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Permalink
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Publication Date
2003-02-06
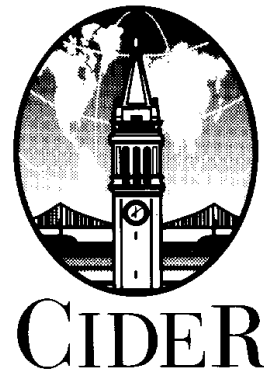
**Gender Bias and The Indonesian Financial
Crisis: Were Girls Hit Hardest?**

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February 2003

Abstract: We analyze how the financial crisis affected a wide range of investments in Indonesian
children and children's outcomes including school enrollment, immunizations, and mortality.
Our dataset is the National Socio-Economic Survey (Susenas), a large nationally representative
sample. We build on past research by differentiating outcomes for boys and for girls, and by
separating regions heavily affected by the financial crisis from others that were relatively unhurt.
 Along most dimensions, children were well protected. Contrary to some theory and press
reports, girls did not fare worse than boys during the crisis.

The East Asian financial crisis of 1997-1998 had a devastating effect on the Indonesian economy. Substantial research in developing countries suggests that female children often bear a disproportionate share of the burden during economic crisis such as this one. In addition, press and policy-oriented reports on the effects of the crisis in Indonesia support this prediction. This study examines the effects of the crisis on children, focusing on whether its effects were more negative for girls than boys.

This paper makes five contributions to the results of past studies:

1. Most studies to date have analyzed data from half or fewer of Indonesia's provinces. We analyze nationally representative data from all provinces and districts with reliable data.

2. Most studies have used relatively small samples; we analyze the Susenas living standards survey, which provides data on over 200,000 households per year.

3. Most studies have analyzed only a single outcome, such as education, yet existing studies have shown widely varying effects of the crisis on different outcomes. Thus, it is important that we examine a wide range of investments in children and children's outcomes, including school enrollment, immunizations, and mortality.

4. Although the crisis had very different effects in different regions, most studies have examined national trends (perhaps breaking out urban versus rural regions or Java versus the rest of the nation). We separately analyze trends in regions with higher or lower exposure to the financial crisis.

5. Finally, most studies have looked at children's average outcomes. We examine not only average outcomes but also whether the crisis had disproportionate effects on girls and whether they were disadvantaged before the crisis.

The size of our data set is beneficial for studying multiple outcomes by various age and gender groups, as sampling variation implies that roughly one in 20 of the changes in outcomes we examine will be statistically significant at the 5 percent level. With our large sample size, we

can expect that most sampling error results will be substantively small even when they are misleadingly statistically significant.

In two areas our results are far more positive in two senses than we had expected. First, contrary to press reports and some analyses of smaller data sets, we do not find that this economic shock had severely negative effects on children. An exception to this finding is immunization rates, which did decline in rural areas. Second, contrary to economic theory, press reports, and some analyses of the Indonesian crisis using smaller data sets, we do not find that girls were harmed more than boys.

Background

Starting in August 1997, Indonesia, like other nations severely affected by the Asian financial crisis, experienced a sudden and widespread financial panic. By January 1998, the Indonesian Rupiah (Rp) was worth 15% of its U.S. dollar value six months earlier, and GDP growth fell from +8% in 1996 to -13% in 1998. Austerity measures, inflation, very high interest rates, and a massive credit crunch brought the crisis from the financial sector to households across the country, causing real wages and consumption to decline. These declines were potentially devastating in a country where average consumption was only about a dollar per day before the crisis, and almost 20% of the population lived below a conservative poverty line of 35,000Rp/month (about $14.50) in 1996.

Effects on children

The financial crisis clearly reduced living standards, and its ill effects may last for a generation or more if it caused a reduction in investments in children. The early studies on the Indonesian crisis suggest that investments in children's health and education declined by meaningful amounts. Frankenberg and her co-authors (1999), for example, find that overall use of health services declined substantially for children between 1997 and 1999, and the percentage of

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children under three receiving vitamin A supplements fell significantly. Moreover, the trend of increased primary school enrollment for Indonesian children was reversed between 1997 and 1999 (Thomas et al., 2001). Further studies indicate that in both nutrition and education, the crisis took the greatest toll on children from poorer households. Stalker (2000: 15, citing evidence in Jahari et al., 2000) claims that between 1995 and 1998, malnutrition rose for those 6 months to 5 years in age. Moreover, "in terms of severe malnutrition the level in 1999 —8 percent —is higher than it was ten years earlier."

In contrast, Cameron (2000) finds only a slight drop in school enrollment and that the health status of children appeared stable from 1997 to 1999. She also finds, however, that although there were not significantly more children in the labor force after the crisis, those employed worked longer hours than in previous years.

Sons versus Daughters
There are several reasons to study gender differences in the effects of the financial crisis in Indonesia. One key motivation for this study is that other negative shocks in poor regions of the world have frequently caused more harm to daughters than to sons. For example, Dreze and Sen (1989) cite a number of studies that show that households in developing countries often have pro-male priorities in times of distress. Conversely, examining a sample of children in rural India, Rose (1999) finds that favorable rainfall shocks increase the probability that girls will survive more than boys. DeTray (1988), in Malaysia, and Schultz (1985), in a cross-national analysis, both find that changes to incomes affect girls' demand for schooling more than boys. Similarly, Alderman and Gertler (1997) show that the demand for daughters' human capital in Pakistan is more income and price elastic than for sons'. Finally, Behrman (1988) finds that the gap between boys and girls in nutrition allocation is greatest in the season when food supplies are low in rural India.

Indonesia presents an important site to study the effects of shocks because the evidence concerning bias against women is mixed. On the one hand, Indonesia has a long tradition of social and financial discrimination against women. For example, for the cohorts born before 1940, average male education was at least twice female education.[1] In addition, over 99 percent of local community leaders are male (Robinson, 1999: 240). Moreover, the Suharto regime, which was in power from the mid-1960s until the financial crisis institutionalized an ideology supporting the subordinate role of women (Robinson, 1999). Even as late as the 1990s, women were far less likely to inherit from their parents than men were (Kevane and Levine, 2001).

On the other hand, some measures show that women in Indonesia have suffered less discrimination than women in neighboring countries. The traditions in most of Indonesia are less biased against daughters than are those in most other large, poor nations such as India and China, and much less than other large predominantly Muslim nations such as Bangladesh or Pakistan. In part due to the different traditions, there is no "missing girls" phenomenon; that is, Indonesian daughters do not suffer higher mortality rates than their brothers (Kevane and Levine, 2001). Education levels for women rose markedly during the Suharto regime, reaching almost full primary school enrollment before the financial crisis, although a gender gap in high school enrollment persisted through the mid-1990s (Kevane and Levine 2001).

Given this mixed record on the relative treatment of daughters, it is important to study how negative shocks in Indonesia affect daughters versus sons. The one previous study on this issue, which uses evidence from before the financial crisis, finds some evidence that daughters lose out

in bad times. Specifically, Cameron and Worswick (2001) find that families with school-age girls reduced their spending on education in response to a crop loss, while families of school-age boys did not.

While the quantitative evidence concerning investments in children is mixed, most qualitative evaluations of the effects of the crisis note that daughters suffered more than sons did. For example, the World Bank staff provides this bleak assessment:

> *Women and girls may be disproportionately hurt by the financial crisis. Women lose their jobs first, and families pull their daughters out of school before sons. The particularly hard pressed may sell daughters to brothels. Even before the crisis, girls in Indonesia were six times more likely than boys to drop out of school before the fourth grade. Once girls are removed from school, they rarely go back. Social organizations also point to a rise in domestic violence and prostitution. Though gender inequality is not a new problem in the region, the crisis situation has exacerbated the difficulties faced by poor women and girls in East Asia (1998: 16).*

Writing two years after the onset of the crisis, the Asian Development Bank concur:

> *Many older children have left school to help their families earn money, with girls being the most likely to drop their education (cited in Symonds, 1999).*

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[1] Susenas.

Moreover, an International Labor Organization report states that, "The crisis seems to have sent a lot of children out of school and 'pushed many more girls than boys into work'" (ICFTU, 1999). Thomas et al. (2001) find that additional girls age 10-14 are associated with lower education budget shares in urban households, while additional males aged 15-19 in a household are associated with higher budget shares spent on education. These results are consistent with the hypothesis that young women left schools while their older brothers' education was protected.

In short, daughters in many nations are more vulnerable to crises than are sons. Moreover, some (but not all) evidence suggests that discrimination existed against daughters in Indonesia before the crisis, and some (but not all) evidence points to discrimination against daughters in Indonesia during the crisis. To add to the confusion, some (but not all) evidence suggests that children as a whole suffered during the financial crisis in Indonesia. Given the mixture of evidence across samples, outcomes, and regions, it is important to evaluate a wide array of measures of investments in children using large sample sizes and a nationwide data set.

Were Results Different in the Regions Most Affected by the Crisis?

Although most analysts write about "the" financial crisis, the effects of the crisis and massive devaluation affected regions in Indonesia in different ways. Most importantly, the enormous real devaluation of the Rupiah greatly increased the spending power of those who sold goods priced in dollars, provided that they were not reliant on local credit. This effect was most important for producers of raw materials and farmers of tradable crops. Because these producers were concentrated in some regions, it is unsurprising that press reports noted a boom in consumption in some regions that exported raw materials (Wagstaff 1998).

To capture the heterogeneous effect of the crisis, we focus on regions in Indonesia that were most affected by the crisis. Several studies on Indonesia's financial collapse have examined differential effects by region, largely emphasizing rural-urban comparisons (Sumarto et al., 1998; Thomas et al., 1999; Thomas et al., 2001). This research indicates that urban areas were vulnerable to price changes because they were more dependent on a cash economy. Rural households, on the other hand, and in particular agricultural households that grow their own food, are better protected from a financial shock. Moreover, those that sold crops and homemade goods may have benefited from the increasing prices of foodstuffs and raw materials.

An important issue for this analysis is therefore determining which areas were most affected by the crisis. One straightforward approach is to examine regions that experienced the greatest decline in real consumption. This measure, however, relies on correctly measuring prices, which is a complex task due to the rapid and uneven inflation experienced across Indonesia during this time. While we incorporate real consumption measures in determining which regions were hit hardest, we also apply three measures that do not depend on potentially unreliable price measures. We define a region as hit hard if either (1) real per capita consumption declined by over 15%, (2) average food share increased by more than 15%, or (3) per capita consumption of calories, protein, and food by weight declined by more than 10%.

Each of these three crisis impact measures is calculated by "region," which we define as the rural and urban areas of Indonesia's districts (kabupaten). Districts vary in physical size and in population, and are political units between county and state in the United States. When we split each district into two regions, one comprising rural areas and the other urban areas, there are a total of 574 regions, with an average population of 360,000 and a standard deviation of 440,000 in 1999.[2] Because of limited data in Irian Jaya and the secession by East Timor, our study does

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[2] Provinces with rapidly growing populations added *kabupaten* between 1996 and 1999. For consistency, our analysis uses the 1996 *kabupaten* numbering system.

not include these provinces, which accounted for less than 1.5% of Indonesia's population of about 206 million in 1999. Excluding these provinces and others for which consumption data are unavailable, the total number of regions included in this study is 495, with 255 urban and 240 rural.

By combining different measures, we reduce false negative errors, which are the number of regions that are hard hit and not labeled as such. As a robustness test, we label a region heavily as hit hard if it met two or more of our criteria, thereby reducing the number of false positive errors, which are the number of regions that are misclassified as hard hit when they were not. Both sets of results are similar.

Labeling regions in this way, we find that 315 of 495 regions were hit hard. Of these, over 60% were urban and over two-thirds consumed below the national average of home-produced food. Only 33% of the highly affected regions had a disproportionately large number of poor households, while 46 percent of the other regions did. These regions also followed the pattern that Sumarto et al. (1998) find in their study of Indonesian regions that were most strongly affected by the crisis: both rural and urban areas of Java, Nusa Tenggara, and East Kalimantan were hard hit, and urban areas generally were the worst off.[3]

Data

The data used for this study come from Indonesia's National Socio-Economic Survey, known by its Indonesian acronym Susenas. Every year since 1992, the Indonesian Statistical Agency, Biro Pusat Statistik (BPS), has surveyed a cross-section of about 200,000 households, or approximately a million individuals. The survey covers basic household characteristics and expenditures, as well as the general welfare of each household member in areas such as education, labor force participation, health, and mortality. Because Susenas covers all districts in

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[3] The effects of severe drought and subsequent forest fires related to 1998 El Niño weather patterns were particularly harsh in Nusa Tenggara and Kalimantan, and probably caused estimates of crisis impacts to be overstated in these regions.

Indonesia, which has a population of roughly 200 million, Susenas has a relatively high sampling fraction of 1:200.

Susenas samples are not representative of Indonesia's population. To save time, costs, and effort, urban communities, which are more easily accessed, are oversampled and more remote rural villages are undersampled. Furthermore, instead of surveying households distributed throughout villages, BPS surveys a cluster of 16 households in a single neighborhood. Our analyses include weights to correct for differential sampling and adjust standard errors and test statistics for clustered sampling.

In 1996 and 1999, 60,000 of the households interviewed for Susenas were given an in-depth Consumption Module in addition to the standard Susenas Core. The households reported on their expenditures of over 110 nonfood items over the past month and year and their expenditures on about 200 food items over the previous week. For this study, we rely on 1997 and 1999 Core surveys for human capital investment data, such as schooling, work, and healthcare. As the 1997 data were collected early in the year, it predates the effects of the crisis. For detailed consumption data, we use the smaller but richer Consumption Modules from 1996 and 1999, which provide information on household consumption in Rupiah and in quantities.[4] We convert the quantity information (typically kilograms, but sometimes in other units) into calories and protein consumed by household of each of the 200 food categories.

Results

We first present descriptive statistics for boys and girls both before and after the crisis. Implicit in these tabulations are the difference-in-difference estimates we are interested in; for example, Did the male-female gap in health and education change after the crisis? We then present a

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[4] The consumption module was not available in 1997, leading us to use the 1996 model.
To reduce the effect or outliers, we compress the top and bottom 1% of all consumption variables.

regression analysis of these difference-in-difference tests that more carefully control for household characteristics. Finally, we divide the nation into regions more or less affected by the financial crisis, and examine whether girls fared better or worse in the most affected regions.

Descriptive Statistics

The dataset includes all households with children under 16. Table 1 shows some basic characteristics of these households and how they changed from 1997 and 1999. Due to a long-term trend of decreasing fertility, household size decreased and the adult-to-child ratio rose. The education of both male heads and female heads[5] rose, and households became increasingly urban, also continuing pre-crisis trends. Household facilities improved, such as household plumbing and access to electricity and water, all of which are correlated with increasing urban population. Our regressions control for these demographic trends.

Children's outcomes

Table 1 also shows that among households with children the percentage of working males heads declined slightly between 1997 and 1999, while the labor force participation of female heads increased over 10%, from 44% to 49%.[6] This increase is especially remarkable considering that labor force participation rates of women, as well as female heads specifically, declined from 1995 to 1997.[7] This trend reversal implies that women increasingly entered the labor force after the crisis. Anecdotal evidence suggests that much of the increase resulted from the rising unemployment of men and decreasing real wages.

The changes in the labor market between 1996 and 1999 may have had implications for the relative enrollment and labor force participation rates of girls and boys. With mothers working

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[5] Female heads include wives of the reported head and single female heads (mostly widows except among younger cohorts).
[6] This pattern follows that of working age women and men generally. From 1997 to 1999 the labor force participation of men and women age 20-55 changed by –1.4% and +6.9% respectively.
[7] Susenas Core, 1993-1999

more hours outside the home, we would expect that households would require daughters to take over housework at the expense of schoolwork. As Charts 1 and 2 show, the percentage of girls 10-14 whose main activity was housework increased 44% (1.1 percentage points) in 1998, from 2.6% to 3.7%, after steadily declining since at least 1993. This percentage increase was 18% for girls 15-19, increasing from 19.5% to 23.0%. At the same time, there was no increase in percentage of girls or boys whose main activity was work, and the labor force participation of both of these groups declined from 1997 to 1999. Furthermore, while the enrollment rates for girls and boys at the junior and senior secondary levels increased from 1997 to 1999, and decreased less than a percentage point at the primary school level, the percentage of both boys and girls 10-15 whose main activity was school fell about 3% from 1997 to 1998, recovering slightly in 1999. Looking only at the enrollment level of children, therefore, hides some of the increased housework and childcare of a percent or more of young woman.

Table 2 shows how boys' and girls' human capital investments differed in 1997 and 1999. In both years, girls were more frequently enrolled than boys in primary school, but the advantage that boys had over girls in junior and senior secondary school enrollment in 1997 disappeared in 1999. Among 10- to 15-year-old boys and girls, trends in main activities were similar before and after the crisis: more boys spent the majority of their time in school and at work than did girls in 1997 and 1999, while far more girls than boys spent the majority of their time doing household labor.

Differences between boys and girls in health measurements such as mortality, immunization, and health treatment were small and were mostly not significant both before and after the crisis. It is interesting to note, however, that between 1997 and 1999, there were dramatic changes in all three measures for children – although the sign of the changes differed across the outcomes. In contrast to expectations, mortality rates declined from 4.8 % to 3.4% for infants under 1 and

from 0.7% to 0.4% for children 1-5.[8] More in line with expectations, among children who had

health complaints, 43%, 57%, and 63% fewer were treated in age groups under 5, 6-10, and 11-

15, respectively, while reporting of health complaints remained constant.

Consumption and Prices

Table 3 shows how real household spending changed between 1996 and 1999, in 1996 Rupiah.[9]

Overall real consumption declined 12.4% percent. As expected, food spending was relatively

protected and in fact is not significantly different before and after the crisis when deflating by the

overall price index. Because of rising relative prices for food, constant inflation-adjusted

expenditures implies declining food quantities, as documented below. The increase in percent of

household budget spent on food, from 57.0% to 62.6%, indicates a decline in welfare as a result

of the crisis, as does the increase in households living below the inflation-adjusted 1996 BPS

poverty line (from 17.6% to 19.8%).

Analyses of how the crisis affected real consumption and poverty rates depend crucially on

assumptions about the rate of inflation across regions, which vary widely depending on which

price index is used. Using a base-case poverty line of 30,000Rp/month in 1996, Suryahadi and

Sumarto (1999) find that estimates of 1999 poverty rates varied from 16.8 to 24.1, depending on

which prices and methodology were used. Beegle et al. (1999) use the 1996 BPS national

poverty line as a base case and find that poverty increased from 11% to 13.8% from 1997 to

1998 in a sample drawn from 7 of 27 provinces. Using BPS deflators and the same baseline and

timeframe, the authors find the poverty rate increased from 11.0 to 19.9%. The deflators we use

also yield higher poverty rate increases than do the BPS deflators. While BPS finds a poverty

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[8] Pre-crisis mortality data is from 1996, while all other pre-crisis data is from 1997.
[9] Deflators used for this analysis were provided by Kai-Alexander Kaiser. They differ from the official BPS cost of
living deflators because they use a Tornqvist deflator that adjusts for the substitution that households undertake
when relative prices change.

rate increase from 17.7% in 1996 to 18.2% in 1999, our deflators show an increase to 19.8% using the same 1996 baseline.

Without relying on price measures, many other indicators show that consumption declined as a result of the crisis. Table 4 shows that per capita calories, protein, carbohydrates, and fat consumption all declined between 1996 and 1999. Furthermore, the consumption by food weight declined 10.7%, from 19.8 kg to 17.7 kg, and this drop was greatest in protein-rich foods such as meat (47.3%), fish (18.2%), and eggs and milk (31.4%).

In addition to evidence that average real income and food consumption fell as a result of the crisis, our data also suggest that children bore the brunt of this decline. As Table 5 shows, in households with children, the budget share spent on children's goods (education, recreation, and children's clothing) decreased 12.2 percent, from 3.7% to 3.3%, while the budget share spent on adult goods (cigarettes, tobacco, cosmetics, and adult clothing) fell only 4.7 percent, from 9.5% to 9.1%. For children, it appears that clothing and recreation consumption was protected at the expense of education.

The average share of income spent on education in households with children dropped almost 22% during the crisis, from 2.3% to 1.8%, while primary enrollment remained unchanged and secondary enrollment increased. This contradiction leads us to question whether enrollment data accurately reflect school attendance. An alternative measure of investment in education is the percent of children whose main activity is school. For youth ages 10-15, this percentage fell by .6 percentage points for girls and 1.5 percentage points for boys (from a base of approximately 86% for both). This decline in youth whose main activity was schooling occurred in spite of an increase in enrollment among children ages 10-15 of 1.1 percentage points for girls and .5 percentage points for boys (from bases of about 87% for both, see Table 2).

Regressions on Male-Female Gaps

In this section, we use regression analysis to examine changes in children's enrollments, time use, immunization, and mortality. We first analyze overall trends; these results extend the cross-tabs above by adding household-level controls. We then examine how results differ for regions more and less affected by the crisis.

All regressions include an extensive list of standard control variables: household size and composition variables, education of household head and spouse, dummy for female household head, age and age squared of child, household structure variables (wall, floor, electricity, etc.), and province interacted with rural or urban dummies. The basic set of regressions includes a 1999 dummy; a girl dummy, which gives the difference between boys and girl in 1997; and the interaction girl*1999, which gives the difference-in-difference. The sum of the coefficients on girls and girl*1999 is the 1999 difference between boys and girls.

The second set of regressions incorporates whether or not the child lives in a region that was strongly affected by the financial crisis. In addition to the independent variables used in the basic regressions, we also include a dummy equal to one if the region was hit hard and the interactions girl*hit hard, 1999*hit hard, and girl*1999*hit hard. The last variable gives the difference-in-difference-in-difference, or how the change in the boy-girl gap between 1997 and 1999 differed between regions that were strongly affected and those that were not.

Both sets of regressions are performed on the same set of 12 dependent variables: primary enrollment (ages 7-12), junior secondary enrollment (ages 13-15), senior secondary enrollment (ages 16-18), child's main activity is school (ages 10-15), child's main activity is housework (ages 10-15), child's main activity is work (ages 10-15), child worked last week (ages 10-15), average hours child worked last week, if child worked (ages 10-15), child was immunized (under 5), child died last year (under 1), child died last year (ages 1-5), and child died last year (ages 6-

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15). Regressions are probits, except where the dependent variable is equal to average hours worked last week, which is ordinary least squares. All results are population weighted, and standard errors are corrected for cluster sampling.

Table 6 shows the difference in means for boys and girls in 1997 and 1999, and the change over time in the gaps between boys and girls. In almost all cases, the gap between boys and girls changed to the benefit of girls instead of the reverse. The one exception is the difference between the percentage of girls and boys whose main activity is housework, which increased from 3.3 percentage points in 1997 to 4.4 percentage points in 1999. (Both differences are significant at .95). Only two other differences-in-differences are significant at .90 or above, however. They are the change in the gap between boys and girls in secondary school enrollment and the percentage whose main activity is school. In both cases, the gap, which favors boys in both years, declined.

The basic regression results, which control for child and household characteristics as well as province and rural/urban area,[10] confirm that boys were not protected from crisis impacts and may have been harmed more than girls (see Table 7). In all cases where the difference-in-difference (the dP/dX estimate on girl*1999) was statistically significant, the relative welfare of girls to boys improved. Furthermore, the improvements were larger in magnitude than those given by the simple difference-in-difference means in Table 6. For example, the gap in junior and senior secondary enrollment fell from 2.5 percentage points to 1.0 percentage points and 6.3 percentage points to 3.9 percentage points, respectively. Furthermore, the gap in the percentage of boys and girls ages 10-15 whose main activity was school, which was 1.1 percentage points in 1997, went away in 1999. At the same time, the gap in percentage of boys and girls whose main

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[10] The basic set of independent variables is: girl, year=1999, girl*1999, household size and composition variables, education of household head and spouse, dummy for female household head, age, and age squared of child, household structure variables (wall, floor, electricity, etc.), and prov*rural dummies. Additional variables used for the region impact regressions are: dummy equal to one if the region was hard hit by the crisis and the interactions girl*hard hit, 1999*hard hit, girl*1999*hard hit.

activity was work, which favored girls in 1997, grew 30% to 1.2 percentage points in 1999. Finally, while girls who worked spent more hours doing so than boys who worked in 1997, this gap disappeared in 1999.

Changes in the male-female gap in regions worst hit by the crisis

The previous section showed that on average, girls were not hurt worse than their brothers by the financial crisis. At the same time, this result is an average of regions that were devastated by the crisis and others that escaped unharmed. A more powerful test focuses on those regions with a declining standard of living.

Table 8 shows that both urban regions and those with little home-produced food suffered more during the crisis than rural regions or regions with low average home production. Urban regions experienced a greater drop in per capita real expenditure and food consumption by weight, as well as a larger increase in food share than did rural households. Similarly, regions where home-produced food consumption was below the mean in 1996 also experienced a far greater decline in per capita expenditure and a greater increase in household food share than did other regions, as predicted. Regions with more than the mean percentage of poor households in 1996, however, seem to have fared better than their counterparts with respect to change in real income, food consumption, and food share of total budget.

Table 9 shows the results when we interact the differencing variables with a dummy equal to 1 if the region was among those hardest hit by the crisis. These results suggest that the improvement that girls made between 1997 and 1999 may not have been as large in areas that were most affected by the crisis. For instance, the gains that were made by girls in junior secondary enrollment, main activity is work, and average hours worked in regions that were not hard hit were not present in the more affected regions. A relative gain was made by girls in senior

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secondary school enrollment, however, reducing the gap between boys and girls by 2.8 percentage points in hard-hit regions, where there was no gain in other regions. None of the difference-in-differences, however, is significant at even the 10 percent level.

To test the robustness of these results, we ran the same regressions defining regions as "hit hard" by the financial crisis only if they met at least two of the three criteria: (1) real per capita consumption declined by over 15%, (2) average food share increased by more than 15%, and (3) per capita consumption of calories, protein, and food by weight declined by more than 10%.

The results of the robustness test, given in Table 10, agree with the original difference-in-difference-in-difference results in sign and are even more consistent – although still not statistically significant. While girls in regions that were not hard hit experienced relative gains compared to boys in levels of secondary school enrollment, main activity is school, main activity is work, and average hours worked, in hard-hit regions, there was no change in the gap between boys and girls for any of the outcomes measured.

Conclusions

Given the very large reductions in consumption and GDP, the bottom line of these analyses is surprisingly optimistic in terms of children's education and health. Enrollments overall were stable or increasing. Child labor declined somewhat, although this was probably due to a decline in demand. Importantly, infant mortality declined.

The good news about child health may be offset over time, as rates of immunizations and health care among those with a health complaint also fell. Interestingly, these problems may have more to do with public budget constraints and decision-making than with private declines in purchasing power. That is, most immunizations and health care are publicly provided, and the

public system suffered very large declines in real purchasing power due to the financial crisis and the devaluation-induced rise in medicine prices. In short, while households largely protected investments in children, the public sector did not. In retrospect, international organizations might have given more assistance to protect basic public goods such as immunizations.

Despite predictions and news reports that families protected investments in sons at the expense of daughters, girls seem to have fared better than boys from 1997 to 1999. Most notably, while enrollment rates for boys were stable, girls' enrollments continued to rise in junior and senior high schools. The fact that female enrollment caught up to male enrollment appears to contradict the hypothesis that parents protect sons' welfare during downturns at the expense of daughters. At the same time, daughters' catching up continued long trends in female enrollment and took place only in regions relatively less affected by the crisis. Thus, it could be that the parents who were most affected by the crisis protected sons' enrollments more than daughters', but daughters overall benefited from a long-term trend in their favor.

Tables

Table 1. Household descriptive statistics

	1997		1999		Change	
	Mean	_Std. Err._	_Mean_	_Std. Err._	_Percent_	_p Value_
Household size	4.751	0.007	4.692	0.008	-1.2%	0.000
# adults > 15	2.866	0.006	2.896	0.006	1.0%	0.000
# children < 6	0.626	0.003	0.594	0.003	-5.0%	0.000
# children 6-10	0.609	0.003	0.591	0.003	-3.0%	0.000
# children 11-15	0.650	0.003	0.611	0.003	-5.9%	0.000
% rural	0.639	0.006	0.618	0.006	-3.3%	0.013
Education of male head, years	6.887	0.027	7.010	0.029	1.8%	0.002
Education of female head, years	5.893	0.027	6.043	0.029	2.6%	0.000
Male head working	0.937	0.001	0.931	0.001	-0.6%	0.000
Female head working	0.442	0.002	0.488	0.002	10.3%	0.000
% with electricity	0.775	0.004	0.838	0.003	8.0%	0.000
% with private water source	0.508	0.004	0.527	0.004	3.7%	0.001
% with plumbing	0.310	0.004	0.350	0.005	12.8%	0.000

Note: Number of observations (households with children under 16) = 298,706 (150,917 in 1997 and 147,789 in 1999). Source: Susenas Core.

Table 2. Education, labor and health characteristics of girls versus boys

	Girls		Boys		Difference	
	Mean	*Std. Err.*	*Mean*	*Std. Err.*	*Percent*	*p Value*
Education and Labor						
1997						
Primary school enrollment, 7-12	0.959	0.001	0.954	0.001	0.6%	0.000
Junior secondary school enrollment, 13-15	0.768	0.004	0.783	0.004	-2.0%	0.000
Senior secondary school enrollment, 16-18	0.474	0.005	0.499	0.005	-5.0%	0.000
% whose main activity is school, 10-15	0.856	0.002	0.866	0.002	-1.0%	0.000
% whose main activity is work, 10-15	0.034	0.001	0.054	0.001	-36.7%	0.000
% whose main activity is housework, 10-15	0.038	0.001	0.005	0.000	714.1%	0.000
Worked last week, 10-15	0.074	0.002	0.113	0.002	-34.2%	0.000
Average hours if worked last week, 10-15	4.523	0.065	4.179	0.042	8.2%	0.000
1999						
Primary school enrollment, 7-12	0.958	0.002	0.952	0.001	0.7%	0.000
Junior secondary school enrollment, 13-15	0.788	0.004	0.794	0.004	-0.7%	0.247
Senior secondary school enrollment, 16-18	0.508	0.005	0.514	0.005	-1.2%	0.293
% whose main activity is school, 10-15	0.850	0.003	0.851	0.003	-0.1%	0.03
% whose main activity is work, 10-15	0.028	0.001	0.050	0.001	-43.4%	0.000
% whose main activity is housework, 10-15	0.051	0.001	0.006	0.000	701.8%	0.000
Worked last week, 10-15	0.067	0.002	0.104	0.002	-35.8%	0.000
Average hours if worked last week, 10-15	4.340	0.067	4.152	0.041	4.5%	0.009
Health						
1996						
Mortality, <1	0.046	0.003	0.050	0.003	-9.2%	0.260
Mortality, 1-5	0.007	0.001	0.007	0.001	1.9%	0.852
Mortality, 6-15	0.001	0.000	0.001	0.000	-1.9%	0.893
1997						
Immunized, <5	0.942	0.003	0.939	0.003	0.2%	0.472
Reported a health complaint, 0-5	0.320	0.004	0.324	0.004	-1.1%	0.334
Reported a health complaint, 6-10	0.214	0.003	0.207	0.003	3.6%	0.023
Reported a health complaint, 11-15	0.172	0.003	0.169	0.003	2.1%	0.213
Treated for health complaint, 0-5*	0.688	0.006	0.686	0.005	0.2%	0.839
Treated for health complaint, 6-10*	0.550	0.007	0.542	0.007	1.4%	0.376
Treated for health complaint, 11-15*	0.499	0.008	0.490	0.007	1.8%	0.333
1999						
Mortality, <1	0.030	0.003	0.038	0.003	-19.6%	0.054
Mortality, 1-5	0.004	0.000	0.004	0.000	-10.9%	0.420
Mortality, 6-15	0.001	0.000	0.001	0.000	-11.6%	0.428
Immunized, <5	0.944	0.003	0.941	0.003	0.3%	0.409
Reported a health complaint, 0-5	0.330	0.004	0.344	0.004	-3.9%	0.002
Reported a health complaint, 6-10	0.214	0.003	0.210	0.004	1.7%	0.319
Reported a health complaint, 11-15	0.169	0.003	0.161	0.003	4.9%	0.014
Treated for health complaint, 0-5*	0.574	0.006	0.576	0.006	-0.4%	0.776
Treated for health complaint, 6-10*	0.435	0.008	0.425	0.008	2.4%	0.327
Treated for health complaint, 11-15*	0.376	0.009	0.371	0.008	1.3%	0.630

*Of those who reported a health complaint.

Note: Total number of children aged 6-18 = 488,485. Number of girls in 1997 = 122,396; number of boys in 1997 = 128,022; number of girls in 1999 = 115,690; number of boys in 1999 = 122,377. Source: Susenas Core.

Table 3: Change in real per capita expenditure, household food shares, and poverty rates

	1996		1999		Change	
	Mean	_Std. Err._	_Mean_	_Std. Err._	_Percent_	_p Value_
Real food, Rp per capita per month	37,503	273.35	37,372	228.40	-0.3%	0.605
Real nonfood, Rp per capita per month	36,682	627.99	27,276	362.90	-25.6%	0.000
Real consumption, Rp per capita per month	73,402	821.81	64,291	541.84	-12.4%	0.000
Budget share spent on food	0.570	0.002	0.626	0.002	9.7%	0.000
Poverty rates, using BPS 1996 poverty line*	0.176	0.004	0.198	0.004	12.3%	0.000

*The BPS national poverty rate of 17.7% in 1996 was used to impute a poverty level of approximately 35,000
Rupiah consumption per person per month. This poverty line was used first to calculate the poverty rate for our sample
in 1996 (which includes all of Indonesia except East Timor and Irian Jaya and is therefore slightly lower than the
BPS rate) and then applied in 1999 using our deflators.
Notes: Number of observations = 118,732 (58,983 in 1996 and 59,749 in 1999). Source: Susenas Module.

Table 4: Change in per capita nutrition consumption, 1996 to 1999

	1996		1999		Change	
	Mean	_Std. Err._	_Mean_	_Std. Err._	_Percent_	_p Value_
Per capita kilogram/month						
Cereals	9.935	0.039	9.111	0.042	-8.3%	0.000
Tubers	1.156	0.023	1.228	0.025	6.2%	0.010
Fish	1.293	0.018	1.057	0.017	-18.2%	0.000
Meat	0.433	0.008	0.228	0.005	-47.3%	0.000
Eggs/milk	0.567	0.007	0.389	0.006	-31.4%	0.000
Vegetables	3.059	0.025	2.778	0.023	-9.2%	0.000
Nuts/beans	1.225	0.014	1.252	0.018	2.2%	0.116
Fruit	2.142	0.026	1.649	0.021	-23.0%	0.000
Kg subtotal	19.782	0.076	17.672	0.071	-10.7%	0.000
Per capita nutrition/day						
Calories	2,099	6.062	1,927	5.717	-8.2%	0.000
Protein, g	56.882	0.203	51.177	0.179	-10.0%	0.000
Carbohydrates, g	355.47	1.060	329.13	1.051	-7.4%	0.000
Fat, g	50.701	0.271	45.389	0.233	-10.5%	0.000

Notes: Because of data constraints, our kilogram analysis excludes the following food categories: oil and fat, beverage additives, spices,
prepared foods, and other. The categories included comprise about 68% of average per capita consumption in Rupiah in both 1996
and 1999. Consumption of prepared foods makes up about 40% of the missing categories, and since this most likely declined in
1999, our kilogram analysis probably underestimates the percent drop in total food consumption. The nutritional conversions were
calculated using conversion factors provided by BPS. Number of observations = 118,732 (58,983 in 1996 and 59,749 in 1999).
Source: Susenas Module.

Table 5: Household budget shares

	1996		1999		Change	
	Mean	*Std. Err.*	*Mean*	*Std. Err.*	*Percent*	*p Value*
Food	0.580	0.002	0.636	0.002	9.8%	0.000
Housing	0.093	0.001	0.076	0.001	-18.4%	0.000
Utilities	0.065	0.000	0.047	0.000	-26.8%	0.000
Healthcare	0.015	0.000	0.015	0.000	0.5%	0.810
Education	0.023	0.000	0.018	0.000	-21.8%	0.000
Children's clothes and recreation	0.014	0.000	0.015	0.000	2.9%	0.031
Total children spending	0.037	0.000	0.033	0.000	-12.2%	0.000
Adult clothing and beauty	0.043	0.000	0.034	0.000	-22.1%	0.000
Tobacco and alcohol*	0.052	0.000	0.057	0.001	9.9%	0.000
Total adult spending	0.095	0.001	0.091	0.001	-4.7%	0.000
Total nonfood**	0.420	0.002	0.364	0.002	-13.4%	0.000

* This category is over 95% tobacco as alcohol consumption is prohibited by Islamic law.
**Includes categories not listed here: transportation, insurance and savings, miscellaneous personal items, recreation, and ceremonies. These categories account for 11.5% of total household spending.
Notes: Number of observations = 118,732 (58,983 in 1996 and 59,749 in 1999). Source: Susenas Module.

Table 6: Differences between boys and girls in health, education, and labor characteristics

| | DIFFERENCE | | | | DIFFERENCE-IN-DIFFERENCE $(Girl_{1999}-Boy_{1999})-$ $(Girl_{1997}-Boy_{1997})$ | |
| | $Girl_{1997}-Boy_{1997}$ | | $Girl_{1999}-Boy_{1999}$ | | | |
	Mean	Std. Err.	Mean	Std. Err.	Mean	Std. Err.
Education and Labor						
Primary school enrollment, 7-12	0.005	0.001	0.006	0.002	0.001	0.002
Junior secondary school enrollment, 13-15	-0.015	0.004	-0.006	0.005	0.010	0.007
Senior secondary school enrollment, 16-18	-0.025	0.006	-0.006	0.006	0.019	0.008
% whose main activity is school, 10-15	-0.009	0.002	-0.001	0.003	0.008	0.004
% whose main activity is work, 10-15	-0.020	0.002	-0.022	0.002	-0.002	0.002
% whose main activity is housework, 10-15	0.033	0.001	0.044	0.001	0.011	0.002
Worked last week, 10-15	-0.039	0.002	-0.037	0.002	0.001	0.003
Average hours if worked last week, 10-15	0.344	0.070	0.188	0.073	-0.156	0.100
Health						
Mortality, <1	-0.005	0.004	-0.007	0.004	-0.003	0.006
Mortality, 1-5	0.000	0.001	0.000	0.001	-0.001	0.001
Mortality, 6-15	0.000	0.000	0.000	0.000	0.000	0.000
Immunized, <5	0.002	0.003	0.003	0.003	0.000	0.005
Reported a health complaint, 0-5	-0.004	0.004	-0.013	0.004	-0.010	0.006
Reported a health complaint, 6-10	0.007	0.003	0.004	0.004	-0.004	0.005
Reported a health complaint, 11-15	0.003	0.003	0.008	0.003	0.004	0.004
Treated for health complaint, 0-5*	0.001	0.006	-0.002	0.008	-0.003	0.010
Treated for health complaint, 6-10*	0.007	0.008	0.010	0.010	0.003	0.013
Treated for health complaint, 11-15*	0.009	0.009	0.005	0.010	-0.004	0.013

Of those who reported a health complaint.
Notes: Total number of children aged 6-18 = 488,485. Number of girls in 1997 = 122,396; number of boys in 1997 = 128,022; number of girls in 1999 = 115,690; number of boys in 1999 = 122,377. Source: Susenas Core.

Table 7: Summary of basic regressions
Change in outcomes of girls relative to boys from 1997 to 1999

		MARGINAL EFFECTS (DP/DX)				
Independent variables:		**Girl**	**Girl+Girl*1999**	**Girl*1999**		
Dependent variables	*Age range*	*(1997 Diff)*	*(1999 Diff)*	*(Diff-in-diff)*	*Observations*	*Pseudo-R²*
Enrollment	7-12	0.001	*0.003*	0.002	226,430	0.176
Enrollment	13-15	*-0.025*	*-0.010*	*0.015*	115,077	0.198
Enrollment	16-18	*-0.063*	*-0.039*	*0.023*	110,769	0.238
Main activity is school	10-15	*-0.011*	0.000	*0.011*	232,365	0.214
Main activity is work	10-15	*-0.009*	*-0.012*	-0.003	232,365	0.213
Main activity is house	10-15	*0.016*	*0.017*	0.001	232,365	0.218
Worked last week	10-15	*-0.026*	*-0.027*	-0.001	232,365	0.182
Average hours worked*	10-15	*0.147*	-0.049	*-0.195*	23,990	0.163
Immunized	0-5	-0.001	0.001	0.001	63,985	0.127
Died last year	under 1	0.002	0.000	-0.002	29,397	0.300
Died last year	1-5	0.000	0.000	0.000	166,614	0.276
Died last year	6-15	0.000	0.000	0.000	382,378	0.102

* For the dependent variable average hours worked, the regression uses ordinary least squares and the regression statistic is a true R², not a pseudo-R².

Notes: Each row reports results from a separate equation. We ran 24 regressions, 12 with the basic set of controls and 12 more with the region-level hit-hard interaction. Both sets of controls were run on the same set of 12 dependent variables. For the binary outcome variables, probits adjusted for clustering and population weights were used; for average hours worked last week, ordinary least squares was used. In all regressions, the sample includes children in the 1997 and 1999 surveys, in the age range given for each outcome. The basic set of independent variables is: girl, year=1999, girl*1999, household size and composition variables, education of household head and spouse, dummy for female household head, age and age squared of child, household structure variables (wall, floor, electricity, etc.), and province interacted with rural or urban dummies. The first column gives the coefficient (dP/dx) on the variable girl, the third is the coefficient on girl*1999, and the second column is their sum. Coefficients in italics are significant at 90%. Total number of children aged 6-18 = 488,485. Number of girls in 1997 = 122,396; number of boys in 1997 = 128,022; number of girls in 1999 = 115,690; number of boys in 1999 = 122,377. Source: Susenas Core.

Table 8: Relative impact of the crisis on urban, food producing, and poor households

		AVERAGE CHANGE FROM 1996 TO 1999					
		Per Capita Real Expenditure		**Per Capita Calories**		**Per Capita Food Consumption, Kg.**	
	Sample	*Change*	*Std. Err.*	*Change*	*Std. Err.*	*Change*	*Std. Err.*
Region Characteristics							
Urban	255	-0.146	0.013	-0.081	0.007	-0.113	0.009
Rural	240	-0.010	0.014	-0.078	0.006	-0.087	0.008
Difference		-0.136	0.019	-0.004	0.009	-0.026	0.012
P value		0.000		0.706		0.034	
Regions that home produced above the average percent of food in 1996	203	-0.007	0.016	-0.077	0.007	-0.092	0.009
Regions that home produced below the average percent of food in 1996	292	-0.132	0.012	-0.081	0.007	-0.107	0.008
Difference		0.126	0.020	0.004	0.010	0.015	0.012
P value		0.000		0.684		0.229	
Regions with below the average percent of poor households in 1996	304	-0.118	0.012	-0.083	0.006	-0.110	0.008
Regions with above the average percent of poor households in 1996	186	-0.018	0.018	-0.073	0.007	-0.085	0.009
Difference		-0.100	0.021	-0.011	0.010	-0.025	0.013
P value		0.000		0.264		0.047	

Note: Regions are the rural or urban areas of a district. Sample is the number of regions with the given characteristic.

Table 9: Effects of the crisis on boys and girls in regions more and less affected by the crisis

Difference in the change in outcomes of girls relative to boys from 1997 to 1999, between regions that were heavily impacted by the crisis and those that were not

Independent variables:		MARGINAL EFFECTS (DP/DX)				
		Girl*1999	Girl*1999+girl* 1999*hardhit	Girl*1999* hardhit		
Dependent variables	_Age range_	_Diff-in-diff not hard hit_	_Diff-in-diff hard hit_	_Triple difference_	_Observations_	_Pseudo R²_
Enrollment	7-12	0.001	0.002	0.001	219,799	0.177
Enrollment	13-15	_0.024_	0.008	-0.016	111,712	0.198
Enrollment	16-18	0.017	_0.028_	0.011	107,464	0.238
Main activity is school	10-15	_0.014_	_0.007_	-0.006	225,523	0.215
Main activity is work	10-15	_-0.003_	-0.002	0.001	225,523	0.214
Main activity is house	10-15	0.001	0.001	0.000	225,523	0.219
Worked last week	10-15	-0.004	0.001	0.005	225,523	0.182
Average hours worked*	10-15	_-0.286_	-0.104	0.183	23,489	0.164
Immunized	0-5	0.001	0.002	0.000	63,985	0.127
Died last year	under 1	-0.002	-0.003	-0.001	28,586	0.301
Died last year	1-5	0.000	0.000	0.000	162,422	0.278
Died last year	6-15	0.000	0.000	0.000	373,111	0.105

* For the dependent variable average hours worked, the regression uses ordinary least squares and the regression statistic is a true R², not a pseudo-R².

Notes: See notes for Table 7. All regressions were statistically significant at the .001 level using a chi-squared test (F-test for average hours). Additional variables used in these regressions include the household characteristics listed in the note for Table 7, a dummy equal to one if the region was hard hit by the crisis and the interactions girl*hard hit, 1999*hard hit, girl*1999*hard hit. A region is defined as hard hit if one of the following criteria is met: (1) real per capita consumption declined by over 15%, (2) average food share increased by more than 15% or (3) per capita consumption of calories, protein, and food by weight declined by more than 10%. The first column gives the coefficient (dP/dx) on the interaction variable hardhit*girl; the second column gives the coefficient on girl*99, the fourth gives the coefficient on girl*1999*hardhit, and the third column is the sum of the coefficient on girl*99 + girl*99*hardhit. Coefficients in italics are significant at 90%. Total number of observations (children aged 6-18) = 474, 209. Number of children in hardhit regions in 1997 = 140,893; number of children in other regions in 1997 = 100,909; number of children in hardhit regions in 1999 = 132,244; number of children in other regions in 1999 = 100,163.

Table 10: Summary of region impact regressions (using alternate measure of crisis impact)

Difference in the change in outcomes of girls relative to boys from 1997 to 1999, between regions that were heavily affected by the crisis and those that were not

		MARGINAL EFFECTS (DP/DX)				
Independent variables:		**Girl*1999**	**Girl*1999+girl***	**Girl*1999* hardhit**		
Dependent variables	_Age range_	_Diff-in-diff not hard hit_	_Diff-in-diff hard hit_	_Triple difference_	_Observations_	_Pseudo R²_
Enrollment	7-12	0.001	0.003	0.002	219,799	0.177
Enrollment	13-15	_0.021_	-0.001	-0.023	111,712	0.198
Enrollment	16-18	_0.020_	0.030	0.009	107,464	0.238
Main activity is school	10-15	_0.011_	0.008	-0.003	225,523	0.215
Main activity is work	10-15	_-0.003_	-0.002	0.001	225,523	0.214
Main activity is house	10-15	0.001	0.000	-0.001	225,523	0.219
Worked last week	10-15	-0.002	0.002	0.004	225,523	0.183
Average hours worked*	10-15	_-0.222_	-0.006	0.216	23,489	0.165
Immunized	0-5	0.000	0.006	0.006	62,119	0.127
Died last year	under 1	-0.003	0.001	0.004	28,586	0.301
Died last year	1-5	_0.000_	0.000	0.000	162,422	0.277
Died last year	6-15	0.000	0.000	0.000	373,111	0.104

* For the dependent variable average hours worked, the regression uses ordinary least squares and the regression statistic is a true R², not a pseudo-R².

Notes: See notes for Table 8. All regressions were statistically significant at the .001 level using a chi-squared test (F-test for average hours). Additional variables used for this table include a dummy equal to one if the region was hard hit by the crisis and the interactions girl*hard hit, 1999*hard hit, girl*1999*hard hit. A region is defined as hard hit if <u>at least two</u> of the following criteria are met: (1) real per capita consumption declined by over 15%, (2) average food share increased by more than 15%, or (3) per capita consumption of calories, protein, and food by weight declined by more than 10%. The first column gives the coefficient (dP/dx) on the variable girl, the third is the coefficient on girl*1999, and the second column is their sum. Coefficients in italics are significant at 90%. Total number of observations (children aged 6-18) = 474, 209. Number of children in hardhit regions in 1997 = 64,513; number of children in other regions in 1997 = 177,289; number of children in hardhit regions in 1999 = 60,112; number of children in other regions in 1999 = 172,295.

References

Alderman, H., and P. Gertler. 1997. "Family Resources and Gender Differences in Human Capital Investments: The Demand for Children's Medical Care in Pakistan," in L. Haddad, J. Hoddinott and H. Alderman (eds.), *Intrahousehold Resource Allocation in Developing Countries.* Baltimore, MD: The Johns Hopkins University Press.

Beegle, K., Frankenberg, E., and D. Thomas. 1999. "Measuring Change in Indonesia," RAND Labor and Population Program, Working Paper Series 99-07.

Behrman, J. 1988. "Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favored?" *Oxford Economic Papers* 40(1): 32-54.

Cameron, L. 2000. **"**The Impact of the Indonesian Financial Crisis on Children: An Analysis Using the 100 Villages Data," *Bulletin of Indonesian Economic Studies,* forthcoming.

Cameron, L., and C. Worswick. 2001. "Education Expenditure Responses to Crop Loss in Indonesia: A Gender Bias." *Economic Development and Cultural Change* 49(2): 351-363.

DeTray, D. 1988. "Government Policy, Household Behavior, and the Distribution of Schooling: a Case Study of Malaysia," *Research in Population Economics* 6: 303-336.

Dreze, J., and Sen, A. 1989. *Hunger & Public Action*. Oxford: Clarendon Press.

Frankenberg, E., Thomas, D., and K. Beegle. 1999. "The Real Costs of Indonesia's Economic Crisis: Preliminary Findings from The Indonesia Family Life Surveys," RAND Labor and Population Program, Working Paper Series 99-04.

ICFTU, "Women and children are the primary victims of the Asian crisis says the ILO," ICFTU Online, 187/991008/ND, 11 October 1999. [http://www.hartford-hwp.com/archives/50/048.html]

Jahari,A., Sandaja, Herman, S., Soekirman, Jus'at, I, Jalal, F.and Latief, D., "Nutritional Status of Under-fives in Indonesia During the Crisis." Paper presented at the 7th National Workshop on Food and Nutrition. Jakarta: LIPI. Indonesian Insitute of Sciences (2000).

Kevane, Michael, and David I. Levine. 2001. "The Changing Status of Daughters in Indonesia," mimeo, University of California, Berkeley CA, 2001.

Robb, Caroline, "Social Aspects of the East Asian Financial Crisis: Perceptions of Poor Communities," East Asia and Pacific Region, The World Bank, Paper prepared for DFID's seminar on the Implications of the East Asian Crisis for Poverty Elimination
July 15, 1998. [http://www.worldbank.org/html/extdr/offrep/eap/social/crobb1.html]

Robinson, K. 1999. "Women: Difference Versus Diversity," in D. Emmerson (ed.), *Indonesia Beyond Suharto.* Armonk, NY: M.E.Sharpe, pp. 237-261.

Rose, E.1999. "Consumption Smoothing and Excess Female Mortality in Rural India," *Review of Economic Statistics* 81(1): 41-49.

Schultz, T. 1985. "School Expenditure and Enrollments, 1960-1980: The Effects of Income, Prices and Population," In *Population Growth and Economic Development,* eds. D. Johnson and R. Lee. Madison, Wisconsin: University of Wisconsin Press.

Stalker, P. 2000. "Beyond Krismon: The Social Legacy of Indonesia's Financial Crisis," Unicef Innocenti Research Centre Working Paper.

Sumarto, S., A. Wetterberg, and L. Pritchett. 1998. "The Social Impact of the Crisis in Indonesia: Results from a Nationwide Kecamatan Survey," SMERU Report, December, Social Monitoring and Early Response Unit, Jakarta.

Suryahadi, Asep and Sudarno Sumarto, 1999. "Update on the Impact of Indonesian Crisis on Consumption Expenditures and Poverty Incidence: Results from the December 1998 Round of 100 Village Survey," SMERU Working Paper. Social Monitoring and Early Response Unit, Jakarta. [http://www.smeru.or.id/report/workpaper/crisiscomsumtion/consumpov.htm#atas]

Symonds, P. "Two years after the economic meltdown: No end to the social crisis in Asia in sight," 24 June 1999. [http://www.wsws.org/articles/1999/jun1999/asia-j24.shtml]

Thomas, D., Frankenberg, E., Beegle, K., and G. Teruel. 1999. "Household Budgets, Household Compostition and the Crisis in Indonesia: Evidence from Longitudinal Household Survey Data," Paper presented at the 1999 Population Association of America Meetings.

Thomas, D., Beegle, K., Frankenberg, E., Sikoki, B., Strauss, J., and G. Teruel. 2001. "Education in a Crisis," California Center for Population Research, Working Paper 003-01.

Wagstaff, Jeremy, "Indonesia's Poverty: How Bad Is It? It's a Tough Question, but an Important One For Gauging the Country's Resilience." WSJ Interactive Edition, Asian Economic Survey, Oct. 26, 1998. [http://interactive.wsj.com/public/current/articles/SB909166294815619500.htm]

World Bank, *Social Consequences of the East Asian Financial Crisis*, Washington DC, 1998. [http://www.worldbank.org/eapsocial/library/socconsq/]