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COPING WITH THE ECONOMIC CONSEQUENCES OF ILL HEALTH IN INDONESIA†

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ABSTRACT

We assess the economic risk of ill health for households in Indonesia and the role of informal coping strategies. Using household panel data from the Indonesian socio-economic household survey (Susenas) for 2003 and 2004, and applying fixed effects Poisson models, we find evidence of economic risk from illness through medical expenses. For the poor and the informal sector, ill health events impact negatively on income from wage labour, whereas for the non-poor and formal sector, it is income from self-employed business activities which is negatively affected. However, only for the rural population and the poor does this lead to a decrease in consumption, whereas the non-poor seem to be able to protect current household spending.

Borrowing and drawing on family network and buffers, such as savings and assets, seem to be key informal coping strategies for the poor, which may have negative long-term effects.

While these results suggest scope for public intervention, the economic risk from income loss for the rural poor is beyond public health care financing reforms. Rather, formal sector employment seems to be a key instrument for financial protection from illness, by also reducing income risk. © 2015 The Authors. *Health Economics* Published by John Wiley & Sons Ltd.

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1. INTRODUCTION

Indonesia has recently formulated ambitious objectives for health care financing reforms, which focus largely on social risk management, in terms of reducing economic risk from ill health and seeking health care. Following initial reforms in 2005, with the introduction of subsidised social health insurance for informal sector workers and the poor, a key objective of the current road map for social security reforms is scaling up to universal health insurance coverage by 2014 and integrating existing social health insurance programs and sub-national health care financing schemes.

The expected welfare impacts of these reforms crucially depend on the extent and nature of economic risk from ill health, which is what we address in this paper. In particular, what economic risk from illness do Indonesian households actually face and what are the main sources of this risk (e.g. medical expenses, income loss)? What are the main (informal) coping strategies employed by households, and to what extent do these

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strategies allow households to deal with the financial consequences of illness and smooth consumption? Mapping these transmission channels and understanding coping behaviour are important for identifying the scope for public intervention, and for tailoring social policy responses to the main sources of economic risk of ill health.

Empirical studies for developing countries generally find that households are constrained in their ability to insure against ill health, although the evidence is mixed. A number of studies show that households are only partly able to smooth consumption, especially in the event of large infrequent high-cost shocks and chronic illness (e.g. Asfaw and Braun, 2004; Gertler and Gruber, 2002; Gertler, Levine and Moretti, 2009; Islam and Maitra, 2012; Nguyen and Mangyo, 2010; Wagstaff, 2007), whereas others find little evidence of imperfect smoothing (e.g. Genoni, 2012; Mohanan, forthcoming; Townsend, 1994).

However, evidence on transmission channels through which health shocks affect household living standards remains limited. Most studies identify medical spending as one source of risk, whereas some studies find evidence of income loss due to illness (e.g.; Kochar, 1995; Lindelow and Wagstaff, 2005; Wagstaff, 2007). For Indonesia, Genoni (2012) and Gertler and Gruber (2002) show that earnings by heads of households are affected as a result of major illness. However, we know little about the source of income that is at risk, or the role of the sector and type of employment.

In addition, few studies explicitly assess the choice and efficacy of coping mechanisms that households employ to self-insure against ill health, and the relative financial contributions from these strategies. Again, the evidence is mixed and seems to be context specific, pointing to borrowing and incurring debt (Gertler, Levine and Moretti, 2009, Islam and Maitra, 2012, Mohanan, forthcoming), transfers and unearned income (Genoni, 2012, Wagstaff, 2007), or selling livestock (Islam and Maitra, 2012) as most import coping strategies.

This paper aims to contribute to this body of empirical literature by looking more closely at the channels of economic risk from illness and the role of coping strategies. We further add to the evidence for Indonesia by disaggregating the analysis into urban and rural areas, poor and non-poor households, and formal and informal sector workers.

We first assess whether households in Indonesia are able to smooth consumption after having suffered an ill health event. We find evidence of imperfect consumption smoothing, in particular for poor and rural households. We then identify the main sources of economic risk of ill health, such as out-of-pocket (OOP) spending on health care and reduced household income through forgone earnings, using detailed information on type of income source (wage labour, agriculture self-employed, non-agricultural self-employed, and transfers and remittances) for different socio-economic groups. Finally, we assess the informal coping strategies invoked by households to deal with ill health-related costs (such as borrowing, selling assets and relying on family networks).

2. EMPIRICAL APPROACH

2.1. Economic risk of illness and consumption smoothing

We apply a general framework of consumption smoothing, which is displayed in Figure 1. Households that experience illness are faced with subsequent sources of economic risk: required medical expenses (2A), indirect cost of seeking treatment (2B) and reduced income (2C). With imperfect financial markets, households may invoke (informal) coping strategies (3) to deal with these risks, and the choice of strategy will have consequences for consumption and poverty (4). For example, financing from disposable income may reduce current consumption, possibly leading to transient (food) poverty. Alternatively, households may resort to traditional coping strategies such as selling assets or incurring debt, which may affect future income. Finally, household may decide to forgo treatment, at the cost of depreciating their human capital.

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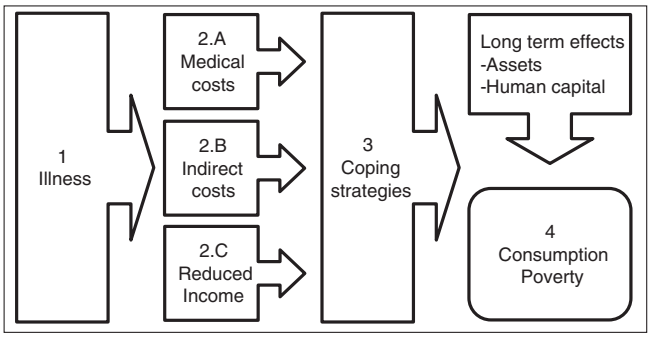

Figure 1. Consumption smoothing, channels of economic risk of illness and the role of coping strategies

In our empirical analysis, we aim to identify a number of these relationships:

A. Reduced form relationship between ill health and household expenditure ($1 \rightarrow 4$).
B. Main sources of risk ($1 \rightarrow$ 2A and 2C).
C. Coping mechanisms induced by ill health ($1 \rightarrow 3$).

2.2. Data

The study draws on the nationally representative Indonesian Socio-economic survey (*Susenas*), which was conducted for a household panel in 2002, 2003 and 2004. In the 2003 and 2004 waves, the survey includes special modules on household expenditure, income, self-reported threats to household welfare, and strategies households used to cope with these threats. The questions on self-reported threats ask whether the welfare of the household has been affected during the last year by an event related to illness, natural disasters, loss of employment or pension, conflict, divorce, theft, business risk or government policies.[1]

The ill health events may reflect not only unexpected health shocks but also lasting conditions and chronic illness that may affect household welfare. In the remainder of the paper, we will therefore refer to ill health events, rather than health shocks. A potential problem with this setup is that self-reported health events may be skewed towards imperfect smoothing, as illness that did not affect consumption may be underreported as threats to household welfare. To assess this problem, we estimate the smoothing regressions using an alternative illness variable for which the question in the survey is less likely to be associated with consumption smoothing: the number of days household members were disrupted in their daily activities such as work or schooling because of illness in the last month. We find that the results for the smoothing regressions are very similar for both variables (reported in the supplemental appendix).

The coping responses are not directly linked to specific events. Rather, when a household reports one or more events, a subsequent question asks what kind of coping strategies were employed in response to any of the reported events. Descriptive statistics of the various events that affected household welfare and coping variables are given in Table I. Besides illness, we include the other self-reported events as control variables in all regressions.

The detailed household spending data is aggregated to three categories: food, non-food and OOP health spending. Non-food consumption excludes health-related spending, whereas both food and non-food consumption includes purchased and home produced goods. Non-food and health spending is based on a 1-year recall period, whereas food consumption reflects the week prior to conducting the survey. For ease of interpretation,

[1]The exact phrasing of the question reads 'During the past year, did the household experience events that negatively affected the household's welfare?' (*Selama setahun terakhir*, *apakah rumah tangga mengalami kejadian yang berdampak negatif terhadap kesejahteraan rumah tangga anda*?)

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Table I. Descriptive statistics of the prevalence of various threats affecting household welfare and associated coping strategies

	2003 mean	2004 mean
Self-reported threats (1/0)		
Health	0.079	0.065
Natural disaster	0.088	0.056
Loss of job or pension	0.029	0.026
Conflict, divorce or theft	0.018	0.018
Business risk	0.223	0.174
Government policies	0.580	0.348
Other shocks	0.227	0.367
Observations	7724	7724
Self-reported coping strategies conditional on any self-reported threat (1/0)		
Use saving	0.155	0.120
Borrow money	0.301	0.252
Sell assets	0.114	0.095
Ask (extended) family to help	0.229	0.205
Increase labour	0.146	0.106
Reduce consumption	0.248	0.166
Other	0.248	0.220
Observations	5714	5482

Notes: Coping strategies are not mutually exclusive.

we rescale this data to a monthly basis when reporting per capita consumption in the paper. Household income is categorised by wages, agriculture self-employed, non-agriculture self-employed and remittances. Per capita household spending, net of medical expenditure, is used as welfare indicator for ranking households by quartile. We define these quartiles based on 2002 spending because these are exogenous to self-reported ill health in 2003 and 2004, unlike the 2003 and 2004 consumption quartiles.[2] Summary statistics for monthly expenditure and income in 2003 are given in the bottom two rows of Table II, expressed in 2002 prices and adjusted for regional price differences, using regional variation in poverty lines. All models further include a vector of household characteristics related to demographics (household size, female head of household), education of the head of household, dwelling characteristics (walls of bamboo, a floor made of earth, floor area, private toilet, a closed sewer, electricity connection, access to clean drinking water, and direct access to a private or public water facility). Descriptive statistics for the control variables are reported in the supplemental appendix.

The survey only provides information on the nature of the sector and job characteristics but does not record whether income was generated from activities in the formal or informal sector. To identify household heads working in the formal and informal sector, we follow the definition adopted by Statistic Indonesia (World Bank 2010, pp. 60–71) and categorise a household head as an informal sector worker if he or she reports his or her 'Employment status of the main occupation during the past week' as self-employed, casual workers or unpaid worker.

The data also has information on enrolment in social health insurance for the public (*Askes*) and private sector (*Jamsostek*), a targeted fee waiver program for the poor, and other insurance programs that are recorded in the survey. These health financing programs are important determinants of economic risk and coping strategies in response to ill health. However, participation of these schemes is not random, but may be correlated with household consumption and income through targeting, self-selection or sector of employment. Although a fixed effects approach would go a long way in eliminating selection bias, the estimates would still confound the actual impacts of these health care financing schemes and the relative security of different sectors. Because it is not the objective of this paper to evaluate the effects of these health financing programs, we will leave these health insurance indicators out of the main specification, only to be included in a sensitivity analysis

[2]This exogeneity assumption would be compromised if the self-reported health events would reflect lasting conditions or susceptibility to health shocks. However, these are typically time-invariant conditions, which we control for in our fixed effects approach.

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Table II. Effect of self-reported ill health on per capita expenditures (OOP, food, non-food) and income (wage, agriculture, non-agriculture, transfer/remittance) for the total sample and by population subgroup

Dependent variable	Expenditures			Income				Number of households
	Non-food (excl OOP)	Food	OOP	Wage	Agriculture	Non-agriculture	Transfers	
Full sample	−0.0164	0.0111	0.9740**	0.0158	−0.0596	−0.3909*	0.0926	7723
	[0.0291]	[0.0172]	[0.1249]	[0.0542]	[0.0527]	[0.1600]	[0.0680]	
Urban	0.0206	0.0409	1.0812**	−0.0113	0.0203	−0.3612*	0.2594**	3279
	[0.0416]	[0.0272]	[0.1563]	[0.0659]	[0.2207]	[0.1916]	[0.0930]	
Rural	−0.0680*	−0.0104	0.8755**	0.0617	−0.0486	−0.2470*	−0.0636	4444
	[0.0373]	[0.0205]	[0.1678]	[0.0903]	[0.0526]	[0.1016]	[0.0936]	
Subgroups								
Quartile 1	−0.0970*	−0.0209	0.6182**	−0.1539	−0.0189	−0.0416	0.1119	1931
	[0.0443]	[0.0249]	[0.1399]	[0.1121]	[0.0800]	[0.1357]	[0.1196]	
Quartile 2	−0.0817	−0.0224	1.3091**	−0.2261*	0.0032	−0.067	0.0869	1930
	[0.0625]	[0.0298]	[0.2008]	[0.1203]	[0.0914]	[0.1238]	[0.1276]	
Quartile 3	0.0482	0.0282	0.9173**	0.1224	−0.0973	−0.241	0.135	1931
	[0.0426]	[0.0286]	[0.1954]	[0.0939]	[0.1214]	[0.1486]	[0.1410]	
Quartile 4	0.01	0.043	1.0449**	0.0518	−0.1028	−0.5374*	0.1725	1931
	[0.0543]	[0.0397]	[0.2182]	[0.0913]	[0.1486]	[0.2384]	[0.1340]	
Informal sector	−0.0436	−0.0103	1.0352**	−0.2687*	0.0113	−0.0597	0.1941*	3780
	[0.0361]	[0.0219]	[0.1462]	[0.1202]	[0.0506]	[0.0716]	[0.1151]	
Formal sector	0.0194	0.0335	1.1268**	0.0043	0.0026	−0.6792*	0.0812	2437
	[0.0491]	[0.0324]	[0.1990]	[0.0593]	[0.2015]	[0.3260]	[0.0950]	
Means in 2003	109 133	150 827	4749	118 983	61 049	84 642	34 974	
	[139 488]	[79 380]	[15 824]	[234 206]	[104 347]	[265 517]	[121 934]	

Notes: Table shows coefficients from Poisson models with household fixed effects. Models include covariates as explained in section 2.2, indicator variables for other shocks, and both urban/rural and region specific time trends. Quartiles are constructed on the basis of total per capita household expenditures in 2002. The full sample for the balanced panel includes 15,446 observations for 7,723 households. Classification for informal and formal work is based on the definition adopted by Statistic Indonesia (World Bank 2010, pp. 60–71).
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
Standard errors are shown between brackets.

(appendix) to assess whether this would lead to omitted variable bias. We find that the results are robust to including these variables.

We restrict our analysis to the 2003 and 2004 waves of the balanced panel of 7724 households. The data shows a substantial rate of attrition, as initially 9484 households were sampled. With the 2002 characteristics, the balanced panel and the households lost due to attrition look similar on average, although there are some differences. The sub-sample of households that dropped out in 2003 and 2004 has a lower rural share (51% vs 58% urban share), which is reflected in slightly higher household spending levels, education and living conditions.[3] We further test for attrition bias by adding an attrition selection term to the consumption smoothing regressions.[4] We find that the results are not sensitive to including the selection term and the coefficient for the selection term is not statistically significant, suggesting that our results are not sensitive to attrition bias.

2.3. Methods

To assess the effect of ill health on consumption (relation A), and on income and medical expenses (relation B), we apply fixed effects Poisson (FEP) models with robust standard errors. These are well suited to deal with skewed outcomes and avoid retransformation problems (Mihaylova *et al.*, 2011; Buntin and Zaslavsky, 2004; Manning and Mullahy, 2001). Although Poisson models are typically used for count data, they do not require the variable of interest to follow a Poisson distribution. In fact, all that is required for the FEP estimator to be consistent is that the conditional mean is correctly specified (Santos Silva and Tenreyro, 2006; Wooldridge, 2002).[5] As such, the FEP is a useful and very robust estimator in the context of panel data on skewed and censored outcomes, such as health and other spending. Let y_{it} represent the income or expenditure of household i at time $t = 2003, 2004$. The FEP setup then assumes the following conditional mean:

$$E\left(y_{it}\middle|h_{it};x_{it};d_{2003};\alpha_i\right) = \exp\left(\gamma h_{it} + x_{it}'\beta + \theta_t d_{2003} + \alpha_i\right) \quad (1)$$

The model includes a variable indicating that a household experienced illness in period t (h_{it}), a time trend (d_{2003}), which is allowed to vary by region and urban/rural area to capture covariate changes in income and expenditure;[6] a full set of household fixed effects (α_i), which absorb time invariant differences; and an array of time varying household characteristics (x_{it}), which were listed in Section 2.2.

To establish the coping strategies that households are most likely to use in response to ill health (relation C), we use a linear probability model with household fixed effects.[7] These models are estimated separately for each of the (binary) coping strategies and only on the sample of households who experienced illness or other shocks in the respective survey year.

[3]The relatively larger urban share may be due to the higher degree of mobility of urban households, reducing the probability of being revisited in 2003 and 2004. The results are given in the supplementary appendix.

[4]The selection term is the inverse Mills ratio based on a selection probit where the probability that a household remains in the balanced panel is explained by the 2002 values of all the explanatory variables used in Equation (1). To aid identification, we also add the ID code of the 2002 enumerator, on the basis of the hypothesis that the probability of participating in the following survey rounds is partly based on a household's experience in the first survey. We estimate the smoothing equation as an Ordinary Least Squares (OLS) difference regression, where the error terms in the selection and smoothing equations are assumed to have a joint normal distribution (see the supplementary appendix for details and results).

[5]The FEP is optimal when the conditional variance is not only proportional (not equal) to the conditional mean but also consistent when this is not the case.

[6]The five regions are the islands of the following: (i) Java and Bali; (ii) Sumatra; (iii) Kalimantan; (iv) Sulawesi; and (v) the other islands. We also included district specific time trends, but this appeared problematic for the quartile sub-samples because of the large number of districts (262). The estimates for the full sample are reported in the supplemental appendix, showing that the results are robust to including region or district specific trends.

[7]We assessed the robustness of results to using a conditional logit (available upon request). Although the result of *family assistance* being the most frequent coping strategy is confirmed, some results differ. We do prefer results from a linear probability model, as the conditional logit uses only those observations for which the dependent variable varies over time, which drastically reduces sample size.

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A key empirical challenge is to deal with the potential endogenous nature of self-reported ill health with respect to household income and consumption. In particular, unobserved heterogeneity in preferences and latent health status may threaten internal validity. To a large extent, this unobserved heterogeneity is eliminated by means of household fixed effects. In addition, changes in demographic, education and housing characteristics of households capture important time variant confounders.

Within this fixed effects framework, exogeneity of self-reported illness could still be compromised if deteriorating health leads to changes in preferences. However, using different data sets for Indonesia, Gertler and Gruber (2002) and Gertler, Levine and Morreti (2009) found no evidence of such state dependence. In support to this finding, our results provide an implicit test for state dependence (which is very similar to the third test for state dependence proposed by Gertler, Levine and Morreti, 2009). State dependence would imply that ill health events affect consumption even if households are able to (self-)insure against illness. There is no reason why state dependence should depend on the ability to insure or smooth consumption. Hence, in absence of state dependence, we would expect negligible effects of illness on consumption for wealthier households that are fully able to smooth consumption, compared with the poorest households. Our results in the next section indeed support this hypothesis. Further endogeneity problems could arise if deteriorating economic circumstances provoke ill health. This bias would be expected to work in the direction of rejecting consumption smoothing and does not seem be to an important problem for the full sample results.

3. RESULTS

3.1. Patterns in self-reported ill health and coping response

In 2003 and 2004, respectively 74% and 71% of households reported welfare in the previous year was affected by a negative event. On average, 7.9% of the sample reported to be affected by ill health in 2003, compared with 6.5% in 2004 (Table I). The frequency of reported ill health events is similar to that of natural disasters (8.8% and 5.6%), but much smaller than self-reported income loss due to business risk (22.0% and 17.4%) and government policies (58.0% and 34.8).[8]

In general, borrowing is the most prominent coping response, followed by adjusting consumption and family assistance (lower panel of Table I). Drawing on savings, increased labour activity and selling assets are the least frequent coping strategies.

3.2. Consumption smoothing and coping with risk

3.2.1. Consumption smoothing. The reduced form effects of self-reported ill health on food and non-food consumption are presented in the first two columns of Table II. We find evidence of imperfect smoothing only for households in the poorest quartile and rural areas, with an ill health event reducing non-food spending by 9.7% and 6.8%, respectively. The point estimate for the second quartile is of a similar order of magnitude, at 8.2%, but not statistically significant at 10% level.

These results also suggest that ill health events affect consumption only through the budget constraint (either through income loss or increased medical spending) and not state dependence.

[8]Of those households that reported a health event in 2003, 23% also did so in 2004, whereas of those that did not report a health event in 2003, 5% did report an event in 2004. So, although there is some degree of clustering of events within households across time, there seems sufficient variation across time for our fixed effects models to pick up effects.

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3.2.2. Main sources of risk. The main sources of economic risk following ill health are given in the last five columns of Table II. OOP health spending seems to be a key source of risk for all sub samples, with an ill health event close to doubling health OOP expenditures on average. Non-agricultural income from self-employment is sensitive to ill health, for both rural and urban households. However, only urban households seem to receive transfers and remittances in response to ill health. An explanation could be that urban households have relatively heterogeneous networks that are more effective in risk management. The results for socio-economic subgroups (rows 5–8) suggest that wage income is negatively affected by ill health for the two poorest quartiles, yet it is only statistically significant for the second quartile. For these poorest quartiles, this may reflect wage income earned predominantly in the informal sector, whereas the richest half of the sample that earns a wage income is more likely to enjoy the relative protection from the formal sector. However, for the richest quartile, we find evidence that health shocks pose a sizable threat to non-agricultural income risk, presumably referring to self-employed business and entrepreneurs. This is indeed confirmed by results for the informal/formal sector workers (rows 9 and 10), which show evidence of income risk from wage labour only for the informal sector, and from non-agricultural income only for the formal sector.

3.2.3. Coping mechanisms induced by health shocks. Coping responses to self-reported ill health are given in Table III, where the coefficients reflect the percentage point increase in the probability of using a particular coping mechanism in response to ill health affecting welfare. With the point estimates, the most commonly used strategies are to rely on family assistance and to borrow (marginal effects of respectively 0.21 and 0.15 percentage point), as already suggested by the summary statistics in Table I. This is followed by decreasing consumption and selling assets.

Urban households seem more likely to borrow and sell assets compared to rural households, but only for the latter do we find evidence that savings are used as coping strategy for illness. This could indicate that credit markets in urban areas function better and are more accessible than in rural areas. Poor households are more likely to reduce current consumption, compared with those in the upper quartiles, which is in line with the results from the smoothing regressions. Responding to illness by depleting buffers such as savings is only

Table III. Effect of ill health on the choice of coping strategies

Dependent variable	Use Savings	Borrow non-collateral	Sell assets/ pawned	Family Assistance	Increase labour	Decrease consumption	Other
Full sample	0.0326+	0.1540**	0.0856**	0.2128**	0.0404*	0.0910**	0.0059
	[0.0172]	[0.0215]	[0.0155]	[0.0200]	[0.0168]	[0.0201]	[0.0209]
Urban	0.0273	0.2064**	0.1433**	0.2194**	0.1006**	0.1143**	0.0177
	[0.0324]	[0.0350]	[0.0239]	[0.0317]	[0.0248]	[0.0334]	[0.0335]
Rural	0.0402*	0.1159**	0.0549**	0.2188**	0.0027	0.0752**	0.0023
	[0.0190]	[0.0274]	[0.0205]	[0.0259]	[0.0229]	[0.0254]	[0.0269]
Subgroups							
Quartile 1	0.0436*	0.2199**	0.1039**	0.3078**	0.0558*	0.1677**	−0.0146
	[0.0236]	[0.0387]	[0.0272]	[0.0371]	[0.0326]	[0.0378]	[0.0382]
Quartile 2	0.0617*	0.1027*	0.1325**	0.1778**	0.0554	0.0950*	0.0788*
	[0.0320]	[0.0449]	[0.0307]	[0.0412]	[0.0353]	[0.0397]	[0.0423]
Quartile 3	0.0154	0.1620**	0.0320	0.1491**	−0.0406	0.0454	0.0196
	[0.0371]	[0.0450]	[0.0340]	[0.0400]	[0.0325]	[0.0415]	[0.0419]
Quartile 4	−0.00002	0.1344**	0.1039**	0.1963**	0.0779*	0.0616	−0.0605
	[0.0485]	[0.0455]	[0.0342]	[0.0445]	[0.0365]	[0.0450]	[0.0475]

Notes: Coefficient from linear regressions with household fixed effects. Models include covariates as explained in section 2.2, indicator variables for other shocks, and both urban/rural and region specific time trends. Quartiles are constructed on the basis of total per capita household expenditures in 2002.
*Significant at 10%.
**Significant at 5%.
***Significant at 1%.
Standard errors are shown between brackets.

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statistically significant for the two poorest quartiles, although the differences with other quartiles lie within its 95% confidence interval. Relying on family networks, borrowing and selling assets are common strategies across all expenditure quartiles.

4. CONCLUSION

This paper investigates economic risks of ill health in Indonesia and the role of informal coping mechanisms in consumption smoothing. For the full population, we see negative effects on income but no evidence of imperfect consumption smoothing, which seems to corroborate the findings for Indonesia by Genoni (2012). However, the analysis for different population groups and sources of income reveals a more heterogeneous picture. We find evidence of economic risk from illness through OOP health payments across the population, while income from wage labour is exposed to risk for households in the poorest quartiles and informal sector and income from self-employed business activities for the wealthiest quartile and formal sector. However, only for the rural population and the poorest quartile do we see smoothing to be imperfect and non-food expenditure to be affected by ill health, whereas the wealthiest half of the population seems to be able to protect current spending. Borrowing appears to be a key coping strategy for the poor to deal with economic risk from ill health, which infers potential long-term effects through incurring debt. In addition, future income may be affected by depleting buffers such as assets and savings for consumption smoothing and financing health care.

There are some limitations to this study. First, the data on self-reported health shocks in the Susenas data might reflect both acute and more chronic ill health conditions, and could be potentially be skewed towards imperfect consumption smoothing. Additional analysis using the number of days unable to work/go to school did however confirm the main findings of the paper. Second, the difference in recall periods for food consumption (a 1-week recall period) and ill health events and related coping strategies (a 1-year period) makes it difficult to pick up the immediate transitory consumption effects of relatively early ill-health events. The fact that we find evidence of imperfect consumption smoothing only for the poor and in rural areas when using actual consumption data, while reducing consumption seems to be a self-reported coping response relevant for the full sample, might be related to this measurement issue. As food spending is typically collected with a 1-week (or one-month) recall period in household surveys, this suggests opportunities for further research, making a case for collecting higher quality expenditure data to look at consumption smoothing, for example, by using household expenditure diaries that can detect changes in expenditure patterns over very short time intervals.

Notwithstanding these limitations, our findings do suggest that there is some scope for expanding social health insurance to the informal sector and cross-subsidisation between poor and non-poor, in particular for managing economic risk of illness for the rural poor and thereby presumably reducing a barrier to seeking health care. This seems to be in line with studies that find health care utilisation by the poorest households in Indonesia to increase through subsidised social health insurance (Sparrow, Suryahadi and Widyanti, Forthcoming) and targeted user fee waivers (Pradhan, Saadah and Sparrow, 2007), but not for the non-poor.

However, the economic risk from income loss for the rural poor falls partly beyond the reach of public health care financing reforms as it also points to the need for income insurance. Combined with potential long-term effects of subsequent coping strategies, uninsured income loss may induce poverty traps.

Most income risk seems to stem from the informal sector that harbours the bulk of the labour force from the poorest half of the population, whereas the formal sector provides financial protection from illness not only through social health insurance but also by reducing income risk. The policy implications are threefold. First, fully protecting households from financial consequences following ill health would require a broader social security network that also covers the informal sector. Second, such a social security reform would require some element of cross-subsidisation, for example, through providing tax-financed premium subsidies for the poor. Finally, Indonesia needs to move forward with the transformation of its economy from an informal to a formal sector-dominated economic structure.

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CONFLICT OF INTEREST

The authors have no conflict of interest.

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