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# Does Social Health Insurance Help Owners of Micro- and Small Firms Cope with Family Hardships? Evidence from Indonesia

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## Abstract

Micro- and small firms lack access to external finance and the labour market so that they are vulnerable to family hardships experienced by the owners such as deaths or sickness of family members. The literature is thin on how these firms cope with family hardships, in particular on whether owners' access to social health insurance helps. We examine whether a social health insurance in Indonesia, *Askeskin*, protects owners of micro- and small firms against family hardships. We find some evidence *Askeskin* reduces the adverse effects of recent deaths in the family, outpatient care, and traffic accidents on net profits; *Askeskin* also protects the firms' assets against owners' outpatient care need. Social health insurance may, therefore, improve micro- and small firms' survival, which (because most people in developing countries' labour markets work in micro- and small firms) helps governments' efforts to eradicate poverty.

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## 1. Introduction

Most micro- and small firms in developing countries employ family workers and lack access to formal credits, which make them vulnerable to family hardships experienced by the owners: Family hardships may shrink the firms' assets and pool of family workers (Gertler & Gruber, 2002; Wagstaff, 2007). The literature on the mechanisms finds, to cope with hardships, households in developing countries sell household- or productive assets (Alam & Mahal, 2016; Mahal, Karan, Fan, & Engelgau, 2013; Mitra, Palmer, Mont, & Groce, 2016), pull children out of school (Mitra et al., 2016; Yamauchi, Buthelezi, & Velia, 2008), withdraw savings (Wagstaff & Lindelow, 2014), borrow money or work less (Khan, Bedi, & Sparrow, 2015), and cut consumption (Beegle, De Weerd, & Dercon, 2007; Wagstaff, 2007).

How micro- and small firms cope with family hardships such as deaths or sickness in the family is an important research question that the literature seems to ignore and to which this paper contributes, in particular on whether owners' access to health insurance helps. We examine whether a social health insurance in Indonesia, *Askeskin* (*Asuransi Kesehatan untuk Masyarakat Miskin*, Health Insurance for the Poor) that the government introduced in 2005, helps micro- and small firms recover from family hardships experienced by the owners. Specifically, we investigate whether being an *Askeskin* recipient, through its interaction with family hardships, affects the performance of micro- and small firms.

The internal finance theory of growth suggests that small firms' growth primarily depends on internal finance, but the correlation weakens if external financial constraints are less binding (Carpenter & Petersen, 2002; Pál & Kozhan, 2009). However, small firms rarely use credits because of imperfect capital markets, complicated banking procedures, and lack of collateral (Beck, Demirgüç-Kunt, &

Maksimovic, 2005; Demirgüç-Kunt & Klapper, 2012; Gertler, 1988; Gertler & Hubbard, 1988; Hubbard & Kashyap, 1990; Myers & Majluf, 1984). Governments can alleviate the problem through subsidies (Hyytinen & Toivanen, 2005) and institutional development (Beck, et al., 2005, 2008; Beck, Demirgüç-Kunt, Laeven, & Maksimovic, 2006); or micro- and small firms may generate funds internally through exports and foreign ownerships (Bridges & Guariglia, 2008), more efficient production (Guariglia, Liu, & Song 2011), and cost cutting (Musso & Schiavo, 2008). Another possible solution is giving the poor access to social health insurance.

Social health insurance like *Askeskin* may affect micro- and small firms in two ways: It may increase owners' and family workers' productivity (because they have better access to healthcare services and, therefore, are healthier), and it may reduce owners' healthcare expenses. The literature on social health insurance suggests insured households incur lower medical expenses (Levine, Polimeni, & Ramage, 2016; Wagstaff, 2010), have better health (Wang, Yip, Zhang, & Hsiao, 2009), and use healthcare services more often (Gruber, Hendren, & Townsend, 2014; Wagstaff & Prahlan, 2005). However, some papers find social health insurance may not always work: Although social health insurance reduces financial risk, it does not affect health outcomes (Barros, 2008) or healthcare utilisation (Nguyen, 2016; Thornton, Hatt, Field, Islam, Freddy, & González, 2010; Wagstaff, 2010); others find higher healthcare utilisation may correlate with higher healthcare expenses (Wagstaff, Lindelow, Jun, Ling, & Qian, 2009; Palmer, Mitra, Mont, & Groce, 2015).

To examine whether social health insurance helps owners of micro- and small firms withstand family hardships, we use data on micro- and small firms in the fourth wave of the Indonesian Family Life Survey (IFLS-4) that the RAND Corporation did in 2007. The sample includes 5,900 micro- and small firms in non-farm sector in

Indonesia. We use firm- and household-modules in the survey to create measures of firm performances (such as assets and net profits) and family hardships (such as deaths or sickness in the family and having outpatient care or accidents). We also include firm- and household characteristics that may correlate with family hardships, being an *Askeskin* recipient, and firm performance as control variables, including information that the government used to select *Askeskin* recipients.

We find some evidence *Askeskin* helps owners of micro- and small firms withstand family hardships: *Askeskin* reduces the adverse effects of deaths in the family in the previous year, outpatient care, and traffic accidents on net profits; we also find *Askeskin* protects firms' assets against owners' outpatient care need.

To the best of our knowledge, this paper is the first that examines whether social health insurance helps micro- and small firms withstand family hardships experienced by the owners. The literature on internal finance suggests good governance and subsidies weaken the impact of internal funds on small firms (Beck et al., 2005, 2006, 2008; Beck et al., 2006; Hyytinen & Toivanen, 2005), but discusses little about whether health insurance helps micro- and small firms recover from family hardships. We also add to the literature on policies whose objective is to improve micro- and small firms' financial access and viability in developing countries. Several papers find microfinance and microinsurance have little impact on the poor (Banerjee, Duflo, & Hornbek, 2014; Cole et al., 2013; Rooyen, Stewart, & de Wet, 2012) and firms' profits and growth (Angelucci, Karlan, & Zinman, 2015; Banerjee, Duflo, Glennerster, & Kinna, 2015; Crépon, Devota, Duflo, & Pariente, 2015). We contribute by studying social health insurance whose outreach is wider.

In the next section, we discuss the *Askeskin* programme. Then we describe the empirical strategy and the data. We discuss the results and conclude.

## 2. The social health insurance in Indonesia—*Askeskin*

When Indonesia introduced the National Social Security System (Law 40/2004) in 2004, which stipulated the principles and goals of social security programmes reforms for universal coverage, only 28 per cent of the Indonesian were covered by formal insurance: 17 per cent by *Askes*, *Asabri*, and *Taspen* for the public sector, and 11 per cent by *Jamsostek* for the private sector (ILO, 2008; Mboi, 2015).<sup>1</sup> About 67 per cent of the workers—most of them worked in informal sector—were uninsured. Even in the formal sector, less than half of the workers had social health insurance, many of which may lose their access to the insurance if they had to move to the informal sector because of an economic slow-down (ILO, 2008).

The government introduced the *Askeskin* programme in 2005 to cover those who were left out—the poor and workers in the informal sector. It covered 60 million people in 2005, which increased to 76.4 million in 2007 and 120 million in 2014. The government renamed the programme as *Jamkesmas* (*Jaminan Kesehatan Masyarakat*, Community Health Insurance) in 2008 to include the near-poor and then *JKN* (*Jaminan Kesehatan Nasional*, National Health Insurance) in 2014 to integrate all state-owned health insurance schemes into a single scheme, making it one of the largest social health schemes in the world (WHO, 2015). Each *Askeskin* beneficiary was entitled a fully subsidised premium of Rp 5,000 per month (about \$6 per year in 2005), which the central government financed through its budget from the energy subsidy reductions (Sparrow, Suryahadi, & Widyanti, 2013).<sup>2</sup>

The targeting process of *Askeskin* was varied across the Indonesian districts. *BPS* (*Badan Pusat Statistik*, Statistics Indonesia) identified recipients using a proxy means test with 14 household indicators, and each district would get a list of eligible recipients and quota.<sup>3</sup> However, the district governments could do their own surveys

and draw up their own list of recipients. The targeting process identified eligible households, but the membership of *Askeskin* was individual—that is, each household member entitled to hold an *Askeskin* card. In the first year of the *Askeskin* programme, the *JPS* (*Jaring Pengaman Social*, Social Safety Net) health card and *SKTM* (*Surat Keterangan Tidak Mampu*, village poverty letters) were accepted to claim the insurance benefits (Arifianto, Marianti, Budiyati, & Tan, 2005; Harimurti, Pambudi, Pigazzini, & Tandon, 2013).

Under *Askeskin*, the government's health insurance agency, *PT Askes*, was responsible for reimbursement of money to healthcare providers, which the Ministry of Health took over in 2008. *PT Askes* received money from the Ministry of Health annually and disbursed the funds to hospitals quarterly, and it charged ten per cent of the premiums for administrating and promoting *Askeskin*. The agent paid primary care services by capitation and reimbursed hospitals on a fee-for-service basis for both inpatient and outpatient care (World Bank, 2012).

In the first year of its implementation, *Askeskin* faced several challenges. First, targeting the poor and the non-poor was difficult. The programme suffered from considerable inclusion and exclusion errors; leakages to the non-poor were large and many of the poor were not captured (Sumarto & Bazzi, 2011). Second, the reimbursement process was inefficient. *Askeskin* funds were misallocated and the Ministry of Health had shortage of funds to reimburse hospitals in time. Some hospitals rejected serving the poor because their previous claims had not been paid (Thabrany, 2008). Third, poor public information caused low utilisation of *Askeskin* card. Both recipients and healthcare providers were unclear about the procedures to beneficiaries, administrative procedures, and responsibilities for healthcare providers (Bachtiar, Wibisana, & Pujiyanto, 2006). Fourth, the access to basic primary care services was

unequal across Indonesia. Health workers, such as doctors and midwives, were unevenly distributed, and the problem was particularly pressing in remote rural areas (World Bank, 2008). Fifth, scepticism of the programme had left *Askeskin* card underutilised. Some recipients preferred not to use their cards to avoid perceived stigmatisation from healthcare providers and longer waiting times because of additional administrative requirements. Some also perceived *Askeskin* financed care as being inferior quality to that self-paying care (Harimurti et al., 2013).<sup>4</sup>

Some papers evaluate the *Askeskin* programme and find it improves access to healthcare services, increases healthcare utilisation, and reduce out-of-pocket healthcare expenditure among the poor. For example, Aji et al. (2013) find out-of-pocket healthcare expenditures for *Askeskin* recipients are 11-34 per cent lower than those of for non-recipients; Sparrow et al. (2013) find *Askeskin* increases outpatient care utilisation; and Quayyum et al. (2009) find *Askeskin* provides some degree of financial protection to households in the poorest quintiles in Serang and Pandeglang districts of Banten Province that incur catastrophic payments.

### 3. Empirical strategy and data

#### 3.1. Empirical strategy

We use the following regression to estimate the effects of *Askeskin* and family hardships on micro- and small firms' performance

$$y_{ij} = \alpha + \beta D_{ij} + \gamma h_{ij} + \pi D_{ij} h_{ij} + \delta X_{ij} + \varepsilon_i \quad (1)$$

where  $y_{ij}$  is the assets (or net profits) of firm  $i$  owned by household  $j$ ;  $D_{ij}$  is an indicator of whether household  $j$  of firm  $i$  is *Askeskin* insured;  $h_{ij}$  is an indicator of whether household  $j$  of firm  $i$  experienced deaths of family members in the previous



year (family hardships);  $D_{ij}h_{ij}$  is the interaction between *Askeskin* and family hardships;  $X_{ij}$  is a vector of control variables (household-, firm-, and owner characteristics, and knowledge of health facilities that may correlate with whether an owner has *Askeskin*, whether she experienced family hardships and the assets of her firm); and  $\varepsilon_i$  is the error term. We also include a set of district fixed effects and dummy variables for whether household  $j$  of firm  $i$  has other insurance schemes. We cluster the standard errors at the district level.

To make *Askeskin* household firms and those owned by non-*Askeskin* households more comparable, we control for observed characteristics available in the data that may correlate with *Askeskin* status, family hardships, or firm performance—all from the third wave of IFLS (past characteristics) to ensure that they are good control variables. First, we control for household characteristics, the indicators the government used in the proxy means test to select *Askeskin* recipients and other variables on households' living conditions. Second, we include firm characteristics that may correlate with the variables of interest. For example, the number of (family) workers may affect the firms' assets and the probability of the household experiences family hardships. Third, we also control for owners' characteristics and households' knowledge of healthcare facilities. Owners who have a bigger household and older owners, for example, are more likely to earn more and experience family hardships. Owners who know the location of the nearest healthcare facilities are more likely to enrol to *Askeskin*, be healthier (or less likely to experience family hardships) and run their firms better (because owners and family workers are healthier).

### 3.2 Data

We use the data from the third and the fourth rounds of the Indonesian Family Life Survey (IFLS) that the RAND Corporation did in 2000 and 2007-2008, respectively. The survey covers a representative sample of about 83 per cent of the Indonesian population living in 13 of the 26 provinces in Indonesia; it collects detailed information on individual respondents, their families, their households, and the communities that they live. We use the individual- and household-level variables: businesses, assets, use of healthcare and health insurance, consumption, expenditure, housing characteristics, and demographics. To ensure we use only past characteristics as control variables, we get the control variables from IFLS-3 whereas the others from IFLS-4.<sup>5</sup>

The sample includes 6,197 firms in non-farm sector that are owned by 4,919 households; most of them are micro firms in the service sector.<sup>6</sup> We follow World Bank's definition on micro- and small firms: micro firms: 1-9 employees; and small firms: 10-49 employees (Kushnir, Mirmulstein, & Ramalho, 2010). We exclude firms that employ 50 or more workers, those owned by households that hold a health card in 2004 or earlier, lost *Askeskin* in 2006-2008, or enrolled in *Askeskin* in 2008. The working sample has 5,901 micro- and small firms.

We use two measures of firm performance (the dependent variable): assets and net profits, which we get from the non-farm business module (Book 2) of IFLS-4. Assets include all non-farm assets: land, building, vehicles, and other non-farm equipment. We construct net profits from a question on the amount of net profits generated by a business in the previous year. For those respondents who did not know their net profits, we use total revenue less total expenses as net profits; all net profits are positive.<sup>7</sup> We also use other measures of assets: equipment assets, non-equipment

assets, assets purchased, and assets sold. All the dependent variables are in Indonesian Rupiah and converted to logarithm.

We define the key variable of interest, *Askeskin* status, from a question in the health insurance module (Book 3B) of IFLS-4 on whether an individual is the policyholder or primary beneficiary of *Askeskin*. The variable is an indicator equals one if a household has at least one *Askeskin* recipient (or health card recipient) and zero otherwise.

We use six measures of family hardships: deaths in the family in the previous year; deaths in the family in the previous two years, deaths in the family in the previous three years, outpatient care, inpatient care, and traffic accidents. We construct the dummy variables for deaths in the family from a question on whether a family member “moved out” of a household because of death in 2006, 2007 and 2008, using household roster (Book K) of IFLS-4. We define outpatient care, inpatient care, and traffic accidents from the questions in adult information book (Book 3B) of IFLS-4: outpatient care is an indicator equals one if a family member visited a healthcare provider in the last four weeks and zero otherwise; inpatient care is an indicator equals one if a family member visited an inpatient care in the past 12 months and zero otherwise; and traffic accident is an indicator equals one if a family member had had a traffic accident and received treatment in the previous three years and zero otherwise.

We use other six health insurance (Book 3B of IFLS-4) as control variables in all specifications: *PT Askes* (Insurance Scheme of Civil Servants), *Astek Jamsostek* (Labour Social Insurance), employer provided health insurance, employer provided clinic, private insurance, and saving-related insurance. The indicators equal one if a household has an insurance and zero otherwise.

The household characteristics (control variables) we use are the quality of household dwelling, ownership of household assets, assistance received, and household consumption; the indicators are from the consumption module (Book 1) and the household characteristics module (Book 2 and Book K) of IFLS-3. The indicators for the quality of dwelling include whether a house has ceramic flooring, concrete roofing, masonry outer wall, electricity, piped water for drinking, its own toilet facilities, a proper garbage disposal system, and a proper sewage drain; the indicators equal one if a house has a facility and zero otherwise. The indicators for household assets are the ownership of durable goods such as a refrigerator, an electric or gas stove, a television, a self-occupied house, other buildings, non-agricultural land, livestock, vehicles, household appliances, savings, receivables, and jewellery; the indicators equal one if a household owns an asset and zero otherwise. The indicators for assistances that households received, which equal one if a household receives an assistance and zero otherwise, include whether a household has ever purchased *sembako* (nine basic foods) or goods in a ‘cheap’ market or ‘special market operation’ at a cheaper price than at the public market, utilised a village poverty letter, received assistance in the form of food or other goods from the government, non-government organisations, and community, and whether a house is self-owned. Household consumption includes the total expenditure on meat during the past week and on clothing during the past one year; the variables are in Indonesian Rupiah and converted to logarithm.<sup>8</sup>

The firm characteristics sets of dummies include whether the business a sole ownership, whether the operation of the business is fully outside home and partially outside home, urban location, the number of business, type of business, the year a business started, household members who own the business, owners outside the households who own the business, source of start-up capital, percentage of share

owned, and the number of workers when the business started. The data are from the non-farm business module (Book 2) of IFLS-4, except for the number of business that is from IFLS-3.<sup>9</sup>

The owner characteristics are household heads' gender, marital status, and highest education; households' religion, ethnical groups, the average age of household members, the number of household members, and the number of female household members; whether household members can read and write in Indonesian language or other language; and whether household members had self-treatment. The variables, except the average age of household members, are dummy variables or sets of dummies. The data are from the education module (Book 3A) and household roster (Book K) of IFLS-3.

Households' knowledge of healthcare facilities includes whether a household head knows the location of the nearest public and private hospitals, *Puskesmas*, private clinic, private physician, midwife, nurse, traditional birth attendant, traditional practitioner, pharmacy, *Posyandu*, and village post.<sup>10</sup> The control variables are dummy variables that equal one if a household knows the location of a health facility and zero otherwise; the data are from the knowledge of health and family planning service module (Book 1) of IFLS-3.

[Table 1 near here]

Table 1, which presents the summary statistics by *Askeskin* status, shows that *Askeskin* household firms and those owned by non-*Askeskin* household differ in their performance but not owners' experience of family hardships. Panel A shows that *Askeskin* household firms have statistically lower assets and net profits of about Rp 10 million and Rp 4 million (about US\$1,000 and US\$425 in 2008), respectively, compared to non-*Askeskin* household firms; their equipment assets and non-equipment

assets are also about Rp 5 million and Rp 5.5 million (about US\$530 and US\$580 in 2008) lower. Panel B shows that the proportion of household that experienced family hardships such as deaths in the family, inpatient care, and traffic accidents is similar between *Askeskin* households and non-*Askeskin* households, but *Askeskin* households are more likely to have outpatient care. Table A1 in Appendix A shows that *Askeskin* households' characteristics differ from those of non-*Askeskin* households, but the households and their firms do not differ much in ownership of other health insurance, owner characteristic, firm characteristics, and knowledge of healthcare facilities (though many differences are statistically significant).

The sample suggests that, except for firm performance and owners' household characteristics, the two groups of firms are economically similar in many respects, though many mean differences are statistically significant. The variation in firm performance, therefore, may be the result of the differences in these variables, instead of *Askeskin* status alone. When we control for the observed characteristics and the district fixed effects in the regression (as we discuss in Section 3.1), the estimates of the control variables pick up the variation in firm performance that *Askeskin* does not explain, which make the two groups of firms more comparable.

## **4. Results**

### ***4.1 The effects of Askeskin and family hardships on firm performance***

Table 2 reports the basic results for the regressions of firms' assets or net profits on *Askeskin* and family hardships, which we define as having deaths in the family in the previous year. Columns in each panel are the estimates of the effects of *Askeskin* and family hardships, with and without control variables. We control for district fixed

effects and other insurance held by the households in column 1; in the other columns, we add household characteristics (column 2), firm characteristics (column 3), owner characteristics and knowledge of health facilities (column 4) as control variables.

[Table 2 near here]

The estimates in Panel A of Table 2 show little evidence that *Askeskin* may cushion the adverse effects of deaths in the family in the previous year on firms' assets. Column 1 shows, in a regression that controls only district fixed effects and other insurance held by the households, *Askeskin* household firms cope better with the deaths in the family (the estimate of the interaction term is positive and statistically significant). We get similar estimates when we also control for household-, firm-, and owner characteristics, as well as knowledge of healthcare facilities (in columns 2, 3 and 4, respectively), though those in the third and the fourth columns are statistically insignificant. The estimate in column 4 does not show evidence that *Askeskin* protects firms' assets against deaths in the family (the estimate of the interaction term is positive and large but statistically insignificant). Deaths in the family are correlated with 91 per cent (the sum of the estimates of deaths in the family and the interaction term) higher assets for *Askeskin* household firms, but the estimate is statistically significant.

Panel B, in which we use net profits as the dependent variable, shows some evidence that *Askeskin* helps firms recover from deaths in the family in the previous year. Column 1 shows that, in a regression with district fixed effects and other insurance held by the households as control variables, *Askeskin* household firms cope better with deaths in the family (the estimate of the interaction term is large, positive and statistically significant). It remains statistically significant even after we control for household-, firm- and owner characteristics, as well as knowledge of healthcare

facilities (columns 2-4); in the most complete specification, the estimate of the interaction term is large, 1.45; it is statistically significant at ten per cent level.

In sum, we find some evidence that owners of micro and small firms may be better able to cope with deaths in the family in the previous year if their households are insured. In the regressions that control for all available observed characteristics, we find *Askeskin* reduces possible adverse effects of deaths in the family in the previous year on net profits but not assets. These results support literature that finds social health insurance effective in providing financial risk protection (Levine, Polimeni, & Ramage, 2015; Wagstaff & Yu, 2007; Wagstaff, 2010).

We should cautiously interpret these estimates because the evidence is statistically weak; moreover, the regressions may not fully overcome the selection bias because some characteristics are unobservable. The estimates of *Askeskin* in both panels are negative and statistically significant, which suggests, among households that did not experience family hardships, *Askeskin* households have smaller firms. The magnitudes of the estimates are large, more than 0.4 in the assets' regressions and more than 0.2 in the net profits ones. The estimates of family hardships in Panel A are large and negative but they are statistically insignificant, which means, among non-*Askeskin* households, family hardships correlate with smaller firms; the estimates in Panel B are smaller but also statistically insignificant.

#### ***4.2. Use of alternative measures of family hardships***

We examine whether the results are robust to the use of alternative measures of family hardships: deaths in the family in the past couple of years and sickness in the family.

We use deaths in the family that happened in the previous two or three years to incorporate family hardships happened in earlier periods.<sup>11</sup> We define three dummy



variables for sickness in the family: (i) whether a household had at least one family members who had outpatient care in the previous month, (ii) whether a household had at least one family members who had inpatient care (hospitalisation) in the previous year, and (iii) whether a household had at least one family members who experienced a traffic accident and received treatment in the previous three years.

[Table 3 near here]

Table 3, which presents the regressions of firms' assets on *Askeskin*, other measures of family hardships and the interaction terms, shows little evidence that *Askeskin* household firms cope better with family hardships. In Panel A, we find no evidence that *Askeskin* reduces the adverse effects of deaths in the family in the previous two years on firms' assets. In column 4, the sum of the three estimates show that, compared to non-*Askeskin* household firms that did not experience deaths in the family in the previous two years (the benchmark category), the family hardship correlates with 48 per cent higher assets for *Askeskin* household firms, but the estimate of the interaction term is statistically insignificant. In Panel B, in which we use deaths in the family in the previous three years as the measure of family hardships, we get similar results; the estimates of the interaction term are in fact negative but none of them is statistically significant.

In Panel C, however, we find evidence that *Askeskin* helps the firms recover from the owners' outpatient care need. The effect is large and positive; the estimate of the interaction term is statistically significant even after we control for all available observed characteristics; the sum of the estimates of outpatient care and the interaction term suggests that assets of firms whose owners had the need of outpatient care are 37 per cent higher if the owners or their households are *Askeskin* recipients. The estimates of *Askeskin* show that, among firms whose owners did not experience family hardships,

*Askeskin* household firms have smaller assets (the estimates are negative and statistically significant). In the regression that includes all control variables, the negative and statistically significant estimate of outpatient care suggests that, among firms owned by non-*Askeskin* households, the hardship reduces assets of the firms by 55 per cent.

Panel D, in which we define family hardships using inpatient care, shows no evidence that *Askeskin* protects firms against the owners' need of inpatient care. None of the estimates of the interaction term is statistically significant although the estimates are large and positive. Likewise, the estimates of inpatient care are statistically insignificant, as indicated by their large standard errors. The estimates of *Askeskin* show, among firms owned by households that did not experience family hardships, *Askeskin* household firms have smaller assets. In column 4, the sum of the three estimates suggests that inpatient care need of the owners and *Askeskin* jointly correlate with 17 per cent higher assets, but we fail to reject the null hypothesis of the effect of inpatient care does not differ by *Askeskin* status.

In Panel E, the results show no evidence that *Askeskin* helps firms cope with the effects from traffic accidents experienced by owners (the estimates of the interaction term are negative but statistically insignificant). The estimates of *Askeskin* are negative and statistically significant like those in Panels C and D; the estimates of traffic accidents are statistically insignificant.

[Table 4 near here]

Table 4, which uses net profits as the dependent variable, shows evidence that *Askeskin* reduces possible adverse effects of outpatient care and traffic accidents, but not those of other measures of family hardships. In Panels A-B, we use deaths in the family in the previous two and three years, respectively, to define family hardships, and

we do not find the effect of deaths in the family in the previous two or three years changes by *Askeskin* status; the estimates of the interaction terms are positive but statistically insignificant after we control for all available characteristics: experiencing deaths in the previous two years and three years, respectively, correlate with 52 per cent and 38 per cent higher net profits if owners are *Askeskin* households. We do not find *Askeskin* and deaths in the family matter either in Panel A; however, the estimate of *Askeskin* is statistically significant at ten per cent level in Panel B in the estimation that includes all available control variables.

Panel C, which uses outpatient care to define family hardships, shows a decrease in the adverse effects of outpatient care, by about 44 per cent among *Askeskin* household firms. The estimates of the interaction term are positive and statistically significant in the regressions even after we control for all available characteristics. The estimates of *Askeskin* suggest that, among households that did not experience family hardships, *Askeskin* household firms have smaller net profits. In the regression that we control for all available characteristics, the estimate of outpatient care shows, among firms owned by non-*Askeskin* households, outpatient care reduces net profits by 18 per cent (the estimate is positive and statistically significant).

In Panel D, in which we use inpatient care to define family hardships, shows no evidence that *Askeskin* helps firms withstand the family hardship (the estimate of the interaction term is negative in the last column but statistically insignificant). The estimates of *Askeskin* are negative and statistically significant, implying that, among firms owned by households that did not experience the hardship, *Askeskin* household firms have smaller net profits. We do not find inpatient care matters for the firms' net profits (its estimates are positive but statistically insignificant).

Panel E, which reports the effects of *Askeskin* and traffic accidents, shows some evidence that *Askeskin* reduces possible adverse effects of traffic accidents experienced by owners on net profits in all the regressions. The estimates of the interaction term are large, positive and statistically significant at ten per cent level in the most preferred estimation (column 4): net profits of *Askeskin* household firms are 13 per cent higher. We find, among households that did not experience traffic accidents, *Askeskin* household firms have smaller net profits; the estimate of *Askeskin* is negative and statistically significant. The estimates of traffic accidents are statistically insignificant, indicating no evidence that the hardship affects net profits.

#### **4.3 Subsamples**

Table 5 presents the regression by subsample: micro firms that hire fewer than ten workers and those whose assets are below Rp 50 million. The numbers in each column are the estimates of the interaction between *Askeskin* and family hardships (see Tables A3 and A4 in Appendix A for full results).

[Table 5 near here]

Panel A, which presents the results of micro firms with fewer than ten workers, shows evidence that *Askeskin* household firms cope better with deaths in the family in the previous year and owners' need of outpatient care. We find evidence that *Askeskin* reduces the adverse effects of deaths in the family in the previous on net profits but not firms' assets. We also find *Askeskin* protects firms' assets and net profits against the adverse effect of owners' need of outpatient care; the estimates of the interaction terms are positive and statistically significant.

In Panel B, in which we use the sample of micro firms with assets below Rp 50 million, we find some evidence that *Askeskin* helps owners recover from deaths in the

family in the previous year and owners' need of outpatient care, but the results differ by the measures of firm performance. We find evidence that *Askeskin* protects firms' profits and assets, respectively, against deaths in the family in the previous year and owners' outpatient care need.

To summarise, the results by subsample are similar to the basic results. We find some evidence that *Askeskin* protects firms' net profits against death in the family in the previous year and outpatient care, particularly for micro firms with fewer than ten workers. As for firms' total assets, we find evidence that *Askeskin* reduces the adverse effects of outpatient care but not deaths in the family in the previous year.

## **5. Conclusion**

*Askeskin* seems to partially help micro- and small firms in Indonesia recover from the owners' experience of family hardships: it absorbs some adverse effects of recent deaths in the family (in the previous year) and traffic accidents on net profits but not on assets. It also reduces some adverse effects of owners' outpatient care need on assets and net profits: with *Askeskin*, assets and net profits, respectively, are 92 and 44 per cent higher among the firms whose owners suffering the family hardship. It may help owners withstand other types of hardships (the magnitude of most estimates of the interaction terms are large), but the estimates are statistically insignificant. Analyses by firm size are similar: *Askeskin* may help micro- and small firms recover from recent deaths in the family, particularly net profits—the estimates of the interaction term are large but some are statistically insignificant.

The evidence that *Askeskin* partially reduces the adverse effects of family hardship on firm performance is in line with the empirical literature of internal finance. Internal finance growth theory suggests that, with limited access to external finance,

small firms' growth is sensitive to the availability of internal finance; and several papers highlight that public policies can help small firms grow by obtaining external finance or increasing productivity (Beck, Demirgüç-Kunt, & Maksimovic, 2005, 2008; Beck, Demirgüç-Kunt, Laeven, & Maksimovic, 2006; Guariglia, Liu, & Song, 2011). Our results may imply that social health insurance protects micro- and small firms' internal funds through reducing healthcare spending and the needs of costly coping strategy (Wagstaff & Prahlan, 2006; Wagstaff & Yu, 2007), as well as improving owners' and family workers' human capital and productivity (Wagstaff & Prahlan, 2006; Wang et al., 2009).

The findings that family hardships (that is, outpatient care) reduce assets and net profits among firms owned by uninsured households are in line with the literature of family hardships. Sickness or health shocks can reduce the income of micro- and small firms through the trade-off between catastrophic health expenditures (Axel, 2016) and reduction in households' productivity (Isoto, Sam, and Kraybill, 2016) and household heads' labour hour worked (Nguyet and Mangyo, 2010). In contrast to Parinduri (2014)'s the findings on micro- and small firms in Indonesia, we find sickness in the family (that is, outpatient care) reduces assets and net profits, but we do not find deaths in the family matter for firms' growth. One reason is that perhaps the households are able to adjust their labour supply following the loss of a household member (Liu, 2013) or health shocks are more likely to induce sale of assets to pay treatment costs (Yilma et al., 2015). Another possible reason is because we use different measures of family hardships.

*Askeskin* seems to reduce assets and net profits among micro- and small firms whose households did not experience family hardships. It is possible that recipients of social health insurance are more likely to seek care even though they do not need to. A

more generous insurance scheme may encourage people to use healthcare services and more expensive care, which can increase the risk of high out-of-pocket expenditures; moreover, healthcare providers may try to increase out-of-pocket payments through inducing demand for uncovered services (Sparrow, Suryahadi, & Widyanti 2010; Wagstaff et al., 2009; Wagstaff & Lindelow, 2008). It may also be because we have not completely controlled for differences between *Askeskin*- and non-*Askeskin* recipients.

The findings imply that social health insurance, through speeding recovery process, may improve micro- and small firms' financial viability, in which many programmes such as microcredit and microinsurance have been focusing on. Given its wide coverage and outreach, social health insurance may stimulate the growth of micro- and small firms, hence, job creation and economic growth. Expansion of social health insurance programmes, therefore, may yield not only a healthier population but also create some spillover benefits.

We can see the findings in this paper as potential benefits of social health insurance: It empowers owners of micro- and small firms. However, for policy implications of our results, we need to consider several limitations. One, our analysis relies on cross-sectional data, which remains vulnerable to heterogeneity of unobserved factors that may affect total assets and net profits, whether a person enrolls in *Askeskin*, and whether she experienced a family hardship. We do control for all available variables in the data and examine robustness of the estimates, but limitations remain: we may not fully overcome the selection bias because some characteristics are unobservable or unavailable. Two, we only measure the short-term effect of *Askeskin* from 2006 to 2008. Initial implementation of *Askeskin* experienced various shortcomings, which may affect the selection of right target group for the insurance. Besides, because the Indonesian government is reforming the *Askeskin* programme and

rolling it out to other target groups, its impact may differ from those we found in this paper, so future work can examine its effects as it evolves. Three, we do not control for supply-side factors such as quality of public healthcare, which may affect the decision of recipients to use *Askeskin*, and we cannot measure the extent to which the supply-side factors contribute to the variation in firm performance.

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<sup>1</sup> *Askes* stands for *Asuransi Kesehatan* (Health Insurance for Civil Servants); *Asabri* stands for *Asuransi Social Angkatan Bersenjata Republik Indonesia* (Health Insurance for the Armed Forces and Police), *Taspen* stands for *Dana Tabungan and Asuransi Pegawai Negeri* (The Fund for Civil Servants); and *Jamsostek* stands for *Jaminan Social Tenaga Kerja* (Social Insurance for Private Sector Workers). The *Askes* scheme covers civil servants and their families, as well as retirees of the civil service, including those from the military. All the beneficiaries contribute two per cent of their base salary regardless of the number of dependants. *Jamsostek* is the health insurance for formal private sector workers. The scheme requires employers to contribute three to six per cent of private sector workers salaries, depending on the marital status of the beneficiary (ILO, 2008).

<sup>2</sup> The premium rate increased to Rp 6,500 per person per month under *Jamkesmas* in 2007. After the programme evolved into *JKN*, only the poor and the near poor received free coverage, other insurance programmes (that is, for civil servants, the military, the police, pensioners, and staff of state enterprises) involved financial contributions by both the employer and the employee (Mboi, 2015).

<sup>3</sup> The indicators are: (1) floor type; (2) wall and roof type; (3) toilet facility; (4) electrical source; (5) cooking fuel source; (6) drinking water source; (7) frequency of meat consumption; (8) frequency of meal consumption; (9) frequency of purchase of new clothes; (10) access to public health facilities; (11) primary source of income; (12) educational attainment of household head; (13) amount of savings and type of assets; and (14) floor



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width. Unfortunately, the data used to devise the official proxy-means test are not available to researchers (Sumarto & Bazzi 2011).

<sup>4</sup> The government has tried to improve the *Askeskin* programme. It refined the targeting system, through the National Targeting System and Unified Database for Social Protection Programmes, to minimise targeting errors and reduce leakages and under-coverage. It also improved healthcare delivery and financing through upgrading healthcare facilities, expanding the number of beds at hospitals, improving service quality of healthcare providers, and improving provision of healthcare services in rural and remote areas. Moreover, in 2011, the government enacted the *BPJS (Badan Penyelenggara Jaminan Sosial, Social Security Administrator Body)* law to pool and harmonise fund reimbursements and administration of all insurance schemes in Indonesia (Harimurti et al., 2013).

<sup>5</sup> The data are available at <http://www.rand.org/labor/FLS/IFLS/html>. See Strauss et al. (2004), Strauss et al. (2009a), and Thomas et al. (2012) for more details.

<sup>6</sup> In this paper, we exclude farm businesses because firm characteristics, which we use as control variables, are different between non-farm and farm businesses.

<sup>7</sup> In the IFLS, respondents were first asked the amount of net profits, and only those who did not have an answer were prompted the amount of total revenue and total expenses. Very few respondents answer the questions on total revenue and total expenses.

<sup>8</sup> *Sembako (Sembilan Bahan Pokok)* refers to nine necessities that include rice, granulated sugar, cooking oil and butter, meat, chicken eggs, milk, corn, kerosene, and salt (based on the decision by Ministry of Industry and Trade, Indonesia, no. 115/mpp/kep/2/1998). The village poverty letter (*Surat Keterangan Tidak Mampu*) is a certificate indicating a citizen is economically less capable, not capable, or poor.

<sup>9</sup> We note that good controls are those variables that have been fixed at the time *Askeskin* was determined, but we do not use the firm characteristics from IFLS-3 because of large sample attrition by over 2,000 observations, owing to unmatched firm identity between IFLS-3 and

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IFLS-4. Since the firm characteristics we use are unlikely to vary by *Askeskin* status, they are thus reliable control variables.

<sup>10</sup> *Puskesmas* stands for *Pusat Kesehatan Masyarakat*, Community Health Clinics. *Posyandu* is sub-community health clinic.

<sup>11</sup> For the specifications of deaths in the family in the previous two years and the previous three years, we drop the households that received *Askeskin* for the first time in 2007 and 2008, and those who lost *Askeskin* in 2006, 2007 and 2008, respectively.

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**Table 1.** Summary statistics

	Mean		
	With <i>Askeskin</i>	Without <i>Askeskin</i>	Difference
	(1)	(2)	(2)-(1) (3)
<b>A. Dependent Variables</b>			
Assets	8.20 (70.07)	18.92 (76.12)	10.72*** (3.09)
Net Profits	6.45 (23.22)	10.59 (29.11)	4.14*** (1.17)
Equipment assets	2.61 (12.86)	7.83 (34.11)	5.22*** (1.33)
Non-equipment assets	5.59 (63.70)	11.10 (62.67)	5.51** (2.57)
<b>B. Family Hardships</b>			
Deaths in the family	0.001 (0.04)	0.004 (0.06)	0.003 (0.003)
Outpatient care	0.41 (0.49)	0.34 (0.48)	-0.06*** (0.02)
Inpatient care	0.09 (0.29)	0.08 (0.28)	-0.01 (0.01)
Traffic accidents	0.13 (0.33)	0.12 (0.33)	-0.00 (0.01)
Number of observations	672	5229	5901

*Notes:* The numbers are means. The numbers in parentheses in columns 1 and 2 are standard deviations; the numbers in parentheses in column 3 are standard errors. The dependent variables in Panel A are in millions of Indonesian Rupiah. The asterisks \*\*\* and \*\* indicate statistical significance at 1% and 5%, respectively.

**Table 2.** The effects of *Askeskin* and family hardships on assets and net profits

Dependent variable (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Assets</b>					
<i>Askeskin</i>	(1)	-1.05*** (0.23)	-0.62*** (0.22)	-0.46** (0.21)	-0.47** (0.23)
Deaths in the family	(2)	-0.94 (1.28)	-0.86 (1.37)	-0.98 (1.37)	-1.19 (1.41)
Deaths × <i>Askeskin</i>	(3)	4.68*** (1.29)	3.55*** (1.53)	0.38 (1.63)	2.10 (1.78)
Number of observations		5,851	5,783	5,649	5,519
Adjusted- $R^2$		0.05	0.07	0.18	0.19
<b>B. Net profits</b>					
<i>Askeskin</i>	(4)	-0.40*** (0.11)	-0.23** (0.12)	-0.22** (0.10)	-0.28** (0.10)
Deaths in the family	(5)	-0.27 (0.47)	-0.01 (0.47)	-0.09 (0.37)	-0.04 (0.41)
Deaths × <i>Askeskin</i>	(6)	2.07*** (0.49)	1.56*** (0.59)	1.11* (0.67)	1.45* (0.78)
Number of observations		5,851	5,783	5,649	5,519
Adjusted- $R^2$		0.07	0.07	0.16	0.16
Control variables:					
Household characteristics		.	✓	✓	✓
Firm characteristics		.	.	✓	✓
Owner characteristics; knowledge of healthcare facilities		.	.	.	✓

*Notes:* The numbers in each column are the estimates of regressions of assets or net profits on *Askeskin*, deaths in the family in the previous year, and the interaction between *Askeskin* and deaths in the family, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. Deaths in the family equals one if at least one family member died in the previous year and zero if otherwise. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table 3.** Other measures of family hardships and assets as the dependent variable

Dependent variable: Assets (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Deaths in the family in the previous two years</b>					
<i>Askeskin</i>	(1)	-0.86*** (0.24)	-0.43* (0.24)	-0.41* (0.24)	-0.41 (0.25)
Deaths in the family	(2)	0.14 (0.50)	0.14 (0.50)	0.07 (0.47)	0.19 (0.47)
Deaths $\times$ <i>Askeskin</i>	(3)	0.75 (1.32)	1.06 (1.22)	0.63 (1.07)	0.70 (1.10)
Number of observations		5,723	5,659	5,530	5,406
<b>B. Deaths in the family in the previous three years</b>					
<i>Askeskin</i>	(4)	-0.80*** (0.27)	-0.38 (0.26)	-0.32 (0.27)	-0.30 (0.28)
Deaths in the family	(5)	0.29 (0.33)	0.34 (0.32)	0.22 (0.31)	0.35 (0.32)
Deaths $\times$ <i>Askeskin</i>	(6)	-0.01 (0.11)	0.12 (1.05)	-0.39 (1.01)	-0.56 (1.08)
Number of observations		5,644	5,580	5,452	5,329
<b>C. Outpatient care</b>					
<i>Askeskin</i>	(7)	-1.38*** (0.29)	-0.90*** (0.27)	-0.77*** (0.27)	-0.80*** (0.29)
Outpatient care	(8)	-0.18 (0.16)	-0.25 (0.16)	-0.46*** (0.16)	-0.55*** (0.16)
Outpatient care $\times$ <i>Askeskin</i>	(9)	0.84** (0.40)	0.73* (0.41)	0.82** (0.39)	0.92** (0.41)
Number of observations		5,849	5,781	5,647	5,517
<b>D. Inpatient care</b>					
<i>Askeskin</i>	(10)	-1.14*** (0.24)	-0.69*** (0.23)	-0.54*** (0.22)	-0.55** (0.23)
Inpatient care	(11)	-0.06 (0.34)	-0.13 (0.33)	-0.18 (0.31)	-0.30 (0.32)
Inpatient care $\times$ <i>Askeskin</i>	(12)	0.96 (0.71)	0.84 (0.70)	0.92 (0.64)	1.02 (0.67)
Number of observations		5,851	5,783	5,649	5,519

**Table 3.** Other measures of family hardships and assets as the dependent variable  
(continued)

Dependent variable: Assets (in logarithm)		(1)	(2)	(3)	(4)
E. Traffic accidents					
<i>Askeskin</i>	(13)	-1.01*** (0.24)	-0.57** (0.23)	-0.40* (0.22)	-0.40* (0.24)
Traffic accident	(14)	0.25 (0.25)	0.15 (0.25)	0.05 (0.24)	0.12 (0.23)
Traffic acc × <i>Askeskin</i>	(15)	-0.30 (0.65)	-0.35 (0.65)	-0.42 (0.56)	-0.47 (0.60)
Number of observations		5,851	5,783	5,649	5,519
Control variables:					
Household characteristics		.	✓	✓	✓
Firm characteristics		.	.	✓	✓
Owner characteristics; knowledge of healthcare facilities		.	.	.	✓

*Notes:* The numbers in each column are the estimates of regressions of assets on *Askeskin*, a measure of family hardships, and the interaction between *Askeskin* and family hardships, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. In Panel A, deaths in the family equal one if at least one family member died in the previous two years and zero otherwise. The sample also excludes those who enrolled in *Askeskin* in 2007. In Panel B, deaths in the family equal one if at least one family member died in the previous three years and zero otherwise. The sample also excludes those who enrolled in *Askeskin* in 2006-2007. In Panel C, outpatient care equals one if a household had at least one family member had outpatient care in the previous month and zero otherwise. In Panel D, inpatient care equals one if a household had at least one family member hospitalised in the previous year and zero otherwise. In Panel E, traffic accidents equal one if a household had at least one family member had a traffic accident and received treatment in the previous three years and zero otherwise. The adjusted- $R^2$  in columns 1, 2, 3, and 4 are 0.05, 0.07, 0.18, and 0.19, respectively. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table 4.** Other measures of family hardships and net profits as the dependent variable

Dependent variable: Net profits (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Deaths in the family in the previous two years</b>					
<i>Askeskin</i>	(1)	-0.30** (0.12)	-0.12 (0.13)	-0.15 (0.12)	-0.18 (0.12)
Deaths in the family	(2)	-0.01 (0.27)	0.01 (0.27)	-0.12 (0.25)	-0.08 (0.26)
Deaths $\times$ <i>Askeskin</i>	(3)	0.39 (0.47)	0.53 (0.44)	0.71* (0.38)	0.60 (0.44)
Number of observations		5,723	5,659	5,530	5,406
<b>B. Deaths in the family in the previous three years</b>					
<i>Askeskin</i>	(4)	-0.36*** (0.14)	-0.19 (0.15)	-0.19 (0.13)	-0.23* (0.13)
Deaths in the family	(5)	-0.14 (0.17)	-0.08 (0.17)	-0.08 (0.16)	-0.09 (0.17)
Deaths $\times$ <i>Askeskin</i>	(6)	0.56 (0.35)	0.60* (0.32)	0.49 (0.30)	0.47 (0.36)
Number of observations		5,644	5,580	5,452	5,329
<b>C. Outpatient care</b>					
<i>Askeskin</i>	(7)	-0.57*** (0.16)	-0.39** (0.17)	-0.41*** (0.16)	-0.45*** (0.16)
Outpatient care	(8)	-0.13 (0.09)	-0.15* (0.09)	-0.18** (0.08)	-0.18** (0.08)
Outpatient care $\times$ <i>Askeskin</i>	(9)	0.44** (0.22)	0.41* (0.23)	0.48** (0.20)	0.44** (0.20)
Number of observations		5,849	5,781	5,647	5,517
<b>D. Inpatient care</b>					
<i>Askeskin</i>	(10)	-0.41*** (0.12)	-0.24* (0.12)	-0.22** (0.11)	-0.27** (0.11)
Inpatient care	(11)	0.06 (0.14)	0.04 (0.14)	0.02 (0.15)	0.02 (0.16)
Inpatient care $\times$ <i>Askeskin</i>	(12)	0.06 (0.37)	0.08 (0.38)	0.00 (0.38)	-0.09 (0.40)
Number of observations		5,851	5,783	5,649	5,519

**Table 4.** Other measures of family hardships and net profits as the dependent variable (continued)

Dependent variable: Net profits (in logarithm)		(1)	(2)	(3)	(4)
E. Traffic accidents					
<i>Askeskin</i>	(13)	-0.45*** (0.12)	-0.28** (0.13)	-0.27** (0.11)	-0.34*** (0.11)
Traffic accident	(14)	0.06 (0.13)	0.04 (0.13)	-0.02 (0.12)	0.03 (0.12)
Traffic acc × <i>Askeskin</i>	(15)	0.37 (0.26)	0.38 (0.26)	0.41* (0.25)	0.44* (0.25)
Number of observations		5,851	5,783	5,649	5,519
Control variables:					
Household characteristics		.	✓	✓	✓
Firm characteristics		.	.	✓	✓
Owner characteristics; knowledge of healthcare facilities		.	.	.	✓

*Notes:* The numbers in each column are the estimates of regressions of net profits on *Askeskin*, a measure of family hardships, and the interaction between *Askeskin* and family hardships, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. In Panel A, deaths in the family equal one if at least one family member died in the previous two years and zero otherwise. The sample also excludes those who enrolled in *Askeskin* in 2007. In Panel B, deaths in the family equal one if at least one family member died in the previous three years and zero otherwise. The sample also excludes those who enrolled in *Askeskin* in 2006-2007. In Panel C, outpatient care equals one if a household had at least one family member had outpatient care in the previous month and zero otherwise. In Panel D, inpatient care equals one if a household had at least one family member hospitalised in the previous year and zero otherwise. In Panel E, traffic accidents equal one if a household had at least one family member had a traffic accident and received treatment in the previous three years and zero otherwise. The adjusted- $R^2$  in columns 1, 2, 3, and 4 are 0.06, 0.07, 0.16, and 0.16, respectively. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table 5.** Subsamples

Dependent variable (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Micro firms with fewer than ten workers</b>					
<i>Assets</i>					
Deaths × <i>Askeskin</i>	(1)	4.65*** (1.29)	3.59** (1.53)	0.30 (1.63)	2.01 (1.72)
Outpatient care × <i>Askeskin</i>	(2)	0.83** (0.39)	0.73* (0.41)	0.81** (0.40)	0.85** (0.41)
<i>Net Profits</i>					
Deaths × <i>Askeskin</i>	(3)	2.02*** (0.47)	1.51*** (0.58)	0.96 (0.66)	1.32* (0.74)
Outpatient care × <i>Askeskin</i>	(4)	0.40* (0.21)	0.37* (0.22)	0.46** (0.20)	0.43** (0.20)
Number of observations		5,781	5,713	5,579	5,450
<b>B. Micro firms with assets below Rp 50 million</b>					
<i>Assets</i>					
Deaths × <i>Askeskin</i>	(5)	5.21*** (1.33)	3.78** (1.52)	0.59 (1.70)	2.45 (1.85)
Outpatient care × <i>Askeskin</i>	(6)	0.79** (0.39)	0.70* (0.41)	0.79** (0.39)	0.77* (0.41)
<i>Net profits</i>					
Deaths × <i>Askeskin</i>	(7)	2.29*** (0.45)	1.49*** (0.57)	0.98* (0.55)	1.29** (0.63)
Outpatient care × <i>Askeskin</i>	(8)	0.27 (0.21)	0.24 (0.22)	0.32 (0.20)	0.27 (0.20)
Number of observations		5,420	5,360	5,236	5,113
Control variables:					
Household characteristics		.	✓	✓	✓
Firm characteristics		.	.	✓	✓
Owner characteristics; knowledge of healthcare facilities		.	.	.	✓

*Notes:* The numbers in each column are the estimates of the interaction between *Askeskin* and family hardships, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. Deaths in the family equals one if at least one family member died in the previous year and zero otherwise. Outpatient care equals one if a household had at least one family member had outpatient care in the previous month and zero otherwise. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

## Appendix A

**Table A1.** Summary statistics

	Mean		Difference (2)-(1) (3)
	With <i>Askeskin</i> (1)	Without <i>Askeskin</i> (2)	
<b>A. Household Characteristics</b>			
Purchases goods at a cheaper price	0.58 (0.49)	0.34 (0.48)	-0.24*** (0.02)
Receives community assistance	0.06 (0.23)	0.03 (0.16)	-0.03*** (0.01)
Receives assistance from government	0.07 (0.26)	0.03 (0.18)	-0.04*** (0.01)
House self-owned	0.81 (0.39)	0.82 (0.38)	0.01 (0.02)
Has electricity	0.91 (0.29)	0.95 (0.22)	0.04*** (0.01)
Has piped water for drinking	0.24 (0.42)	0.30 (0.46)	0.07*** (0.02)
Has own toilet facilities	0.52 (0.50)	0.72 (0.45)	0.20*** (0.02)
Disposes garbage in trash can	0.21 (0.40)	0.29 (0.46)	0.09*** (0.02)
Uses letter for the poor	0.11 (0.31)	0.05 (0.21)	-0.06*** (0.01)
Drains sewage in drainage ditch	0.44 (0.50)	0.55 (0.50)	0.10*** (0.02)
Owns a refrigerator	0.05 (0.21)	0.19 (0.39)	0.14*** (0.02)
Owns an electric/gas stove	0.03 (0.18)	0.16 (0.37)	0.13*** (0.01)
Owns a television	0.53 (0.50)	0.72 (0.45)	0.19*** (0.02)
Floor made of ceramic	0.08 (0.28)	0.20 (0.40)	0.12*** (0.02)
Wall made of masonry	0.55 (0.50)	0.72 (0.45)	0.17*** (0.02)
Concrete roofing	0.68 (0.47)	0.66 (0.47)	-0.01 (0.02)



**Table A1.** Summary statistics (continued)

	Mean		
	With <i>Askeskin</i> (1)	Without <i>Askeskin</i> (2)	Difference (2)-(1) (3)
<b>A. Household Characteristics</b>			
Owns the land and self-occupied house	0.81 (0.39)	0.83 (0.38)	0.01 (0.02)
Owns other house/building	0.07 (0.26)	0.14 (0.34)	0.06*** (0.01)
Owns non-agricultural land	0.13 (0.34)	0.20 (0.40)	0.07*** (0.02)
Owns livestock	0.03 (0.17)	0.03 (0.17)	0.00 (0.01)
Owns vehicles	0.41 (0.49)	0.53 (0.50)	0.12*** (0.02)
Owns household appliances	0.74 (0.44)	0.88 (0.33)	0.14*** (0.01)
Has savings	0.23 (0.42)	0.35 (0.48)	0.12*** (0.02)
Owns receivables	0.10 (0.30)	0.16 (0.36)	0.06*** (0.01)
Owns jewellery	0.59 (0.49)	0.68 (0.47)	0.09*** (0.02)
Expenditure on clothes	0.28 (0.42)	0.44 (0.74)	0.16*** (0.03)
Expenditure on meat	0.01 (0.02)	0.02 (0.04)	0.01*** (0.001)
<b>B. Owns Other Insurance</b>			
Health insurance for civil servants ( <i>PT ASKES</i> )	0.05 (0.23)	0.11 (0.31)	0.05*** (0.01)
Labour social insurance ( <i>ASTEK</i> <i>Jamsostek</i> )	0.05 (0.22)	0.08 (0.27)	0.03** (0.01)
Employer provided health insurance	0.02 (0.13)	0.03 (0.17)	0.01* (0.01)
Employer provided clinic	0.01 (0.10)	0.02 (0.14)	0.01 (0.01)
Private insurance	0.01 (0.09)	0.02 (0.16)	0.02*** (0.01)
Saving-related insurance	0.00 (0.00)	0.00 (0.06)	0.00 (0.00)

**Table A1.** Summary statistics (continued)

	Mean		
	With <i>Askeskin</i> (1)	Without <i>Askeskin</i> (2)	Difference (2)-(1) (3)
<b>C. Firm Characteristics</b>			
Number of business	0.84 (0.77)	0.94 (0.84)	0.10*** (0.03)
Year business started	1997.60 (10.63)	1998.58 (9.78)	0.97** (0.41)
Number of workers	0.93 (1.66)	1.29 (2.39)	0.35*** (0.09)
Percentage of share	98.85 (9.14)	98.27 (10.50)	-0.58 (0.42)
Sole ownership	0.98 (0.13)	0.97 (0.17)	-0.01* (0.01)
Operation of business is all outside home	0.56 (0.50)	0.51 (0.50)	-0.04** (0.02)
Operation of business is partially outside home	0.25 (0.43)	0.24 (0.42)	-0.01 (0.02)
Urban location	0.47 (0.50)	0.53 (0.50)	0.07*** (0.02)
Start-up capital (savings)	0.42 (0.49)	0.52 (0.50)	0.10*** (0.02)
Start-up capital (family members)	0.39 (0.49)	0.35 (0.48)	-0.04** (0.02)
Start-up capital (other owners)	0.01 (0.11)	0.02 (0.13)	0.01 (0.01)
Start-up capital (banks)	0.02 (0.13)	0.03 (0.17)	0.01** (0.01)
<b>D. Owner Characteristics</b>			
Household size	6.30 (2.78)	6.13 (2.80)	-0.17 (0.12)
Average age of household member	29.67 (11.57)	29.50 (9.87)	-0.17 (0.41)
Male household head	0.84 (0.36)	0.86 (0.35)	0.02 (0.01)
Household head is married	0.82 (0.38)	0.84 (0.37)	0.01 (0.02)
Number of female household members	1.61 (1.88)	1.56 (1.89)	-0.05 (0.08)

**Table A1.** Summary statistics (continued)

	Mean		
	With <i>Askeskin</i> (1)	Without <i>Askeskin</i> (2)	Difference (2)-(1) (3)
D. Owner Characteristics			
Religion: Islam	0.94 (0.23)	0.89 (0.32)	-0.06*** (0.01)
High school education	0.12 (0.32)	0.19 (0.39)	0.08*** (0.02)
Can read	0.93 (0.26)	0.97 (0.17)	0.04*** (0.01)
Can write	0.92 (0.27)	0.97 (0.18)	0.05*** (0.01)
E. Knowledge of healthcare facilities			
Knows the location of a public hospital	0.75 (0.43)	0.79 (0.41)	0.04** (0.02)
Knows the location of a private hospital	0.49 (0.50)	0.55 (0.50)	0.07*** (0.02)
Knows the location of <i>Puskesmas</i>	0.94 (0.23)	0.94 (0.24)	-0.00 (0.01)
Knows the location of a private clinic	0.53 (0.50)	0.58 (0.49)	0.05** (0.02)
Knows the location of a private physician	0.79 (0.41)	0.78 (0.41)	-0.00 (0.02)
Knows the location of a midwife	0.37 (0.48)	0.34 (0.47)	-0.03* (0.02)
Knows the location of a nurse	0.69 (0.46)	0.58 (0.49)	-0.11*** (0.02)
Knows the location of a traditional birth attendant	0.28 (0.45)	0.26 (0.44)	-0.02 (0.02)
Knows the location of a traditional practitioner	0.61 (0.49)	0.67 (0.47)	0.06*** (0.02)
Knows the location of a pharmacy	0.82 (0.39)	0.79 (0.41)	-0.03* (0.02)
Knows the location of <i>Posyandu</i>	0.23 (0.42)	0.24 (0.43)	0.01 (0.02)
Number of observations	672	5229	5901

*Notes:* The numbers are means. The numbers in parentheses in columns 1 and 2 are standard deviations; the numbers in parentheses in column 3 are standard errors. Expenditure on clothes and meat in Panel A are in millions of Indonesian Rupiah. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table A2.** Other measures of firm performance

Dependent variable (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Equipment assets</b>					
<i>Askeskin</i>	(1)	-0.76*** (0.22)	-0.42** (0.23)	-0.25 (0.22)	-0.25 (0.23)
Deaths in the family	(2)	-0.14 (1.12)	0.02 (1.19)	-0.20 (1.17)	-0.07 (1.19)
Deaths × <i>Askeskin</i>	(3)	3.89*** (1.13)	2.52* (1.37)	-1.34 (1.52)	-0.61 (1.68)
<b>B. Non-equipment assets</b>					
<i>Askeskin</i>	(4)	-1.52*** (0.27)	-0.89*** (0.28)	-0.70** (0.28)	-0.67** (0.28)
Deaths in the family	(5)	0.21 (1.50)	-0.51 (1.54)	-0.34 (1.50)	-1.24 (1.48)
Deaths × <i>Askeskin</i>	(6)	-1.43 (1.53)	-0.08 (1.95)	-3.99* (2.32)	-3.06 (2.43)
<b>C. Assets purchased</b>					
<i>Askeskin</i>	(7)	-0.48* (0.28)	-0.42 (0.29)	-0.17 (0.31)	-0.17 (0.31)
Deaths in the family	(8)	0.27 (1.45)	0.55 (1.59)	1.29 (1.86)	1.39 (1.93)
Deaths × <i>Askeskin</i>	(9)	-1.37 (1.50)	-2.01 (1.86)	-3.33 (2.27)	-2.86 (2.40)
<b>D. Assets sold</b>					
<i>Askeskin</i>	(10)	-0.04 (0.13)	0.02 (0.14)	0.02 (0.15)	0.03 (0.16)
Deaths in the family	(11)	-0.34** (0.17)	-0.31 (0.20)	-0.24 (0.21)	-0.19 (0.25)
Deaths × <i>Askeskin</i>	(12)	0.47* (0.26)	0.08 (0.50)	0.20 (0.61)	0.55 (0.69)
Observations		5,851	5,783	5,649	5,519
Control variables:					
Household characteristics		.	✓	✓	✓
Firm characteristics		.	.	✓	✓
Owner characteristics; knowledge of health facilities		.	.	.	✓

*Notes:* The numbers in each column are the estimates of OLS regressions of the measures of firm performance on *Askeskin*, deaths in the family in the previous year, and the interaction between *Askeskin* and deaths in the family, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. Deaths in the family equal one if at least one family member died in the previous year and zero otherwise. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table A3.** Using micro firms with fewer than ten workers

Dependent variable (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Deaths in the family in the previous years</b>					
<i>Dependent variable: Assets</i>					
<i>Askeskin</i>	(1)	-1.04*** (0.22)	-0.62*** (0.22)	-0.45** (0.22)	-0.47** (0.23)
Deaths in the family	(2)	-0.91 (1.28)	-0.85 (1.37)	-0.93 (1.37)	-1.24 (1.41)
Deaths × <i>Askeskin</i>	(3)	4.65*** (1.29)	3.59** (1.53)	0.3 (1.63)	2.01 (1.72)
<i>Dependent variable: Net profits</i>					
<i>Askeskin</i>	(4)	-0.39*** (0.11)	-0.24** (0.12)	-0.22** (0.10)	-0.26** (0.10)
Deaths in the family	(5)	-0.25 (0.46)	0 (0.46)	-0.04 (0.36)	0.07 (0.38)
Deaths × <i>Askeskin</i>	(6)	2.02*** (0.47)	1.51*** (0.58)	0.96 (0.66)	1.32* (0.74)
<b>B. Outpatient care</b>					
<i>Dependent variable: Assets</i>					
<i>Askeskin</i>	(7)	-1.36*** (0.28)	-0.90*** (0.27)	-0.75*** (0.28)	-0.78*** (0.29)
Outpatient care	(8)	-0.17 (0.16)	-0.25 (0.16)	-0.46*** (0.16)	-0.51*** (0.16)
Outpatient care × <i>Askeskin</i>	(9)	0.83** (0.39)	0.73* (0.41)	0.81** (0.40)	0.85** (0.41)
<i>Dependent variable: Net profits</i>					
<i>Askeskin</i>	(10)	-0.55*** (0.16)	-0.38** (0.17)	-0.40** (0.16)	-0.43*** (0.15)
Outpatient care	(11)	-0.11 (0.09)	-0.14 (0.09)	-0.18** (0.08)	-0.18** (0.08)
Outpatient care × <i>Askeskin</i>	(12)	0.40* (0.21)	0.37* (0.22)	0.46** (0.20)	0.43** (0.20)
Number of observations		5,781	5,713	5,579	5,450

*Notes:* The numbers in each column are the estimates of OLS regressions of assets or net profits on *Askeskin*, a measure of family hardships, and the interaction between *Askeskin* and family hardships, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. In Panel A, deaths in the family equal one if at least one family member died in the previous year and zero otherwise. In Panel B, outpatient care equals one if a household had at least one family member had outpatient care in the previous month and zero otherwise. The adjusted- $R^2$  in columns 1, 2, 3, and 4 are 0.06, 0.07, 0.16, and 0.16, respectively. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.

**Table A4.** Using micro firms with assets below Rp 50 million

Dependent variable (in logarithm)		(1)	(2)	(3)	(4)
<b>A. Deaths in the family in the previous years</b>					
<i>Dependent variable: Assets</i>					
<i>Askeskin</i>	(1)	-0.83*** (0.22)	-0.55** (0.22)	-0.38* (0.22)	-0.41* (0.24)
Deaths in the family	(2)	-0.99 (1.32)	-1.12 (1.37)	-0.88 (1.44)	-1.14 (1.48)
Deaths × <i>Askeskin</i>	(3)	5.21*** (1.33)	3.78** (1.52)	0.59 (1.70)	2.45 (1.85)
<i>Dependent variable: Net profits</i>					
<i>Askeskin</i>	(4)	-0.35*** (0.11)	-0.23* (0.12)	-0.23** (0.10)	-0.28*** (0.10)
Deaths in the family	(5)	-0.40 (0.43)	-0.17 (0.44)	-0.24 (0.33)	-0.15 (0.36)
Deaths × <i>Askeskin</i>	(6)	2.29*** (0.45)	1.49*** (0.57)	0.98* (0.55)	1.29** (0.63)
<b>B. Outpatient care</b>					
<i>Dependent variable: Assets</i>					
<i>Askeskin</i>	(7)	-1.14*** (0.28)	-0.82*** (0.27)	-0.67** (0.28)	-0.68** (0.29)
Outpatient care	(8)	-0.18 (0.17)	-0.22 (0.16)	-0.44*** (0.16)	-0.47*** (0.16)
Outpatient care × <i>Askeskin</i>	(9)	0.79** (0.39)	0.70* (0.41)	0.79** (0.39)	0.77* (0.41)
<i>Dependent variable: Net profits</i>					
<i>Askeskin</i>	(10)	-0.46*** (0.16)	-0.32* (0.17)	-0.35** (0.16)	-0.38** (0.15)
Outpatient care	(11)	-0.07 (0.09)	-0.08 (0.09)	-0.14 (0.08)	-0.14 (0.09)
Outpatient care × <i>Askeskin</i>	(12)	0.27 (0.21)	0.24 (0.22)	0.32 (0.20)	0.27 (0.20)
Number of observations		5,420	5,360	5,236	5,113

*Notes:* The numbers in each column are the estimates of OLS regressions of assets or net profits on *Askeskin*, a measure of family hardships, and the interaction between *Askeskin* and family hardships, without (column 1) and with control variables (columns 2-4). All regressions include district dummies and the dummies for other insurance held by the households. The sample excludes two groups of individuals: (i) those who lost *Askeskin* in 2006, 2007, or 2008; and (ii) those who enrolled in *Askeskin* in 2008. In Panel A, deaths in the family equal one if at least one family member died in the previous year and zero otherwise. In Panel B, outpatient care equals one if a household had at least one family member had outpatient care in the previous month and zero otherwise. The adjusted- $R^2$  in columns 1, 2, 3, and 4 are 0.06, 0.07, 0.16, and 0.16, respectively. The numbers in parentheses are robust standard errors, clustered by districts. The asterisks \*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10%, respectively.