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Effect of a Health Shock on Working Hours and Health Care Usage: The role of Financial Inclusion

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Effect of a Health Shock on Working Hours and Health Care Usage: The role of Financial Inclusion

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Abstract

This study explores the role of financial inclusion in the mitigation of the effects of a health shock at the household level. To that end, we examine empirically the effect of financial inclusion on household working hours and health care utilization, using round six of the Ghana Living Standard Survey data. We find that a health shock does decrease household working hours and increase the likelihood of health care utilization. This suggests that households in Ghana are not able to fully insure themselves against a health shock. However, we find that, faced with a health shock, households who are financially excluded see their working hours reduce more than those who enjoy full financial inclusion. Also, financial inclusion increases the likelihood of health care utilization when households experience a health shock. We find evidence that loan acquisition (borrowing) is one of the main mechanisms by which households can insure themselves against a health shock. Generally, our findings support the financial inclusion agenda of policymakers in Ghana and many other countries. Thus, efforts to ensure full financial inclusion will increase the probability of households using the financial sector as a means of insulating themselves against the effects of health shocks.

Keywords: Health shock, financial inclusion, working hours, health care utilization, Ghana
JEL Classification: O12, I10, G21, J22

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1. Introduction

Idiosyncratic health shocks, including illness and/or injury, are among the most debilitating economic shocks affecting the economic opportunities of many households in both developed and developing countries. However, the effects of health shocks on the welfare of households are likely to be greater in developing countries because insurance markets and their associated services are underdeveloped, which make most households more vulnerable and less capable of insulating themselves against health shocks (Islam & Maitra, 2012). An understanding of the impact of health shocks is crucial, but, to ensure the appropriateness of policy interventions, that understanding must be in the context of the dire economic consequences (economic costs) that health shocks impose on households. These economic costs associated with health shocks come in two forms: [1] the increased health expenditures required to treat such illness and/or injury; and [2] a reduction in income due to lost hours of work and the subsequent decline in productivity (Gertler & Gruber, 2002). Intuitively, it can be argued that those health shocks are as threatening economically to the wellbeing of the individual as they are to the general health (in terms of labor productivity), and to the growth and development of national economies.

A number of empirical studies have examined the effects of health shocks on household outcomes—consumption, hours worked, health care utilization, and health and non-health consumption expenditures—in developing countries. In particular, those studies have focused on examination of the ability of households to protect their income (or consumption) from health shocks, mainly through a risk sharing mechanism. However, the results of most of those studies are inconclusive. For example, whereas Islam and Maitra (2012), Kochar (1995), and Townsend (1994) found that household consumption is not responsive to health shocks in developing countries, Gertler and Gruber (2002) and Wagstaff (2007) found that health shocks have a decreasing and significant effect on household income and consumption. Regarding labor supply response to health shocks, Zucchelli et al. (2010) found that while health shocks increase the risk of men becoming unemployed, they also increase the risk of an early exit for women in the labor market. Pohl

et al. (2014), and García-Gómez et al. (2013) report a similar finding, from which they conclude that health shocks reduce employment.

In the absence or limited presence of formal and/or informal insurance mechanisms and schemes, the severity of the impacts of health shocks is even more profound (Islam & Maitra, 2012). One way to mitigate those impacts is to make different insurance instruments readily available so as to improve households' ability to respond to insure themselves against health shocks. Given the structural weaknesses in the financial systems of developing countries, however, financial inclusion (as prescribed by many mainstream economists including those working for the World Bank) emerges an alternative means by which households could protect themselves against health shocks. One way that households could use the financial sector as an instrument for self-insurance against health shocks is through borrowing (e.g., loan acquisition or overdraft) and/or reliance on savings. These loans or savings could increase household access to credit and funds, which would enable access to timely diagnosis, prevention and treatment of diseases, which in urns could be beneficial to their employment decisions (Ahmed & Cowan, 2019).

Since financial inclusion has recently gained currency in development discourse, a number recent studies have explored the role that financial inclusion plays in assisting households to insure themselves against health shocks. Surprisingly, many of those studies focused on food and non-health consumption smoothing by households (e.g., Annim, et al., 2011; Jack and Suri, 2014; Carlson et al., 2015; Mitra, et al., 2016, Riley, 2018), and have paid little attention to the relevance of labor supply, which is a critical factor underlying income and asset accumulation, and leading in turn to consumption smoothing. A literature search found no studies analyzing the potential effects of financial inclusion on household working hours and health care utilization during health shocks in developing countries such as Ghana. This lack of attention to this important phenomenon motivates the study.

Given that many developing countries are working to achieve full financial inclusion and universal health coverage (Giedion et al., 2013), and to increase productivity (high economic growth), a full understanding of health care utilization and labor supply responses to health shocks, and the role of financial inclusion during health shock periods is

essential. A number of empirical studies have found health shocks to be one of most common income shocks and a cause of poverty in many households in developing countries (Atake, 2018). In Ghana for instance, poor health has been shown to have rendered many households vulnerable to poverty and to have distressing effects on individual and household productivity, and on economic growth (Novignon et al., 2012). In recognition of the above considerations, this study examines the potential effects of financial inclusion on household working hours and health care utilization during health shocks in Ghana. To the best of our knowledge, this study is the first to examine the potential role of financial inclusion in enabling households to insulate themselves against health shocks in Ghana, using the current Ghana Living Standard Survey (GLSS 6) data.

We conduct our analysis at the household level rather than the individual level. We argue that when a household member suffers illness and/or injury (health shock periods), it is possible that other members of the household will assume 'care-taking', which requires adjustment of their working hours during such periods. Consequently, not only would the working hours of the victim be affected, but also those of other members of the household, which could have a ripple effect on the working hours of the entire household. In the first section of our analysis, we examine the effects health shocks on two outcome variables: working hours and health care usage. We further identify the role played by financial inclusion during health shocks, if any. Finally, we explore the mechanism by which financial inclusion plays such a role. Recognizing that financial inclusion could be potentially endogenous, we use three estimation techniques here with one of them addressing such endogeneity concern: ordinary least squares (OLS), fixed effects (FE), and instrumental variable with fixed effects (IV-FE). Interestingly, the estimation results from all these three techniques are consistent and lead to the same conclusion, suggesting robustness of our results.

Generally, the results from our analysis suggest that households in Ghana are not able to fully insure themselves against health shocks, and thus significantly reduce their working hours by an average of 2.95 hours per week during a health shock. At the same time, the probability of households visiting a health facility, or consulting a health

practitioner or a traditional healer during a health shock, increases by 56 percentage points. However, with financial inclusion, our empirical findings indicate that financially included households who experience a health shock see their working hours reduced by an average of 8.3 hours per week less than financially excluded households. The role of financial inclusion in mitigating the negative effects of health shocks on household working hours is more pronounced when adults in the household experience health shocks than when children experience such shocks. Also, we find that financially included households are more likely to utilize health care than excluded ones when they experience a health shock. Specifically, the probability of health care utilization increases by 4.2 percentage points more for financially included households than for their excluded counterparts during a health shock. Regarding self-insurance mechanism, our results indicate that financially included households are more likely to acquire a loan (borrow) than excluded ones. The above findings suggest that financial inclusion can be an effective policy instrument by which households in Ghana and other developing countries can insulate themselves against health shocks.

The remainder of the paper is structured as follows: section two describes the data used with its summary statistics. Section three presents in detail the empirical framework, including empirical model specifications and identification strategy. Section four discusses the results, and section five presents conclusions and implications for policy-makers.

2. Data and summary statistics

The data used in this study comes from the sixth round of GLSS survey implemented by Ghana Statistical Service (GSS) and conducted in 2012-2013. The survey covers 18,000 households in 1,200 Enumeration Areas (EAs), and designed to be nationally representative. With a response rate of 93.2%, 16,772 out of the 18,000 households were successfully enumerated. Using a two-stage stratified sampling design, the 1,200 EAs were selected at the first stage to form a Primary Sampling Units (PSUs). These PSUs were then allocated into 10 regions using probability that is proportional to the population size. Further, the EAs were categorized into rural and urban settlements. Within each EAs, an

average of 15 households were systemically selected to form a Secondary Sampling Units (SSUs). The survey included detail questions on education, health, employment and time use, migration and tourism, housing conditions, household agriculture, access to financial services and asset ownership, household demographic characteristics, community characteristics, and households' perception on governance, peace and security in Ghana.

We combine these data sets by household to measure financial inclusion, a health shock, working hours, health care usage and borrowing (loan acquisition) at the household level. We define hours worked as total working hours of the entire household during the past one week prior to the survey. Financial inclusion is measured as a binary variable where 1 indicates whether any household member has a bank account or is contributing to a loan or saving scheme, and 0 otherwise. Similarly, a health shock is an indicator variable equal to 1 if any household member has suffered from illness or injury or both in the past two weeks prior to the survey, and 0 otherwise. Also, health care usage equal to 1 if any household member has consulted a health practitioner or a traditional healer or has visited a health facility during the past two weeks, and 0 otherwise; while borrowing is a binary variable where 1 indicates whether any household member has applied for or acquired a loan in the past twelve months, and 0 otherwise.

The summary statistics of the variables are shown in Table 1. From Table 1, about 48% of the households, on average, are financially included. Also, on average, approximately 41% of the households experienced a health shock. At the disaggregated level about 41% and 40% of financially included and financially excluded households, respectively, reported to have experienced a health shock during the past two weeks prior to the survey. Furthermore, the average working hours of each household is about 91.3 hours per week, while about 27% of the households have engaged in health care utilization and 12% of the households borrowed a year prior to the survey. The highest educational level of the household is secondary education, constituting about 62% of the households with households 'with no education' being the least, representing 1.2% of the households. In addition, approximately 80% of the households have either registered for or are covered by health insurance. The average number of adults aged 18 years and above per household are

2 while the average number of children who are below 18 years per household are also 2. Regarding the characteristics of household heads, the average age of a household head within our sample is 45.8 years and about 72% of the households are headed by a male. Also, close to 60% of the household heads are married with approximately 50% of the household heads engaging in farming activities. Furthermore, 67% of the household heads are Christians, 26% of them are Muslims, with those without any religion accounting for 6.9%, while the Traditionalists representing only 0.1%. In addition, we inferred from our sample that about 56% of the households are located in rural areas and the remaining 44% of the households are living in urban areas.

3. Empirical Framework

In this section, we presents our empirical model specifications and our identification strategy for examination of the effects of a health shock on working hours and health care utilization. Our analysis also composes those effects on financially included and excluded households under a health shock. That is, we examine the role that financial inclusion plays in moderating the effects of an idiosyncratic health shock on household working hours and health care utilization. In addition, we, elucidate the mechanism of that moderating role of financial inclusion.

3.1. Empirical model specification

To test the relationship between a health shock and working hours and health care usage, we estimate the following econometric equation:

$$y_{id} = \alpha + \rho Hshock_{id} + \boldsymbol{\varphi} \mathbf{X}_{\mathbf{id}} + \lambda_d + \varepsilon_{id} \quad (1)$$

where y_{id} is (a) total working hours or (b) health care usage of household i in location or district d . $Hshock_{id}$ is the health shock: a dummy variable equal to 1 if any household member has suffered illness or injury or both in the past 2 weeks, and 0 otherwise. This measure of health shock was used by Islam and Maitra (2012). λ_d is location or district fixed effects, and ε_{id} is the error term. Without the location or district fixed effects, the

regression may yield bias estimates due to a possible correlation between an omitted or unobserved location or district characteristics and the error term. $\mathbf{X_{id}}$ is a vector of household head characteristics: age, marital status, farming, employment type, industry type, and religion; and household characteristics: education, household size, income, health insurance coverage, and rural location, as shown in Table 1. For specification (a), where working hours is the outcome variable, we exclude income from the control variables to avoid simultaneous causality. Note that the definitions of the variables in the above equation are those in the previous section under data and summary statistics. For a health shock to have a relationship or an effect on the outcome variables, we a priori expect $\rho < 0$ for (a) and $\rho > 0$ for (b).

Now, to examine the potential effect or role of financial inclusion in enabling households to insure against an idiosyncratic health shock, we estimate an extended version of Equation (1)[3]:

$$y_{id} = \alpha + \rho Hshock_{id} + \psi FiN_{id} + \beta FiN_{id} * Hshock_{id} + \boldsymbol{\varphi}\mathbf{X_{id}} + \boldsymbol{\theta}\mathbf{X_{id}} * Hshock_{id} + \lambda_d + \varepsilon_{id} \quad (2)$$

where FiN_{id} is financial inclusion of household i in location or district d. The other variables in equation (2) are the same as explained above. We interact the shock variable with financial inclusion ($FiN_{id} * Hshock_{id}$) to examine the role of financial inclusion during a health shock. The parameter of interest is β. We would expect a priori that $\beta > 0$. To control for observed factors that could both (1) be correlated with financial inclusion and (2) help households to insure against a health shock, we also interact the health shock variable with all the control variables ($\mathbf{X_{id}} * Hshock_{id}$). This technique minimizes the potential bias in the estimate of our parameter of interest.

Furthermore, financially included households could use the financial sector to insure against a health shock in two ways: [1] they could tap into their savings and [2] they could borrow from the financial sector to pay for a visit to a health clinic or the purchase of medicine during a health shock, for faster recovery. That opportunity is not available for

[3] This specification is a time-invariant version in that of Jack and Suri (2014).

financially excluded households. To examine the impact of financial inclusion on loan acquisition (borrowing) during a health shock, we test the second mechanism or channel by estimating the equation (3).

$$loan_{id} = \alpha + \rho Hshock_{id} + \psi FiN_{id} + \beta FiN_{id} * Hshock_{id} + \boldsymbol{\varphi}\mathbf{X_{id}} + \boldsymbol{\theta}\mathbf{X_{id}} * Hshock_{id} + \lambda_d + \varepsilon_{id} \quad (3)$$

where $loan_{id}$ is a dummy variable equal to 1 if household i in location or district d applied for or acquired a loan in the past 12 months[4], and 0 otherwise. As previously, we would a priori expect $\beta > 0$. The rest of the variables in equation (3) are the same as those explained earlier.

3.2. Identification strategy

The identification of the causal effects of financial inclusion on working hours and health care usage during a health shock, captured by the interaction term ($FiN_{id} * Hshock_{id}$), requires that the health shock variable be exogenous and be equally likely to affect both financially included and excluded households. Health shocks have been shown empirically using household-level panel data in Africa and other developing countries to be exogenous (Jack & Suri, 2014; Ahmed & Cowan, 2019) and not persistent or anticipated (Islam & Maitra, 2011; Gertler & Gruber, 2002). Thus, we follow Carlson, et al., (2015) in considering our health shock variable to be exogenous or uncorrelated with the error term.

Another concern regarding our identification strategy is the potential endogeneity of the financial inclusion variable (FiN_{id}). This potential endogeneity stems from self-selection by households to be either financially included or excluded. Consequently, the financial inclusion variable may be correlated with both observed and unobserved household characteristics, which are also correlated with our outcome variables. Therefore,

[4] Our data does not include questions on whether households applied for or acquired a loan during the past two weeks (i.e. during the period they experienced a health shock). However, our thesis is that they might have suffered illness during the previous period and applied for or acquired a loan. Even if that is not the case, a loan acquired in a previous period before a health shock could be used for the same purpose.

we deal in part with the endogeneity problem by controlling for observed household characteristics which may be correlated with financial inclusion in all the regressions. Since the focus of our analysis is on the coefficient of the interaction term ($FiN_{id} * Hshock_{id}$), i.e. β, we are much more concerned about selection into the financial sector being correlated with household's ability to deal with a health shock. That is, the interaction term being correlated with the error term (ε_{id}) conditional on location or district fixed effects and other covariates in the regression model. Thus, we fully address the potential endogeneity issue by performing an instrumental variable with fixed effects (IV-FE) analysis using a 2 stage-least-squares (2SLS) estimator.[5]

Given that we have two potential endogenous variables, financial inclusion (FiN_{id}) and its interaction with the health shock variable ($FiN_{id} * Hshock_{id}$), we need at least two instruments. Those instruments would need to be correlated with financial inclusion (relevant condition) but must not be correlated with any of our outcome variables (exogeneity condition). Indeed, distance to nearest bank is correlated with financial inclusion because the closer a bank is to a household, the greater the accessibility will be. Furthermore, distance to nearest bank per se would not be correlated with any of our outcome variables. Therefore, we use distance to the nearest bank (measured in kilometers) and its interaction with the health shock variable as instruments in our IV-FE estimation. Similar instrument(s) of that nature have been used extensively in previous studies.[6]

4. Results and Discussion

This section discusses the results of the examination of [1] the effect of a health shock on working hours and on health care usage; [2] the role of financial inclusion in enabling households to insure themselves against an idiosyncratic health shock; and [3] the

[5] In our IV-FE estimation, we used ivreg2 with first option command in STATA to generate the first-stage F-statistic values.

[6] See Jack and Zuri, (2014) and Riley, (2018).

mechanism through which households use the financial sector to insure themselves against a health shock.

4.1. Effects of health shock on working hours and health care usage

Tables 2 and 3 show the results of the analysis of the impact of a health shock on household working hours and health care usage, respectively. Columns 1 and 2 of each table show the results of OLS and FE estimations for the full sample, while columns 3 and 4 show the results of the same estimations at the heterogeneous level, i.e. rural and urban sub-subsamples. The results of both OLS and FE estimations show that a health shock negatively affects household working hours but positively affects health care utilization. In particular, it can be seen in column 2 of Table 2 that, on average, a health shock significantly reduces household working hours by approximately 2.95 hours per week. This is because the coefficient of the health shock variable is negative and statistically significant at 1% level of significance. Also, the results in column 2 of Table 3 indicate that a health shock increases the probability of health care usage by about 56 percentage points. That is, the coefficient of the health shock variable is positive and statistically significant at 1% level of significance. The latter finding is consistent with that of Ahmed and Cowan, (2019), for East Africa, while the former finding is in line with that of García-Gómez et al. (2013), Bradley et al. (2012) and Cai et al. (2008) for Netherlands, USA, and Australia, respectively. The findings indicate that households in Ghana are not able to fully insure themselves against idiosyncratic health shocks.

Looking at the heterogeneous effects of a health shock for rural and urban households, from the results in columns 5 and 6 of Table 2 it be seen that whereas the effect of health shock on households working hours is negative and statistically significant for rural households, that on urban households working hours is insignificant, although the coefficient is negative. Specifically, health shock reduces rural household working hours by approximately 4 hours per week. The insignificant effect of health shock on urban household working hours could be accounted for by the fact that households in urban areas are likely to have access to health related training facilities (gymnasium) which may afford

them an advantage in terms of maintaining a healthy lifestyle over rural households. As a result, a health shock may not have a long-lasting effect on urban household's health status and hence, would not affect their working hours much. However, in columns 5 and 6 of Table 3 it can be seen that a health shock significantly increases the probability of health care utilization for both rural and urban households, with the magnitude of the effect being approximately the same. In particular, a health shock increases the probability of both rural and urban households visiting a health clinic or consulting a medical practitioner by about 6 percentage points.

4.2. The role of financial inclusion

Having established that a health shock significantly affects household working hours and health care utilization, and that households are not able to fully insure themselves against a health shock, we then examine the potential role of financial inclusion during a health shock. The results of OLS, FE, and IV-FE estimations for the full sample are shown in Table 4. The results in columns 1 to 3 are for the case where working hours is the dependent variable, while those in columns 4 to 6 are for the case where health care usage is the dependent variable. The results for all the three estimation techniques are consistent in terms of significance level and the sign of our parameter of interest, except in terms of magnitude where the IV-FE results show slightly higher estimates than both OLS and FE estimates. The consistency of these estimation techniques indicates the robustness of our estimates. To save space, we do not report the first-stage results of the IV-FE estimations but we do show their corresponding F-statistic values. Thus, we interpret the results for the second stage only. First, we test whether or not our instruments are weak/valid by showing the F-statistic from the first stage estimation in columns 3 and 6 of Table 4, columns 2, 4, 6, and 8 of Table 5, and column 3 of Table 6. From the results, the F-statistic values obtained for all specifications are well above the Stock and Yogo critical values. Also, all of the associated probability values are well below 1% suggesting that the instruments are valid or at least not weak.

As for the estimates of our parameter of interest, the results in column 3 of Table 4 show that financial inclusion plays a significant role in helping households to mitigate the negative effect of a health shock on their working hours. Evidently, the coefficient of the interaction term is positive and statistically significant at 5% level of significance. The positive coefficient value of 8.3 is of an economically meaningful magnitude, it indicates that when households are faced with a health shock, those with no access to the financial sector (financially excluded households) see their working hours reduced by about 8.3 hours per week more than those with full access to the financial sector (financially included households). We argue that those with access to the financial sector could tap into their savings or borrow for a visit to a health clinic or a consultation with a doctor, which helps to speed healing and return to work,—an opportunity that is less available to financially excluded households.

We examine the latter explanation by estimating an equation where health care utilization is the dependent variable. The results of the IV-FE estimation are shown in column 6 of Table 4. It can be seen that the coefficient of the interaction term is positive and statistically significant at 5% level of significance. This positive coefficient value of 0.0421 suggests that the probability of financially included households, who experienced a health shock, using health care increases by 4.2 percentage points more than financially excluded households who experienced a health shock. That is, financially included households are about 4.2 percentage points more likely to pay a visit to a health facility or consult a health practitioner during a health shock as compared to financially excluded households. This finding is consistent with the finding by Ahmed and Cowan (2019) for Kenya. The authors, however, measured financial inclusion with mobile money use which is a recent technology by many developing countries to enhance financial inclusion. The above finding provides evidence on the role of financial inclusion in increasing health care utilization during periods of injury or illness.

Also, we analyze the heterogeneous effects by decomposing our sample into rural and urban sub-samples to understand differences in the role of financial inclusion at these two centers. The results are displayed in Table 5. Columns 1, 2, 5 and 6 show the results for

the rural sub-sample while, columns 3, 4, 7 and 8 show the results for the urban sub-sample. It can be seen in column 2 that the coefficient of the interaction term is positive and statically different from zero at the 1% level of significance. The results show that, in rural areas, when households experience a sudden illness or injury, the working hours of those households who are financially constrained decrease by about 10.54 hours per week more than those who enjoy full financial inclusion. However, in urban areas, the coefficient of the interaction term is not statically different from zero at any of three conventional levels of significance, although it is positive. This suggests that in urban centers financial inclusion has no impact on the working hours of households faced with a health shock. Thus, the role of financial inclusion in mitigating the negative effect of a health shock on household working hours is pronounced in rural areas but not in urban areas.

Moreover, for impact of financial inclusion on household health care utilization, the coefficients of the interaction term are not statistically significant at any of three conventional levels of significance (see columns 6 and 8 of Table 5), although their economic importance is preserved (i.e. the coefficients are positive). This means that there is no significant difference between the impact of financial inclusion both on health care utilization of households in rural areas and on health care utilization of households in urban areas when they experience a health shock. These results might be the result of our definition of health care utilization, which includes formal, semi-formal and, informal health care utilization.[7] Whereas households in urban areas are likely to utilize formal or semi-formal health care, those in rural areas are equally likely to visit a traditional healer or use informal health care when they suffer from illness and/or injury.

4.3. Mechanism

In this section, we analyze our second explanation of borrowing as a mechanism through which households can insulate themselves against a health shock. We estimate

[7] Our related data does not allow us to analyze these three levels of health care utilization because the question on that was asked in a composite manner. That is, whether any household member has consulted a health practitioner or a traditional healer or visited a health facility during the past two weeks.

equation (3) above, where loan acquisition is the dependent variable. Table 6 reports the results of the role of financial inclusion in the likelihood of a household acquiring a loan during health shocks. The results in column 3 re-support the validation of our explanation during health shocks. Evidently, the coefficient of the interaction term is positive and statistically significant at 5% percent level of significance. In particular, the coefficient value of 0.0412 indicate that when households are faced with a health shock, financially included households are about 4 percentage points more likely to acquire a loan or borrow than financially excluded ones. This suggests that borrowing is one of the mechanisms through which the probability of health care utilization can be increased during health shocks and consequently, working hours of households can be increased as well. Again, this finding is consistent with that of Ahmed and Cowan (2019) for Kenya.

5. Heterogeneous health shocks effects analysis

Here, we decompose the shock to the household into two: shocks to children who are below 18 years (whether any child in the household suffered from illness and/or injury), and shocks to adults who are 18 years and above (whether any adult in the household suffered from illness and/or injury). This will allow us to identify the type of shock that is driving our main analysis. The results of the effects of those shocks on household working hours are displayed in Table 7. It can be seen in column 2 that adult-health shock significantly reduces household working hours by about 2 hour per hours per week, and the coefficient is statistically significant at 10% level of significance. However, the coefficient on child-health shock is not significant at any of the three levels of significance. This result is intuitive because children do not generally contribute to labor productivity and a result their health status may not significantly affect household working hours. However, since an adult member in a household would usually assume 'care-taking' of a sick child, which would require adjustment of his/her working hours, the working hours of the household could be negatively related to child-health shock: the reason the coefficient on the child-health shock is negative.

Also, the results of the effect of financial inclusion on household working hours during a health shock is shown in Table 8. From column 3 and 6, it is can be observed that whereas the coefficient on the interaction between financial inclusion and adult-health shock is positive and statistically significant at 1% level of significance, that on the interaction between financial inclusion and child-health shock is statistically insignificant, although the coefficient is positive. In particular, when an adult member in the household experience a health shock, households who are financially excluded see their working hours reduce by about 12 hours per week more than those households who are financially included. However, that role played by financially inclusion is not at present when a child in the household experience a health shock.

6. Conclusion and Policy Implications

Idiosyncratic health shocks tend to have negative affect on the health status of households, in turn affecting their ability to fully engage in economic activities to generate income. Naturally, households would visit a health facility, buy medicine or consult a health practitioner in order to recover from illness and/or injury and return to income-generating activities. However, more often than not, the insurance market in developing countries is not well-developed and, as a result, may fail to help households to adequately insure themselves against a health shock.

In this study, we empirically examine the role of financial inclusion as a means by which households could address a health shock in terms of its effects on household working hours and health care utilization. Using data from the sixth round of Ghana's Living Standard Survey (GLLS-6) and applying three estimation techniques, we show that, health shocks decrease household working hours and increase the probability of health care utilization. Our results indicate that, generally, households in Ghana are not able to fully insure themselves against health shocks. In particular, we find that illness or injury decreases household working hours by an average of about 2.95 hours per week, and increases the probability of health care utilization by approximately 56 percentage points.. Also, out results shows that health shocks to adult members in the household significantly

reduces household working hours. However, the effect is insignificant when children in the household experience health shocks. At the disaggregated level, we find that rural households suffer a loss of working hours more than households in urban areas. In fact, we find that the effect of a health shock on the working hours of the urban households is statistically insignificant, although the effect was negative whereas households in the rural households had their working hours significantly reduced by about 3.7 hours per week, on average. However, the effect of a health shock on health care utilization is of approximately the same in magnitude for both rural and urban households. More specifically, we find that injury or illness increases the probability of health care utilization by households in both rural and urban areas by an average of about 6 percentage points.

Regarding the role of financial inclusion, our estimates show that, when households are faced with a health shock, those with access to the financial sector experience less reduction in their working hours than those without access to the financial sector. In particular, when households are faced with a health shock, financially excluded households see their working hours reduce by about 7.2 hours per week more than financially included ones. In particular, the role of financial inclusion in mitigating the negative effects of health shocks on household working hours is more pronounced when adults in the household experience health shocks than when children experience such shocks. In addition, the probability of health care utilization increases by 4.2 percentage more for financially included households than financially excluded households during a health shock. Furthermore, our heterogeneous analysis show that in rural areas the working hours of financially excluded households decreased significantly more than the working hours of financially included ones, during a health shock. However, in urban centers, financial inclusion has no impact on the working hours of both households, when faced with a health shock. These findings suggest that the role of financial inclusion in mitigating the negative effect of a health shock on household working hours is more pronounced in rural areas than in urban centers. Also, we find no significant difference between the impact of financial inclusion on health care utilization of households in rural areas and on that of households in urban areas during a health shock.

Finally, we find that, one mechanism through which households address a health shock is loan acquisition or borrowing. Thus, during a health shock, financially included households are about 4 percentage points more likely to acquire a loan than financially excluded households. Our findings generally support the financial inclusion agenda of policymakers in Ghana and many other countries. Also, there is a need for ongoing enhancement of financial inclusion in rural areas by the Government of Ghana and other stakeholders to help rural people deal with health shocks, while not neglecting that in urban areas. Thus, efforts to ensure full financial inclusion will increase the probability of households using the financial sector as a means of insulating themselves against the effects of health shocks.

Table1: Summary statistics

Variables		Obs.	Mean	Std. Dev
Financial inclusion		16,760	0.479	0.500
Health shock	Financially Included	8,022	0.411	0.492
	Financially Excluded	8,730	0.401	0.490
	Full Sample	16,764	0.406	0.491
Outcome variables				
Working hours		15,359	91.309	69.784
Health care usage		16,763	0.269	0.443
Loan (Borrowing)		16,760	0.117	0.321
Household head characteristics				
Male (dummy)		16,772	0.718	0.450
Age		16,772	45.839	15.893
Age Squared		16,772	2,354	1,640
Married (dummy)		16,772	0.591	0.492
Farmer (dummy)		16,118	0.503	0.500
Employment type (categorical)		16,772	1.705	0.589
Industry type (categorical)		16,772	1.912	1.247
Religion (categorical)		16,767	1.188	0.543
Household level characteristics				
Education(categorical)		15,439	1.974	0.796
Children		16,772	2.001	2.012
Adults		16,772	2.261	1.291
Health insurance coverage (dummy)		16,751	0.796	0.403
Log of household income		16,549	8.125	1.406
Rural (dummy)		16,772	0.556	0.497

Table 2: Results of the effect of a health shock on working hours

	Full sample		Rural	Urban	Rural	Urban
	OLS	FE	OLS	OLS	FE	FE
	(1)	(2)	(3)	(4)	(5)	(6)
Health Shock	-3.065***	-2.950***	-3.010*	-2.265*	-3.656***	-2.182
	[1.166]	[0.958]	[1.573]	[1.351]	[1.299]	[1.348]
Constant	-8.087	1.197	-31.4**	6.432	-16.51	5.266
	[9.721]	[9.231]	[14.80]	[11.16]	[17.89]	[11.18]
Observations	14,076	14,076	7,889	7,820	6,256	7,820
R-squared	0.384	0.388	0.405	0.406	0.337	0.410
Controls included	YES	YES	YES	YES	YES	YES
Location or District FE	NO	YES	NO	NO	YES	YES

Note: Dependent variable is total working hours. All regressions include full set of controls. Robust standard errors in brackets. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively.

Table 3: Results of the effect of a health shock on health care usage

	Full sample		Rural	Urban	Rural	Urban
	OLS	FE	OLS	OLS	FE	FE
	(1)	(2)	(3)	(4)	(5)	(6)
Health Shock	0.566***	0.559***	0.554***	0.581***	0.536***	0.574***
	[0.0126]	[0.0115]	[0.0150]	[0.0195]	[0.0115]	[0.0177]
Constant	-0.0698	-0.0600	-0.0457	0.0347	-0.0248	0.0559
	[0.0761]	[0.0728]	[0.127]	[0.113]	[0.175]	[0.102]
Observations	14,679	14,679	8,190	6,489	8,190	6,489
R-squared	0.406	0.392	0.388	0.430	0.358	0.414
Controls included	YES	YES	YES	YES	YES	YES
Location or District FE	NO	YES	NO	NO	YES	YES

Note: Dependent variable is health care usage. All regressions include full set of control

variable. Robust standard errors in brackets. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively.

Table 4: Results of the role of financial inclusion

Dep. Variable	Working hours			Health care usage		
	OLS	FE	IV-FE	OLS	FE	IV-FE
	(1)	(2)	(3)	(4)	(5)	(6)
Health Shock	-14.24	-12.50	-9.869	0.138	0.124	0.103
	[21.38]	[22.27]	[21.78]	[0.179]	[0.178]	[0.191]
FiN	4.134**	2.540*	-1.340	0.0118**	0.0127**	0.0236***
	[1.676]	[1.502]	[2.404]	[0.00522]	[0.00580]	[0.00878]
*FiN*Health Shock*	5.082**	5.721**	8.307**	0.0378**	0.0272*	0.0415*
	[2.484]	[2.390]	[3.576]	[0.0151]	[0.0144]	[0.0212]
First-Stage F-Statistics:						
FiN			7278.95***			4880.45***
FiN*Health Shock			3803.63***			2348.78***
Observations	14,067	14,067	11,690	14,668	14,668	12,164
R-squared	0.388	0.366	0.398	0.412	0.398	0.397
Controls included	YES	YES	YES	YES	YES	YES
Shock*Controls included	YES	YES	YES	YES	YES	YES
Location or District FE	NO	YES	YES	NO	YES	YES

Note: All regressions include full set of controls variables and their interaction with health shock. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively.

Table 5: Results of heterogeneous effects

Dependent Variable	Working hours				Health care usage			
	Rural		Urban		Rural		Urban	
	FE	IV-FE	FE	IV-FE	FE	IV-FE	FE	IV-FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Health Shock	9.804	7.753	-20.51	9.731	-0.0200	-0.0211	0.183	-0.00348
	[34.06]	[32.36]	[30.16]	[54.57]	[0.336]	[0.352]	[0.254]	[0.384]
FiN	0.466	-0.922	4.980***	-5.114	0.0234***	0.0209**	-0.000347	-0.107
	[2.593]	[2.742]	[1.535]	[33.54]	[0.00860]	[0.0106]	[0.00798]	[0.180]
*FiN*Health Shock*	8.806**	10.54***	1.761	1.828	0.0229	0.0350	0.0175	0.120
	[3.549]	[4.041]	[2.514]	[44.11]	[0.0188]	[0.0233]	[0.0257]	[0.188]
First-Stage F-Statistics:								
FiN		6854.61***		11.56***		6622.00***		13.81***
FiN*Health Shock		4097.46***		14.77***		3967.05***		20.14***
Observations	7,817	7,299	6,250	4,410	8,187	7,656	6,481	4,508
R-squared	0.377	0.378	0.346	0.347	0.384	0.381	0.418	0.431
Controls included	YES	YES	YES	YES	YES	YES	YES	YES
Shock*Controls included	YES	YES	YES	YES	YES	YES	YES	YES
Location or District FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: All regressions included full set of controls variables and their interaction with health shock. Robust standard errors in brackets. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively.

Table 6: Mechanism: Borrowing (Loan)

	Loan		
	OLS	FE	IV-FE
	(1)	(2)	(3)
Health Shock	-0.0353	-0.0617	-0.0824
	[0.146]	[0.137]	[0.160]
FiN	0.0772***	0.0676***	0.0882***
	[0.00994]	[0.00963]	[0.0134]
*FiN*Health Shock*	0.0416**	0.0446***	0.0412**
	[0.0177]	[0.0171]	[0.0206]
First-Stage F-Statistics:			
FiN			4882.43***
FiN*Health Shock			2350.14***
Observations	14,669	14,669	12,165
R-squared	0.055	0.049	0.048
Controls included	YES	YES	YES
Shock*Controls included	YES	YES	YES
Location or District FE	NO	YES	YES

Note: All regressions include full set of controls variables and their interaction with health shock. Robust standard errors in brackets. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively

Table 7: Results of heterogeneous health shock effects on working hours

	OLS	FE	OLS	FE
VARIABLES	(1)	(2)	(3)	(4)
Health Shock (adults)	-2.690*	-2.008*		
	[1.536]	[1.129]		
Health Shock (children)			-2.082	-1.215
			[1.273]	[1.224]
Constant	-8.704	0.657	-8.685	-6.763
	[9.322]	[8.739]	[9.382]	[9.164]
Observations	14,076	14,076	14,076	14,076
R-squared	0.384	0.388	0.384	0.362
Controls included	YES	YES	YES	YES
Shock*Controls included	YES	YES	YES	YES
Location or District FE	NO	YES	NO	YES

Note: All regressions include full set of controls variables and their interaction with health shock. Robust standard errors in brackets. ***, **, and * indicate significance levels at 1%, 5%, and 10% respectively.

Table 8: Results of heterogeneous health shocks effects: the role of financial inclusion

	OLS	FE	IV-FE	OLS	FE	IV-FE
	(1)	(2)	(3)	(4)	(5)	(6)
FiN	4.176***	3.032**	-0.677	6.212***	4.524***	0.0936
	[1.572]	[1.441]	[2.215]	[1.722]	[1.558]	[2.531]
Health Shock (adults)	-21.38	-25.41	-21.92			
	[30.93]	[32.95]	[41.06]			
*FiN*Health Shock*	8.900***	8.355***	12.15***			
	[3.042]	[2.749]	[4.002]			
Health Shock (adults)				-13.93	-3.793	3.505
				[22.93]	[22.23]	[20.95]
*FiN*Health Shock*				0.278	1.543	8.338
				[3.030]	[2.910]	[5.755]
First-Stage F-Statistics:						
FiN			7214.21***			7271.48***
FiN*Health Shock			1849.90***			1227.57***
Observations	14,067	14,067	11,690	14,067	14,067	11,690
R-squared	0.390	0.367	0.398	0.388	0.366	0.397
Controls included	YES	YES	YES	YES	YES	YES
Shock*Controls included	YES	YES	YES	YES	YES	YES
Location or District FE	NO	YES	YES	NO	YES	YES

Note: All regressions include full set of controls variables and their interaction with health shock. Robust standard errors in brackets. ***, **, and * indicate significance levels at

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