gap and squared poverty gap by 27.4 and 36.7 percent, respectively.

Treating all pension income as transfers (sensitivity analysis) rather than as market income (benchmark) has little effect on inequality, but makes a significant difference on market and net market income poverty, which increases by 1-2 percentage points (depending on the poverty line) with respect to the benchmark scenario. 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, the effectiveness of direct and total transfers is reduced sharply when pension income is included as a transfer.

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 on 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 reduced their redistributive effect on extreme poverty.

Another way of appreciating 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 Gini coefficient 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.[13] In other

[13] See a brief description of this decomposition method in Lustig, Pessino and Scott (2012).

words, the compositional shift from indirect subsidies to direct transfers increased the overall efficiency of the fiscal system, and the partial shift to direct transfers was sufficient to maintain the inequality reducing effect, but insufficient to compensate for the effect on the poor of the net cut of 1.1 percent of GDP in post-fiscal benefits (energy subsidies). 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 reducing indirect subsidies without a sufficient compensation through direct transfers clearly harmed the poor.

TABLE 2: REDISTRIBUTIVE EFFECTS AND EFFECTIVENESS OF THE FISCAL SYSTEM: GINI COEFFICIENT AND EXTREME POVERTY HEADCOUNT INDEX

	Gini				Poverty Headcount Index			
					LBM		2.5 USD PPP	
	2008	2010						
	Nation.	**Nation.**	**Urban**	**Rural**	2008	2010	2008	2010
Market income	**0.5278**	**0.5107**	**0.4806**	**0.5197**	**16.3%**	**18.3%**	**12.2%**	**12.6%**
Net Market Income	**0.5171**	**0.4975**	**0.4666**	**0.5123**	**16.7%**	**18.4%**	**12.4%**	**12.6%**
Disposable Income	**0.5094**	**0.4876**	**0.4622**	**0.4810**	**15.2%**	**16.4%**	**10.8%**	**10.7%**
Post-fiscal Income	**0.5002**	**0.4809**	**0.4590**	**0.4761**	**14.6%**	**16.9%**	**10.2%**	**10.7%**
Final Income	**0.4481**	**0.4294**	**0.4149**	**0.3930**	**-.-**	**-.-**	**-.-**	**-.-**
Change with respect to Market Income								
Net Market Income	**-2.0%**	**-2.6%**	**-2.9%**	**-1.4%**	**2.2%**	**0.5%**	**1.4%**	**0.6%**
Disposable Income	**-3.5%**	**-4.5%**	**-3.8%**	**-7.4%**	**-7.0%**	**-10.3%**	**-11.2%**	**-14.9%**
Post-fiscal Income	**-5.2%**	**-5.8%**	**-4.5%**	**-8.4%**	**-10.8%**	**-7.8%**	**-16.2%**	**-15.1%**
Final Income	**-15.1%**	**-15.9%**	**-13.7%**	**-24.4%**	**-.-**	**-.-**	**-.-**	**-.-**
Effectiveness[a]								
Direct transfers	**1.99**	**2.05**	**1.82**	**1.35**	**12.14**	**11.23**	**16.67**	**16.04**
Total transfers (final income*)	**1.42**	**1.39**	**1.40**	**1.09**	**-.-**	**-.-**	**-.-**	**-.-**

Source: author's estimates using data from ENIGH 2008, 2010, and Cuenta Pública 2008, 2010.
a. Effectiveness: change in net market Gini associated with transfer divided by transfer share of in GDP.

ii 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, as workers in the first four deciles are exempted from personal income taxes (PIT) and benefit from a negative income tax (employment subsidy). Indirect taxes are close to neutral due to general exemptions on foods and medicines, as well as the assumption that rural households do not pay VAT. Despite this, the overall tax system nationally and in urban areas is only mildly progressive. This is explained by the relatively small weight of PIT relative to indirect taxes. Total taxes are more progressive within rural areas, reflecting the VAT assumption, and the sector accounts for only 3.2 percent of tax revenues. As noted before, the inclusion in this analysis of oil revenues, comparable in size to total tax revenues considered here, treated as a poll tax, would make the tax system highly regressive.

Transfers are highly progressive overall, and households in the first decile receive on average monetary net benefits representing 32 percent of market income nationally, and total (cash and in-kind) net benefits representing 138 percent. Transfers in-kind account for the bulk of the estimated redistributive incidence of the fiscal system, which reflect their 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 are more important than direct transfers from the third decile onwards, despite their reduction in 2010.

There are additional important differences between urban and rural populations (not shown in the table). Net (direct transfers minus direct taxes) monetary benefits represent an increase in market income of 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 representing 97 and 373 percent of market income, respectively. These contrasting results depend critically on the assumption that rural households evade VAT fully. Relaxing this assumption (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 would still only become net contributors by the 9th rural decile.

Indirect subsidies were larger than indirect taxes for the poorest 40 percent in 2008 (nationally), and reduce net indirect taxes significantly even for higher income households, while in 2010 these subsidies where larger than indirect taxes for the first decile.

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[a]	Total	Direct[b]	Indirect	Indirect Subsidies	Direct Transfers	In-kind Education	In-kind Health	Other In-kind
1	137.9	32.1	6.4	0.1	6.3	7.2	31.4	68.2	36.1	1.6
2	54.0	8.1	5.1	0.4	4.8	4.6	8.6	29.0	16.3	0.6
3	35.3	2.6	6.1	0.7	5.4	3.6	5.1	20.7	11.6	0.4
4	25.1	0.0	6.3	0.8	5.4	3.4	2.8	15.6	9.2	0.3
5	17.5	-2.8	7.8	1.6	6.2	3.0	1.9	12.6	7.4	0.3
6	12.1	-4.2	8.2	2.1	6.1	2.7	1.3	9.7	6.2	0.4
7	6.5	-5.7	8.9	2.9	6.0	2.4	0.9	6.9	5.0	0.2
8	1.6	-7.5	10.3	4.0	6.3	2.2	0.6	5.0	3.8	0.2
9	-3.2	-9.4	11.6	5.4	6.2	1.7	0.4	3.2	2.9	0.2
10	-10.5	-12.7	14.0	7.9	6.0	1.0	0.2	1.0	1.2	0.0
All	3.1	-7.7	11.0	5.0	6.0	2.0	1.3	6.3	4.3	0.2

Source: author's estimates using data from ENIGH 2008, Cuenta Pública 2008, SHCP (2008, 2010).
a. Monetary benefits are direct taxes plus indirect subsidies.
b. Direct taxes include contributions to social security.

iii 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. Contributory pensions are regressive when they are treated as an income component of market income (the benchmark scenario): the concentration coefficient of contributory pensions income nationally is 0.70. However, 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. This reflects the dependence of many pensioners on their pension as their primary income source, so without their pension they fall considerably in the income distribution, but it also shows that access to 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

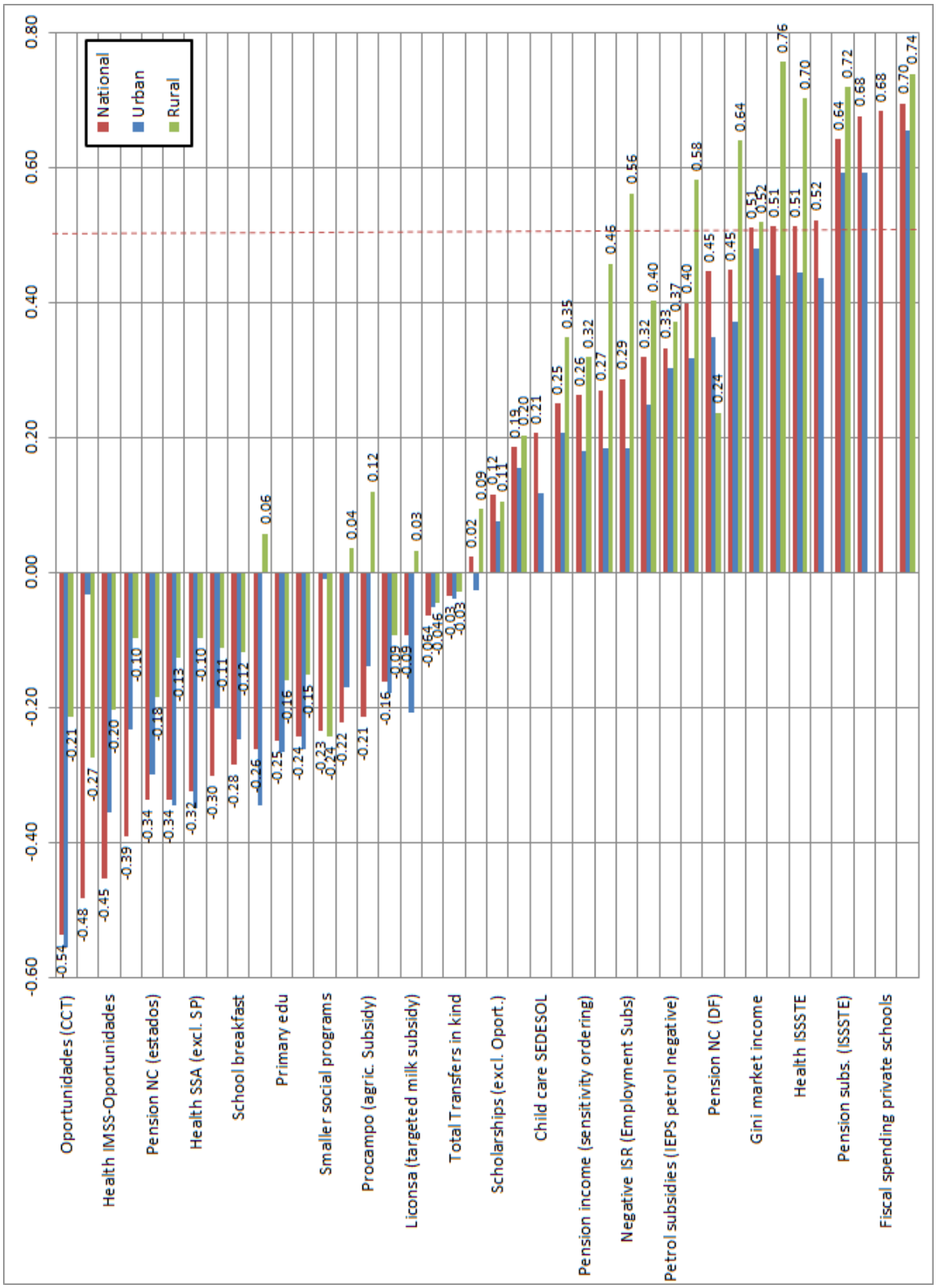
contributory social security systems have minimal rural coverage, and these benefits are regressive within the rural sector.

Despite these differences, 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 for 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 partly from the pro-rural allocation of these transfers.

A significant fraction of programs concentrate resources disproportionately on the non-poor, who, using the national poverty lines, represent 48 percent of the population. 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 is as follows: *Oportunidades* (64.5 percent), *Procampo* (17.7), *70 y más* (10.2), *Programa Alimentario* (PAL) (2.3), *Empleo Temporat* (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 9.1 percent, contributory pension subsidies (to active workers as well as pensioners) cover just 2.5 percent, and public university services just 1.9 percent.

FIGURE 1: CONCENTRATION COEFFICIENTS OF PUBLIC BENEFITS: NATIONAL, URBAN, RURAL, 2010



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

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

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 heterogeneous 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 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 evaluated the *impact* of the instruments analyzed on households' welfare. This would require the application of either experimental or quasi-experimental ex-post evaluation methodologies which are obviously unfeasible for the large-scale, wide-coverage, and long-established interventions analyzed here, like the public education and health 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 which are of particular relevance here: (1) behavioral effects (labor, savings, intra- and inter-household transfers, fertility, etc.), (2) indirect effects through the market system (general equilibrium) or external to it (externalities), (3) combined effects of multiple interventions, and (4) 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 efficient redistributive effects associated with in-kind transfers. These result from an increase in resources allocated to these transfers as well as expansion in the coverage of education and health services over the last two decades in Mexico. There is much evidence, however, that as basic services have achieved or are approaching universal coverage, the more relevant unequalizing factor is the quality of these services. Since these services are universally accessible, especially to urban and upper income groups facing no economic barriers to access, their high degree of progressivity is in itself evidence of low quality: as households rise in the income distribution they opt out of the public system in favor of costly private services.

With these caveats in mind, the principal reform implications of this analysis may be summarized as follows:

1) *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, reveals significant opportunities to improve the system's redistributive impact.

2) *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 redistributively counter-productive. The results presented here show that redistributive efficiency can be increased significantly by shifting resources from indirect tax spending instruments, to direct or in-kind transfers.

3) *Political and economic barriers to entry under high inequality conditions.* The present analysis has not studied the causes of vertical and horizontal fiscal inequalities. There are two general endogenous causes explaining the failure of some important public benefits to reach the poor under conditions of high (pre-fisc) inequality: (1) organized capture by non-poor interest groups, and (2) economic barriers and costs to access public benefits. These barriers include (and overcoming them implies): user fees (shift to tax finance), social security contributions (shift to general tax finance), labor opportunity costs of attending public higher education (shift from supply to demand subsidies), and purchasing power for subsidized goods and services (shift to targeted or progressive subsidies, or direct transfers). Population dispersion in Mexico acts as a third barrier contributing to both income inequality and fiscal inequality.

REFERENCES

CEPAL. 2010. La hora de la igualdad: brechas por cerrar, caminos por abrir. Santiago, Chile: CEPAL.

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.

Mirrlees, James, Stuart Adam, Tim Besley, Richard Blundell, Steve Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles, and Jim Poterba. 2011. Tax by Design: the Mirrlees Review. Oxford University, UK: Oxford University Press.

Scott, John. 2012a. Fiscal Policy, Urban-Rural Inequality and Rural Poverty in Mexico. IFAD (International Fund for Agricultural Development) Report, Rome, Italy.

Scott, John. 2012b, ¿Quién se beneficia de los subsidios energéticos en México? CIDE El Uso y Abuso de los Recursos Públicos, Mexico.

Segal, Paul. 2011. El pertóleo 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 University, UK.

SEP. 2011. Principales Cifras Ciclo Escolar 2010-2011. 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.

CEQ WORKING PAPER SERIES

"Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook," by Nora Lustig and Sean Higgins, *CEQ Working Paper No. 1,* July 2011; revised January 2013.

"Commitment to Equity: Diagnostic Questionnaire," by Nora Lustig, *CEQ Working Paper No. 2,* 2010*;* revised August 2012.

"The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia,Brazil, Mexico and Peru: A Synthesis of Results," by Nora Lustig, George Gray Molina, Sean Higgins, Miguel Jaramillo, Wilson Jiménez, Veronica Paz, Claudiney Pereira, Carola Pessino, John Scott, and Ernesto Yañez, *CEQ Working Paper No. 3,* August 2012.

"Fiscal Incidence, Fiscal Mobility and the Poor: A New Approach," by Nora Lustig and Sean Higgins, *CEQ Working Paper No. 4*, September 2012.

"Social Spending and Income Redistribution in Argentina in the 2000s: the Rising Role of Noncontributory Pensions," by Nora Lustig and Carola Pessino, *CEQ Working Paper No. 5*, January 2013.

"Explaining Low Redistributive Impact in Bolivia," by Verónica Paz Arauco, George Gray Molina, Wilson Jiménez Pozo, and Ernesto Yáñez Aguilar, *CEQ Working Paper No. 6,* January 2013.

"The Effects of Brazil's High Taxation and Social Spending on the Distribution of Household Income," by Sean Higgins and Claudiney Pereira, *CEQ Working Paper No.7,* January 2013.

"Redistributive Impact and Efficiency of Mexico's Fiscal System," by John Scott, *CEQ Working Paper No. 8,* January 2013.

"The Incidence of Social Spending and Taxes in Peru," by Miguel Jaramillo Baanante, *CEQ Working Paper No. 9,* January 2013.

"Social Spending, Taxes, and Income Redistribution in Uruguay," by Marisa Bucheli, Nora Lustig, Máximo Rossi and Florencia Amábile, *CEQ Working Paper No. 10,* January 2013.

"Social Spending, Taxes and Income Redistribution in Paraguay," Sean Higgins, Nora Lustig, Julio Ramirez, Billy Swanson, *CEQ Working Paper No. 11,* February 2013.

"High Incomes and Personal Taxation in a Developing Economy: Colombia 1993-2010," by Facundo Alvaredo and Juliana Londoño Vélez, *CEQ Working Paper No. 12,* March 2013.

"The Impact of Taxes and Social Spending on Inequality and Poverty in Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay: An Overview," Nora Lustig, Carola Pessino and John Scott, *CEQ Working Paper No. 13,* April 2013.

"Measuring Impoverishment: An Overlooked Dimension of Fiscal Incidence," by Sean Higgins and Nora Lustig, *CEQ Working Paper No. 14,* April 2013

"Tax Reform in Latin America: A long term assessment," by Vito Tanzi, *CEQ Working Paper No. 15,* April 2013

WHAT IS CEQ?

Led by Nora Lustig (Tulane University) and Peter Hakim (Inter-American Dialogue), the Commitment to Equity (CEQ) project is designed to analyze the impact of taxes and social spending on inequality and poverty, and to provide a roadmap for governments, multilateral institutions, and nongovernmental organizations in their efforts to build more equitable societies. CEQ/Latin America is a joint project of the Inter-American Dialogue (IAD) and Tulane University's Center for Inter-American Policy and Research (CIPR) and Department of Economics. The project has received financial support from the Canadian International Development Agency (CIDA), the Development Bank of Latin America (CAF), the General Electric Foundation, the Inter-American Development Bank (IADB), the International Fund for Agricultural Development (IFAD), the Norwegian Ministry of Foreign Affairs, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean (UNDP/RBLAC), and the World Bank. http://commitmenttoequity.org

COMMITMENT TO EQUITY

The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).