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Abstract

We look at the incidence of consumption adjustments and coping mechanisms in the face of health and other shocks in the Philippines and inquire whether the country's National Health Insurance Program (NHIP) is able to cushion poor and non-poor households from the impacts of health shocks. We use data on shocks from a nationally representative survey. We define consumption changes using self-reported adjustments in food and non-food consumption, and construct a categorical variable corresponding to broad groups of coping mechanisms. We use an ordered probit model to estimate the likelihood of consumption changes and a multinomial probit model to estimate the likelihood of a coping mechanism, across type of NHIP coverage. We control for the type of shocks and include household characteristics and location that proxy for preferences, capacity and relative costs of safety nets. Households covered under the NHIP's program for the poor are less likely to make food and non-food consumption reductions, indicating protection of their consumption. However, consumption is not fully protected as households still undertake self-insurance mechanisms. While NHIP benefits are not sufficient to fully insure consumption, NHIP members are better off in terms of reducing the number of coping strategies employed compared with non-NHIP members.

1. Introduction

Uncertain events or shocks reduce the resources available to households for consumption, as resources are reduced and/or diverted to restore destroyed or impaired productive capacity. Health shocks have substantial impacts on household consumption because of high out-of-pocket payments and lost productivity of sick household members (Lindelow and Wagstaff, 2005; Galiano, 2008; McIntyre, 2006).

Both food and non-food consumption have been affected with evidence showing differential adjustments depending on the type of shock (Wagstaff, 2007; Heltberg and Lund, 2009; Gustaffson et al. 2009). Evidence also points to differential adjustments for the poor and non-poor, with the former shouldering more extensive consumption adjustments than the latter (Jalan and Ravallion, 1999).

In the face of uncertain events, an efficient response would be to insure against the losses from the random shocks. In the absence of or incomplete formal insurance mechanisms such as life, non-life and health insurance, households have resorted to non-formal insurance mechanisms and self-insurance. Examples of these coping mechanisms abound for both health and non-health shocks. These include seeking transfers and external assistance from both government and non-government sources such as family and social networks (De Weerdt and Dercon, 2006; Dehejia et al., 2007), drawing down from their physical and financial assets (Hoddinot, 2006), and borrowing money to supplement their incomes (Kruk et al, 2009). Human capital investments have also been reduced or

foregone, as households pull their children from school or trade-off schooling quality for less expensive alternatives (Heltberg and Lund, 2009; Gertler, Levine and Ames, 2004).

Evidence from other countries indicates that social health insurance has been found to help insure against the costs of illness (Wagstaff and Pradhan, 2005). However, there is evidence that it is not able to fully protect consumption (Gertler and Gruber, 2002; Asfaw and von Braun, 2004). In developing countries with limited or no social insurance, other coping mechanisms are resorted to (Lieve and Xu, 2008).

Recognizing the adverse impacts of illness on households, the NHIP was instituted in 1995 to provide insurance against illness for the whole population. The NHIP's Sponsored Program (SP) targets the poor in particular, through premium sharing between the local and national government. Estimates on the aggregate protection provided by the NHIP membership programs have been developed, including the share of social health insurance in expenditures from the country's National Health Accounts (NSCB 2010), and more recently, a measure of benefit delivery (Tan, et al 2011).

However, evidence of social health insurance's impact on households in the Philippines remains limited. Studies have mainly focused on social health insurance's impact on health care utilization and health care outcomes (Kraft et al, 2009; Quimbo et al, 2011; Dror et al, 2005), but not on its ability to provide consumption cover and mitigate against other non-formal and self-insurance mechanisms for catastrophic illness expense.

Thus, this paper seeks to contribute evidence on the consumption impacts of shocks, in particular health shocks, and how social health insurance has affected the coping mechanisms against these shocks in Philippine households. We ask what the implications are of shocks, in particular, the effects of health shocks on consumption, and whether social health insurance in the Philippines protects consumption from health shocks. We look at which consumption items are protected, and whether the protection extends those of the poor. We also look at the factors affecting the use of other coping mechanisms to shocks and inquire whether social health insurance mitigates the need for other coping in the case of health shocks.

In Section 2, we provide a brief background on the NHIP and the extent of its coverage. We develop our conceptual framework and empirical model in the next section. We discuss the result of our estimates in Section 4. Section 5 concludes.

2. Social Health Insurance in the Philippines

Perhaps the formal insurance mechanism with the most population coverage is the social health insurance program, NHIP, established in 1995. The NHIP is implemented through several membership options. Government and private sector employees and their dependents are covered through the Employed program, with premium payments shared by both employers and employees. Retirees and their qualified dependents are covered under the Lifetime Member program, with a minimum number of premium payments as employed members sufficing to pay for their coverage. Self-employed individuals, those

separated from employment and those not eligible under other NHIP programs can avail of insurance benefits by paying for their own premiums under the Individually Paying Program (IPP). Lastly, the Sponsored Program (SP) initiated in 1997 (then known as the Indigent Program) provides insurance coverage to poor families. Their annual premiums are shared by the national government and local governments, according to a scheme dependent on the latter's capacity to pay.

Benefits are uniform for members and their dependents. Inpatient benefits are subject to ceilings that vary depending on the severity of the illness and the health facility level. For SP members, outpatient consultations, and selected outpatient diagnostics are covered at assigned primary care health units.

NHIP coverage remains limited. Population coverage is estimated at 51.8% (Tan et al, 2011). Benefit utilization stands at 58.6 % and 3.1 % for inpatient and outpatient benefits, respectively. The average proportion of health care expenses paid is at 36.46 % for inpatient care. A summary measure called the benefit delivery rate (BDR), which can be interpreted as the amount paid out of every 100 pesos spent (net however of government subsidies to public hospitals and clinics), is estimated to be 8.8 % in 2010, with BDR for the poorest quintile at 8.7%. Moreover, the share of social insurance in total health care spending is at 8.5% in 2007 (NSCB, 2010).

This limited coverage prompts us to investigate the extent to which the NHIP has been able to protect consumption, and the extent to which other coping mechanisms have been employed in response to health shocks.

3. Methods

3.1. Conceptual frame and empirical model

Our basic model postulates that households who experience shocks face a reduction in the resources that can be used for consumption either because total available resources is lower (e.g., loss of livelihood) or because the shock precipitates an increase in consumption requirements (e.g., need to obtain health care services). While the magnitude of reduction depends on the nature of the shock, with some shocks entailing a greater loss of resources compared to other shocks, households determine the extent by which different types of consumption may have to be reduced because of the shock. The decisions to "allocate" the negative impact of the shock across consumption items will depend on household preferences, the prices of consumption items, and the presence of and amounts reimbursed by insurance mechanisms.

Our basic model further assumes that households can avert a reduction in present consumption by turning to "coping strategies" that involve the following elements: transfers from government and non-government institutions and social networks, reductions in future consumption (e.g., financial coping like borrowing, the sale of assets,

drawdown of savings), and a reductions in human capital investments (e.g., foregoing the schooling of children). Analogous to decisions on the reduction of consumption items, household choice of coping strategies will depend on household preferences, the implicit costs of coping strategies, and the presence of insurance mechanisms.

The costs of particular coping strategies are dependent on the shocks themselves. For instance, receiving assistance from friends and neighbours may be more likely in the case of idiosyncratic shocks like illness and death, rather than for covariate shocks which affects groups of nearby households.

The ability to protect consumption is therefore dependent not only the type of shock experienced by households but also on the presence of formal insurance mechanisms and various coping mechanisms employed. The latter are in turn dependent on the costs and relative gains from these coping strategies.

Given this framework, the difference between pre-shock and post-shock consumption can be specified to be a function of the shocks experienced as well as the presence of formal, non-formal and self-insurance mechanisms. As we do not have pre-shock consumption estimates, we rely on categorical, self-reported consumption adjustments in the presence of shocks. Thus, we estimate a reduced form consumption adjustments model in the form:

$$\Pr(\text{Consumption Adjustment}_i = j) = \beta_0 + \beta_1' \text{Healthshocks}_i + \beta_2' \text{HealthInsurance}_i + \beta_3' \text{Healthshock}_i \text{ x HealthInsurance}_i + \beta_4' \text{OtherShocks}_i + \beta_5' \text{HHcharacteristics}_i + \beta_6' \text{Region}_i + \epsilon_i$$

Household characteristics not only represent consumption preferences but also relative costs to households of coping strategies. We interact formal insurance with the shocks they intend to protect against, specifically health shocks with health insurance. Regional dummies are included to represent levels of prices and differences in access to institutional forms of support.

We use an ordered probit model to estimate the consumption adjustments model employing the following hierarchy of choices: no consumption adjustments, non-food consumption adjustments only, with food consumption adjustments. The rationale for this hierarchy is the assumption that households would want to preserve consumption whenever possible and that non-food consumption would be foregone before food consumption.

To assess the choice of coping strategies, we estimate a polychotomous choice of self-insurance and non-formal coping mechanisms in the presence of shocks. We estimate a coping strategy choice model with the following alternatives: no coping strategy, financial coping strategy without seeking external assistance, any human capital coping strategy without seeking external assistance, seeking external assistance only, financial coping

strategy while seeking financial assistance, and any human capital coping strategy while seeking financial assistance.

We deviate from the use of separate binary probits in earlier studies (Leive and Xu, 2008) by estimating the coping strategy choice through a multinomial probit model. We account for the possibility that some choice alternatives are more correlated relative to other choices and that binary comparisons of two choices may not be independent of other alternatives i.e., address IIA violations. We specify the choice probability using the expression:

$$\Pr(\text{Coping}_i = j) = \beta_0 + \beta_1' \text{Healthshocks}_i + \beta_2' \text{Insurance}_i + \beta_3' \text{Healthshocks}_i \text{ x Insurance}_i + \beta_4' \text{OtherShocks}_i + + \beta_5' \text{HHcharacteristics}_i + \beta_6' \text{Region}_i + \epsilon_i$$

3.2. Data and Variables

We used an extensive shock module from baseline survey data collected as part of a randomized policy experiment on the use of vouchers as an incentive for enrolment into the Philippines' NHIP (Capuno, et al 2011). Conducted in early 2011, the nationally representative survey covered 2,950 households. We used data on the most severe shock experienced by households in the last three years, resulting in a sample of about 2,483 households.

In the absence of pre-shock consumption measures, we use self-reported consumption adjustments to indicate whether and which consumption items were reduced. We construct a categorical variable that is equals 0 if the household did not reduce consumption, 1 if the household reduced non-food consumption, and 2 if the adjustments involved at least any reduction in food consumption.

We use a categorical variable to represent coping mechanisms. This is zero if the household did not seek assistance, nor undertake any financial coping mechanisms or schooling adjustments – the no coping scenario. A "1" means that the household undertook financial coping only, while "2" means that the household coped by making schooling adjustments solely or in combination with financial coping. Solely seeking assistance from external sources is represented by a "3", while this in combination with financial coping is represented by a "4". A "5" means a household coped by seeking assistance from external sources and undertaking schooling adjustments with or without financial coping. Thus, categories two and five represent coping mechanisms with human capital impacts.

Coverage in social health insurance is represented by dichotomous variables indicating whether the household head or spouse is enrolled under the SP or in any of the other NHIP programs. Distinguishing coverage this way allows us to represent insurance protection of the poor vs. the non-poor.

Dichotomous variables represent the broad classes of shocks; natural, economic, socio-political, illness/injury and death shocks. Natural shocks is used as numeraire shock for identifying the most severe shock.

We include binary variables on the presence of an overseas contract worker household member, household member participation in socio-civic activities, and household head's religion to represent the ease with which households can seek assistance from other households.

We use household wealth quintiles identifiers derived from a principal component analysis of household assets, and a dichotomous variable indicating the households' previous shock experience, as indicators of household resources. Household head characteristics represent preferences and capacity to undertake coping mechanisms. Region dummies represent prices and institutional ability to respond to shocks.

In terms of the number of households reporting them as most severe, illness or injury shocks are ranked third behind natural shocks (e.g., drought, floods, earthquakes, pest infestation, extreme heat, fire) and economic shocks (e.g. declines in prices and demand for products, unexpected increases in food and essential commodities, loss of job, collapse of business) (Please see Table 1). For these most severe shocks, nearly half of households undertook consumption adjustments, with most adjusting non-food consumption. This indicates that households are unable to fully secure consumption in the face of shocks.

Financial coping in the form of borrowing, dissaving, postponing investments, selling or pawning assets and produce are the most common coping mechanisms, while seeking external assistance only is undertaken by 5% of households. About 4% of households make schooling adjustments, solely or in combination with other adjustments to cope with shocks.

About 50% of households are covered by the NHIP, majority of which are in the paying programs. About 14% of household heads are members in non-religious groups, while about 5% of households have overseas contract worker members.

4. Results

4.1. Consumption

Households covered under the SP are less likely to make consumption adjustments in the face of health shocks (Please see Table 1). This indicates that social health insurance in the Philippines seems to smoothen the poor's consumption in the face of these shocks. Both the poor's food and non-food consumption are protected, with higher protection afforded to food consumption as indicated by a higher absolute value of the marginal effect of SP coverage on making any food consumption adjustments (-0.038) compared with the marginal effects of SP coverage on non-food consumption adjustments (0.02).

The marginal effects of coverage under other NHIP programs are not significant, implying that those covered under the other programs are less protected from consumption adjustments. The asymmetric consumption effect of the NHIP across income class probably arises as the poor need only so much to restore their usual consumption standards, while the rich need a lot more than the usual NHIP reimbursement.

Those who experienced economic shocks are more likely to make consumption adjustments, in particular any food adjustments. Richer households are less likely, while bigger households more likely, to make consumption adjustments both in food and non-food items These findings are consistent with those of Heltberg and Lund (2009). Households in urban areas are more likely to adjust consumption, reflecting higher prices of consumption goods and higher costs of non-formal insurance mechanisms with less closely-knit urban communities.

4.2. Coping

While we see that coverage of the poor in social health insurance protects food and non-food consumption, households need to undertake other coping mechanisms besides drawing down on insurance to fully protect consumption. Households covered in both the SP and other programs are more likely to have additional coping mechanisms with health shocks (Please see Table 3). SP covered households are more likely to undertake financial coping strategies, while households covered under other programs rely on their own

financial resources or seek external assistance. We see some protection of human capital as those covered under other NHIP programs are less likely to combine seeking assistance with schooling adjustments.

Households with health shocks are more likely to undertake multiple coping mechanisms. In terms of the size of the marginal effects, those who experienced health shocks are more likely to have financial coping, followed by seeking assistance from external sources and resorting to schooling adjustments. Those with death shocks additionally seek assistance from external sources only. Socio-political shocks induce households to undertake schooling adjustments, while households experiencing economic shocks resort to financial coping mechanisms and seeking assistance from institutions, family and friends.

Households with female heads are likely to make schooling adjustments and financial coping adjustments, and less likely to draw on external sources of assistance. These indicate that female headed households may be at a disadvantage when it comes to access to external assistance. Households located in urban areas cope by making schooling adjustments or by seeking external assistance.

Our results indicate that social health insurance allows poor households to smoothen both food and non-food consumption. However, social health insurance coverage remains incomplete, since households undertake other coping mechanisms even with coverage. Thus, to the extent that there are foregone earnings due to liquidated assets and future interest payments on borrowings, future consumption is not altogether protected. These

imply that improvements in benefits and benefit delivery may be warranted to ensure fuller protection.

Despite the incompleteness of social insurance coverage, however, those without social health insurance are worse off following a shock. In order to maintain consumption, multiple coping mechanisms are employed by those suffering from health shocks, including seeking assistance from external sources and even schooling adjustments. For the poor who are covered, benefits from social health insurance substitute for external assistance from government and non-government institutions and schooling adjustments. These substitutions across coping strategies are likewise noted in Dercon (2002). For those covered by other NHIP programs, benefits allow members to avoid undertaking schooling adjustments. These suggest that some protection is afforded to human capital. These results are consistent with Capuno, et al's (2009) findings that NHIP coverage improves the chances of school attendance among children.

5. Conclusions

Our results indicate that social health insurance in the Philippines protects at least the poor from reductions in consumption, both food and non-food, in the face of health shocks. However, social health insurance is not able to provide full insurance for consumption, as poor households still resort to some self-insurance in the form of dissaving or borrowings.

While social health insurance is less able to protect non-poor members' consumption, it is able to shield members from undertaking schooling adjustments, protecting the future earnings capacity of children. Less coping adjustments undertaken by the insured compared with the uninsured indicate that the NHIP has contributed, albeit not fully, to restoring household welfare in the face of health shocks.

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Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Non-food consumption adjustments only	2483	0.2880	0.4529	0	1
With food consumption adjustments	2483	0.1836	0.3873	0	1
Financial coping only	2483	0.2867	0.4523	0	1
With schooling adjustments	2483	0.0270	0.1621	0	1
Sought assistance only	2483	0.0576	0.2330	0	1
Sought assistance and with financial coping only	2483	0.1007	0.3010	0	1
Sought assistance and with schooling adjustments	2483	0.0137	0.1162	0	1
Covered under the NHIP SP	2483	0.1462	0.3534	0	1
Covered under other NHIP Programs	2483	0.3540	0.4783	0	1
Covered by other health insurance	2483	0.0584	0.2345	0	1
Illness or injury shock	2483	0.1965	0.3975	0	1
Death shock	2483	0.0471	0.2119	0	1
Socio-political shock	2483	0.0278	0.1644	0	1
Economic shock	2483	0.3435	0.4750	0	1
Second asset quintile	2483	0.2396	0.4269	0	1
Third asset quintile	2483	0.1643	0.3706	0	1
Fourth asset quintile	2483	0.1877	0.3905	0	1
Fifth asset quintile	2483	0.1772	0.3819	0	1
Number of household members	2483	5.0971	2.1721	1	15
With an overseas worker	2483	0.0536	0.2252	0	1
Household head at least high school graduate	2483	0.5469	0.4979	0	1
Age of household head	2483	45.3862	12.5911	20	96
Female household head	2483	0.0157	0.1244	0	1
Urban	2483	0.4998	0.5001	0	1
Roman Catholic	2483	0.8820	0.3227	0	1
Member of non-religious group	2483	0.1410	0.3480	0	1
HH experienced a shock before 2008	2483	0.2159	0.4115	0	1
Ilocos Region	2483	0.0536	0.2252	0	1
Cagayan Valley	2483	0.0157	0.1244	0	1
Central Luzon	2483	0.1051	0.3068	0	1

Bicol	2483	0.0628	0.2427	0	1
Western Visayas	2483	0.0914	0.2883	0	1
Central Visayas	2483	0.0826	0.2753	0	1
Eastern Visayas	2483	0.0520	0.2220	0	1
Zamboanga Peninsula	2483	0.0262	0.1597	0	1
Northern Mindanao	2483	0.0499	0.2179	0	1
Davao Region	2483	0.0544	0.2268	0	1
SOCKSARGEN	2483	0.0540	0.2260	0	1
Cordillera Administrative Region	2483	0.0185	0.1349	0	1
ARMM	2483	0.0270	0.1621	0	1
CALABARZON	2483	0.1486	0.3558	0	1
MIMAROPA	2483	0.0226	0.1485	0	1

Source: Authors' estimates

Table 2. Consumption adjustments

	Marginal effects of ordered probit (N=2,483)					
	No consumption adjustments		Non-food consumption adjustments only		With food consumption adjustments	
Covered under the NHIP SP	***0.0588***	**	***-0.0201***	*	***-0.0387***	**
Covered under other NHIP Programs	***-0.0169***		***0.0050***		***0.0118***	
Covered by other health insurance	0.0258		-0.0090		-0.0167	
Illness or injury shock	-0.0172		0.0038		0.0134	
Death shock	0.0472		-0.0143		-0.0329	
Socio-political shock	-0.0070		0.0021		0.0049	
Economic shock	-0.0535	**	0.0162	**	0.0373	**
Second asset quintile	-0.0210		0.0044		0.0165	
Third asset quintile	0.1049	***	-0.0321	***	-0.0729	***
Fourth asset quintile	0.0907	***	-0.0268	***	-0.0639	***
Fifth asset quintile	0.2055	***	-0.0762	***	-0.1293	***
Number of household members	-0.0144	***	0.0043	***	0.0100	***
With an overseas foreign worker	0.0331		-0.0100		-0.0231	
Household head at least high school graduate	0.0368		-0.0112		-0.0257	
Age of household head	0.0011		-0.0003		-0.0008	
Female household head	0.0370		-0.0112		-0.0258	
Urban	-0.0576	**	0.0175	**	0.0402	**
Roman Catholic	-0.0265		0.0080		0.0185	
Member of non-religious group	0.0063		-0.0019		-0.0044	
HH experienced a shock before 2008	-0.0648	***	0.0196	***	0.0451	***
Regions						
Ilocos Region	0.0797	*	-0.0221	*	-0.0575	**
Cagayan Valley	0.0170		-0.0039		-0.0131	
Central Luzon	0.1260	**	-0.0391	***	-0.0869	***
Bicol	-0.0262		0.0051		0.0211	
Western Visayas	0.2179	***	-0.0806	***	-0.1374	***
Central Visayas	0.0737	**	-0.0202	*	-0.0536	*
Eastern Visayas	-0.0102		0.0021		0.0081	
Zamboanga Peninsula	0.0353		-0.0086		-0.0266	
Northern Mindanao	-0.0403		0.0074		0.0329	
Davao Region	-0.0454		0.0082		0.0372	
SOCKSARGEN	0.0691		-0.0187		-0.0504	
Cordillera Administrative Region	0.1769	***	-0.0608	**	-0.1161	***

ARMM	0.1516	**	-0.0496	**	-0.1020	**
CALABARZON	0.0399		-0.0099		-0.0300	
MIMAROPA	0.2319	***	-0.0877	***	-0.1442	***

*** significant at 1%, ** significant at 5%, * significant at 10%
Source: Authors' estimates

Table 3. Coping with Shocks

	Marginal effects of multinomial probit (N=2,483)															
	No coping			Financial coping only			With schooling adjustments			Sought assistance			Sought assistance and financial coping			Sought assistance and with schooling adjustments		
Covered under the NHIP SP	-0.0957	***		0.0845	***		0.0136			0.0066			-0.0139			0.0049		
Covered under other NHIP Programs	-0.0448	**		0.0387	**		-0.0099			-0.0122			0.0352	**		-0.0069	*	
Covered by other health insurance	-0.0131			-0.0007			-0.0088			-0.0140			0.0162			0.0205		
Illness or injury shock	-0.2481	***		0.1474	***		0.0001			-0.0095			0.0961	***		0.0140	*	
Death shock	-0.2477	***		0.1134	**		0.0025			0.0344	*		0.0841	***		0.0133	*	
Socio-political shock	0.0321			0.0515			0.0329	**		-0.0497			-0.0558			-0.0110		
Economic shock	0.0717	***		0.1340	***		-0.0015			-0.0826	***		-0.1167	***		-0.0049		
Second asset quintile	-0.0114			-0.0097			0.0130			0.0010			0.0174			-0.0103		
Third asset quintile	0.0455			-0.0509			-0.0024			0.0048			0.0108			-0.0079		
Fourth asset quintile	0.0641	**		-0.0534			0.0035			0.0108			-0.0022			-0.0227	***	
Fifth asset quintile	0.0296			-0.0304			0.0020			0.0060			0.0163			-0.0236	***	
Number of household members	-0.0094	*		0.0040			0.0000			-0.0004			0.0048	*		0.0011		
With an overseas worker	0.0183			0.0214			0.0017			0.0024			-0.0479			0.0041		
Household head at least high school graduate	0.0474	**		-0.0216			0.0000			-0.0037			-0.0244	*		0.0024		
Age of household head	-0.0006			0.0005			0.0000			0.0000			0.0001			0.0001		
Female household head	0.3428	***		0.2450	***		0.0562	**		-0.8904	***		0.2066	***		0.0397	***	
Urban	-0.0397	*		-0.0233			0.0145	*		0.0310	***		0.0127			0.0048		
Roman Catholic	0.0348			-0.0469			-0.0028			-0.0050			0.0307			-0.0108	**	
Member of non-religious group	-0.0062			0.0212			-0.0109			0.0251	**		-0.0397	**		0.0105	**	
HH experienced a shock before 2008	0.0202			0.0117			0.0060			-0.0091			-0.0222			-0.0066		

Luzon outside NCR	0.0257		-0.0040		0.0033	0.0056	0.0173	-0.0481	**
Visayas	0.1934	***	-0.0859	**	-0.0064	-0.0084	-0.0390	-0.0537	**
Mindanao	0.1437	***	-0.0800	*	0.0012	0.0177	-0.0267	-0.0560	**

*** significant at 1%, ** significant at 5%, * significant at 10%

Source: Authors' estimates