# Psychological Health Before, During, and After an Economic Crisis: Results From Indonesia, 1993–2000

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The 1997 Indonesian financial crisis resulted in severe economic dislocation and political upheaval. Previous studies have established the detrimental consequences for economic welfare, physical health, and child education. The crisis also affected the psychological well-being of the Indonesian people. Comparing responses of the same individuals interviewed before and after the crisis, this study documents substantial increases in several dimensions of psychological distress among men and women across the age distribution. It shows larger impacts of the economic crisis on the more vulnerable groups, including those with low education, the rural landless, urban residents, and those in provinces most affected by the crisis. Elevated psychological distress persists even after the economy returns to precrisis levels, suggesting that the deleterious effects of the crisis may persist longer on the psychological well-being of the Indonesian population than on standard measures of economic well-being. JEL codes: I10, O12.

The 1997 Asian currency crisis, one of the most disruptive global economic events in decades, caused severe economic damage across much of East and Southeast Asia. No country was more affected than Indonesia. After several decades of sustained economic growth with low inflation and a stable exchange rate, and three decades of President Suharto in power, Indonesia's society and economy were fractured by the 1997 crisis. The Indonesian rupiah (Rp) collapsed, falling from around Rp 2,500 to the U.S. dollar in late 1997 to Rp 15,000 to the U.S. dollar in mid-1998. GDP fell 12 percent in 1998 alone. Prices spiraled up with inflation reaching 80 percent in 1998 while food prices rose by 160 percent. Economic upheaval was accompanied by political

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turmoil. President Suharto resigned after street protests in early 1998, presaging historic changes in the systems of national and local government.

The vast majority of Indonesian households struggled with the immediate economic adversity at the onset of the crisis and with the tremendous uncertainty over their economic, social, and political futures. Living through the crisis took a toll on the psychological well-being of the Indonesian people. This study identifies subgroups of the population that paid the highest price in terms of their psychological health.

The impacts of the crisis on economic well-being were far from uniform. By several measures, the crisis was centered in urban areas, with disadvantaged urban households bearing the brunt of the crisis (Frankenberg, Thomas, and Beegle 1999; Friedman and Levinsohn 2002). Household declines in consumption and increase in poverty rates were much greater in urban areas than in rural areas. For example, it is estimated that between 1997 and 1998, household per capita expenditure declined by 34 percent among the urban households and 13 percent among the rural households (Frankenberg, Thomas, and Beegle 1999).[1] Among the self-employed rural men—mostly farmers—real hourly earnings declined by 11 percent. But among those working in the market sector, real wages declined by more than 50 percent in one year. Rural wage earners are primarily landless laborers and government workers (whose wages were set in nominal terms before the onset of the crisis). In the urban sector, people's real hourly earnings fell by 50 percent in both the market and self-employed sectors. While hourly earnings collapsed, employment rates remained remarkably stable despite some migration from urban to rural areas (Smith and others 2002). These facts reflect the rise in the relative price of food, particularly rice, benefiting food producers, and the concomitant collapse of real wages, taking its greatest toll on urban workers and the rural landless.

The economic impacts of the crisis varied dramatically across the 27 Indonesian provinces and numerous island groups, even within urban and rural areas (Levinsohn, Berry, and Friedman 2003). More urbanized provinces in Java, such as Jakarta and West Java, suffered the largest contractions, whereas the deleterious economic effects of the crisis were substantially more muted in provinces that produced exports and export-related services such as tourism (Bali, for example) and that produced oil, timber, and fishing (Sumatra). Variation across provinces and between rural and urban areas was a fundamental aspect of Indonesia's economic crisis, and these patterns are important for understanding how the economic crisis affected psychological well-being.

Previous studies have described the effects of the crisis on the economic well-being and physical health of Indonesians. Together, the studies indicate a dramatic but short-lived decline in the economic well-being of most

1. Poverty rates more than doubled in urban areas while rising about 50 percent in rural areas (Suryahadi, Sumarto, and Pritchett 2003).

Indonesians, suggesting an enormously resilient population that took great efforts to weather the storm.[2] But to the authors' knowledge, the impact of the financial crisis on psychological and mental health has not been explored. This article provides empirical evidence on how much the upheavals and associated stresses of the crisis affected the psychological health of Indonesians and whether any effects were long lasting. It contributes new evidence on the psychosocial costs of economic insecurity in developing economies.

Das and others (forthcoming) review the limited population-level evidence of psychosocial disability in developing countries. Typically, the highest levels of psychological pathologies are found in countries emerging from conflict, where levels of posttraumatic stress reactivity are high among the general population (de Jong and others 2001). People in regions that have suffered from natural disaster also suffer significantly more psychological distress as indicated by depression, somatization, and anxiety (Wang and others 2000; Frankenberg and others 2008). Given this evidence, it is plausible to hypothesize that severe economic dislocation could have adverse effects on physical and psychological health. Tangcharoensathien and others (2000) show that, after the onset of the financial crisis in Thailand, severe stress, suicidal ideation, and hopeless feelings were more prevalent among the unemployed than the employed. However, in the absence of any information prior to the crisis, it is not known how much of these gaps are related to the crisis or what the impact of the crisis was on the psychological well-being of the general population. In contrast, this article uses population-based data that follow the same individuals before and after the Indonesian financial crisis, which was both deeper and longer lasting than the Thai crisis.

## I. Data

Data from the Indonesia Family Life Survey (IFLS) are used to track the indicators of psychological distress of the same individuals, who were assessed in up to three interviews before, during, and after the onset of the crisis. The IFLS is an ongoing multipurpose longitudinal survey of individuals, households, and communities. The first wave of IFLS was fielded in 1993 and collected information on more than 30,000 individuals living in 7,200 households. The original sample, which covered 321 communities in 13 provinces, is representative of the population residing in those provinces, about 83 percent of the national population. (Outlying provinces were excluded from the sample for cost reasons.)

The same respondents were reinterviewed in 1997 (IFLS2), a few months before the beginning of Indonesia's currency crisis, and again in 2000 (IFLS3).

2. Studies have described the impact of the crisis on poverty, consumption, wealth, labor supply, wages, earnings, schooling, physical health, and health care use (Frankenberg, Thomas, and Beegle 1999; Suryahadi, Sumarto, and Pritchett 2003; Frankenberg, Smith, and Thomas 2003; Thomas and others 2004; Strauss and others 2004).

About one-quarter of the respondents were reinterviewed in 1998 (IFLS2+) to measure the immediate impact of the crisis.[3] Attrition in both resurveys was low.[4]

In addition to collecting extensive information on the socioeconomic and demographic characteristics of respondents and their families, the IFLS assesses the psychological well-being of its respondents using a common interview-based survey instrument of the type outlined in Das and others (forthcoming). The IFLS psychological health questions, adapted from the General Health Questionnaire (GHQ), measure symptoms of two globally common categories of psychiatric disorder—depression and anxiety (Goldberg 1972). Appendix table A.1 presents the IFLS questions used in this study.

The questions focus on general feelings of sadness or anxiety as well as specific symptoms of distress.[5] They have been translated and back-translated to ensure accuracy and extensively field-tested to ensure comprehension by study subjects. Appendix table A.1 also includes a question on self-perceived general health status, a summary measure of health that encompasses physical and nonphysical domains of well-being. As a broader summary of health, general self-reported health status provides a useful comparison with psychological health indicators and emphasizes the potentially unique impacts of the crisis on psychological well-being.

The psychological health questions were assessed in full in the 1993 and 1998 surveys, and a subset of questions were assessed in 2000. (The subset is marked with an asterisk in appendix table A.1.) Unfortunately, the psychological health questions were not included in the 1997 wave.

The panel dimension of the data is exploited to contrast the general psychological health of each individual at two points, 1993 and 2000. (Results from the 25 percent subsample interviewed in 1998 are also used.) This seven-year period brackets the financial, political, and social crisis—which, given its magnitude, is likely a key factor underlying changes in psychological health over this period. An important advantage of using 1993 for comparison is that the estimates will not be contaminated by expectations of impending crisis.

3. The sample for the 1998 wave covered 25 percent of the IFLS enumeration areas, selected to span the country's socioeconomic and demographic diversity. The 1998 sample achieved above 80 percent efficiency relative to the entire IFLS sample.

4. Considerable attention has gone to minimizing attrition in the IFLS. In each resurvey, about 95 percent of original households have been recontacted, ameliorating concerns about selective attrition. Around 10–15 percent of respondents moved from the location in which they were interviewed in the previous wave, and concerted efforts were made to track these respondents to their new locations. Individuals who moved out of their original households have also been followed, adding around 1,000 households to the sample in 1997 and about 3,000 households in 2000.

5. The questions ask about a broad array of symptoms. Validation studies with the U.S.-based GHQ have concluded that if a clustering of symptoms within an individual is identified, then psychiatrists would likely be able to diagnose a psychological disorder. However it should be stressed that the IFLS data do not provide diagnostic information per se and hence the measures are interpreted as indicative of general psychological well-being.

## II. Psychological Distress Before and after the Crisis

The empirical discussion begins with an overview of the psychological well-being indicators before and after the onset of the 1997 crisis. Table 1 reports the overall prevalence of psychological distress and poor general health in the population of men and women aged 20 and older at the time of each wave of the survey.[6] Columns 1–3 report estimates that draw on all respondents in each wave of the survey, weighted to be representative of the underlying population.[7] Columns 4–5 report estimates for panel respondents who were interviewed in both 1993 and 2000.

Psychological distress indicators measured in IFLS are dramatically higher after the onset of the 1997 crisis. For both men and women, the prevalence of distress almost doubles between 1993 and 1998 for each indicator except one, difficulty sleeping, which increases by about 50 percent. To illustrate, in 1993 about 12 percent of men report feeling sad in the previous four weeks; in 1998, nearly 30 percent of men reporting feeling sad. Women are slightly more likely to feel sad than men are in 1993 (16 percent) and much more likely to feel sad in 1998 (41 percent). There were even larger proportionate increases in the prevalence of anxiety which rose threefold to fourfold (albeit from a lower base).

When both markers are combined into an index identifying those who report feeling either sad or anxious, about one in six respondents reported such feelings in 1993. In 1998, one in three men and almost one in every two women reported these feelings. In 1993, one respondent in five had difficulty sleeping, and in 1998 this affected one in three adults. The prevalence of fatigue nearly doubled, and short temper more than double . For both men and women, the prevalence of reported somatic pain tripled from around 20 percent of respondents to 60 percent.

The increase in prevalence of psychological problems between 1993 and 1998 suggests a substantial rise in underlying psychological and emotional

6. For ease of exposition, the psychological distress and general health status questions have been dichotomized. Respondents who report a particular psychological distress indicator either "often" or "sometimes" over the past four weeks are combined. Likewise, respondents who report their general health status as "somewhat unhealthy" or "very unhealthy" are recorded as being in "poor general health." An alternative approach to measurement of health problems with survey data is to aggregate responses to several questions and to create a summary index (see Das and others 2007 for an example in psychological health). Results are presented across all three survey waves for three domains of psychological problems—feelings of sadness or anxiety and suffering from sleep difficulties. Those are the only questions repeated across each available wave of IFLS. Additional psychological morbidities, such as shortness of temper, were recorded in the 1993 and 1998 waves. The results are qualitatively unchanged if all six questions are combined into an index to compare 1993 and 1998. Similarly, results are not changed if the three common questions across the three surveys are combined into an index to compare 1993 with 1998 and 2000.

7. The sample sizes vary across the waves of the survey because of changes in the survey design. In 1993, a subsample of adults were interviewed in each household. In 1998 and 2000, all adults were individually interviewed. Recall that the 1998 survey was restricted to a 25 percent subsample of enumeration areas.

TABLE 1. Percentage of Male and Female Respondents Aged 20 and Older Reporting Psychological Distress and Poor Health

| Health indicator | All respondents | | | Panel respondents | |
|---|---|---|---|---|---|
| | 1993 [1] | 1998 [2] | 2000 [3] | 1993 [4] | 2000 [5] |
| Men | | | | | |
| Psychological health | | | | | |
| Sad | 12.0 | 28.9*** | 27.5*** | 11.4 | 24.2*** |
| Anxious | 4.6 | 19.7*** | 18.4*** | 4.6 | 15.5*** |
| Sad or anxious | 13.8 | 32.7*** | 32.4*** | 13.5 | 28.6*** |
| Insomnia | 18.3 | 31.4*** | 27.4*** | 18.6 | 28.4*** |
| Fatigue | 25.5 | 47.2*** | — | 25.2 | — |
| Short temper | 11.8 | 28.7*** | — | 11.7 | — |
| Somatic pain | 17.4 | 57.9*** | — | 17.0 | — |
| General health status | | | | | |
| Poor general health | 10.7 | 11.4 | 11.6*** | 9.7 | 15.1*** |
| Sample size | 5,629 | 2,928 | 10,128 | 4,598 | 4,598 |
| Women | | | | | |
| Psychological health | | | | | |
| Sad | 15.8 | 41.0*** | 37.5*** | 17.1 | 37.6*** |
| Anxious | 7.3 | 25.9*** | 24.4*** | 8.5 | 23.6*** |
| Sad or anxious | 17.9 | 44.1*** | 42.7*** | 19.9 | 42.2*** |
| Insomnia | 22.3 | 35.0*** | 32.6*** | 23.6 | 35.9*** |
| Fatigue | 26.3 | 54.0*** | — | 28.5 | — |
| Short temper | 16.6 | 39.5*** | — | 18.1 | — |
| Somatic pain | 20.1 | 62.0*** | — | 21.6 | — |
| General health status | | | | | |
| Poor general health | 10.9 | 13.4*** | 14.3*** | 11.3 | 17.1*** |
| Sample size | 6,892 | 3,222 | 11,271 | 5,957 | 5,957 |

***Significantly different from 1993 prevalence at 1 percent level.

— Not available.

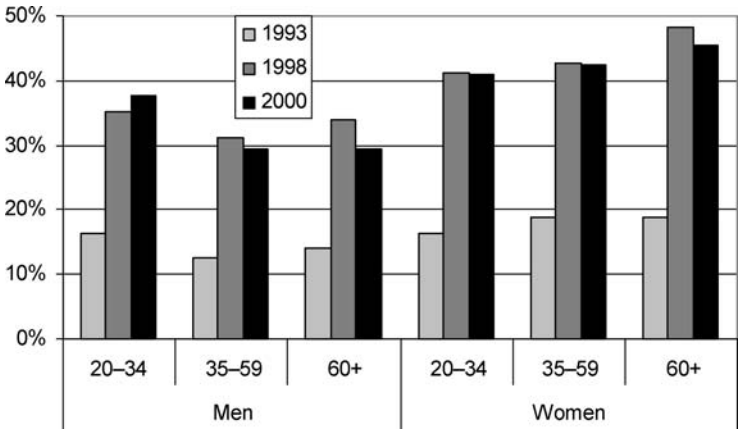
*Note:* Prevalence estimates are weighted to be population representative. Panel sample includes respondents who were at least 20-years-old in 1993 and who were interviewed in both 1993 and 2000.

*Source:* Authors' analysis based on data from IFLS waves 1 (1993), 2+ (1998), and 3 (2000).

distress, which persists well beyond the onset of the crisis (column 3 of table 1). There is only a small decline in the prevalence of psychological distress between 1998 and 2000 for both men and women. This persistence of distress is noteworthy since the Indonesian economy had begun to recover in 2000, and mean household consumption levels had already returned to the precrisis levels of 1997 (Ravallion and Lokshin 2007).

In contrast with the results for psychological well-being, self-reported general health status changed very little over the seven years. Around 11 percent of men and 11–14 percent of women report themselves in poor health. The relative stability of this general health measure suggests that the psychological distress

FIGURE 1. Variation in Psychological Distress (Prevalence of sadness or anxiety, percent)



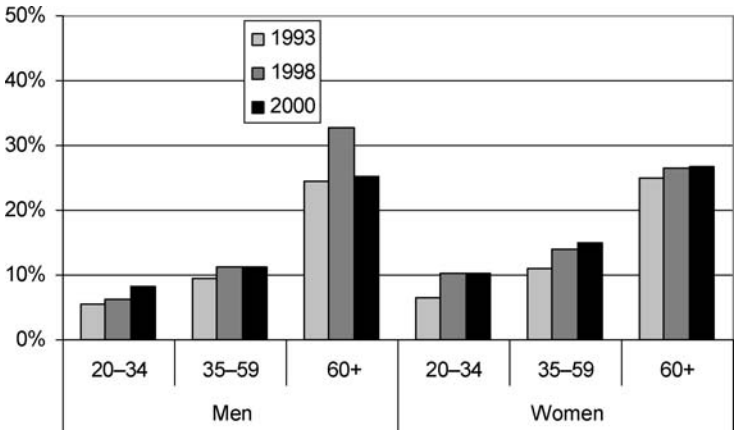

*Source*: Authors' analysis based on data from IFLS waves 1 (1993), 2+ (1998), and 3 (2000).

indicators identify a dimension of health and well-being different from general health and that the crisis affected these separate dimensions differently.

The analyses thus far provide evidence on the prevalence of health problems in the population at each point in time. It is also useful to focus on changes in health for the same group of individuals over time. The right panel of table 1 reports the prevalence of psychological problems and poor general health among respondents who were individually assessed in both 1993 and 2000 and were aged at least 20, in the 1993 baseline. More than 80 percent of the 1993 respondents were also interviewed in 2000. Comparing prevalence rates at baseline for the population (in the first column) with the rates for the panel sample (in the fourth column) provides insights into the representativeness of the panel sample. For both male and female respondents, the prevalence rates in 1993 are very similar across the columns. The rates in 2000 are not directly comparable in the cross-section and panel samples because the respondents are seven years older in the panel sample. For the psychological indicators, the rates are still close in value. Thus the panel sample replicates the large increase in psychological distress between 1993 and 2000, which was observed in the cross-section sample. In contrast, in the panel sample, a larger fraction of respondents report themselves in poor general health relative to the cross-section sample. This largely reflects the fact that poor health rises with age and provides further evidence that time effects are minor relative to age effects for general health.

To explore the variation in psychological distress over the life course, figure 1 provides a snapshot of the relation between reported sadness or anxiety and age for men and women. The prevalence of sadness or anxiety varies little with age, although prevalence rates are slightly higher among younger and older men in 1993 and among older women in all three years.

FIGURE 2. Variation in General Health (Percentage of respondents reporting poor general health)




*Source*: Authors' analysis based on data from IFLS waves 1 (1993), 2+ (1998), and 3 (2000).

These modest age differences were dwarfed by the dramatic overall increase in prevalence between 1993 and either 1998 or 2000. For every age group, the prevalence of sadness or anxiety roughly doubles between 1993 and 1998, indicating a profound increase in psychological distress for adults across the entire age distribution. The estimates for 1998 and 2000 are almost identical, indicating the persistence of crisis effects on psychological health across all ages, even as the Indonesian economy began to recover.

The results in figure 1 stand in contrast to those in figure 2, which presents the same snapshot for general health status. A clearer age gradient is observed for general health—as respondents age they are more likely to report poor general health. This result, consistent with the broader empirical literature, highlights the different domains of well-being identified by general health status and by the psychological health questions. Another difference concerns the relative lack of change in the general health status measure over 1993–2000. There does appear to be an increase in reported poor general health in 1998, although one not close in magnitude to that for the psychological distress measures. The general and sustained rise in the population's psychological distress is not mirrored in changes in the population's perceived general health.

## III. INDIVIDUAL TRANSITIONS IN PSYCHOLOGICAL DISTRESS AND THE CRISIS

Taking advantage of the longitudinal nature of IFLS, the rates at which individuals transited into and out of psychological distress are examined in table 2. For each measure of psychological distress, the percentage of people in each of four possible categories is listed: those who report psychological distress in

TABLE 2. Transitions in Psychological Well-Being of Panel Respondents between 1993 and 2000 (percentage of respondents)

| Transition status | Instance of measure | | Psychological distress measure | | | | |
|---|---|---|---|---|---|---|---|
| | 1993 | 2000 | Sadness | Anxiety | Sad/anxious | Difficulty sleeping | Poor general health status |
| All panel respondents ($N = 10,524$) | | | | | | | |
| No transition | No | No | 60.4 | 75.3 | 55.2 | 56.3 | 77.0 |
| | Yes | Yes | 6.8 | 2.2 | 8.6 | 10.3 | 3.7 |
| Transition | No | Yes | 25.0 | 17.9 | 27.7 | 22.3 | 12.5 |
| | Yes | No | 7.9 | 4.6 | 8.5 | 11.1 | 6.9 |
| Male panel respondents ($N = 4,586$) | | | | | | | |
| No transition | No | No | 69.0 | 81.1 | 63.9 | 61.7 | 78.7 |
| | Yes | Yes | 4.6 | 1.2 | 6.0 | 8.6 | 3.5 |
| Transition | No | Yes | 19.6 | 14.4 | 22.5 | 19.7 | 11.6 |
| | Yes | No | 6.9 | 3.4 | 7.5 | 10.0 | 6.2 |
| Female panel respondents ($N = 5,938$) | | | | | | | |
| No transition | No | No | 53.8 | 70.8 | 48.5 | 52.2 | 75.6 |
| | Yes | Yes | 8.4 | 2.9 | 10.6 | 11.6 | 3.9 |
| Transition | No | Yes | 29.2 | 20.7 | 31.7 | 24.2 | 13.2 |
| | Yes | No | 8.6 | 5.6 | 9.3 | 11.9 | 7.3 |

*Source:* Authors' analysis based on data from IFLS waves 1 (1993) and 3 (2000).

both survey years, those who report no distress in either year, those who transited into distress, and those who transited out of distress.

A substantial fraction of men and women transited into psychological distress. But more than half the population—and in some cases three-quarters—experience no transition, with the vast majority of these people never reporting psychological distress. A small fraction of the population moves out of feeling distressed. For example, of the 12 percent of men who feel sad in 1993, fewer than half still feel sad in 2000. Of the 17 percent of women who feel sad in 1993, half still feel sad in 2000. About 20 percent of men and 30 percent of women move from not feeling sad in 1993 to feeling sad in 2000. The patterns are broadly similar for the other indicators of psychological well-being.[8] Relative to men, women are more likely to transit into and out of distress.

In general, the fraction of the population that transitinto psychological distress is between two and five times greater than the fraction that transited out of distress. In contrast with the psychological indicators, relatively few people transited into poor health while comparatively more transited out. Of those in

8. The patterns are also similar for transitions in the 25 percent subsample over 1993–1998. The relative persistence of distress in 1998–2000 in contrast to either 1993–2000 or 1993–1998 is more pronounced, indicating greater stability in the psychological measures over this shorter period after the onset of the crisis.

poor health in 1993, two-thirds reported they were not in poor health in 2000, again underscoring the difference from psychological distress.

## IV. Psychological Distress and Individual Characteristics

The combination of measures of psychological well-being and demographic and socioeconomic characteristics of individuals collected in the IFLS provides opportunities to identify population subgroups at elevated risk of suffering from psychological distress during economic and political uncertainty. Multivariate regression is used to identify susceptible groups before and after the onset of the crisis as well as groups in psychological distress in both waves of the survey and those likely to transit into or out of psychological distress.

Individual characteristics include gender, age, and education, all measured in 1993. Of course, not all observed changes between 1993 and 2000 may be due to the 1997 crisis. However, the fact that the impact of the 1997 crisis differed dramatically across the Indonesian archipelago is exploited to relate the extent of changes in psychological health to markers of the magnitude of the crisis for the area in which each respondent was living in 1993. Specifically, controls include province of residence, whether the respondent was living in an urban or rural area, and among rural dwellers, living in a household that owned a farm business or not. The latter included landless laborers, who relied on wage work as well as government workers such as teachers, public health workers, and local administrators, most of whose wages were set in nominal terms before the onset of the crisis and severe inflation. Because food prices rose faster than other prices, farmers were partially protected from the deleterious impact of the crisis, whereas rural wage earners and urban dwellers saw a significant reduction in their real hourly earnings. Under the plausible assumption that the crisis was unanticipated in 1993, the impact of location of residence in 1993 on psychological distress can be interpreted as capturing impacts unaffected by behavioral responses to the crisis.

Regression results are reported in table 3 for three indicators of psychological distress—sadness, anxiety, and difficulty in sleeping—and for poor general health using the sample of respondents who were at least aged 20 in 1993 and interviewed in both 1993 and 2000. Columns 1 and 2 in each block examine the correlates associated with psychological distress or poor health in 1993 and 2000, respectively. Odds ratios from logistic regressions are reported. The dependent variable is unity, if the respondent reports being in poor psychological or physical health. Columns 3–5 in each block report the results of a transition model across 1993–2000, estimated by multinomial logistic regression. Risk ratios, relative to not being in poor psychological or general health in both 1993 and 2000, are reported. Asymptotic *t*-statistics are based on estimated standard errors that are robust to heteroskedasticity of arbitrary form and take into account correlations of unobserved factors common within households. The table presents results for gender, age, education, and

TABLE 3. Demographic and Socioeconomic Influences of Psychological Distress and General Health, Cross-Sectional and Panel Estimates

| Select demographic and socioeconomic measures in 1993 | Sadness | | | | | Anxiety | | | | | Sleep difficulties | | | | | Poor general health | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | |
| | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] |
| Male | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Female | 1.57 | 1.89 | 1.91 | 1.59 | 2.38 | 1.95 | 1.67 | 1.63 | 1.89 | 2.85 | 1.36 | 1.45 | 1.48 | 1.41 | 1.67 | 1.21 | 1.22 | 1.25 | 1.28 | 1.21 |
| | (8.04) | (14.95) | (13.71) | (6.21) | (10.18) | (7.88) | (10.11) | (9.23) | (6.30) | (6.69) | (6.41) | (8.76) | (7.94) | (5.23) | (7.41) | (2.94) | (3.57) | (3.66) | (3.07) | (1.82) |
| 20–34 years | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| 35–59 years | 1.08 | 1.12 | 1.11 | 1.07 | 1.19 | 0.86 | 1.00 | 1.00 | 0.84 | 0.90 | 1.21 | 1.35 | 1.31 | 1.13 | 1.56 | 1.78 | 1.77 | 1.65 | 1.59 | 3.00 |
| | (1.25) | (2.29) | (1.95) | (0.74) | (1.90) | (1.75) | (0.03) | (0.03) | (1.65) | (0.74) | (3.41) | (6.09) | (4.72) | (1.67) | (5.46) | (6.97) | (8.44) | (6.73) | (4.86) | (7.03) |
| 60 years and older | 1.09 | 1.38 | 1.41 | 1.12 | 1.37 | 0.79 | 1.23 | 1.23 | 0.75 | 1.02 | 1.37 | 1.88 | 1.79 | 1.20 | 2.30 | 3.96 | 3.98 | 3.76 | 3.66 | 9.66 |
| | (0.91) | (4.22) | (4.04) | (0.83) | (2.23) | (1.55) | (2.34) | (2.25) | (1.54) | (0.06) | (3.71) | (8.50) | (6.83) | (1.53) | (7.19) | (13.18) | (15.26) | (12.82) | (10.05) | (13.01) |
| Less than primary | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Primary graduate | 0.89 | 0.87 | 0.86 | 0.86 | 0.83 | 1.06 | 0.90 | 0.88 | 1.02 | 1.08 | 1.01 | 0.95 | 0.94 | 0.99 | 0.98 | 0.79 | 0.90 | 0.95 | 0.84 | 0.70 |
| | (1.74) | (2.71) | (2.63) | (1.66) | (1.93) | (0.64) | (1.83) | (2.07) | (0.14) | (0.48) | (0.08) | (0.94) | (1.10) | (0.16) | (0.24) | (2.98) | (1.56) | (0.70) | (1.93) | (2.79) |

*(Continued)*

TABLE 3. Continued

| Select demographic and socioeconomic measures in 1993 | Sadness | | | | | Anxiety | | | | | Sleep difficulties | | | | | Poor general health | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | | Cross-section association | | Transitions across the two periods | | |
| | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] | 1993 [1] | 2000 [2] | Enter [3] | Exit [4] | Persist [5] |
| Secondary graduate | 0.82 | 0.82 | 0.80 | 0.77 | 0.76 | 1.49 | 0.80 | 0.79 | 1.55 | 1.17 | 0.79 | 0.72 | 0.70 | 0.78 | 0.65 | 0.53 | 0.61 | 0.71 | 0.66 | 0.23 |
| | (1.99) | (2.72) | (2.73) | (2.04) | (1.94) | (3.35) | (2.58) | (2.57) | (3.11) | (0.73) | (2.76) | (4.56) | (4.15) | (2.35) | (3.48) | (5.02) | (4.88) | (3.21) | (2.98) | (5.26) |
| Rural landed | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Rural landless | 1.04 | 1.19 | 1.19 | 1.02 | 1.20 | 0.97 | 1.18 | 1.16 | 0.86 | 1.32 | 1.08 | 1.05 | 1.09 | 1.17 | 1.05 | 1.06 | 1.13 | 1.12 | 1.01 | 1.22 |
| | (0.41) | (2.60) | (2.36) | (0.12) | (1.45) | (0.25) | (2.16) | (1.84) | (0.87) | (1.19) | (1.04) | (0.68) | (1.09) | (1.59) | (0.42) | (0.54) | (1.44) | (1.18) | (0.09) | (1.23) |
| Urban | 1.34 | 1.14 | 1.13 | 1.36 | 1.43 | 1.48 | 1.12 | 1.09 | 1.44 | 1.66 | 1.17 | 1.08 | 1.09 | 1.20 | 1.19 | 1.03 | 1.03 | 1.02 | 1.03 | 1.06 |
| | (4.02) | (2.31) | (1.92) | (3.31) | (3.49) | (3.86) | (1.75) | (1.37) | (3.12) | (2.79) | (2.47) | (1.48) | (1.34) | (2.28) | (2.04) | (0.37) | (0.39) | (0.27) | (0.26) | (0.42) |

— Excluded category.

*Note:* Sample includes all male and female panel respondents' aged 20 and older in 1993. Columns 1 and 2 report odds ratios for logistic regression results. The dependent variable is one if respondent reports condition, and zero otherwise. Columns 3–5 report relative risk ratios for multinomial logistic regression estimates. Entrants report condition in 2000 but not in 1993, exits report condition in 1993 but not in 2000, and persisters report condition in both periods; excluded outcome is no report of condition in both periods. Regressions include province of residence controls. Numbers in parentheses are asymptotic *t*-statistics robust to heteroskedasticity and that take into account within-household correlations. Sample size is 10,555 respondents.

*Source:* Authors' analysis based on data from IFLS waves 1 (1993) and 3 (2000).

rural–urban location. (Differences by province of residence are summarized in the next section.)

### *Gender*

Gender plays an important role in both the prevalence of psychological distress and in transitions across states of distress over time. In both 1993 and 2000, women are significantly more likely than men to report feeling sad and anxious, suffering from sleep difficulties, and being in poor general health, after controlling for other characteristics. Relative to men, the omitted category, there is significantly more churning among women, who are much more likely to transit between states of psychological or general health (in either direction). These transition rates are not large enough to offset the higher risks of being in poor health, so women are also more likely than men to be in poor health in both 1993 and 2000.

For example, women are 57 percent more likely than men to be sad in 1993, and 89 percent more likely in 2000. This is reflected in the transition rates, reported in columns 3 and 4, which indicate that women are 91 percent more likely than men to become sad but 59 percent more likely to stop being sad. Hence, the larger gender gap in 2000. In contrast, the gender gap in risk of feeling anxious declines between 1993 and 2000 from 95 percent to 67 percent. Women are 89 percent more likely to stop being anxious and 63 percent more likely to become anxious. Clearly there is more mobility into and out of psychological distress among women than men, though women remain much more likely than men to be sad or anxious in both waves (column 5).

### *Age*

Age is specified as a categorical variable with three groups, ages 20–34, 35–59, and 60 and older (the youngest age group is the omitted category in table 3). The influence of age varies with the psychological distress indicator. For example, feelings of sadness appear unrelated to age in 1993, conditional on other observed characteristics. But by 2000, a clear age gradient emerges, with respondents in the oldest category 38 percent more likely to report sadness than those in the youngest category. This is largely because the likelihood of transitioning from not being sad to being sad is significantly higher for those ages 60 and older, as well as for those in the middle age range. A similar pattern holds for feelings of anxiety—no clear age gradient in 1993 yields to a significantly positive gradient in 2000, when the oldest group is 23 percent more likely to report anxious feelings (and more likely to transition into feelings of anxiety).

These general results echo the information in figure 1, where there is little evidence that age is associated with the risk of being sad or anxious before the onset of the crisis, but that an age gradient appears, at least for women, by 2000. Both sleep difficulties and poor general health status tend to increase

with age, and older adults are more likely to transit into suffering from sleep difficulties or poor health, as expected.

### *Education*

Education, an indicator of socioeconomic status, is also measured as a categorical variable. Respondents are grouped into three categories: incomplete primary school (including those with no formal education), primary school graduates (including those with some years of secondary schooling), and secondary graduates or higher. Education appears to have a slight negative relation to feelings of sadness in 1993, with secondary graduates 18 percent less likely to report sadness relative to the omitted category of those who have not finished primary schooling. This gradient is largely unchanged in 2000, though it becomes more precise with even primary graduates 13 percent less likely to report sadness than those without primary schooling.

Feelings of anxiety follow a different pattern. In 1993, there is a significant positive gradient between education and anxiety, with those in the highest education category 49 percent more likely to report anxiety than those without primary schooling. In 2000, a significant negative gradient is observed, with secondary school graduates being 20 percent less likely to report anxiety than those without primary schooling. Over the crisis period, those who have not completed primary school are significantly more likely to transit into anxiety, while secondary school graduates or higher are significantly more likely to transit out of anxiety. Thus the crisis period witnessed a disproportionate increase in anxiety among the less educated. Studies cited earlier suggest that the most vulnerable groups during the 1997 crisis were the poorer and less educated groups. This is apparent in the evidence for anxiety, which likely reflects concerns about economic insecurity.

The pattern for sleep difficulties and poor general health are similar to each other. The better educated are less likely to have difficulty in sleeping both before and after the onset of the crisis, and they are less likely to experience a transition into or out of sleeping difficulties. The better educated tend to report better general health in 1993 and 2000, and they are less likely to experience a transition into or out of poor general health.

### *Area of Residence*

The last three rows of table 3 investigate the relation between psychological health and area of residence, as well as landed status, all measured before the onset of the crisis. Rural dwellers who owned land in 1993 are the reference category. They are, on average, the group most protected from the deleterious impact of the crisis because they tend to be food producers and the relative price of food rose dramatically during the crisis. The landless are substantially more vulnerable to the negative impact of the crisis since they relied on (mostly nonfarm) wage labor at a time when wages collapsed.

This difference in vulnerability is apparent in the increasing relative likelihood of sadness and anxiety for the rural landless. Before the crisis, the rural landless were neither more nor less likely to report feelings of sadness or anxiety than the rural landed. After the crisis, the landless were significantly more likely to be sad (19 percent more likely) or anxious (18 percent more likely) and significantly more likely to transition into sadness or anxiety. The buffer of land assets most likely helped to protect landed households from severe income shocks and greater psychological distress.[9]

Urban residents have a consistently higher likelihood of reporting sadness, anxiety, or sleep difficulties than do landed rural residents before the crisis, and this remains true for feelings of sadness after the crisis as well. (For both anxiety and sleep difficulties in 2000 urban residents still have a higher likelihood of distress, although the difference does not meet standard levels of significance.) Urban residents are also more likely to transition across states of psychological distress and nondistress and to remain in a state of psychological distress, than their rural counterparts. In contrast with the result for psychological health, urban location does not influence the self-reporting of poor general health (nor does rural landless status).

Urban status clearly influences psychological distress indicators and is an important conditioning variable. But the relative importance of urban residence in determining psychological health does not change over the crisis period, at least in relation to landed rural households. If urban areas are more adversely affected by the crisis than rural areas, this impact does not translate into higher psychological distress conditional on other observed characteristics. This is in part due to the separation of the rural population into landed and landless in the regression analyses. The results in table 3 suggest that the rural landless bore the heaviest psychological burden of the crisis and that overall psychological distress was lower in rural areas in 1993. It is also possible that a high degree of heterogeneity in crisis impacts across Indonesia's cities may mask any crisis effects in the regression framework.[10]

9. An alternative explanation for this finding may arise if landless rural respondents are more likely than landed respondents to migrate to urban areas, where psychological distress is higher in general. When the analysis is conditioned on individuals who have never migrated, the results are essentially identical.

10. The data afford more generous regression specifications that can include a broader set of socioeconomic characteristics in the models, such as marital status and religion of respondents, living arrangements, wealth, household resources, and employment status. But it is not clear how to interpret estimates from these models, since these characteristics are potentially correlated with other unobserved factors that also influence psychological well-being. While marital status, work status, and wealth accumulation have all been shown to be associated with psychological well-being, the direction of causality has not been established (Ettner, Frank, and Kessler 1997; Dooley, Prause, and Ham-Rowbottom 2000). The preference here is to report a parsimonious specification under the assumption that the characteristics included—educational attainment, location of residence, and ownership of land measured in 1993—are largely fixed before psychosocial well-being in 1993 is determined.

## V. Regional Variations in Psychological Health Transitions

Provincial location is another factor that mediated the severity of exposure to the crisis. Previously cited studies note large geographic variations in crisis indicators, such as inflation or declines in real household resources. For example, provinces on the island of Java were among the most affected, while Bali, with its reliance on tourism, and certain provinces in Sumatra and in the east of Indonesia, with their resource-intensive export industries, were less affected.

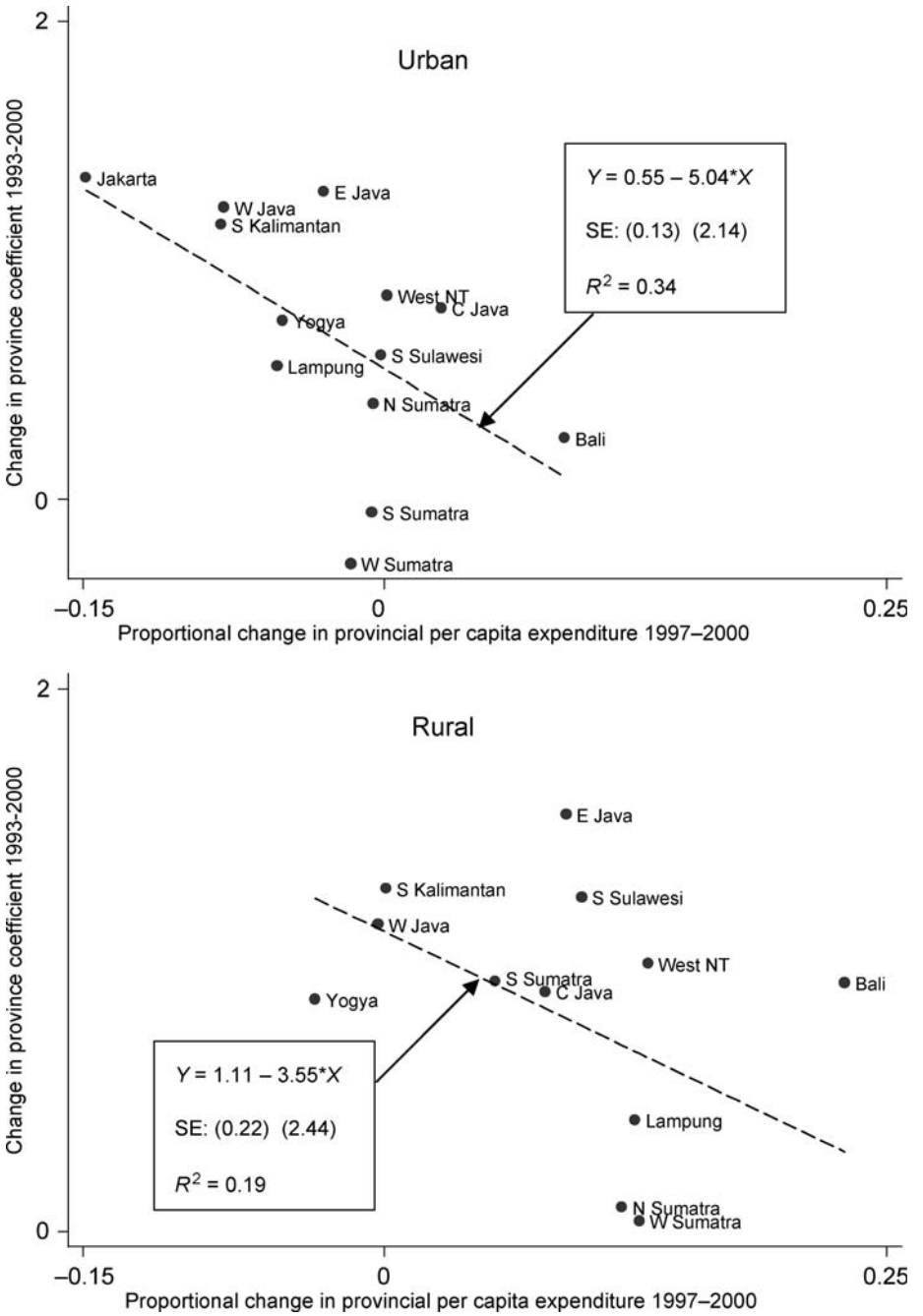
The spatial pattern in the changes in psychological distress indicators largely reflects these geographic differences in crisis severity. The models reported in table 3 also included controls for province of residence in 1993 (results not shown). There are pronounced differences in the psychological distress indicators by province of residence. This is the case even after controlling for gender, age, education, and urban–rural location. To provide a context for interpreting the differences in estimated risk ratios for provinces, those differences are related to a common measure of the impact of the financial crisis—the proportional change in mean real per capita household expenditure for each provincial urban or rural area.

These results are graphically summarized in figure 3, which relates the change in the estimated province effect between 1993 and 2000 to the proportional change in regional mean real per capita household expenditure between 1997 and 2000. The change in the estimated province effect can be interpreted as the change in mean psychological distress in that province, conditional on population observables. The province effects are based on logistic regressions of the form reported in table 3, except that here they are estimated separately for urban and rural households. The measure of psychological distress is the combined measure of sadness and anxiety.[11]

The results show a similar pattern for rural and urban areas, though the relation is more pronounced in urban areas. Moving from left to right on either *x*-axis in figure 3 indicates greater growth in mean real per capita household expenditure and thus a milder impact of the crisis. Almost all urban areas experience a decline in mean real per capita household expenditure between 1997 and 2000. For example, expenditures decline by 15 percent in Jakarta, and increase only in urban Central Java and urban Bali. Mean real per capita household expenditure growth is generally greater in rural areas; only three provinces—Yogyakarta, West Java, and South Kalimantan—experience a decline in rural areas. Moving from bottom to top on either *y*-axis indicates an increase in the conditional provincial mean of sadness or anxiety from 1993 to 2000.

11. The conclusions are unchanged when looking at the prevalence of sadness or anxiety separately or at pooled urban and rural households. Similar analysis that investigates the association of changes in general health status with provincial measures of crisis impacts does not find any relationship, consistent with results reported above.

FIGURE 3. Change in the Province Mean Conditional Prevalence of Sadness or Anxiety




*Source*: Authors' analysis based on data from IFLS waves 1 (1993), 2+ (1998), and 3 (2000).

Even at this aggregate level, there is a clear positive relation between the severity of crisis and changes in the relative prevalence of psychological distress. The urban areas that experience the largest declines in mean income also exhibit the largest rise in sadness or anxiety. People living in Jakarta were hit hardest by the crisis in both economic and psychological terms. Bali fares relatively well over the crisis period and also posts one of the smallest rises in overall prevalence. This general relation is also apparent in the fitted regression line, which has a significant negative slope (despite the small sample size of 13) and an $R^2$ statistic of 0.34. While the crisis affects the psychological health of many urban Indonesians, those who live in cities most affected by the crisis experience the greatest increase in distress.[12]

Rural residents in areas most affected by the crisis also experience the greatest increases in psychological distress, though the relation is not as pronounced as that for urban residents, even after excluding the outlier of rural Bali (where relative distress increases considerably even though mean household expenditures increased by almost 25 percent). The rural areas that experience negative or zero mean income growth over 1997–2000 witness some of the largest increase in psychological distress. In contrast North and West Sumatra, which experience healthy growth in mean real per capita household expenditure, also experience the smallest increases in distress. The overall relation between growth in mean real per capita household expenditure and psychological distress is slightly weaker in rural areas than in urban areas. Indeed, the slope of the rural fitted regression line is negative but not significant at conventional levels. This weaker relation may be due in part to the fact that population in rural areas overall did not fare as poorly over the crisis period for the reasons discussed earlier.

## VI. Conclusions

The 1997 financial crisis was the most disruptive socioeconomic event to confront Indonesians for at least three decades. The effects of the crisis were wide-ranging. Although some households prospered from the new opportunities afforded by rapid price changes and shifts in the structure of the economy and the political landscape, overall poverty increased and mean income fell. This study is the first to look at the impacts of the crisis on psychological health, using a high-quality longitudinal socioeconomic survey. It finds that the severe economic dislocation and political uncertainty engendered by the crisis increased psychological distress in the overall population.

12. An alternative to the analysis described here is to regress individual changes in psychological health directly on the measured changes in mean provincial income. This approach finds similar results—respondents in provinces with larger contractions in mean income are significantly less likely to transition out of sadness or anxiety, given an initial state of psychological distress, than their counterparts in regions less affected by the crisis.

There was substantial increase in distress indicators at all ages and among men and women. The imprint of the crisis on psychological well-being can be seen in the greater prevalence of poor psychological health for groups most adversely affected: the less educated, the rural landless, and residents in hardest hit cities. To avoid the complications of co-determinacy between psychological health and economic outcomes, such as labor force participation or income, no attempt was made to estimate and interpret correlations with characteristics that might respond to the crisis. Instead, the analysis focused on characteristics such as age, gender, education, and location before the crisis.

Also important is the persistence of psychological distress from the immediate postcrisis period in 1998 to the recovery period in 2000. By 2000 mean national per capita household consumption had already recovered to 1997 levels and the overall economy had returned to precrisis growth rates. However, psychological distress remained elevated, suggesting that economic dislocation has longer lasting effects on psychological well-being than on static measures of economic status. The evidence here suggests that psychological well-being does not necessarily go hand in hand with standard measures of welfare based on economic status. It also suggests that examining the impact on psychological health provides a more complete picture of the consequences of the economic crisis for individuals and their households and communities.

## Appendix

Table A.1. IFLS Psychological and General Physical Health Status Questions

| Question | Possible responses | | | |
|---|---|---|---|---|
| *Indicators of psychological distress* | | | | |
| In the last four weeks, have you... | | | | |
| a. Experienced sadness? | 1. Often | 2. Sometimes | 3. Never | |
| b. Experienced anxiety or fear? | 1. Often | 2. Sometimes | 3. Never | |
| c. Had a hard time sleeping? | 1. Often | 2. Sometimes | 3. Never | |
| d. Felt fatigue or exhaustion?* | 1. Often | 2. Sometimes | 3. Never | |
| e. Been short-tempered or hypersensitive?* | 1. Often | 2. Sometimes | 3. Never | |
| f. Felt bodily pains?* | 1. Often | 2. Sometimes | 3. Never | |
| *Indicator of general health status* | | | | |
| In general, how is your health? | 1. Very healthy | 2. Somewhat healthy | 3. Somewhat unhealthy | 4. Very unhealthy |

*Not asked in 2000

*Source:* IFLS waves 1 (1993), 2+ (1998), and 3 (2000).

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