Boosting health insurance coverage in developing countries: do conditional cash transfer programmes matter in Mexico?

Olga Biosca[1]* and Heather Brown[2]

[1]Yunus Centre for Social Business and Health/Glasgow School for Business and Society, Glasgow Caledonian University, Glasgow G4 0BA, UK and [2]Institute of Health and Society, Newcastle University, Newcastle upon Tyne NE2 4AA, UK

*Corresponding author. Yunus Centre for Social Business and Health, 3rd Floor, Buchanan House, Glasgow Caledonian University, Cowcaddens Road, Glasgow G4 0BA, UK. E-mail: Olga.Biosca@gcu.ac.uk

Accepted	20 December 2013
Background	Achieving universal health insurance coverage is a goal for many developing countries. Even when universal health insurance programmes are in place, there are significant barriers to reaching the lowest socio-economic groups such as a lack of awareness of the programmes or knowledge of the benefits to participating in the insurance market. Conditional cash transfer (CCT) programmes can encourage participation through mandatory health education classes, increased contact with the health care system and cash payments to reduce costs of participating in the insurance market.
Objective	To explore if participation in a CCT programme in Mexico, Oportunidades, is significantly associated with self-reported enrolment in a public health insurance programme.
Methods	Cross-sectional data from 2007 collected on 29 595 Mexican households where the household head is aged between ages 15 and 60 were analysed. A logit model was used to estimate the association between Oportunidades participation and awareness of enrolment in a public health insurance programme.
Results	Participation in the Oportunidades programme is associated with a 25% higher likelihood of being actively aware of enrolment in Seguro Popular, a public health insurance scheme for the lowest socio-economic groups.
Conclusions	Participation in the Oportunidades CCT programme is positively associated with awareness of enrolment in public health insurance. CCT programmes may be used to promote participation of the lowest socio-economic groups in universal public health insurance systems. This is crucial to achieving universal health insurance coverage in developing countries.
Keywords	Demand for public health insurance, conditional cash transfer programmes, Oportunidades, Mexico, Latin America

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KEY MESSAGES

- Achieving universal health coverage is a goal of many developing countries as a means for promoting economic development. Enrolling the most deprived groups is proving to be a challenge to reaching this goal.

- We hypothesize that lack of product awareness and familiarity with health care system may be acting as a barrier to participation amongst the lowest socio-economic groups.

- We empirically test if conditional cash transfer (CCT) programmes, such as Oportunidades, may address these barriers by increasing participants' knowledge and familiarity with the health care system.

- Participation in Oportunidades is positively and significantly associated with enrolling in the public health insurance system. CCTs could be a mechanism to help promote the uptake of public health insurance in developing countries.

Introduction

Good health is necessary for sustainable economic development. Three out of the eight Millennium Development Goals (MDGs) adopted by 189 countries in the United Nations Millennium Declaration in 2000 are health related. Improving general health has become a priority for governments of many developing economies, partly to meet the MDG targets established for 2015. Recent developments in the social policy of major middle-income economies such as Brazil, Mexico, India, China and South Africa increasingly focus on universal health coverage as a means for social and economic development (United Nations 2012). Access to health insurance has been identified as essential for promoting good health (World Health Organisation 2013) and it is probable that universal health insurance will play an important role in the post-2015 agenda. Insurance improves health by eliminating barriers to accessing adequate health care and protects people from unexpected expenditure and impoverishment (Gumber and Kulkarni 2000; Bärnighausen et al. 2007).

To improve their coverage, public health insurance schemes in developing countries have expanded their reach to target informal and rural workers, who had been previously excluded from participation in these programmes. By tackling these restrictions in the supply of public health insurance, middle-income countries such as China, Mexico, Philippines and Vietnam have aimed to protect the most deprived groups of the population from the financial risks associated with using health services (Wagstaff et al. 2009).

From the perspective of improving access to health insurance, efforts have focused on creating insurance programmes and products that remove the barriers that prevented access by the lowest socio-economic groups to these programmes, as well as improving the quality of the services on offer. However, enrolling the rural population remains one of the main challenges for achieving universal coverage in developing economies (Nguyen and Knowles 2010). This suggests that there are also demand side failures affecting the achievement of universal health insurance coverage. The concept of health insurance is frequently not well understood, especially among the vulnerable and poor who are often illiterate and/or have very low education levels (Knowles 2007). This acts as a barrier to insurance uptake; even where insurance is free but individuals need to enrol in the programme. Evidence suggests that in a developing country setting, formal education and better understanding of the product have positive effects on take-up (Acharya et al. 2012).

Demand side factors such as product awareness and health knowledge, as well as supply side factors, are thus likely to be important determinants of health insurance demand at the household level.

Conditional cash transfer (CCT) programmes offer a two pronged approach to combating poverty by improving family liquidity and building up human capital (Doetinchem et al. 2008). We hypothesize that CCT programmes could be used to address the demand side failures of public health insurance uptake amongst the lowest socio-economic groups of the population. CCTs give cash payments to individuals in exchange for complying with specific positive activities such as vaccinating children, health education classes and attending preventive health care services. The mandatory health education classes and exposure to the health system by compulsory preventive health checks influence human capital formation and health behaviour (Gertler and Van der Gaag 1990).

CCT programmes have been widely adopted in Latin America and are now spreading to Asia and Africa. Research on CCTs is extensive but it has mostly focused on evaluating their impact on outcomes that are directly associated with the conditions imposed by the programmes such as health care service use, health, nutrition and schooling (Rawlings and Rubio 2005). CCTs have been found to be an effective tool for modifying and improving short-term health behaviour (Lagarde et al. 2009).

The aim of this article is to explore if CCT participation is significantly associated with self-reported enrolment in the public insurance market. We exploit health policies adopted by the Mexican government, which implemented a universal health insurance system, Seguro Popular, in 2004 and had been implementing the CCT programme Oportunidades, formerly Progresa, since 1998.

The association between CCT programmes and awareness of enrolment in health insurance programmes by the lowest socio-economic groups could be essential to accelerating the achievement of universal coverage in developing economies. Countries in similar circumstances could address some of the demand side failures related to the uptake of universal health insurance through CCTs.

Methods

The programmes

In 2000, there were serious supply side failures in the health care market in Mexico. Approximately half of the Mexican population lacked access to any public health insurance scheme. Informal workers had to attend low-cost public facilities funded by the Department of Health or pay for private health care services. Out-of-pocket health expenditure represented more than half of the total national health expenditure. The nature of the system triggered important debates on fairness and efficiency issues such as the unequal distribution in the allocation of public resources per capita between the insured and uninsured (González-Pier *et al.* 2007).

To address the failing in the health care system of limited access to health insurance for the majority of the population and high household expenditures on health care, a public health insurance system, Seguro Popular, was implemented in 2004. Seguro Popular targets the poorest groups of the population who lack access to any other public health insurance scheme. To participate in this programme, beneficiaries pay contributions according to their decile of income but families in the bottom deciles receive free coverage. Seguro Popular was rolled out gradually, being widely available by 2006 (García-Díaz and Sosa-Rubí 2011). Ninety-eight per cent of the families enrolled in the insurance programme received free coverage as they were in the lowest income decile (Sosa-Rubí *et al.* 2009). This reveals that Seguro Popular is effectively reaching its target, i.e. poorest and uninsured groups of the population. Households eligible for alternative higher-quality public schemes for formal workers are not legally entitled to participate in Seguro Popular. Appendix 1 provides more information on the public insurance system in Mexico.

We speculate that demand side factors related to health insurance product awareness and knowledge of the health care system could be addressed by a CCT programme, providing one is in place. Oportunidades is a CCT programme that started in rural Mexico in 1998 with the aim of 'breaking the intergenerational circle of poverty' by improving the educational, health and nutritional status of the low income population.

Oportunidades currently provides services to approximately 25 million Mexicans (5.8 million families), roughly a quarter of the country's population. The programme operates in the 32 Mexican States, with a budget in 2011 of over 5 million United States dollars.[1]

Participation in Oportunidades is restricted to families in the poorest groups of the population that satisfy a number of geographic and socio-economic criteria. Oportunidades provides regular payments to female household heads[2] in the form of cash or electronic transfers into their bank account. The payments are contingent upon regular school attendance of children, regular medical check-ups for family members and preventive health workshops (platicas).

The health component of Oportunidades targets women/mothers aged between 20 and 59. A mandatory requirement for receiving the cash payments is that women attend fortnightly workshops on preventive health methods and best health practices for the home. A key objective of these educational sessions is encouraging beneficiary women to be proactive in obtaining their right to social services (Adato *et al.* 2000). Working age women are also required to attend preventive treatment sessions for tuberculosis, diabetes, cancer, AIDS, etc. as well as receiving treatment for addictions, when needed. To access these health care services, beneficiaries are entitled to receive a health insurance package with limited coverage called Instituto Mexicano del Seguro Social (IMSS)-Oportunidades. This insurance package only covers the costs associated with the mandatory health components of the CCT programme. Regular contact with the health services from attending these appointments may increase awareness of entitlement to receive full health insurance coverage through Seguro Popular, and, more generally, increase knowledge about the health care system (Sosa-Rubí *et al.* 2011).

Insurance choice

This is an exploratory study to investigate the association between CCTs with training programmes and social support, and knowledge of being enrolled in a public health insurance scheme. There are three main reasons why the two may be associated. Firstly, CCTs can act as information brokers. Mandatory health classes provide a platform to spread health information that participants would otherwise not easily access. CCTs have been found to indirectly impact beneficiaries' reproductive health behaviour and decisions through a 'learning effect' (Sosa-Rubí *et al.* 2011) and to encourage beneficiaries to be informed and active health consumers (Barber and Gertler 2009). More information means that participants can make better informed choices about their health. If a lack of information is affecting uptake of public insurance by the lowest socio-economic groups, better access to health information will result in a higher likelihood of enrolling in a public health insurance scheme by participants.

Secondly, Oportunidades participants are required to attend preventive health checks at public health clinics. Thus, they also have regular exposure to the public health system which may influence their perception on the value of public health insurance (Sosa-Rubí *et al.* 2011).

Finally, the cash payments from the CCT programme will increase household budgets. If costs associated with the public insurance programme such as the travel and time costs of enrolment are affecting uptake, the cash transfers may lower the perceived cost of participating in the public insurance market.

Because of the nature of our data, we cannot identify which of these three pathways explains the association between knowledge of health insurance enrolment and participation in a CCT with a training programme and social support.

Standard factors influencing insurance uptake will also be considered in the analysis models. The insurance decision is likely to be influenced by previous medical utilization and expenditure. Health-related behaviour such as tobacco expenditure may also influence the decision to invest in health insurance. Demographic and socio-economic factors such as age, literacy, ethnicity, car ownership, home ownership, household deprivation and state of residence may equally influence the likelihood of choosing insurance (Sosa-Rubí *et al.* 2009).

Data and variables

Oportunidades was originally designed as a randomized control trial. Data were collected by the Mexican Secretary for Social Development (SEDESOL). In 1998, access to the programme was randomly assigned among the rural localities in seven Mexican states.[3] By 2003, all targeted villages had been incorporated into the programme and an additional control group of rural localities was included in the analysis. In 2007, the two Mexican states with higher deprivation levels, Chiapas and Oaxaca, were added to the sample. In both cases, quasi-experimental propensity score matching techniques were used to sample localities receiving Oportunidades and localities not receiving the programme that shared similar observable characteristics such as distance to health centres, hospitals, primary and secondary schools, literacy levels, education and deprivation levels. Thirty-eight socio-economic and demographic variables were considered in the propensity score to match the treatment and control localities. This ensured that the localities with and without access to the Oportunidades programme were similar and comparable. The percentage of the local population covered by Seguro Popular was also used in the propensity score (INSP 2007) and all the localities in the sample had access to Seguro Popular at the time of the survey.[4]

To enable comparison across groups of participant and non-participant households, SEDESOL collected information which is used to create a household poverty index controlling for the demographic and socio-economic conditions that determine eligibility to participate in Oportunidades (Todd 2004). According to this index, all households in the estimation sample are entitled to receive Oportunidades. However, even if households are eligible to participate in Oportunidades they may not be able to participate if the programme is not available in their local area. This allows us to investigate if participating in Oportunidades is associated with knowledge of Seguro Popular participation by comparing households who share similar characteristics but some are unable to access Oportunidades because it is not yet offered in their area. Ninety per cent of eligible households in rural localities when given access to the CCT programme in 2000 enrolled in it (Fernald *et al.* 2008).

The cross-sectional analysis uses data collected in 2007. We do not take full advantage of the randomized control element of the sample design in our analysis because we are not trying to determine causal pathways that may explain the association between participation in Oportunidades and enrolment in a health insurance programme. This is an exploratory study to determine if there is an association between knowledge of enrolment in a health insurance scheme and participation in Oportunidades.

Data from 2007 are used because the universal insurance programme, Seguro Popular, was introduced in 2004 after the previous round of Oportunidades' evaluation data was collected in 2003. This is also the only wave of data collected on the two states with the highest deprivation levels in the country. Our sample is limited to households where the household head is of working age (15–60). Different health insurance and social protection programmes are available after retirement which is why we decided to focus on a working age population. A similar age group is used in the analysis by Knaul *et al.* (2011).

Our study is at the household level, but it is assumed that it is women's influence on household decision making that affects health insurance consumption (Barber and Gertler 2009). This assumption is a consequence of participation in Oportunidades being restricted to adult females.

A short and a long version of the questionnaire were used to collect the Encuesta de Evaluación de los Hogares (ENCEL)-Oportunidades dataset. In our analysis we exploit the long version of the questionnaire because it includes questions on ethnicity and literacy of the household head, as well as on health behaviour and expenditure. Our sample contains 29 595 observations.

Outcome variable

The regression analysis focuses on the decision to participate in the public insurance system measured by awareness of enrolment in the Seguro Popular insurance programme. In the analysis, it is a dichotomous outcome variable that takes the value of 1 if the household has knowledge of their enrolment in the insurance programme and is equal to zero if a household reported not being affiliated to Seguro Popular. We use this variable to measure perceptions regarding enrolment. Respondents must be aware that they are enrolled in the programme. If they are automatically enrolled in Seguro Popular, but are not aware of this enrolment when responding to the health questionnaire, we assume that they will report not being enrolled in this health insurance scheme.

It is important to note that when Seguro Popular was introduced, Oportunidades participants were enrolled automatically. However, participants may not have been aware of their enrolment status and potential benefits of the insurance programme (García-Díaz and Sosa-Rubí 2011).

This insurance scheme extends to the partner or spouse of the affiliate, children under 18 or up to 25 if single and a student or economically dependent and living in the same household as their parent(s). It covers relatives over 64 and every disabled member of the family (Aterido *et al.* 2011). For this reason, this analysis is conducted at the household level.

After dropping observations with incomplete or missing responses on insurance affiliation (<1% of the sample), we included in our analysis households who report being affiliated to Seguro Popular and exclude from the insured group households with alternative forms of insurance such as IMSS and Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado (ISSSTE) (see Appendix 1 for more information on the different insurance programmes). There are no restrictions placed on the non-insured group included in the analysis.

Explanatory variables

The main explanatory variable of interest is a dichotomous indicator for Oportunidades participation which equals 1 if the individual is a participant and zero if she is not a participant. The non-participant group lives in an area where Oportunidades is not yet available but shares similar socio-economic and demographic characteristics with those who are Oportunidades participants. We also control for the age, literacy and ethnicity of the household heads, as well as home ownership, car ownership and an indicator for the deprivation level of the household based on CONEVAL (2009). Weekly

household expenditure on tobacco, monthly household expenditure on medication, number of days that household heads had been ill during the month prior to the survey and past utilization of health care services are also included as explanatory variables in the analysis.

For the majority of our explanatory variables, there are missing or incomplete responses for <5% of the observations. However, the expenditure variables, medical and tobacco expenditure, have missing or incomplete responses of approximately 30%. We run additional regression models that exclude these expenditure variables. The results are not significantly different from models including these expenditure variables. The pattern of missing data does not seem to be systematically related to participation in Seguro Popular or in Oportunidades.

Analysis

First, we described the variables included in the analysis. This initial description was not adjusted for any variable. It simply shows the mean number of sample members for each variable.[5]

The main analysis focuses on the factors affecting participation in the public insurance scheme, Seguro Popular. It is estimated using a logistic model. The dependent variable is a dichotomous variable that equals 1 if the respondent reports being enrolled in the public insurance scheme ($M_h = 1$) and is equal to zero otherwise ($M_h = 0$). The logistic regression model is defined as follows:

$$M_h = \begin{cases} 1 & \text{if} \quad M_h^* = \alpha Z_h + \beta P_{ht-1} + \psi S_h + \xi O_h + e_h \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

The subscript h denotes households. Z_h is a vector of socio-economic characteristics. P_h is a vector capturing past health related expenditure. S_h is a vector of state dummies, O_h is a scalar containing the dummy variable for Oportunidades participation, and e_h is a random error term. The coefficients of parameters to be estimated for the vectors are α, β, ψ and for the scalar is ξ.

Equation (1) is estimated by maximum likelihood. Results are supplemented by estimating the average marginal effects (AMEs) using the STATA v.12 post-estimation command, 'margin'. AMEs have a straightforward quantitative interpretation compared with the coefficients which only have a qualitative interpretation. The AMEs are estimated by calculating individual marginal effects for the explanatory variables included in the analysis and averaging these calculations over the sample. For dichotomous variables, the AMEs are calculated by predicting the probability that the indicator variable in question is equal to 1 and the probability that the variable is equal to zero. The difference between these two probabilities is then averaged across the whole sample. For continuous variables, the AMEs are estimated by taking the derivative of the predicted probability of the variable in question and averaging across the whole sample.

Results

Table 1 compares the socio-economic, demographic and health characteristics between participants and non-participants. Approximately 34% of the sample participate in Seguro Popular and 54% of our sample are Oportunidades beneficiaries.

According to our deprivation indicator, 84% of the sample is classified as deprived.

Table 2 reports the AME estimates for the factors influencing public insurance participation. Participants in Oportunidades are 25% more likely to report being enrolled in Seguro Popular, the public health insurance scheme. Households that report being enrolled in Seguro Popular insurance compared with not being enrolled in the insurance programme are more likely to have a household head that is literate, be a member of an ethnic minority, be deprived according to the deprivation index and have used medical care during the past year. Households that own their car are significantly less likely to report being enrolled in Seguro Popular insurance scheme.

Discussion and conclusion

Achieving universal health insurance coverage in developing countries is essential to promoting good health. Enrolling the lowest socio-economic groups has proven difficult. We hypothesize that low uptake of public insurance by the most deprived socio-economic group stems from a lack of information and awareness about the insurance market which leads individuals to make sub-optimal choices.

We suggest that the CCT programme Oportunidades can conceivably be used to address demand side failures in the health insurance market. This may be because the programme acts as a knowledge broker, plausibly through the mandatory health education classes and social support, and increases exposure to the public health system helping participants make more informed choices. Additionally, the cash payments from CCT programmes alter households' budget changing the perceived costs and benefits of insurance and affecting uptake. This line of reasoning is coherent with findings from quantitative and qualitative studies that report positive behavioural changes of Oportunidades participants related to health and health care (Barber and Gertler 2009).

We find that participation in a CCT programme is positively associated with being enrolled in a health insurance system. These results suggest that developing countries should address both demand and supply side failures that affect uptake of voluntary and universal public health insurance. This is an exploratory study and we cannot identify causal pathways that may affect this association between CCT participation and enrolment in a health insurance programme.

This study has several limitations. To focus on Mexican policy that addressed supply side failures related to the uptake of public insurance, we are limited to 1 year of data that were collected after the Seguro Popular programme was implemented. Using cross-sectional data limits our ability to infer causality. However, the association between CCT programmes and health insurance participation had, to our knowledge, never been assessed before and is crucial in aiding understanding on how to achieve the universal coverage objective. Additionally, this study is limited to participation in the Seguro Popular insurance scheme. Alternative social-security public insurance forms that are compulsory in nature such as IMSS or ISSSTE have not been considered in the analysis. We assume that workers entitled to these schemes always participate, even if in practice private employers frequently would not

Table 1 Descriptive statistics

Variables	Observations (number)	Total	Oportunidades	
			Participants $n = 31\,061$	Non-participants $n = 16\,781$
Seguro Popular	47 842	0.34	0.43	0.17
		(0.47)	(0.49)	(0.37)
Head of household age	47 842	40.99	42.62	37.96
		(10.51)	(9.53)	(11.50)
Head of household literate	47 842	0.73	0.75	0.70
		(0.44)	(0.43)	(0.46)
Ethnic minority	47 842	0.25	0.28	0.19
		(0.43)	(0.45)	(0.39)
Married/cohabiting	47 833	0.93	0.93	0.91
		(0.26)	(0.25)	(0.28)
Own house	47 842	0.50	0.51	0.48
		(0.50)	(0.50)	(0.50)
Own car	47 842	0.11	0.09	0.16
		(0.32)	(0.29)	(0.37)
Deprived	47 842	0.84	0.86	0.81
		(0.37)	(0.35)	(0.40)
Household poverty index	47 749	0.81	0.85	0.75
		(0.39)	(0.36)	(0.43)
			[30 998]	[16 751]
Weekly tobacco expenditure	32 020	1.81	1.51	2.29
		(12.08)	(10.17)	(14.59)
			[19 659]	[12 361]
Monthly medical expenditure	31 034	54.40	49.27	62.68
		(145.43)	(138.12)	(156.16)
			[19 157]	[11 877]
Days ill during past month	45 893	1.00	0.99	1.01
		(3.51)	(3.49)	(3.54)
			[29 801]	[16 092]
Previous utilization of health care	47 613	0.29	0.38	0.11
		(0.45)	(0.49)	(0.31)
			[30 921]	[16 692]

Notes: Figures in square brackets are the number of observations. Standard deviations are in parentheses. Monthly medical expenditure and weekly tobacco expenditure are measured in Mexican pesos. In 2007, the average exchange rate between Mexican pesos and US dollars was 0.09 US dollars to 1 Mexican peso (see X-rates: http://www.x-rates.com/average/?from=MXN&to=USD&amount=1&year=2007). Age is measured in years, days ill in the past month is measured in days, and all other variables are measured in percentages. The variable Deprived is constructed using a methodology proposed by CONEVAL (2009). A household is considered deprived if it has a dirt floor, the overcrowding index calculated as the number of individuals living in the household adjusted by the number of rooms exceeds 2.5, there is no piped water available in the property, or/and no gas/electric oven/kitchenette. The household poverty index is provided in the dataset and has been calculated to determine Oportunidades elegibility (INSP 2006). Previous utilization of health care denotes self-reported utilization of preventive health care services during the last year.

pay their health insurance contribution excluding the more vulnerable employees (Aterido *et al.* 2011).

Equally, evidence exists that households benefiting from Oportunidades might have been automatically affiliated to the Seguro Popular programme; however, beneficiaries have not been informed and are frequently not aware of their status (García-Díaz and Sosa-Rubí 2011). In this study, data are self-reported and Oportunidades' participants who are not aware of their health insurance affiliation report themselves as not being affiliated to any insurance scheme. Participation in Seguro Popular is used to measure perceptions regarding insurance

coverage, in other words knowledge and/or awareness of programme participation and not actual formal enrolment. This supports the idea that CCTs might act as a knowledge broker. Even if in some countries automatic affiliation of cash transfer beneficiaries to universal insurance schemes is common practice, supply side policies are not enough. This research provides evidence of a potential need for demand side policies that increase active and informed participation in health decisions.

The findings suggest that reducing demand side failures is important for improving access to health care for the lowest

Table 2 Marginal effects from logit model for Oportunidades participation

Seguro Popular insurance	AME
Oportunidades participant vs non-participant	0.25***
	(0.01)
Head of household age	0.00
	(0.00)
Head of household age squared	−0.00
	(0.00)
Head of household literate vs illiterate	0.05***
	(0.01)
Ethnic minority vs majority ethnic group	0.03***
	(0.01)
Own house vs rent	−0.01
	(0.01)
Own car vs no car	−0.02**
	(0.01)
Deprived vs not deprived	0.02**
	(0.01)
Weekly tobacco expenditure	−0.00**
	(0.00)
Monthly medical expenditure	−0.00***
	(0.00)
Days ill during past month	0.00***
	(0.00)
Previous utilization of health care	0.08***
	(0.01)
n	29 595
Log-likelihood	−16 779.08

Notes: Average marginal effects are shown. Standard errors are in parentheses. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$. The model also includes state dummies which are not shown.

socio-economic groups. Developing countries with CCT programmes in place, such as Colombia or the Philippines, may have a higher likelihood of achieving universal health insurance coverage amongst the poorest compared with countries that do not address these demand side failures such as China. By encouraging informed decisions, CCTs might not only be used as a vehicle of accelerating free health insurance uptake but also incentivize the use of private insurance. However, the nascent private health insurance market in Mexico and the small take-up by sample members in the dataset of private insurance impeded considering private insurance choice in the analysis. This article builds a case for tailored health insurance policy accounting for the different poverty alleviation programmes that might be in place in each developing country.

Conflict of interest statement. None declared.

Endnotes

[1] More information on the programme can be found on www. oportunidades.gob.mx.

[2] Couples comprised a male and female household head. The female household head receives the conditional cash transfer payment.

[3] Guerrero, Hidalgo, Michoacán, Puebla, Querétaro, San Luis Potosí and Veracruz.

[4] Information on the construction of the index and the selection of localities can be found in Instituto Nacional de Salud Pública (2006).

[5] We do not control for the selection bias of benefiting from Oportunidades as the incorporation of households in the programme is based on observable locality and household socio-economic characteristics. According to the poverty index, all the households considered in our sample are eligible to participate in the programme. Also, enrolment is supply-driven and the percentage of eligible households that choose not to participate is very low (García-Díaz and Sosa-Rubí 2011).

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Appendix 1 Public insurance schemes in Mexico

Insurance type	Participation criteria[a]
Limited coverage	
IMSS-Oportunidades	Compulsory to Oportunidades participants.
	Limited coverage to specific primary and secondary services required to meet CCT programme criteria to receive cash payments.
	For full coverage, beneficiaries should simultaneously participate in any other insurance programme such as Seguro Popular
Full coverage	
IMSS	Available to workers in the formal private sector[b]
	Legally compulsory but frequently private employers do not enrol their employees
ISSSTE	Available to workers in the public sector
	Compulsory
PEMEX (Petróleos Mexicanos), SEDENA (Secretaria de Defensa Nacional), SEMAR (Secretaria de Marina)	Available to workers of each of these public enterprises
	Compulsory
Seguro Popular	Available to workers in the informal sector
	Households eligible for alternative higher-quality public schemes for formal workers are not legally entitled to participate (Sosa-Rubí *et al.* 2009)
	Opt-in

[a]Every scheme extends to the partner or spouse of the affiliate, children under 18 or up to 25 if single and a student or economically dependent and living in the same household as their parent(s). It covers relatives over 64 and every disabled member of the family (Aterido *et al.* 2011).

[b]Formal sector is defined as all those types of employment which offer regular wages and hours, which carry with them employment rights, and on which income tax is paid.

Source: IMSS (http://www.imss.gob.mx/estadisticas/Documents/20112012/introduccion.pdf): http://www.seguro-popular.salud.gob.mx/.