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Protecting Child Nutritional Status in the Aftermath of a Financial Crisis

Evidence from Indonesia

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Abstract

This paper exploits heterogeneity in program exposure to evaluate the effectiveness of a supplementary feeding program implemented in the wake of the 1997–1998 economic crises in Indonesia. The explicit aim of the program was to protect the nutritional status of infants and young children from adverse effects of the crisis. The use of heterogeneity in program exposure has several advantages for identifying the impact of the program. First, the analysis avoids the strong assumption that all targeted children experienced homogenous exposure to the program, and facilitates identification in a setting in which nearly all communities experienced some exposure. Second, by exploiting child age and program eligibility rules, the paper estimates models with community fixed effects and thus avoid bias introduced as a result of endogenous program placement. The analysis finds that the program improved the nutritional status of children 12 to 24 months of age at the time of the survey in 2000, and helped to avoid problems of severe malnutrition among young children.

This paper—a product of the Human Development and Public Services Team, Development Research Group—is part of a larger effort in the department to study the effects of crisis-related economic shocks and policy responses on individual and household well-being. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at jgiles@worldbank.org.

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Protecting Child Nutritional Status in the Aftermath of a Financial Crisis: Evidence from Indonesia*

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1. Introduction

With the onset of the global financial and economic crisis in late 2008, concerns were immediately raised over the vulnerability of infants and young children and the likelihood of increases in infant mortality (Friedman and Schady, 2009). Short of increasing mortality, business cycle fluctuations may have considerable impact on early child well-being. Indeed, even in less extraordinary times, it is common for negative aggregate shocks to be associated with increased infant mortality across the developing world, particularly for girls (Baird et al 2007). A growing number of studies establish a link between malnutrition during early childhood and slower physical growth, delayed motor development, lower IQ, and low educational achievement. Improving health and nutritional status, on the other hand, is frequently associated with improvements in longer-term outcomes, including reduced likelihood of chronic disease, increases in educational attainment, and higher subsequent returns in the labor market.[1]

The apparent lack of deterioration in child well-being in Indonesia in the wake of the 1997/98 East Asian Financial Crisis stands out as a striking example of the potential capacity for insuring infants and children against the most extreme consequences of adverse economic shocks.[2] Missing from research on the Indonesian case, however, is evidence as to whether policy responses to the crisis can be credited with helping to avert the negative consequences that have been experienced after similar crises elsewhere the developing world. Existing research does not separate the impacts of policy from private family based consumption smoothing efforts, and if policy

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[1]See, for example, Alderman et al 2001; Alderman, Behrman and Hoddinot, 2005; Alderman, Hoddinot and Kinsey 2006; Glewwe, Jacoby and King 2001; Glewwe and King 2001; Maluccio et al 2005; Martorell 1999; and Strauss and Thomas, 1998.

[2]Studies using the Indonesian Family Life Survey (IFLS) and rural Central Java survey data have found that there was no significant decline in the health and nutritional status of Indonesia's children in the wake of the crisis (see Frankenberg et al, 1999; and Strauss et al, 2004; and Block et al, 2004).

responses to the crisis were indeed important for reducing adverse effects on the health and nutritional status of young children, there may be important lessons to be drawn from Indonesia's experience.

This study evaluates the effect of a supplemental feeding program, *Program Makanan Tambahan (PMT)*, on child health and nutritional status in Indonesia from 1998 to 2000.[3] The "intent-to-treat" effect of the program is estimated using both the duration of program exposure within the community and child-age restrictions for participation.[4] The analysis takes advantage of rich information included in two rounds of panel data from the Indonesia Family Life Survey (IFLS-2 and IFLS-3) covering the pre- and post-crisis periods (1997 and 2000, respectively). Crucial to the identification of the PMT effect is detailed information on implementation of emergency social safety net programs, in the community questionnaire, which facilitates exploiting duration of program exposure.

Prior work evaluating public health programs in Indonesia, including the impact of placing midwives in communities (Frankenberg and Thomas, 2001; Frankenberg et al, 2005), recognizes the importance of controlling for program placement. Where these studies, and more generally, the vast majority of research in the program evaluation literature make use of a single binary indicator for program exposure in difference-in-difference approaches, this strategy is not always practical or feasible. When nearly all communities receive some treatment, but exposure differs with individual age and the timing of implementation within a community, a binary exposure indicator may fail to

[3]The specific aim of the feeding program was to prevent children under five years of age from suffering deterioration in nutritional status as a result of the crisis.

[4]The use of an *intent-to-treat* approach in evaluating the effect of a program has an important advantage relative to the use of a participation indicator: this approach avoids the complication raised by the fact that participation by individuals is not exogenous.

identify program effects. Moreover, some types of programs differ in impact with both exposure and intensity. King and Behrman (2009), for example, note that the impact of early childhood development (ECD) programs may be particularly sensitive to duration of program exposure.[5] For these reasons, this paper identifies impacts of the PMT program by exploiting differences in program exposure within communities while controlling for fixed community characteristics.

We find that the program had significant impact on children between 12 and 24 months of age at the time of the survey in 2000, but no effect on the nutritional status of children younger and older than this age group. Depending on the specification used, the program increased the standardized height-for-age of children 12 to 24 months of age by 0.48 to 0.55 standard deviations, and reduced the likelihood of stunting by 15 percent as of 2000.

The paper is organized as follows. Section 2 provides an analytical framework. Section 3 discusses the program and its implementation, and this is followed by an introduction to the data source, the IFLS, in section 4. The empirical strategy is discussed in section 5, results are discussed in section 6 and a final section concludes.

2. Analytical Framework

The analytic approach is framed using a standard household model (e.g., Rosenzweig and Wolpin, 1986) to highlight the identification assumptions important when modeling the effect of a nutritional intervention on child health status. We assume that preferences of household i are inter-temporally separable and that the household

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[5]Armecin et al (2006), Behrman, Cheng and Todd (2004) and Gertler (2004) examine ways in which impact of ECD programs vary with program exposure and also exploit duration of exposure in their identification strategies.

maximizes a quasi-concave utility function over goods and services ($\mathbf{X^i}$), and the health status of a young child, H^i, or :

$$\max_{X,H} U^i(\mathbf{X^i}, H^i; \mathbf{Z^i}) \tag{1}$$

where $\mathbf{Z}^i$ is a vector of household characteristics. The production of health (or nutritional status), H^i, is characterized by the following production function:

$$H^i = h(\mathbf{N}^i, \mathbf{X}^i, \mathbf{Z^i}, \boldsymbol{\mu}^{\mathbf{i}}) \tag{2}$$

in which child health is a function of per child health inputs $\mathbf{N}^i$, household characteristics $\mathbf{Z^i}$, and both observed and unobserved community characteristics μ^{i}. The household faces a budget constraint in which total consumption of goods and services as well as health inputs cannot exceed total income:

$$Y^i = \boldsymbol{p}'_x \mathbf{X}^i + (\boldsymbol{p}_n - \boldsymbol{s}_n^i)' \mathbf{N}^i \tag{3}$$

where Y^i is total income, $\boldsymbol{p}_x$ is a vector prices for goods and services $\mathbf{X}^i$, $\boldsymbol{p}_n$ and $\boldsymbol{s}_n^i$ are prices and subsidies associated with health inputs $\mathbf{N}^i$, respectively and we note that the magnitude of subsidies may vary with the timing of child eligibility.

Solving the optimization problem in equation (1) conditional on equation (2) and (3) yields a reduced-form health production function for the young child within household i:

$$H^i = h(\boldsymbol{p}_x, \boldsymbol{p}_n, \boldsymbol{s_n^i}, Y^i, \mu^{\mathrm{i}}) \tag{4}$$

Our interest here is to identify the impact of public nutrition program on child nutritional status. Differentiating health status with respect to a subsidized input in equation (4) assists us in evaluating program impact on health:

$$\frac{\partial H^i}{\partial s_N^i} = \frac{\partial H^i}{\partial N^i}\frac{\partial N^i}{\partial s_N^i} + \frac{\partial H^i}{\partial X^i}\frac{\partial X^i}{\partial s_N^i} + \frac{\partial \mu^{\mathrm{i}}}{\partial s_N^i} \tag{5}$$

From (5), note that the effect of the program (subsidy) on health or nutritional status can be decomposed into three components. The first is the subsidy effect through a change in demand for nutrition inputs (a price effect), and will be positive. The second component is a change in child nutritional status through relocation of resources within household.[6] Strictly speaking, the sign on this term is ambiguous. If X^i is a health input for the child in household i, then we would expect $\frac{\partial H^i}{\partial X^i} > 0$, but the sign of $\frac{\partial X^i}{\partial s_N^i}$ will depend on how households respond to the subsidy. If households increase purchase of X^i in response to the subsidy, then the sign will be positive as will the second term.[7]

The third term is bias which is introduced if the subsidy, s_N^i, is correlated with unobserved characteristics of the household, the child or the community, μ^{i}. The sign of this program placement bias is ambiguous. It is negative when the government or program distributor follows a compensatory principle, or when a program is targeted first to less-endowed areas, which could lead to downward bias in estimates of the true program effect. Conversely, if the program is placed more intensively in better endowed areas, the sign of bias may be positive and the estimated program effect will overstate the true effect. Thus, unless allocation of subsidy N, s_N^i, is independent μ^{i}, estimation of the program effect must control for these forms of unobserved heterogeneity. In implementing an identification strategy exploiting variation in program exposure, we must be concerned that unobservable characteristics at the community level are associated with timing of program implementation.

[6]For example, some research in the literature has found that nutritional intervention programs may be ineffective if parents shift some nutritional resources away from treated children to other household members.

[7]While it is possible that the household may respond to the subsidy by substituting into purchase of other goods, we would need to believe that X^i is not a normal good for the sign to be negative.

3. A Nutritional Intervention Aimed at Protecting Young Children

The goal of supplementary feeding program was to maintain and to improve the nutritional status of children under five, particularly those at risk as a result of the 1997-98 economic crisis.[8] The program was targeted through a two stage process. First, central and regional governments decided which communities or villages would receive the program, and then determined the timing of implementation within communities. Capacity constraints likely affected the timing of program rollout. Districts differed in their capacity to roll out the PMT program, and communities differed in the availability of staff to administer it. As a result, it is not surprising to find differences in duration of program exposure across communities.

Funding was distributed to local public health clinics, the *Pusat Kesehatan Masyarakat (Puskesmas*), and a list of children eligible to receive supplementary food was then prepared by the village midwife in consultation with other village leaders. As with other community health programs in Indonesia, program supervision was typically the responsibility of the village midwife if one was present. If a midwife was not available in the community, responsibility was assumed by the *Puskesmas*.[9] Descriptive information from the IFLS show that in 62 percent of communities, the village midwife administered the program, and in majority of the rest (35 percent of sampled communities), the program was supervised by a member of the Puskesmas staff. Others may have been involved in preparing program's recipient list, including the

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[8]A monthly supplementary feeding program took place prior to the crisis as part of a public health program. In contrast to post-crisis supplementary feeding program, the pre-crisis program was much less intensive and distributed through the Village Integrated Health Post (*Pos Pelayanan Terpadu*, *Posyandu)*. Under this program, food supplements were delivered along with some basic health services to preschool age children and pregnant women residing in the community.

[9]Village midwives are trained to provide basic health services in communities or villages. Their work is coordinated and supervised by the head of *Puskesmas* whose scope of services include a *kecamatan* (an administrative area intermediate in size between the district and the village).

village head or other officials, family planning workers, Puskesmas staff, and community activists. Other than working through the Posyandu and village midwives, the village women's association (*Program Kesejahteraan Keluarga,* PKK) may have also played a role in delivering nutritional supplements to members of the community.

The program targeted poor children between 6 and 60 months of age and pregnant women. The intervention specifically divided children into three sub-groups: (i) infants (6 to 12 months), (ii) young children (12 to 24 months), and (iii) children (24 to 60 months).[10] The majority of communities and villages that received the program from 1998 to 2000 served all of these sub-groups. In fewer than four percent of communities, non-targeted individuals received some benefits, including children 5-14 years old, women in reproductive age, the elderly and in some cases, even adult males.

Across the three sub-groups of children under five years of age, the program benefit differed in terms of share of overall diet, content of diet and the frequency of feedings provided to targeted groups. For infants (6-12 months), supplemental diets were provided in the form of soft meals to supplement breast milk. The nutritional composition per 100 grams of food included 360-430 kcal of energy and 10-15 grams of protein, and this was provided 3 to 4 times a day for 180 consecutive days. Young children (12-24 months) and children 24-60 months received a locally prepared snack with a nutritional composition that included energy (360-430 kcal) and protein (9-11 grams) for 90 consecutive days. The difference in the program between these two older groups was substantial: for younger children, the snack was provided three to four times a day, while older children only received the snack once a week.

[10] In addition to children under 5, the program also targeted pregnant women, particularly those women from poor households. Services provided to this sub-group included pregnancy monitoring and provision of pregnancy vitamins. In our labeling the age ranges, a child falls within a specified age range if greater than or equal to the lower bound and less than the upper bound. For example, aged 6 to 12 months refers to greater or equal to 6 months and less than 12 months.

The program was first introduced in some communities in early 1998, but as noted above, local capacity constraints likely led to differences in the timing of program roll out. Program coverage, as indicated in Table 1, was low at the beginning of the period (early 1998) because the crisis had not been anticipated in the 1997-1998 fiscal budget.[11] It was only during the following fiscal year (1998-1999) that coverage of the program expanded above 70 percent of communities. Program coverage then expanded to over 89 percent of communities in 1999-2000 before declining to 80 percent during the first half of fiscal year 2000-2001.[12] During the 1998-2000 period most of the sampled communities (95.4 percent) were exposed to the program for some period of time.

4. Evaluation of the PMT Using the Indonesian Family Life Survey

The data used in this study come from the 1997 and 2000 rounds of the Indonesia Family Life Survey (IFLS), which covers periods before and after the 1997-1998 Asian Financial Crisis and implementation of the child supplementary feeding program. The IFLS is a panel survey that enumerates information on various aspects of individual, household and family livelihoods. In addition, information on characteristics of communities is also collected, including features of the socio-economic environment, physical infrastructure, health and education facilities, and programs administered through these facilities.[13] In this study we link community-level data on implementation

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[11] The national budget plan (fiscal year) in Indonesia prior to 2001 ran from April 1 to March 31. After 2001, the Government of Indonesia changed the fiscal year to correspond to the calendar year.

[12] Pritchett et al (2002) note that the initial fiscal year 1998-1999 did not provide for broad emergency programs to cope with negative impacts of the crisis. In July 1998 the current budget was revised to include an explicit Social Safety Net Program.

[13]One author of this paper was a member of the IFLS3 survey team. A discussion of sampling and survey methods for IFLS2 and IFLS3 can be found in Frankenberg, Beegle and Thomas (1999) and Strauss et al (2004b), respectively.

of the supplementary feeding program from 1998 onward with individual-level data on health and nutritional status of children.

The analysis sample includes all children who were between 6 and 60 months at the time of the 1997 and 2000 survey rounds and lived in IFLS communities (2170 and 2618 children, respectively). The average age of these children in 1997 and 2000 was 34.1 and 32.7 months, respectively. Given the low percentage of communities in which non-targeted groups (older children and adults other than pregnant women) received benefits, the share of non-targeted children exposed to the program is likely to be negligible.

The measure of nutritional status used in our analysis is child standardized height-for-age. In terms of potential measurement error, the health literature suggests that this is a less problematic indicator for child health and nutritional status than other alternative health measures.[14] Moreover, as a longer-term indicator of health status, standardized height-for-age is more suitable for analyzing potential adverse effects of the crisis at the time of the 2000 survey round.

In order to focus on more extreme effects, we also examine the probability that children suffer from stunting, or have standardized height-for-age below negative 2, which is often referred to in the medical literature as *shortness*. Standardized height-for-age is calculated using the STATA ado program *zanthro* (Vidmar et al, 2004), which compares actual child height for age in the IFLS sample with those from a US reference population from the 2000 Center for Disease Control and Prevention (CDC) Growth Charts.

[14] In IFLS, height and weight are measured by trained health workers with regularly calibrated health equipment. IFLS enumeration protocols and training helped to limit errors in measurement of this variable.

In Table 2, we show the mean child standardized height-for-age and proportion of children suffering from stunting in 1997 and 2000 over the two survey rounds. We observe a positive but insignificant change in child standardized height-for-age from 1997 to 2000 among children between 6 and 60 months of age. More striking, however, is the significant reduction in stunting. Specifically, the proportion of 12-24 months and 24-60 months children who were stunted decreased by 8.3 and 2.8 percent, respectively, from 1997 to 2000 and this is consistent with descriptive evidence presented in Strauss et al (2004).

While we will first present results using a binary measure of exposure to the feeding program, PMT_v, in community v, we also construct a time-varying individual level indicator of exposure, PMT_{ivt}, by combining information on child age, program introduction and program rules.[15,16] In particular, let (t_s, t_p, t_b) be the date of the survey, date in which the program is first introduced in community v, and birth date of a child, respectively. Children differ in exposure to the feeding program by date of birth and the program start and end dates within the community. For example, a child born six months or more before the introduction of the program will be exposed for $t_s - t_p$ years at the time of the survey. We calculate PMT_{ivt} as the share of life after age six months that child i in community v was exposed to the program, where $a = t_s - (t_b + 0.5)$, the program exposure variable as calculated as:[17]

[15] In IFLS3, the community informant was asked about details of program implementation, including the beginning and the ending dates of programs, the kinds of food given to the recipients, and the identity and position of the program administrator.

[16] One might use program duration in the community as an alternative measure, but this would assign the same measure of exposure to each child living in the community regardless of age and fail to capture heterogeneity in exposure related to child age and program design. Second, it is important to distinguish program effects across children within communities because duration of exposure at the community level is likely to be endogenous if timing of implementation was based on criteria that were not observed by the program evaluator.

[17] Remember that program exposure starts at six months of age, or at half a year.

$PMT_{ivt} = 0$ if the program had not existed in community v when the year t survey was conducted.

$= (t_s - t_p)/a$ if $t_s \geq t_p \geq t_b + 0.5$ in community v and year t.

$= 1$ if $t_s \geq t_b + 0.5 \geq t_p$ in community v and year t.

The exposure variable, PMT_{ivt}, will vary between 0 and 1 as it measures the share of time from the eligibility date that child i was exposed to the program. Only children who were born after July 1997 and were between 6 and 42 months of age at the time of the survey in 2000 could possibly experience full program exposure. In contrast, a "0" indicates that a child was not exposed to the program, which is true of all children in 1997. PMT_{ivt} is equal to zero for children who either lived in a community which never received the program or who lived in a program community but did not meet the age criteria during community exposure. Values between 0 and 1 reflect children who were exposed for some part of their eligible life, but were born at least six months before introduction of the program. Table 3 shows mean program exposure for each of the targeted groups which are also disaggregated into various sub-groups for the 2000 sample.

We will control for other covariates to isolate the effect of the program on child nutritional status. These covariates cover biological, socio-economic and demographic characteristics that determine both parental preferences and household permanent income, and thus may be correlated with child nutritional status but unrelated to program exposure. Other than child age and gender, we control for mother and father's height and education, household demographic characteristics, household access to a toilet and sanitation facilities, and additional community characteristics, which are shown in Table 4.

5. Approaches to Empirical Identification

To frame our approach to identification consider first the following "difference-in-difference" specification employing the village-level binary indicator of program exposure (PMT_v):

$$H_{ivt} = \alpha_0 + \alpha_1 T_t + \alpha_2 PMT_v + \beta PMT_v * T_t + \mathbf{Z}'_{it}\boldsymbol{\gamma}_1 + \mathbf{Z}'_{ht}\boldsymbol{\gamma}_2 + \mathbf{Z}'_{vt}\boldsymbol{\gamma}_3 + \varepsilon_{ivt} \qquad (6)$$

where H_{ivt} is a health outcome variable, in this case an anthropometric measure of nutritional status, of child i living in community v at time t, T_t is dummy variable equal to 1 in 2000 and 0 in 1997.

The parameter of interest in (6), β, is the difference-in-difference estimator measuring the impact of the program on the treatment group. When using a binary program variable, the treatment group is comprised of children in the communities and villages that received the program. The control group is all children residing in a village or community without the program. Therefore β measures change of nutritional status among children under 5 who lived in treatment villages relative to those who lived in control villages. All changes in nutritional status associated aggregate changes from 1997 to 2000 and not related to the program, including presumably negative effects associated with the financial crisis, will be picked up by α_1. The effects of characteristics of communities receiving the program, but independent of the program itself, will be captured by α_2. Alternate specifications include additional time-varying individual, household, and community characteristics, $\mathbf{Z}_{it}$, $\mathbf{Z}_{ht}$ and $\mathbf{Z}_{vt}$, respectively.

Given that the program was not rolled out simultaneously in all treatment villages, the estimated program effect in (6) may be biased if the timing of exposure is related to unobserved local characteristics, such as availability of staff to administer the program or community poverty rates at the outset of the crisis. Our understanding of both government priorities and the constraints faced in the roll-out process suggest that controlling for time-invariant unobserved village characteristics will reduce these sources of bias. To that end, we estimate models that include community fixed effects, $\boldsymbol{\mu}_v$, in the model:

$$H_{ivt} = \alpha_0 + \alpha_1 T_t + \beta PMT_v * T_t + \mathbf{Z}'_{it}\boldsymbol{\gamma}_1 + \mathbf{Z}'_{ht}\boldsymbol{\gamma}_2 + \mathbf{Z}'_{vt}\boldsymbol{\gamma}_3 + \boldsymbol{\mu}_v + \varepsilon_{ivt} \quad (7)$$

The estimate of the program effect is picked up by β. Note further that PMT_v will no longer enter directly as this variable is perfectly collinear with the village fixed effect. The program effect, β, will only be identical in specifications (6) and (7) if unobserved village level characteristics are unrelated to the duration of program exposure within villages.

The model above assumes uniform treatment both across treated villages and for all individuals within villages. This assumption is not accurate of course and may lead to an underestimate of the actual program effect. We thus use the child-specific program exposure variable, PMT_{ivt}, defined above, and estimate:

$$H_{ivt} = \alpha_0 + \alpha_1 T_t + \beta PMT_{ivt} * T_t + \mathbf{Z}'_{it}\boldsymbol{\gamma}_1 + \mathbf{Z}'_{ht}\boldsymbol{\gamma}_2 + \mathbf{Z}'_{vt}\boldsymbol{\gamma}_3 + \boldsymbol{\mu}_v + \varepsilon_{ivt} \quad (8)$$

We evaluate whether there are improvements in child nutritional status, and reductions in stunting, as the proportion of a child's eligible life exposed to the program (PMT_{ivt}) increases.[18] The interpretation of the coefficient β is thus similar to that in models using the binary program variable. Because this program variable varies by child rather than

[18]One may at first wonder whether PMT_{ivt} should enter directly in this model. It is important to remember that $PMT_{ivt} = 0$ in 1997 prior to the crisis. As $T_t = 0$ in 1997 and 1 in 2000, $PMT_{ivt} * T_t$ is essentially identical to PMT_{ivt}. We use the interaction notation to be conceptually consistent with specification (7).

by community, we may identify program effects while also controlling for community-level unobserved heterogeneity.

Since the program was handled either by a village midwife or through the Posyandu (medical clinics under the Puskesmas) one may worry that the effects of the PMT program may be confounded with other public health initiatives operating through these same providers. We do not believe this to be likely, however, because there was a significant decline in other health services provided by the Posyandu over the period from 1997 to 2000. Strauss et al (2004) report that provision of Oralit, an oral rehydration treatment for diarrhea, had decreased 9.4 percent by 2000 and child growth monitoring services were 14.1 percent lower than in 1997. It is unlikely that the measure of PMT exposure is picking up the effects of other programs targeted to infants and young children and implemented at the same time. If anything, the reduction in provision of other services over the period might lead to an underestimate of the effects of the PMT program, if such declines are systematically related to program exposure. It is important also to remember that our favored models include a community fixed effect, which controls for systematic differences in the phase-out of other programs across communities, and further that, within communities, these other services did not have age restrictions, while those for the PMT program were clear and well known. Differences in exposure across children should not be systematically related to the availability of other health services.

6. Results and Analysis

6.1. Determinants of Program Duration

Before proceeding to estimate equations (6), (7) and (8), we first investigate both the distribution of the program and program duration across communities with an eye toward assessing the importance of controlling for community fixed effects. Descriptive evidence shown Panels A and B of Figure 1 provides information on community average characteristics of children under 5 years of age in 1997 and before the onset of the crisis. As one might expect, average child height-for-age is greater in urban communities. Crossing points of the urban and rural CDFs appear in the upper and lower tails when average height-for-age z scores are -2.2 and -0.2, respectively, indicating that in the lower tail, average health status of young children may be worse in a small number of urban communities. Panel B provides an additional perspective on the lower tail of Panel A as it shows that the proportion of stunted children was higher in rural communities than urban ones except for the upper tail of the stunted share distribution. Urban households also have higher per capita expenditure in 1997 than rural households (Panel C).

Given the distributions of community average child nutritional status measures and per capita in 1997, we might expect that rural communities would be exposed to the program for a longer period of time if the program had targeted poorer communities where children had lower nutritional status. Panel D, however, suggests that up to a 20 month crossing point, children in urban communities generally had longer exposure during the period from 1998 to 2000. In the upper part of the distribution, to the right of the 20 month crossing point, the distribution of program duration was essentially equal. This descriptive evidence raises the possibility that the program may have first targeted communities where severe malnutrition problems were expected, but then for the majority of the distribution, the program was biased toward urban rather than rural communities.

We next use ordinary least squares to examine the correlates of program duration on 1997 community-level covariates, including measures of average child nutritional status, socio-economic status, health and physical infrastructure as well as variables that proxy for remoteness of the community. We also include district fixed-effect to control for district-level unobserved heterogeneity that may have affected timing of program implementation. Estimation results are shown in Table 5. We first examine placement without including the community average of our preferred measure of nutritional status (height for age of children under 60 months). In model 1 of Table 5, those variables associated with remoteness of the community are jointly significant and different from zero. The signs on the coefficients of two variables, distance from district capital and availability of public transportation, suggest that more remote communities had longer exposure to the program. The coefficient on another indicator, whether the community is urban, indicates that urban communities tended to have longer exposure to the program relative to rural communities between 1998 and 2000. Given that they tend to have less difficulty staffing public health clinics and in retaining midwives (Chomitz et al, 1998), urban communities were probably in a better position to roll out the program quickly.

We next include two different measures of nutritional status in model 2 and 3, the 1997 average height-for-age of children under 5 and the other is proportion of children living in the community in 1997 who were stunted. Coefficients on the three measures of remoteness do not change in magnitude or significance when we include community average indicators of child health. The coefficient on 1997 average height-for-age is negative, which implies that communities with healthier children tended to receive the program for a shorter amount of time than communities where average nutritional status was worse, but the coefficient is not significantly different from zero. Share of children who were stunted in the community in 1997, however, is positively associated with program duration.

If program allocation during 1998-2000 was based entirely on 1997 characteristics as modeled here, the finding that urban communities received a longer duration of treatment would be inconsistent with the fact that average nutritional status in urban communities in 1997 was better than in rural areas. The allocation procedure may be based on the community characteristics in 1998 and 1999, or changes from 1997, which we cannot observe in the IFLS. In this sense, observable characteristics do not include enough information to conclude that the program was properly targeted, or to explain the apparent urban bias in its distribution. There may be other information that cannot be observed and controlled for with our data here that explain the apparent urban bias in duration of program exposure.[19] It is apparent from this exercise, however, that both observed and unobserved characteristics of communities receiving the program may have influenced program duration. For this reason, we favor models employing community fixed effects, and identify program effects from within village differences in child exposure to the program.

6.2. The Effects of the Supplementary Feeding Program

Recognizing the variation in benefits and program protocols across the three targeted age groups, we perform the analysis on three separate subsamples of children based on their ages at the time of the survey, estimating PMT effects separately for children who were 6 to 12 months, 12 to 24 months and 24 to 60 months of age. In order to highlight the benefits of using the eligible life exposure measure, we first use the binary indicator of exposure to the PMT program to estimate the impact on child height for age and

[19] Frankenberg et al (1999), for example, use IFLS2 and IFLS2+ to capture changes in people's well-being at the beginning of the crisis and find that urban communities experienced larger increases in the proportion of households living below the poverty line.

likelihood of stunting. We then contrast these results with models using share of eligible life exposed to the program.

Table 6 presents estimation results for the effect of the program on child nutritional status using a binary indicator for presence of the program between 1998 and 2000. We present OLS models pooling communities, and then models with community fixed-effect models to control for unobserved community characteristics systematically related to program implementation. The results shown in Table 6 show positive effects of the program on child standardized height-for-age for infants 6-12 months of age and negative effects for older children, though none of these effects are statistically significant. The inclusion of community fixed-effect generally increases the coefficient on the program effect, but the program effect remains statistically insignificant. As noted earlier when motivating this exercise, this is not particularly surprising, as 95 percent of sampled communities received the program at some point during 1998-2000.

We next examine program impact on probability of stunting by estimating linear probability models for which the dependent variable equals 1 when the standardized height for age is less than -2. The signs on the coefficient of interest, Program Exposure *(Year 2000), are negative, as we would expect, for children in the younger two groups, but positive and insignificant for children 24-60 months of age. The program only appeared to be effective in lowering the probability of stunting in 2000 among infants 6-12 months when we control for unobserved heterogeneity using community fixed effects. In particular, community fixed-effect estimates (model 3 of Table 7) indicate that exposure to the program reduced the probability of stunting in 2000 by 33 percent. Meanwhile when the community fixed-effect estimates include time-varying community characteristics in the specification, exposure to the program reduces the probability of being stunted in 2000 by 39 percent. In thinking about these results, and the (insignificant) estimated effects reported in Table 6, it is worth remembering that the younger group of children is most likely to have PMT program effects confounded with the effects of a prenatal care program that was implemented over roughly the same period. Given their ages, children 6 to 12 months are likely to have benefitted from the prenatal care program as well.

We next identify the PMT program effect using the share of eligible child life exposed to the program. As the effects of the supplementary feeding program are likely to be cumulative, use of this measure is likely to improve on our ability to estimate the program effect. Results of estimated effects on height for age z-scores are shown in Table 8. When we first pool across communities, we observe negative signs on program effects for some sub-groups, but it is unlikely that these specifications adequately control for endogenous program placement. When including community fixed-effects, we find positive and significant program effects on height-for-age of children 12-24 months of age (columns 3 and 4 of panel B in Table 8). In particular, our results suggest that exposure to the program increased child standardized height-for-age by 0.46 to 0.53 standard deviations, depending on whether or not time-varying community characteristics are included, and the estimated program effect is statistically significant at the 5 percent level. For children aged 24 to 60 months, the program effect is negative and statistically insignificant, but as expected, magnitudes are smaller when including community fixed effects to control for program placement. It is also notable that this result does not differ from models shown in Table 6 that used the binary measure of program exposure. For infants between 6 and 12 months the sign is positive but insignificant when including community fixed-effects and this is thus also consistent with findings using the binary program variable.

In Table 9, we examine how exposure to the PMT program affected the probability of stunting, again using the exposed share of eligible life as our measure of program exposure. We find that the program led to a statistically significant reduction in stunting for the 12 to 24 month age group. In particular, full exposure to the program reduced the probability that children in this age group would suffer stunting by 14 percent, and this effect is statistically significant at the 10 percent level. The program did not lead to a significant reduction in stunting among children 6 to 12 months of age. Viewed in contrast to the binary indicator results reported in Table 7, the lower magnitude of the effect for this younger age group are unsurprising as estimates using the binary indicator for the 6 to 12 month group are more likely to be picking up the effects of pre-natal interventions earlier in the post-crisis period. The lack of any positive and significant effects on the 24 to 60 month age group may be attributable to the much lower nutritional content of the intervention for older children.

Other parameter estimates, such as coefficients on child age and parent's human capital and shown in appendix tables A6-A9, are consistent with findings elsewhere in the economics literature. In particular, age (in months) exhibits a non-linear relationship with health and nutritional status of children. There is a negative relationship between height for age and age until 24 months and then this relationship is positive as children age beyond 24 months. Education of parents, particularly mother's education, is also associated with higher nutritional status of children in the older age group (24 to 60 months). Although we see a positive association between father's education and the nutritional status of children, the relationship is not statistically different from zero.

7. Summary and Conclusions

This paper evaluates the effectiveness of a supplementary feeding program for maintaining child nutritional status in the wake of the 1997-1998 economic crises in Indonesia. Since the program was nearly universal in its implementation, use of a simple binary indicator to measure program exposure may not allow us to accurately capture the program effect. Instead, we make use of detailed information on program implementation to exploit heterogeneity in program exposure when evaluating the program effect.

The use of program heterogeneity has at least two advantages for identifying the effect of Indonesia's supplemental feeding program. First, by using eligible share of a child's life exposed to the program, we are able to estimate an effect even with low variation in program distribution at the community level. Second, exploiting eligible share of life exposed allows us to avoid the strong assumption that all targeted children experienced homogenous exposure to the program and this permits a more accurate estimate of the program effect than when using a binary indicator.

We show that although the program tended to be universally distributed over the 1998 to 2000 period, the duration of exposure varied across communities. We also provide insight into the government's implicit allocation rule when determining program duration: both remoteness and pre-crisis community-level average child health outcomes appeared to have influenced duration of exposure to the program.

Findings on the effect of program exposure show that the program improved the nutritional status of children 12 to 24 months of age during the period of economic crisis, and in particular, improved standardized height-for-age by an average of 0.46 to 0.53 standard deviations. Given the increase of standardized height-for-age for all sampled children between 1997 and 2000 was only 0.04, this implies that the crisis would have otherwise led to a negative impact on child nutritional status in the absence of the PMT program. Our findings also suggest that the program helped children with severe malnutrition problems, but again the impacts were limited to those who were 12-24 months of age at the time of the 2000 survey round.

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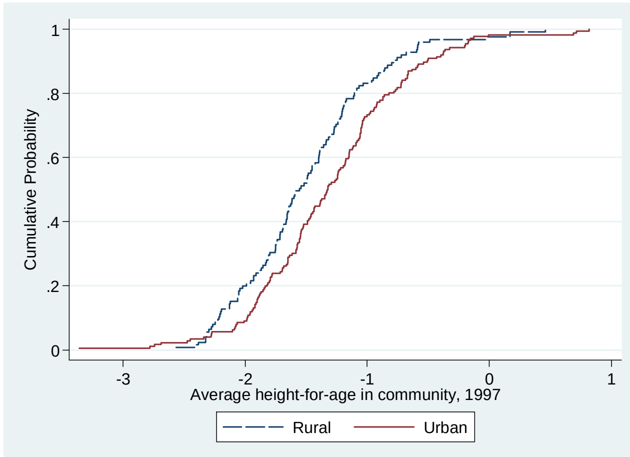
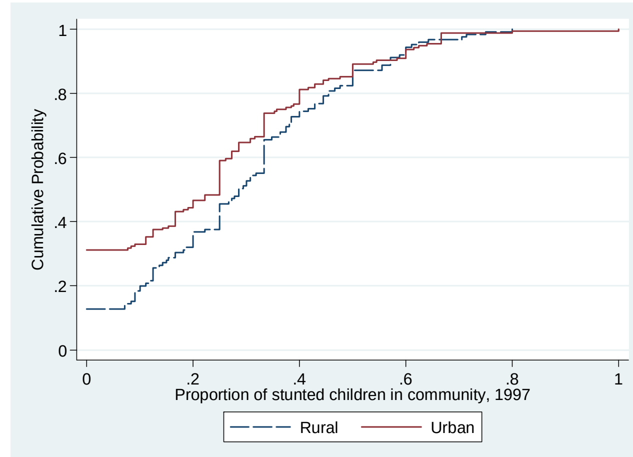
Figure 1

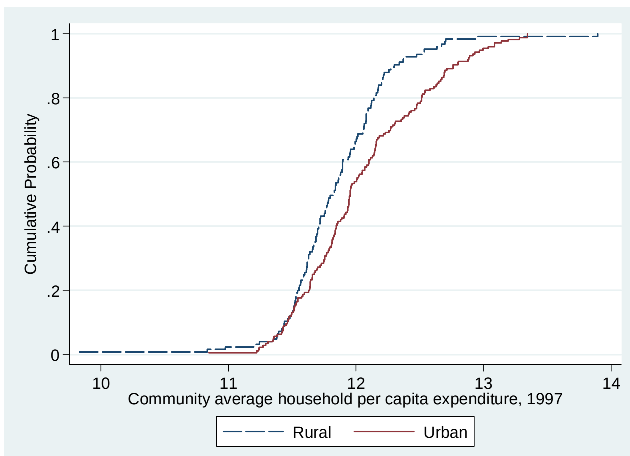
CDFs of Community Average Child Characteristics in 1997 and Program Duration in 2000



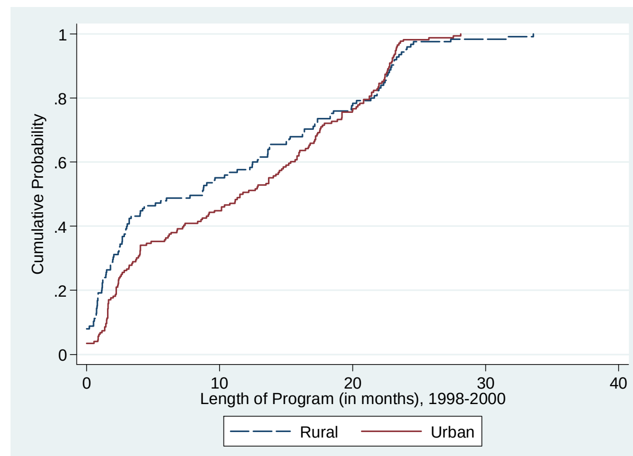
A. Community Average Height for Age



B. Community Average Proportion Stunted



C. Community Average ln(PCE)



D. Program Duration

Sources: For A, B and C, IFLS (1997); for D, Community Infrastructure and Facility Survey, IFLS (2000).

Table 1. Distribution of PMT Coverage Across Communities, 1998-2000

	Total	Urban	Rural
Communities with PMT from 1998-2000 (%)	95.4	96.4	94.6
1998/1999 fiscal year (%)	70.2	72.1	68.8
1999/2000 fiscal year (%)	89.3	94.0	85.7
2001 fiscal year* (%)	80.1	80.6	79.7

Note: Number of communities in the sample is 301. (*) indicates the fiscal year ended in December.

Table 2. Standardized Height-for-Age and Incidence of Stunting: Children between 6 and 60 months in 1997 & 2000

	1997	2000	Diff
6-12 Months			
Mean	-0.96	-0.90	0.06
	(0.12)	(0.07)	(0.13)
Stunted (%)	20.29	16.67	-3.62
	(0.03)	(0.02)	(0.03)
Observations	207	318	
12-24 Months			
Mean	-1.66	-1.62	0.04
	(0.06)	(0.05)	(0.08)
Stunted (%)	36.32	28.05	-8.28**
	(0.02)	(0.02)	(0.03)
Observations	468	574	
24-60 months			
Mean	-1.60	-1.56	0.04
	(0.03)	(0.03)	(0.04)
Stunted (%)	35.12	32.33	-2.79*
	(0.01)	(0.01)	(0.02)
Observations	1495	1726	

Notes: Calculated from IFLS data. Standard errors are in parentheses. (*) is significant at 10%; (**) is significant at 5%; (***) is significant at 1%.

Table 3. Mean Child Exposure to Supplementary Feeding Program, Children 6-60 Months in 2000.

	All groups	Gender		Community	
		Boy	Girl	Urban	Rural
6-12 months	**0.34**	0.34	0.33	0.36	0.32
Observations	**525**	271	254	230	295
12-24 months	**0.26**	0.27	0.24	0.30	0.23
Observations	**1042**	526	516	474	568
24-60 months	**0.14**	0.14	0.14	0.14	0.14
Observations	**3221**	1625	1596	1364	1857

Notes: Calculated from IFLS3 data.

Table 4. Descriptive Statistics

	Mean 1997 (Std. Dev.)	Mean 2000 (Std. Dev.)
Household		
Mother's education	6.32	7.14
	(4.01)	(3.94)
Father's education	6.87	7.55
	(4.13)	(3.98)
Mother's height	150.14	150.38
	(5.22)	(5.05)
Father's height	161.03	161.61
	(5.13)	(5.37)
Gender of HH head (male=1)	0.88	0.88
	(0.31)	(0.32)
Main activity of HH (farm=1)	0.37	0.42
	(0.48)	(0.49)
HH access to private toilet (Yes=1)	0.55	0.59
	(0.50)	(0.49)
HH access to sanitation (Yes=1)	0.19	0.19
	(0.39)	(0.40)
Community		
Type of community (urban=1)	0.43	0.44
	(0.49)	(0.50)
Distance of comm. to bus station (km)	4.81	3.75
	(7.14)	(7.01)
Prop. of land with technical irrigation	0.07	0.08
	(0.17)	(0.18)
Asphalt road in the comm (Yes=1)	0.74	0.78
	(0.44)	(0.41)
Village has sewerage (Yes=1)	0.55	0.52
	(0.50)	(0.50)
Village has piped water (Yes=1)	0.56	0.55
	(0.50)	(0.50)

Notes: Calculated from IFLS2 and IFLS3 data

Table 5. Determinants of Program Duration across Communities 1997-2000 (pooled OLS)

Model	(1)	(2)	(3)
Health Status			
Average Height-for-Age	-	-0.87	-
		(0.90)	
Proportion of Children Stunted (%)	-	-	4.61*
			(2.64)
Sociol-Economic Status			
Average Per-Capita Expenditure	-0.91	-0.7	-0.47
	(1.16)	(1.19)	(1.20)
Farm Household Share (%)	-3.01	-2.72	-2.73
	(2.77)	(2.80)	(2.76)
Share of Households with Male Head (%)	1.43	1.28	1.35
	(2.12)	(2.10)	(2.10)
Physical Infrastructure			
Availability of Asphalt Road (Yes=1)	2.1	2.02	2.07
	(1.77)	(1.76)	(1.76)
Proportion of Land with Semi-Tech Irrigation (%)	-4.25	-4.18	-4.7
	(4.02)	(3.96)	(3.88)
Access to piped water (yes=1)	0.12	0.15	0.15
	(1.39)	(1.38)	(1.38)
Remoteness of Community			
Distance to District Capital (km)	0.04*	0.04*	0.04*
	(0.02)	(0.02)	(0.02)
Distance to Bus Station (km)	-0.14	-0.14	-0.15
	(0.10)	(0.10)	(0.10)
Public Transportation in Community (Yes=1)	-4.30***	-4.30***	-4.39***
	(1.53)	(1.52)	(1.52)
Urban Community (Yes=1)	2.61*	2.75*	2.78*
	(1.56)	(1.56)	(1.55)
District Fixed-Effects	Yes	Yes	Yes
R-Squared	0.24	0.25	0.25
F-Test (economic status) (p-value)	0.79	0.59	0.53
	(0.50)	(0.62)	(0.66)
F-Test (infrastructure) (p-value)	0.80	0.78	0.90
	(0.49)	(0.51)	(0.44)
F-Test (remoteness of community) (p-value)	3.18	3.18	3.26
	(0.01)	(0.01)	(0.01)

Notes: Dependent variable is number of months the program was in the community between 1998-2000. Independent variables are community averages of 1997 covariates. Standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5% and 1%.

Table 6. The Effect of PMT on Height-for-Age of Children 6-60 Months: Using Binary Indicator for Program Exposure

	Pooled OLS		Community Fixed-Effects	
	(1)	(2)	(3)	(4)
A. 6-12 Months				
Year Dummy (2000=1)	-0.255	-0.345	-0.418	-0.524
	(0.392)	(0.394)	(0.702)	(0.705)
Program Exposure (Yes=1)*Year	0.264	0.384	0.507	0.617
	(0.383)	(0.386)	(0.712)	(0.722)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.14	0.16	0.57	0.58
B. 12-24 Months				
Year Dummy (2000=1)	0.001	-0.035	0.109	0.121
	(0.231)	(0.235)	(0.241)	(0.257)
Program Exposure (Yes=1)*Year	-0.106	-0.063	-0.096	-0.089
	(0.225)	(0.231)	(0.265)	(0.280)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.08	0.08	0.40	0.40
C. 24-60 months				
Year Dummy (2000=1)	0.012	0.042	0.071	0.086
	(0.136)	(0.137)	(0.187)	(0.187)
Program Exposure (Yes=1)*Year	-0.100	-0.125	-0.120	-0.139
	(0.133)	(0.134)	(0.191)	(0.192)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.15	0.15	0.26	0.26

Note: The dependent variable is the child height for age z-score, and the program effect is a dummy for whether the community had a supplemental feeding program interacted with a dummy for year=2000. Other covariates (with coefficients reported in Appendix Tables A6.1, A6.2 and A6.3) include: gender (boy=1), age (months), father and mother's education and height, male head of household, farm household, household access to private toilet, sanitation and free health services, distance of village to bus station, community's access to sewerage and piped water, number of village midwives, presence of a *posyandu* in the community, and an indicator for whether the community is urban. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5% and 1%.

Table 7. The Effect of PMT on Probability of Stunting Among Children 6-60 Months: Using Binary Indicator for Program Exposure

	Pooled Linear Probability		Linear Probability w/ Community FEs	
	(1)	(2)	(3)	(4)
A. 6-12 Months				
Year Dummy (2000=1)	0.084	0.101	0.231	0.286
	(0.106)	(0.107)	(0.200)	(0.206)
Program Since '98 (Yes=1)*Year	-0.130	-0.151	-0.330*	-0.395*
	(0.103)	(0.105)	(0.198)	(0.206)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.09	0.11	0.53	0.53
B. 12-24 Months				
Year Dummy (2000=1)	-0.070	-0.054	0.011	0.033
	(0.087)	(0.089)	(0.148)	(0.153)
Program Since '98 (Yes=1)*Year	0.019	-0.004	-0.088	-0.108
	(0.085)	(0.087)	(0.153)	(0.159)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.08	0.09	0.37	0.38
C. 24-60 Months				
Year Dummy (2000=1)	0.012	0.005	-0.021	-0.024
	(0.053)	(0.054)	(0.071)	(0.070)
Program Since '98 (Yes=1)*Year	0.001	0.009	0.039	0.044
	(0.052)	(0.053)	(0.072)	(0.072)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.11	0.11	0.21	0.22

Note: There are 4788 observations. The dependent is an indicator for whether the child has a height for age z score less than -2, and the program effect is a dummy for whether the community had a supplemental feeding program interacted with a dummy for year=2000. Other covariates (with coefficients reported in Appendix Tables A7.1, A7.2 and A7.3) include: gender (boy=1), age (months), father and mother's education and height, male head of household, farm household, household access to private toilet, sanitation and free health services, distance of village to bus station, community's access to sewerage and piped water, number of village midwives, presence of a *posyandu* in the community, and an indicator for whether the community is urban. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5% and 1%.

Table 8. The Effect of PMT on Height-for-Age of Children 6-60 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled OLS		Community Fixed-Effects	
	(1)	(2)	(3)	(4)
A. 6-12 Months				
Year Dummy (2000=1)	0.021	0.087	-0.047	-0.064
	(0.170)	(0.170)	(0.341)	(0.356)
*Exposed Share**Year	-0.044	-0.122	0.220	0.241
	(0.187)	(0.190)	(0.476)	(0.500)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.14	0.16	0.57	0.58
B. 12-24 Months				
Year Dummy (2000=1)	-0.121	-0.116	-0.208	-0.221
	(0.104)	(0.105)	(0.144)	(0.151)
*Exposed Share**Year	0.042	0.042	0.464**	0.528**
	(0.125)	(0.126)	(0.229)	(0.237)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.08	0.09	0.40	0.41
C. 24-60 Months				
Year Dummy (2000=1)	-0.055	-0.043	-0.022	-0.028
	(0.058)	(0.058)	(0.071)	(0.073)
*Exposed Share**Year	-0.107	-0.127	-0.079	-0.064
	(0.117)	(0.118)	(0.172)	(0.175)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.15	0.15	0.26	0.26

Note: Dependent variable is child height for age z-score. *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. Other covariates (with coefficients reported in Appendix Tables A8.1, A8.2 and A8.3) include: gender (boy=1), age (months), father and mother's education and height, male head of household, farm household, household access to private toilet, sanitation and free health services, distance of village to bus station, community's access to sewerage and piped water, number of village midwives, presence of a *posyandu* in the community, and an indicator for whether the community is urban. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5% and 1%.

Table 9. The Effect of PMT on the Probability of Stunting Among Children 6-60 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled Linear Probability		Linear Probability w/ Community FEs	
	(1)	(2)	(3)	(4)
A. 6-12 Months				
Year Dummy (2000=1)	-0.043	-0.049	-0.054	-0.049
	(0.046)	(0.046)	(0.100)	(0.103)
*Exposed Share**Year	0.005	0.010	-0.062	-0.081
	(0.051)	(0.052)	(0.130)	(0.133)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.09	0.10	0.52	0.53
B. 12-24 Months				
Year Dummy (2000=1)	-0.065	-0.072*	0.001	0.003
	(0.039)	(0.040)	(0.053)	(0.056)
*Exposed Share**Year	0.026	0.028	-0.145*	-0.143*
	(0.047)	(0.048)	(0.082)	(0.084)
Time Varying Community Characteristics	No	Yes	No	Yes
R-squared	0.08	0.09	0.38	0.38
C. 24-60 Months				
Year Dummy (2000=1)	0.002	0.001	-0.003	0.001
	(0.023)	(0.023)	(0.027)	(0.028)
*Exposed Share**Year	0.045	0.047	0.069	0.058
	(0.046)	(0.046)	(0.068)	(0.069)
Time Varying Community Characteristics	No	Yes	No	Yes
R-Squared	0.11	0.11	0.21	0.22

Note: There are 4788 observations. The dependent is an indicator for whether the child has a height for age z score less than -2. *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. Other covariates (with coefficients reported in Appendix Tables A9.1, A9.2 and A9.3) include: gender (boy=1), age (months), mother and father's education and height, an indicator for male head of household, farm household, household access to private toilet, access to sanitation and free health services, distance of village to bus station, community's access to sewerage and piped water, number of village midwives, presence of a *posyandu* in the community, and an indicator for whether the community is urban. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5% and 1%.

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Appendix Tables

Table A6.1 The Effect of PMT on Height-for-Age of Children 6-12 Months: Using Binary Indicator for Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	-0.255	-0.345	-0.418	-0.524
	[0.392]	[0.394]	[0.702]	[0.705]
Program since '98 (Yes=1)*Year	0.264	0.384	0.507	0.617
	[0.383]	[0.386]	[0.712]	[0.722]
Gender (boy=1)	0.105	0.115	0.004	0.005
	[0.124]	[0.124]	[0.197]	[0.206]
Age	-0.126***	-0.126***	-0.170***	-0.170***
	[0.036]	[0.035]	[0.057]	[0.058]
Mother education (years)	0.003	0.004	-0.023	-0.023
	[0.015]	[0.015]	[0.023]	[0.024]
Father education (years)	0.008	0.010	0.014	0.012
	[0.015]	[0.015]	[0.022]	[0.022]
Mother height (cm)	0.063***	0.061***	0.059***	0.057***
	[0.012]	[0.012]	[0.018]	[0.019]
Father height (cm)	0.047***	0.049***	0.070***	0.069***
	[0.012]	[0.012]	[0.019]	[0.019]
Head of HH (male=1)	-0.011	-0.027	0.275	0.275
	[0.221]	[0.221]	[0.443]	[0.462]
Number of children 5-14 yo in HH	0.016	0.012	0.016	0.027
	[0.061]	[0.061]	[0.088]	[0.090]
HH owns private toilet (Yes=1)	0.137	0.101	0.178	0.190
	[0.135]	[0.135]	[0.221]	[0.227]
HH has sanitation (Yes=1)	0.055	-0.008	0.255	0.313
	[0.170]	[0.193]	[0.404]	[0.463]
Type of community (urban=1), C	-	0.337**		0.071
		[0.169]		[0.465]
Distance to district capital (km), C	-	0.000		-0.002
		[0.003]		[0.006]
Distance to bus station (km), C	-	0.030***		0.008
		[0.011]		[0.021]
Land w/ technical irrigation (%), C	-	-0.009		0.258
		[0.333]		[0.830]
Comm. has asphalt road (Yes=1), C	-	-0.242		0.008
		[0.162]		[0.392]
Comm. has sewerage system (Yes=1), C	-	0.071		-0.299
		[0.140]		[0.340]
Comm. has piped water (Yes=1), C	-	-0.006		-0.132
		[0.152]		[0.369]
Constant	-17.118***	-17.314***	-20.068***	-19.380***
	[2.456]	[2.458]	[3.833]	[3.944]
R-squared	0.14	0.16	0.57	0.58

Notes: n is 525. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A6.2 The Effect of PMT on Height-for-Age of Children 12-24 Months: Using Binary Indicator for Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	0.001	-0.035	0.109	0.121
	[0.231]	[0.235]	[0.241]	[0.257]
Program since '98 (Yes=1)*Year	-0.106	-0.063	-0.096	-0.089
	[0.225]	[0.231]	[0.265]	[0.280]
Gender (boy=1)	-0.121	-0.124*	-0.207**	-0.202**
	[0.074]	[0.075]	[0.088]	[0.090]
Age	-0.043***	-0.043***	-0.034***	-0.034***
	[0.011]	[0.011]	[0.012]	[0.012]
Mother education (years)	0.008	0.008	-0.007	-0.007
	[0.008]	[0.009]	[0.009]	[0.009]
Father education (years)	0.004	0.002	0.002	0.001
	[0.009]	[0.009]	[0.010]	[0.010]
Mother height (cm)	0.025***	0.024***	0.029***	0.030***
	[0.007]	[0.007]	[0.008]	[0.008]
Father height (cm)	0.032***	0.032***	0.038***	0.038***
	[0.008]	[0.008]	[0.009]	[0.009]
Head of HH (male=1)	0.009	0.021	-0.134	-0.141
	[0.123]	[0.123]	[0.135]	[0.138]
Number of children 5-14 yo in HH	-0.003	0.001	0.022	0.021
	[0.037]	[0.038]	[0.044]	[0.045]
HH owns private toilet (Yes=1)	0.137*	0.134*	0.147	0.143
	[0.080]	[0.081]	[0.104]	[0.105]
HH has sanitation (Yes=1)	0.220**	0.188*	0.108	0.081
	[0.097]	[0.113]	[0.162]	[0.172]
Type of community (urban=1), C	-	0.149		0.174
		[0.104]		[0.211]
Distance to district capital (km), C	-	-0.001		0.000
		[0.002]		[0.003]
Distance to bus station (km), C	-	0.009		0.015
		[0.006]		[0.012]
Land w/ technical irrigation (%), C	-	0.366*		-0.321
		[0.211]		[0.425]
Comm. has asphalt road (Yes=1), C	-	-0.110		-0.001
		[0.103]		[0.187]
Comm. has sewerage system (Yes=1), C	-	-0.096		-0.092
		[0.086]		[0.167]
Comm. has piped water (Yes=1), C	-	0.070		0.004
		[0.094]		[0.161]
Constant	-10.318***	-10.164***	-11.826***	-11.921***
	[1.607]	[1.613]	[1.842]	[1.875]
R-squared	0.08	0.09	0.40	0.40

Notes: n is 1042. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A6.3. The Effect of PMT on Height-for-Age of Children 24 to 60 Months: Using Binary Indicator for Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	0.012	0.042	0.071	0.086
	[0.136]	[0.137]	[0.187]	[0.187]
Program since '98 (Yes=1)*Year	-0.100	-0.125	-0.120	-0.139
	[0.133]	[0.134]	[0.191]	[0.192]
Gender (boy=1)	-0.014	-0.012	-0.005	-0.006
	[0.040]	[0.040]	[0.041]	[0.041]
Age	0.006***	0.005***	0.005**	0.005**
	[0.002]	[0.002]	[0.002]	[0.002]
Mother education (years)	0.019***	0.018***	0.013**	0.013**
	[0.005]	[0.005]	[0.005]	[0.005]
Father education (years)	-0.004	-0.005	-0.002	-0.002
	[0.005]	[0.005]	[0.005]	[0.005]
Mother height (cm)	0.056***	0.055***	0.054***	0.055***
	[0.004]	[0.004]	[0.004]	[0.004]
Father height (cm)	0.034***	0.033***	0.034***	0.034***
	[0.004]	[0.004]	[0.004]	[0.004]
Head of HH (male=1)	0.026	0.030	-0.025	-0.017
	[0.067]	[0.067]	[0.069]	[0.069]
Number of children 5-14 yo in HH	-0.055***	-0.051***	-0.032	-0.031
	[0.019]	[0.019]	[0.020]	[0.020]
HH owns private toilet (Yes=1)	0.141***	0.126***	0.118**	0.109**
	[0.043]	[0.044]	[0.048]	[0.048]
HH has sanitation (Yes=1)	0.383***	0.304***	0.356***	0.318***
	[0.053]	[0.063]	[0.071]	[0.076]
Type of community (urban=1), C	-	0.143**		-0.018
		[0.058]		[0.092]
Distance to district capital (km), C	-	-0.001		-0.002
		[0.001]		[0.001]
Distance to bus station (km), C	-	0.001		0.002
		[0.003]		[0.005]
Land w/ technical irrigation (%), C	-	0.026		-0.182
		[0.115]		[0.182]
Comm. has asphalt road (Yes=1), C	-	-0.006		0.198**
		[0.053]		[0.087]
Comm. has sewerage system (Yes=1), C	-	-0.060		-0.014
		[0.047]		[0.075]
Comm. has piped water (Yes=1), C	-	0.017		0.014
		[0.049]		[0.077]
Constant	-15.717***	-15.473***	-15.423***	-15.607***
	[0.813]	[0.817]	[0.873]	[0.890]
R-squared	0.15	0.15	0.26	0.26

Notes: n is 3221. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A7.1. The Effect of PMT on Probability of Stunting Among Children 6 to 12 Months: Using Binary Indicator for Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	0.084	0.101	0.231	0.286
	[0.106]	[0.107]	[0.200]	[0.206]
Program since '98 (Yes=1)*Year	-0.130	-0.151	-0.330*	-0.395*
	[0.103]	[0.105]	[0.198]	[0.206]
Gender (boy=1)	-0.025	-0.026	0.019	0.021
	[0.033]	[0.034]	[0.054]	[0.056]
Age	0.023**	0.023**	0.019	0.020
	[0.010]	[0.010]	[0.016]	[0.017]
Mother education (years)	0.002	0.002	0.009	0.009
	[0.004]	[0.004]	[0.007]	[0.007]
Father education (years)	-0.000	-0.000	-0.002	-0.001
	[0.004]	[0.004]	[0.006]	[0.006]
Mother height (cm)	-0.011***	-0.011***	-0.011**	-0.011*
	[0.003]	[0.003]	[0.005]	[0.005]
Father height (cm)	-0.014***	-0.014***	-0.021***	-0.020***
	[0.003]	[0.003]	[0.005]	[0.005]
Head of HH (male=1)	0.010	0.006	-0.000	-0.008
	[0.060]	[0.060]	[0.116]	[0.119]
Number of children 5-14 yo in HH	0.011	0.012	0.010	0.009
	[0.017]	[0.017]	[0.025]	[0.025]
HH owns private toilet (Yes=1)	-0.051	-0.045	-0.084	-0.086
	[0.036]	[0.037]	[0.058]	[0.059]
HH has sanitation (Yes=1)	0.018	0.008	0.012	-0.014
	[0.046]	[0.053]	[0.110]	[0.131]
Type of community (urban=1), C	-	-0.025	-	-0.011
		[0.046]		[0.129]
Distance to district capital (km), C	-	0.000	-	0.001
		[0.001]		[0.002]
Distance to bus station (km), C	-	-0.005*	-	-0.002
		[0.003]		[0.006]
Land w/ technical irrigation (%), C	-	-0.058	-	-0.341
		[0.091]		[0.216]
Comm. has asphalt road (Yes=1), C	-	0.030	-	-0.006
		[0.044]		[0.115]
Comm. has sewerage system (Yes=1), C	-	-0.041	-	0.050
		[0.038]		[0.097]
Comm. has piped water (Yes=1), C	-	0.031	-	-0.009
		[0.041]		[0.089]
Constant	3.902***	3.939***	5.125***	4.887***
	[0.663]	[0.669]	[1.080]	[1.135]
R-squared	0.09	0.11	0.53	0.53

Notes: n is 525. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A7.2. The Effect of PMT on Probability of Stunting Among Children 12 to 24 Months: Using Binary Indicator for Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	-0.070	-0.054	0.011	0.033
	[0.087]	[0.089]	[0.148]	[0.153]
Program since ’98 (Yes=1)*Year	0.019	-0.004	-0.088	-0.108
	[0.085]	[0.087]	[0.153]	[0.159]
Gender (boy=1)	0.038	0.037	0.069**	0.073**
	[0.028]	[0.028]	[0.034]	[0.035]
Age	0.007*	0.008*	0.003	0.002
	[0.004]	[0.004]	[0.005]	[0.005]
Mother education (years)	-0.001	-0.000	0.004	0.004
	[0.003]	[0.003]	[0.004]	[0.004]
Father education (years)	-0.000	0.000	0.001	0.001
	[0.003]	[0.003]	[0.004]	[0.004]
Mother height (cm)	-0.010***	-0.010***	-0.014***	-0.014***
	[0.003]	[0.003]	[0.003]	[0.003]
Father height (cm)	-0.011***	-0.011***	-0.012***	-0.012***
	[0.003]	[0.003]	[0.003]	[0.003]
Head of HH (male=1)	-0.019	-0.022	0.062	0.063
	[0.046]	[0.046]	[0.058]	[0.058]
Number of children 5-14 yo in HH	-0.001	-0.003	-0.011	-0.012
	[0.014]	[0.014]	[0.017]	[0.017]
HH owns private toilet (Yes=1)	-0.061**	-0.058*	-0.062	-0.056
	[0.030]	[0.030]	[0.040]	[0.041]
HH has sanitation (Yes=1)	-0.125***	-0.091**	-0.007	0.008
	[0.037]	[0.043]	[0.061]	[0.064]
Type of community (urban=1), C	-	-0.042	-	0.002
		[0.039]		[0.075]
Distance to district capital (km), C	-	0.000	-	0.001
		[0.001]		[0.001]
Distance to bus station (km), C	-	-0.004	-	-0.000
		[0.002]		[0.005]
Land w/ technical irrigation (%), C	-	-0.121	-	0.022
		[0.080]		[0.144]
Comm. has asphalt road (Yes=1), C	-	0.032	-	-0.086
		[0.039]		[0.073]
Comm. has sewerage system (Yes=1), C	-	-0.030	-	0.037
		[0.032]		[0.058]
Comm. has piped water (Yes=1), C	-	-0.038	-	-0.061
		[0.035]		[0.066]
Constant	3.619***	3.649***	4.332***	4.369***
	[0.606]	[0.608]	[0.708]	[0.713]
R-squared	0.08	0.09	0.37	0.38

Notes: n is 1042. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A7.3. The Effect of PMT on Probability of Stunting Among Children 24 to 60 Months: Using Binary Indicator for Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	0.012	0.005	-0.021	-0.024
	[0.053]	[0.054]	[0.071]	[0.070]
Program since '98 (Yes=1)*Year	0.001	0.009	0.039	0.044
	[0.052]	[0.053]	[0.072]	[0.072]
Gender (boy=1)	0.014	0.014	0.005	0.006
	[0.016]	[0.016]	[0.016]	[0.016]
Age	-0.003***	-0.003***	-0.003***	-0.003***
	[0.001]	[0.001]	[0.001]	[0.001]
Mother education (years)	-0.006***	-0.006***	-0.005***	-0.005***
	[0.002]	[0.002]	[0.002]	[0.002]
Father education (years)	0.001	0.001	0.001	0.001
	[0.002]	[0.002]	[0.002]	[0.002]
Mother height (cm)	-0.019***	-0.018***	-0.018***	-0.018***
	[0.002]	[0.002]	[0.002]	[0.002]
Father height (cm)	-0.011***	-0.011***	-0.011***	-0.011***
	[0.002]	[0.002]	[0.002]	[0.002]
Head of HH (male=1)	-0.004	-0.006	0.010	0.009
	[0.026]	[0.026]	[0.028]	[0.028]
Number of children 5-14 yo in HH	0.023***	0.021***	0.019**	0.019**
	[0.007]	[0.008]	[0.008]	[0.008]
HH owns private toilet (Yes=1)	-0.040**	-0.037**	-0.041**	-0.041**
	[0.017]	[0.017]	[0.020]	[0.020]
HH has sanitation (Yes=1)	-0.112***	-0.094***	-0.097***	-0.095***
	[0.021]	[0.025]	[0.027]	[0.029]
Type of community (urban=1), C	-	-0.043*		0.015
		[0.023]		[0.038]
Distance to district capital (km), C	-	0.000		-0.000
		[0.000]		[0.001]
Distance to bus station (km), C	-	-0.000		-0.000
		[0.001]		[0.002]
Land w/ technical irrigation (%), C	-	-0.062		-0.027
		[0.045]		[0.070]
Comm. has asphalt road (Yes=1), C	-	-0.020		-0.073**
		[0.021]		[0.035]
Comm. has sewerage system (Yes=1), C	-	0.029		0.002
		[0.018]		[0.029]
Comm. has piped water (Yes=1), C	-	-0.000		-0.003
		[0.019]		[0.030]
Constant	4.969***	4.879***	4.852***	4.926***
	[0.319]	[0.321]	[0.347]	[0.354]
R-squared	0.11	0.11	0.21	0.22

Notes: n is 3221. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A8.1 The Effect of PMT on Height-for-Age of Children 6 to 12 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	0.021	0.087	-0.047	-0.064
	[0.170]	[0.170]	[0.341]	[0.356]
*Exposed Share**Year	-0.044	-0.122	0.220	0.241
	[0.187]	[0.190]	[0.476]	[0.500]
Gender (boy=1)	0.110	0.122	-0.007	-0.005
	[0.124]	[0.124]	[0.197]	[0.207]
Age	-0.128***	-0.128***	-0.172***	-0.171***
	[0.036]	[0.035]	[0.057]	[0.058]
Mother education (years)	0.003	0.004	-0.024	-0.023
	[0.015]	[0.015]	[0.022]	[0.024]
Father education (years)	0.007	0.009	0.013	0.011
	[0.015]	[0.015]	[0.022]	[0.022]
Mother height (cm)	0.063***	0.062***	0.060***	0.058***
	[0.012]	[0.012]	[0.018]	[0.019]
Father height (cm)	0.047***	0.049***	0.070***	0.070***
	[0.012]	[0.012]	[0.019]	[0.019]
Head of HH (male=1)	-0.025	-0.051	0.282	0.278
	[0.221]	[0.220]	[0.442]	[0.460]
Number of children 5-14 yo in HH	0.018	0.014	0.018	0.027
	[0.061]	[0.061]	[0.088]	[0.090]
HH owns private toilet (Yes=1)	0.124	0.077	0.184	0.195
	[0.135]	[0.136]	[0.219]	[0.226]
HH has sanitation (Yes=1)	0.063	0.001	0.245	0.306
	[0.171]	[0.194]	[0.396]	[0.453]
Type of community (urban=1), C	-	0.363**	-	0.090
		[0.170]		[0.460]
Distance to district capital (km), C	-	0.001	-	-0.001
		[0.003]		[0.006]
Distance to bus station (km), C	-	0.028***	-	0.007
		[0.011]		[0.021]
Land w/ technical irrigation (%), C	-	-0.026	-	0.214
		[0.335]		[0.839]
Comm. has asphalt road (Yes=1), C	-	-0.255	-	-0.017
		[0.164]		[0.383]
Comm. has sewerage system (Yes=1), C	-	0.065	-	-0.272
		[0.140]		[0.337]
Comm. has piped water (Yes=1), C	-	-0.019	-	-0.172
		[0.152]		[0.358]
Constant	-17.085***	-17.223***	-20.175***	-19.528***
	[2.457]	[2.458]	[3.797]	[3.934]
R-squared	0.14	0.16	0.57	0.58

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 525. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A8.2 The Effect of PMT on Height-for-Age of Children 12 to 24 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	-0.121	-0.116	-0.208	-0.221
	[0.104]	[0.105]	[0.144]	[0.151]
*Exposed Share**Year	0.042	0.042	0.464**	0.528**
	[0.125]	[0.127]	[0.227]	[0.235]
Gender (boy=1)	-0.122	-0.124*	-0.219**	-0.214**
	[0.074]	[0.074]	[0.088]	[0.089]
Age	-0.042***	-0.043***	-0.030***	-0.030**
	[0.011]	[0.011]	[0.012]	[0.012]
Mother education (years)	0.008	0.008	-0.007	-0.007
	[0.008]	[0.009]	[0.009]	[0.009]
Father education (years)	0.004	0.002	0.001	0.001
	[0.009]	[0.009]	[0.010]	[0.010]
Mother height (cm)	0.024***	0.024***	0.029***	0.029***
	[0.007]	[0.007]	[0.008]	[0.008]
Father height (cm)	0.031***	0.031***	0.036***	0.036***
	[0.008]	[0.008]	[0.009]	[0.009]
Head of HH (male=1)	0.012	0.023	-0.144	-0.153
	[0.123]	[0.123]	[0.135]	[0.138]
Number of children 5-14 yo in HH	-0.002	0.002	0.026	0.025
	[0.037]	[0.038]	[0.044]	[0.045]
HH owns private toilet (Yes=1)	0.137*	0.134*	0.121	0.119
	[0.080]	[0.081]	[0.102]	[0.103]
HH has sanitation (Yes=1)	0.224**	0.193*	0.133	0.130
	[0.097]	[0.113]	[0.159]	[0.168]
Type of community (urban=1), C	-	0.145		0.113
		[0.104]		[0.213]
Distance to district capital (km), C	-	-0.001		0.001
		[0.002]		[0.003]
Distance to bus station (km), C	-	0.010		0.017
		[0.006]		[0.012]
Land w/ technical irrigation (%), C	-	0.369*		-0.400
		[0.211]		[0.422]
Comm. has asphalt road (Yes=1), C	-	-0.108		0.061
		[0.103]		[0.186]
Comm. has sewerage system (Yes=1), C	-	-0.095		-0.088
		[0.086]		[0.165]
Comm. has piped water (Yes=1), C	-	0.072		-0.028
		[0.093]		[0.161]
Constant	-10.234***	-10.107***	-11.447***	-11.551***
	[1.609]	[1.614]	[1.840]	[1.874]
R-squared	0.08	0.09	0.40	0.41

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 1042. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A8.3 The Effect of PMT on Height-for-Age of Children 24 to 60 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled OLS		Community Fixed-Effects	
Year (2000=1)	-0.055	-0.043	-0.022	-0.028
	[0.058]	[0.058]	[0.071]	[0.073]
Age exposed to the program*Year	-0.107	-0.127	-0.079	-0.064
	[0.117]	[0.118]	[0.172]	[0.175]
Gender (boy=1)	-0.014	-0.012	-0.005	-0.006
	[0.040]	[0.040]	[0.041]	[0.041]
Age	0.005***	0.005***	0.005**	0.005**
	[0.002]	[0.002]	[0.002]	[0.002]
Mother education (years)	0.019***	0.018***	0.013**	0.013**
	[0.005]	[0.005]	[0.005]	[0.005]
Father education (years)	-0.004	-0.005	-0.002	-0.002
	[0.005]	[0.005]	[0.005]	[0.005]
Mother height (cm)	0.056***	0.055***	0.054***	0.055***
	[0.004]	[0.004]	[0.004]	[0.004]
Father height (cm)	0.034***	0.033***	0.034***	0.034***
	[0.004]	[0.004]	[0.004]	[0.004]
Head of HH (male=1)	0.027	0.032	-0.024	-0.016
	[0.067]	[0.067]	[0.068]	[0.069]
Number of children 5-14 yo in HH	-0.054***	-0.051***	-0.032	-0.030
	[0.019]	[0.019]	[0.020]	[0.020]
HH owns private toilet (Yes=1)	0.143***	0.128***	0.118**	0.108**
	[0.043]	[0.044]	[0.048]	[0.048]
HH has sanitation (Yes=1)	0.382***	0.302***	0.357***	0.318***
	[0.053]	[0.063]	[0.071]	[0.076]
Type of community (urban=1), C	-	0.145**		-0.015
		[0.058]		[0.093]
Distance to district capital (km), C	-	-0.001		-0.002
		[0.001]		[0.001]
Distance to bus station (km), C	-	0.002		0.002
		[0.003]		[0.005]
Land w/ technical irrigation (%), C	-	0.019		-0.176
		[0.115]		[0.182]
Comm. has asphalt road (Yes=1), C	-	-0.008		0.192**
		[0.053]		[0.087]
Comm. has sewerage system (Yes=1), C	-	-0.062		-0.015
		[0.047]		[0.075]
Comm. has piped water (Yes=1), C	-	0.019		0.020
		[0.049]		[0.078]
Constant	-15.727***	-15.487***	-15.415***	-15.602***
	[0.813]	[0.817]	[0.873]	[0.890]
R-squared	0.15	0.15	0.26	0.26

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 3221. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A9.1. The Effect of the PMT on the Probability of Stunting Among Children 6 to 12 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	-0.043	-0.049	-0.054	-0.049
	[0.046]	[0.046]	[0.100]	[0.103]
*Exposed Share**Year	0.005	0.010	-0.062	-0.081
	[0.051]	[0.052]	[0.130]	[0.133]
Gender (boy=1)	-0.028	-0.029	0.024	0.026
	[0.033]	[0.034]	[0.054]	[0.057]
Age	0.024**	0.024**	0.019	0.020
	[0.010]	[0.010]	[0.017]	[0.017]
Mother education (years)	0.002	0.002	0.010	0.010
	[0.004]	[0.004]	[0.007]	[0.007]
Father education (years)	-0.000	-0.000	-0.001	-0.001
	[0.004]	[0.004]	[0.006]	[0.006]
Mother height (cm)	-0.011***	-0.011***	-0.012**	-0.011**
	[0.003]	[0.003]	[0.005]	[0.005]
Father height (cm)	-0.014***	-0.014***	-0.021***	-0.020***
	[0.003]	[0.003]	[0.005]	[0.006]
Head of HH (male=1)	0.016	0.014	0.001	-0.004
	[0.060]	[0.060]	[0.115]	[0.118]
Number of children 5-14 yo in HH	0.010	0.012	0.009	0.008
	[0.017]	[0.017]	[0.026]	[0.026]
HH owns private toilet (Yes=1)	-0.045	-0.039	-0.086	-0.086
	[0.037]	[0.037]	[0.058]	[0.059]
HH has sanitation (Yes=1)	0.015	0.007	0.012	-0.013
	[0.046]	[0.053]	[0.108]	[0.129]
Type of community (urban=1), C	-	-0.031	-	-0.025
		[0.046]		[0.129]
Distance to district capital (km), C	-	0.000	-	0.000
		[0.001]		[0.002]
Distance to bus station (km), C	-	-0.004	-	-0.001
		[0.003]		[0.006]
Land w/ technical irrigation (%), C	-	-0.058	-	-0.296
		[0.091]		[0.220]
Comm. has asphalt road (Yes=1), C	-	0.032	-	0.013
		[0.045]		[0.115]
Comm. has sewerage system (Yes=1), C	-	-0.039	-	0.032
		[0.038]		[0.097]
Comm. has piped water (Yes=1), C	-	0.036	-	0.016
		[0.041]		[0.091]
Constant	3.886***	3.906***	5.185***	4.960***
	[0.664]	[0.670]	[1.078]	[1.141]
R-squared	0.09	0.10	0.52	0.53

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 525. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A9.2. The Effect of the PMT on the Probability of Stunting Among Children 12 to 24 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	-0.065	-0.072*	0.001	0.003
	[0.039]	[0.040]	[0.053]	[0.056]
*Exposed Share**Year	0.026	0.028	-0.145*	-0.143*
	[0.047]	[0.048]	[0.082]	[0.084]
Gender (boy=1)	0.037	0.037	0.072**	0.075**
	[0.028]	[0.028]	[0.034]	[0.035]
Age	0.008*	0.008*	0.002	0.001
	[0.004]	[0.004]	[0.005]	[0.005]
Mother education (years)	-0.001	-0.001	0.004	0.004
	[0.003]	[0.003]	[0.004]	[0.004]
Father education (years)	-0.000	0.001	0.001	0.001
	[0.003]	[0.003]	[0.004]	[0.004]
Mother height (cm)	-0.010***	-0.010***	-0.014***	-0.014***
	[0.003]	[0.003]	[0.003]	[0.003]
Father height (cm)	-0.011***	-0.011***	-0.012***	-0.012***
	[0.003]	[0.003]	[0.003]	[0.003]
Head of HH (male=1)	-0.018	-0.021	0.064	0.065
	[0.046]	[0.046]	[0.058]	[0.058]
Number of children 5-14 yo in HH	-0.001	-0.002	-0.012	-0.012
	[0.014]	[0.014]	[0.017]	[0.017]
HH owns private toilet (Yes=1)	-0.062**	-0.058*	-0.055	-0.051
	[0.030]	[0.030]	[0.040]	[0.041]
HH has sanitation (Yes=1)	-0.125***	-0.089**	-0.011	-0.001
	[0.037]	[0.043]	[0.060]	[0.064]
Type of community (urban=1), C	-	-0.044	-	0.016
		[0.039]		[0.075]
Distance to district capital (km), C	-	0.000	-	0.000
		[0.001]		[0.001]
Distance to bus station (km), C	-	-0.003	-	-0.001
		[0.002]		[0.005]
Land w/ technical irrigation (%), C	-	-0.119	-	0.054
		[0.080]		[0.144]
Comm. has asphalt road (Yes=1), C	-	0.033	-	-0.099
		[0.039]		[0.073]
Comm. has sewerage system (Yes=1), C	-	-0.029	-	0.036
		[0.032]		[0.058]
Comm. has piped water (Yes=1), C	-	-0.038	-	-0.049
		[0.035]		[0.066]
Constant	3.636***	3.674***	4.245***	4.294***
	[0.607]	[0.609]	[0.705]	[0.711]
R-squared	0.08	0.09	0.38	0.38

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 1042. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.

Table A9.3. The Effect of the PMT on the Probability of Stunting Among Children 24 to 60 Months: Using Exposed Share of Eligible Life to Measure Program Exposure

	Pooled Linear Probability		Linear Probability w/Community FEs	
Year (2000=1)	0.002	0.001	-0.003	0.001
	[0.023]	[0.023]	[0.027]	[0.028]
*Exposed Share**Year	0.045	0.047	0.069	0.058
	[0.046]	[0.046]	[0.068]	[0.069]
Gender (boy=1)	0.014	0.014	0.006	0.006
	[0.016]	[0.016]	[0.016]	[0.017]
Age	-0.003***	-0.003***	-0.003***	-0.003***
	[0.001]	[0.001]	[0.001]	[0.001]
Mother education (years)	-0.006***	-0.006***	-0.005***	-0.005***
	[0.002]	[0.002]	[0.002]	[0.002]
Father education (years)	0.001	0.001	0.001	0.001
	[0.002]	[0.002]	[0.002]	[0.002]
Mother height (cm)	-0.019***	-0.018***	-0.018***	-0.018***
	[0.002]	[0.002]	[0.002]	[0.002]
Father height (cm)	-0.011***	-0.011***	-0.011***	-0.011***
	[0.002]	[0.002]	[0.002]	[0.002]
Head of HH (male=1)	-0.004	-0.006	0.010	0.009
	[0.026]	[0.026]	[0.028]	[0.028]
Number of children 5-14 yo in HH	0.023***	0.021***	0.019**	0.019**
	[0.007]	[0.008]	[0.008]	[0.008]
HH owns private toilet (Yes=1)	-0.040**	-0.038**	-0.041**	-0.040**
	[0.017]	[0.017]	[0.020]	[0.020]
HH has sanitation (Yes=1)	-0.112***	-0.093***	-0.098***	-0.095***
	[0.021]	[0.025]	[0.027]	[0.029]
Type of community (urban=1), C	-	-0.044*	-	0.011
		[0.023]		[0.038]
Distance to district capital (km), C	-	0.000	-	-0.000
		[0.000]		[0.001]
Distance to bus station (km), C	-	-0.000	-	-0.000
		[0.001]		[0.002]
Land w/ technical irrigation (%), C	-	-0.059	-	-0.028
		[0.045]		[0.069]
Comm. has asphalt road (Yes=1), C	-	-0.019	-	-0.069*
		[0.021]		[0.036]
Comm. has sewerage system (Yes=1), C	-	0.031*	-	0.003
		[0.018]		[0.029]
Comm. has piped water (Yes=1), C	-	0.000	-	-0.005
		[0.019]		[0.029]
Constant	4.971***	4.880***	4.851***	4.922***
	[0.319]	[0.321]	[0.347]	[0.355]
R-squared	0.11	0.11	0.21	0.22

Notes: *Exposed Share* is the share of a child's eligible life exposed to the program and is calculated as described on page 11. n is 3221. (C) indicates community-level variables. Robust standard errors are in parentheses. (*), (**) and (***) indicate significance respectively at 10%, 5%; and 1%.