Insurance and Poverty Reduction: Evidence from Philippine Urban and Rural Households

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The poor are the most vulnerable class to risks and shocks and yet are also the least likely to be insured. In this essay, I explore the relationship between insurance and poverty reduction using a nationally representative household panel data from the Philippines. I find that the main pathway through which insurance coverage diminishes vulnerability to poverty is by aiding already non-poor households from falling into poverty in the face of shocks. In contrast, insurance coverage is insignificant in aiding escape from poverty among already poor households. However, a difference-in-difference (DID) analysis that exploit the occurrence of super-typhoon Reming in 2006 in the Bicol region of the Philippines suggest that insurance coverage enabled poor households to escape from poverty in the face of a natural disaster. Hence, while insurance may not be a magic cure to fundamental roots of poverty, it remains a critical tool in diminishing the exposure to poverty of the most vulnerable sectors of Philippine society.

I. Introduction

Albert and Vizmanos (2018) note that one of the key criteria of poverty is vulnerability even to minor events and that even micro insurance coverage can make a major difference in diminishing such vulnerability. Yet, while the poor needs insurance most, they are also the least likely to have it.

Evidence exists that insurance coverage can reduce poverty. Risk is a major cause of poverty, and insurance has long been proposed a remedy for this risk (Mosley 2001; World Development Report 2000). Various studies in developing countries find that insurance protect households from poverty by reducing household out-of-pocket expenditure and catastrophic expenditure (see for e.g., Aryeetey et al. (2016) for Ghana, Dillon (2011) for Mali, Hamid et al. (2011) for Bangladesh, and Asfaw and Jutting (2007) for Senegal).

Even among the poor, different sectors have varying exposure to risk. For instance, in rural areas around the world, illness and exposure to climatic risks remain among the

root causes of rural poverty (see for e.g., Zhou et al. 2020 for China). On the other hand, poor urban households, while also exposed to such risks, are less vulnerable ~~to them~~ due to the non-agricultural nature of their livelihoods and their greater proximity to government services and city amenities such as utility, health, and (micro)financial services.

Against these backgrounds, the case seems strong for insurance to play a bigger and more systematic role in poverty alleviation. In this essay, I analyze the links between insurance and poverty, with particular focus on their urban and rural profiles. I use the 2004 and 2008 Annual Poverty Indicators Survey (APIS), a nationally representative household panel survey data conducted by the Philippine Statistics Authority (PSA).

The APIS has been administered by the PSA since 1998 in years when the Family Income Expenditure Survey (FIES) is not conducted and when funds are available. The FIES is a national household survey conducted by the PSA every three years since 1985 and is the Philippines' main source of household income and expenditure data.[1] On the other hand, the APIS is a nationwide survey that is designed to develop integrated (income and non-income) poverty indicators in the country. Although both the FIES and APIS are generally conducted independently each year, the 2004 and 2008 rounds of APIS constitute a special panel survey dataset that allows us to track a household's poverty status and other characteristics in both years. The 2004 and 2008 APIS were both conducted in July of their respective years, with the "past six months" preceding the interview as reference period.

I conduct a simple logistic regression analysis to examine the relationship between insurance and poverty reduction in the Philippines. I analyze two pathways through which insurance may impact poverty: preventing poverty and aiding escape from poverty. The initial results suggest that the main pathway through which insurance contributes to poverty reduction in the Philippines is through preventing non-poor households from falling into poverty, while it appears insignificant in pulling already-poor households out of poverty. To check the robustness of the results, I exploit the occurrence of super-typhoon Reming in 2006 in a difference-in-difference (DID) analysis in the Bicol region of the Philippines. This analysis allows us to see the differential impact of insurance coverage between insured and uninsured households when faced with a shock, such as a natural disaster. The DID results, on the other hand, indicate that, when hit by a shock, poor households can escape poverty if covered by insurance.

This paper contributes to the literature in four ways. First, while most studies on insurance and poverty in developing countries focus on rural households (for e.g., Zhai et al. (2021) and Zhou et al. (2020) for China and Hamid et al. (2011) for Bangladesh),

[1] Prior to 1985, the FIES had been conducted every 5 years beginning in 1957 (Ericta and Luis 2009).

this paper explicitly explores the differential impacts of insurance coverage on urban and rural households. Second, it also distinctly investigates how insurance coverage impacts the poverty status of initially non-poor and already-poor households.

Second, it also distinguishes between the impact of insurance coverage on the poverty status of initially non-poor and already poor households. On the other hand, existing studies primarily focus on either one of these two economic classes (for e.g., Hamid (2011) and Zhou et al. (2020)) or do not distinguish between the two (for e.g., Aryeetey et al. (2016)).

Third, this study investigates the role of formal insurance on poverty reduction vis-à-vis the presence of informal insurance among a household's risk coping tools. Although there is a large volume of literature on the role of informal insurance in managing risks (for e.g., Jalan and Ravallion (1999) and Morduch (1999)) and on the crowding-out effect of formal insurance on informal insurance (for e.g., Geng et al. (2018) and Lin et al. (2014)), there is little evidence on how formal insurance fares in comparison with informal insurance in alleviating poverty.

Finally, I exploit the occurrence of a natural catastrophe in uncovering the impact of insurance coverage on poor and non-poor households when they are hit by a shock. While several studies cited in this paper rely solely on collected survey data to derive some measure of household shock, such as out-of-pocket and catastrophic expenditures, I utilize the occurrence of a natural disaster in a DID analysis to capture the impact of an economic shock that can encompass death, health, and material damage to the household. Using such indicator of a household shock is particularly apt and important in the context of the Philippines, which due to its geographic location, is oftentimes severely damaged by natural disasters.

Section 2 provides an overview of poverty and insurance coverage in the Philippines. Section 3 presents the empirical strategy and results of this essay. Finally, Section 4 concludes.

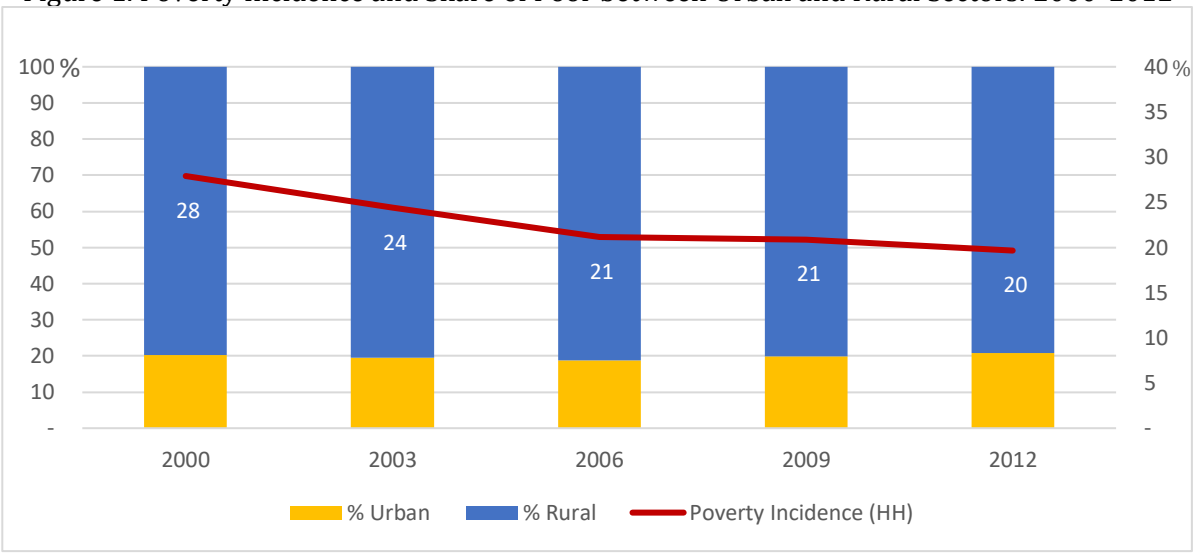
II. Background: Poverty and Insurance in the Philippines

In this section, I provide an overview of the characteristics of the poor and the insured in the Philippines, focusing on the urban and rural profiles of poverty and insurance in the country.

Who are the poor and who are the insured?

Worldwide and in the Philippines, the poor reside mostly in the rural areas (Balisacan and Fuwa 2004; Ravallion et al. 2007). Figure 1 shows that while poverty incidence has steadily declined in the Philippines from 28 percent in 2000 to 20 percent in 2012, the share of poor between the urban and rural areas has largely remained the same at around 20 percent and 80 percent, respectively. Hence, poverty in the Philippines remains a largely rural phenomenon.

Figure 1. Poverty Incidence and Share of Poor between Urban and Rural Sectors: 2000-2012



Notes: Poverty incidence is defined as the share of households with per capita income falling below the annual per capita poverty threshold or the minimum income required to meet the basic food and nonfood needs as estimated by the Philippine Statistics Authority.

Source: Author's calculations based on the Family Income and Expenditure Survey (FIES) 2000–2012

On the other hand, Table 1 reveals that while the number of insured households[2] remained at 41 percent between 2004 and 2008 in the Philippines, the urban share of insured households increased from 41 to 44 percent, while the rural share declined from 59 to 56 percent. Table 1 also shows that the majority of uninsured households in the Philippines are rural households, increasing from 68 to 70 percent of the uninsured from 2004 to 2008.

[2] The insured are defined here as households with any family member who is a member of the national health insurance program, PhilHealth, or any (privately provided) health, life, and/or pre-need insurance system.

Table 1. Insurance Coverage and Share of Insured between Urban and Rural Sectors: 2004-2008

	2004	2008
Households with Insurance	41%	41%
Urban Share	41	44
Rural Share	59	56
Total	100	100
Households without Insurance	59%	59%
Urban Share	32	30
Rural Share	68	70
Total	100	100

Notes: Households with insurance are defined as those households with any family member who is enrolled in the government social insurance program, PhilHealth, or any (privately provided) health, life, and/or pre-need insurance system.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Are the poor insured?

Table 2 reveals that only 25 percent of poor households are enrolled in the national health insurance program, PhilHealth, or any (privately provided) health, life, and/or pre-need insurance system in 2008 – a figure which declined from 30 percent in 2004. Among the poor urban households, enrollment in an insurance program increased from 27 percent to 31 percent between 2004 and 2008. On the other hand, insurance coverage decreased among poor rural households from 30 percent to 24 percent.

Table 2. Insurance Coverage among the Poor: 2004-2008

	2004	2008
Poor Households		
Insurance Holders	30%	25%
Non Insurance Holders	70%	75%
Total	100%	100%
Urban Poor		
Insurance Holders	27%	31%
Non Insurance Holders	73%	69%
Total	100%	100%
Rural Poor		
Insurance Holders	30%	24%
Non Insurance Holders	70%	76%
Total	100%	100%

Notes: Households with insurance are defined as those households with any family member who is enrolled in PhilHealth or any privately provided health, life, and/or pre-need insurance system.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

I next examine the vulnerability to poverty of Filipino households using a poverty transition matrix. A poverty transition matrix allows us to assess the vulnerability of certain sectors to poverty by revealing their rate of entry and exit into poverty. I divide households into poor, near-poor (those whose incomes are less than 1.5 times the poverty threshold), and the rest of the non-poor households. Table 3 presents the results. The main figures in the table are in percentage of the economic class presented in the rows, while in parentheses are figures in percentage of all households in 2004.

Table 3 reveals that around 40 percent of poor households in 2004 exited poverty in 2008 (21 percent became near-poor and 18 percent became non-poor well beyond near-poverty). Near-poor households in 2004, on the other hand, were almost equally likely to be poor (32 percent) or remain near-poor (31 percent) in 2008, although majority (37 percent) were able to become non-poor well beyond near-poverty. Finally, very few among the rest of non-poor and non-near-poor households fell into poverty (8 percent) or near-poverty (14 percent). These figures show, unsurprisingly, that near-poor households are more vulnerable to poverty than the rest of the non-poor households. [3]

Table 3. Poverty Transition Matrix (in Percent of Households in 2004): 2004 – 2008

Poverty Status 2004	Poverty Status 2008			
	Poor	Near-Poor	Rest of Households	**Total**
Poor	61% (19)	21% (6)	18% (6)	**100%** (31)
Near-Poor	32% (6)	31% (6)	37% (7)	**100%** (18)
Rest of Households	8% (4)	14% (7)	78% (40)	**100%** (51)
(Total)	**(29%)**	**(19%)**	**(52%)**	**(100%)**

Notes: Poor households are defined as households with per capita income falling below the annual per capita poverty threshold estimated by the Philippine Statistics Authority. Near-poor households are defined as households with per capita income falling below 1.5 times the per capita poverty threshold. The main figures are in percentage of the row totals, while in parentheses are figures in percentage of all households in 2004..

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Our results so far suggest a huge gap between the poor and the insured in the Philippines. As noted earlier in Table 2, only a quarter of poor households were enrolled in an insurance program in 2008. This huge gap is of critical policy importance since insurance can be a vital tool in reducing vulnerability to poverty. In the next section, I explore the pathways through which insurance contributes to poverty reduction, namely (1) by preventing falling into poverty and (2) by aiding escape from poverty.

[3] Albert and Vizmanos (2018) conduct a similar analysis using the Family Income and Expenditure Survey (FIES) 2003 and 2009 and arrive with the same conclusions.

III. Insurance and Poverty Reduction in Urban and Rural Philippines

I use the 2004-2008 APIS panel data, which consist of 8,185 households in each of the two survey years, to provide evidence on whether insurance can reduce vulnerability to poverty. I proceed by testing the following two hypotheses:

H1: Insurance coverage can prevent non-poor households from falling into poverty.

H2: Insurance coverage can aid poor households in escaping poverty.

Can insurance prevent falling into poverty?

In order to test the first hypothesis, I use the subsample of non-poor households in 2004 and estimate a simple logistic regression of the following form:

$$Poor_i = \beta_0 + \beta_1 Insurance_i + \beta_2 X_i + \lambda_p + u_i$$

The dependent variable $Poor_i$ is a dummy variable denoting whether household i is poor in 2008. $Insurance_i$ is the main variable of interest and is a dummy variable denoting whether the household has insurance in 2004. X_i are controls for household characteristics including age and education of the household head, and dummy variables for whether the family sold any real or personal property ($Sale$), received loans ($Loan$), and withdrew from savings ($Withdraw$) in 2004. The last three control variables, $Sale, Loan,$ and $Withdraw$, are of particular interest because these are other common and important coping mechanisms for Filipino households who face shocks. λ_p denotes the province fixed effects, which to a large extent, can absorb the impacts of confounding factors such as geographical location, climatic characteristics, and local institutions. If insurance coverage prevents a non-poor household from falling into poverty, then we should expect a negative sign of β_1.

Table 4 shows the regression results using the entire subsample of non-poor households in 2004, as well as the subsamples of the non-poor urban and rural households in 2004. The coefficients of the main variable of interest, $Insurance$, are negative and significant, indicating that non-poor households with insurance in 2004 are less likely to become poor in 2008 than non-poor households without insurance in 2004. The magnitude of the coefficients is also larger for rural households than urban households, suggesting that insurance coverage are of even more critical importance for rural households in reducing vulnerability to poverty.

Finally, it is interesting to note the impacts of other household coping mechanisms to shocks on household poverty. Selling assets is an important and statistically significant coping strategy for households, particularly for rural ones, in preventing poverty. Withdrawing from savings is also useful for both urban and rural households, which both have statistically

significant *withdraw* coefficients of about equal magnitude. Borrowing loans, on the other hand, while having positive coefficients, suggesting a potential push into poverty, are insignificant.

The results are generally robust to the addition of other important potential confounding factors, such as household income and the formality of work of the household head, in the regression analysis. Table 4A in the appendix shows the regression results when additional controls, namely sex of the household head ($Female = 1$), sector of work ($Formal = 1$)[4], household size, and the logarithm of per capita household income. The sex of the household head and household size are insignificant, while household income, expectedly, plays a significant role in preventing poverty.

More interesting to discuss is what happens to the insurance coefficient when the sector of work (i.e., formal or informal) is controlled for in the model. Overall and particularly for the rural *non-poor*, the formality of work of the household head does not play a significant role in preventing household poverty. On the other hand, formality of work matters for the urban *non-poor*. More importantly, the insurance coefficient for becomes insignificant for these urban households, suggesting an important link or correlation between insurance coverage and formal sector work in the Philippines. Such result also provides useful insight for policy solutions to improving insurance coverage in the country, such as the need to capture informal workers in the Philippine system of social safety nets.

[4] I classify as formal workers those who are employed in private establishments or the government and government-owned corporations, while informal workers are those who are self-employed without any employee, work for a private household, or work in own family-operated farm or business. This definition of informality is close to that used by McCaig and Pavcnik (2015, 2018).

Table 4. Poverty status in 2008 of Non-Poor Households in 2004

	All Non-Poor Households (1)	Urban Non-Poor Households (2)	Rural Non-Poor Households (3)
Dependent variable: Poor			
Insurance	-0.462***	-0.345**	-0.498***
Age of household head	-0.025***	-0.030***	-0.022***
Education of household head	-1.567***	-1.466***	-1.682***
Sale	-1.579**	-1.179	-0.518
Loan	0.122	0.288	0.496***
Withdraw	-0.519***	-0.565**	-0.115
Province Fixed Effects	Yes	Yes	Yes
No of observations	5,225	2,175	2,969
R squared	0.16	0.18	0.15

Notes: Estimations are conducted using logistic regression. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months in 2004. *Loan* is a dummy variable denoting whether the household received any loans in the past six months in 2004. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months in 2004. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Can insurance aid escape from poverty?

I next examine whether insurance can aid escape from poverty. Using the subsample of poor households in 2004, I now estimate the following equation:

$$Poor_i = \beta_0 + \beta_1 Insurance_i + \beta_2 X_i + \lambda_i + \varepsilon_i$$

All variables are the same as in the previous model, but I now test whether insurance coverage enables a *poor* household in 2004 to *become non-poor* in 2008. Hence, we should expect a negative sign of β_1, indicating that insured poor households in 2004 are more likely to become non-poor in 2008 than non-insured poor households.

Table 5 shows the results of the regression analysis. Unlike the results in the previous model, we find no evidence that insurance coverage of poor households in 2004 can aid in their escape from poverty by 2008. The coefficients on our variable of interest, *Insurance*, have the correct negative signs but are insignificant. Similarly, the other variables for coping mechanisms against shocks, *Sale*, *Loan*, and *Withdraw*, are all insignificant as well

(although $Loan$ is positive and marginally significant for all poor households, again suggesting a potential exacerbating effect of loan borrowing on household poverty). However, as in the previous results, we still find that the age and education level of the household head have negative impacts on the probability of remaining poor. That is, having older and highly educated household heads reduces the chance of remaining poor.

These results are again generally robust to additional controls and important confounding factors, as Table 5A in the appendix shows. The insurance coefficients remain negative, or very close to nil, and insignificant. However, household size and household per capita income are important determinants of a poor household's ability to leave poverty. A larger household makes it more difficult to exit poverty, while households with more per capita income are, expectedly, more likely to leave poverty. The sector of work, on the other hand, appears to matter differently for $poor$ households compared to their non-poor counterparts. For $poor\ urban$ households, the formality of work of the household head does not matter in predicting a household's ability to escape poverty. This result may be explained by the possibility that at the very bottom of the income distribution, it is not the sector of work (formal or informal), but the quality of work and type of profession that a worker engages in that matters in his household's ability to move up the income ladder. On the other hand, formality of work of the household head matters for $poor\ rural$ households, suggesting an important role of structural transformation, or the movement away from agriculture, where most workers are self-employed, towards industrial and services employment, in rural poverty reduction.

In sum, the results show that the main pathway through which insurance impacts poverty reduction is through preventing a non-poor household from falling into poverty. The results also suggest that insurance coverage may not be as effective in aiding already poor households escape from poverty when there are more fundamental drivers of (chronic) poverty in the Philippines, such as lack of access to education, and hence to decent, well-paying jobs. Nonetheless, I still highlight the important role of insurance in reducing vulnerability to poverty, particularly among the non-poor who can tip into poverty in the face of shocks.

Table 5. Poverty status in 2008 of Poor Households in 2004

	All Poor Households (1)	Urban Poor Households (2)	Rural Poor Households (3)
Dependent variable: Poor			
Insurance	-0.048	-0.111	-0.038
Age of household head	-0.022***	-0.016*	-0.025***
Education of household head	-0.947***	-1.627***	-0.775***
Sale	-0.265	-0.063	-0.293
Loan	0.198*	0.272	0.140
Withdraw	0.025	-0.498	0.043
Province Fixed Effects	Yes	Yes	Yes
No of observations	2,322	423	1,870
R squared	0.07	0.14	0.08

Notes: Estimations are conducted using logistic regression. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months in 2004. *Loan* is a dummy variable denoting whether the household received any loans in the past six months in 2004. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months in 2004. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Robustness Check: *Evidence from Super-typhoon Reming in the Bicol Region*

To check the robustness of my results, I perform a difference-in-difference (DID) analysis exploiting a natural disaster that struck the Bicol region of the Philippines in 2006. Super-typhoon *Reming* (international code name: *Durian*) wreaked havoc in the southeastern part of Luzon Island and caused widespread damage to property estimated to be over Php 600 billion (JPY 1.2 trillion) and casualties reaching 655 deaths, 455 missing, and 2,430 injured (Orense and Ikeda 2007). To estimate the impact of insurance coverage on poverty status, I estimate the following equation using the subsample consisting of six provinces in the Bicol region:

$$Poor_{it} = \beta_0 + \beta_1 Insurance_i \times Year2008 + \beta_2 Insurance_i + \beta_3 Year2008 + \beta_4 X_{it} + \lambda_i + \varepsilon_{it}$$

I again run the regression separately for non-poor and poor households. The definitions of the variables are the same as in the previous models, but I now add the subscript t to

indicate time for the years 2004 and 2008. $Year2008$ is a dummy variable equal to 1 for observations in the year 2008. We are interested in the interaction term, $Insurance_i \times Year2008$, and its coefficient β_1 measures the average treatment effect (ATE) of insurance coverage in 2004 on poverty status in 2008 after households were hit by the calamity shock.

The DID analysis measures the difference between the average poverty status outcome of households that are covered by insurance and households that are not after both types of households have experienced super-typhoon Reming. The DID analysis eliminates the effects of all time-invariant baseline differences between insured and uninsured households, but any time-varying differences in household characteristics must be controlled for in order to isolate the effect of insurance coverage on poverty status after the occurrence of the natural disaster. I do so by including all the controls we have used so far in the earlier regression analyses.

The DID equation above also shows that we must expect an insignificant β_2, the coefficient of insurance, if we do not want any statistically significant baseline differences in poverty status between the insured and uninsured households. On the other hand, we must see a positive β_3, coefficient of Year 2008 and our indicator for the occurrence of super-typhoon Reming, if we expect the event to push households into poverty or exacerbate it. Finally, we must expect a negative β_1, the coefficient of the interaction of $Insurance$ and $Year2008$, if being covered by insurance makes it less likely to become or remain poor. Another way of looking at the DID equation is by interpreting $\beta_1 \cdot Year2008 + \beta_2$ as the marginal effect of insurance on household poverty status. As we should expect a negative β_2, or a poverty-reducing effect of $Insurance$, and a positive β_3, or a poverty-inducing effect of $Year2008$ (our indicator for super-typhoon Reming), then we must expect a negative β_1, which enhances the poverty-reducing effect of $Insurance$ and counters the poverty-enhancing effect of $Year2008$.

Table 6 shows the results of the DID analysis. The results largely confirm my previous findings. Column (1) shows the regression results for the non-poor households in 2004 while column (2) shows the results for the poor households in 2004. The interaction term, $Insurance_i \times Year2008$, has a negative and significant coefficient in column (1), confirming the earlier results that insurance coverage in 2004 reduces the probability of becoming poor in 2008. However, column (2) now shows a negative and significant effect of insurance coverage on the probability of remaining poor for already-poor households. The coefficient on the interaction term, $Insurance_i \times Year2008$, has a negative and significant coefficient, suggesting that in the face of shocks, such as a natural disaster, insurance coverage can lift already poor households out of poverty. For these households, insurance payout when disaster strikes may be large enough not only to help them recover from the shock but also to provide them with significant resources that can aid them out of poverty.

Table 6A in the appendix, which adds further controls similar to the earlier analyses, however, shows that the result is only robust for non-poor households. Adding controls, such as the sex of the household head, formality of work of the household head, household size, and household income, the impact of insurance coverage on household poverty status remains negative and statistically significant. On the other hand, while the effect for poor households remains negative, the estimate becomes insignificant when household income is controlled for. This reinforces the result that insurance coverage is not sufficient to push already poor households out of poverty. However, I suggest caution in making full conclusions out of these results. For instance, other measures of poverty can be investigated, such as the poverty gap, a continuous measure of the degree of poverty. [5] While my measure of poverty, a categorical indicator of poverty status, may not capture significant effects of insurance coverage on poverty for already poor households, a continuous measure such as the poverty gap might capture significant impact of insurance coverage on the degree of poverty.

Table 6. Poverty status in 2008 after experiencing Typhoon Reming

	All Non-Poor Households in 2004 (1)	All Poor Households in 2004 (2)
Dependent variable: Poor		
Insurance x Year2008	-0.169***	-0.119*
Insurance	0.031	-0.027
Year 2008	0.318***	-0.307***
Age of household head	-0.001	-0.003*
Education of household head	-0.108***	-0.111
Sale	0.204	0.061
Loan	0.025	0.034
Withdraw	0.012	-0.038
Province Fixed Effects	Yes	Yes
No of observations	607	380

Notes: Regressions are conducted using the linear probability model. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months. *Loan* is a dummy variable denoting whether the household received any loans in the past six months. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

[5] The poverty gap measures the distance between a household's income and the poverty threshold.

IV. Conclusion

In this essay, I explored the relationship between insurance and poverty reduction. The link between the two is particularly important because the poor, who are in most need of insurance, are also the least likely to have it. Furthermore, insurance coverage is a potentially vital and effective policy tool to assist segments of society who are vulnerable to poverty.

Using a nationally representative household panel data conducted in 2004 and 2008, I provide evidence on the link between insurance and poverty reduction. In particular, I uncover that the main pathway through which insurance enrollment diminishes vulnerability to poverty is by preventing already non-poor households from falling into poverty in the face of shocks. I also find that such impact is larger for rural households than urban ones. It is not surprising given that rural households are subject to greater risks and that the vast majority of both the poor and the uninsured reside in rural areas. The regression analyses also unveil critical linkages between formal sector work and insurance coverage in the Philippines, as well as the importance of education, occupational upgrading, and formalization in poverty reduction. While the results suggest that insurance is critical in $preventing$ poverty, they also reveal that insurance coverage may not matter when the household is $already\ poor$ – for which it is education and the quality and sector of work of the household head that counts in enabling escape from poverty.

I also exploited the occurrence of super-typhoon Reming in 2006 to estimate the impact of insurance coverage on poverty status when households are hit by shocks. The DID results confirm my initial findings and further indicate that insurance coverage can enable poor households to escape poverty in the event of a disaster. The results also suggest that insurance coverage may be a critical solution for rural agricultural households, who are greatly exposed to risks and damages from natural disasters, particularly in the typhoon-prone Philippines.

In sum, I have shed light on the role of insurance coverage in poverty reduction in the Philippines. While insurance may not be a perfect substitute for many other anti-poverty policy solutions nor would it be a magic cure to fundamental roots of poverty, it remains a critical tool in diminishing the exposure to poverty of the most vulnerable sectors of Philippine society.

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Appendix

Table 4A. Poverty status in 2008 of Non-Poor Households in 2004

	All Non-Poor Households (1)	Urban Non-Poor Households (2)	Rural Non-Poor Households (3)
Dependent variable: Poor			
Insurance	-0.206**	-0.063	-0.301**
Age of household head	-0.019***	-0.023***	-0.016***
Education of household head	-0.928***	-0.820***	-1.043***
Sale	-1.562**	-1.438	-2.342**
Loan	-0.018	0.124	-0.111
Withdraw	-0.383***	-0.401	-0.481***
Female household head	0.020	0.310	-0.032
Formal worker in 2004	0.115	0.415**	0.060
Formal worker in 2008	-0.197*	-0.316*	-0.138
Household size	0.026	0.026	0.043
Log per capita income	-1.780***	-1.917***	-1.666***
Province Fixed Effects	Yes	Yes	Yes
No of observations	5,225	2,175	2,969
R squared	0.22	0.26	0.21

Notes: Estimations are conducted using logistic regression. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months in 2004. *Loan* is a dummy variable denoting whether the household received any loans in the past six months in 2004. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months in 2004. *Female* is a dummy variable denoting whether the household head is female. *Formal* is a dummy variable denoting whether the household head is a formal worker. *Log per capita income* is the logarithm of household per capita income. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Table 5A. Poverty status in 2008 of Poor Households in 2004

	All Poor Households (1)	Urban Poor Households (2)	Rural Poor Households (3)
Dependent variable: Poor			
Insurance	-0.024	-0.210	0.008
Age of household head	-0.019***	-0.011	-0.023***
Education of household head	-0.830***	-1.332**	-0.655**
Sale	-0.390	-0.225	-0.421
Loan	0.083	0.297	-0.036
Withdraw	-0.163	-0.374	-0.219
Female household head	-0.130	-0.113	-0.076
Formal worker in 2004	0.137	0.181	0.129
Formal worker in 2008	-0.212*	0.347	-0.331**
Household size	0.092***	0.166**	0.080***
Log per capita income	-1.506***	-0.969**	-1.761***
Province Fixed Effects	Yes	Yes	Yes
No of observations	2,322	423	1,870
R squared	0.11	0.18	0.13

Notes: Estimations are conducted using logistic regression. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months in 2004. *Loan* is a dummy variable denoting whether the household received any loans in the past six months in 2004. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months in 2004. *Female* is a dummy variable denoting whether the household head is female. *Formal* is a dummy variable denoting whether the household head is a formal worker. *Log per capita income* is the logarithm of household per capita income. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008

Table 6A. Poverty status in 2008 after experiencing Typhoon Reming

	All Non-Poor Households in 2004 (1)	All Poor Households in 2004 (2)
Dependent variable: Poor		
Insurance x Year2008	-0.150***	-0.074
Year 2008	0.329***	0.006
Insurance	0.048	0.002
Age of household head	0.005	-0.001
Education of household head	0.060**	-0.045
Sale	0.126	0.028
Loan	0.001	-0.034
Withdraw	0.042	-0.053
Female household head	0.030	0.006
Formal worker	-0.012	0.013
Household size	0.008	-0.006
Log per capita income	-0.198***	-0.599***
Province Fixed Effects	Yes	Yes
No of observations	607	380

Notes: Regressions are conducted using the linear probabibility model. *Poor* is a dummy variable denoting whether the household is poor in 2008. *Insurance* is a dummy variable denoting whether the household has insurance membership in 2004. *Education* is a dummy variable denoting whether the household head is a college graduate. *Sale* is a dummy variable denoting whether the household sold any real or personal property in the past six months in 2004. *Loan* is a dummy variable denoting whether the household received any loans in the past six months in 2004. *Withdraw* is a dummy variable denoting whether the household withdrew savings or business equity in the past six months in 2004. *Female* is a dummy variable denoting whether the household head is female. *Formal* is a dummy variable denoting whether the household head is a formal worker. *Log per capita income* is the logarithm of household per capita income. *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively.

Source: Author's calculations based on the Annual Poverty Indicators Survey (APIS) 2004–2008