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The Incidence of Agricultural Subsidies in Mexico

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Abstract

This study presents a comprehensive incidence analysis of agricultural and rural development programs implemented in Mexico over the last two decades, in the context of an ambitious reform effort to modernize the agricultural sector and address rural poverty. This "second agrarian reform" included the 1992 Ejido reform, the liberation of agricultural markets through the North American Free Trade Agreement (1994-2008), and the introduction of innovative programs, including the delinked Procampo transfers and conditional cash transfers (Progresa/Oportunidades). The study presents a critical analysis of the separation between efficiency ("productive") and equity ("social") considerations in the design and evaluation of agricultural/rural development policies. It reviews the evolution of agricultural production, productivity, employment, salaries, and the declining impact of the sector on the income of the rural population. It analyzes the distribution of agricultural subsidies at the state and municipality level, considering the geographic distribution of growth, productivity and employment, as well as the incidence of benefits at the producer and household level, quantifying the conflicting impact of agricultural subsidies and rural development programs on rural income inequality in Mexico.

Resumen

Este estudio presenta un análisis amplio de la incidencia de los programas agrícolas y de desarrollo rural implementados en México durante las últimas dos décadas, en el contexto de un esfuerzo ambicioso de reforma por modernizar el sector agrícola y atacar la pobreza rural. Esta "segunda reforma agraria" incluyó la reforma de 1992 del Ejido, la liberalización de los mercados agrícolas a través del Tratado de Libre Comercio de Norteamérica (1994-2008), la introducción de programas innovadores, incluyendo las transferencias desvinculadas de Procampo y las transferencias condicionadas de Progresa/Oportunidades. El estudio presenta una reflexión crítica de la separación de consideraciones de eficiencia ("productivos") y equidad ("sociales") en el diseño y evaluación de las políticas agrícolas/rurales. Se analiza la evolución de la producción, productividad, empleo y salarios agrícolas, y el impacto decreciente del sector en el ingreso de la población rural. Se cuantifica la distribución de los subsidios agrícolas a nivel estatal y municipal, considerando la evolución geográfica del crecimiento, productividad y empleo, así como la incidencia de beneficios a nivel de los productores y hogares, evaluando el impacto conflictivo de los subsidios agrícolas y programas de desarrollo rural en la desigualdad del ingreso rural.

Introduction

This study presents a detailed and comprehensive incidence analysis of the principal agricultural and rural development programs (ARD) introduced in Mexico in the context of the opening up of agricultural markets through the *North American Free Trade Agreement* in 1994-2008. These programs have been the subject of various evaluations in recent years.[1] The OECD and World Bank reports incorporate quantitative estimates of the incidence of agricultural subsidies at the household/producer level, as well as geographically, based on Scott (2006, 2008). The present study builds upon and extends the latter results in several respects, including an extended discussion of the relevance of distributive analysis in the evaluation of agricultural subsidies, a distributive analysis of the income sources and employment conditions of rural and agricultural households, an expansion in the coverage programs analyzed, and the use of more accurate measures of producer wealth to estimate the distribution of agricultural subsidies at the household/producer level.

The poverty-reduction potential of agriculture as well as is a principal theme of the *World Development Report 2008*, though the report also emphasizes the growing importance of non-farm rural activities. None of the noted evaluations of agricultural policies in Mexico includes an analysis of rural/agricultural labor markets. This remains one of the least studied aspects of the rural economy in Mexico (see Esquivel 2009 for a recent research outline of this area), and has important policy implications in the present context, as the regressive concentration of subsidies in the richer, northern state producers has often been rationalized by the claim that these subsidies "trickle down" to the poor through agricultural labor markets. However, given the compensatory rather than productive objectives in the design and allocation of most of these subsidies, these have tended to favor established large-scale, capital-intensive grain production, rather than the development of more labor-intensive fruit and vegetable production. There is no evidence of positive employment effects of agricultural subsidies at the state level. Over the last decade agricultural employment has declined significantly in most states, but disproportionately so in those receiving the larger subsidy shares (section 5.3).

The study refines the benefit incidence analysis of agricultural subsidies by controlling for variations in the quality and productivity of land, as well as

[1] Recent comprehensive evaluations of agricultural and rural policies in Mexico have been produced by the OECD (2006), IADB (2007) and World Bank (2008), though only the OECD report has been published to this date (September 2009). Evaluations of Procampo have been undertaken by GEA, Auditoría Superior de la Federación (2006), and an advisory group on Procampo's reform set up in 2008 by Sagarpa and IADB (unpublished). *Alianza para el Campo* has been evaluated by FAO (2005).

producer prices, at the state level, thus obtaining a better proxy of the wealth/income of beneficiaries than simple (undifferentiated) land holdings. This reveals that the preliminary assessments of previous studies overestimated the degree of regressivity (concentration on wealthier producers) in the case of the delinked *Procampo* transfers, but underestimated the concentration in the case of *Ingreso Objetivo*, as of most of the other subsidies concentrated on larger commercial producers. Not surprisingly, the analysis also reveals that land assets, thus adjusted, are far more unequally distributed than suggested by the unadjusted land data commonly used to measure land inequality in Mexico and internationally (Deininger and Olinto 2002).

The study is structured as follows. Section 1 considers the relevance of distributive analysis in the present context in the light of the multiple (and often conflictive) objectives of agricultural subsidies. In particular, the section responds to a well-established view (among policy-makers in the sector) dismissing such analysis as the imposition of equity objectives to instruments concerned purely with efficiency objectives. Section 2 describes and quantifies the evolution of the principal agricultural adjustment/compensatory programs in Mexico in the post-NAFTA era. Section 3 reviews the evolution of agricultural growth, productivity and employment and wages, considering the possible effects of agricultural subsidies on these trends. Section 4 reviews recent data on rural poverty and human development deprivation, and analyzes the income sources and labor market profile of the rural poor. Section 5 analyzes the economic impact of agricultural subsidies at the state level, considering agricultural GDP, productivity growth and the agricultural labor market (employment and wages). Section 6 analyzes the distribution of agricultural subsidies at the state and municipality level, and its incidence on growth, productivity and employment. Section 7 presents a benefit incidence analysis of agricultural subsidies at the producer and household level, and estimates the (first-order) impact of ARD expenditures on rural income inequality in Mexico. Last section derives policy recommendations.

1. Is Equity Relevant? Productive, compensatory and distributive objectives in agricultural policy

The distributive incidence of agricultural subsidies in Mexico has received growing attention not only in the cited international reports but also in a number of governmental and non-governmental initiatives as well as in the media.[2] Policy- and decision-makers within the agricultural sector, however,

[2] These include various forums on the reform of agricultural subsidies in Presidencia de la República, Congress (Centro de Estudios para el Desarrollo Rural Sustentable y la Soberanía Alimentaria, CEDRSSA), and the excellent

have traditionally been more skeptical about the relevance of equity considerations for the design and appraisal of agricultural policies. To motivate the distributive analysis to be presented below it is therefore important to clarify this issue at the outset.

The design and evaluation of public agricultural policies in Mexico has often been plagued by a problem which is common in complex policy areas: the imputation of multiple, often conflictive objectives on single policy instruments. This is often aggravated when the objectives are confused and implicit, rather than clearly defined. A notable example of this is the case of Procampo, as will be seen below.

At the same time, the *overall* conception, design and evaluation of rural development and agricultural policies has traditionally been marked by a sharp division in objectives between "productive" and "social" programs, with the former concerned exclusively with increasing the productivity of the agricultural sector, and the latter focused on alleviating rural poverty. This division has been historically ingrained at the federal and local administrations, with a strict division between the ministries responsible for "productive" programs (mainly *Sagarpa*), and those concerned with "social" programs (mainly *Sedesol*). This division has been preserved in the *Ley de Desarrollo Rural Sustentable* and its associated budgetary instrument, the *Programa Especial Concurrente para el Desarrollo Sustentable* (PEC). Despite its intended function as an integrating and coordinating institutional framework for rural development policy, the PEC has served in actual practice as little more than a classificatory scheme, grouping the large set of agricultural and rural development programs by common functions, at the broadest partition productive vs. social.

This division is consistent with a general result from modern welfare economics on the independence of efficiency from equity interventions,[3] which may be interpreted as implying that "productive" programs should focus exclusively on correcting market failures to push GDP towards the economy's productive potential (the *production possibility frontier*), delegating to "social" (redistributive) instruments the task of attaining a particular social optimum within this frontier. An obvious implication of this interpretation is that productive instruments should be evaluated by their success in increasing productivity, not by their distributive incidence (and vice versa for social programs).

data base of the Procampo and other agricultural subsidies published by FUNDAR (www.subsidiosalcampo.org.mx). The incidence of agricultural subsidies has also been reported by Coneval in their *Informe de Evaluación de la Política de Desarrollo Social en México 2008* (graph 16. P.80), and appears to have been used in the definition of priorities in the 2010 proposed federal budget.

[3] This follows from the so-called "fundamental theorems of welfare economics" which prove that every competitive market in general equilibrium is Pareto efficient, and conversely, every Pareto efficient point can be achieved through a general equilibrium (per appropriate allocation of assets).

This may seem to provide a rigorous foundation for the rejection of distributive concerns in the case of agricultural subsidies. Such skepticism is of course often a thinly veiled and self-serving rationalization on behalf of established interests,[4] but it may also be a legitimate concern of agricultural policy-makers, especially given Mexico's agrarian history. For example, Rosenzweig (2008) presents this concern in a recent analysis of agricultural policy produced for a panel of independent experts on Procampo reform set up by Sagarpa and the IDB: "Una de las razones por las cuales la política agropecuaria ha perdido efectividad es por consideraciones de equidad mal entendidas…Al estar basadas las transferencias en los factores de la producción, necesariamente se está buscando un resultado productivo y no un resultado de equidad social…" (pp. 5-6).

Given the prevalence and basic economic logic of this claim, it is important to be as clear as possible in explaining why this is in fact an argument for considering the distributive impact of agricultural subsidies in their overall assessment, rather than ignoring it.

1. Note first that even if the conditions of the welfare theorems did apply, allowing a strict separation in the implementation of efficiency and equity policies, this would still not make the distributive effects of the efficiency instruments irrelevant. On the contrary, designing and implementing the equity instruments to achieve the social optimum would of course require precise understanding of the (collateral) distributive effects of the efficiency instruments. These effects could be neutral or even progressive, thus facilitating the task of the equity instruments. As we will see, agricultural subsidies in Mexico (as in most countries) are actually highly regressive, most of them even more regressive than the distribution of private incomes in the rural sector. Considering their weight in the agricultural/rural economy, this means that they are actually a significant *determinant* of rural inequality in Mexico. This implies that to achieve the social optimum (assuming this gives some positive weight to equity), the redistributive instruments would have to be designed to compensate for the effect of the productive instruments as well as for the other (market) determinants of inequality.

[4] For example, a presentación at Sagarpa by the *Asociacion Mexicana de Secretarios de Desarrollo Agropecuario* (AMSDA, Septiembre 2008; presented to the Secretary of Agriculture and addressed to the President of Mexico) reacting to recent reform proposals, dismissed distributive concerns as "populist", with a sombre threat: "*Lamentablemente se ha externado que el propósito de los cambios en PROCAMPO e Ingreso Objetivo son para quitarle al grande y darle al chico...Es el Rico vs el Pobre. Eso suena a demagogia y populismo anacrónico y provocará enconos que alteren la estabilidad del País.*" The presentation was delivered by Jorge Kondo, President of AMSDA, Secretary of Agriculture of Sinaloa (one of the states with the largest shares of agricultural subsidies), and apparently personally a mayor beneficiary of these subsidies (Merino 2009, based on www.subsidiosalcampo.or.mx).

2. In fact, of course, the idealized assumptions of the welfare theorems are highly unrealistic, and especially so in the context of rural and agricultural markets and institutions. The theorems assume the existence of complete and perfectly competitive markets for all goods and factors of production, perfectly informed economic agents, and costless (perfectly informed) redistributive instruments. In addition to assuming no market failures, the welfare theorems assume no failures in non-market (political, government and non-government) institutions required to identify and implement a socially optimum distribution. The failure of these conditions to apply does not mean that the welfare theorems are of no practical interest, but their guiding power is "negative" or indirect rather than direct: it lies in the capacity to identify precisely and exhaustively the falsifying conditions to be addressed by public policy.
3. In the present context, this means that the efficiency and equity considerations are not easily separable in the design and evaluation of agricultural subsidies and agricultural/rural development policies more generally. Given the market-failures prevalent in the rural/agricultural sector, large inequalities between producers in the access to inputs and markets represent a mayor restriction to productivity and growth. The close interdependence between efficiency and equity conditions in economic growth has received much attention in recent years, as reviewed in the *World Development Report 2006: Equity and Development*, the WDR 2008 in the context of agriculture, and World Bank (2004, 2006) and Levy and Walton (2009) for the case of the LAC region and Mexico, respectively. This interdependence may be illustrated with many specific examples, and even with the broad history of agrarian reform and agricultural support policies in Mexico over the last century. At the risk of gross simplification, this history may be summarized as follows:
    a) The Agrarian Reform produced atomized agricultural land holdings and drastically constrained land markets under the *Ejido* system,
    b) The principal agricultural support policies applied in this period—price-based subsidies and irrigation and other input subsidies—benefited mostly large-scale and capital (irrigation)-intensive grain producers in the North, but failed to reach the bulk of small-scale and subsistence producers created by the Reform, constraining them to low-quality, low-investment, technologically primitive production units. It was only by the end of the century that a mayor transfer program was introduced capable

of reaching the bulk of these producers (Procampo, 1994), even if their share of the transfer was limited to their share in land-holdings.

c) In addition to the historical bias against small-holders, subsistence farmers and landless agricultural workers in the allocation of agricultural subsidies, poor rural households were also excluded from most social and anti-poverty programs, again until the end of the century. These were allocated with a strong *urban bias* which was only reversed with efforts to expand the coverage of basic education and health services to rural areas in the 1990's, including especially the creation of the innovative *Progresa* CCT program in 1997 (renamed Oportunidades in 2001).

4. To recap the separation of *equity* and *efficiency* instruments: land reform and (belatedly) social programs were used to address rural inequality, while agricultural subsidies were concentrated on the larger producers on purely efficiency considerations. The outcome of these policies, as we will see bellow, is an agricultural sector which is both highly unequal, and relatively inefficient, as well as resilient to reform (section 3). At the centenary of the Mexican Revolution, two decades after the "second agrarian refiorm", the rural economy is still trapped in a low growth, high inequality equilibrium, barely sustaining the poorest of the poor while supporting some of the richest and most generously subsidized individuals in Mexico. This outcome reflects many failures of design and implementation within the two mayor policy categories (distributive and productive), but is also explained by the historical separation of these instruments, leading respectively (at one extreme) to a populous, commercially unviable small-holder and subsistence sector, which has survived as a form of minimal social insurance, and (at the other end) large-scale northern grain producers receiving the bulk of subsidies without much evidence of significant impacts in productivity or employment (see sections 3 and 5). In the middle, are the small to middle-sized (5-20+ Has) producers with undeveloped potential, constrained in their access to credit, insurance, technology, marketing and other critical inputs. These are generally not poor enough to benefit from Progresa or other social programs and not large enough to attract significant agricultural subsidies under present allocation criteria, but may well be the potential beneficiaries with the highest impact: such support would be *both* more equitable and more productive, relaxing significant binding constraints on agricultural production (in contrast to large producers which are

already close to their production-possibility frontiers, partly as a consequence of the cumulative effect of past historical investments in their favor). A similar argument was made fifteen years ago by De Janvry *et al*. (1995), who showed that the strata of middle-sized producers had the most potential to benefit from support to facilitate crop reconversion and modernization under NAFTA. Unfortunately, while Procampo did succeed in allocating resources to these producers at least proportional to their share in cultivated land (41%, see graph 36), the required complementary inputs failed to reach this strata (both because the input support programs were significantly curtailed, and those which do exist are concentrated on the larger producers, see section 6.1).

2. Agriculture Trade Adjustment and Compensatory Programs after NAFTA

The principal ARD policies currently implemented in Mexico originated in the context of a broad, market-orientated reform effort to modernize the agricultural sector in the early and middle nineties, in the context of both, the opening up of agricultural commodity markets under the *North American Free Trade Agreement* (NAFTA) in 1994 with a 15 year transitional period, and the constitutional reform of the *Ejido* land tenure system in 1992.

Mexico's "second agrarian reform", as this ambitious reform effort has rightly been labeled (by one of its principal architects, see Gordillo *et al*. 1999), was accompanied by extensive reforms in ARD policies, introducing more efficient (less distortionary), as well as more equitable policy instruments. The long-drawn "first" agrarian reform, following the Mexican Revolution, was accompanied from the Cardenas administration in the 1940's until its formal termination in 1992, by two principal forms of agricultural support: input support (irrigation, fertilizers, stockholding) and market price support (MPS). By design, these support policies where both highly distortionary and inequitable, failing to reach the small and subsistence farmers created by the agrarian reform.

Farmers were partly compensated for the gradual reduction of MPS under NAFTA through three principal support programs: a) the *Programa de Apoyos a la Comercialización,*[5] an output-based subsidy program introduced in 1991, b) the *Programa de Apoyos Directos al Campo* (*PROCAMPO)*, a per hectare direct transfer program decoupled from production and commercialization, introduced in 1994, and c) *Alianza para el Campo,* an investment support program (or family of programs) offering matching grants and support

[5] The *Programa de Apoyos a la Comercialización* and *PROCAMPO* are both managed by *Apoyos y Servicios a la Comercialización Agraria* (*ASERCA*).

services, introduced in 1996. The expectation was that these programs would not only play a compensatory role in the face of growing external competition but, in the case of *Procampo* and *Alianza*, would also provide the necessary support for farmers to modernize production and switch to higher value crops in the context of the newly liberalized land and product markets.

In the context of Mexico´s dual agricultural sector and previous agricultural support policies, the decoupled design of *Procampo* was revolutionary in terms of efficiency as well as equity. By decoupling transfers from production/commercialization, the program was expected to minimize distortions in productive decisions and to transfer resources directly to subsistence farmers, for the first time in Mexico's post-revolutionary history. The original decree for the creation of Procampo lists an extended list of objectives, including prominently as "one of its main objectives", increasing the income of "2.2 million rural subsistence producers which were excluded from the support system".[6]

The reform in agricultural support policies was accompanied by a reform in rural development and anti-poverty policies, involving the following inter-linked elements: a) the introduction of innovative and effectively targeted rural programs, b) a reallocation of social spending towards the rural sector, reversing the marked urban bias of social spending in previous decades (in anti-poverty programs, food subsidies, basic education and health services for the uninsured), and c) an increase in the relative share of rural development (social) over agricultural support (productive) programs in overall ARD spending. The principal program introduced to implement these reforms was the *Programa de Educación, Salud y Alimentación* (*Progresa*, in 1997; renamed *Oportunidades* in 2001), offering direct cash transfers to poor rural households conditional on human capital investment (attending basic education and using health services).[7] Three important targeted rural development programs introduced in this period are: a) the *Fondo de Aportaciones para Infraestructura Social* (*FAIS*, in 1996), a large decentralized

[6] *Decreto que Regula el Programa de Apoyos Directos al Campo Denominado Procampo*, DOF, 25 de julio de 1994. The list of objectives includes (emphasis added): 1) *mayor participación en el campo de los sectores social y privado para* ***mejorar la competitividad interna y externa****; 2)* ***elevar el nivel de vida de las familias rurales****; 3)* ***modernización del sistema de comercialización****, 4)* ***incremento de la capacidad de capitalización*** *de las unidades de producción rural; 5)* ***facilita la conversión*** *de aquellas superficies en las que sea posible establecer actividades que tengan una mayor rentabilidad, dando* ***certidumbre económica*** *a los productores rurales y* ***mayores capacidades para su adaptación*** *al cambio, que demanda la nueva política de desarrollo agropecuario en marcha, y la aplicación de la política agraria contenida en la reforma al artículo 27 constitucional; 6)* ***impulse nuevas alianzas entre el mismo sector social y con el sector privado*** *en forma de asociaciones, organizaciones y sociedades capaces de enfrentar los retos de la competitividad,7)* ***adopción de tecnologías más avanzadas*** *y la implantación de modos de producción sustentados en principios de eficiencia y productividad; 8) debido a que más de* ***2.2 millones de productores rurales que destinan su producción al autoconsumo se encontraban al margen de los sistemas de apoyos****, y en consecuencia en desigualdad de condiciones frente a otros productores que comercializan sus cosechas, se instrumenta este sistema, que tiene* ***como uno de sus principales objetivos mejorar el nivel de ingreso de aquellos productores****,* and 9) ***contribuir a la recuperación, conservación de bosques y selvas y la reducción de la erosión de los suelos y la contaminación de las aguas*** *favoreciendo así el desarrollo de una cultura de conservación de los recursos rurales…*

[7] In 2001 the program was extended to urban areas and upper-secondary education and renamed *Oportunidades*.

fund for basic infrastructural investment replacing the *Programa Nacional de Solidaridad* (PRONASOL) of the Salinas administration (1988-1994); b) the *Programa de Empleo Temporal* (*PET*, in 1995), a multi-agency, self-targeted temporary employment program;[8] and c) the *Rural Development Program* (1996), the principal Alianza program formally targeted to poor producers.

The principal instruments emerging from these reforms have been retained with some minor changes after 2000, though the pace and depth of the previous reform effort has not been sustained in the present decade. A potentially important institutional innovation was the passing of an umbrella law for rural development, the *Ley de Desarrollo Social Sustentable* (2001), which included an effort to create a coordinating framework for ARD expenditures, the *Programa Especial Concurrente para el Desarrollo Rural Sustentable* (PEC). However, beyond offering a budgetary classification scheme to order ARD expenditures, the PEC has not had much impact on the allocation of ARD resources.

Since 2000, ARD spending has almost doubled in real terms, reaching a federal ARD budget of 204 billion pesos for 2008. This expansion happened in the context of the liberalization of most agricultural products in 2003 and the liberalization of the "sensitive" products (maize, beans, sugar and milk powder) in 2008. The successful political mobilization by farmer organizations led to the negotiation of the *Acuerdo Nacional para el Campo* (2003). As will be shown below, the consequent expansion of APE was allocated to the more distortionary instruments (and some new, like agricultural Diesel subsidies), a partial retrenchment of the previous reform effort.

The principal challenge for a quantitative historical analysis of APE is the availability of a sufficiently comprehensive and consistently classified time-series data base. Perhaps the best data available for this purpose is the *Producer and Consumer Support Estimates OECD Database1986-2006* (OECD 2007), which covers the period before and after the reforms and uses a careful classification scheme designed to monitor the economic efficiency of agricultural support policies. Its principal limitation, as in all such efforts, is the accuracy and consistency of the data fed into this scheme.[9] Annex A1 lists the programs included in the corresponding OECD categories.[10]

The following graphs (1-4) show the evolution of the principal support instruments. This includes tax financed APE as well as MPS policies through trade protection, involving implicit transfers from/to consumers. It also

[8] Originally the PET involved the participation of Sedesol, Semarnat, SCT, and Sagarpa, but the Sagarpa component has been recently discontinued.

[9] For some limitations of this data see Wise (2004). The present analysis uses the OECD data reported for Mexico, corrected for an error in the reporting of the Procampo budget for 1999-2002.This error is large enough to imply a serious underestimation of the total support estimates for the relevant years. For the years 1999-2002 the OECD data reports numbers of the order of 300 million pesos, while the expenditure numbers are above 10,000 million. There may well be other, less obvious errors, but a systematic revision of the OECD data to ensure full consistency over time is beyond the scope of the present study.

[10] For detailed definitions and sources see OECD (2007a,b).

includes "fiscal spending", or budget revenue lost through tax concessions. We classify the instruments by the degree of distortions they impose on agricultural goods and input markets, and evaluate the historical trend in the allocation of support resources between these types of instruments. The most distortionary forms of support include MPS and payments based on current output and variable input use, while the least distortionary include spending on sectoral public goods, classified in the OECD terminology as *General Services Support Estimate* (GSSE), and payments based on historical entitlements (based on area, animals, revenues or income).

This data reveals the following broad trends in agricultural support policies:

a) Total support to producers (TSE)[11] has followed a broadly cyclical pattern: it declined in the second half of the 80's (following the 1983 crisis and 1986 trade liberalization through GATT), increased significantly between 1989 and 1994 (reaching its highest historical level in real terms in 1993), collapsed in 1995 following the "tequila crisis", expanded between 1996 and 2002, fell in 2002-2004, and started to grow again after 2004.
b) Transfers from consumers through MPS accounted for a majority of producer support in 1990-1993 and 1997-2002.
c) Tax-financed support (APE) presents a declining trend between 1986 (80 billion MP) and 1999 (30 billion), punctuated by temporary surges in 1989-1990 and 1993-1994, and a growing trend from 2000 to 2006 (50 billion).
d) The principal form of APE up to 1993 period has been input based, in its majority associated with variable inputs, but its trend has been declining until 1998. Since then it has bounced back, in particular through the growth of variable inputs (energy subsidies, principally), and by 2006 it again accounted for the largest share in APE.
e) The introduction of Procampo in 1994 changed the composition of PSE significantly towards a less distortionary policy mix. In terms of its budgetary weight as well as coverage, Procampo was the largest APE program over the last decade. However, in the course of the decade its relative share among the three principal programs has declined from 80% to almost 40%, as Apoyos and Alianza transfers have increased (graph 9). Procampo's coverage has been gradually eroded between 1994 and 2006, from 3 to 2.2 million producers,

[11] TSE is defined as the sum of transfers to producers from taxpayers and from consumers, net of budget revenues (the import receipts associated with MPS policies). "Fixed capital formation" includes principally financing (FIRA, etc.), Alianza capital grants, and Procampo capitalize. "Current/non-current A/An/R/I" refers to transfers based on the following actual/historical variables: area planted/animal numbers/receipts/income. For further detail see Annex A1 and OECD (2007a,b).

and from 13.3 to 11.8 million hectares. This may have resulted in part because of a failure to replace the natural attrition from the program.

f) Public goods accounted for an important share of APE before 1994, mostly in the form of Conasupo public stockholding facilities and hydrological infrastructure. Though they declined with the dismantling of Conasupo, contracting to a third of their 1994 value by 1996, they have increased steadily thereafter mostly through the expansion of inspection and marketing services.

Overall, the 1990s reforms led to a sharp reduction in the participation of the most distortionary instruments—MPS, output and variable input payments—with the combined share of the latter two in APE declining from 50% to 20% between 1990 and 1996.[12]On the other hand, the share of the least distortionary—public goods and payments based on historical entitlements—increased from a 30% to 70% in the course of that decade. In the present decade, however, these trends have been reversed, with the more distortionary instruments gradually gaining ground and the least distortionary loosing it.

The degree of agricultural bias in public spending can be measured with FAO's "Agricultural Orientation Index" (AOI), defined as the share of ARD spending in total public spending, divided by the share of agriculture GDP in total GDP. Even in 2001, the last year available in the comparative FAO database, when APE in Mexico was close to its lowest point in the last two decades, within the LAC region Mexico is the country with highest AOI. Considering that ARD spending has almost doubled in Mexico in real terms between 2000 and 2008, it seems likely that Mexico would still be found at the upper end of this distribution.

To analyze APE separately from rural development expenditures we recalculate the AOI using the OECD data reviewed above. We also modify the FAORLC estimates by using a narrower public expenditure category, *gasto programmable,* which excludes non-discretionary expenditures (mandatory tax revenue shares to the states and debt payments), and thus better represents the policy stance and fiscal effort on behalf of ARD. This provides a rather different assessment than suggested by the above graph. From 1986 to 2000, we observe a declining trend in the economic importance of the sector as well as the share of public resources allocated to it, interrupted by a growth of ARD expenditures in 1991-1993, associated with the Salinas reforms.

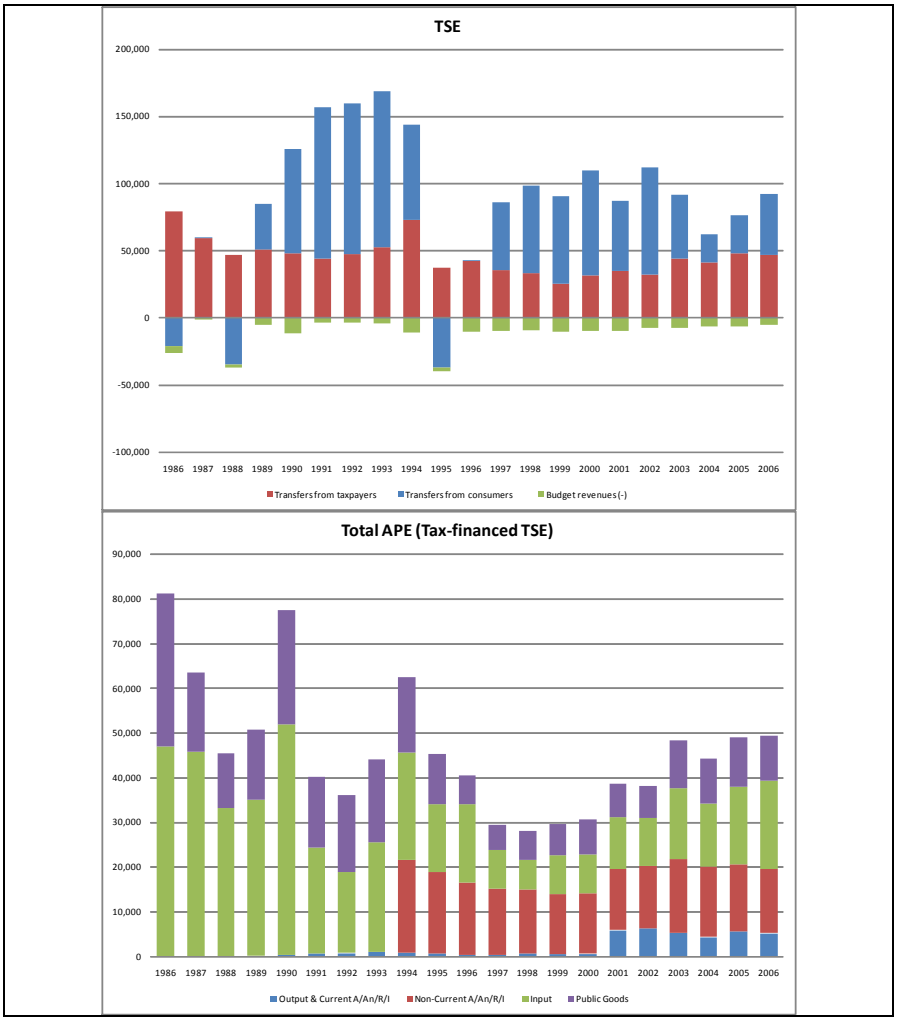
[12] The sharp fall in payments based on variable inputs in 1997-2000 may be due to inconsistencies in the OECD data. The fall in 1997 corresponds to a drop in the electricity subsidy for groundwater pumping for irrigation, while the sharp increase in 2001 corresponds to the introduction of large energy subsidies. The new output-based payments in 2001 correspond to the introduction of *Ingreso Objetivo* (ASERCA), with large subsidies for grains and other crops in 2001.

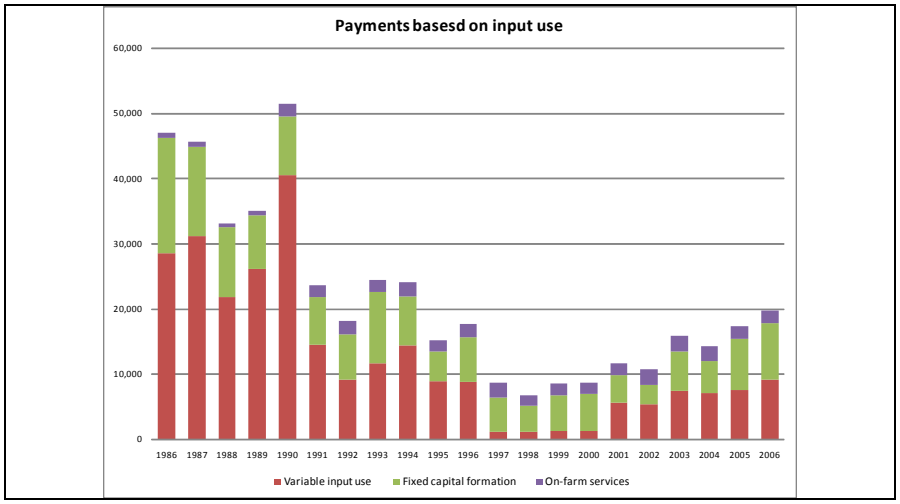
Despite the use of a narrower budgetary concept for total public spending, the AOI has fluctuated within the 0.5-1 range over the period (with the exception of 1994), indicating a relative bias in public spending against rather than for agriculture. The declining trend has been reversed in the present decade, and the AOI has started to converge towards unity.

In the case of ARD expenditures, ignoring the second half of the 1980's (which is distorted by a sharp adjustment in public spending in 1986-1988), the share of ARD in total rural expenditures is at present similar to what it was in 1990, approximately 10%. Measured relative to AGDP/GDP, which has halved over this period, the ARD spending effort has almost doubled, suggesting a strong rural bias in public expenditures. Using the size of the rural economy, as estimated above, however, the "rural orientation index" (ROI), as we may call it, is only 0.83 (it would be closer to unity if we add the electricity subsidy and agricultural fiscal exemptions to PEC).

Measured relative to GDP, APE spending in Mexico is comparable to the OECD average and slightly higher than the US. Given Mexico´s limited fiscal capacity (55% of the OECD average, 73% of the US), however, this expenditure represents a much larger fiscal effort: 4.9% of government revenue (vs. 2.8% in the OECD and just 1.6% in Brazil) and 8.5% of tax revenue.

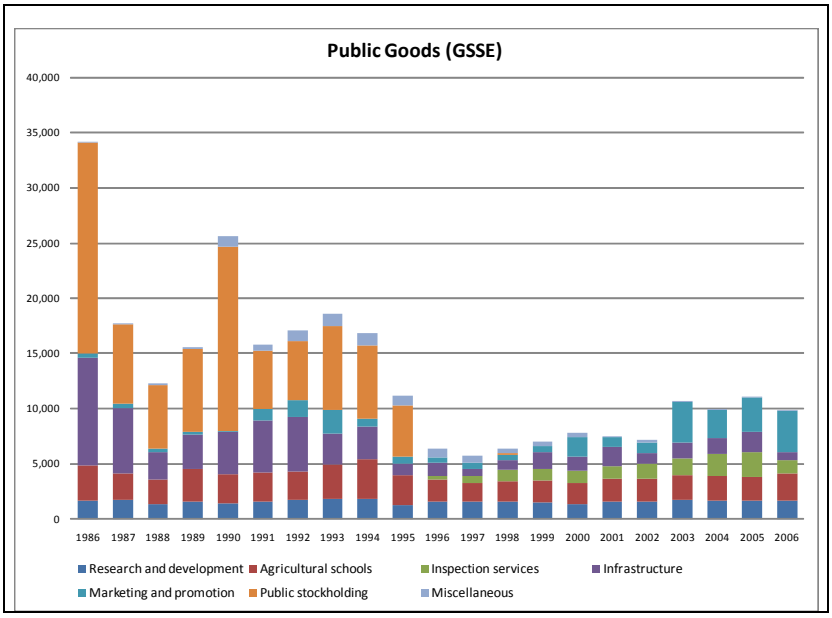
Graph 1. Agricultural Support: Total Support Estimate (TSE), APE, and payments based on inputs 1986-2006 (MP of 2006)





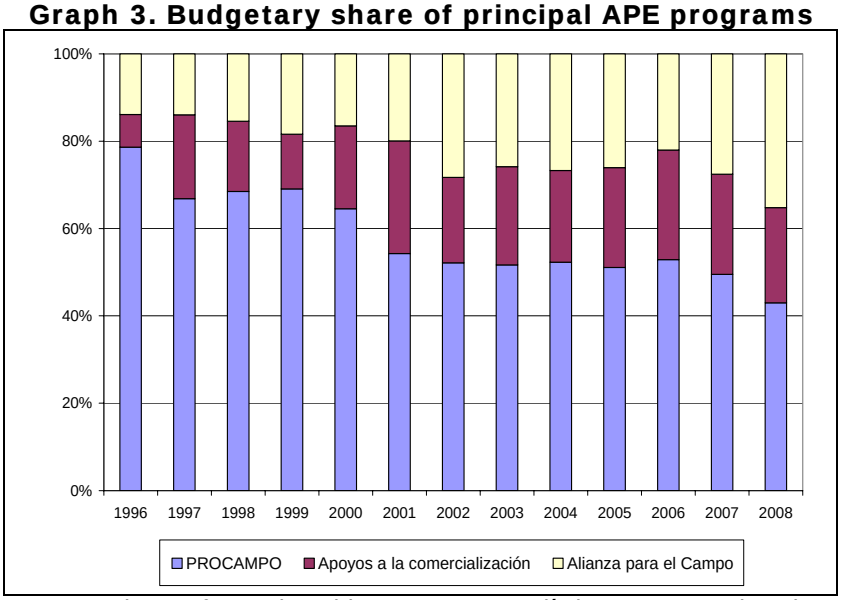
Source: OECD (2007). Note on definitions: "TSE" (total support estimate) is the sum of transfers to producers from taxpayers and from consumers, net of budget revenues (import receipts associated with MPS policies). "Fixed capital formation" includes principally financing (FIRA, etc.), Alianza capital grants, and Procampo capitalize. "Current/non-current A/An/R/I" refers to transfers linked to the following actual/historical variables: area planted/animal numbers/receipts/income. For further detail see Annex A1 below and OECD (2007a, b).

Graph 2. Agricultural Support: Public Goods (GSSE) 1986-2006 (MP of 2006) (MP of 2006)



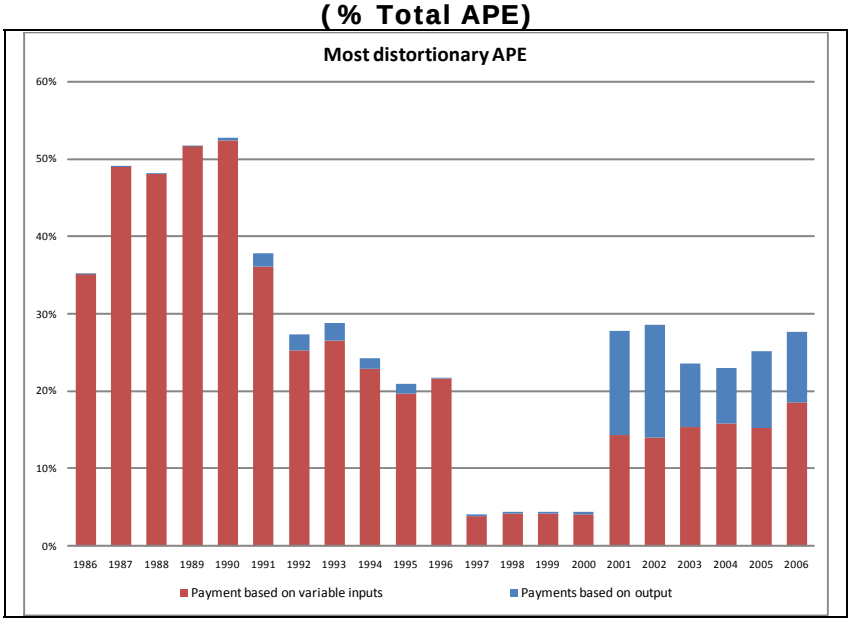
Source: OECD (2007).

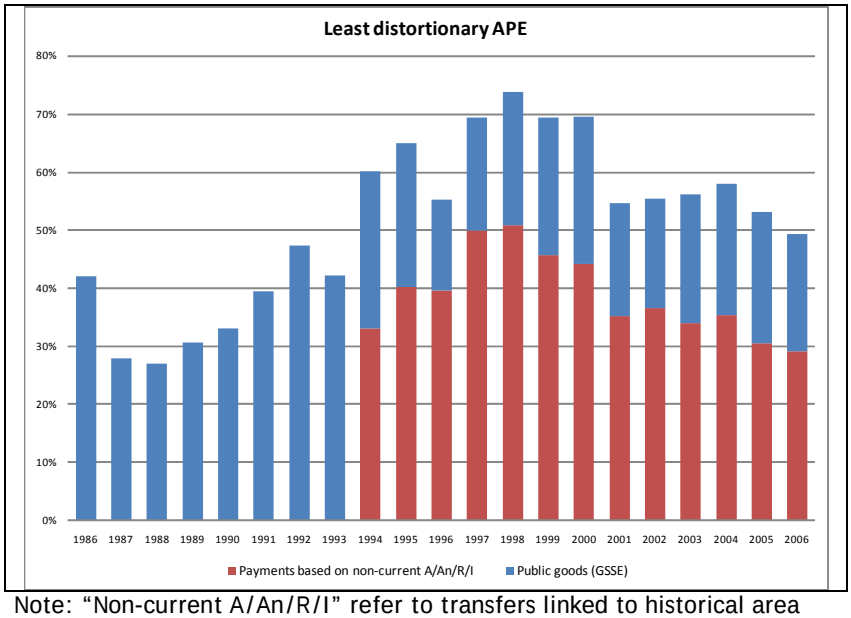
Graph 3. Budgetary share of principal APE programs



Source: Primer Informe de Gobierno, Anexo Estadístico, 2007. PEF (2008).
Note: Actual spending, except 2007 and 2008, which report budgetary commitments.

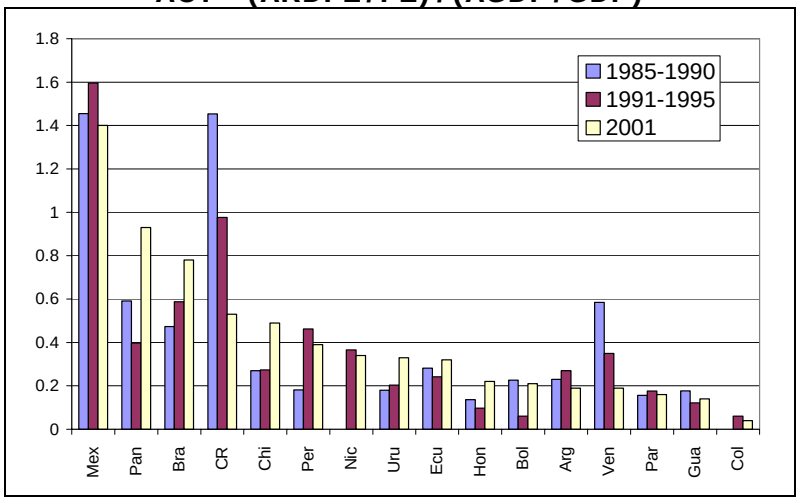
Graph 4. Least and most distortionary APE (% Total APE)





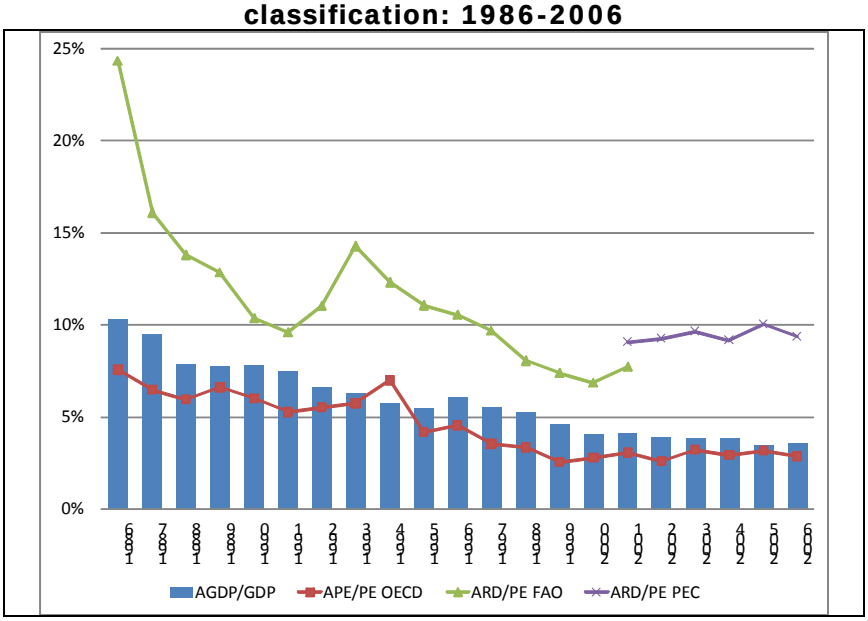
Note: "Non-current A/An/R/I" refer to transfers linked to historical area planted/animal numbers/receipts/income. For further detail see Annex A1 below and OECD (2007a, b).
Source: OECD (2007).

Graph 5. "Agricultural orientation index"
AOI = (ARDPE/PE) / (AGDP/GDP)



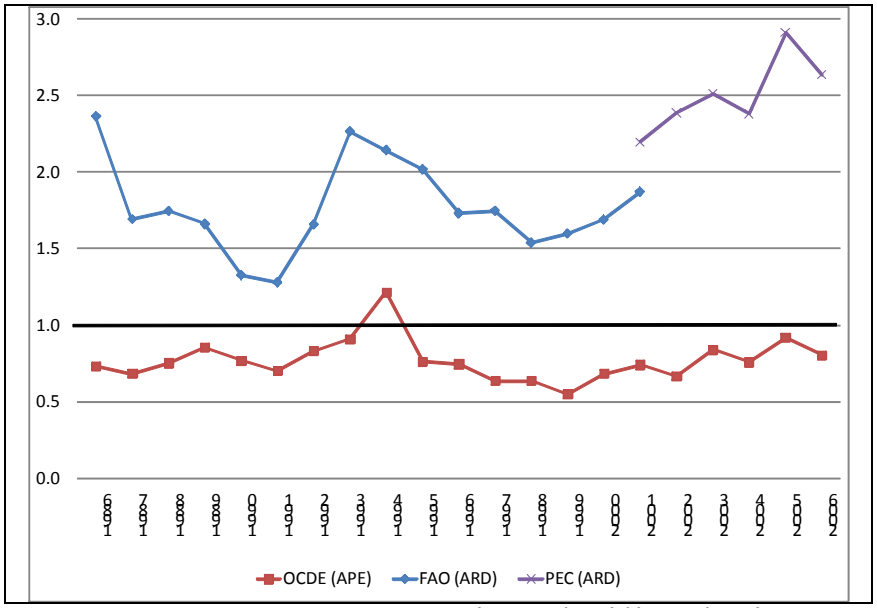
Source: FAORLC. AOI = (ARDPE/PE)/(AGDP/GDP).

Graph 6. Evolution of AGDP/GDP and APE/TPE (ARD/TPE) ratios using OECD, FAORLC and PEC classification: 1986-2006



Sources: FAORLC, OECD, PEC, INEGI. TPE = gasto programmable.

Graph 7. Evolution of Agricultural Orientation Index (AOI) using OECD, FAORLC and PEC classification: 1986-2006



Source: FAORLC, OECD, PEC, INEGI. AOI = (ARD PE/TPE)/(AGDP/GDP). TPE = gasto programmable.

Table 9. Agricultural fiscal effort: comparative perspective				
		APE/GDP (%)	Gov. Revenue/ GDP (%)	APE/Gov. Revenue (%)
Mexico	Tax Revenue	**0.9**	**19**	**4.9**
	Tot Revenue		**11**	**8.5**
Brazil		0.6	35	1.6
US		0.7	27	2.7
OECD		1.0	36	2.8

3. Subsidies, Growth, Productivity, and Employment in Agriculture

3.1. Growth and Productivity (Land and TFP)

Between 1980 and 2007 agricultural GDP has grown by an average yearly rate of 1.6%, while total GDP has grown by 2.7%, so AGDP/GDP has contracted from 7% to 5.4% over this period. However, the gap between the national and agricultural growth rates has narrowed in more recent years: agriculture GDP lagged in the first years of the liberalization reforms, but the gap has narrowed after 2000. In 2001 and 2003, when total GDP growth stagnated (0.2% and 1.3%, respectively), agriculture GDP grew by 3.5% and 3.1%. The latter trend, together with the stability of basic food prices and Oportunidades transfers is widely credited for the unexpected reduction in rural poverty during the stagnant 2000-2002 period (Székely and Rascon 2005), as described below.

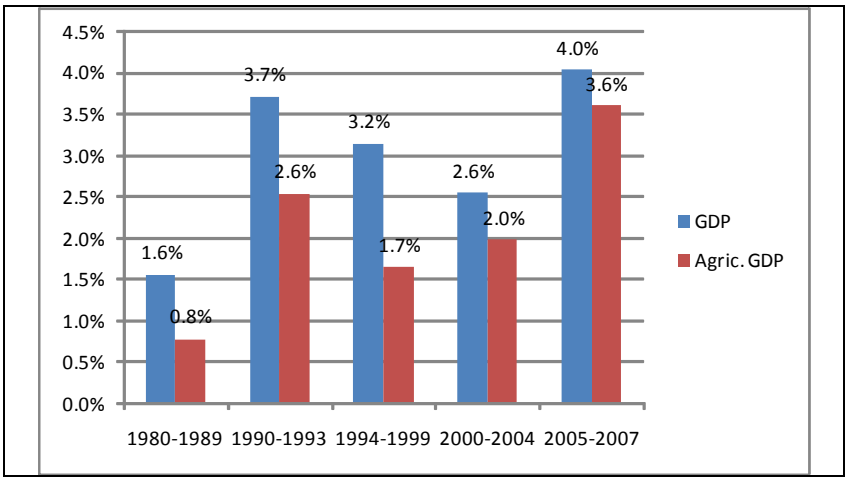
Immediately after 1994 we observe a significant increase in the production of fruits and vegetables, but only a modest expansion in grains consistent with the pre-1994 trend. The former was associated with an expansion in cultivated land in the case of vegetables, and an increase in the productivity of land in the case of fruits. By contrast, after 2000, the growth of vegetable production slows down, and in the case of fruits declines, while grains grow at an average 7.5% annually, entirely through increasing land productivity. The 1988-1994 and 2000-2004 periods present similar trends in the relative behavior of grain vs. fruits & vegetable production and cultivated land, in favor of the former. This coincides with the surge of MPS and output-based support for grains, as well as the expansion of variable input-based support, which is also mostly linked to the latter.

These trends may indicate a conflict between the market liberalization process, initiated in the early 1990s and culminating in 2008, and agricultural support policies. Both MPS and output-linked ASERCA payments have targeted mostly traditional crops, particularly maize and other grains, as well as raw sugar and some animal products like milk and poultry meat. Fruits and vegetables, on the other hand, have not received significant support, but

have benefited from the liberalization of agricultural markets. Far from being resolved, this conflict has been revived in the present decade, with the gradual shift back towards more distortionary support policies. Subsidies have been biased towards traditional crops (grains), thus hampering rather than supporting the comparative advantages towards fruits & vegetables under market liberalization.

Considering the correlation between ARD expenditure and agricultural performance, graph 8 compares growth rates in agricultural GDP and TFP over the 1981-2001 period with average ARD/GDP expenditure rates for 1985-2001 for the principal LAC countries (ordered by ARD/AGDP). These rates vary widely, from Mexico, with ARD expenditure equal to 34% of agricultural GDP, to Colombia, with less than 3% of GDP.[13] The figure suggests if anything a negative correlation between the countries' ARD expenditures and growth of GDP and TFP. Excluding Costa Rica, the six top spenders (above 15% of agricultural GDP), have the lowest agricultural GDP growth rates over the period. On the other hand, the high growth agricultural sectors (both GDP and TFP) are concentrated in the lower and middle end of the ARD spending distribution.

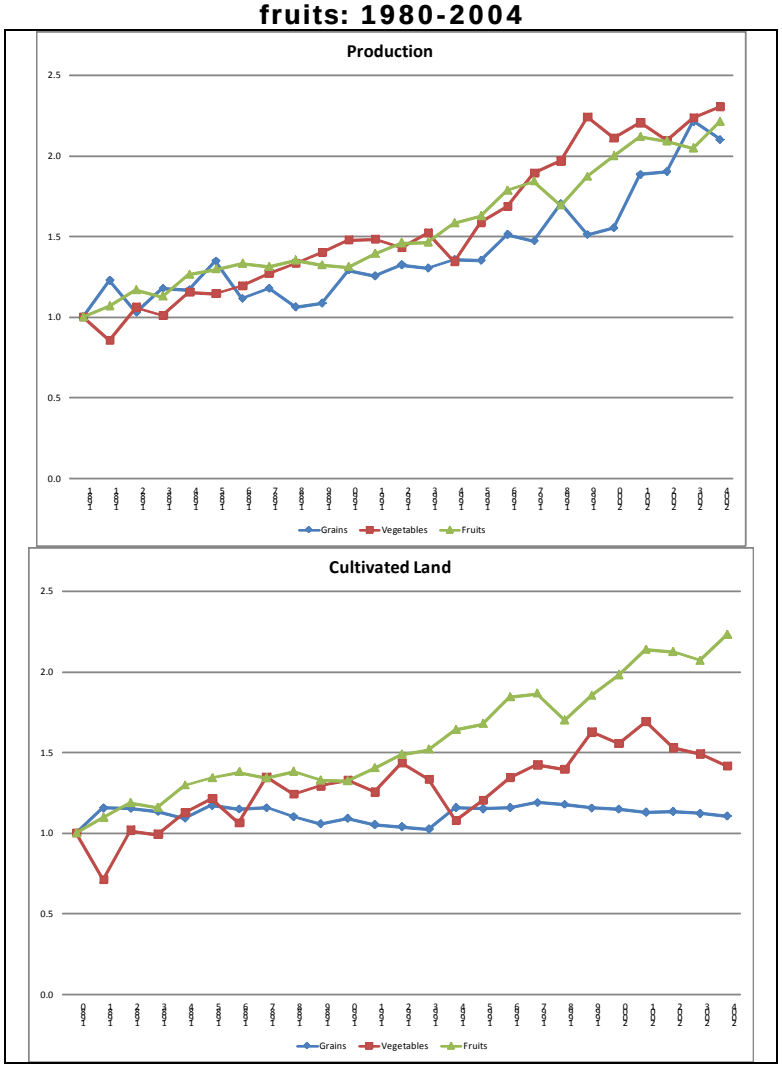
Graph 8. Average annual GDP and AGDP growth: 1980-2007

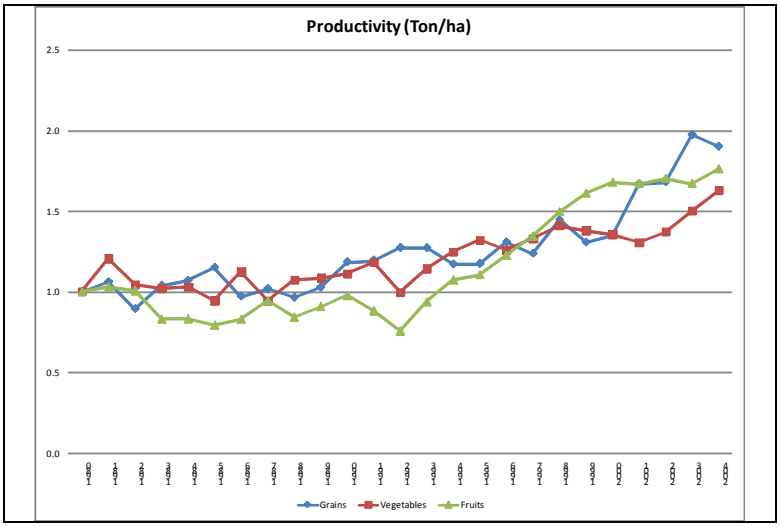


Source: authosr's calculations based on data from INEGI.

[13] The expenditure data and GDP data are from the regional FAO data base. TFP growth estimates are from Avila and Evenson (2004).

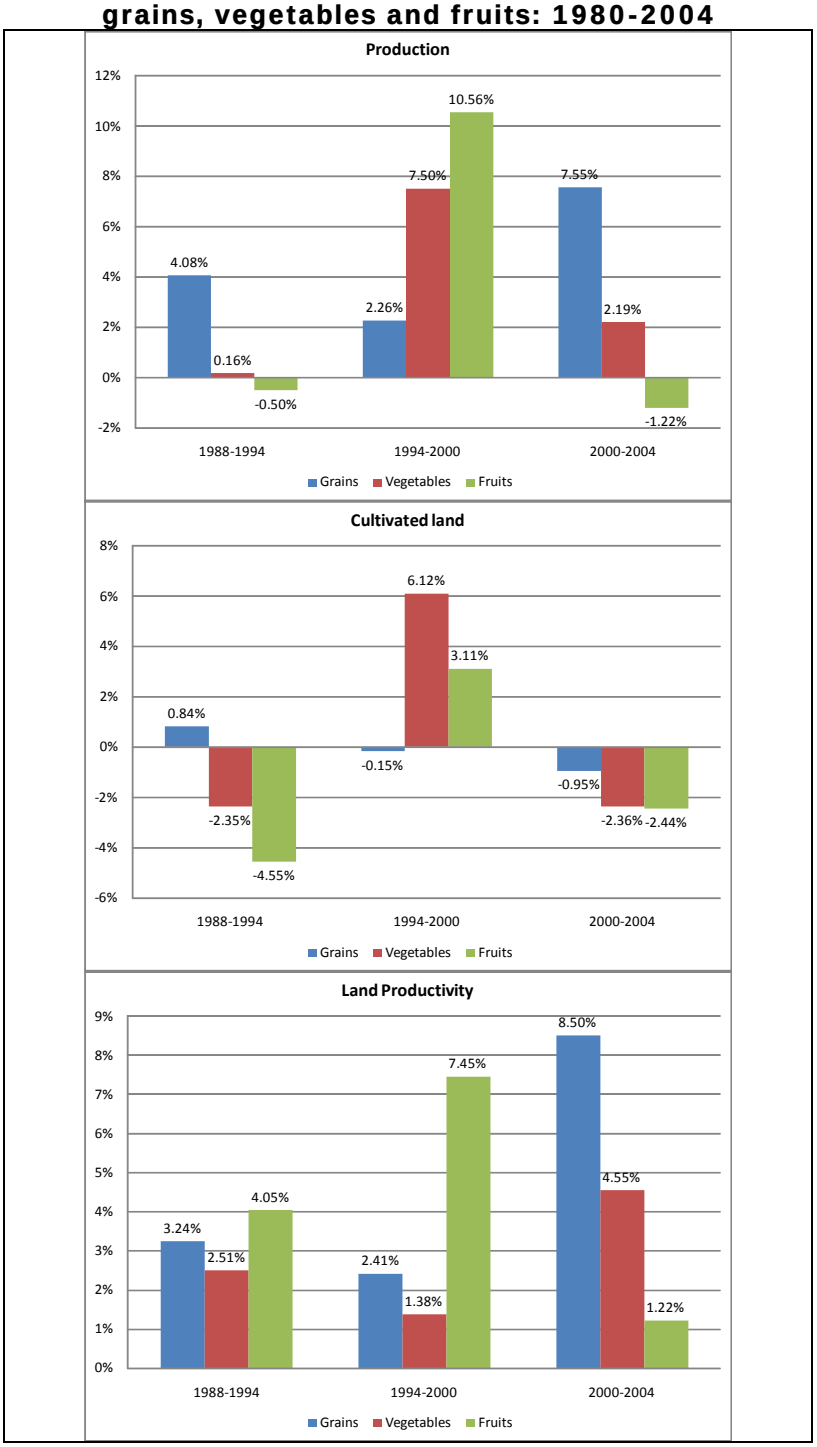
Graph 9. Index of production, cultivated land, and land productivity in grains, vegetables and fruits: 1980-2004





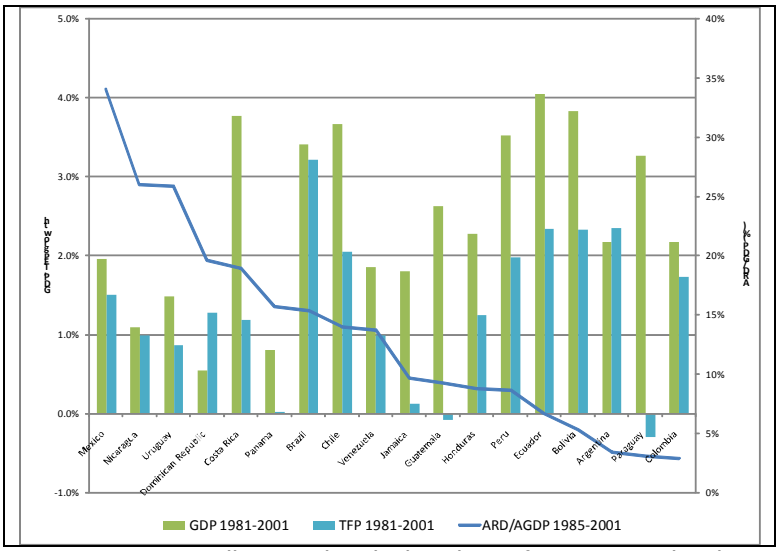
Source: SIAP, SAGARPA.

Graph 10. Average annual growth rates in production, cultivated land, and land productivity in grains, vegetables and fruits: 1980-2004



Source: SIAP, SAGARPA.

Graph 11. Distribution of ARD/AGDP and average yearly agricultural GDP and TFP growth rates in 1981/5-2001



Source: ARD expenditure and Agricultural GDP from FAO-Regional Office for LA; Agricultural TFP growth rates from Avila and Evenson (2004).

3.2. Employment, wages and other income sources

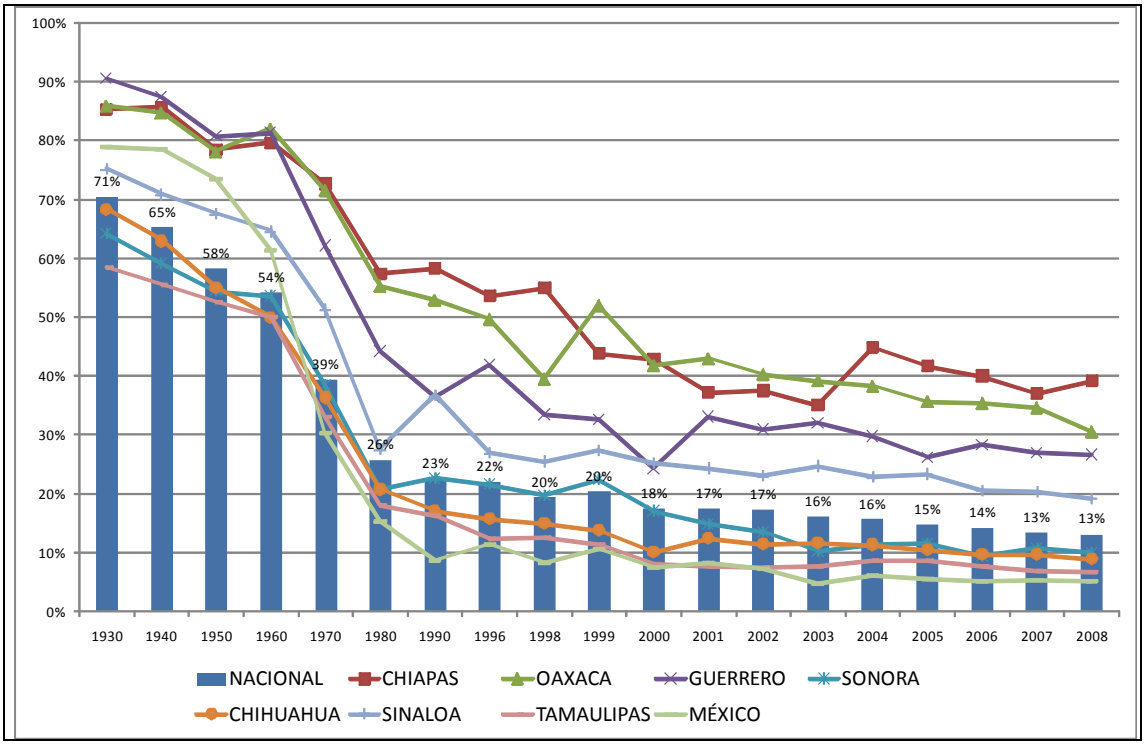
Between 1930 and 1980 the share of agriculture in total employment declined from 71% to 26% (graph 12), but by the end of the century a fifth of the labor force was still employed in agriculture. According to the national employment survey (ENOE), agricultural employment has declined to 13% in 2008, representing 5.7 million workers, but is still very significant in the poor southern states: 40% in Chiapas, and close to 30% in Oaxaca and Guerrero.

Despite these employment data, the economic weight and labor income from agriculture has fallen drastically in recent decades. The 2007 Agricultural Census shows that most workers in the sector are unpaid family members, and of those who receive payment the majority are eventual workers (Table 10a): of the 8.6 million persons reported working in agriculture in the 2007 Census, only 421,000 are permanent paid workers. This number has practically remained the same since the 1991 Census, while the total number of workers has declined from 10.6 to 8.6 million, and unpaid family workers have declined from 8.3 to 3.5 million, with eventual paid workers increasing from 1.8 to 4.7 million. This subsititution of unpaid family workers for paid eventual workers is striking and suggests agricultural labor markets have developed significantly in the NAFTA years, liberating family members for more productive rural and non-rural employment (migration) opportunities. This hypothesis is also consistent with the evolution of rural income sources, described in the next section (see graph 18, 19).

Unfortunately, at the time of writing the tables from the 2007 Agricultural Census published by INEGI do not report employment by farm size. However, the data from the 1991 Census (graphs 13a, 13b) shows that both unpaid family workers and paid eventual workers are concentrated in small to medium farms, while paid workers are concentrated in medium to large farms. Comparing the number of producers in each strata (graph 13c), it is interesting to note that between 1991 and 2007 small producers have increased from 2.24 to 2.75 million, while the number of both middle-sized and larger producers have declined by almost 30%.

Wages in the primary sector have also fallen significantly in relation to the rest of the economy and even in absolute terms (table 10b, graph 14), declining by 2.2% annually in 1989-1994 while average wages for the economy overall increased 6% annually, and increasing 1.4% annually in the last decade (vs. 2.9% overall). The decline in primary sector employment decelerated in 2007-2008, and wages actually increased more than in the rest of the economy in this year. The primary sector only accounted for 6% of the total wage mass of the economy in 2008.

Graph 12. Employment in agriculture as a share of total employment in Mexico: National and selected states

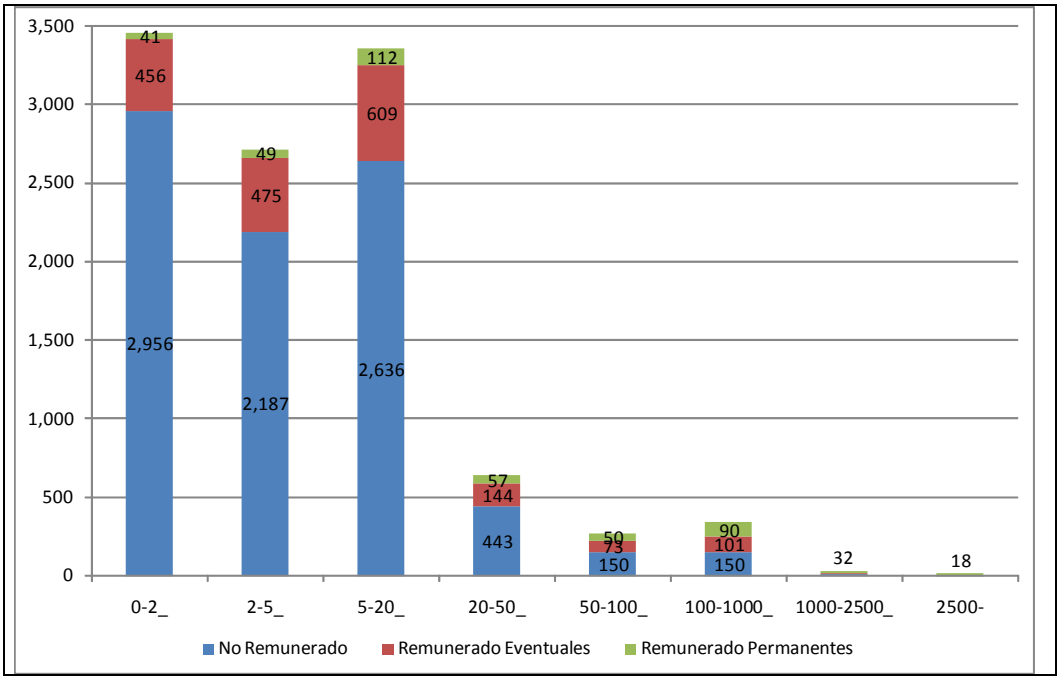


Source: INEGI; Population Census: 1930-1990; ENOE; 1996-2008.

Table 10a. Employment in Agricultural and Forestry: Agrarian Census 1991, 2007			
	1991	**2007**	**Change 1991-2007**
Total	**10,676,311**	**8,650,187**	**-19%**
Non Remunerated (Family)*	**8,370,879**	**3,510,394**	**-58%**
Male	7,112,977	2,399,283	-66%
Female	1,257,902	1,111,111	-12%
Remunerated	**2,305,432**	**5,139,793**	**123%**
Permanent (more than 6 months)	**427,337**	**420,989**	**-1%**
Male	399,944	378 701	-5%
Female	27,393	42 288	54%
Eventual (less than 6 months)	**1,878,095**	**4,718,804**	**151%**
Male	1,717,275	4 164 690	143%
Female	160,820	554 114	245%

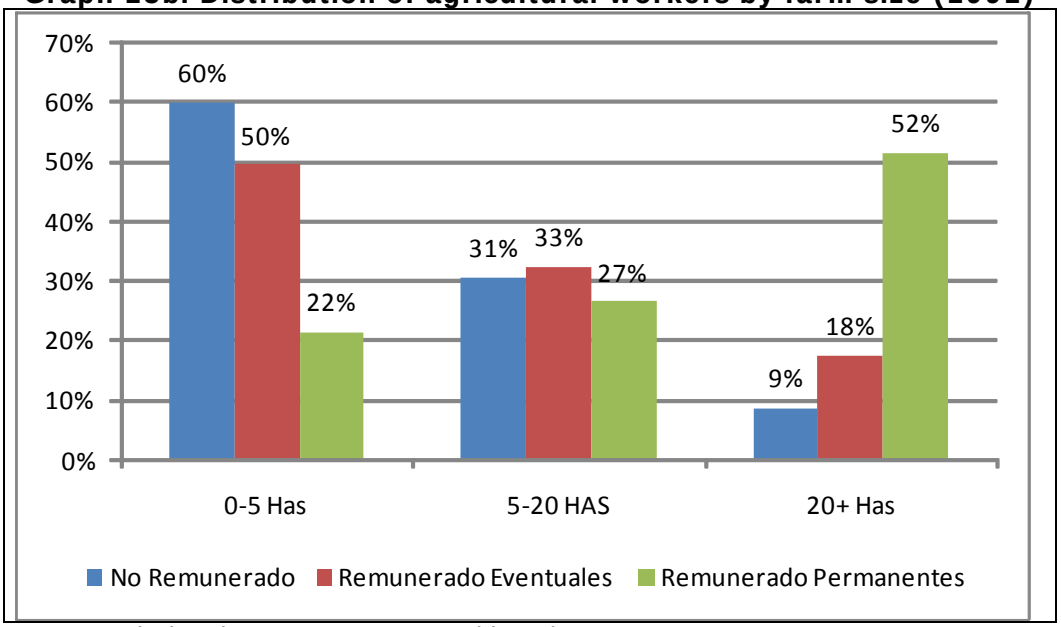
Source: Agricultural Census, 2007 INEGI (table 114 in Resultados del VIII Censo Agrícola, Ganadero y Forestal; Agricultural Census 1991, INEGI, table 54 in http://www.redeco.economia.unam.mx/CA/CAG91/ .
*The 1991 Census also reports 268,033, workers who are unpaid but non-family.

Graph 13a. Distribution of agricultural workers by farm size (1991): Number of workers



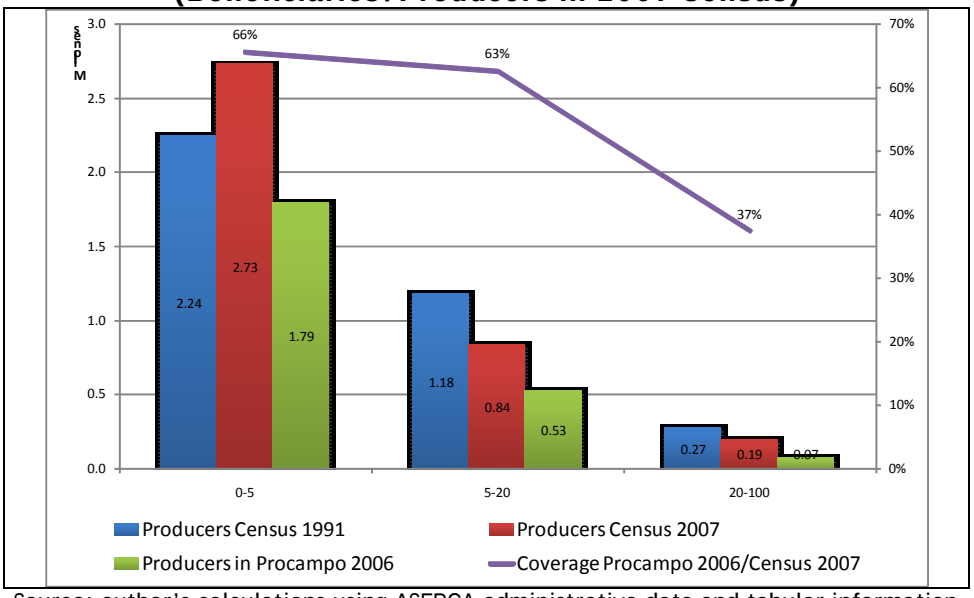
Source: Agricultural Census 1991 (INEGI).

Graph 13b. Distribution of agricultural workers by farm size (1991)



Source: Agricultural Census 1991, INEGI, table 54 in http://www.redeco.economia.unam.mx/CA/CAG91/ .

Graph 13c. Distribution of producers by (Beneficiaries/Producers in 2007 Census)

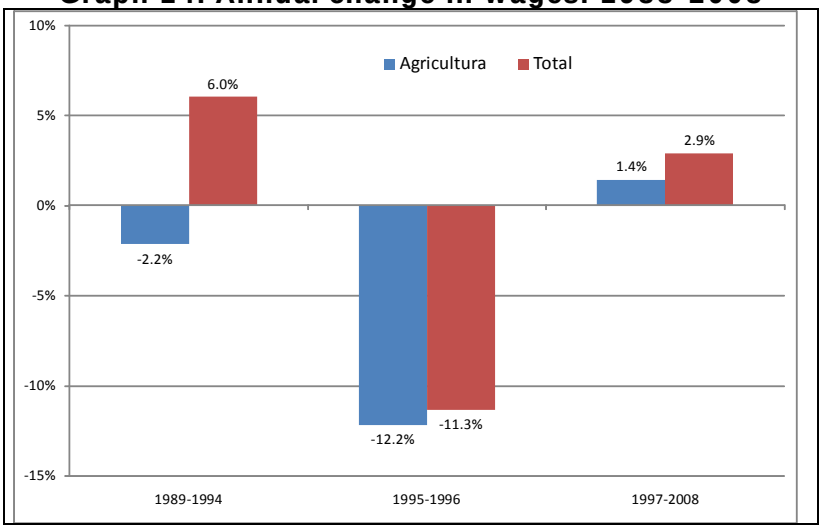


Source: author's calculations using ASERCA administrative data and tabular information from the Agricultural Census 1991 and information of the Agricultural Census 2007 cited in De la Madrid (2009).

Table 10b. Employment and wages in primary sector: 2005-2008 (first quarter)			
		Primary Sector	Other sectors
Employed pop	2005	6,047,361	34,528,513
	2006	5,875,619	35,845,496
	2007	5,734,735	36,665,727
	2008	5,676,086	37,644,591
Wage (MP/month)	2005	2,605	10,147
	2006	2,393	10,595
	2007	2,293	10,865
	2008	2,382	11,121
Annual growth rates			
Employed Pop	2005-2006	-2.8%	3.8%
	2006-2007	-2.4%	2.3%
	2007-2008	-1.0%	2.7%
Wage	2005-2006	-8.1%	4.4%
	2006-2007	-4.2%	2.6%
	2007-2008	3.9%	2.4%
Wage Mass	2005-2006	-10.7%	8.4%
	2006-2007	-6.5%	4.9%
	2007-2008	2.8%	5.1%

Source: ENOE 2005-2008, INEGI.

Graph 14. Annual change in wages: 1988-2008



Source: ENE, ENOE.

4. Rural Poverty and Inequality: Agriculture in rural incomes

Measuring rural development in terms of monetary poverty and basic human development indicators, large gaps persist between the rural and urban sector, but also within the rural sector. Extreme poverty (*alimentaria*) declined from 53% to 24% between 1996 and 2006, but most of this decline represents a recovery from the dramatic increase in poverty following the 1995 "tequila" crisis: the 1992-2002 decade was fully "lost" in terms of rural poverty-reduction, and the decline observed between 2002 and 2006 was almost completely reversed by 2008, when extreme poverty reached almost 31.8%, only slightly below the 1992 value (graph 15). The 2006-2008 increase in poverty was due mainly to the increase in the price of the basic food basket due to the global rise in food prices, and the beginning of the effects of the global financial crisis. Since this still does not take into account the full effects of the latter crisis, it is unfortunately certain that rural poverty will increase significantly more in 2009-2010.

The rural sector is often perceived and assumed by policy makers to be relatively homogenous, but the contrasts in poverty rates by size of locality and regionally the sector are as dramatic as those between the rural and urban sectors. The poverty rate doubles as we pass from urban (>15,000 inhabitants) to semi-urban (2500-15000) localities, and doubles again from the latter to small rural localities (<2500) (World Bank 2005). The contrast between rural areas in the northern states and the rural South is even more dramatic, with almost a ten-fold difference in extreme poverty rates: from 6.5% in BC, to close to 60% in Chiapas and Guerrero (graph 16). The poorest

eight states account for 64% of the rural poor, but only 18% of agricultural GDP. As discussed above and shown in detail below, the noted division of labor between "social" and "productive" rural expenditures can be clearly appreciated in the same graph: the allocation of Oportunidades corresponds closely to the distribution of poverty, while APE is distributed between states as a function of agricultural production.

Rural income inequality increased significantly between 1994 and 2000 (2002 if we consider only monetary income sources), but declined back to 1994 levels by 2006 (graph 17a).[14] The inverted U-shape reflects mostly the evolution of labor and non-monetary income in this period, which suggests a structural transformation in the rural economy but requires further investigation. Transfers have contributed to reduce rural inequality and flatten the trend over the period. This reflects the effect of Oportunidades, Procampo (which as we will see is regressive in absolute terms but progressive in relative terms), and remmitances.

Extreme inequalities in rural living standards persist even in the basic human development (health, education) indicators targeted by the principal social spending programs. In the 2000 census, illiteracy in rural areas was 21%, twice the national average and seven times the average for Mexico City, and average schooling was less than 5 years, half the average for Mexico City. Almost three-quarters of the population in Mexico City (half of the national population) had completed post-primary education, but only a quarter of the population in the rural sector. In 2005, infant mortality rates (IMR) varied widely by municipality ordered by the *CONAPO marginality index*, a multi-dimensional poverty indicator closely correlated with degree of "ruralness": from 3-8 per thousand (live births) in richer urban *delegaciones,* to 30-80 per thousand in the poorest municipalities, comparable to the gap observed between low and high income countries in the world (graph 17b).

To assess the extent to which agriculture offers income and employment opportunities for the rural poor in Mexico, we use ENIGH income-expenditure surveys, the ENOE (2008) employment survey, and ENCASEH (2004), a large and detailed survey covering households in *Oportunidades* localities. Though the latter is not nationally representative, it is representative of producers in poor rural localities.

There has been a dramatic transformation in the income sources for the average rural household over the last decade. Independent (non-wage) farm income has collapsed from 28.7% to 9.1% of total household income between 1992 and 2004, while total (independent and wage) farm income has contracted from close to 38% to just 17% of household income (graph 18).

The extreme rural poor have a larger participation in agricultural activities, but they also derive a relatively small share of their income from

[14] For further details on the dynamics of income distribution in Mexico over this period see Esquivel (2008), and Esquivel, Lustig and Scott (2009).

the sector (graphs 19 and 20, tables 11 and 12). The poorest quintile accounts for more than half of all agricultural workers and 60% of households in the poorest decile have agricultural workers, though only 26.6% of these households report generating independent farming income. However, the poorest 30% of households obtain on average less than a third of their income from agriculture. In particular, subsistence farming has become irrelevant source of income for rural households: 27% of HHs report obtaining non-monetary income from self-production/consumption, but this represents less than 2% of their total current income, and only 7% for the poorest dicile. Non-farming wages represents the principal single income source for all but the poorest decile, while for the latter the largest income source are public transfers.

In comparison to urban households, rural households obtain a smaller share of their income from the labor market (41%) and are more dependent on transfers (18%) and self-employment (18%).

Considering the characteristics of rural households in poor localities were Oportunidades operates, table 12 divides these by land-holdings. It is notable first that 71% of these households are landless. Though these households tend to be younger and have less assets generally (housing, appliances and cars), they also report higher labor income and education indicators than land owners.

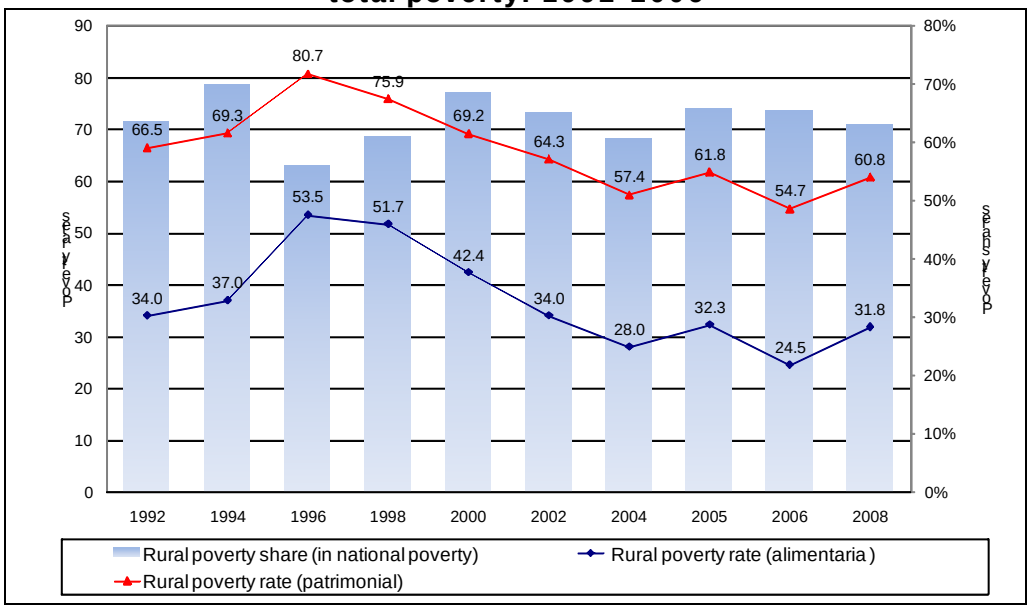
Among the latter non-agricultural workers are better off than agricultural workers, which also report the lowest coverage of social securtity of all household groups (5%).

By far the poorest households in these localities are not the landless, but small-holders, especially households with less than 2 hectares. These also tend to have a higher proportion of indigenous population and agricultural workers (more than 70% of these household report the main occupation of the household head as agricultural workers), but lowest proportion of *Ejidatarios or comuneros*.

The great mayority of land-holders own their land, though this proportion is lower for small holders. Most of the land is rainfed, though the proportion of irrigated land increases in the 6-20 ha range. Corn is the principal crop, especially among small-holders, followed by beans.

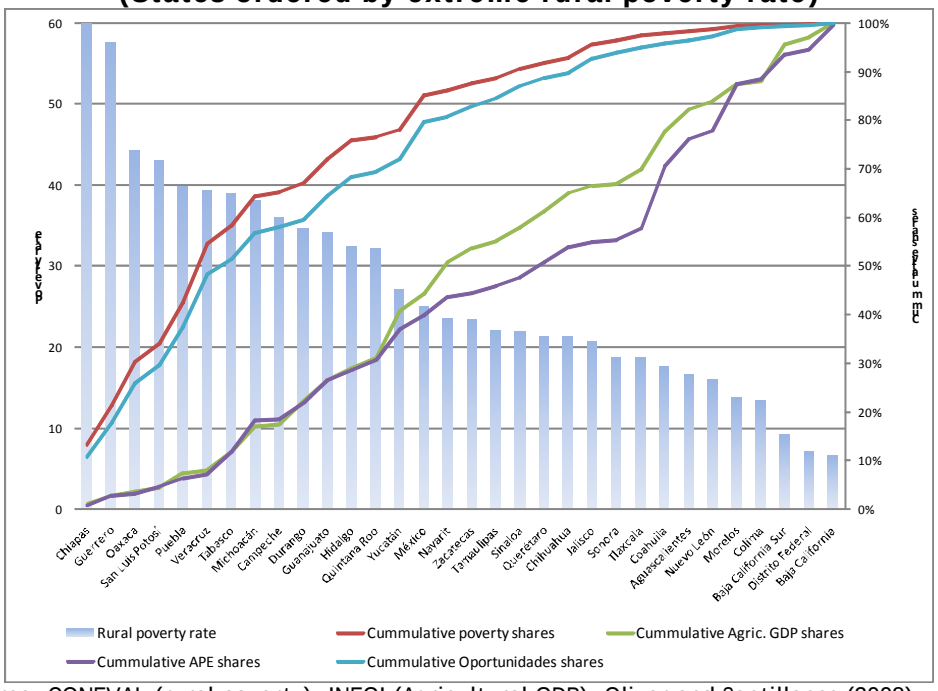
The data on the coverage of public programs will be taken up in section 6.

Graph 15. Rural poverty rates and rural share in total poverty: 1992-2006



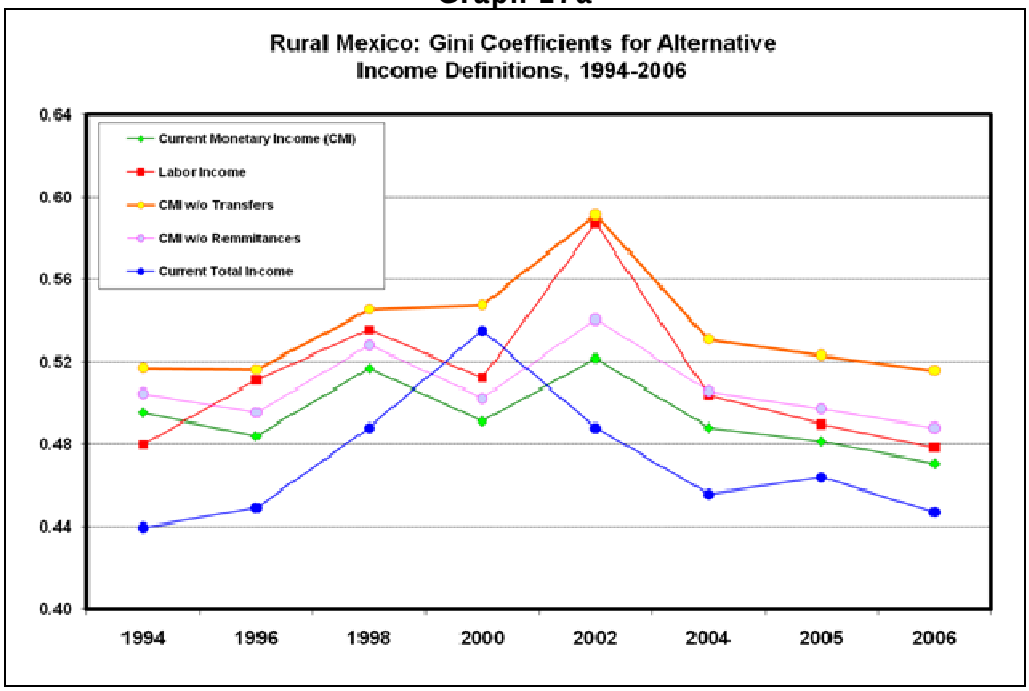
Source: CONEVAL.

Graph 16. Extreme rural poverty (pobreza alimentaria), AGDP and public ARD expenditure: 2005/2006 (States ordered by extreme rural poverty rate)



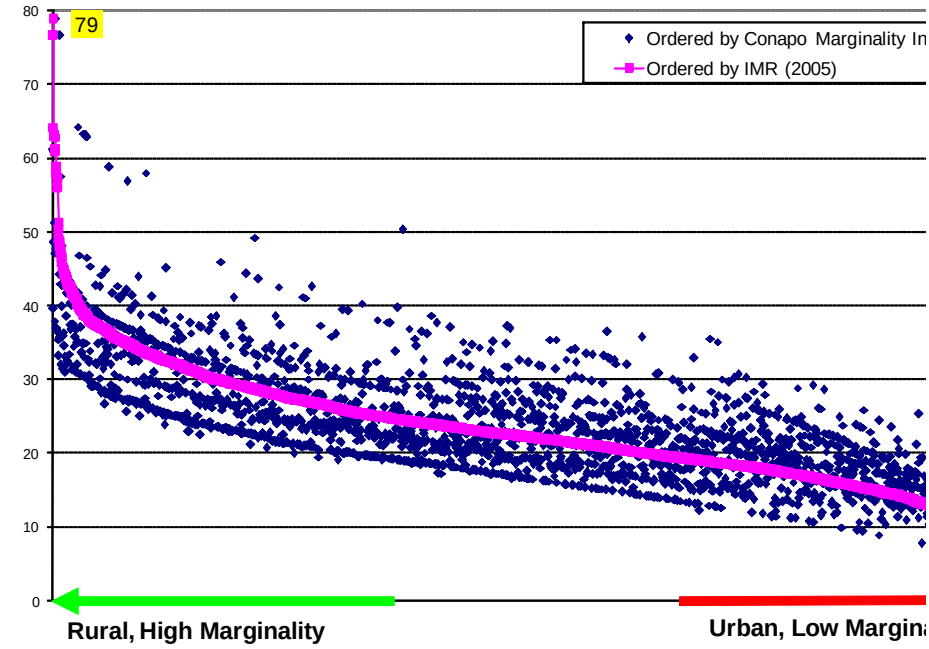
Source: CONEVAL (rural poverty); INEGI (Agricultural GDP); Oliver and Santillanes (2008): (ARD expenditure.

Graph 17a



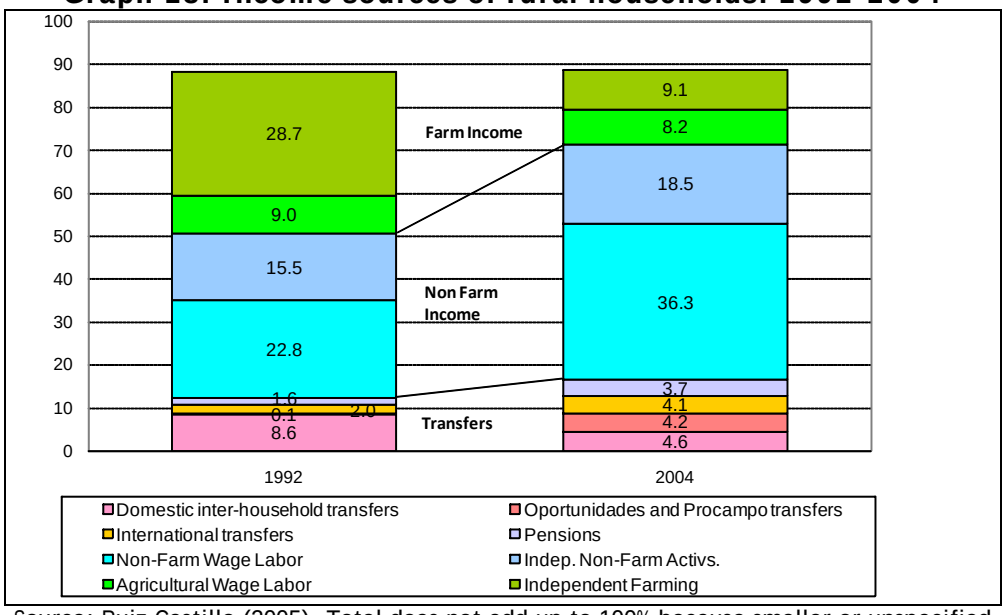
Source: Esquivel (2008)

Graph 17b. Infant Mortality Rates (IMR) by Municipalities ordered by IMR and Conapo Marginality Index: 2005



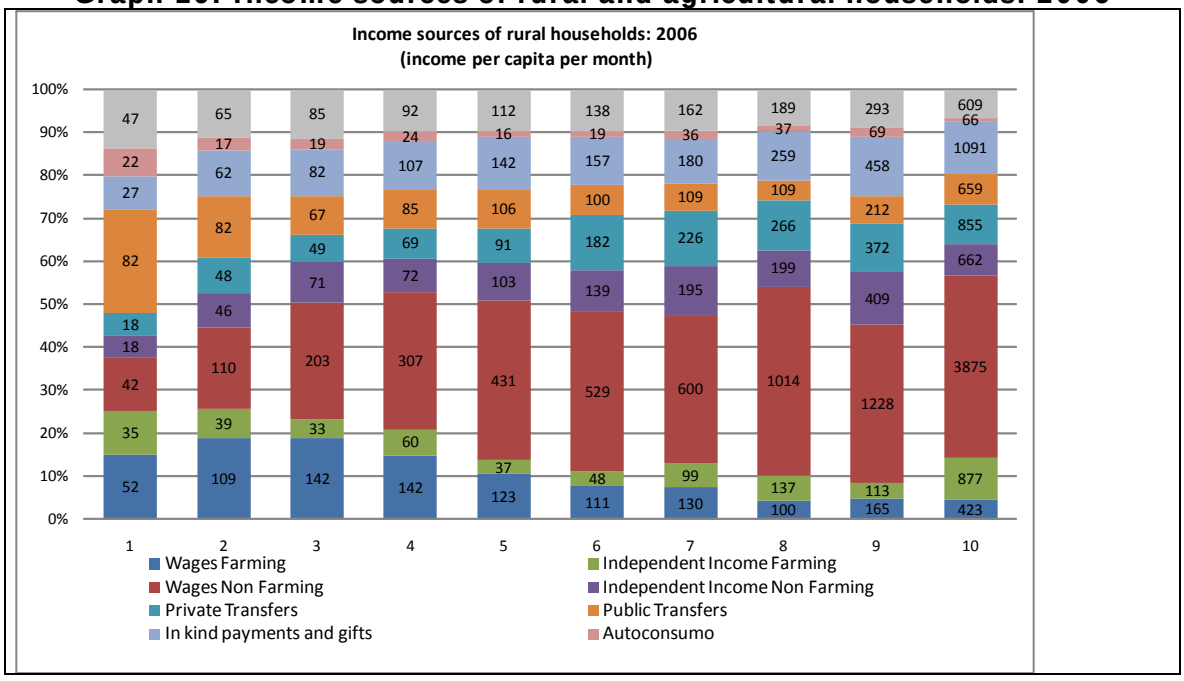
Source: CONAPO.

Graph 18. Income sources of rural households: 1992-2004



Source: Ruiz Castillo (2005). Total does not add up to 100% because smaller or unspecified income sources were excluded.

Graph 19. Income sources of rural and agricultural households: 2006



Source: author's calculations based on ENIGH 2006 (INEGI).

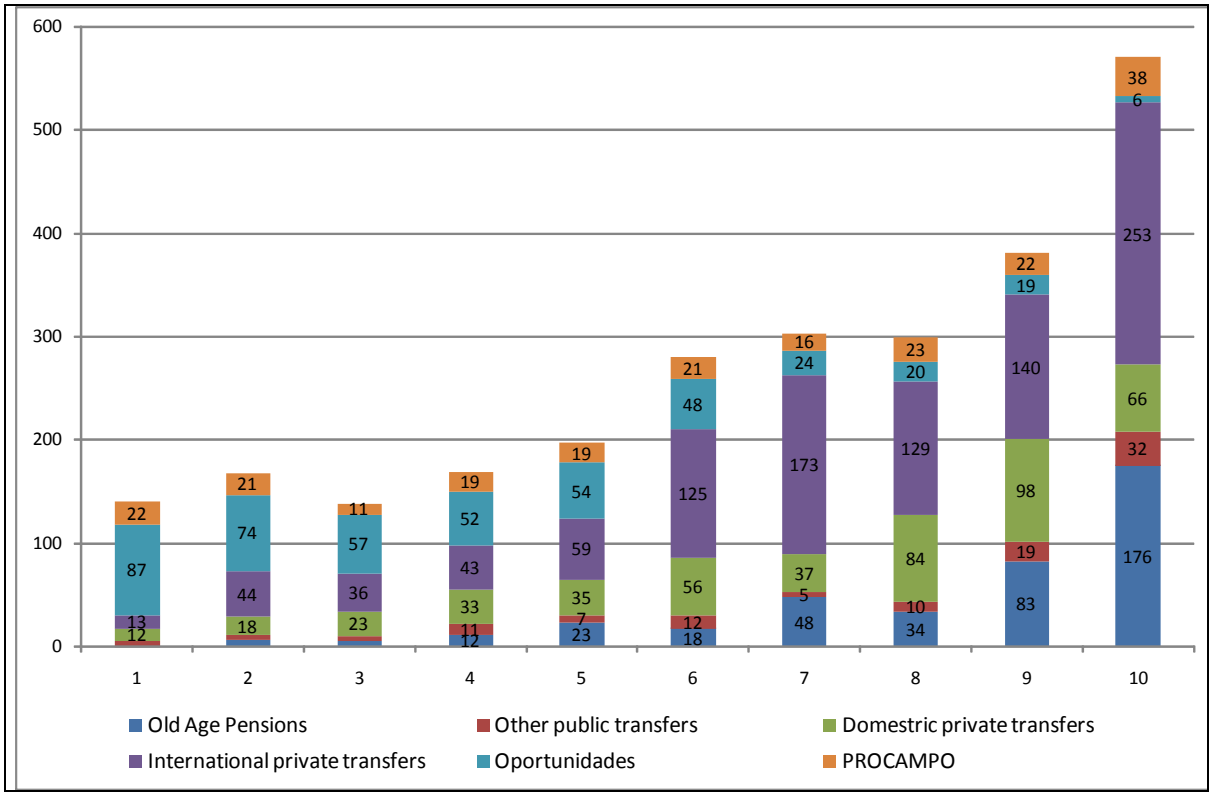
Table 11. Agricultural activities by rural household deciles ordered by income per capita (2006)						
	Hh with agricultural workers		Hh with independent farming income			
HH Deciles	Households	% Decile	Households	% Decile	Annual farming income	
					million MP	MP/hh
1	3,222,510	60%	705,977	26.6%	2,705	3,831
2	1,492,371	32%	249,587	9.4%	1,830	7,331
3	946,424	24%	190,263	7.2%	1,253	6,586
4	625,353	15%	119,835	4.5%	1,038	8,664
5	578,002	13%	103,074	3.9%	1,853	17,977
6	340,805	9%	86,394	3.3%	982	11,362
7	390,019	9%	68,100	2.6%	977	14,349
8	233,630	7%	63,465	2.4%	917	14,456
9	144,672	5%	30,022	1.1%	878	29,249
10	152,976	4%	39,521	1.5%	3,521	89,093
Total	8,126,762	18%	1,656,238	6.2%	15,954	9,633

Source: author's estimations based on ENIGH (2006).

Table 12. Monetary and non-monetary (NM) income sources: Rural and Urban HH: % of total current income (2006)				
	Urban		Rural	
	HH	Income	HH	Income
Labor income	79%	52%	67%	41%
Independent income	38%	15%	53%	18%
Transfers	38%	9%	70%	18%
Presents (NM)	70%	8%	71%	11%
Implicit housing rent (NM)	80%	12%	95%	9%
Self-production/consumption (NM)	12%	0.7%	27%	1.8%
Payments in kind (NM)	18%	1.6%	6.6%	0.9%
Rent	6.0%	3.4%	3.2%	0.9%

Source: ENIGH 2006.

Graph 20a. Public and private transfers per capita per month received by rural households: 2006

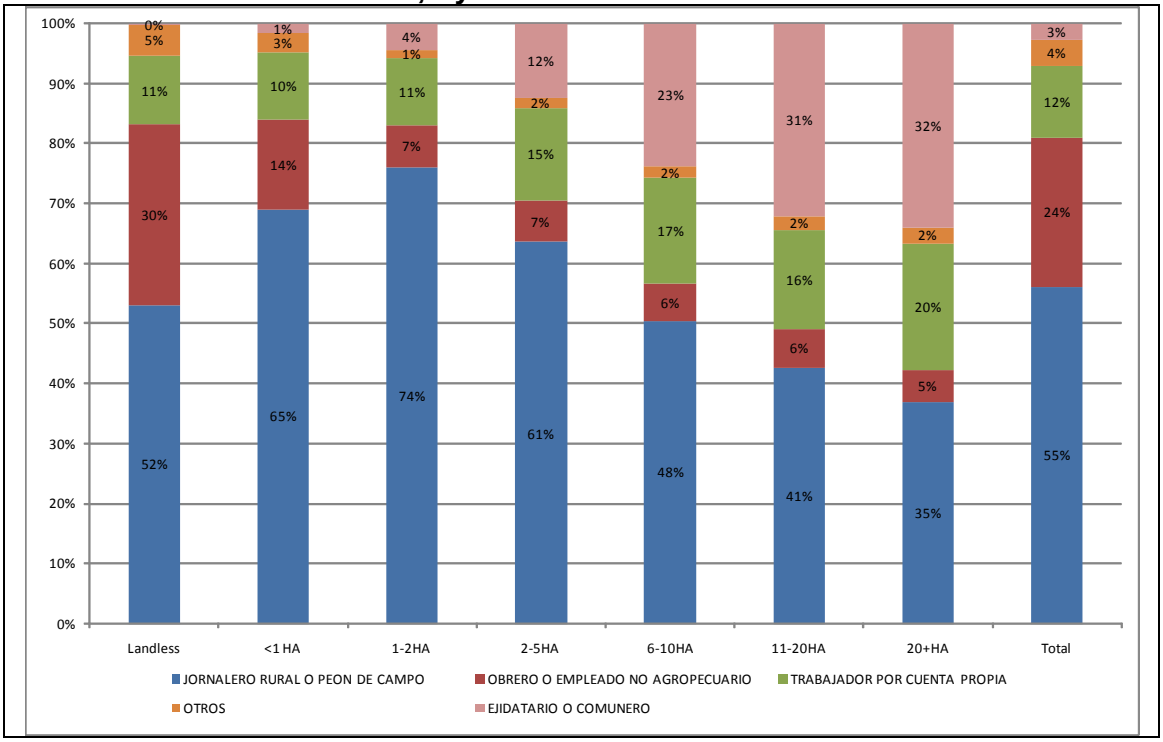


Source: author's calculations based on ENIGH 2006 (INEGI).

Table 13. Household head characteristics, household assets and land use by land ownership or use (2004)								
	Landless							
	Non Agricultural worker	Agricultural worker	<1 HA	1-2HA	2-5HA	6-10HA	11-20HA	20+HA
Households (#)	223,465	255,968	45,726	52,394	59,119	23,135	11,094	5,603
	33%	38%	7%	8%	9%	3%	2%	1%
Age (years)	38	39	43	45	52	58	58	56
Income from main job ($/month)	2,547	2,219	1,792	1,748	1,846	2,004	2,107	2,274
Indigenous	6%	10%	31%	33%	17%	6%	6%	8%
Literacy	90%	84%	75%	74%	77%	82%	83%	82%
Post-basic education	41%	44%	41%	44%	38%	35%	35%	36%
No social security	78%	94%	74%	86%	78%	66%	64%	74%
Procampo	0%	1%	7%	19%	39%	47%	44%	42%
Oportunidades	50%	44%	46%	58%	56%	51%	35%	38%
Both	0%	0%	4%	11%	23%	28%	19%	16%
House owned	66%	69%	85%	89%	91%	94%	96%	96%
Dirt Floor	18%	31%	45%	50%	32%	15%	15%	20%
Rooms (#)	1.7	1.6	1.6	1.6	2.0	2.4	2.4	2.3
Electricity	93%	88%	83%	72%	78%	90%	89%	82%
Piped water in house	28%	24%	19%	17%	28%	43%	45%	41%
Fridge	54%	43%	28%	27%	47%	69%	74%	65%
Car or Truck	13%	10%	7%	8%	19%	33%	41%	41%
Tractor	0%	0%	0%	0%	1%	5%	9%	10%
Land characteristics								
Owned			78%	81%	88%	93%	94%	95%
Rented			5%	4%	3%	1%	1%	1%
Sharecroping			3%	2%	2%	2%	1%	1%
Borrowed			14%	12%	7%	3%	2%	2%
Irrigated			7%	5%	10%	16%	18%	10%
Agricultural use			67%	65%	68%	67%	63%	57%
Live stock use			1%	1%	2%	4%	11%	23%
Forestry use			0%	0%	0%	0%	1%	1%
Not used			32%	34%	30%	29%	25%	19%
Corn			63%	61%	55%	50%	44%	44%
Beans			12%	16%	19%	20%	17%	19%

Source: author's calculations 2004 ENCASEH Oportunidades survey.

Graph 20b. Position of household head in main occupation in poor rural localities, by size of land owned or used



Source: author's calculations ENCASEH 2004 Oportunidades survey.

5. Geographic Distribution of Agricultural Subsidies and Agricultural Development

5.1. Distribution of agricultural public expenditures: States

The geographic analysis agricultural public expenditures (APE) is presented at the state level for most programs, but extended to the municipality level where information is available (*Procampo, Ingreso Objetivo*). In this case the distribution of APE is analyzed ordering states (and municipalities) by their rural poverty rates, using the official measures of *pobreza alimentaria* estimated by CONEVAL for 2005 (see graph 16 above), except for graph 21 which uses the multivariate CONAPO marginality index. The two state rankings are closely correlated.

The division of labor between social and productive programs noted above (section 2) is illustrated clearly by the overall allocation of these programs at the state level. Graph 16 (section 4 above) compares the cumulative distribution of APE and of *Oportunidades*, the largest rural social program. This reveals that the distribution of APE follows closely the distribution

agricultural GDP (AGDP), while the distribution of *Oportunidades* follows closely the distribution of extreme rural poverty.

The correlation of APE with agricultural economic activity is weaker if we consider agricultural employment (*PO Agr* in graph 21). As we have seen before, the largest beneficiaries, the richer agricultural states of Sinaloa, Tamaulipas, Chihuahua and Jalisco, account for a relatively small proportion of agricultural employment. By contrast, the poorer states of Veracruz, Chiapas, Oaxaca, Puebla and Guerrero, account for a large part of employment but receive a much smaller share of these resources.

The distribution of APE *per rural capita* for the principal programs is concentrated in the richer half of the poverty-ordered state distribution, with the highest benefits allocated to Tamaulipas, Sinaloa, Chihuahua, and Sonora (graph 22, using data presented in World Bank 2004). These four states are among the principal beneficiaries of Procampo (in per capita terms), reflecting their agricultural land assets, but their disproportionate participation in APE is also explained by *Apoyos*, *Diesel* and the electricity/water subsidies (Tarifa 9). At the other extreme of the state distribution, the poorest states obtain support mostly from Procampo and Alianza, but overall obtain barely a tenth of the support benefiting the former states (in rural per capita terms).

The electricity subsidy for agriculture is mostly used for water-pumping for irrigation in the northern states and represented 10,672 million pesos in 2008 (Tercer Informe de Gobierno, 2009). This is the most heavily subsidized use of electricity in Mexico, with price equal to just 28% of cost (vs. 90-100% in industry). In addition to its regressive allocation, which is a consequence of the distribution of hydrological resources in Mexico, this subsidy has contributed to a significant and unsustainable increase in the over-exploitation of aquifers in Mexico (Muñoz *et al.,* 2005, Guevara *et al.,* 2007, Kessler *et al.,* 2007).

Taking the broadest division between public goods, representing less than 10% of total APE (see above section 2, graph 2), and private transfers, it is notable that the former are even more regressively distributed than the latter, with per capita benefits rising significantly in the upper half of the state distribution.

Considering the distribution of the three principal support programs, *Procampo, Alianza* and *Apoyos* (graph 24, the cumulative distribution of extreme poverty is included as a benchmark to judge the degree of progressivity of the programs), *Alianza* is the most progressive at the state level, with 28% of transfers going to the poorest five states, followed by Procampo, with 22%. The degree of progressivity has been slightly reduced for both programs between 2002 and 2006. *Apoyos* is highly concentrated in just four states, Sinaloa, Sonora, Tamaulipas en Chihuahua receiving 80% of its

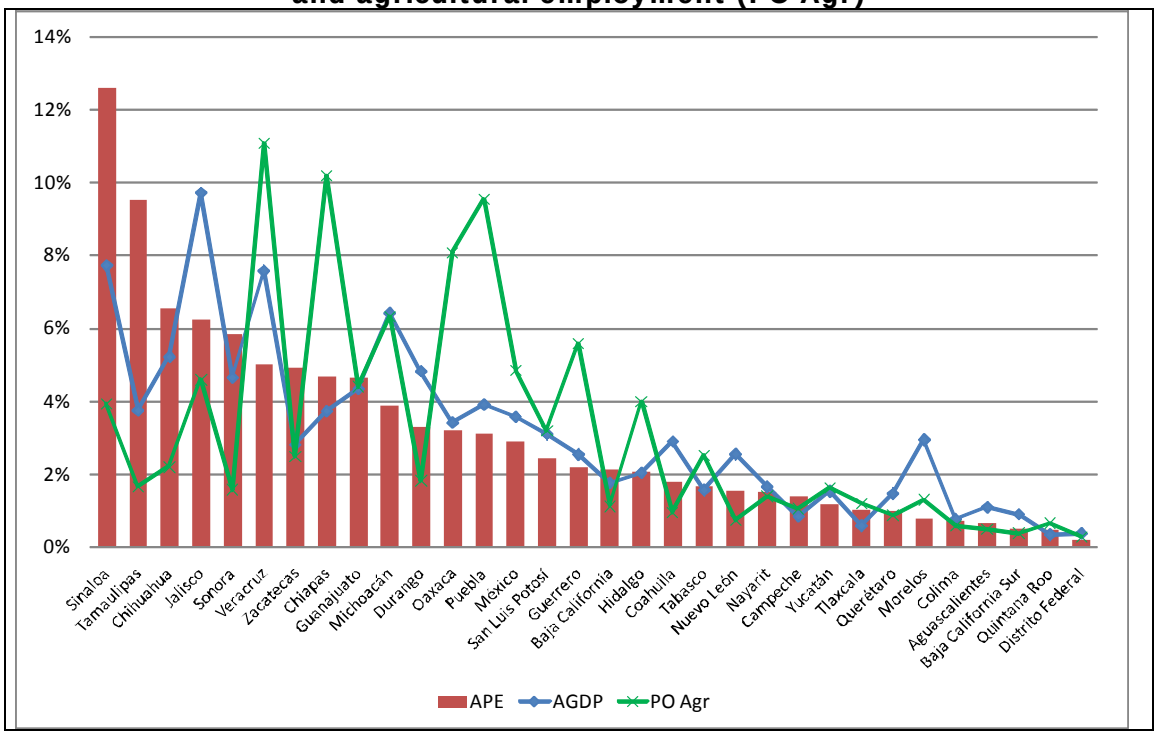
resources in 2002, with the poorest half of the states receiving just 5% of resources in 2002, and less than 10% in 2006.

Considering the case of Procampo in particular, we use the 1991 and 2007 Agricultural Census to evaluate coverage at the state level (graphs 25-27), in the PV cycle. This analysis must be interpreted with some care, as producers may be counted more than once in the Procampo data base, which may explain the coverage reates above 100% in smaller states. With this caveat, the analysis reveals a large variations in coverage between states, from full coverage in Durango and Coahuila, to less than 15% in BCS and Tabasco.

Considering the case of maize and comparing from the beginning to the present of the program (graph 26), the number of producers has increased some states, including Chiapas, Puebla and México, but the total number of producers has decreased slightly (2.68 million in 1991, 2.66 million in 2007), while cultivated land has increased from 7.3 to 8.1 million hectares. Procampo's coverage has decreased significantly in all states except Chihuahua, and Jalisco (in terms of land).

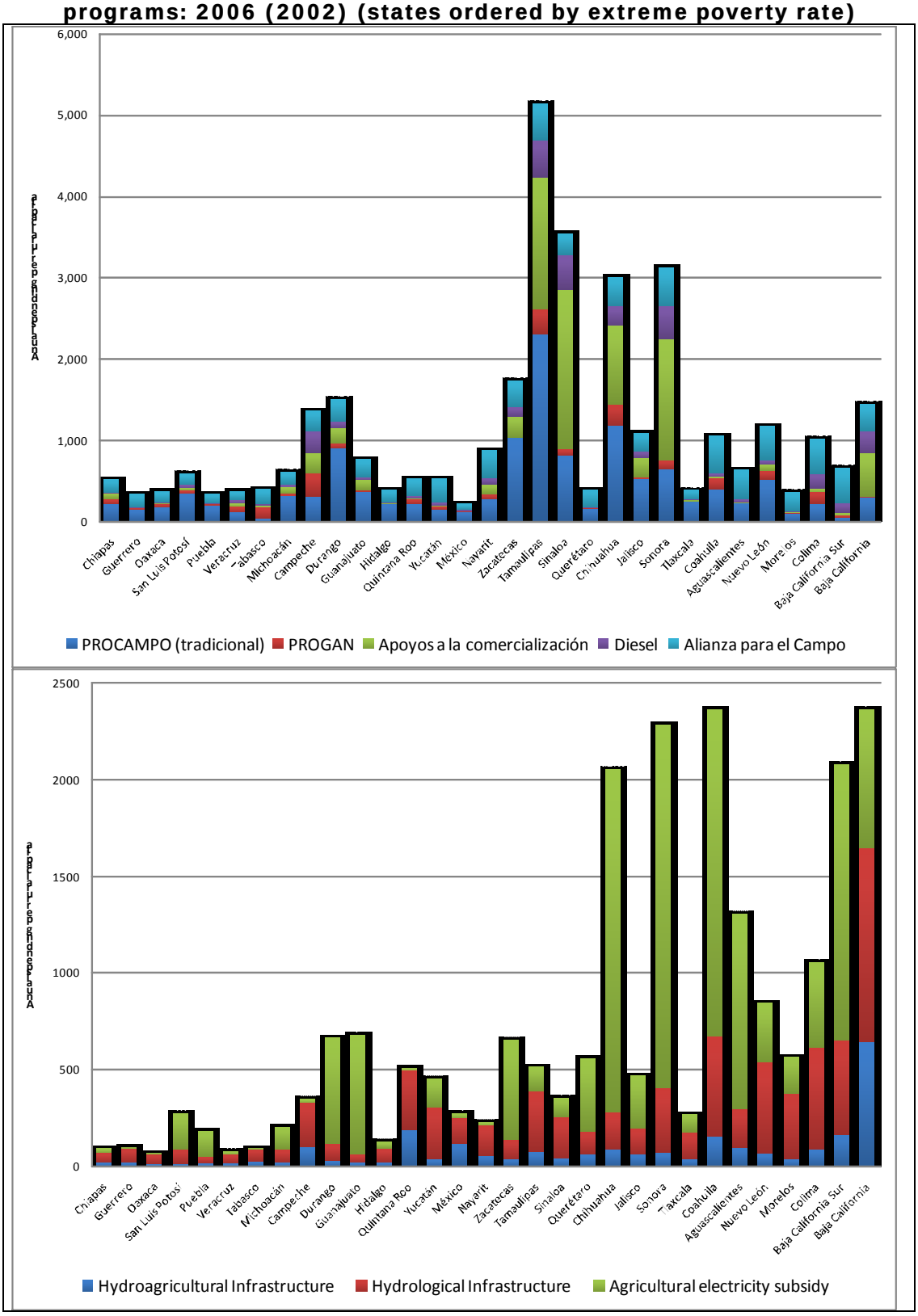
Coverage is below 50% in the poorer states (Veracruz, Guerrero, Chiapas), and just above 50% in Oaxaca. Some of the large agricultural states have high coverage rates (Chihuahua, Jalisco), but this is not so for Tamaulipas and Sinaloa. There appears to be no clear relation with average size of land holdings (graph 27).

Graph 21. Agricultural public expenditure (APE), agricultural GDP (AGDP) and agricultural employment (PO Agr)



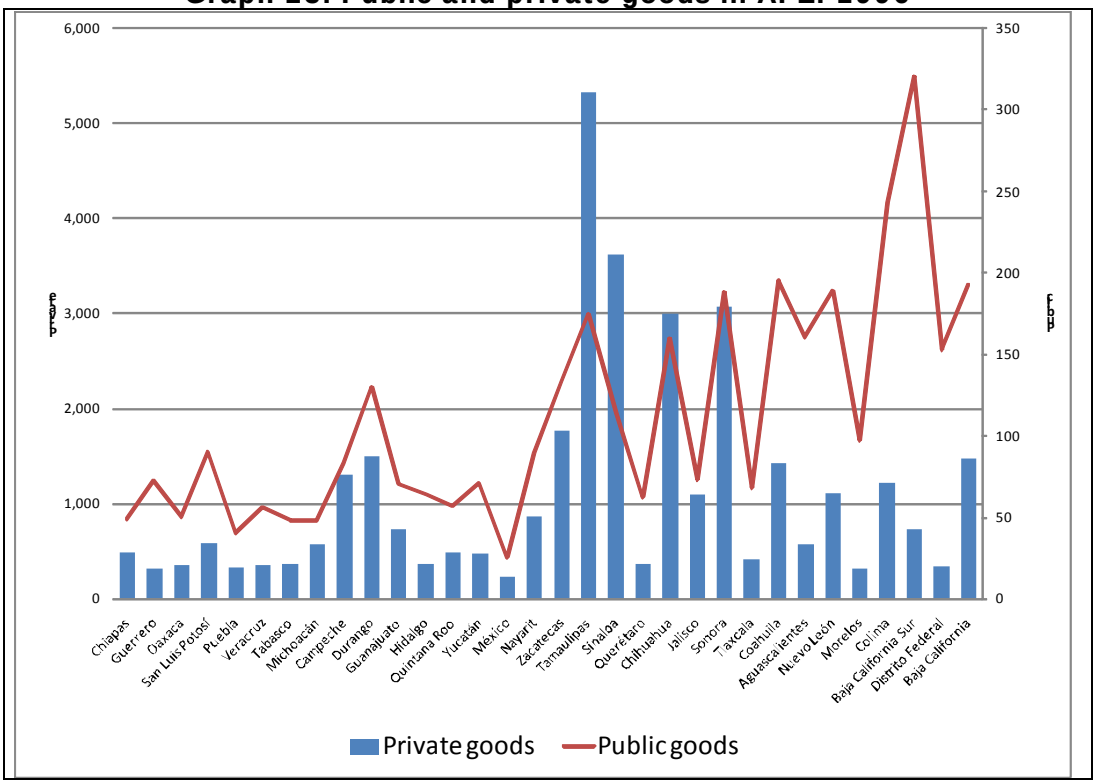
Source: author's calculations based on Agricultural Census 1991 (INEGI).

Graph 22. Annual spending per rural capita (MP) by principal APE programs: 2006 (2002) (states ordered by extreme poverty rate)



Source: upper graph: Oliver and Santillanes (2008); lower graph: World Bank (2004).

Graph 23. Public and private goods in APE: 1996

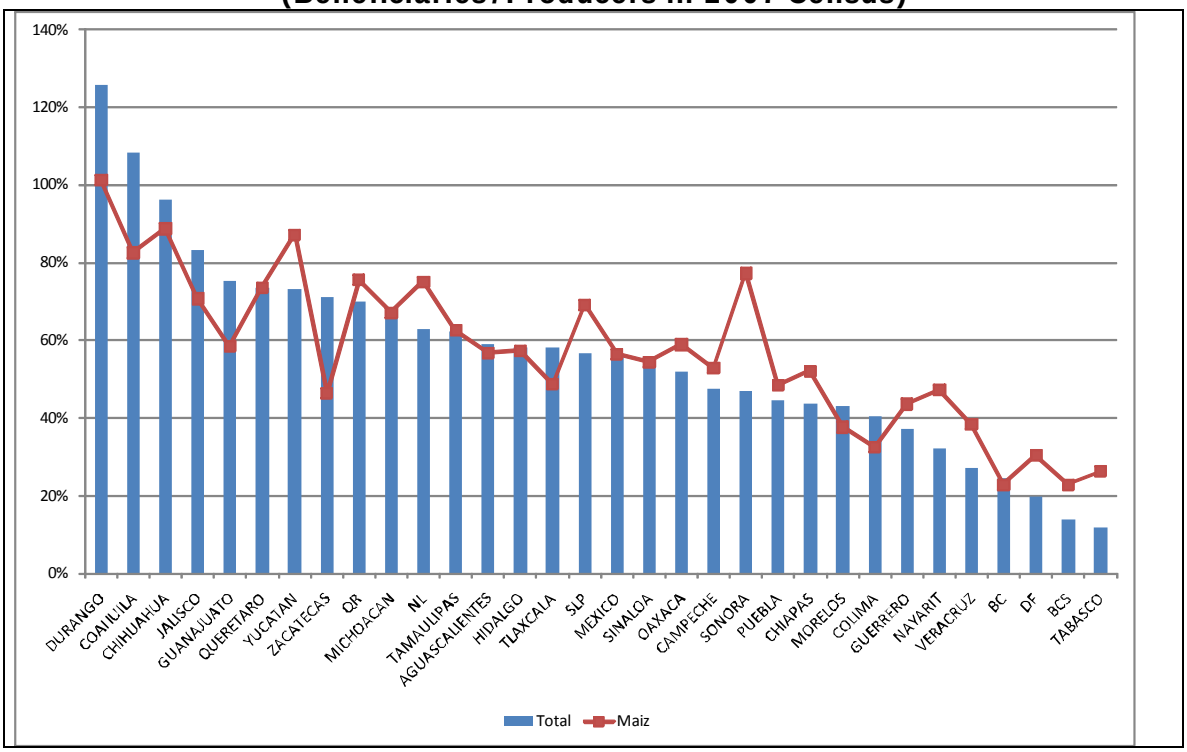


Source: author's elaboration using data from Oliver and Santillanes (2008).

Graph 24. Distribution of Procampo, Alianza, Apoyos: 2002-2006 (percentage shares and cumulative of national total; states ordered by extreme poverty rate)

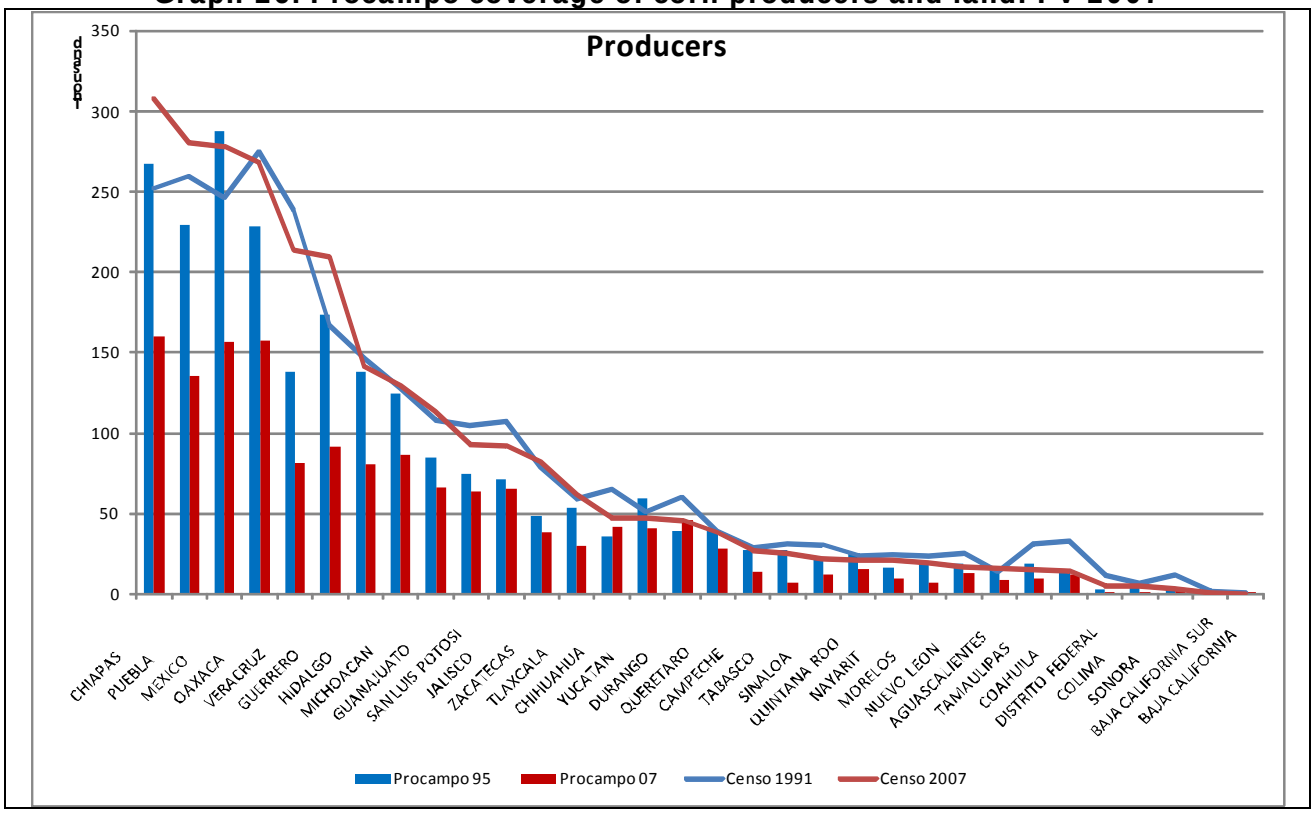
Source: author's elaboration using data from Oliver and Santillanes (2008); World Bank (2004).

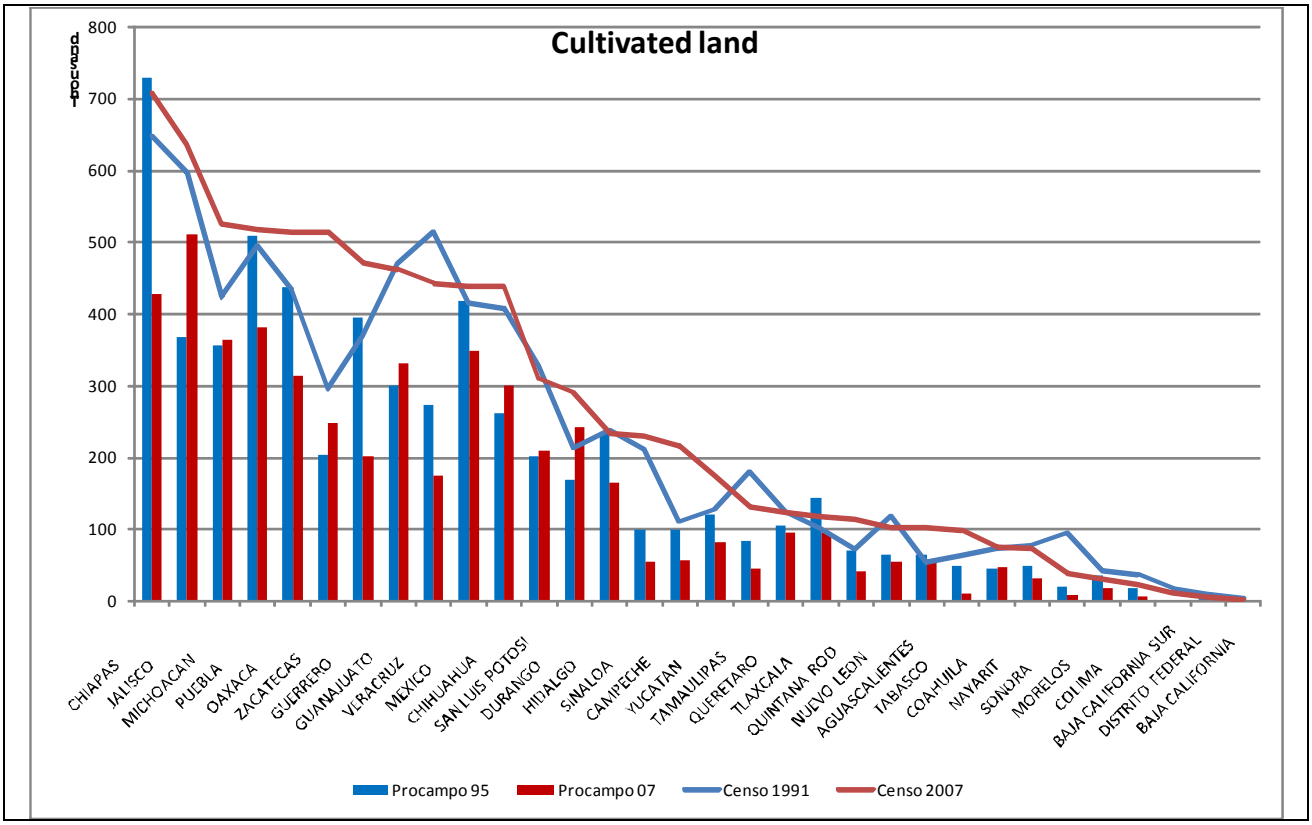
Graph 25. Procampo coverage of all and corn producers PV 2007 (Beneficiaries/Producers in 2007 Census)



Source: author's calculations using ASERCA administrative data and 2007 Agricultural Census, INEGI.

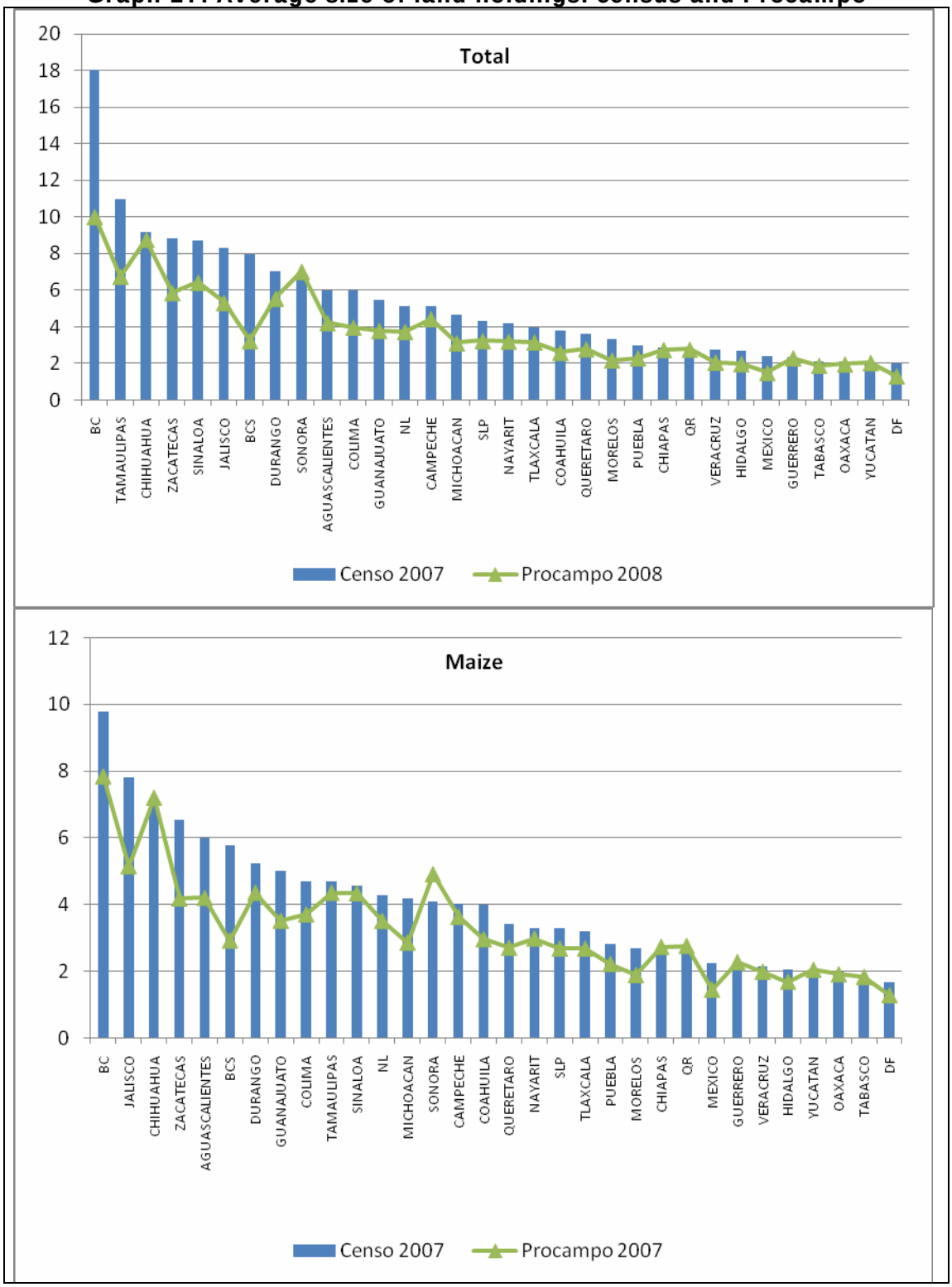
Graph 26. Procampo coverage of corn producers and land: PV 2007





Source: author's calculations using ASERCA administrative data.

Graph 27. Average size of land holdings: census and Procampo



Source: author's calculations using ASERCA administrative data.

5.2. Distribution of agricultural public expenditures: Municipalities

We present an analysis of the distribution of transfers at the municipality level using administrative ASERCA data for *Procampo* and *Ingreso Objetivo* (the principal instrument of *Apoyos a la Comercialización*), and data on the municipal allocation of most of the other ARD programs included in PEC compiled by CEDRSSA (2009). Municipalities are ordered by rural poverty rates (pobreza alimentaria) estimated by CONEVAL.

Both *Procampo* and *Ingreso Objetivo* are regressively distributed, but the latter extremely so, with high per capita payments for a small fraction of municipalities, and no payments for most of the rest (graph 28). In comparison, the Procampo benefits are densely distributed throughout. The poorest 50% of municipalities receive 40% of Procampo transfers, but less than 6% of Ingreso Objetivo, and in the latter case these resources are concentrated in a few municipalities so the great majority of the poorest half of municipalities (and all those in the poorest third) receive no transfers from *Ingreso Objetivo* at all.

The CEDRSSA (2009) data base allows for the first time an analysis of the distribution of a majority of the PEC programs, representing the bulk of federal ARD spending implemented in Mexico today. The data is for 2007 and covers 59 PEC programs with a combined budget of $104 billion pesos, representing close to 60% of PEC.

We analyze this data by ordering municipalities by rural poverty rates, partitioning municipality sets thus ordered to obtain rural population deciles, so that each decile represents 10% of the rural population (not 10% of municipalities). Excluding some small programs and redundancies, graph 29 presents the distributions of 32 individual programs, and graph 30 presents the distribution of the programs grouped according to the principal functional categories.

Two important caveats in interpreting the following results must be mentioned. First, the quality of the data may vary significantly between programs, as they originate in administrative records. Secondly, the analysis ignores intra-municipal inequalities so the results may differ from the analysis based on individual producer or household data presented below (section 6).

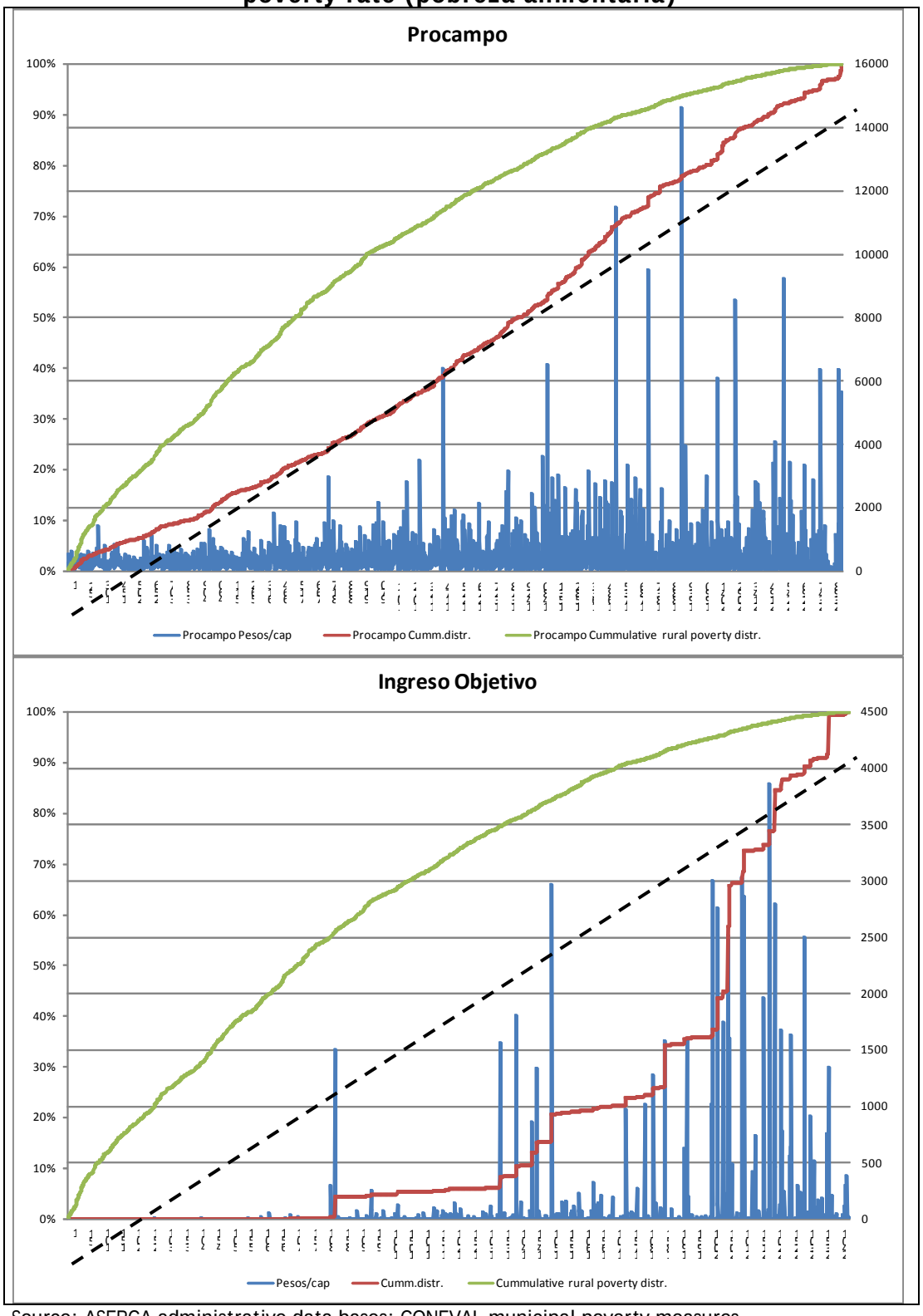
Considering the programs individually, we find a wide range between the most progressive, *Infraestructura Básica Indígena*, with more than 90% allocated to the poorest 40%, and the most regressive, with 90% of resources allocated to the richest 40%. As expected, Sedesol programs dominate among the more progressive, but we also find here indigenous (CDI), water (CAN), and transport (SCT) programs, as well as federalized funds (FAIIS) and *Procampo Capitaliza*. The regressive end is dominated by Sagarpa Apoyos and Alianza programs, as well as financing programs (FIRA, Financiera Rural),

FORTAMUN, and Procampo Tradicional. The contrast between Procampo Tradicional and Capitaliza is surprising and requires further investigation.

The distribution by functional categories (graph 30) confirms these results: social and infrastructure spending are progressive overall, environmental programs are broadly neutral, while financial and "competitiveness" programs (as these are classified in the PEC), are highly regressive.[15] There is an interesting contrast between the two federalized municipal funds (Ramo 33): the FISM, allocated in part through a poverty-based formula, is progressive, while FORTAMUN is regressive. The overall distribution of all the PEC programs analyzed here is broadly neutral.

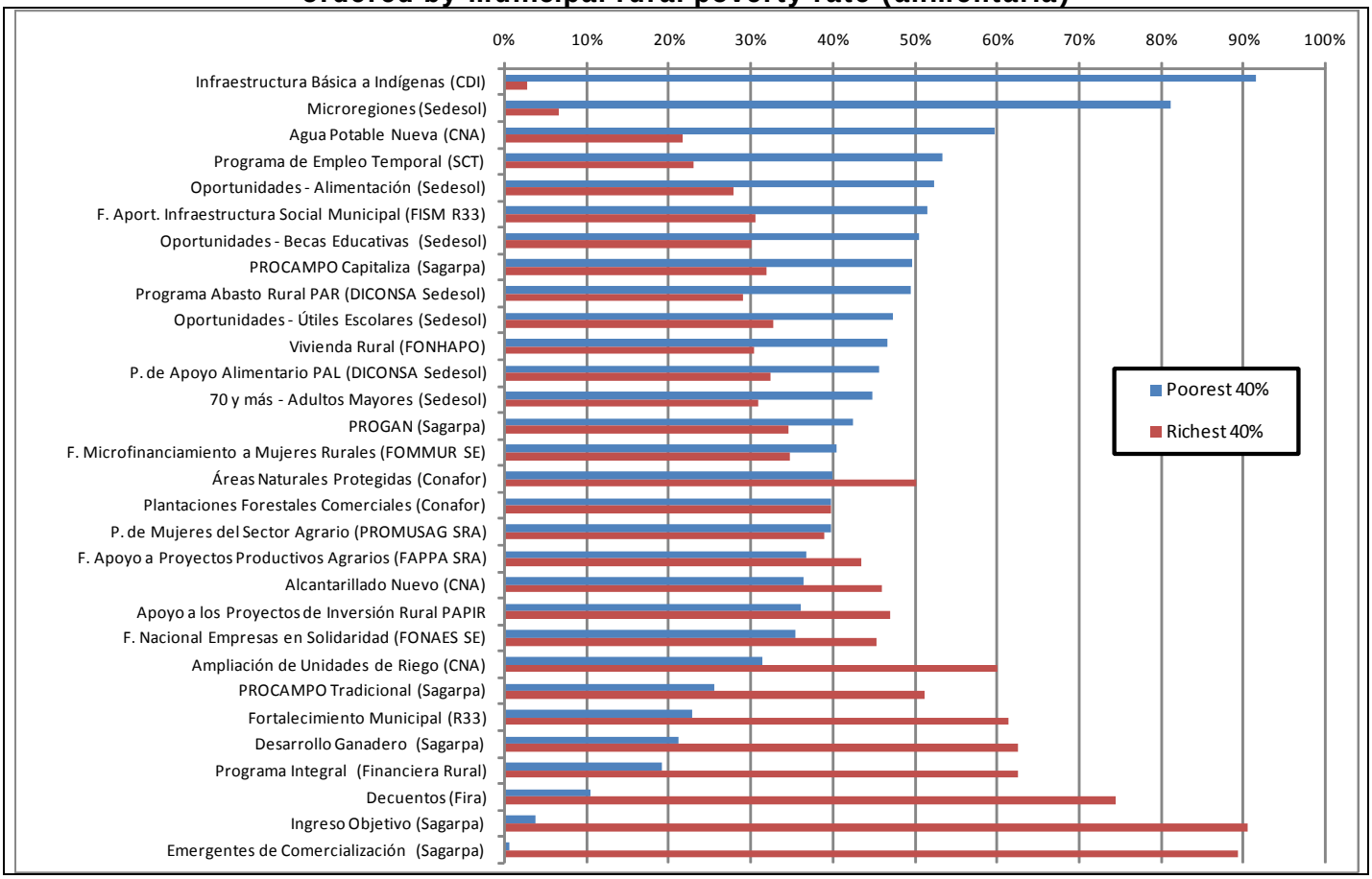
[15] Financial programs are considered on the right-hand scale of graph 30 and are not added to the total because the data base reports the full credits allocated by public financial institutions rather than the fiscal cost, or subsidy included in these credits.

Graph 28. Procampo and Ingreso Objetivo transfers in OI-2005 & PV-2006 by municipalities ordered by rural poverty rate (pobreza alimentaria)



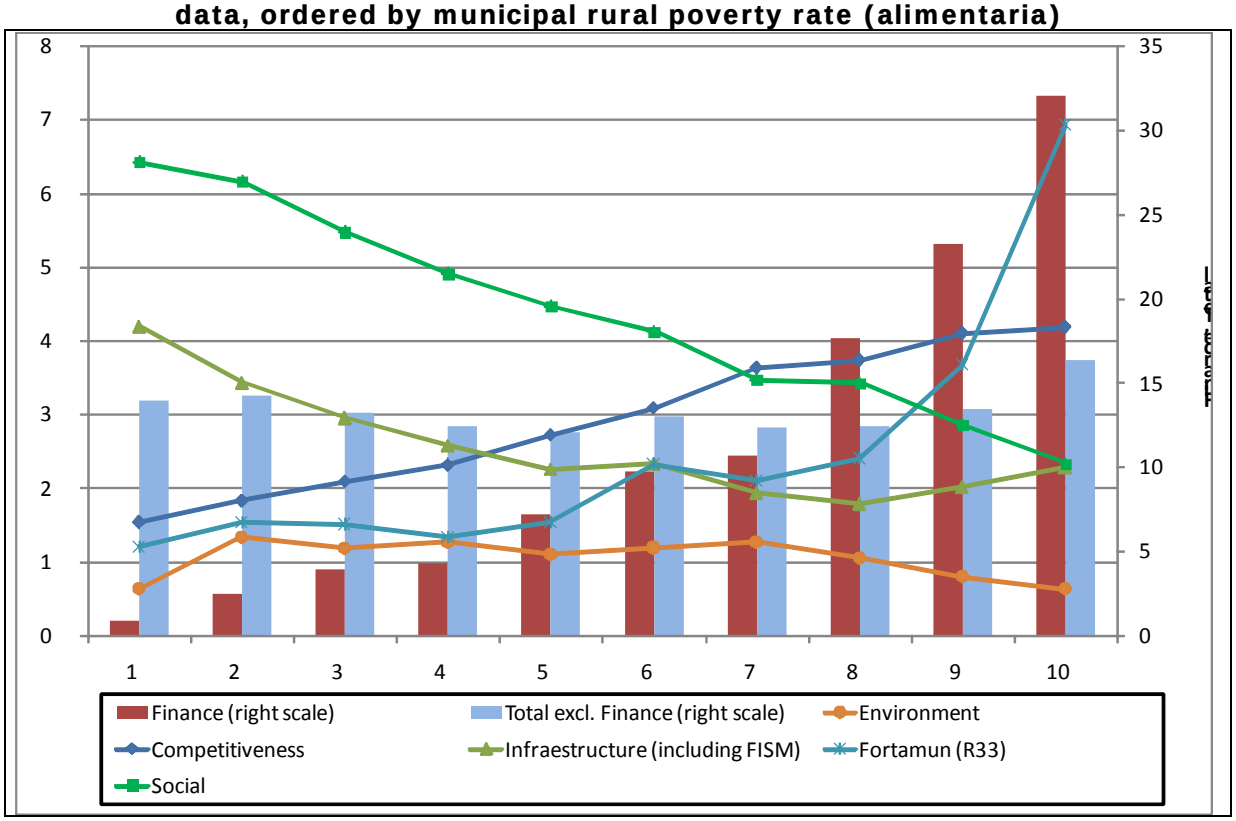
Source: ASERCA administrative data bases; CONEVAL municipal poverty measures.

Graph 29. Distribution of rural development and agricultural programs based on population deciles derived from municipal level data, ordered by municipal rural poverty rate (alimentaria)



Source: author's elaboration using data from CEDRSSA (2009).

Graph 30. Distribution by broad functional groups of rural development and agricultural programs based on population deciles derived from municipal level data, ordered by municipal rural poverty rate (alimentaria)



Source: author's elaboration using data from CEDRSSA (2009).

5.3. Effects on growth, productivity, employment and migration

The geographic concentration of APE in Mexico constitutes a unique natural experiment to test the impact of APE on agricultural growth. This analysis is of some policy relevance because the noted strategic allocation of agricultural subsidies to the largest agricultural states (see graphs 16, 21) is motivated on two assumptions: a) that the overall impact of APE is maximized by concentrating resources in the most productive states, and b) that the most productive states are the big northern agricultural states, accounting for the largest shares in national AGDP.

Though consistent data on the evolution of all APE at the state level is limited, what is available suggests that there is much historical inertia and little inter-temporal variation in the distribution of federal resources between states. This is obviously true in the case of Procampo, which established its historical entitlements in 1993 and has undergone only marginal changes in its rules since then, but also appears to be the case of the other mayor programs

(graph 31). We therefore use the 2006 distribution of APE as an approximation to the distribution of APE over the last decade.

As documented above (graph 21), the distribution of APE is closely correlated with the distribution of AGDP. The largest recipients (Sinaloa, Tamaulipas, Chihuahua) are favored disproportionately even in relation to the size of their AGDP. The agricultural sector in the main beneficiary states might thus be expected to perform better than the rest. Graphs 32-33 present annual growth rates for AGDP (1994-2004) and for land and labor productivity (2000-2004). As with the international data, there is no apparent correlation between APE and growth in AGDP. If anything, the relationship appears to be negative: except for Zacatecas, the states with growth levels significantly above the national average (Mexico, Durango, Queretaro, Nuevo Leon, Jalisco, Aguascalientes, BCS) are all in the lower half of the APE/GDP distribution (>10%), while the three top recipients of APE had below-average growth.

Labor and land productivity also appear to be uncorrelated with APE (graph 33). The four states with the highest APE/AGDP rates present the lowest land productivities among all states except two. On the other hand, productivity growth is roughly U-shaped: it is positive for some of the states with largest shares of APE, negative for most states in the middle and again positive for the states with the smallest APE shares.

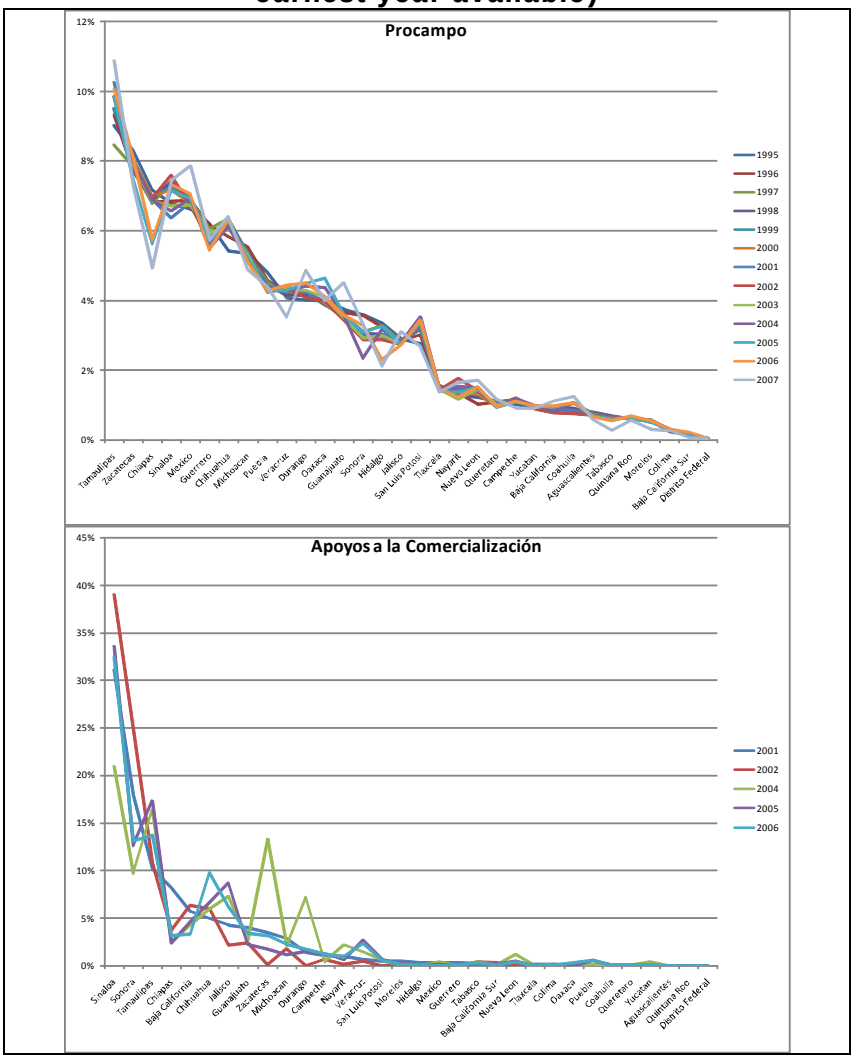
Finally, graph 34 compares the distribution of employment loss in agriculture over the last decade (1996-2008) with the distribution of the principal support programs, ordering states by their share in the total employment loss over the period. Again, we observe a negative correlation: the states with the steepest agricultural employment losses receive on average more support.

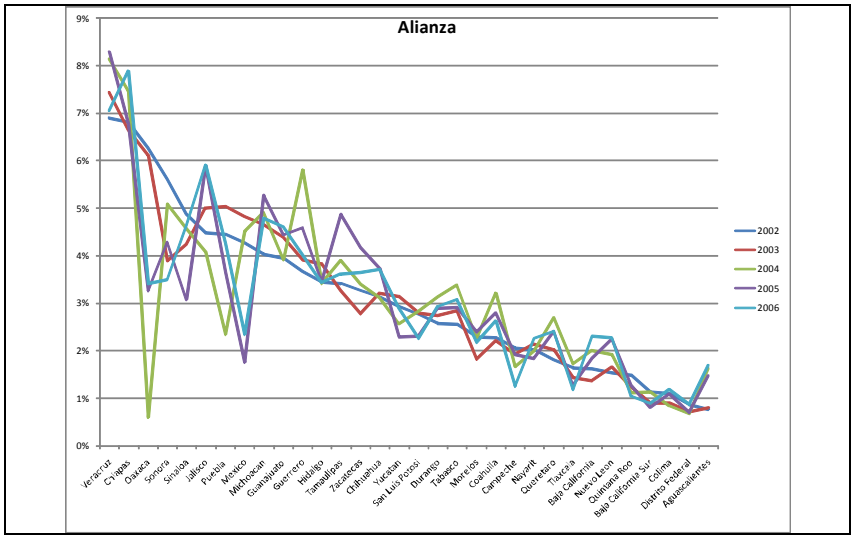
These results may seem counterintuitive, but can be explained by several factors. First, APE and infrastructural investments have been concentrated historically in the largest and most developed agricultural states, where additional growth potential and productivity gains may thus be smaller than in the less developed states where public investment has been scarcer. Secondly, as noted before, a large proportion of agricultural subsidies is directed at large-scale and capital-intensive maize and other grain production, with limited direct employment potential. Finally, the results may also reflect a limited productive impact of most agricultural subsidies at the farm level. Many of these subsidies represent compensatory transfers rather than productivity-increasing investments, and for the latter impact evaluations are available for any of these programs.

Finally, to obtain a preliminary sense of the correlation between Procampo transfers and migration decisions, we compare the distribution of *Procampo* beneficiaries at the municipality level with various census-based migration measures, including households receiving remittances (2000), households with migrants (2000), international migrants in 1995 and 2000, and

the change in migrants between these two years (graph 35). This reveals a weak relationship between the distribution of Procampo and migration at the municipal level, at least in the case of poorer municipalities, as Procampo *beneficiaries* (in contrast to its transfers) are concentrated disproportionately in the poorer municipalities, while migrants come disproportionately from municipalities with lower poverty levels. This is consistent with the results of a careful econometric analysis on this issue in a companion paper to the present study (Cuecuecha and Scott 2009).

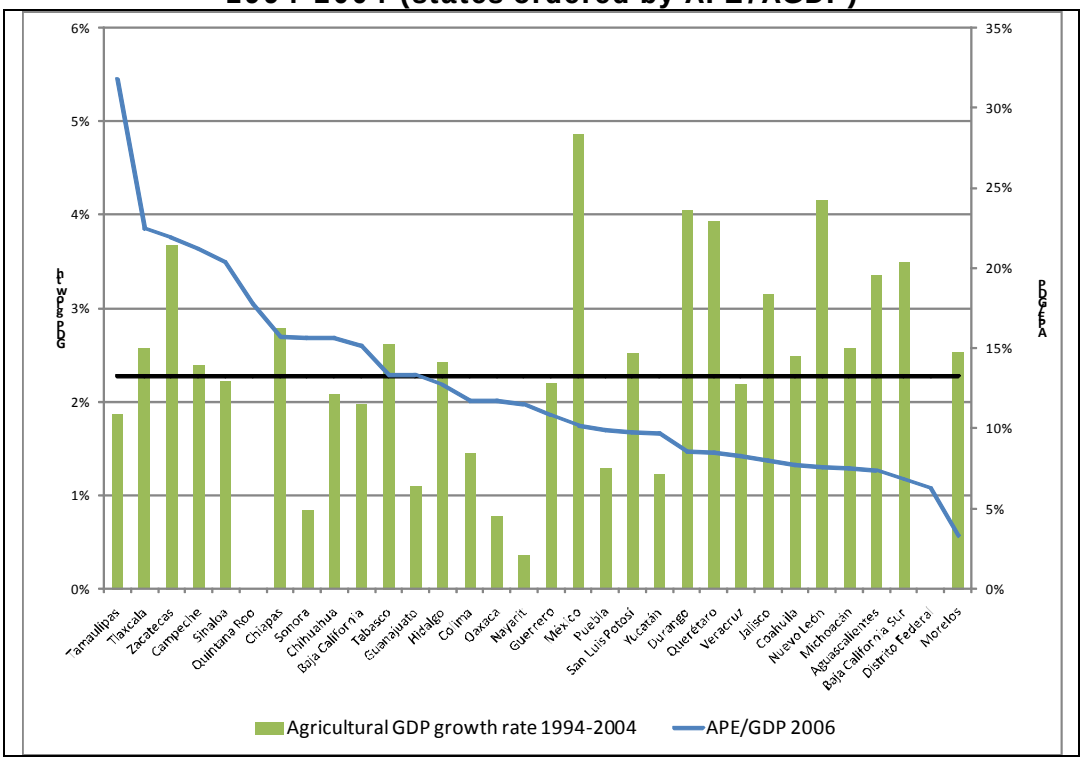
Graph 31. Percentage share of states in Procampo, Apoyos, and Alianza transfers: 1995-2007 (ordered by earliest year available)





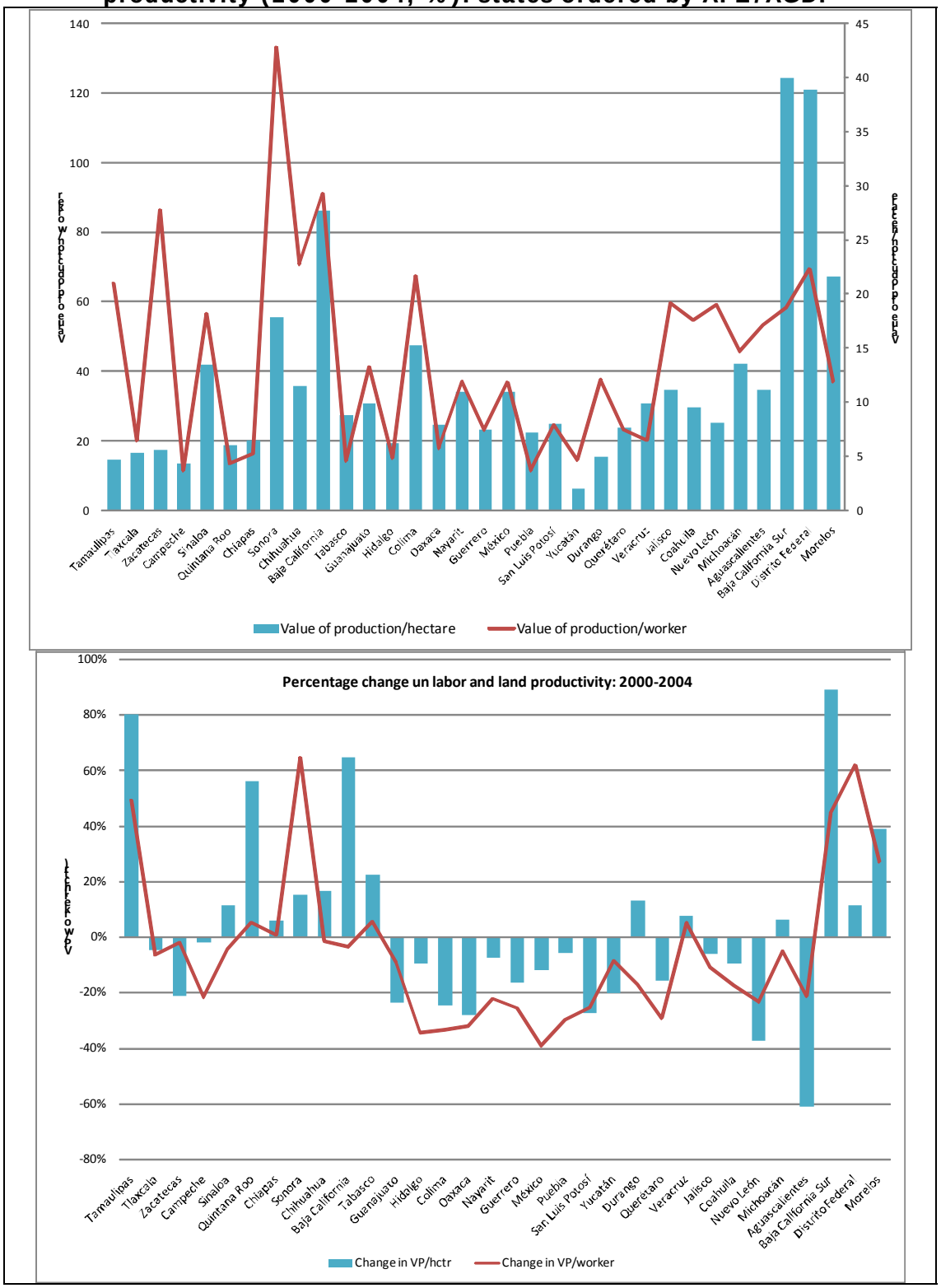
Source: Sagarpa, Oliver and Santillanes (2008)

Graph 32. APE (% AGDP) and average yearly AGDP growth rates: 1994-2004 (states ordered by APE/AGDP)



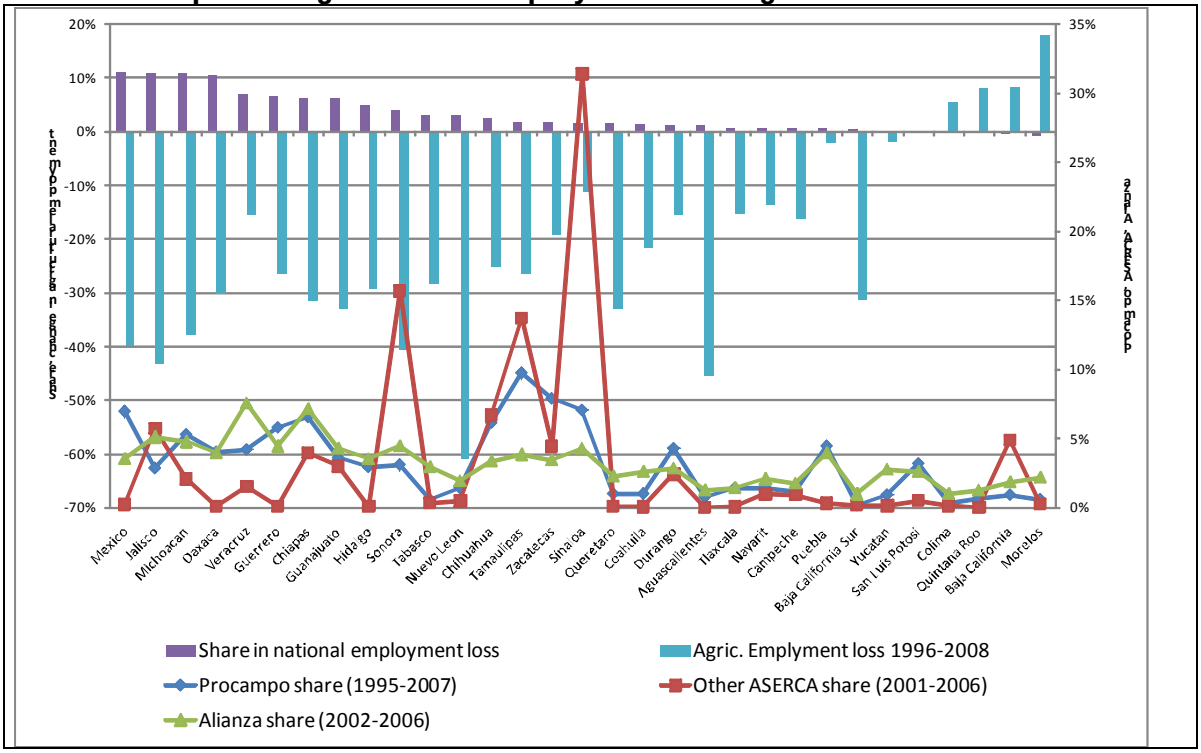
Source: authors calculations using data from SIAP (SAGARPA) and Oliver and Santillanes (2008).

Graph 33. Average value of production per worker and hectare (2000-2004, thousand MP 2004) and percentage change in labor and land productivity (2000-2004, %): states ordered by APE/AGDP



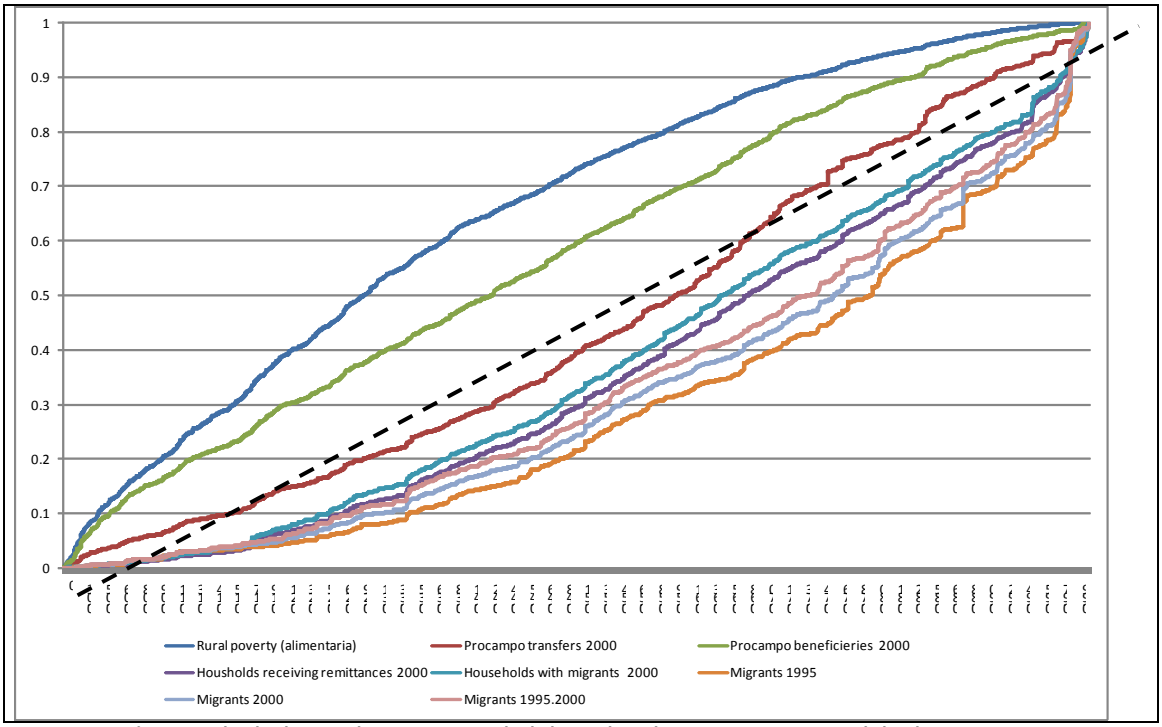
Source: authors calculations using data from SIAP (SAGARPA).

Graph 34. Agricultural employment and agricultural subsidies



Source: author's calculations based on data from ENOE and Oliver and Santillanes (2008).

Graph 35. Municipal Procampo and migration concentration curves: 1995-2000



Source: author's calculations using ASERCA administrative data, CONEVAL municipal poverty measures, and 1995 Conteo and 2000 Censo de Población y Vivienda (INEGI).

6. Distribution of ARD Programs among Households and Producer

In this section the distribution of benefits is analyzed at the level of individual producers and households. The availability of household and producer data bases reporting both agricultural support programs and a relevant measure of household/producer wellbeing or wealth is limited. This study uses three kinds of data sources, which are complementary but not strictly comparable: a) national household surveys including coverage of ARD programs (ENIGH 2006 and 2008, and ENIGH-Modulo Social 2006), b) evaluation surveys for specific programs (Alianza, Oportunidades), and c) administrative data of the programs (Procampo, Ingreso Objetivo). The national household surveys have the important advantages of being nationally representative and including high-quality data on income and other measures of welfare, but their sample size is not designed to capture specific transfer programs accurately, especially when these have limited coverage or concentrate a large share of their benefits in a relatively small proportion households. The other two sources are designed to capture the program beneficiaries and transfers

accurately, but are not nationally representative and generally contain limited or no income data. The analysis obtained from the three sources must therefore be interpreted carefully and complementarily.

The distribution of benefits is analyzed using two different ordering criteria corresponding to the alternative data sources. In the case of administrative data, producers are ordered by land holdings, which is the only proxy of wealth/welfare available in this data. In the case of the national household surveys, benefits received are analyzed by population deciles ordered by total current income per capita.

Data Sources	
Data Source	**Program**
ENIGH 2006, 2008	Procampo, Oportunidades
ENIGH-Modulo Social 2006	Social and rural development programs
Oportunidades recertification and identification data base (ENCASEH 2004)	Oportunidades, Procampo
ASERCA beneficiary data base (2005, 2006)	Procampo, Ingreso Objetivo
Alianza evaluation data base – *Evalianza* (2005, 2006), FAO-Sagarpa	Alianza para el Campo

The household and producer data available allows coverage of the principal ARD programs, including the principal agricultural support programs (Procampo, Ingreso Objetivo, and Alianza), as well as the principal rural social programs, including Oportunidades, Adultos Mayores 70 y más, and Programa de Empleo Temporal. We also estimate the distribution of hydro-agricultural and agricultural electricity subsidies (Tarifa 9) using the distribution of irrigated land as a (rough) proxy. The agricultural support programs covered in this incidence analysis represent approximately 75% of total APE in Mexico.

6.1. Producer deciles ordered by land-holdings (Administrative data)

Before analyzing the distribution of agricultural subsidies by producer deciles (ranked by land-holdings), we consider the distribution of producers grouped by average size of land-holdings. Using administrative data, producers with less than 5 *Has* represent 75% of Procampo´s beneficiaries, but receive 37% of the program's transfers, reflecting their share in covered land (graph 36). Producers with 5-20 Has represent 22% of beneficiaries and receive 41% of the benefits, while producers with more than 20 *Has* represent 3% of the beneficiaries and obtain 23% of the transfers.

Is all the regressivity of Procampo explained by the distribution of land in Mexico, or is the program's coverage of producers also biased against smaller producers? Comparison between the Procampo data and the 2007 Agricultural

Census in the aggregate suggest no such bias, neither at the state level (see graph 27) nor at the national level (graph 13c, above): coverage is highest among small 0-5 (66%) and medium (63%) producers. However, the evidence from poor rural localities presents a somewhat different picture (graph 37), with coverage declining with land size, to just 19% for 1-2 Has and 7% for less than 1 Ha. This issue requires further investigation. One possible explanation for the difference between the two sources might be that the Census might under-report smaller producer units.

This data also allows us to contrast the coverage of Procampo and Oportunidades. As expected, Oportunidades coverage is relatively high throughout in these poor rural localities, but it is significantly higher for household with 1-5 Has (58%), than among landless agricultural workers and households with less than 1 Ha (44% and 46%, respectively). It is also remarkable that in the poorest group in terms of land as well as income (see table 13 above), those under 1 Ha, only 4% of households have *both* programs, while 50% have *neither*.

Despite its level of concentration, Procampo is by far the most pro-poor among the three principal agricultural programs. Barely 9% of the benefits from *Ingreso Objetivo* reach the smaller 75% of producers, while the top 3% of producers absorb 60% of the program's transfers.

More surprisingly, using individual producer data *Alianza* also appears to be significantly more regressive than Procampo, despite the comparatively progressive distribution documented above at the state level (graph 24). *Alianza* includes a broad set of farm investment programs financed through matching grants by both federal and state governments. These are classified into three principal groups, the *Programa de Desarrollo Rural* (PDR), the *Programa de Fomento Agrícola*, and the *Programa de Fomento Ganadero*. In contrast to the latter two, which have no explicit equity objectives, the rules of PDR explicitly target low-income producers. These require that at least 70% of its resources be allocated to Very High or High marginality localities (as defined by CONAPO's marginality index). However, the Alianza evaluation data reveal a failure to comply with these criteria: in 2004 only 32% of the expenditures associated with PDR were spent in these localities – less than 2% in Very High marginality localities.

In the context of a recent evaluation of the program, FAO (2005) used a survey and typology of beneficiaries based on socioeconomic and productive variables to evaluate the distribution of PDR benefits.[16] The FAO study found

[16] The table below reports the values of some of the principal variables in the FAO typology based on a survey of PDR beneficiaries.

that 78% of PDR beneficiaries were of Types I and II, in contrast to 54% of total *Alianza* beneficiaries, and on this basis concluded that the PDR "is targeted to low income producers" (p 3). Unfortunately, however, this conclusion does not survive a careful analysis of the FAO data. First, the evaluation survey is representative of Alianza beneficiaries only, so their "low income" position is defined relative to this set of beneficiaries, not the rural populations at large. Secondly, the asset-based typology used in the FAO evaluations is not well suited to identify poorer producers even within this set (see table in footnote and graph below). To address the latter problem table 14 presents basic characteristics and transfers received by producer quintiles ordered by schooling level, using the *Evalianza* data. This simple alternative ordering brings out the extreme differences between the lower and upper groups: from 1 to 14 years of schooling, and from 7.5 (1) to 114 (10.5) rainfed (irrigated) Has. The two lowest strata, representing 40% of the beneficiaries, receive only 35% of PDR transfers.

To address the first problem, World Bank (2006, fig. 3.24) uses a rural household survey (ENHRUM 2002) to place these types within the national rural distribution. As shown in graph 38, this implies that almost 73% of PRD transfers are concentrated in the richest quintile of the rural population by Evalianza's asset index (Types II-IV, representing 22% of the population), while 35% of PRD beneficiaries and 45% of all Alianza beneficiaries are concentrated in the richest 2% of the rural population.

To compare the distribution of the principal APE programs on a common basis we present the distribution of benefits by producer deciles, and concentration curves based on producer percentiles, ranking producers by two alternative land measures:

(1) size of land holdings as reported in the administrative or evaluation data, and

(2) quality-adjusted land assets: as a more accurate proxy for producer income and wealth an approximation to the value of land assets obtained from the estimated value of production in each productive unit taking into account a) whether it is rainfed or irrigated, b) crop type, c) size of cultivated land, and d) average productivity and prices by State (using Sagarpa data).

Table 15 presents the distribution of Procampo and Ingreso Objetivo using the two concepts, and graphs 39-41 present concentration curves for these programs, for Alianza (fitted from the observations available from the FAO data presented above) and for energy and hydro-agricultural subsidies

Selected variables	Typology of PDR Beneficiaries				
	I	II	III	IV	V
Education (Years)	4.8	6.3	8.9	14.3	19.0
Value of Assets (MP)	1,799	56,557	208,853	662,765	512,000
Number of Equivalent Cattle Units	5.6	8.3	13.8	28.6	71.0
Irrigated land Equivalent (hectare)	0.8	3.0	11.1	33.1	10.0
Source: FAO (2005)					

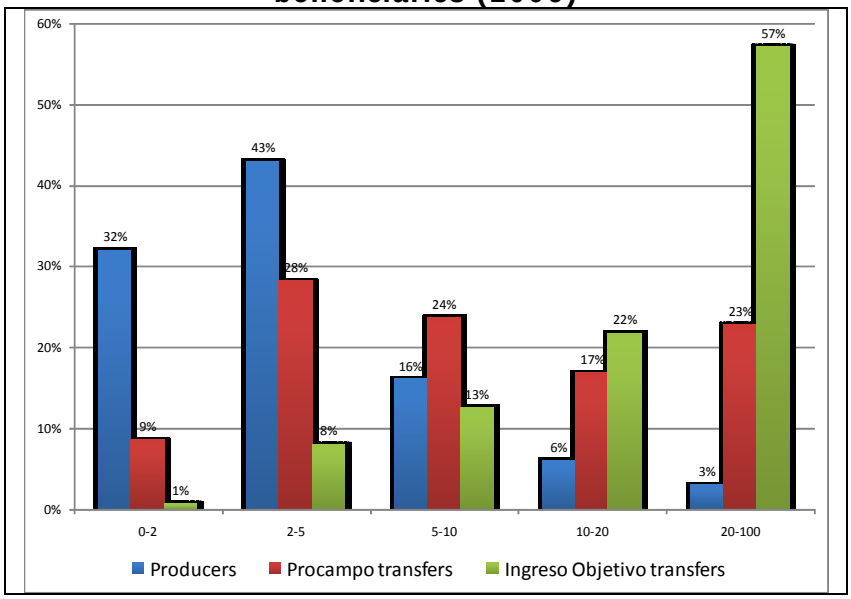
(proxied by the distribution irrigated land). This analysis reveals extreme concentrations of benefits for all programs, except for Procampo in the quality-adjusted rankings. The poorest producer decile (in terms of both rankings) receives a tenth of a percentage point of *Ingreso Objetivo*, similarly insignificant fractions of energy/irrigation subsidies, and only 2-3% of Procamo. At the other extreme, the producers in the top decile receive transfer shares in the order of:

a) 42% (33%) of *Procampo* (adjusted)
b) 55% of the *Alianza PDR*,
c) 60% of energy and hydrological subsidies,
d) 85% (90%) of *Ingreso Objetivo*.

These distributions are of course mutually reinforcing. In addition to the large subsidies associated with irrigation, as graph 40 shows, the distribution of Procampo and Ingreso Objetivo are more regressive for irrigated than for rain-fed land.

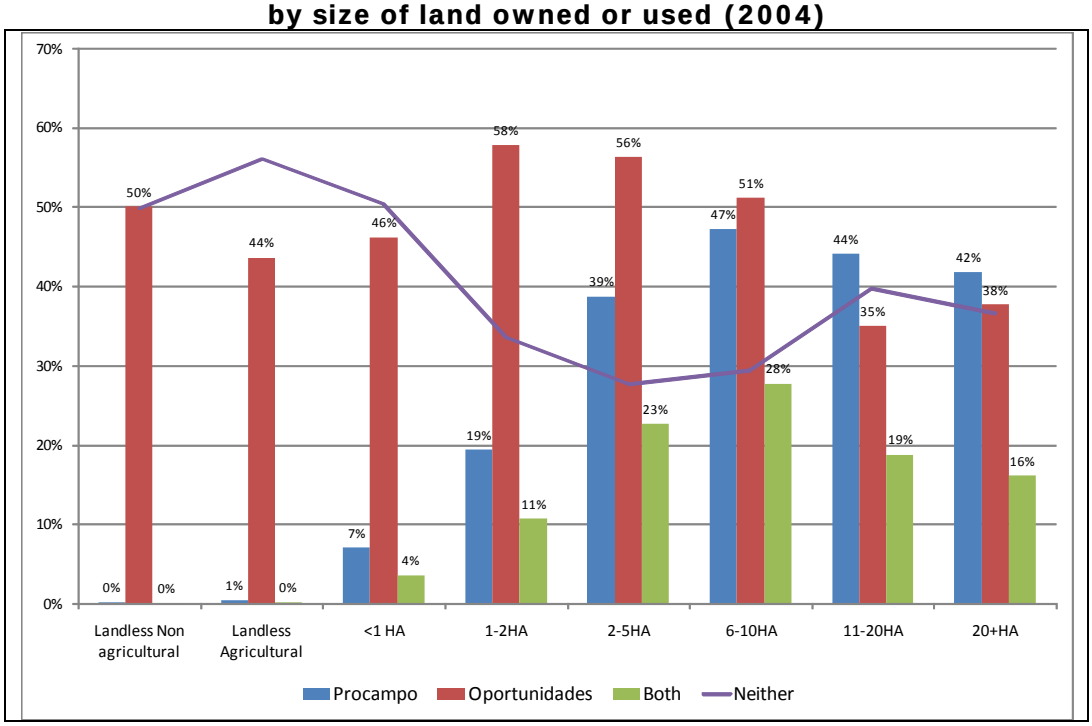
It is interesting that the more accurate measure of producer wealth reduces the degree of regressivity in the case of *Procampo* but it increases it in *Ingreso Objetivo*. This suggests that many of the larger beneficiaries from Procampo given the size of their lands may be poorer once the land is adjusted for quality (and viceversa for smaller ones), while Ingreso Objetivo is not only concentrated on larger land-holdings but also on those with the more productive ones.

Graph 36. Distribution of producers and transfers from Procampo and Ingreso Objetivo between Procampo beneficiaries (2006)



Source: author's calculations using ASERCA administrative data.

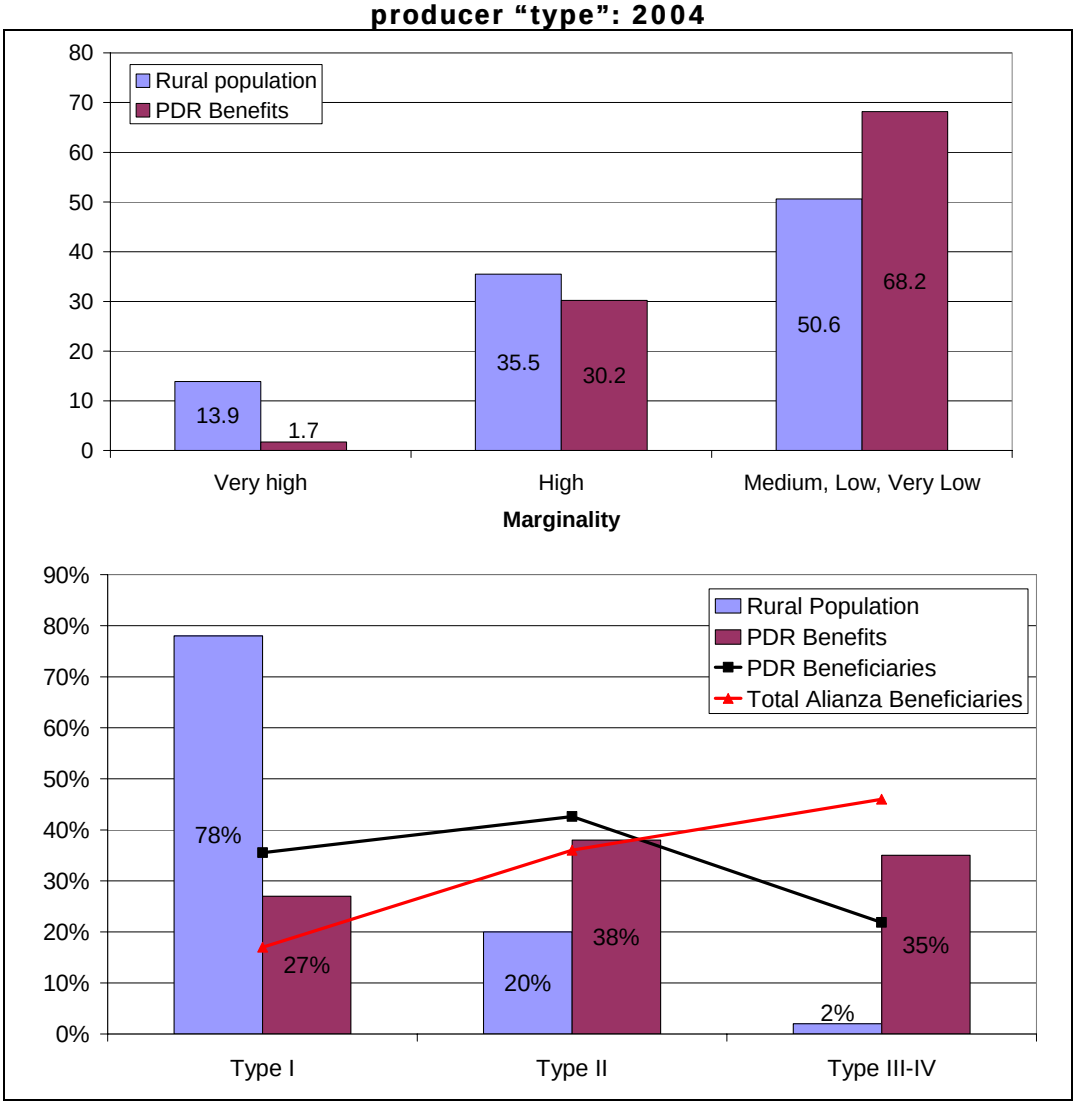
Graph 37. Coverage of Oportunidades and Procampo among households in poor rural localities, by size of land owned or used (2004)



Source: author's calculations ENCASEH 2004 Oportunidades survey.

Table 14. Characteristics and transfers to Alianza beneficiaries: Beneficiary quintiles ordered by schooling (Evalianza 2005)						
		1	**2**	**3**	**4**	**5**
Age		58	53	48	43	42
Schooling		1.1	4.1	6.0	8.4	14.1
Land	**Rain fed**	7.5	12.8	19.1	30.4	114.3
	Irrigated	1.0	1.6	1.3	3.3	10.5
Distribution of transfers	**Total**	13%	18%	17%	23%	30%
	D.Rural	16%	19%	21%	25%	20%
	Agrícola	13%	20%	14%	20%	33%
	Ganadero	8%	11%	17%	24%	40%
Source: author's calculations using Evalianza 2005 data.						

Graph 38. Distribution ofbeneficiaries and funds of the *Programa de Desarrollo Rural* by marginality of localities and socioeconomic producer "type": 2004



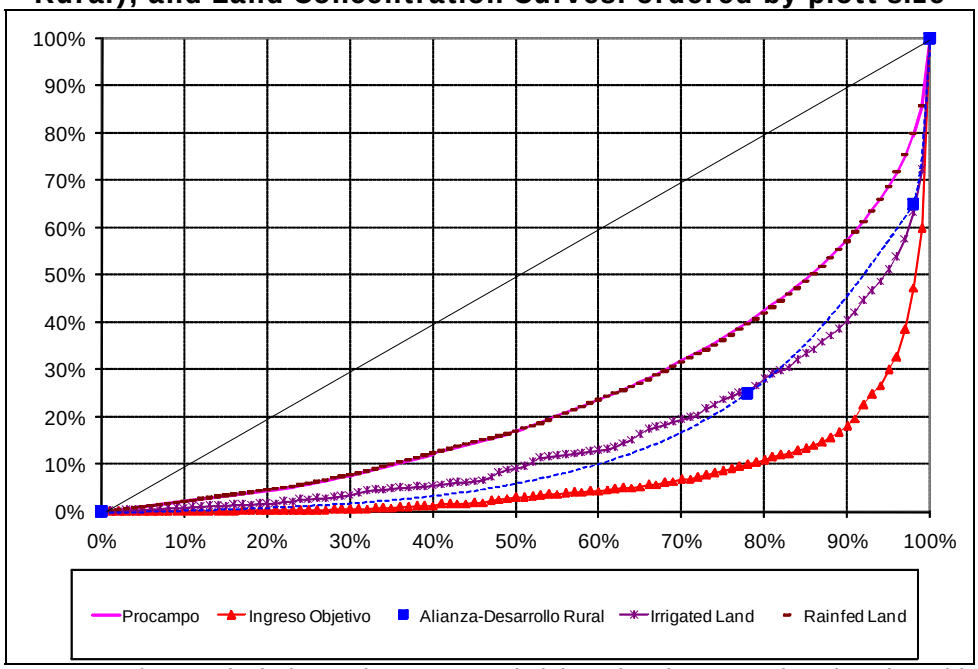
Source: FAO (2005) and World Bank (2006).

Table 15. Distribution of *Procampo* and *Ingreso Objetivo* transfers by producer deciles ranked by (1) *land holdings* and (2) *quality-adjusted land holdings* (Spring-Summer 2006)

Producer Deciles	Land (Has)			Distribution of transfers			
	Average	Range		Procampo		Ingreso Objetivo	
		Min	Max	(1)	(2)	(1)	(2)
1	0.93	0.01	1.00	2.2%	2.9%	0.1%	0.1%
2	1.00	1.00	1.00	2.3%	3.4%	0.1%	0.3%
3	1.39	1.00	1.75	3.2%	3.9%	0.3%	0.0%
4	1.98	1.75	2.00	4.6%	5.1%	1.0%	0.2%
5	2.12	2.00	2.50	4.9%	6.4%	2.6%	0.2%
6	2.90	2.50	3.00	6.7%	7.6%	1.4%	0.9%
7	3.62	3.00	4.00	8.3%	9.9%	2.0%	0.8%
8	4.75	4.00	5.79	10.8%	12.1%	2.6%	1.3%
9	6.99	5.79	9.00	15.2%	15.8%	5.0%	6.8%
10	**20.48**	**9.00**	**1957.5**	**41.8%**	**33.0%**	**85.0%**	**89.6%**
Percentiles							
90-97		9	20	17%		23%	
98-100		20	1957.5	25%		62%	

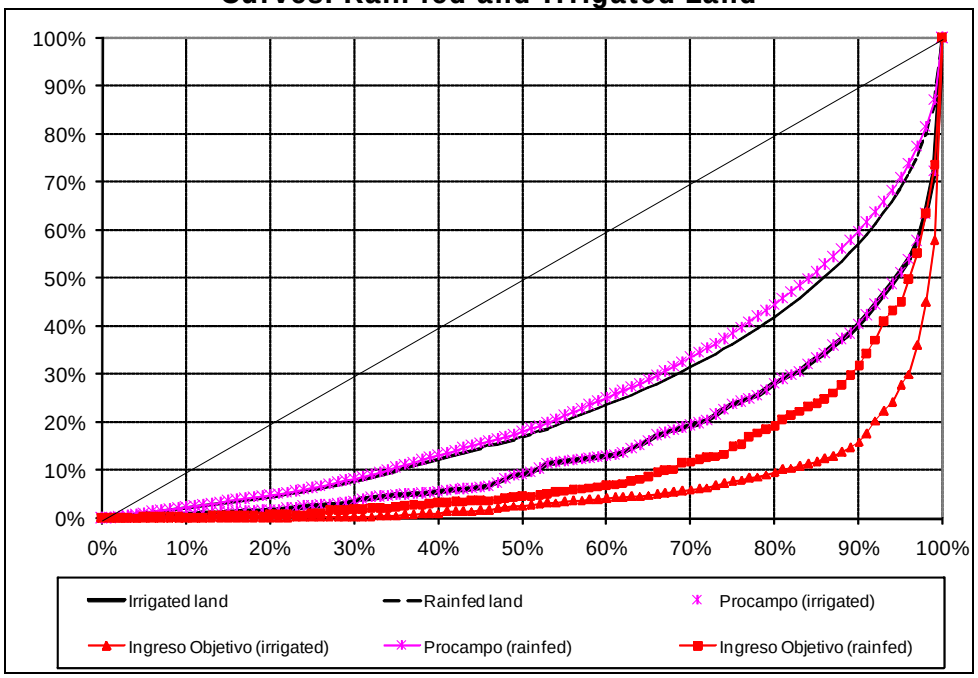
Source: author's calculations using ASERCA administrative data.

Graph 39. Procampo, Ingreso Objetivo, Alianza (Desarrollo Rural), and Land Concentration Curves: ordered by plott size



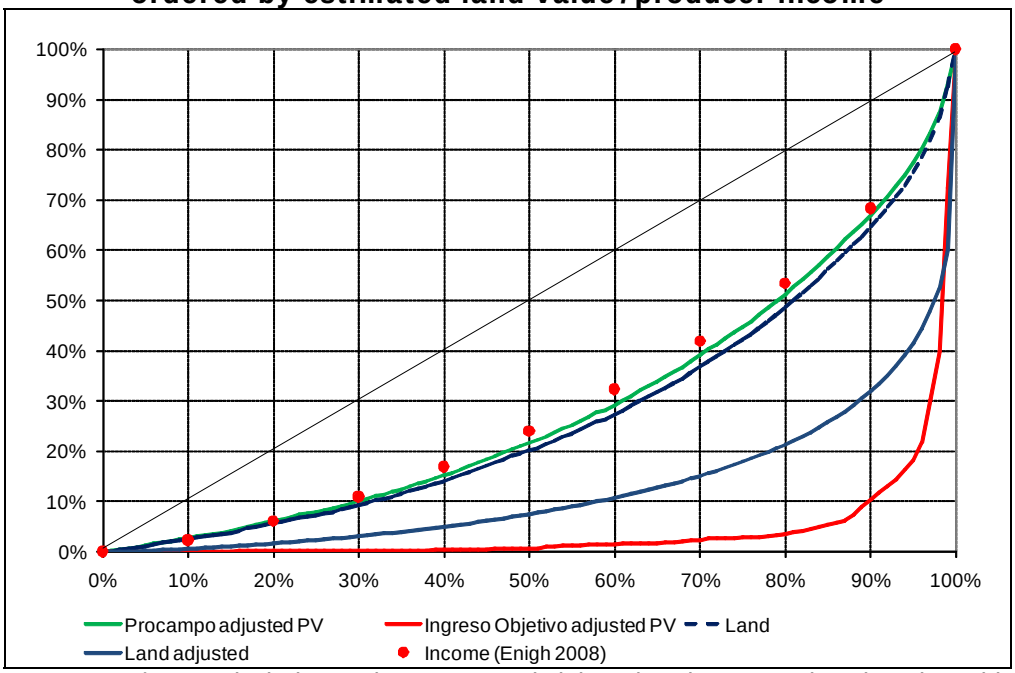
Source: author's calculations using ASERCA administrative data, FAO (2005) and World Bank (2006).

Graph 40. Procampo and IngresoObjetivo Concentration Curves: Rain fed and Irrigated Land



Source: author's calculations using ASERCA administrative data.

Graph 41. Procampo, Ingreso Objetivo and Land: ordered by estimated land value/producer income



Source: author's calculations using ASERCA administrative data, FAO (2005) and World Bank (2006).

6.2. Household deciles ordered by income per capita (ENIGH 2006, 2008)

To put these distributions in the context of public rural spending on social programs as well as the national and rural income distribution, and to estimate the distributive impact of these resources, in this section we analyze the distribution of Procampo and the principal social programs using the ENIGH 2006 survey (and its associated "Modulo de Programas Sociales"). In the case of Procampo, the only agricultural program reported in this survey, these results must be interpreted with some care, as the survey is not designed to be representative of individual transfers, especially when a large proportion of their resources is concentrated on a small fraction of the population in the top decile, as we have just seen is the case of Procampo.[17] Despite this, the ENIGH data confirm a concentration of benefits in the top decile (graph 42), where 4.5% of Procampo's beneficiaries receive 27% of the program's transfers, while the poorest income decile accounts for 20% of beneficiaries but 8.7% of benefits.

The contrast between the principal social and agricultural programs, Oportunidades and Procampo, is evident from their concentration curves in income space, both nationally and within the rural sector (graph 43).

A critical issue in this analysis is the position of the APE concentration curves with respect to the (pre-transfer) income Lorenz curve, as this determines whether these programs are simply ineffective as redistributive instruments, or actually contribute to *increase* income inequality (below the Lorenz curve). The noted data limitations in both the ENIGH and the administrative data preclude a direct and unambiguous settlement of the issue. It seems reasonable to conclude that Procampo (and perhaps Alianza's PDR) is probably progressive in relative terms: its concentration curve is well above the income Lorenz curve generated by the ENIGH data (graph 43), but similar to the latter when using administrative data (graph 41, 44).

But Procampo is probably the exception among (non-targeted) agricultural subsides. The concentration curve for agricultural land and perhaps even quality-adjusted land may reasonably be interpreted as an *upper bound* for the concentration curves of *non-targeted, input- or output-linked transfers and subsidies,* generally: a large part of the rural population (at least the

[17] The analysis above based on administrative data has shown that a quarter of the program transfers are received by the top 3% of producers. As is well known the ENIGH survey does not capture HH incomes at the upper extreme of the income distribution very well, for three principal reasons: a) the low statistical probability of selecting this small set of HHs in the sample, b) these HHs are less likely to participate once selected, an c) even if they are selected and agree to participate, they are more likely to underreport their income. The sizable measured underreporting of aggregate incomes and spending in the ENIGH in relation to the National Accounts is attributed in part to this truncation, and is the principal reason why the official methodology to measure poverty in Mexico does not adjust income to National Accounts. See Leyva-Parra (2005) and Scott (2005). This seems to be the main explanation for the large difference in the degree of estimated regressivity for Procampo using ENIGH (0.12) vs. administrative data (0.50).

poorest 50%) is excluded from such programs simply because they are either landless or have plots which are too small to be reached by such programs (except for a decoupled program like Procampo), and in the upper half of the land distribution there are probably strong economies of scale (and land quality) in the capacity to attract agricultural support resources (unless some explicit targeting is applied, as in the case of the PDR). This applies clearly to the case of input support programs like the energy subsidies (diesel agropecuario and tarifa 9). This implies that the majority of agricultural support programs, and APE overall, are regressive in relative terms, and thus a contributing cause of rural income inequality.

These estimates of course only consider the direct, first-order incidence of the benefits from APE. In a general equilibrium setting, agricultural workers and small land owners may share some of the benefits from the agricultural support transfers obtained by large commercial producers, through higher wages and land prices. However, there are at least two reasons to doubt that such "trickle-down" effects would be sufficient to reverse the first-order effect. First, as we have seen, the large, grain-producing commercial farms in the northern states benefiting from these transfers tend to be capital- rather than labor-intensive. Secondly, by further increasing the cost-advantage of large-scale producers, these transfers undermine the capacity of small (potentially) commercial producers to compete in these markets. Note that the argument to support these smaller but viable farmers is exactly analogous to the argument often used in favor of supporting the larger commercial producers to compensate them for unfair competition due to international subsidies.

To compare the equity of APE more systematically in the context of RD expenditures, and assess the global impact of ARD expenditures on rural income inequality, we can compare the APE programs analyzed above with the social and rural development programs reported in the ENIGH 2006 and a special "Social Program Module" commissioned by Sedesol with the ENIGH 2006. The following graphs compare two synthetic indicators: concentration coefficients (CC) and the shares of transfers received by the poorest/richest quintile.

Though as noted above, the coefficients obtained from administrative data (based on quality-adjusted land-orderings) are not strictly comparable with the ENIGH-based indicators, the contrast between the social and rural programs (Oportunidades, Piso Firme and the Programa de Empleo Temporal, the most progressive) and agricultural programs (Ingreso Objetivo and irrigated land-based programs, the most regressive) is clear from the gap of the estimated concentration coefficients (graphs 44, 45).

To obtain an estimate of the distribution and incidence of overall RDE and APE expenditures and their distributive effect, we make the following assumptions:

I. The social and rural development expenditures (RDE) we have not been able to estimate directly (40% of the total) is distributed on average as those we have. This probably overestimates the progressivity of RDE, given the weight of Oportunidades in our estimates.
II. The APE programs whose distribution we have not been able to estimate (37%) are assumed to be distributed as total (rain fed & irrigated) cultivated land, as reported in the ASERCA data bases, except for the energy and hydro agricultural expenditures, which are proxied through the distribution of irrigated land. This is probably a lower bound for the regressivity of APE.
III. Given the important degree of underreporting of household income in ENIGH when compared to the National Accounts, to obtain a realistic estimate of the incidence of ARD expenditures we adjust household income by the relevant factor (1.87). Since it is reasonable to assume that underreporting in Mexico is more significant at the top than the lower end of the income distribution, we report both adjusted and unadjusted estimates.

Despite the comparability issues, total APE appear to contribute to increase rural income inequality in Mexico, while the RD expenditures considered here are progressive (pro-poor) in absolute terms, with the notable exception of Sedesol´s small productive programs, including *Opciones Productivas, Apoyos a la Palabra*, which are reported here together with other credit programs. The poorest quintile of rural households receive 31% of RDE, but just 4% of APE, while the richest quintile receive 9% of RGD but 60.7% of APE. Total ARD are regressive in absolute terms, but still progressive relative to the distribution of pre-transfer income.

Total APE transfers represent a fifth (20.7%) of the adjusted average income of the richest decile (almost 40% if unadjusted to NAs), but just 7.6% for the poorest (14% unadjusted) (table 16). On the other hand, RDE add 53% (almost 100% unadjusted) to the poorest deciles pre-transfer income, but barely adds to the income of the top decile. Adding these transfers together, the distribution of public ARD expenditures is flat for the poorest 40%, at close to $400 pesos per capita per month, but increases sharply in the tenth decile, where rural households obtain on average more than $3000 pesos monthly per capita.

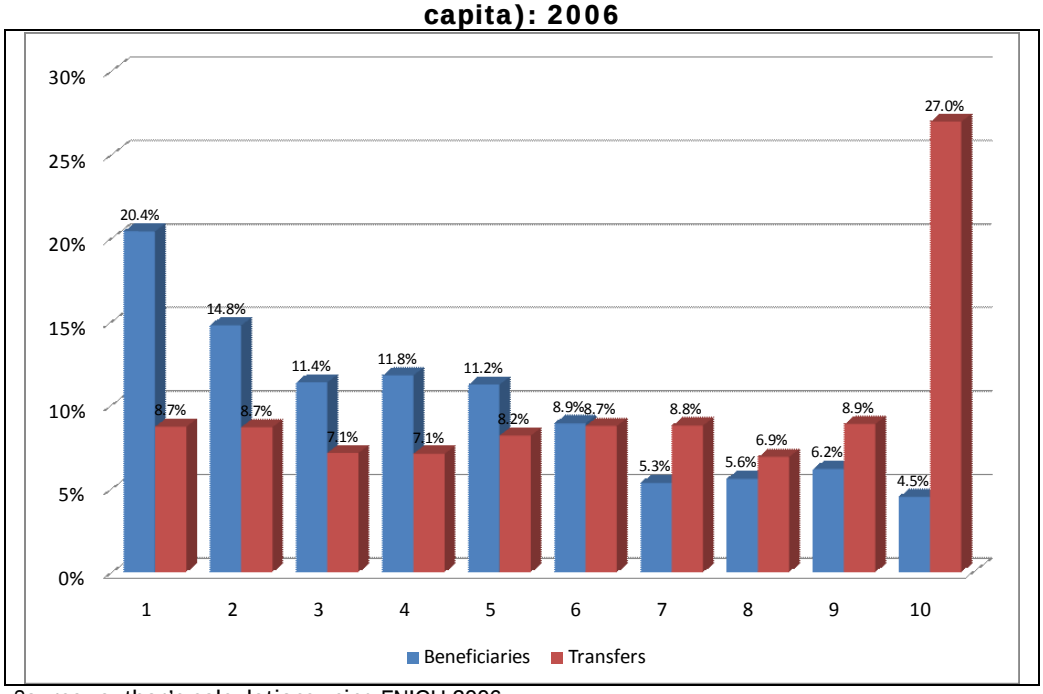
In purely accounting terms, APE *increases* the rural Gini coefficient by 6.7% (11.5% unadjusted), while RDE *decreases* it by 14% (24.8% unadjusted), with a net reduction of 6.5% associated with total ARD. In other words, APE appears to cancel more than half of the redistributive impact of RDE on

relative inequality, measured through the Gini coefficient (though not, of course, on poverty reduction).

While the recognition and concern for the inequity of APE in Mexico has grown in recent years, partly as a result of the increasing availability of the type of evidence reviewed in this study, reform efforts to address these inequities have so far been timid and have clearly been effectively blocked by large producer interest groups and agricultural states. For example, following the recommendations of a number of special advisory groups on Procampo reform set up by Sagarpa and the President's Office, as well a the numerous national and international reports cited before, there was apparently a genuine intention on the part of the federal government to limit Procampo transfers to small and medium-sized farmers, but this was effectively blocked by the noted interest groups. The result was a marginal reform of the Procampo rules which increased transfers to small (rainfed) farmers, while limiting maximum benefits per producer per cycle to 100,000 pesos. Graph 49 shows the results of a simulation of this reform applied to the ASERCA data base, revealing a negligible distributive impact.

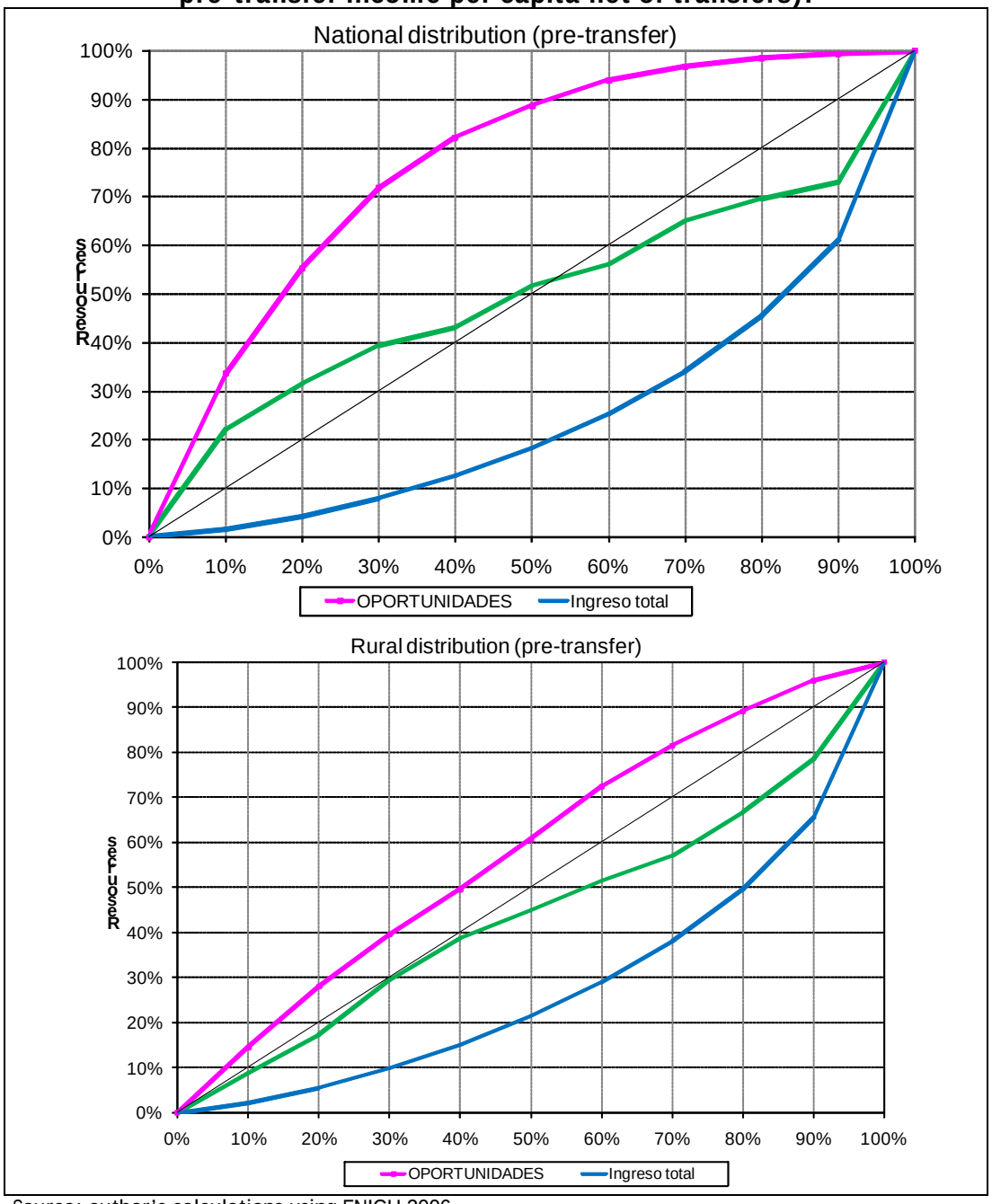
A more recent reform effort is contained in the federal budget proposal for 2010, which proposes mayor cuts in perhaps the most regressive APE instrument of all, *Ingreso Objetivo*. It will be interesting to see if this proposal survives the legislative negotiation.

Graph 42. Distribution of Procampo beneficiaries and transfers by national population deciles (ordered by pre-transfer income per capita): 2006



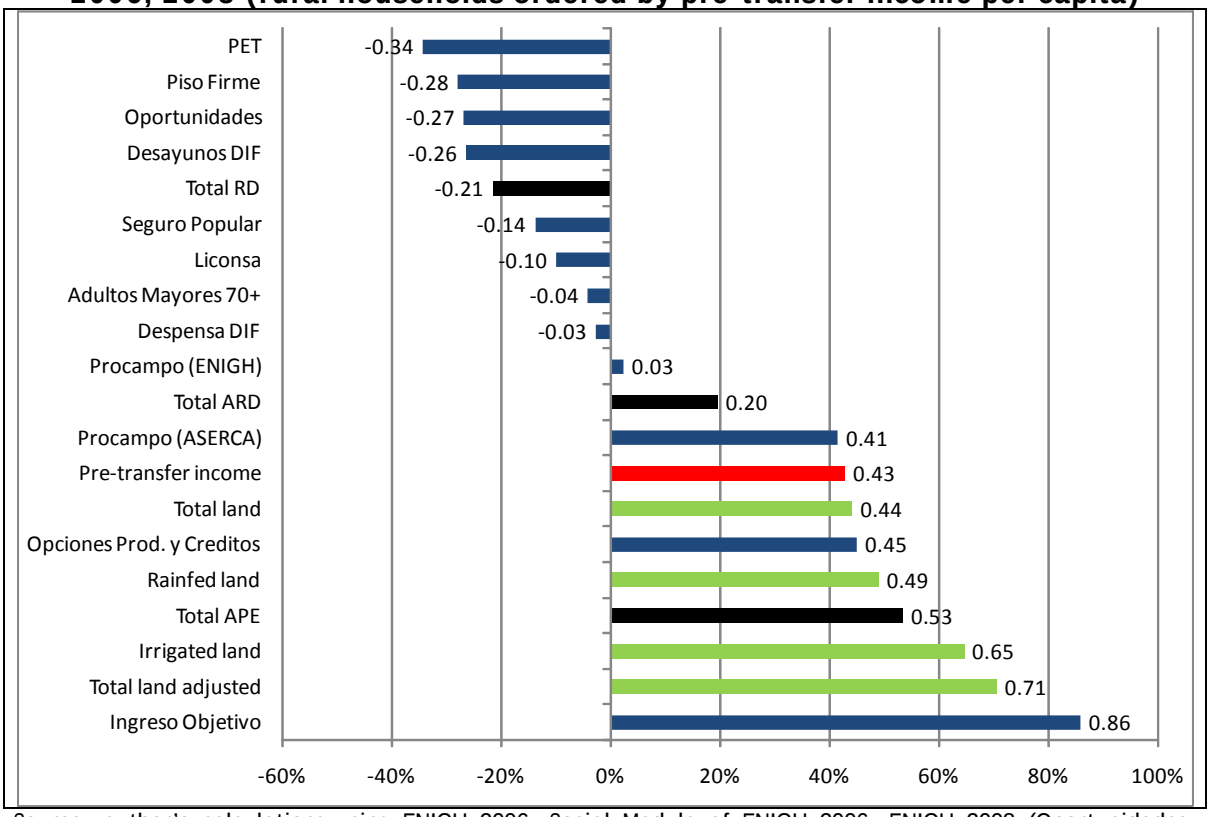
Source: author's calculations using ENIGH 2006.

Graph 43. Distribution of Oportunidades and Procampo transfers and pre-transfer income by national and rural household deciles (ordered by pre-transfer income per capita net of transfers):



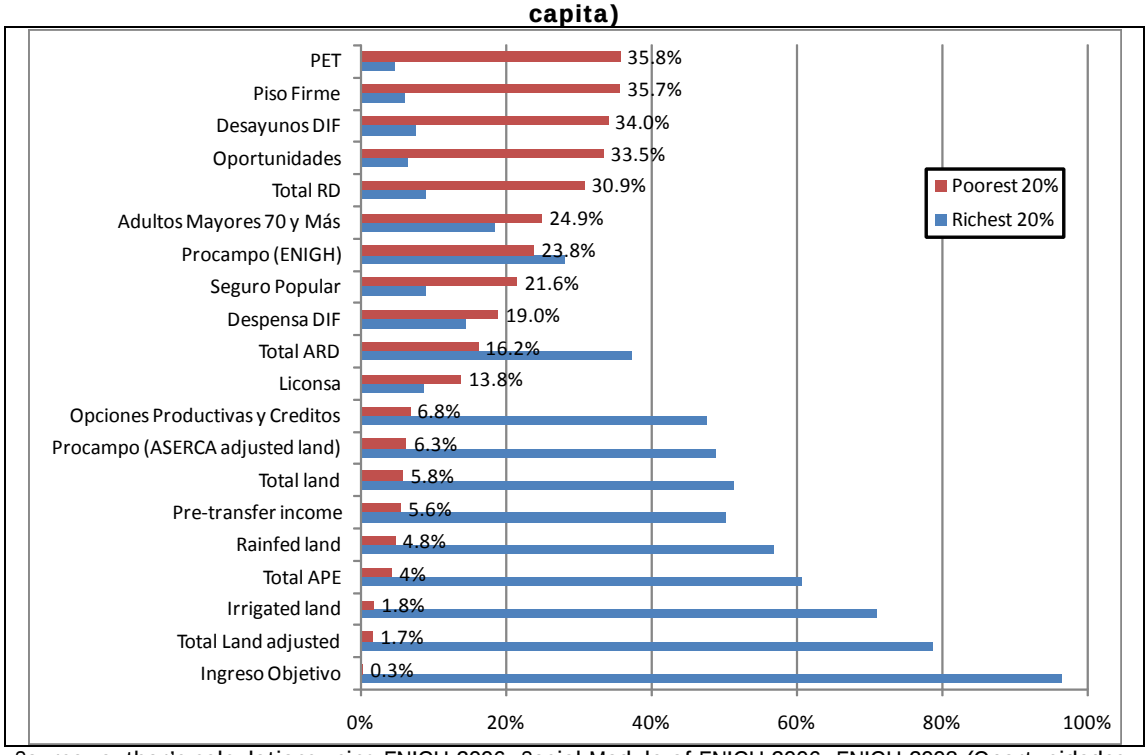
Source: author's calculations using ENIGH 2006.

Graph 44. Concentration coefficients of ARD expenditures, income and land: 2006, 2008 (rural households ordered by pre-transfer income per capita)



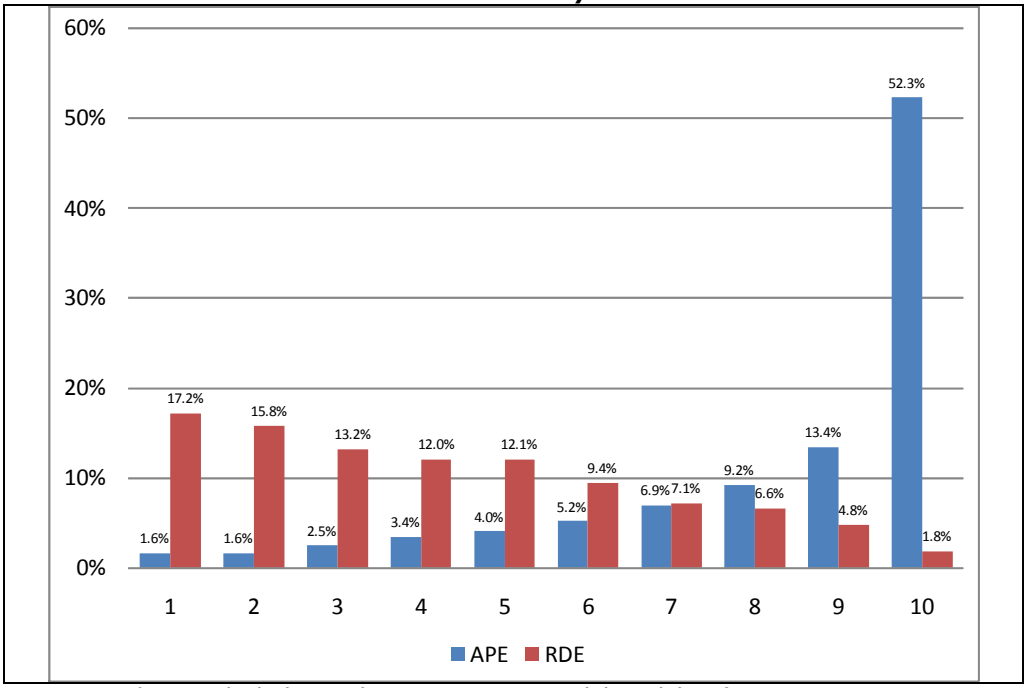
Source: author's calculations using ENIGH 2006, Social Module of ENIGH 2006, ENIGH 2008 (Oportunidades, Procampo) ASERCA Beneficiary data bases (Piso Firme, PET, Deasyunos and Despensas DIF, Opciones Productivas, and Crédito); and Cuenta Pública 2006.

Graph 45. Relative share of poorest 20 % of rural households in of ARD expenditures, income and land: 2006, 2008 (rural households ordered by pre-transfer income per capita)



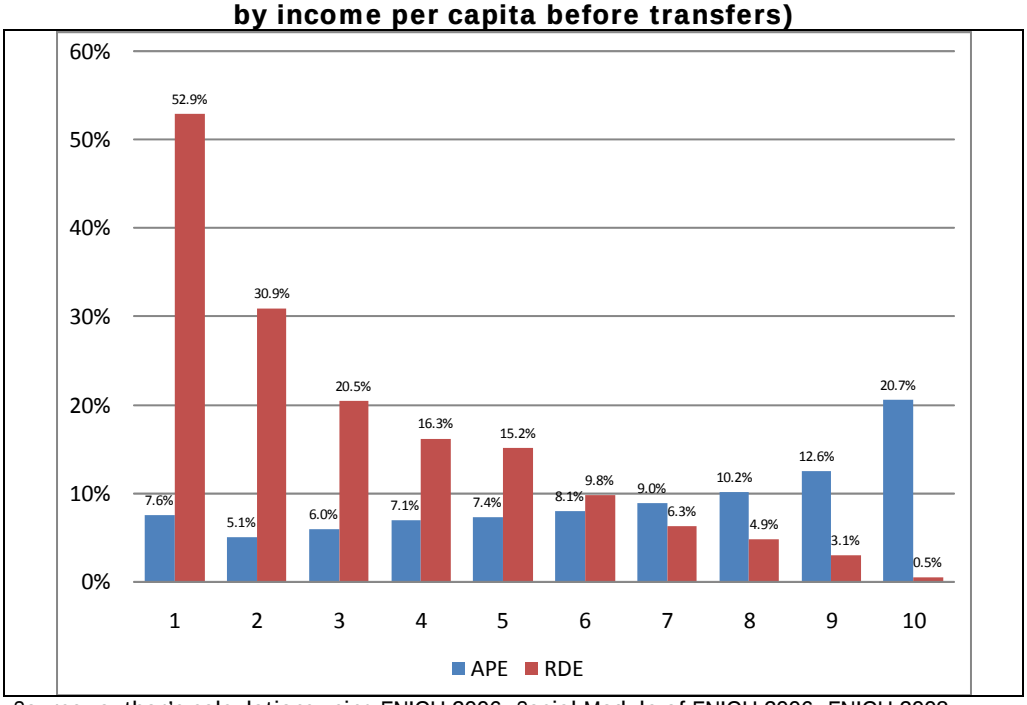
Source: author's calculations using ENIGH 2006, Social Module of ENIGH 2006, ENIGH 2008 (Oportunidades, Procampo) ASERCA Beneficiary data bases (Piso Firme, PET, Deasyunos and Despensas DIF, Opciones Productivas, and Crédito).

Graph 46. Distribution of APE and RDE (rural household deciles ordered by income per capita before transfers)



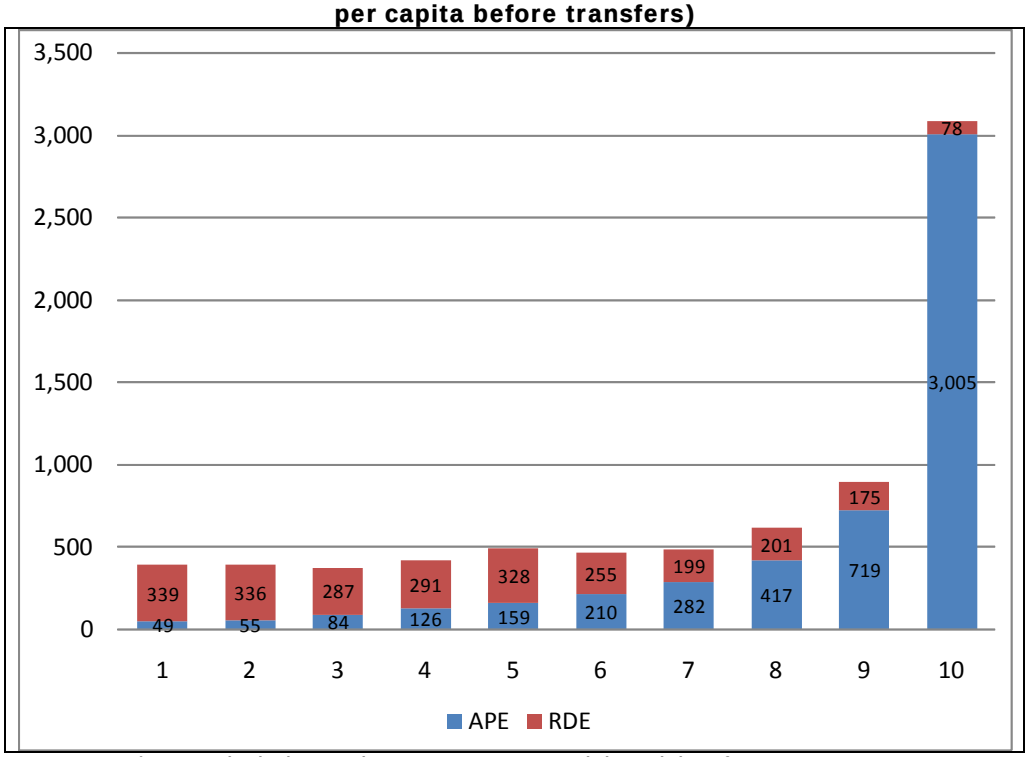
Source: author's calculations using ENIGH 2006, Social Module of ENIGH 2006, ENIGH 2008 (Oportunidades, Procampo) ASERCA Beneficiary data bases (Piso Firme, PET, Deasyunos and Despensas DIF, Opciones Productivas, and Crédito); and Cuenta Pública 2006.

Graph 47. Incidence of APE and RDE in rural household income: transfers as % of pre-transfer income (household deciles ordered by income per capita before transfers)



Source: author's calculations using ENIGH 2006, Social Module of ENIGH 2006, ENIGH 2008 (Oportunidades, Procampo) ASERCA Beneficiary data bases (Piso Firme, PET, Deasyunos and Despensas DIF, Opciones Productivas, and Crédito); and Cuenta Pública 2006.

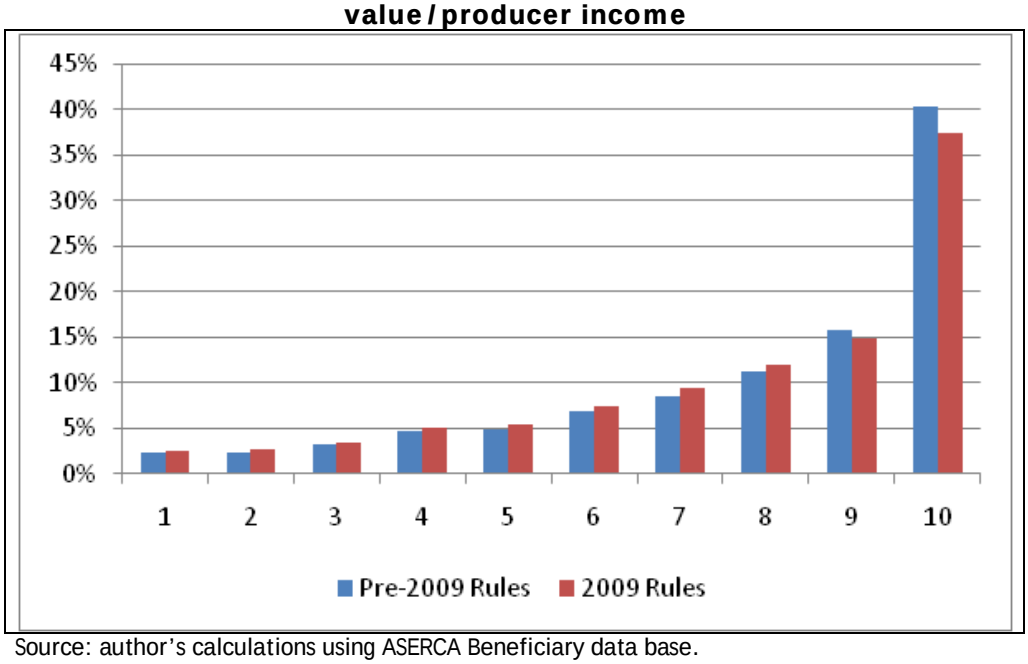
Graph 48. Estimated average monthly transfers per capita to rural households from APE and RDE (rural household deciles ordered by income per capita before transfers)



Source: author's calculations using ENIGH 2006, Social Module of ENIGH 2006, ENIGH 2008 (Oportunidades, Procampo) ASERCA Beneficiary data bases (Piso Firme, PET, Deasyunos and Despensas DIF, Opciones Productivas, and Crédito); and Cuenta Pública 2006.

Table 16. Redistributive effects of Agricultural and Rural Expenditures									
HH Deciles	Distribution						Transfer Incidence		
	Transfers		Pre-transfer income	Post-transfer income					
	APE	RDE		+ APE	+ RDE	+ APE & RDE	APE	RDE	Total
Income: Unadjusted (Million MP)	108,572	76,925	467,957						
1	1.6%	17.2%	2.9%	2.7%	4.9%	4.4%	14.2%	99.0%	113.2%
2	1.6%	15.8%	4.4%	3.9%	6.0%	5.3%	9.5%	57.9%	67.4%
3	2.5%	13.2%	5.5%	5.0%	6.6%	5.9%	11.2%	38.3%	49.5%
4	3.4%	12.0%	6.5%	6.0%	7.3%	6.7%	13.2%	30.4%	43.7%
5	4.0%	12.1%	7.1%	6.6%	7.8%	7.2%	13.8%	28.4%	42.2%
6	5.2%	9.4%	8.5%	8.0%	8.7%	8.2%	15.1%	18.4%	33.5%
7	6.9%	7.1%	10.0%	9.5%	9.6%	9.2%	16.8%	11.8%	28.6%
8	9.2%	6.6%	11.6%	11.2%	10.9%	10.6%	19.1%	9.2%	28.3%
9	13.4%	4.8%	13.7%	13.8%	12.5%	12.7%	23.6%	5.8%	29.3%
10	52.3%	1.8%	29.7%	33.5%	25.8%	29.7%	38.7%	1.0%	39.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	23.2%	16.4%	39.6%
G/CC	**0.5839**	**-0.2652**	**0.3486**	**0.3887**	**0.2620**	**0.3118**			
Change in G				**11.5%**	**-24.8%**	**-10.6%**			
Income: Adjusted (Million MP)			875,291						
1			2.9%	2.7%	4.0%	3.8%	7.6%	52.9%	60.5%
2			4.4%	4.1%	5.3%	5.0%	5.1%	30.9%	36.0%
3			5.5%	5.2%	6.1%	5.8%	6.0%	20.5%	26.5%
4			6.5%	6.2%	7.0%	6.6%	7.1%	16.3%	23.3%
5			7.1%	6.8%	7.5%	7.2%	7.4%	15.2%	22.6%
6			8.5%	8.2%	8.6%	8.3%	8.1%	9.8%	17.9%
7			10.0%	9.7%	9.8%	9.5%	9.0%	6.3%	15.3%
8			11.6%	11.4%	11.2%	11.0%	10.2%	4.9%	15.1%
9			13.7%	13.7%	13.0%	13.1%	12.6%	3.1%	15.7%
10			29.7%	31.9%	27.5%	29.7%	20.7%	0.5%	21.2%
Total							**12.4%**	**8.8%**	**21.2%**
G/CC			**0.3486**	**0.3721**	**0.2990**	**0.3259**			
Change in G				**6.7%**	**-14.2%**	**-6.5%**			

Graph 49. Simulated effect of the 2009 Procampo Rules on the distribution of Procampo transfers among producers ordered by estimated land value / producer income



Source: author's calculations using ASERCA Beneficiary data base.

Conclusions

This report has analyzed the distributive incidence of the principal agricultural and rural development programs implemented in Mexico in over the last two decades, in the context of an ambitious effort to modernize the agricultural sector and address rural poverty. This "second agrarian reform" included the 1992 *Ejido* reform, the liberation of agricultural markets through the *North American Free Trade Agreement* (1994-2008), the shift to more efficient and equitable agricultural support instruments, especially the delinked *Procampo* transfers. A similarly ambitious and complementary reform effort in rural social policies included the introduction of effectively targeted rural programs, notably *Progresa/Oportunidades*, and a more general pro-rural reallocation of social spending, reversing a strong historic urban bias in the allocation of anti-poverty programs, food subsidies, basic education and health services for the uninsured.

While an evaluation of the impact of these reforms on agriculture and rural poverty in Mexico is impossible in the absence of the relevant counterfactual, especially given the broader economic context of instability and stagnation characterizing this period, the evidence on the instruments and outcomes of these policies reviewed in this report suggests that the principal challenges motivating the reforms remain in place. We will not attempt to summarize this extensive evidence here, beyond emphasizing a few basic observations:

a) Today as two decades ago, a third of the rural population live in extreme poverty (pobreza alimentaria) and despite a gradual urbanization process the rural sector still accounts for a majority of the extreme poor.
b) While there is some evidence of the incipient development of rural labor and land markets, these are still hampered by structural restrictions and the lack of adequate access to other productive inputs, including credit, human capital, technology, transport and other infrastructure.
c) Despite some evidence of growth in productivity and crop diversification in line with Mexico's geographic and factor comparative advantages (labor-intensive fruits and vegetables), the grain-based dual structure of agriculture has survived practically unchanged.
d) Perhaps the most dramatic transformation of the rural economy over this period is the decline of agriculture as a significant source of income and labor opportunities for most rural households, with public transfers, remmitances, and non-farming rural activities filling the void.

Looking into the policy implications of the above analysis, it is important to note that despite its ambitious agenda the "second agrarian reform" may not have been ambitious enough in its implementation, failing to support agricultural development were it was most needed, by providing critical inputs to middle-sized farmers with significant but constrained productive (and employment-generation) potential. We may identify some basic components of a "third agrarian reform", directed at the three principal producer strata:

a) Considering middle-sized producers, in addition to the noted "efficiency vs. equity" conceptual framework, an important practical restriction explaining the lack of significant productive support programs reaching small to medium producers is the large heterogeneity of such producers, making the identification, implementation and monitoring of specific support "packages" difficult. This will require the development of innovative and flexible support instruments as well as the development of a detailed producer data base (an effort of the latter kind is currently under way at Sagarpa in collaboration with the IADB and World Bank).
b) In the case of the precarious social insurance function of subsistence farming, this should give way through the construction of effective and universal non-contributive social insurance schemes in the rural sector, liberating land resources to their most productive use.
c) In the case of the larger commercial producers, a case is often made in favor of maintaining or increasing support as a response to international support for competing producers and the idea of food security ("soberanía alimentaria"). But this must be carefully and explicitly weighted against competing considerations, including i) the high opportunity cost of fiscal resources in a country with low fiscal capacity, high inequality and historically low public investment, and ii) the availability of better (less distortionary and inequitable) instruments to ensure domestic stability in food prices and supply while exploiting the very considerable benefits to domestic consumers from international productivity gains and subsidies. On the other hand, a case may be made for shifting support resources targeted at this producer group from private transfers to public goods, though as has been documented here such investments are already heavily concentrated on these producers.

Annex

A1. OECD Agricultural Support Classification and Programs
III.1 Producer Support Estimate (PSE)
A. Support based on commodity outputs
A1. Market Price Support
Wheat
Maize
Barley
Sorghum
Rice
Soyabeans
Raw sugar
Milk
Beef and Veal
Pigmeat
Poultrymeat
Eggs
Dry Beans
Tomatoes
Coffee
Others
A2. Payments based on output
ASERCA marketing payments: rice
ASERCA marketing payments: maize
ASERCA marketing payments: wheat
ASERCA marketing payments: sorghum
ASERCA marketing payments: barley
ASERCA marketing payments: canola
ASERCA marketing payments: copra
ASERCA marketing payments: peanuts
ASERCA marketing payments: cotton
ASERCA marketing payments: safflower
ASERCA marketing payments: soya
CAFÉ FUND
PACE marketing payments: maize
PACE marketing payments:beans
B. Payments based on input use
B1. Variable input use
ENERGY payments
Estimulo ald diessel de uso agropecuario
SEED: PRONASE / ASERCA / ALIANZA
PRONASE / ASERCA
ALIANZA kilo por kilo
ALIANZA programanopalero
ALIANZA selecctionmasal

A1. OECD Agricultural Support Classification and Programs
FERTILIZER
Fertimex (fertiliser payment)
ALIANZA fertliliserprogramme
PESTICIDES (ASERCA)
INSURANCE (ANAGSA / AGROASEMEX)
IRRIGATION
FEED (CONASUPO + ALBAMEX)
MACHINERY (SESA)
ALIANZA -- Oat programme (programaavenero)
Land and building tax concessions
Value added tax concessions
B2. Fixed capital formation
Interest concessions
BANRURAL and FIRA
FICART, FIRCO and PRONASOL
FINA, FIDAZUCAR and FIMAIA
Debt write-offs
ProcampoCapitaliza
Capital grants (ALIANZA)
ALIANZA Ferti-irrigation and irrigation techniques
ALIANZA Mechanisation
ALIANZA Alternative crops
ALIANZA Post-harvest equipment
ALIANZA Saline soil rehabilitation
ALIANZA Land conservation
ALIANZA Prairies improvement
ALIANZA Livestock improvement
ALIANZA Milk programme
ALIANZA Genetic improvement
ALIANZA Bee keeping
ALIANZA Livestock repopulation
ALIANZA Pig improvement
ALIANZA Productive infrastructure rehabilitation
ALIANZA Poultry support
ALIANZA Rural equipment
ALIANZA Development of indigenous areas
ALIANZA Heavy machinery
ALIANZA Better young horses
ALIANZA Agriculture/irrigation infrastructure
ALIANZA Livestock infrastructure
ALIANZA Purchase of calves
ALIANZA Support to CNA programmes
ALIANZA Fuerte Mayo programme
ALIANZA Light machinery
ALIANZA Technical improvemnts of irrigation
ALIANZA Basic livestock infrastructure

A1. OECD Agricultural Support Classification and Programs
ALIANZA Technical assistance to microcredits
ALIANZA Fund for microcredits for rural women
ALIANZA Payments for purchase of capital inputs
ALIANZA Payments to facilitate the access of framers to financing
ALIANZA Fomento a la inversion y capitalizacion
ALIANZA DesarolloGanadero
ALIANZA Desarollo de proyectos agropecuarios integrales
B3. On-farm services
EXTENSION (ALIANZA, FIRCO, FEGA, INCA RURAL)
FEGA
INCA RURAL
FIRCO
Rastros TIF programme
Genetic improvement
Desarrollo de capacidades en el medio rural (PRODESCA)
ALIANZA programmes:
ALIANZA Training and extension
ALIANZA Heavy machinery maintenance
ALIANZA State programmes on marketing and quality cricles (all com)
ALIANZA State programmes on marketing and quality cricles (livestock)
ALIANZA Mobilisation control and regional livestock projects
ALIANZA Supervision and evaluation
ALIANZA Pest and desease control (crops)
ALIANZA Pest and desease control (livestock)
ALIANZA Payments for oil-palm
ALIANZA Women in rural development
ALIANZA Elementary Program of Technical Assistance
C. Payments based on current A/An/R/I, production required
C1. single commodity
Alianza -- soybeans (oleaginosas)
Alianza -- coffee (programa del café)
Alianza -- rubber (programa del Hule-apoyo directo)
Alianza -- cacao (cacao)
Alianza -- cotton [1] (apoyo al algodon)
Alianza -- Fomento al Algodón
Alianza -- Programa del Café (centralizado)
C2. specific group of commodities
Alianza -- fruit (fomentofruticola)
Alianza -- citrus (programa de cítricos)
Alianza -- strategic crops (cultivos estratégicos)
Disaster payments (CONASUPO, SAGAR)
Disaster payments (PIASRE)
crops
livestock
C3. all commodities

A1. OECD Agricultural Support Classification and Programs
Income tax concession
Programme of temporary employment in poor areas
D. Payments based on non-current A/An/R/I, production required
PROGAN
E. Payments based on non-current A/An/R/I, production not required
PROCAMPO Tradicional
Basic crops (ALIANZA)
F. Payments based on non-commodity criteria
F1. long-term resource retirement
Programa de adqusicion de derechos de uso del agua
F2. a specific non-commodity output
PNSOi NONE
F3. other non-commodity criteria
PNOPi NONE
G. Miscellaneous payments
Pmi NONE
IV. General Services Support Estimate (GSSE)
H. Research and development
INIFAP, IMTA, ALIANZA
I. Agricultural schools
Agricultural Technical Institutes and Vocational Agricultural Schools
J. Inspection services
CNSA, SNIC's, ALIANZA
K. Infrastructure
Total infrastructure
L. Marketing and promotion
FOCIR, Alliance for agriculture, CONAFRUT, ASERCA, PROMOAGRO
M. Public stockholding
CONASUPO
N. Miscellaneous
CONAZA
PRONASOL
V.1 Consumer Support Estimate (CSE)
O. Transfers to producers from consumers (-)
O.1. of which, MPS commodities
P. Other transfers from consumers (-)
P.1. of which, MPS commodities
Q. Transfers to consumers from taxpayers
Q.1.Commodity specifc transfers to consumers
Q.2.Non-commodity specific transfers to consumers
ASERCA
CONASUPO and FERRONALES
FIDELIST
LICONSA
DICONSA

A1. OECD Agricultural Support Classification and Programs
R. Excess feed cost
VI. Total Support Estimate (TSE)
S. Transfers from consumers
T. Transfers from taxpayers
U. Budget revenues (-)

Source: OECD (2007).

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