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Lessons for Developing Countries

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**Taking stock of nine years of implementation of *Seguro Popular* in Mexico:
Lessons for developing countries**

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Abstract

This paper reviews the empirical evidence on the health and labor market effects of the introduction of *Seguro Popular (SP)*, a program designed to provide affordable health services to almost 50 million people uninsured by Social Security in Mexico. Nine years after launch, with almost 90% of the uninsured population affiliated to SP in 2010, universalization of the health care protection in Mexico is in principle almost attained. This program is interesting because of its size and also because it is representative of a wider trend: the expansion of non-contributory systems alongside traditional social security programs in a number of developing economies. We draw three main messages from the Mexican experience. First, the *Seguro Popular* has been an effective tool in increasing health coverage and reducing catastrophic health expenditures for Mexican families. Although the literature has been unable to identify substantive health effects yet, they most likely will materialize in the near future. Second, although initially designed as a co-paid system between the user and the government (both state and federal), only a very small fraction of the resources (less than 0.5%) have been mobilized from the users, leaving the government as the sole payer. Finally, the establishment of a parallel non-contributory health system has affected the traditional contributory system, creating additional distortions in the labor market. The evidence from all the papers reviewed here indicates that the *Seguro Popular* has so far generated an increase in the share of informal employment of between 0.4 and 1 percentage points, or equivalently between 160.000 and 400.000 jobs over the 2002-2010 period. That is equivalent to between 8-20% of formal job creation during the same period.

Keywords: Welfare program; Seguro Popular; Informal Sector; Mexico.

JEL Codes: I3, H5, H75, H53, E26, O17

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Introduction

On average, one out of two workers in the Latin American region is informal, meaning that they do not contribute to social security in their job. This fact has traditionally left large segments of the population exposed to financially crippling health shocks and in high risk of old age poverty due to lack of pension coverage.

However, the provision of Social Security in the Latin American region is rapidly changing. The last two decades have seen an unprecedented expansion of non-contributory systems, side by side with traditional social security. This is a direct consequence of the inability of social security systems to reach wide levels of coverage, either by design (most social security systems explicitly exclude the self-employed – a large percentage of employment in developing economies) or the inability of states to curb the evasion of social security contributions among a large majority of employers. Given the difficulties associated with reforming social security systems, many countries are resorting to the creation of parallel non-contributory schemes directly financed with general revenues which become available to those who are not entitled to social security.

While the upside is the rapid progress in coverage that such initiatives have promoted, there are important potential pitfalls that should be considered as well. Since workers have to demonstrate that they are not in social security (i.e. that they are informal) to qualify for the non-contributory benefits, the risk is that those who are contributing to social security stop doing so to benefit from free-of-cost benefits (Levy, 2008), a risk particularly high in Latin America where the literature has shown large flows between formal and informal jobs (Bosch and Maloney, 2008, Pages and Stampini, 2009). To mitigate this risk, benefits provided by non-contributory programs tend to be lower than those provided by social security. However, political and legal pressures may make unfeasible the maintenance of parallel (contributory and non-contributory) systems with different levels of benefits. Further, low willingness or ability to pre-pay for insurance among low income workers implies that for many, social security acts like a tax to becoming formal, while non-contributory regimes act as a subsidy on informality or inactivity. It is therefore expected that the introduction of such non-contributory regimes will further distort the labor market, fostering informality and reducing labor market participation, with potentially grave impacts on resource allocation and aggregate productivity. In parallel, there are substantial fiscal

implications, as non-contributory systems represent large and growing unfunded commitments that governments will have to fulfill in the future.

The Mexican *Seguro Popular* (SP) is one of such programs designed to provide affordable health care to the 50 million uninsured people in Mexico. This paper summarizes the latest evidence of the major impacts of this far reaching and, to some extent, controversial program. We first review the evidence regarding the impact of the SP on health related outcomes and then focus on the consequences of the SP on the labor market.

As in many other Latin American countries, access to health care in Mexico is intimately linked to formal work status. Mexico's health care system was born in 1943. Two institutions were created for formal sector workers - the *Instituto Mexicano de Seguro Social* (IMSS) for registered private employees, and later, the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), for public employees.¹ Workers affiliated to either IMSS or ISSSTE are considered formal sector workers. They (and their families) have access to a bundle of benefits that include health and pensions.

In parallel to IMSS and ISSSTE, the *Secretaría de Salud y Asistencia* (SSA) was created to serve all individuals outside the formal sector (denominated in this paper as *the uninsured*). SSA's main role was purely one of "social assistance". However, due to the overwhelming demand for affordable health care for poor families, a number of programs were designed to provide access to health care to the low income population. By 2000, the inequalities in this system were apparent. Nearly 50% of the Mexican population, amounting to 47 million people, were not insured by either IMSS or ISSSTE and were relying on the SSA or private institutions for their health care. The World Health Organization ranked Mexico 144th out of 191 countries in fairness of health care and the Mexican Ministry of Health estimated that 2 to 4 million families (10 to 20% of the total population) suffered catastrophic and impoverishing health care

¹ These two institutions operate under mutual systems whereby privately and publicly employed workers (and their families) are entitled to a full spectrum of benefits, not only health care, but also other benefits such as pension and disability benefits, housing loans and in the case of dismissal, severance payments. In exchange for these benefits and rights, employees and their employers pay payroll taxes amounting to roughly 25% of their salaries excluding other local and federal taxes. Under this system, the workers and their families are not charged for the use of health services and they have access to a wide range of prescription drugs.

expenses every year. These families were almost exclusively drawn from the lowest income quintile, and were four times more likely to be uninsured than insured (Knaul and Frenk, 2005). The pressure for reform was mounting and in 2003 a new health system was established.

Nine years later, with almost 90% of the uninsured population affiliated to SP in 2010, universalization of the health care protection in Mexico is in principle almost attained. This is an impressive achievement. However, to get here, Mexico took a very different route to that followed by other countries where a state-provided or state-funded health system covers the whole population. The introduction of SP generated an alternative, and arguably competing, health care system to that originally established by Social Security (SS) By the end of 2010 the number of individuals covered by the SP surpassed those covered by IMSS. Reviewing the evidence we highlight three main lessons learnt from the Mexican experience:

First, the expansion of SP coverage has reduced the financial burden imposed by health expenditures, particularly catastrophic ones, to the formerly uninsured households in Mexico.

Second, we have also learned about the difficulties of creating a culture of prepayment. As of 2010, the contributions of the affiliates cover less than 0.5% of the SP expenditure. This is an important lesson for other countries which seek to expand the reach of contributory systems with subsidized contributions or matching agreements which imply co-financing between the state and individuals.

Finally, some of the fears that parallel non-contributory systems would directly compete with the contributory one have come true. Offering virtually free health services to workers conditional on being employed in the informal sector constitutes a *de-facto* subsidy to informal employment. There is evidence that the implementation of the SP has changed incentives to contribute to social security and workers and firms have responded to these changes. The available evidence so far points at a relocation of between 0.4 and 1 percentage points which is equivalent to 160.000 to 400.000 workers. During this same period, around 2 million formal jobs were created suggesting that the

increase should have been between 8% and 20% higher in the absence of the SP. This reallocation has been more intense among small firms and unskilled workers.

In the rest of this paper, we first describe the reform and its implementation. Then the evidence on the direct health benefits is reviewed, as well as any indirect effects on the Social Security system and on the labor market. We finally discuss lessons to be drawn from the Mexican experience.

1. The Reform

The 2003 reform establishing the System for Social Protection in Health (*Sistema de Protección Social en Salud*, SSPH) was designed to increase financial protection by offering subsidized, publicly provided access to health insurance to those without Social Security protection. This reform institutionalized an existing pilot program: *Seguro Popular de Salud* or Popular Health Insurance that had been running in some Mexican states since 2002.² It is worth noting that covering the uninsured (those not covered by either IMSS or ISSSTE) was not a new phenomenon. The Mexican government, through the SSA, had provided health care for the uninsured since the advent of the formal social protection institutions. In fact, since the mid-1990s, well before the implementation of the SP, there had been a steady increase in health spending for the uninsured population; the share of total health spending for the uninsured increased from 19% in 1990 to 44% in 2010. The innovation behind the SP was to create an official entitlement for the uninsured (targeting universal health coverage) as well as the increase in budget allocation.

The transition to universal coverage translated into an annual goal of affiliating 14.3% of the approximately 12 million uninsured families. The law stipulated to focus the affiliation process on the poorest quintile of the population and thus the transition phase had been highly progressive (Knaul et al., 2006). The SP operated prior to the reform as a pilot program between 2001 and 2003. Then coverage under the SP expanded progressively since 2003, and it achieved close to universal access to all of

² The *Seguro Popular* pilot program started in 2002. The new law for the creation of the SSPH was passed by Congress in April, 2003. The law came into effect in January 2004 (González-Pier et al., 2006).

the uninsured population by 2010. Knaul and Frenk (2005) describe the key innovations and expected benefits of the Mexican health reform, describing encouraging results of the initial stages of implementation. Interestingly, since the affiliation of the SP was voluntary, some of the uninsured never affiliated. One possibility is that, since the SP is not contingent on health status, they do not affiliate until they are exposed to a health shock. A second possibility is perhaps SP facilities are not nearby and hence there is not a large incentive to affiliate.

One of the objectives of the reform was creating and guaranteeing an explicit basic universal package of services to all affiliates. Services covered included a package of essential primary and secondary interventions managed and delivered at the state level, and a package of high-complexity health-care interventions financed through a fund for protection against catastrophic health spending administered at the federal level. Only households not covered by Social Security health services are eligible for the program, and this is the single eligibility criterion (González-Pier, 2006). Hence, affiliation was conditional on labor status, not on income level. The number of services covered by the SP has been increasing over time (for example the number of covered secondary interventions increased from 91 in 2003 to 275 in 2010), implying that the gap in the quality of service received by the insured vs the uninsured has been closing.

Another aim of the reform was to promote a “culture of co-payment” (Secretaría de Salud, 2002), so their affiliates were obliged to pay an annual premium in exchange for access to health services. When it was legislated in 2003, it was stipulated that SP would be financed through tripartite contributions from the federal government, the states, and individual contributions. This financing design was aimed at increasing health expenditures as a percentage of GDP, particularly for the uninsured, and at increasing the progressivity of transfers across states. Initially, the size of the payment was set to increase with economic status, while the poorest 20% of the households were declared exempt from all payments.³

2. Implementation of, and affiliation to, *Seguro Popular*

³ By 2010 the poorest 40% of the households were exempt from any payment, and families up to the seventh decile with at least 1 child younger than 4 years of age were also exempt. A detailed description of the contribution system of the program can be found in Frenk et al. (2006).

After its passage into law in 2003, the SP was implemented in stages across states. It is important to note that health services for the informal workers were already available before the SP and hence if the provision of such services generated any distortions in the labor market, they were already in place before the implementation of the SP. The institutionalization of the SP improved those services, potentially strengthening such effects

The SP had begun with a pilot phase in five states in 2002 (Colima, Jalisco, Aguascalientes, Tabasco and Campeche). According to Mexican officials, these states were chosen initially due “to the capacity of offering the services, large concentration of urban and semi-urban population and the existence of previous benefit programs from the government” (Secretaría de Salud, 2002). In order to start the program in the rest of the 26 states and Mexico City, the federal government needed to sign an agreement of participation with each state. However, during 2002 and 2003, 14 other states (Sinaloa, Tamaulipas, Baja California, San Luis Potosí, Sonora, Coahuila, Guanajuato, Zacatecas, Oaxaca, México, Quintana Roo, Guerrero, Hidalgo, Chiapas and Morelos) started to implement the SP without a formal agreement with the federal government. According to SP officials, this was possible before 2004 if the municipal government agreed to offer the program. This was still considered by the SSA as the pilot phase. Throughout 2003, 2004 and 2005, all states except Mexico City (DF) had signed the official agreement with the federal government. This agreement included not only the required funds to finance the program but also its rules of operation. The rules of operation stated that the program needs to be implemented in localities with high poverty incidence and/or localities with indigenous populations, but the localities also needed to have health facilities in close range. Hence, the decision of which municipalities were affiliated first was a decision based on existence of agreements with state governments and available infrastructure.

The expansion of the SP was very fast. By 2010, the SP included more than 43 million affiliates (Secretaría de Salud, 2010) although this number could be an overestimate. According to the 2010 Population Census there are only 26.2 million affiliates, and according to the 2009 National Employment and Social Security Survey (*Encuesta Nacional de Empleo y Seguridad Social*, ENESS) only 12.7 million. In any case, affiliation seems to have been rapid and intense. This is shown in Figure 1, which

plots the evolution of the affiliation of individuals and households to the SP from 2002 to 2010 according to the SP registry.

A crucial issue in the impact evaluations of SP is how this roll out across municipalities was undertaken. In principle, although the rule governing the process states that the poorest regions (subject to minimum infrastructure requirements) should have priority, in practice other considerations seem to have played a dominant role. Barros (2009) shows how political and logistical concerns seem to have driven the implementation sequence of the SP program across states in Mexico. In particular, he shows that the intensity target, measured as the ratio of the total number of households agreed (by the federal and state governments) to enroll in the SP, and the total number of households not covered by SS in the state, is uncorrelated with the initial level of economic development and regional health needs. Some authors have seen a political motivation in the way SP was implemented: Díaz-Cayeros et al. (2006) argue that municipalities in smaller states were given preference to achieve full coverage of the SP so the federal government could claim full coverage in the state before the presidential election of July 2006. Furthermore, there seems to be a correlation between the early implementation of SP and the affiliation of the state governor in post pilot municipalities. Bosch and Campos (2010) show that bigger municipalities implemented SP earlier, but variables related to the income, number of uninsured, and industrial structure were not significant in predicting the timing of affiliation of a municipality to SP. Azuara and Marinescu (2010) show that the level of informality in a municipality or state prior to the introduction of SP is not correlated with the moment when SP is introduced. They also examine whether the year of introduction of SP is predicted by observable variables in 2000, at either the municipality or state level. Similarly, Aterido et al. (2011) show that the growth rate of informality prior to the introduction of SP does not predict the arrival of SP either. All these studies conclude there is no evidence that informality in states or municipalities determined the timing of the expansion of SP, and suggest that the introduction of the program was close to random. Most studies that we review below rely on that variation to obtain results, as a difference- in-difference methodology is used in many of them, based on the fact that in some municipalities the SP started earlier while it was available in other municipalities only later.

3. Direct effect of *Seguro Popular* on health services provision and health outcomes

As discussed above, the reform increased substantially the affiliation to the Seguro Popular. However, affiliation to the SP did not immediately imply access to health services since many municipalities did not have the infrastructure or resources to deliver health care. Furthermore, it remained to be seen whether the SP had the capability to improve health outcomes of the insured population.

During 2006, a series of articles were published in *The Lancet*, under the name of Health System Reform in Mexico (Frenk et al., 2006, González-Pier et al., 2006, Lozano et al., 2006, Knaul et al., 2006, Gakidou et al., 2006, Sepúlveda et al., 2006). Those articles argue that the health system reform in Mexico, and the SP program in particular, has been a complete success. Frenk et al. (2006) state that the reform of the health system allowed for a substantial increase in public investment in health, and it realigned incentives towards a better quality service. The total public health expenditure as a share of GDP increased from 2.6 in 2000 to 3.1 in 2010. Furthermore, the allocation of resources between insured and uninsured population was also altered. Figure 2 shows that the relative per capita health expenditure between the insured and the uninsured fell from 2.2 to 1.5 during the 2000-2010 decade, and particularly so after the implementation of the SP in 2004.⁴

Yet while the reform increased coverage of health services and per capita expenditures for the uninsured population, and it partially redressed large funding inequities across states, some key goals of the reform could not be accomplished (Lakin, 2010). Furthermore, the reform introduced a copayment for all families except for the 20% poorest households (later extended to the 40% poorest), however in practice very few households paid the premium. As previously discussed, fast implementation was partly motivated by political considerations. According to official figures, only 7.2% of affiliates were paying in June 2005, which led to a substantial financing gap (Lakin, 2010). As of 2010, the contributions of the affiliates constitute less than 0.5% of the SP

⁴ The per capita on the insured is calculated as the health care expenditures executed by IMSS and ISSSTE divided by the total number of affiliates to these programs. Similarly, the per capita expenditure on the uninsured is calculated as the health expenditure executed by the SSA divided by the number of uninsured. Data obtained from the Secretaria de Salud at <http://portal.salud.gob.mx/>

expenditure. Thus, the reform did not help create a culture of prepayment. Furthermore, the states were supposed to co-pay part of the cost of the implementation of the SP but were unable to meet the financing demands and so most of the cost was absorbed by the federal budget with very little copayment from the users or the states.

A second important shortcoming was the inability to guarantee a universal package of benefits. Many clinics and hospitals could not provide some of the services that were part of the universal package. Perhaps because of this, the evidence regarding how much the conditions of the uninsured have improved with SP is still inconclusive. Some authors document increased access to medicines (Garrido-Latorre et al., 2008), an increase in the use of health services by those affiliated to the SP (Gakidou et al., 2006, Scott, 2006, Sosa-Rubí et al. 2009, Harris and Sosa-Rubí, 2009) and a reduction in catastrophic health expenditures (Gakidou et al., 2006, Scott, 2006, Knaul et al. 2005, Knaul et al., 2006, Galárraga et al., 2008, Hernández-Torres et al., 2008). However other studies document only small improvements in access to health services for SP affiliates relative to non-affiliates (Urbina, 2008). Related to this is the fact that there were important lags in the implementation of the SP. Bosch and Campos-Vazquez (2010) show that 3 years after the implementation of the SP in a municipality there is a significant increase in medical personnel but not in medical infrastructure, suggesting the sluggish construction of facilities to deliver health care.

A third issue is that so far, studies have found no discernible effects on health outcomes (Aguilera and Marrufo, 2006, Gakidou et al., 2006, Scott, 2006, Knaul et al., 2006). Table 1 summarizes the data and the methodology used, as well as the results found in a large number of studies assessing the effects of SP on health related outcomes.

The two most systematic studies up to date on the effects of the SP on health outcomes corroborate some of these findings. King et al. (2009), using an experimental approach, and Barros (2009), using triple differences in differences, show that the SP significantly reduced health catastrophic expenditures of Mexican households, but they did not find any significant effects on health outcomes, at least so far. However, their findings are mixed when it comes to assessing service utilization. While Barros (2009)

finds a substantial increase, King et al. (2009) cannot identify any significant changes. We briefly describe these studies.

King et al. (2007, 2009) take advantage of the implementation of SP to introduce an experimental component to evaluate the program. During the early stages of the roll out of SP, King et al. (2007) were able to clearly define treatment and control areas. In particular, the experiment consisted in, first, defining a series of contiguous geographic regions (called health clusters), each one including an actual or future health clinic or facility and the population area around it. Then health clusters were matched in pairs, so that members of each pair were as similar as possible on a range of background characteristics. Then they randomly treated one health cluster from each pair with an active advertisement campaign to encourage individuals to affiliate with SP, along with the health facilities, drugs, and doctors necessary to implement the program effectively. The other health cluster in each pair did not receive any extra treatment. At the time of random assignment, they conducted a baseline survey of the health facility within each health cluster, and a survey of randomly selected households within the pairs of clusters (chosen based on likelihood of compliance with encouragement to affiliate and similarity of the clusters within each pair). This baseline household survey is used to verify that the treated and control groups are similar on a wide range of health characteristics and other variables. Ten months later they conducted follow-up surveys of the health facilities and individuals within each health cluster, which are used to ascertain the short-run effect of the program. Primarily, the estimates indicated a 23% reduction from baseline in catastrophic health expenditures. Contrary to expectations and previous observational research, they found no effects on medication spending, health outcomes, or utilization. Nevertheless, by the authors' own admission, this experiment could say little about the long term health impacts of the program.

Barros (2009) estimates the impact of the SP program by analyzing differences over three dimensions. The first dimension is the variation in the program intensity target, measured as the ratio of the total number of households agreed (by the federal and state governments) to enroll during a single quarter, and the total number of households not covered by SS in the state (as of 2007). The program intensity quarter is measured at the time of the cross-section (first quarter of 2006). The second dimension is the differences across time before and after the program was initiated in a particular

state. Finally, the third dimension is the differences over SP eligibility, comparing individuals with and without SS (people in the informal sector to people in the formal sector). To support this specification, the author tests the assumption that SS coverage among the population in a region is not affected by the regional intensity of SP (households switching from the formal to the informal labor market to become SP-eligible) and finds no correlation. However, as we will see later, there is some evidence against these assumptions. With this caveat in mind, Barros (2009) results show that SP increased by 4.2 percentage points the amount of resources that beneficiaries were able to spend on non-health expenditures, or save, and encourage beneficiary people to seek care. In particular, while SP-eligible households at baseline were 10.4 percentage points more likely than Social Security households not to seek care due to financial concerns, the effect of SP has been to close this gap by about 40% (4.2 percentage points reduction over the initial 10.4 percentage points difference). However the effect on health status is negligible, and evidence of an impact on labor supply or earnings is not found. This way, the author states that the policy motivation of having a redistributive impact is reached, in the sense that tax revenues come from formal households and go to the SP which is applied to informal households suffering from any sickness.

In sum, there seems to be evidence that, as expected, the provision of a universal health insurance service has reduced substantially the catastrophic expenditures that poor Mexican families had to incur in the face of a health shock. However, there is little consensus on whether services have improved substantially for SP beneficiaries relative to non-beneficiaries (who can get services at clinics and hospitals of the Secretary of Health). While so far the evidence has not found significant changes in the health of those affected by this reform, more medium and long-run analysis is needed to establish the health effects of SP.

4. Unintended effects of *Seguro Popular* on the labor market

The SP was designed to provide affordable health care to those workers and their families who were not affiliated with social security. In fact, a pre-requisite to join the SP was that the worker was not covered by the formal social protection mechanisms provided by the IMSS or the ISSSTE. Hence, there was concern by policy makers, and

economists, that workers and firms could opt out of IMSS and join the SP. This issue is of particular relevance in Mexico because a number of studies provide evidence of the large degree of mobility between formal (the insured) and the informal (the uninsured) labor markets (Maloney, 1999, Bosch and Maloney, 2008, Pagés and Stampini, 2009). Around 25% of formal workers are found in the informal sector or in non-employment a year later. Although the evidence on whether these two markets are integrated is far from being conclusive, the introduction of SP makes informal jobs more attractive. This may motivate some formal workers to seek jobs in the informal sector. However, the SP does not necessarily generate incentives to change jobs, but to change labor status, from formal (covered by IMSS) to informal (not covered by IMSS) and so workers might find it optimal (probably in collusion with the employer) to change labor status (, i.e to stop contributing to social security) within the same job in the same firm. All this might reduce the number of workers who normally transition from informal to formal jobs and increase the number of workers that transit from formal into informal jobs. In turn this might affect firm's decision to comply with formality. In particular, it might induce firms to cheat more, as the firms might be inclined to appropriate the surpluses generated by the SP by offering informal contracts. Finally, the introduction of SP may also affect the decisions of unemployment/non-participation, as those who are searching for a job may stop searching or search less intensively when the SP benefit is made available.

This potential shift towards informal activities or non-employment is worrisome at least for three reasons. First, because the benefits from formal social protection are bundled (Levy, 2008), hence, contribution to social security entitles the worker not only to health care but also to other important benefits. Perhaps the most important of those is access to a pension scheme. If workers or firms (or both) choose to avoid social security contributions knowing that the SP provides affordable health care, this may trigger the loss of all other benefits as well. This would imply expanding health care coverage at the expense of reducing other social protection mechanisms, in particular, reducing the efficiency of the pension system to prevent old age poverty. Second, workers choosing informal arrangements in the provision of health care may have implications at the aggregate level, since this “informalization” of firms and workers may lead to a lower scale of production (smaller firms), lower employment rates, lower investment and lower overall productivity with ultimate implications for overall growth.

And finally, there are clear fiscal implications as the shift towards informal activities reduces the tax base.

Perhaps because of the larger implications for poverty, productivity and growth, the search for unintended effects of the SP in the labor market has been extremely active with a large number of studies using a variety of data sets. However, the results have been mixed, and no real consensus has been reached in the literature. Some early studies do not find any impact of the SP on the share of formal workers in the labor market (Gallardo-García, 2006, Esquivel and Ordaz, 2008, Barros, 2009, Campos and Knox, 2010, Aguilera, 2011).

Others find relatively small increases in the share of informality for particular population groups (Azua and Marinescu, 2010, Duval and Smith, 2011). However, a new wave of papers (Aterido et al., 2010, Bosch and Campos, 2010, Bosch and Cobacho, 2011, Pérez-Estrada, 2011) is consistently finding systematic reallocation effects of the SP in the labor market. Table 2 shows the data sources, period of analysis, methodology and main results of this literature. While the identification strategy is relatively similar in most of these studies, the data employed, geographical coverage and time span vary substantially, constituting the most likely source of the discrepancies in the results.

As mentioned before, the SP was not randomly implemented across municipalities, but most of the studies rely on the timing of the SP roll out as the main mechanism to identify its effects in the labor market.⁵ That is, in one way or another, all studies try to identify employment effects implementing a differences in differences approach. Since the implementation of the program was at the municipality level, these geographical divisions have constituted the main unit of analysis, although state level variation has also been used (see Barros, 2009). Having said this, there are some differences in the identification strategies due to the particularities of the data that we describe below.

In one of the earliest studies regarding the effects of the SP on the labor market, Barros (2009) uses the National Income and Expenditure Survey (*Encuesta Nacional de Ingresos y Gastos de los Hogares*, ENIGH) 2000-2006 to show no evidence of any shift towards informal employment after the implementation of the SP. He suggests the lower

⁵ Perhaps the only exception to this is Aguilera (2011) which takes advantage of King's et al (2009) experimental design to analyze the effects in the labor market.

quality of healthcare services of the SP compared to the SS system as a possible reason. As argued before, the author identifies the effect of the SP using the intensity target at the state level. Perhaps this larger level of aggregation (state level) compared to other papers (municipality level) is working against finding an effect. The author also explains that another admissible reason could be that the time frame (the last year of the survey is 2006) is not long enough to analyze the possible effect on informality. This is particularly true for the SP since affiliation did not immediately imply access to services and hence, as other authors claim, there can be important lags in the effect of the SP on the labor market.

In a similar study, Campos and Knox (2010) try to unveil employment effects of the SP using the quarterly National Survey of Employment (*Encuesta Nacional de Empleo*, ENE) and the Urban Household Evaluation Survey (*Encuesta de Evaluación de los Hogares Urbanos*, ENCELURB). These data sets cover over 150 municipalities between 2001 and 2004 - the early years of SP implementation. To study the existence of any effect of the SP program on shifts in employment out of the formal sector, they compare municipalities where workers were given access to the SP program during that period to municipalities which had not yet received the program by that time. They obtain a small negative but not significant effect, so they conclude there is little change in the likelihood of being formally employed in a municipality once it gains access to SP. Males with less than a high school education have the largest negative response to the SP program, with a 1 percentage point decline in the share of formal employment rates after the introduction of SP, although this result is not statistically significant either. They additionally use the two first years of the *Encuesta Nacional de Ocupación y Empleo* (ENOE), and their conclusions remain unchanged.

Both Barros (2009) and Campos and Knox (2010) suggest that the relatively short time span after the implementation of the SP could be a factor explaining the lack of significant results. This is partially confirmed by Azuara and Marinescu (2010), who extend the work of Campos and Knox (2010) using the labor force surveys ENE for 1995 to 2004, and ENOE from 2005 to 2010 and find some negative impacts of the SP, albeit very imprecisely estimated. Although they find no significant effect of the SP when they analyze the whole employed population (they find a non-significant 0.8 percentage points increase in the share of informal employment), they do report a significant decrease in the share of formal employment for less educated workers (with

less than 9 years of schooling). In particular, the implementation of the SP was associated with a 1 percentage point increase in the share of informal employment among less educated workers. Slightly larger significant increases in informality are found when further restricting the sample to married workers with children or to workers over 34 years old. However, even among these groups, the size of the impact is close to 1 percentage point. They explain this heterogeneity in the impact by the fact that some workers are likely more sensitive to the availability of health insurance when choosing to work formally or informally than others. They also analyze the effect of SP on the probabilities of transition between all the employment statuses: informal employment, formal employment, and non employment. They do not find any significant effect on any of the probabilities, even restricting to workers with less than 9 years of education. Similarly, they do not find any impact of SP on wage gains for workers moving from the formal to the informal sector, nor for workers moving in the opposite direction, concluding that marginal workers do not value health benefits much.

Other papers have also used the ENE-ENOE data set to unveil effects of the SP using slightly different approaches. Aterido et al. (2010) analyze the impact of SP on workers' decisions about formal vs. informal jobs, taking advantage of the panel dimension of the data set which allows them to control for decisions at the household level and for unobserved heterogeneity across households. Their analysis also takes into consideration that program coverage depends not only on the individual's employment status, but also on that of other household members. They conclude that the introduction of SP has generated a decrease in the share of formal employment of 0.4-0.7 percentage points, with adjustments largely occurring within a few years of the program's introduction. Furthermore, rather than encouraging exit from the formal sector, SP is associated with a 3.1 percentage point reduction (a 20% decline) in the inflow of workers from informal salaried into formal salaried employment.

Their study also explores the effects on the participation-non participation margin, and finds evidence of significantly decreased flows out of unemployment and lower labor force participation into formal salaried employment of around 1-2 percentage points. They find the impact to be larger for those with lower education attainment, and for individuals in larger households.

Pérez-Estrada (2011), also exploiting the ENE-ENOE 2000-2008, confirms earlier studies that the SP decreased the share of formal employment by around 1 percentage point. Furthermore, this effect was coupled with a 15% decrease of relative informal wages, suggesting that part of the benefits of the SP was translated into lower wages for the uninsured.

Parker and Scott (2008) obtain different results for the early years of the program depending on the data. Using Rand's Mexican Family Life Survey (MxFLS) 2002–2005, they find a disincentive effect in rural municipalities: beneficiaries of the SP are 13 to 15 percentage points less probable to be formal in rural areas, and about 7 percentage points in urban areas. However, using aggregate data from the 2000 and 2005 Census, they do not find significant effects.

Duval and Smith (2011) analyze the impact of the program on the willingness to search for a job in the formal sector, and the probability of actually getting one. The main contribution of this paper to the literature is that the authors anchor the discussion with a model that identifies the willingness to apply for a formal sector job. They depart from the traditional sector allocation model by adding an additional equation capturing the hiring decisions of formal sector employers, classifying informal sector workers depending on whether they are voluntary or involuntary. They use data from ENE from 2002 to 2004, ENOE from 2005 to 2009, and administrative data from the program to estimate the degree of presence of the program at the state level. The results show that the SP generated disincentives to look for a formal job in rural areas, although according to the authors this negative effect is small if compared to other determinants of sector allocation decisions.

A slightly different approach is taken by Bosch and Campos-Vazquez (2010) who employ data at the municipality level directly from the IMSS registry for the period 2000-2009. The IMSS data is available for a balanced panel of 1395 municipalities that constitute 99% of total employment registered with IMSS. They use a difference in differences approach, comparing the evolution of the registration of employers and employees against the timing of the roll out of the SP. They find evidence of a negative impact of the program on registration of employees in small and medium firms (up to 250 employees), which according to the economic Census in 2009, account for 99% of

all firms in Mexico. However, as expected, no effect is found for large firms. An interesting finding is that the effects of the SP on the labor market occur with substantial lags. In particular, after three years from the initial implementation of the SP, the level of employee registration with IMSS is 4% lower than it should have been in firms of less than 250 employees. They conclude that around 300,000 jobs were not registered with IMSS due to the SP. This contrast with the nearly 2 million jobs created during this period. That is, in the absence of the SP, the economy should have produced 15% more formal jobs. The authors also show that young and female workers present stronger negative effects after the implementation of the SP.

An additional novel result from this study is that registration of employers was also substantially reduced by the SP. This is important since the SP was aimed at providing health care insurance to a large segment of informal self-employed. Similar to the effects on employees, three years after implementation of the SP, the level of employer registration with IMSS was 4% lower than it should have been. This resonates with the fact that according to the Economic Census from 2003 to 2008, 630.000 new firms with up to 5 employees were added to the economy in a time when the growth in the number of registered employers with IMSS in the same type of firms was virtually zero.

Note that this result refers to the *level* of employment and not to the *share*, since the IMSS data does not contain data on informal or unemployed workers. Hence it is not entirely comparable with previous studies that employ the labor force surveys (ENE-ENO). A drop in 300.000 formal jobs represents an increase in the share of informal employment of around 0.75 percentage points, quantitatively very much in line with previous estimates but with substantial smaller standard errors due to the expanded sample of municipalities.

One idea that emerges strongly from Bosch and Campos (2010) is that the effects of the SP are better observed in small firms. First, because they are in the threshold between formality and informality and hence more likely to react to changes in the incentive structure, and second, because evasion is easier for them. Bosch and Cobacho (2011) use data from the National Microenterprise Survey (ENAMIN) to study the effects of the program in small firms. Their identification strategy builds on two previous results. First, the effects of the SP were stronger in small and medium firms.

Second, younger workers seem to have been more affected by the reform (Bosch and Campos, 2010). The ENAMIN samples specifically small firms in Mexico, with detailed information about them. Due to the fact that a large number of these firms and municipalities are completely informal, the authors focus only on those firms that have some attachment with formality (either because the employer is registered with IMSS, or there is at least one employee with IMSS). In particular, the authors test whether young workers (relative to older workers) show a higher degree of informality in those municipalities which had been exposed longer to the SP. Using a differences in differences approach, across age groups in municipalities with different exposures to the program, the authors show strong effects on informalization in those municipalities more exposed to the program. On average, a 10% increase in the time of exposure to the SP decreases the share of formal employment of young workers by 1.1 and 2.1 percentage points relative to workers between 25-35 and older than 35, respectively. It is however difficult to compare this result to others since it only corresponds to a very small set of firms.

Finally, in a significant departure of the use of the roll out of the SP as the identifying variation, Aguilera (2011) employs the social security administrative database of the pension system (*Sistema de Ahorro para el Retiro*, BDSAR) that contains individual information about all workers that participate or have participated in the formal sector between August 1997 to February 2006. She then matches this database provided by the randomized experiment implemented by King et al. (2007) described above at the zip code level. The results suggest that SP has no impact in the short run on formal employment or the probability of entering or leaving the formal sector. However, by the author's own account, the reduced scale of the experiment (only a few municipalities) and the short time span may work against finding any effects in the labor market.

In all, our understanding of the literature is that while the papers analyzing the early years of the SP do not find significant effects of the program in the labor market, there seems to be some agreement that the data covering up to the end of the roll out in 2010 is showing some evidence of a reallocation effect from the formal towards the informal sector.

However, the extent of this reallocation is a matter of debate. On one end, Azuara and Marinescu (2010) claim no effect on the overall share of informality (although they

find a positive but insignificant increase in the share of informal employment of around 0.8 percentage points). They do, however, find a significant increase in the share of informal employment for some subgroups, especially the unskilled, of around 1 percentage point (which would imply a 0.6 percentage point over total employment). Other studies using the same data set do report a significant increase in the share of informal employment of the order of 0.4 to 1 percentage point (Aterido et al., 2010 and Pérez-Estrada, 2011). To put these numbers in perspective, as of 2010, Mexico had around 40 million non-public workers. Hence, a 1 percentage point change in the share of formal employment implies a 400.000 workers reallocation from the formal to the informal sector (assuming that there are no overall employment effects). Even in Azuara and Marinescu (2010), a 1 percentage point increase in the share of informal employment among unskilled workers would imply a reallocation of over 240.000 workers. In fact, all these estimates are very much in line with the evidence found by Bosch and Campos-Vazquez (2010) using IMSS data which show a very significant decrease in the level of formal employment among small and medium firms of around 4%, equivalent to 300.000 formal workers.

5. Discussion and conclusions

Nine years after the implementation of the SP we have learned a few things about its effects. The expansion of SP coverage has reduced the financial burden imposed by health expenditures, particularly catastrophic ones, to the previously uninsured households in Mexico. The reform has also increased the volume of resources directed to the health sector. These are remarkable achievements likely to bring far reaching welfare gains for many families in Mexico. While studies so far have found little evidence of enhanced health outcomes as a result of SP, such effects may take some time to materialize. Further evaluations should be undertaken in order to assess those effects in years to come.

We have also learned about the difficulties of creating a culture of prepayment. As of 2010, the contributions of the affiliates constitute less than 0.5% of the SP expenditure. This is an important lesson for other countries which seek to expand the reach of contributory systems with subsidized contributions or matching agreements which imply co-financing between the state and individuals. The evolution of the

Mexican experience suggests a low willingness to pre-pay for health insurance even if ex-post health expenses may drive families to poverty and destitution.⁶ These results should also provide a note of caution to proposals suggesting matching contributions in pensions, as the willingness to pre-pay for pensions may be even lower than the willingness to pre-pay for health. The low willingness to prepay for health and pensions can explain why many workers are in the informal sector in the first place, as neither workers nor firms are willing to cover the ex-ante costs of such benefits.⁷

In this scenario, offering virtually free health services to workers conditional on being employed in the informal sector further increases the disincentives to work in the formal sector, constituting a *de-facto* subsidy to informal employment. There is evidence that the implementation of the SP has changed incentives to contribute to social security, and workers and firms have responded to these changes. The available evidence so far points at a relocation of between 0.4 and 1 percentage point which is equivalent to 160.000 to 400.000 workers. During this same period around 2 million formal jobs were created, suggesting that the increase should have been between 8% and 20% higher in the absence of the SP. Several studies suggest that this reallocation has been more intense among small firms and unskilled workers; that is, among workers with lower ability to pay for social security and in firms where it is easier to evade contributions.

Importantly, evidence of such adverse effects on formality is not restricted to the experience of the introduction and implementation of SP. A similar health care program implemented in Mexico DF only in 2001, studied in Juárez (2009), shows a very large and negative impact of affiliation of less educated women with Social Security. In particular, Juárez (2009) shows that women, with at most a high school education, are between 4 to 9.7 percentage points less likely to have a formal job after the policy change, several times higher than the SP effects.

⁶ Interestingly, a survey of social protection conducted by the Inter-American Development Bank shows around 85% of Mexicans consider that either the government or the employers should be ultimately responsible for providing health care for workers.

⁷ It is possible to argue that health insurance and pensions insurance may well be treated differently. Health shocks are often individual true shocks (unforeseeable random events). The issue with pensions has more to do with savings than with insurance. The only risky elements are longevity (which is easily insurable at a macro level as there are few moral hazard/adverse selection problems, at least if a death register exists) and inflation risk. Given such differences it is unlikely that the same policy institution would be optimal for both aspects.

Other countries with similar approaches to the universalization of the health care access have also shown negative effects in registration to Social Security. Camacho et al. (2009) show that the expansion of social programs in the early nineties in Colombia inadvertently created incentives for people to become informal. Their estimated increases in informality are substantially larger than those found for the SP, between 2 and 4 percentage points.

In contrast, some experiences in Latin American countries have shown that health coverage can be improved hand in hand with more formal jobs if the right incentives are provided. Bérigolo and Cruces (2010) study the effects of Social Security benefits on labor market informality in Uruguay. The reform improved formal social security by extending health benefits to private sector salaried workers' dependants, mainly children and spouses, and thus changed the incentive structure of holding formal jobs within the household. Their findings indicate that after the health reform, the informality rates among workers fell significantly by about 1.3 percentage points (a 5% change) with respect to those not affected by the reform. These effects provide evidence of substantial incentive effects of social security benefits on the type of employment. Similarly, Calderón-Mejía and Marinescu (2011) analyze the effects of unifying health and pension system payments, which required employers to make contributions to these two plans through a unified payment system. Their results suggest that the reform had large positive effects on full formality. However, it also increased full informality, due to some workers (or their employers) who before the reform had chosen to contribute only to the health insurance scheme, and after the reform they chose to not contribute to any scheme through the unified payment system.

All public policies face trade-offs and ultimately policy makers have to balance the benefits of a particular policy against the costs. The larger question from a policy perspective is whether this is the right model to pursue for other countries with similar health coverage problems. This is part of a larger debate in Latin America and in other developing countries about how to extend the reach of health care and old age pensions. The recent trends in the region have been to entitle informal workers (and their families) with a series of non-contributory benefits. The concern is that the expansion of non-contributory entitlement programs currently underway might generate fragmented and

unequal social protection systems and alter significantly the incentives to participate in contributory programs.

A reduction in formal employment of a few percentage points may be considered a magnitude countries can live with. However we highlight a number of points that might be relevant in the evaluation of the costs of the SP.

First, a point not often made is that these estimates refer to the short to medium-run effects of the SP on the labor market since the difference between treatment and control municipalities are at maximum 6 years apart. The findings in Bosch and Cobacho (2011) indicate that the intensity of exposure, measured by the (log of) number of quarters in which a municipality is exposed to the program matters, with longer exposures being associated with larger disincentive effects.

Second, while the package of services and the cost of the benefits offered by Social Security are larger than that offered by SP, Figure 2 clearly shows that the relative volume of resources that goes to insured populations is rapidly declining, while the number of interventions and services that, in principle, are offered to SP affiliates has been progressively increasing. It is therefore expected that as these differences become smaller, free, high quality health care will look increasingly more attractive, particularly for low and middle-income households affiliated to social security. In Colombia where a similar dual system exists, legal pressures have made non-viable the survival of parallel contributory and non-contributory systems. In particular, the Constitutional Court (2008) issued a decision ordering the government to unify the benefits in the two systems, first for children, and then progressively for adults, raising doubts of how to finance and determine eligibility of health benefits. Mexico might face similar problems in the future since improving health services for the uninsured, a good policy objective in itself, might generate further and further distortions in the labor market.

Third, the SP is by no means the only social program in Mexico. A wide variety of programs aimed at the uninsured are present now in Mexico, ranging from housing and day care to non-contributory pensions. In fact, according to Levy (2011), the SP budget represents only 25% of all the programs aimed at protecting the uninsured. Hence, the estimates here could just represent a fraction of the real reallocation effect that social

protection for the uninsured is generating in Mexico. This is particularly true in a context where there are large flows between formal and informal jobs and hence workers stay part of their working lives in the informal sector. The “innovation” of the SP with respect to other similar programs is that it offered a reasonable identification strategy for economists to measure its effects (i.e. program implementation was staggered across the country). Hence, whatever effects the literature is finding from SP are estimated on top of a labor market already distorted by numerous non-contributory programs for informal workers.

Fourth, another important aspect to consider is the cost in terms of foregone productivity and output. The results presented here suggest that the combination of taxes to formal jobs and subsidies to informal ones reallocates economic activity towards informal, less productive firms. If that is so, output and productivity declines because a larger share of economic activity takes place in smaller, less productive firms.

Fifth, while non-contributory programs like SP increase health coverage, they also make participation in other mandatory social security programs (such as pensions) less likely. That is, the evidence so far suggests a direct trade-off between promoting health coverage and other benefits. More incentives to access health care through the informal non-contributory system would ultimately mean lower pension coverage, which in turn reinforces the need for implementing non-contributory pension programs, which are already spreading rapidly throughout the region.

All of this does not imply that countries should not pursue universalization of health care and pension coverage. On the contrary, this is a goal that we strongly advocate. Again, it is a question of what is the right model to achieve it. We believe that such goal may be more efficiently pursued with an integrated package of services for the whole population with subsidies offered to all workers (formal and informal) based on their earnings capacity, rather than having parallel fragmented systems. This is the thrust of health care systems funded partially or totally with general revenues, and where co-financing, if any, is based on earning ability or fixed copayments, rather than on work status. As indicated above, implementing co-financing may be difficult, other than for high income families; therefore countries must be prepared to find alternative sources of

financing to firms' and individuals' contributions in order to provide access to these services.

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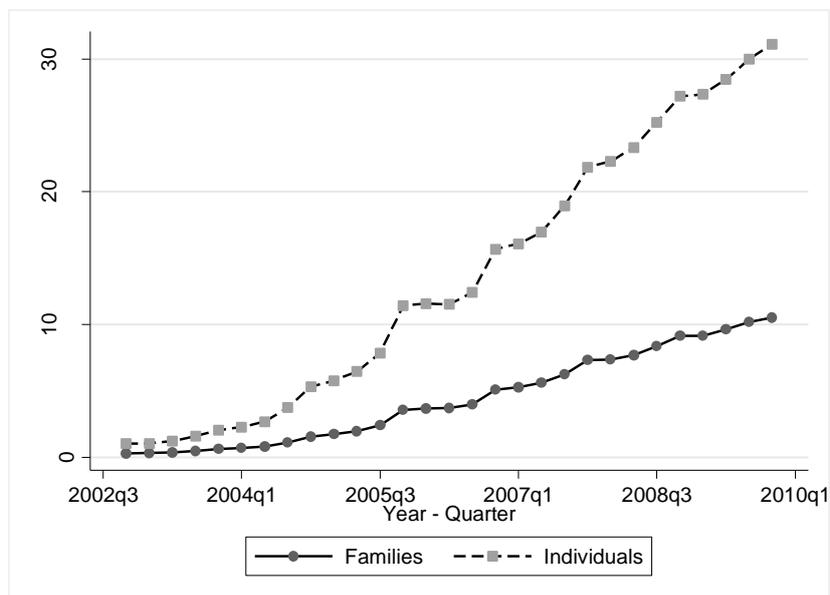
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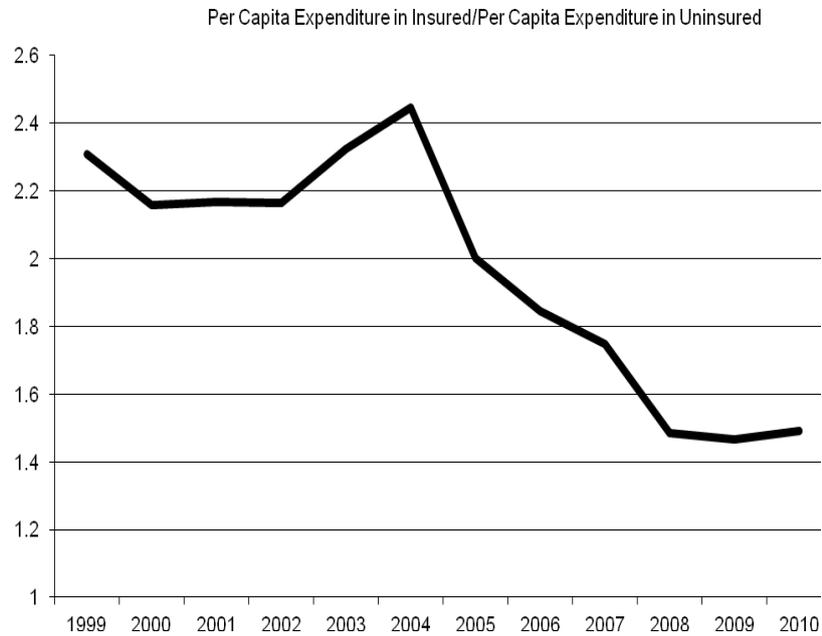
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Figure 1: Number of individuals and households affiliated with SP: 2002-2009



Notes: Number of individuals and households registered with the SP according to the administrative records of SP 2002-2009, including children and dependants. Source: Bosch and Campos (2010).

Figure 2: Relative per capita health expenditures for insured and uninsured populations



Note: The per capita on the insured is calculated as the health care expenditures executed by IMSS and ISSSTE divided by the total number of affiliates to these programs. Similarly, the per capita expenditure on the uninsured is calculated as the health expenditure executed by the SSA divided by the number of uninsured. Source: Dirección General de Información en Salud (DGIS). *Base de datos de cuentas en salud a nivel federal y estatal, 1990-2007. Sistema Nacional de Información en Salud (SINAIS)*. [México]: Secretaría de Salud.

Table 1: Effects of Seguro Popular on Health outcomes (I/III)

Authors	Data	Methodology	Main results
Knaul et al. (2006)	ENIGH 1992-2004 (every 2 years) ENSANut 2005-05	Descriptive statistics OLS	Negative association between out-of-pocket health spending/catastrophic spending and coverage of SP.
Aguilera and Marrufo (2006)	Hospital discharge data at the state level		No significant effect of the SP program on the incidence of low birth weight.
Gakidou et al. (2006)	ENSA 2000 for coverage and responsiveness ENSANut 2005-06 for catastrophic expenditure, coverage, responsiveness, hospital use and functional health status ENED 2002-03 for responsiveness ENIGH 2000 and 2004 for catastrophic expenditure <i>Census</i> and <i>Padrón del SP</i> 2002-06 for affiliation SAEH 2000-05 for hospital use SICUENTAS and the Health Statistics Bulletin 2000-2005 for health expenditure SEED 1995-2005 for mortality rates SINERHIAS for the concentration of doctors and nurses	Descriptive statistics Logistic regression	Affiliation is preferentially reaching the poor and the marginalized communities; Federal non-SS expenditure increased by 38% from 2000 to 2005; proportion of individuals paying for medication among SP affiliates is 41.3%, in uninsured people is 73.8% and in individuals in SS is 30.7%; Equity of public-health expenditure across states improved; SP affiliates used more inpatient and outpatient services than uninsured people; effective coverage of 11 interventions has improved between 2000 and 2005–06; Inequalities in effective coverage across states and wealth deciles have decreased; catastrophic expenditures for SP affiliates are lower than for uninsured people.

Table 1: Effects of Seguro Popular on Health outcomes (II/III)

Authors	Data	Methodology	Main results
Scott (2006)	ENIGH 2004	Descriptive statistics	Higher utilization rates of public health services for SP affiliates than for the rest of the uninsured, and higher for higher income groups; household health expenditures lower for SP beneficiaries; incidence of catastrophic health expenditures lower across deciles for SP beneficiaries.
Gallardo-García (2006)	Mexican Family Life Survey 2002	Dynamic discrete choice model	Negligible impact on birth weight.
Esquivel and Ordaz (2008)	ENEU 1995-2004	Propensity score matching	The presence of a member in the family working in the formal sector has a positive effect to work in the formal sector. No evidence of an effect of the social policy in Mexico on informality.
Díaz-Cayeros (2006)	Mexico panel 2006	Propensity score matching	No significant effect of social assistance programs on PAN's (<i>Partido de Acción Nacional</i>) victory in 2006 elections.
Sosa-Rubí et al. (2009)	ENSANut 2006	Multinomial probit estimation	Robust, significantly positive impact of SP on pregnant women's access to obstetrical services.
Harris and Sosa-Rubí (2009)	ENSANut 2006	Latent class model	Enrollment in SP is associated with a mean increase in 1.65 prenatal visits during pregnancy; 59% of this treatment effect is the result of increased prenatal care among women who had little or no access to care.
Galárraga et al. (2008)	ENIGH 2006, ENSANut 2006 SP Impact Evaluation Survey	Bivariate probit estimation	Using the ENIGH: No effect on catastrophic health expenditures; statistically significant effect on the reduction of household's expenditures on medicines and outpatient care. Using ENSANut and SP Impact Evaluation Survey: SP reduces the probability of catastrophic health expenditures; reduction of the probability of expenditures on medicines and outpatient care among the SP insured families.

Table 1: Effects of *Seguro Popular* on Health outcomes (III/III)

Authors	Data	Methodology	Main results
Hernández-Torres et al. (2008)	SP Impact Evaluation Survey 2002 Campeche and Colima	Probit model	8% of reduction in catastrophic expenditure on health, independent of the economic level or the kind of service.
King (2009)	Experimental design	Experimental Design	23% of reduction from baseline in catastrophic expenditures. The intention-to-treat effect on health spending in poor households was 426 <i>pesos</i> ; the complier average causal effect was 915 <i>pesos</i> ; no effects on medication spending, health outcomes, or utilization.
Barros (2009)	ENSA 2000 ENSANut 2006 ENIGH 2000, 2004, 2005, 2006	Differences in differences	SP decreases households' health expenditures: 4.2% of increase in savings of non-health expenditures; reduction of 40% of people not seeking care due to financial constraints; negligible effect on health status.

Table 2: Effects of *Seguro Popular* on the labor market (I/II)

Authors	Data	Methodology	Main results
Gallardo-García (2006)	Mexican Family Life Survey 2002	Dynamic discrete choice model	No significant impact on informal sector.
Parker and Scott (2008)	2000 Population Census 2005 Conteo de Población Rand's Mexican Family Life Survey (MxFLS) 2000-2005	Differences in Differences	Effects in rural but not urban municipalities using MxFLS. No effects using the Census data.
Barros (2009)	ENSA 2000 ENSANut 2006 ENIGH 2000, 2004, 2005, 2006	Triple differences in differences Repeated cross sections	No evidence of an impact on labor supply or earnings. No evidence of any trend towards informal sector.
Campos and Knox (2010)	ENE and ENCELURB 2001-2004 <i>Oportunidades</i> 2002-2004 ENOE 2005, 2006	Differences in differences Repeated cross sections	No effect of SP program on informal sector.
Azuara and Marinescu (2010)	ENE 1995-2004 ENOE 2005-2009	Differences in differences Repeated cross sections	A decrease of 0.8 percentage points in the share of formal employment for workers with less than 9 years of schooling; 1 percentage point for married workers with children or over 34 years old. No impact of SP on wage gains for workers moving from a sector to the other.
Bosch and Campos (2010)	IMSS data 2000-2009	Differences in differences	Negative impact of SP on the level of formal employment of around 4 percentage points among small and medium firms; strong negative impact on the level of employer registration of employers of around 4 percentage points.

Table 2: Effects of *Seguro Popular* on the labor market (II/II)

Authors	Data	Methodology	Main results
Aterido et al. (2010)	ENE 2000-2004 ENOE 2005-2009	Differences in differences Panel data estimation	0.4% -0.7% of households remain informal due to SP; higher sensitivity among larger households and households headed by individuals with less than secondary completed education. Effects also larger among individuals whose spouses are affiliated to social security. Higher informality associated with reduced transitions from informal to informal jobs. Little effect on transitions from formal to informal sector. Adverse effects also on flows out of unemployment and on participation. Informal workers pay partly for SP benefits through lower wage growth.
Duval and Smith (2011)	ENE 2000-2004 ENOE 2005-2009	Differences in Differences Repeated cross sections	Small effect of SP (larger in rural areas) on reducing the probability of looking for a formal sector job.
Pérez-Estrada (2011)	ENE 2000-2004 ENOE 2005-2008	Differences in Differences Repeated cross sections	Negative effect of SP on the share of formal workers of 1 percentage point. Large effect on the informal wage premium, decreasing average informal wages by 9% and increasing average formal wages by 5%.
Bosch and Cobacho (2011)	ENAMIN 1996, 1998, 2002 and 2008	Differences in Differences Repeated cross sections	Negative impact of SP on formal job creation in small firms. 10% of increase in the time of exposure to the SP increases the formality rate of workers between 25-35 and workers with more than 35 years of age (relative to workers between 16-24) in 1.1 p.p. and 2.1 p.p. respectively.