Supplementary Material

Persistent Effects of Temporary Incentives:
Evidence from a Nationwide Health Insurance Experiment

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APPENDIX

A: Attrition and variable definitions

Table A1: Probit model of attrition

	Marginal effect	Standard error
willingness to pay (log)	-0.0239	(0.102)
expenditure per capita (log)	0.0992	(0.0682)
receive social support	-0.0828	(0.106)
informal economic activity	-0.165	(0.0794)
employed (head of hhold)	-0.123	(0.131)
college education (head hhold)	0.268	(0.121)
house		
owned	-0.393	(0.110)
# rooms	0.108	(0.0530)
poor building materials	0.108	(0.117)
poor decoration	0.0228	(0.129)
poor neighbourhood	0.0242	(0.102)
flush toilet	-0.139	(0.0841)
safe drinking water	-0.0778	(0.0869)
poor health (head of hhold)	0.445	(0.263)
adverse health event last year	-0.162	(0.102)
sickness / injury in last 30 days	0.0405	(0.0987)
inpatient stay in last year	0.0744	(0.105)
any maitenance medication	0.00517	(0.0988)
medical expenditure (ihs)	0.0169	(0.0127)
household size	-0.0631	(0.0280)
# children	-0.0229	(0.0359)
>1 family in household	0.0264	(0.144)
aware of PhilHealth insurance	-0.152	(0.122)
aware of PhilHealth benefit package	0.248	(0.103)
aware PhilHealth claims procedure	0.00634	(0.0993)
tenure at location	-0.0105	(0.00248)
urban	0.406	(0.113)
hospital in municipality	0.0385	(0.120)
hospital within 1 hour	-0.212	(0.0978)
health clinic in municipality	0.139	(0.0869)
clinic within 15 minutes	-0.0202	(0.114)
constant	-0.462	(0.815)
Joint significance χ^2 (45)	209.9	(p=0.0000)
Number of households	1420	

Notes: Probit estimates of marginal effects on probability of attrition from 2015 follow-up survey averaged over the baseline sample eligible for the experiment interventions. Standard errors clustered at the municipality level. There are 238 clusters. All variables measured in baseline survey. See Appendix Table A2 for definitions. The model also includes 14 indicators of regions (the strata), which are jointly significant.

Table A2: Control variable definitions (all measured in baseline survey)

willingness to pay, PHP	willingness to pay for PhilHealth health insurance in pesos
total expenditure per capita, PHP	total household expenditure per capita in pesos
receive social support	receipt of social assistance not 4P conditional cash transfer
informal economic activity	engaged in informal entrepreneurial activity
employed	head of household is working
college education	head of household has college education
house	
owned	household owns home
# rooms	number of rooms in house
poor building materials	house exterior poorly constructed, semi-permanent / temporary
poor decoration	house interior badly in need of repair / decoration / dilapidated
poor neighborhood	located in neighborhood with poor housing / slum district
flush toilet	flush toilet to sewage pipe or septic tank
safe drinking water	drinking water from community water system/ bottled/filtered
poor health (head of hhold)	report currently ill/injured or suffering previous illness/injured
adverse health event last year	household experienced illness, injury or death in the last year
sickness / injury in last 30 days	someone in household sick or injured within the last 30 days
inpatient stay in last year	someone in household admitted to hospital within the last year
any maintenance medication	regular monthly expenditure on medication for chronic illness
medical expenses past 6 months	expenditure on medical care/medicines last 6 months
household size	number of people in household
# children	number of dependent children in household
>1 family in household	more than one family in household
aware of PhilHealth	
insurance	aware of PhilHealth insurance program
benefit package	aware of different PhilHealth benefit packages
claims procedure	aware of requirements for claiming PhilHealth benefits
tenure at location	number of years have lived at currently location
urban	urban location
hospital in municipality	public hospital (any type) in municipality
hospital within 1 hour	can walk to a public hospital in an hour or less
health clinic in municipality	public health clinic (RHU/CHC) in municipality
clinic within 15 minutes	can walk to public health clinic in 15 minutes or less

Notes: In all statistical models estimated, logarithmic transformations of willingness to pay and total household expenditure per capita are used, and the inverse hyperbolic sine transformation of medical expenses in the past 6 months is used.

B: Additional balance checks

Table B1: Balance checks after weighting in sample used to estimate subsidy effects

	Baseline weighted mean [SD]		H_0: C=T	Normalized
	Control (C)	Treatment (T)	p-value	difference
willingness to pay (PHP)	118.5 [119.5]	121.8 [55.6]	0.662	-0.051
total expenditure per capita (PHP)	20310 [30749]	20491 [19746]	0.930	-0.010
receive social support	0.185	0.177	0.882	0.015
informal economic activity	0.543	0.547	0.941	-0.007
employed (head of hhold)	0.892	0.890	0.963	0.004
college education (head of hhold)	0.057	0.073	0.387	-0.065
house				
owned	0.898	0.889	0.851	0.018
# rooms	1.590	1.601	0.904	-0.012
poor building materials	0.667	0.662	0.937	0.008
poor decoration	0.786	0.775	0.832	0.020
poor neighbourhood	0.582	0.589	0.915	-0.012
flush toilet	0.437	0.435	0.983	0.003
safe drinking water	0.498	0.508	0.898	-0.017
poor health (head of hhold)	0.030	0.019	0.522	0.057
adverse health event last year	0.264	0.270	0.914	-0.012
sickness / injury in last 30 days	0.255	0.258	0.942	-0.007
inpatient stay in last year	0.140	0.137	0.939	0.007
any maitenance medication	0.231	0.213	0.688	0.037
medical expenses past 6 months (PHP)	862.0 [3574]	920.9 [4473]	0.844	-0.015
household size	5.308 [6.226]	5.312 [2.809]	0.993	-0.001
# children	1.961 [2.692]	1.967 [2.182]	0.975	-0.003
>1 family in household	0.169	0.162	0.848	0.017
aware of PhilHealth insurance	0.852	0.860	0.892	-0.016
aware of PhilHealth benefit package	0.148	0.152	0.910	-0.011
aware PhilHealth claims procedure	0.132	0.151	0.544	-0.052
years at current address	28.840 [31.075]	27.994 [23.350]	0.696	0.038
urban	0.487	0.482	0.960	0.008
hospital in municipality	0.808	0.812	0.941	-0.008
hospital within 1 hour	0.494	0.503	0.898	-0.016
health clinic in municipality	0.561	0.553	0.888	0.015
clinic within 15 minutes	0.272	0.269	0.959	0.005
Number of clusters	62	152	214	214
Number of households	271	469	740	740
F-test (47, 692)			0.189	(p=1.000)

Notes : Weighted means at baseline. Standard deviations (SD) of continuous variables in brackets. Sample used to estimate subsidy effects after attrition. Variable definitions in Appendix Table A2. Means of 15 sample stratifiers (regions) not shown. F test is of joint significance of all covariates (including regions) in explaining treatment indicator.

Table B2: Balance checks in sample used to estimate application assistance effects

	Baseline Mean [SD]		H_0: C=T	Normalized
	Control	Treatment	p-value	difference
willingness to pay (PHP)	124.5 [56.10]	128.3 [61.90]	0.350	-0.084
total expenditure per capita (PHP)	19249 [16680]	25421 [27543]	0.000	-0.346
receive social support	0.188	0.150	0.222	0.100
informal economic activity	0.552	0.512	0.344	0.081
employed (head of hhold)	0.906	0.865	0.169	0.129
college education (head of hhold)	0.063	0.065	0.890	-0.012
house				
owned	0.875	0.923	0.052	-0.159
# rooms	1.573	1.581	0.907	-0.010
poor building materials	0.677	0.665	0.789	0.025
poor decoration	0.802	0.769	0.350	0.080
poor neighbourhood	0.587	0.604	0.697	-0.035
flush toilet	0.441	0.373	0.168	0.138
safe drinking water	0.486	0.538	0.239	-0.105
poor health (head of hhold)	0.010	0.015	0.611	-0.044
adverse health event last year	0.257	0.277	0.583	-0.045
sickness / injury in last 30 days	0.264	0.273	0.778	-0.021
inpatient stay in last year	0.135	0.104	0.243	0.097
any maitenance medication	0.198	0.227	0.462	-0.071
medical expenses past 6 months (PHP)	896.6 [4211]	673.2 [2426]	0.444	0.069
household size	5.476 [2.373]	4.865 [2.608]	0.001	0.271
# children	2.135 [2.108]	1.738 [1.614]	0.008	0.215
>1 family in household	0.156	0.092	0.030	0.193
aware of PhilHealth insurance	0.858	0.869	0.694	-0.034
aware of PhilHealth benefit package	0.160	0.131	0.302	0.082
aware PhilHealth claims procedure	0.163	0.123	0.178	0.114
years at current address	26.598 [17.997]	27.054 [19.423]	0.764	-0.027
urban	0.503	0.519	0.738	-0.031
hospital in municipality	0.813	0.823	0.715	-0.027
hospital within 1 hour	0.493	0.546	0.217	-0.106
health clinic in municipality	0.559	0.596	0.363	-0.075
clinic within 15 minutes	0.260	0.258	0.934	0.006
missing on willingness to pay	0.128	0.138	0.701	-0.029
Number of clusters	125	117	242	242
Number of households	288	260	548	548
F-test (48, 499)			5.926	(p=0.000)

Notes : Unweighted means at baseline. Standard deviations (SD) of continuous variables in brackets. Sample used to estimate application assistance effects after attrition. Variable definitions in Appendix Table A2. Means of 15 sample stratifiers (regions) not shown. There is a significance difference in the means of only one of these region indicators at the 5% level, and a signficant difference in another two at the 10% level. The normalized difference is not greater than 0.25 in magnitude for any of these region indicators. The F test is a test of the joint

Table B3: Balance checks after weighting in sample used to estimate application assistance effects

	Baseline weighted mean [SD]		H_0: C=T	Normalized
	Control (C)	Treatment (T)	p-value	difference
willingness to pay (PHP)	131.5 [195.39]	128.3 [61.90]	0.746	0.029
total expenditure per capita (PHP)	24511 [47904]	25421 [27543]	0.766	-0.028
receive social support	0.149	0.150	0.969	-0.003
informal economic activity	0.496	0.512	0.764	-0.026
employed (head of hhold)	0.871	0.865	0.930	0.009
college education (head of hhold)	0.059	0.065	0.785	-0.023
house				
owned	0.923	0.923	1.000	0.000
# rooms	1.577	1.581	0.976	-0.003
poor building materials	0.669	0.665	0.953	0.005
poor decoration	0.761	0.769	0.883	-0.013
poor neighbourhood	0.608	0.604	0.950	0.006
flush toilet	0.358	0.373	0.756	-0.029
safe drinking water	0.553	0.538	0.812	0.022
poor health (head of hhold)	0.011	0.015	0.708	-0.032
adverse health event last year	0.278	0.277	0.985	0.001
sickness / injury in last 30 days	0.284	0.273	0.810	0.019
inpatient stay in last year	0.096	0.104	0.765	-0.025
any maitenance medication	0.247	0.227	0.720	0.035
medical expenses past 6 months (PHP)	1113 [6746]	673.2 [2426]	0.306	0.090
household size	4.903 [5.649]	4.865 [2.608]	0.894	0.012
# children	1.793 [2.779]	1.738 [1.614]	0.767	0.027
>1 family in household	0.094	0.092	0.955	0.005
aware of PhilHealth insurance	0.885	0.869	0.811	0.025
aware of PhilHealth benefit package	0.119	0.131	0.677	-0.035
aware PhilHealth claims procedure	0.119	0.123	0.892	-0.011
years at current address	26.329 [31.923]	27.054 [19.423]	0.746	-0.032
urban	0.551	0.519	0.574	0.045
hospital in municipality	0.813	0.823	0.847	-0.017
hospital within 1 hour	0.551	0.546	0.922	0.007
health clinic in municipality	0.583	0.596	0.814	-0.021
clinic within 15 minutes	0.272	0.258	0.709	0.028
Number of clusters	125	117	242	242
Number of households	288	260	548	548
F-test (47, 500)			0.261	(p=0.999)

Notes : Weighted means at baseline. Standard deviations (SD) of continuous variables in brackets. Sample used to estimate application assistance effects after attrition. Variable definitions in Appendix Table A2. Means of 15 sample stratifiers (regions) not shown. F test is of joint significance of all covariates (including regions) in explaining treatment indicator.

Table B4: Balance checks in sample used to estimate combined effects of subsidy plus application assistance

	Baseline Mean [SD]		H_0: C=T	Normalized
	Control	Treatment	p-value	difference
willingness to pay (PHP)	116.9 [58.21]	130.3 [60.36]	0.006	-0.307
total expenditure per capita (PHP)	20756 [22972]	25980 [30696]	0.017	-0.259
receive social support	0.111	0.155	0.168	-0.129
informal economic activity	0.513	0.523	0.851	-0.021
employed (head of hhold)	0.856	0.883	0.430	-0.080
college education (head of hhold)	0.077	0.079	0.947	-0.005
house				
owned	0.904	0.915	0.697	-0.039
# rooms	1.705	1.608	0.155	0.129
poor building materials	0.664	0.629	0.485	0.074
poor decoration	0.768	0.734	0.402	0.077
poor neighbourhood	0.638	0.570	0.246	0.139
flush toilet	0.347	0.421	0.214	-0.152
safe drinking water	0.480	0.570	0.170	-0.181
poor health (head of hhold)	0.030	0.018	0.316	0.080
adverse health event last year	0.247	0.292	0.333	-0.101
sickness / injury in last 30 days	0.269	0.289	0.658	-0.045
inpatient stay in last year	0.122	0.117	0.864	0.015
any maitenance medication	0.203	0.237	0.396	-0.081
medical expenses past 6 months (PHP)	1153 [5051]	828.6 [3516]	0.368	0.080
household size	5.310 [2.514]	4.904 [2.560]	0.049	0.178
# children	1.849 [2.075]	1.743 [1.692]	0.495	0.060
>1 family in household	0.188	0.108	0.014	0.228
aware of PhilHealth insurance	0.882	0.886	0.896	-0.013
aware of PhilHealth benefit package	0.118	0.140	0.474	-0.066
aware PhilHealth claims procedure	0.166	0.152	0.681	0.038
years at current address	28.131 [19.739]	26.308 [21.783]	0.278	0.107
urban	0.376	0.544	0.051	-0.335
hospital in municipality	0.819	0.827	0.841	-0.022
hospital within 1 hour	0.432	0.535	0.107	-0.207
health clinic in municipality	0.565	0.564	0.996	0.001
clinic within 15 minutes	0.199	0.246	0.243	-0.111
missing on willingness to pay	0.125	0.132	0.852	-0.018
Number of clusters	62	130	192	192
Number of households	271	342	613	613
F-test (48, 564)			2.906	(p=0.000)

Notes: Unweighted means at baseline. Standard deviations (SD) of continuous variables in brackets. Sample used to estimate effects of combined treatment consisting of subsidy followed by application assistance if do not initially respond to subsidy. Sample after attrition. Variable definitions in Appendix Table A2. Means of 15 sample stratifiers (regions) not shown. There is no significance difference in the means of any of these region indicators at the 10% level. The normalized difference is greater than 0.25 in magnitude for two of these region indicators. The F test is a test of the joint significance of all the covariates (including the region indicators) in explaining an indicator of

Table B5: Balance checks after weighting in sample used to estimate combined effects of subsidy plus application assistance

	Baseline weighted mean [SD]		H_0: C=T	Normalized
	Control (C)	Treatment (T)	p-value	difference
willingness to pay (PHP)	127.1 [233.84]	129.3 [81.78]	0.881	-0.024
total expenditure per capita (PHP)	24770 [65363]	25699 [30814]	0.829	-0.030
receive social support	0.175	0.152	0.656	0.045
informal economic activity	0.475	0.517	0.417	-0.071
employed (head of hhold)	0.870	0.874	0.941	-0.007
college education (head of hhold)	0.075	0.072	0.902	0.011
house				
owned	0.924	0.919	0.949	0.008
# rooms	1.619	1.594	0.867	0.021
poor building materials	0.666	0.647	0.820	0.029
poor decoration	0.777	0.752	0.730	0.038
poor neighbourhood	0.561	0.587	0.658	-0.046
flush toilet	0.404	0.397	0.944	0.010
safe drinking water	0.549	0.554	0.970	-0.007
poor health (head of hhold)	0.017	0.016	0.926	0.007
adverse health event last year	0.293	0.285	0.907	0.015
sickness / injury in last 30 days	0.278	0.281	0.959	-0.005
inpatient stay in last year	0.114	0.110	0.913	0.009
any maitenance medication	0.273	0.232	0.553	0.067
medical expenses past 6 months (PHP)	975.3 [4328]	750.7 [3025]	0.467	0.068
household size	4.948 [10.75]	4.884 [3.182]	0.925	0.016
# children	1.743 [2.321]	1.741 [1.799]	0.989	0.001
>1 family in household	0.110	0.100	0.788	0.030
aware of PhilHealth insurance	0.875	0.878	0.981	-0.004
aware of PhilHealth benefit package	0.137	0.136	0.960	0.005
aware PhilHealth claims procedure	0.138	0.138	0.983	0.002
years at current address	27.20 [53.08]	26.68 [24.23]	0.880	0.022
urban	0.512	0.532	0.890	-0.027
hospital in municipality	0.800	0.825	0.748	-0.043
hospital within 1 hour	0.479	0.541	0.553	-0.093
health clinic in municipality	0.606	0.580	0.765	0.038
clinic within 15 minutes	0.228	0.252	0.610	-0.047
Number of clusters	62	130	192	192
Number of households	271	342	613	613
F-test (47, 565)			0.326	(p=0.999)

Notes : Weighted means at baseline. Standard deviations (SD) of continuous variables in brackets. Sample used to estimate application assistance effects after attrition. Variable definitions in Appendix Table A2. Means of 15 sample stratifiers (regions) not shown. F test is of joint significance of all covariates (including regions) in explaining treatment indicator.

C: Additional robustness analyses

Table C1: Persistent effects of incentives on willingness to pay - robustness to estimator

	Doubly robust				Inverse Probability Weights	Unadjusted
	Main Estimate	Interval Regression	Common Support	Trimmed		
	(1)	(2)	(3)	(4)	(5)	(6)
Subsidy	-2.95	-2.91	-3.00	-0.88	-2.29	-0.19
	(6.88)	(6.70)	(6.85)	(7.24)	(7.41)	(5.89)
N hholds	640	640	636	625	640	640
Application Assistance	-6.97	-7.02	-8.25	-6.20	-6.87	-9.01
	(8.86)	(8.51)	(8.89)	(8.32)	(10.47)	(7.27)
N hholds	475	475	472	463	475	475
Combined	-5.15	-5.03	-6.18	-8.57	-4.78	-5.20
	(6.60)	(6.37)	(6.66)	(7.57)	(7.75)	(6.31)
N hholds	534	534	531	515	534	534

Notes: Outcome is elicited willingness to pay (WTP) per month for PhilHealth health insurance. Column (1) reproduces the estimates from Table 2 obtained by applying inverse probability weights (IPW) and controlling for all baseline covariates listed in Table 1 (plus region stratifiers) in a weighted least squares regression. Column (2) is as column (1) but uses interval regression on the WTP intervals rather than least squares on the mid-points of the intervals. Column (3) is as column (1) but drops treatment group observations with a propensity score greater than the maximum propensity score of the conrol group observations (Dehejia and Wahba, 1999). Column (4) is as column (1) but drops control group observations with a weight greater than 1 percent of the sum of all weights (Huber et al, 2013). Column (5) is the weighted mean difference between the treatment and contol groups without regression adjustment for the covariates (other than stratification indicators). Column (6) is the unweighted mean difference between the treatment and control groups (with adjustment for stratification indicators only). All estimators control for sample stratification on region. Robust standard errors clustered at the municipality level in parentheses.

Comparison with immediate effects reported in Capuno et al. (2016)

As mentioned in section 5.2 of the paper, our estimate of the immediate effect of the subsidy on insurance enrollment is about three quarters larger than the estimate of this effect reported in Capuno et al. (2016). We demonstrate here that this discrepancy is due to heterogeneity in the effect by attrition status. Our empirical strategy for estimating the immediate effect of the subsidy differs from that employed by Capuno et al. in four respects: i) set of control covariates, ii) estimator, iii) exclusion of respondents who were offered assistance with application after failing to respond (initially) to the subsidy, and iv) exclusion of those who had attrited from the sample in 2015 even if they were observed in 2012. The estimates presented in Table C2 isolate the effect of each of these differences in methodology and identify iv) as the main source of the discrepancy in the estimates. We focus on panel A showing the estimated immediate

effect of the subsidy since there is no discrepancy in the estimates of the effect of application assistance shown in panel B. Columns (2) and (3) replicate the estimates presented in Capuno et al. (2016) using the methods and sample deployed in that paper. These estimates are obtained without imposing either sample selection iii) or iv). The estimate in column (2) is produced without any adjustment for covariates, while that in column (3) is obtained from least squares regression controlling for a more limited set of covariates than we use to obtain our main estimate, which is reproduced in column (1). Column (4) is obtained using the same method and sample as column (3) except that control is made for our more extensive set of covariates. Comparing the estimates in these two columns, it is clear that our estimate of a larger immediate effect of the subsidy does not result from controlling for more baseline characteristics. Column (5) continues to deploy the full sample used in Capuno et al. but applies the doubly robust estimator we use to obtain the main estimate, rather than unweighted least squares. This makes the estimate marginally significant but does not markedly increase its magnitude. Column (6) continues with the same estimator but drops from the sample respondents who were offered assistance with application, as we do to produce the main estimate. The size of the estimate increases very little but its significance strengthens. Finally, in column (7), we exclude those who were lost to follow-up in 2015 but include those who were offered application assistance. This raises the estimate by about three quarters in comparison with that given in column (5) obtained by the same method by without exclusion of the attriters. It is this sample restriction that explains the discrepancy between our main estimate and that obtained by Capuno et al.

Table C2: Immediate effects of incentives on insurance enrollment
- robustness to sample selection

	Main estimate	Full sample				Exclude application assistance treated	Exclude attriters
		Capuno et al. (2016)		All covariates			
		Un-adjusted	Ltd. covars. OLS	OLS	Doubly robust	Doubly robust	Doubly robust
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A: Subsidy	0.055	0.0312	0.0301	0.0271	0.0346	0.0360	0.0609
	(0.0202)	(0.0195)	(0.0185)	(0.0180)	(0.0176)	(0.0180)	(0.0195)
Control mean	0.0499	0.0836	0.0836	0.0836	0.0792	0.0782	0.0477
N hholds	740	1420	1420	1420	1420	1025	1000
B: Application Assistance	0.2912	0.2884	0.2910	0.2837	0.2780	N/A	See column (1)
	(0.0311)	(0.0281)	(0.0293)	(0.0292)	(0.0293)		
Control mean	0.0426	0.0255	0.0255	0.0255	0.0314		
N hholds	548	787	787	787	787		

Notes: Outcome is an indicator of household health insurance coverage through PhilHealth IPP enrollment in 2012. Column (1) reproduces the estimates from Table 2 obtained by applying inverse probability weights (IPW) and controlling for all baseline covariates listed in Table 1 (plus region stratifiers) in a weighted least squares regression. Columns (2) and (3) replicate the unadjusted and covariate adjusted (by OLS) estimates of Capuno et al. (2016) using the full samples observed in 2012 including those who had attrited by 2015. For estimation of the subsidy effect, this full sanple also includes repondents who were subsequently offered application assistance. To be consistent with Capuno et al., column (2) does not control for sample stratification by region. All other columns do. Column (4) is as column (3) but using the full set of covariates we use in column (1) rather than the more limited set of covariates used by Capuno et al. Column (5) uses the same sample and covariate set as column (4) but with the doubly robust estimator. Column (6) is as column (5) but excluding respondents who were subsequently offered application assistance. Column (7) is as column (5) but excluding those lost to follow-up in 2015 even if they were observed in 2012. For the application assistance intervention, imposing this restriction results in the sample used in column (1). Robust standard errors clustered at the municipality level in parentheses.

D: Willingness-to-pay of compliers

This appendix demonstrates that during the period that the incentives operate, the pre-insurance WTP of immediate compliers with the subsidy is lower than the pre-insurance WTP of immediate compliers with application assistance. It also shows that after the incentives are withdrawn, the pre-insurance WTP of subsidy persistent compliers depends on the magnitude of the learning effect, while the WTP of application assistance persistent compliers also depends on the magnitude of the indirect application costs.

Let $TWTP_i^0$ be the maximum total cost that individual *i* would be willing to incur in order to obtain insurance. Provided this is not less than the premium (p) plus the indirect costs of application (c_i), the individual will insure $(I_i = 1)$. In the absence of any incentives, insurance status is given by $I_i = 1\left(TWTP_i^0 \geq p + c_i\right) = 1\left(WTP_i^0 \geq p\right)$, where 1() is the indicator function and $WTP_i^0 = TWTP_i^0 - c_i$ is the maximum premium the individual is willing to pay.

A subsidy (*s*) reduces the premium to *p*-*s*. In our experiment, the subsidy is effectively 50 percent and so when it is offered, insurance status is given by $I_i = 1\left(WTP_i \geq \frac{1}{2}p\right)$. Immediate compliers with the subsidy have $WTP_i^0 \in \left[\frac{1}{2}p, p\right)$. A random 50 percent of the non-compliers were additionally offered assistance that reduced the indirect cost of application by a proportion $\lambda_i \in (0,1]$. For this treatment group, $I_i = 1\left(TWTP_i^0 \geq \frac{1}{2}p + (1-\lambda_i)c_i\right) = 1\left(WTP_i^0 \geq \frac{1}{2}p - \lambda_i c_i\right)$. Immediate compliers with application assistance have $WTP_i^0 \in \left[\frac{1}{2}p - \lambda_i c_i, \frac{1}{2}p\right)$, which is less than the WTP of the compliers with the subsidy by an amount that depends on the magnitude of the indirect application costs and the proportion by which they are reduced by the intervention. All else equal, WTP will be lower for those assistance compliers who perceive greater costs of applying for insurance and who are more appreciative of the effectiveness of the assistance.

The experience of being insured provides the opportunity to learn about its true value. After having experienced insurance, let the maximum premium the individual is willing to pay be given by $WTP_i^1 = WTP_i^0 + \alpha_i$, where α_i represents the learning effect. If the individual discovers that the benefits of insurance exceed their expectations, while the indirect costs are lower than anticipated, then $\alpha_i > 0$. On the other hand, if the individual is disappointed by the effective coverage or discovers that they underestimate the cost of renewing enrollment, then $\alpha_i < 0$. Willingness to pay could also be revised downward if there were anchoring on the subsidized price.

By the time of the follow-up survey in 2015, not only had the incentives been withdrawn, the (unsubsidized) premium had also doubled. If we assume that the indirect costs of application had not changed, and neither had any other determinant of the demand for insurance, then the insurance status at follow-up of someone who had not previously been insured would be $I_i = 1\left(TWTP_i^0 \geq 2p + c_i\right) = 1\left(WTP_i^0 \geq 2p\right)$. For immediate compliers, who experienced insurance and so had an opportunity to learn of its benefits and costs, insurance status at follow-up is given by $I_i = 1\left(WTP_i^1 \geq 2p\right) = 1\left(WTP_i^0 \geq 2p - \alpha_i\right)$. Persistent compliers would not have insured if they had never been offered incentives but continue to insure after incentives they were exposed to for a period are withdrawn. For these individuals, $WTP_i^0 \in \left[2p - \alpha_i, 2p\right)$.

Persistent compliers must be immediate compliers. Otherwise, they cannot experience any learning (or anchoring) effect. Without these effects, incentives that were initially offered but subsequently withdrawn cannot continue to influence the decision to insure. For immediate compliers with the subsidy, $WTP_i^0 \in \left[\frac{1}{2}p, p\right)$. Hence, the willingness to pay of these individuals can only lie in the interval required for persistent compliance if $\frac{1}{2}p \leq 2p - \alpha_i < p \Rightarrow \alpha_i \in \left(p, \frac{3}{2}p\right]$. The learning effect must be positive and greater than the initial premium. If it were smaller, then enrollment at follow-up, when the premium is twice as large as it was initially, would imply a WTP consistent with being an *always taker* when the incentives were operating. But the learning effect cannot be too large. At a value more than 50 percent above the initial premium, compliance at follow-up would imply a WTP consistent with being a *never taker* when the incentives were operating.[1]

For immediate compliers with application assistance, $WTP_i^0 \in \left[\frac{1}{2}p - \lambda_i c_i, \frac{1}{2}p\right)$. Their WTP can only lie in the interval necessary for persistent compliance if $\frac{1}{2}p - \lambda_i c_i \leq 2p - \alpha_i < \frac{1}{2}p$ $\Rightarrow \alpha_i \in \left(\frac{3}{2}p, \frac{3}{2}p + \lambda_i c_i\right]$. The learning effect must be greater than the upper bound on this effect for persistent compliance with the subsidy. If it were not, then enrollment at follow-up would imply a WTP at which there would have been immediate compliance with the subsidy $\left(WTP_i^0 > \frac{1}{2}p\right)$. But the learning effect cannot exceed this upper bound $\left(\frac{3}{2}p\right)$ by more than the

[1] $\alpha_i > \frac{3}{2}p \Rightarrow 2p - \alpha_i < \frac{1}{2}p$. Then, $WTP_i^0 \in \left[2p - \alpha_i, \frac{1}{2}p\right)$ would be feasible for enrollment at follow-up when the price was $2p$ but it would also imply being a never taker when the subsidy was operating and price was $\frac{1}{2}p$.

reduction in indirect costs achieved by application assistance $(\lambda_i c_i)$ since this would imply a WTP consistent with being a never taker even when offered assistance.

Figure D1 depicts the intervals in which WTP for insurance prior to its purchase must lie for immediate compliance with the two incentives while they were operating. Since application assistance was offered on top of the subsidy conditional on non-compliance (initially) with the subsidy, WTP of compliers with assistance should be less than WTP of compliers with the subsidy. The greater are both the indirect costs of application and the extent to which they are reduced by assistance, the lower should be the WTP of compliers with this incentive.

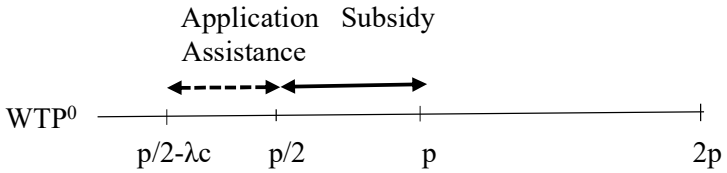

Figure D1: Willingness to pay of immediate compliers

Notes: The solid black line traces increasing pre-insurance WTP from left to right. Double-headed arrows indicate the WTP intervals of immediate compliers with the subsidy (solid) and with application assistance (dash). p is the premium, c indicates the indirect cost of application and λ is the proportionate reduction in this cost achieved by application assistance.

According to the logic presented above, persistent compliers must have a pre-insurance WTP within the intervention-specific interval required for immediate compliance at a point determined by the magnitude of a positive learning effect (net of any negative anchoring effect). The range in which the (net) learning effect must lie for persistent compliance with each incentive is shown in Figure D2. Compliance with each incentive requires a substantial learning effect at least as large as the initial premium, and even larger for compliance with application assistance. Individuals facing very high indirect costs of application that the assistance was effective in reducing would need to have a very positive experience of insurance in order to be persuaded to renew their insurance.

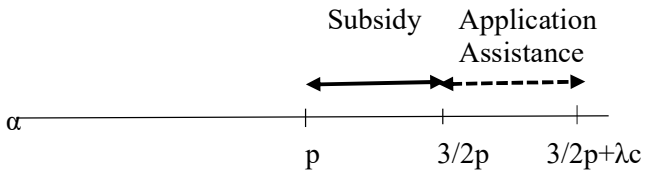

Figure D2: Learning effects of persistent compliers

Notes: The solid black line traces an increasing learning effect from the experience of being insured (α) from left to right. Double-headed arrows indicate the intervals in which the learning effect must lie for persistent compliance with the subsidy (solid) and with application assistance (dash). p is the premium, c indicates the indirect cost of application and λ is the proportionate reduction in this cost achieved by application assistance.

It is not possible to predict how the (pre-insurance) WTP of immediate and persistent compliers compare. The feasible WTP interval of persistent compliers with an incentive must be a sub-interval of the respective interval of immediate compliers. However, the composition of compliers, and so the mean WTP, can differ in the short- and long-term. For example, consider two immediate compliers with the subsidy: $\frac{1}{2}p < WTP_A^0 < WTP_B^0 < p$. If $p < \alpha_A \leq \frac{3}{2}p$ and $\alpha_B < p$, then only A will be a persistent complier and the mean WTP of persistent compliers will be less than the mean WTP of immediate compliers. However, mean WTP of persistent compliers will exceed that of immediate compliers if $\alpha_A < p$ and $p < \alpha_B \leq \frac{3}{2}p$. The direction in which mean WTP moves will depend on the correlation of WTP with the learning effect.

The interval in which the learning effect should lie to give persistent compliance with each incentive is derived under the assumption that nothing changes between periods other than withdrawal of the incentives and the doubling of the unsubsidized premium. This is a strong assumption. Willingness to pay for insurance will change with circumstances, such as illness, income, household size and composition, even if there were no learning effect through the experience of being insured. If changes in circumstances were randomly and symmetrically distributed, then their effect should cancel out on average, leaving learning (net of anchoring) as the only cause of any change in mean WTP. But we cannot be sure that this is the case and so should expect WTP elicited at baseline to be more weakly associated with persistent compliance than it is with immediate compliance.

Table D1: Complier characteristics ratios for immediate and persistent effects of combined incentive

Characteristic at baseline (x)	$Pr[x_i=1]$	$Pr[x_i=1\|complier]/Pr[x_i=1]$	
		immediate	persistent
	(1)	(2)	(3)
A) willingness to pay ≥ 1200 PHP	0.6871	1.1119	1.2487
	(0.0317)	(0.0635)	(0.1981)
B) any medical expenditure	0.3233	1.0198	1.3604
	(0.0366)	(0.1346)	(0.4414)
C) illhealth	0.5126	1.0131	1.1938
	(0.0309)	(0.0858)	(0.2213)
D) total hhold expend. ≥ median	0.5206	0.8940	0.9586
	(0.0300)	(0.0821)	(0.2764)
E) urban	0.5194	1.0969	1.3889
	(0.0511)	(0.0994)	(0.2822)
Number of households	613	613	613

Notes: Row A) indicates willingness to pay for PhilHealth insurance at least as high as the premium. Row B) indicates that the household had positive medical expenses in the last six months. Row C) indicates households in which a) anyone was sick or injured in the last 30 days, OR b) there is regular monthly expenditure on maintenance medication for a chronic condition, OR c) anyone was admitted to hospital in the last year, OR d) there was any adverse health event in the last year. Row D) indicates that total household expenditure per capita above the median of the full (not analytical) sample. Row E) indicates residence in an urban location. Columns (1) gives means of the characteristics in the sample used to estimate the effect of the combined incentive. Columns (2) and (3) give the ratio of the estimated effect of the combined incentive on insurance enrollment in the sub-sample defined by the characteristic (x) to the estimated effect in the full analytical sample. Each ratio estimates prevalence of the characteristic among compliers relative to its prevalence in the full analytical sample. Ratios are given for estimated immediate (2012) and persistent (2015) effects on insurance. Estimates are obtained using the doubly robust estimator used to obtain the main estimates given in Table 2. Delta method standard errors adjusted for clustering at the municipality level in parentheses.

Table D2: Complier characteristics ratios for immediate and persistent effects of incentives
- more detailed characteristics than in Table 4

Characteristic at baseline (x)	Subsidy			Application Assistance		
	Pr[xi =1]	Pr[xi =1|complier]/Pr[xi =1]		Pr[xi =1]	Pr[xi =1|complier]/Pr[xi =1]	
		immediate	persistent		immediate	persistent
	(1)	(2)	(3)	(4)	(5)	(6)
willingness to pay						
< 1200 PHP	0.3848	0.0184	0.4569	0.3209	0.8517	0.1175
	(0.0268)	(0.4554)	(0.6403)	(0.0344)	(0.152)	(0.8038)
= 1200 PHP	0.4576	1.7451	1.3145	0.473	1.0844	0.9143
	(0.0236)	(0.5456)	(0.5001)	(0.0226)	(0.1363)	(0.4465)
> 1200 PHP	0.1576	1.5631	2.479	0.2061	0.9812	2.3419
	(0.0197)	(1.2042)	(1.3591)	(0.0277)	(0.2479)	(1.0667)
medical expenditure						
= 0	0.7036	0.8598	0.5466	0.6866	0.9710	0.866
	(0.0268)	(0.237)	(0.3753)	(0.0296)	(0.0738)	(0.3473)
≤ median | m>0	0.1807	2.4974	0.904	0.1946	1.4392	1.1993
	(0.0215)	(1.1571)	(0.9928)	(0.0242)	(0.2672)	(0.8957)
> median | m>0	0.1157	1.9813	1.0118	0.1189	0.1328	0.8218
	(0.0136)	(1.4587)	(1.3571)	(0.0185)	(0.1751)	(1.6988)
illhealth						
anyone sick last 30 days	0.2475	1.3588	1.7618	0.2789	1.1117	0.0547
	(0.0198)	(0.7142)	(0.9265)	(0.0297)	(0.1896)	(0.7095)
adverse health event last year	0.2692	1.3259	1.7332	0.2745	0.6903	1.1308
	(0.0232)	(0.6203)	(0.9203)	(0.0292)	(0.2025)	(0.7154)
monthly spending on	0.2222	0.8796	1.0412	0.241	0.8393	1.5905
maintenance medicines	(0.019)	(0.7782)	(0.7215)	(0.024)	(0.2061)	(1.1412)
inpatient admission last year	0.135	-0.6539	3.2117	0.0991	0.6217	3.0741
	(0.0153)	(1.3012)	(1.7696)	(0.0137)	(0.4657)	(1.9169)
total hhold expenditure						
3rd quartile	0.2411	1.4177	-0.2894	0.2817	0.3958	0.8143
	(0.0183)	(0.6968)	(0.8105)	(0.0282)	(0.1633)	(0.7221)
top quartile	0.1655	2.3893	3.185	0.2478	1.1694	0.7476
	(0.0172)	(1.1736)	(1.7207)	(0.032)	(0.2223)	(1.1858)
Number of households	740	740	740	548	548	548

Notes : Columns (1) and (4) give respective analytical sample means of the characteristics. Columns (2)-(3) and (5)-(6) give the ratio of the estimated effect of the respective incentive (subsidy or application assistance) on insurance enrollment in the sub-sample defined by the characteristic (x) to the estimated effect in the full analytical sample. Each ratio estimates prevalence of the characteristic among compliers relative to its prevalence in the full analytical sample. Ratios are given for estimated immediate (2012) and persistent (2015) effects on insurance. Estimates are obtained using the doubly robust estimator used to obtain the main estimates given in Table 2. Delta method standard errors adjusted for clustering at the municipality level in parentheses.

References

Capuno, J.J., A.D. Kraft, S. Quimbo, C.R. Jr. Tan, and A. Wagstaff. 2016. "Effects of Price, Information, and Transactions Cost Interventions to Raise Voluntary Enrollment in a Social Health Insurance Scheme: A Randomized Experiment in the Philippines." *Health Economics* 25(6): 650–662.