Do Health Care Providers Respond to Demand-Side Incentives? Evidence from Indonesia

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Abstract

This paper exploits the sub-district randomization of Indonesia's household Conditional Cash Transfer (CCT) program to analyze how the program affects the local healthcare market. The CCT program generates a demand shock in the healthcare market as measured by increased use of midwives, who are the main delivery attendants. Among poor households that receive the cash transfer, the program is associated with a 45% increase in the use of midwives for delivery assistance. Consequently, participating households experience an increase in delivery fees paid to midwives. The program is associated with a 10% increase in the number of midwives and a 10% increase in delivery fees charged by midwives in treated sub-districts. In addition, participants experience higher quality of prenatal care. However, this is driven by increased utilization among participants, instead of improvements in the quality of care provided by midwives.

JEL codes: I1, I3, O1

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1 Introduction

Developing countries have used different strategies to improve health outcomes in low-resource settings, especially among the poor. Price is often cited as a barrier to healthcare access among the poor (Whitehead et al., 2001); therefore, household Conditional Cash Transfer (CCT) programs have been implemented in many developing countries as an anti-poverty strategy that seeks to increase human capital investments. CCT programs provide cash transfers to poor households on the condition that participating households meet the specified health and educational investments on their children. Although most CCT programs have been shown to improve health-seeking behavior, the program effects on health outcomes are mixed (Fizbein et al., 2009). Similarly, Indonesia's CCT program has been shown to improve its targeted prenatal indicators, but there are no significant effects on birth outcomes (Alatas et al., 2011). This paper adds to the impact evaluation and existing literature by estimating the program effects on the local healthcare market. In particular, I analyze whether the demand shock from the program is associated with changes in healthcare price and the quality of care.

The household CCT program is a demand-side intervention that generates a demand shock in the healthcare market since the program is intended to increase the use of healthcare services among the poor. Increased demand may increase price, which in turn may dampen program effects because higher prices limit the affordability of healthcare. Although price increases alone would lower utilization (Kremer and Miguel, 2007; Cohen et al., 2010), participating households are required to use healthcare services in order to receive the cash transfer, in spite of the price increase. Thus, to analyze changes in healthcare utilization, this paper estimates changes in the probability of using doctors and midwives for delivery assistance.

To measure the program's local general equilibrium effect in the health care market, this paper analyzes changes in delivery fees received by midwives, who are the primary birth attendants in Indonesia[1]. Although CCT programs have no significant general equilibrium effects as measured by local prices and wages (Fizbein et al.,

[1] 62% of births are attended by midwives (Source: Indonesia: Demographic and Health Surveys 2007).

2009; Angelucci and De Giorgi, 2009), there may be price effects in the healthcare market because the program specifically targets investments in health. In the short-run, when supply is fixed, healthcare price should increase. To mitigate the price increase, CCT programs are implemented in supply-ready communities, so that the health and educational facilities are able to meet the additional demand. In the long-run, supply availability can also increase to further mitigate the short-run price increases. Despite the supply response, the demand shock in the healthcare market would still be weakly associated with a price increase, even though only poor households are directly affected by the program. To analyze the supply response, this paper estimates changes in the availability of healthcare providers and price changes associated with the CCT program.

The general equilibrium effect on quality of care and health outcomes is ambiguous. On the one hand, increased demand may lower healthcare quality as providers see more patients, and obtaining low quality of prenatal care would do little to improve birth outcomes. On the other hand, quality may increase because CCT programs educate expectant mothers about maternal and child health, including prenatal care. Since prenatal care is an input in the production of birth outcomes, with this intervention, women should have better knowledge and obtain higher quality prenatal care, which should translate into better birth outcomes (Barber and Gertler, 2010). But better prenatal care also improves the detection of prenatal complications, which could subsequently lead to worse surviving birth outcomes (Alexander and Korenbrot, 1995). Because birth outcomes are affected by multiple factors in addition to prenatal care, this paper focuses on prenatal care quality, which is more readily observed. To explore whether quality changes among participants are reflected in the local health care market, I compare prenatal quality changes experienced by participating households to changes in the self-reported prenatal quality provided by midwives.

Following the impact evaluation, this paper exploits the sub-district randomization of Indonesia's CCT pilot program to estimate the intent to treat and treatment on the treated parameters. The local general equilibrium effect is given by the difference in the delivery fees that midwives receive in treated and control sub-districts. For households, the program effects are measured using a sample of near poor and

poor households, which is the population most likely to be affected by the program. Households in treated sub-districts are enrolled in the program based on a proxy means test. Since household participation is endogenous, the treatment on the treated effect is estimated using instrumental variable, with the sub-district randomization as instrument for household participation. The outcomes of interest for households include the use of midwives for childbirth assistance, the delivery fees paid to midwives, and prenatal care quality.

Among near poor and poor households that live in treated sub-districts, the CCT program is associated with a 15% increase in the use of midwives for delivery assistance, and a 25% increase in delivery fees paid to midwives. For households that receive the cash transfers, program participation is associated with a 45% increase in the use of midwives for childbirth. Consequently, participating households experience an increase in delivery fees paid to midwives, which amounts to 30% of the cash transfer. The demand shock from the CCT program is associated with a 10% increase in the number of midwives. In spite of the supply response, the program is associated with a 10% increase in midwives' delivery fees in the local healthcare market. Participating households experience a 0.15 standard deviation increase in prenatal care quality, which is driven by increased utilization in the targeted population, and not quality improvements in the local health care market. These results suggest the importance of healthcare quality to improve health outcomes in CCT programs.

The remainder of the paper is organized as follows. Section 2 presents the institutional background and the pilot program. Section 3 describes the data and estimation strategy. Section 4 presents the results. Section 5 provides a brief discussion of the results in relation to previous findings in the literature, and section 6 concludes.

2 Background

One of the objectives of the CCT program is to reduce maternal mortality by increasing the use of doctors or midwives for childbirth assistance, and discouraging the use of untrained traditional birth attendants. Since 80% of women obtain delivery

assistance from their prenatal care provider[2], increased use of doctors or midwives for childbirth may increase their use for prenatal care, which would increase prenatal care quality in the target population. Indonesia's health workforce is made up of nurses or paramedics, midwives, and doctors, who are salaried and receive a fee-for-service payment for each service rendered. In the public health care system, each sub-district has at least one health center, headed by a doctor, and staffed by several nurses and midwives[3]. Doctors and midwives are trained delivery attendants, while nurses and paramedics are only allowed to assist midwives and doctors in deliveries[4]. The majority of midwives are employed by the government, and such midwives live in the village in the catchment area to serve one or several villages. Midwives are supervised by the sub-district clinic and submit a report of their activities to the clinic monthly. Although midwives are the primary birth attendant in Indonesia, 36% of births are attended by traditional birth attendants[5], who receive no medical training and are not trained to identify or manage delivery complications. In spite of the low quality of traditional attendants, they continue to assist childbirth because they charge much lower fees relative to midwives. In addition, women sometimes choose to use traditional birth attendants accompanied by a trained attendant because of family or cultural tradition.

Government midwives are allowed to hold private practice outside of their public hours to supplement their income (Heywood and Harahap, 2009). 90% of midwives have their own private practice, and about 60% of their income comes from private practice (Ensor et al., 2009). Dual practice, which is private practice undertaken by healthcare workers employed in the public sector, has increased the supply of healthcare services in Indonesia, but there is limited oversight, and there are concerns that dual practice reduces the incentive to deliver services to the poor (Barber et al., 2007). Starting from 2005, *Askeskin*, the government's health insurance scheme for the poor, reimburses midwives for services rendered to low-income households. More recently, two types of health interventions were launched to further improve

[2]Source: Indonesia: Demographic and Health Surveys 2007

[3]http://www.searo.who.int/en/Section313/Section1520_6822.htm

[4]9% of births are attended by nurses without a doctor or midwife present (Source: Indonesia: Demographic and Health Surveys 2007).

[5]Source: Indonesia: Demographic and Health Surveys 2007

healthcare access for the poor.

The household CCT program, *Program Keluarga Harapan*[6] (PKH), was piloted along with a community CCT program, *PNPM Generasi*[7]. In 2007, the government used geographic targeting to pilot the two programs in 5 provinces: West Java and East Java on the main island of Java, and the following off-Java provinces: North Sulawesi, Gorontalo, and East Nusa Tenggara (NTT). The household CCT program also includes sub-districts in Jakarta, the capital city. Figure 1 shows the location of the treated and control areas of each program. The pilot program ensured that there was no overlap between the two programs. Randomization was done at the sub-district level because many facilities, including secondary schools and health centers, are provided at the sub-district level. In addition, the cluster design takes into account the possibility of local externalities resulting from the sub-district treatment (Miguel and Kremer, 2004; Olken, 2007). Both programs target the same maternal and child health indicators and educational indicators[8].

The household CCT program, PKH, was piloted in sub-districts that were considered supply-ready to ensure that local health and education facilities would be able to serve the additional patients and students generated by the program. The program sets a lower threshold for sub-districts outside of the main island of Java because health and education services are more limited off-Java. 588 sub-districts were identified for PKH pilot, and the sample was stratified by urban classification. 329 sub-districts were randomized into treatment and 259 sub-districts were in the control group. Within treated sub-districts, PKH targeted households classified as extremely poor by Statistics Indonesia (*Badan Pusat Statistik*, BPS). Statistics Indonesia used a proxy-means test to all poor households to identify program beneficiaries. Extremely poor households with expectant or lactating women, children under 5, and school-aged children are eligible for the household CCT program.

Like other household CCT programs, PKH delivers a quarterly cash transfer to mothers, which is done through the nearest post office. The amount that each

[6] Hopeful Family Program

[7] *Program Nasional Pemberdayaan Masyarakat: Generasi Sehat dan Cerdas* (National Program for Community Empowerment: a Healthy and Bright Generation)

[8] The indicators for both the household and community CCT programs are listed in table A.1.

household receives depends on household composition[9], ranging from a minimum transfer of *Rp.* 600,000 (USD 60) to a maximum of *Rp.* 2,200,000 (USD 220). The transfer amounts to 15% to 20% of estimated total consumption of poor households. The total cost to meet all the program requirements amounts to 50% of the transfer[10]. Each household receives the transfer every quarter so long as they meet the program requirements. Verification for both programs is conducted by trained facilitators who collect monthly attendance sheets from schools in the villages, and patient and service lists from healthcare providers. The PKH district office checks household compliance before initiating the following payments. Non-compliant households will first receive a warning letter delivered by the facilitator. A second breach will result in a 10% loss of benefit, and a third breach will result in expulsion.

Dual practice affects providers' response to the demand shock associated with the CCT program. The CCT program allows households to choose between private and public practice for their health care services, and government health care providers are required to report both their public and private patients to the sub-district health center. In public practice, midwives are often required to follow pricing guidelines from the district's Health Department[11], so we expect the program to have no effect on public fees. However, in private practice, midwives are able to set their private fees because they can induce private demand. With dual practice, the program effect on private fees is theoretically ambiguous[12], and increased demand in public or private practice may have different effects on private price. If increased demand from program beneficiaries only increases public demand, this may result in non-participants moving to private practice, thereby increasing private demand. Since the program may affect both public and private demand, how dual practice providers set private fees in response to a demand shock is an empirical question that this paper addresses.

[9]Table A.2 shows the amount that an eligible household would receive annually (1 USD is approximately 10,000 *Rupiah*).

[10]Source: Author's calculations based on average household expenditure on prenatal care, delivery, postnatal care, vaccinations, and education at baseline.

[11]Source: Various district and province level health regulations (*Peraturan Daerah*).

[12]Theoretical framework for dual practice midwives is based on Bir and Eggleston (2003), available upon request.

3 Data and Estimation

3.1 Data

The data comes from a series of surveys conducted for the impact evaluation of the household CCT program. Prices and quality are collected directly in the household survey and the midwife survey. Two waves of the survey were carried out in control and treated sub-districts as part of the evaluation series. The baseline round was conducted in 2007 prior to program implementation and a follow-up survey was conducted in 2009. The surveys include household, village, midwife, and facility surveys. The sample covers the sub-districts that were included in the initial randomization[13].

The household CCT impact evaluation survey follows a panel of 14,326 households in 2,723 villages. Households in the sample are poor or near poor households, because they are most likely to be affected by the CCT program: 95% of the households in the sample ever received an unconditional cash transfer (*Bantuan Langsung Tunai*, BLT), and 94% received subsidized rice (*Raskin*) (Alatas et al., 2011). 98% of households were re-interviewed at follow-up, with 13,602 married women and 5,616 children under the age of 3[14]. The household survey contains information on household size, education, age, household asset ownership, and consumption expenditure. The indicator for program participation is equal to one when households report receiving cash transfers from the household CCT program[15].

The household survey includes a survey of ever married women, which contains women's pregnancy history in the 24 months prior to the survey. The survey includes detailed information on each pregnancy, such as prenatal visits, birth weight, and

[13]About 10% of the initial control sub-districts managed to gain access to the program, they are included in the sample, and their treatment status is based on their initial randomization status.

[14]In every hamlet in the sample, a list of households with the following conditions was collected: (i) pregnant or lactating mothers or women who were pregnant in the last 24 months and (ii) households with children aged 6-15 years. Two households were randomly selected from group (i), and three households from group (ii) were selected for the survey.

[15]Households that report receiving payments in contaminated sub-districts are coded as program beneficiaries. The impact evaluation compares the survey response to administrative data and finds that 4% of households that received the cash transfer did not report it in the survey (Alatas et al., 2011).

delivery assistance. Parity is constructed based on women's pregnancy history. The survey also contains information on the fees paid for prenatal care, delivery, and postnatal care. To replicate the impact evaluation and estimate the program effect on birth outcomes, the main health outcomes are infant death and birth weight. Infant death includes stillbirths and deaths up to 11 months. Birth weight is based on women's recall and reported in grams, conditional on being weighed at birth. Increased use of trained delivery attendants should lower the probability of maternal death from delivery complications, so maternal death is included as an additional health outcome, even though the number of maternal deaths is extremely small in the sample.

The women's survey is also used to estimate the following: demand for healthcare services, fees paid for delivery assistance, and the quality of prenatal care received. To estimate changes in the demand for each type of delivery attendant, the outcomes of interest are the probability of using doctors, midwives, and traditional birth attendants. Changes in delivery fees paid to each type of provider are also estimated, since participating households should increase delivery fees paid to doctors and/or midwives as a result of the requirement to use of trained delivery attendants. Changes in the quality of care are estimated using a prenatal quality index. The quality index is constructed using principal component analysis of all items in a complete prenatal check-up, the number of tetanus toxoid vaccinations received, an indicator for receiving any information on pregnancy complications, and an indicator for receiving any iron pills[16]. A complete prenatal check-up includes the measurement of the mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, and external and internal pelvic examinations.

To estimate supply changes in treated sub-districts, this paper uses information from the village, health center, and midwife surveys. Villages and sub-district health centers were contacted in both waves to form a panel, and this information is used to estimate the program effect on the number of providers at the village and sub-district clinic levels. Midwives in these sub-districts were also sampled, and 65% of the 1,407 midwives at baseline were re-interviewed in the follow-up survey. The

[16]Since the indicator for iron pills is a program requirement, when this is excluded for robustness, the results are qualitatively similar.

midwife survey is used to estimate the program effect on delivery fees, dual practice and hours worked.

To estimate the program effects on the local healthcare price and quality, the midwife survey is used to estimate changes in midwife income, list prices, transaction price, and prenatal quality. Changes in midwife income capture changes in her salary, and the quantity and price of all the services she provides. Changes in the list price, given by the price that midwives charge in their public and private practice for a normal delivery[17], capture price changes in public and private practice. The transaction price is given by the actual fees received from each of the last three deliveries they assisted[18]. Transaction price is used as an additional outcome because of the possibility of price discrimination, when midwives receive fees above or below the list price. The analyzed sample is restricted to deliveries that do not use the government's insurance scheme for the poor, *Askeskin*, because there is a separate price and reimbursement scheme for such patients[19]. The midwives' prenatal quality index is constructed using principal component analysis based on self-reported prenatal items[20].

3.2 Summary Statistics

Table 1 provides summary statistics of household-level characteristics. Households in treated and control areas share similar characteristics at baseline, and baseline differences, with district fixed effects included, are not jointly significant. Baseline infant mortality, maternal mortality, and reported birth weight between control and treated sub-districts are similar (Panel A). In terms of delivery assistance, in control sub-districts, 62% of births were attended by either a doctor or midwife, with 56% of deliveries attended by midwives at baseline (Panel B). Traditional attendants were present at 43% of births at baseline, and 34% of deliveries were only attended by untrained traditional attendants. In terms of delivery fees, households in control

[17] 89% of deliveries in the sample are normal deliveries.

[18] 95% of midwives reported all 3 deliveries.

[19] For the purposes of this paper, prices paid by *Askeskin* patients are not directly affected by the program, and the program did not change the share of *Askeskin* deliveries.

[20] The quality of prenatal care provided is only asked in the follow-up survey, so the estimate is based on the cross-sectional survey.

and treated areas report spending about *Rp.* 300,000 ($30) for delivery assistance at baseline (Panel C). Households spend about *Rp.* 100,000 ($10) on doctors, *Rp.* 170,000 ($17) on midwives, and *Rp.* 40,000 ($4) on traditional birth attendants[21].

Provider availability and characteristics are similar at baseline, and adjusted baseline differences are not jointly significant. Table 2 describes the baseline number of healthcare providers at the sub-district clinic and the village (Panel A). On average, there are 1.6 doctors per sub-district clinic and 0.3 doctors per village. Control sub-district clinics are staffed by 9 midwives at baseline, which corresponds to 1 midwife per village. Similarly, there are 9 nurses per clinic at baseline, which corresponds to 1 nurse per village. On average, a village has 0.6 traditional attendants.

Since midwives are the main healthcare providers, table 2 describes midwife characteristics at baseline (Panel B). Almost 90% of midwives in the sample hold dual practice, and on average, almost half of their *Rp.* 3,000,000 ($300) monthly income comes from private practice. Midwives charge *Rp.* 130,000 ($13) for normal delivery in their public practice, and the private fee is approximately double the public list price. On average, the fees received from the last three deliveries are similar to the private price at baseline. The high number of private patients and private hours worked is consistent with the substantial share of private income.

3.3 Estimation Strategy

At the household level, the intent-to-treat (ITT) and treatment on the treated (TOT) effects are estimated using the women's survey. The ITT effect captures the average program effect among near poor and poor households residing in treated sub-districts. This parameter is estimated by the following equation using OLS:

$$y_{isdt} = \delta CCT_{sdt} + \gamma \overline{y_{sd1}} + \alpha_d + \epsilon_{isdt}$$

where y_{isdt} is the delivery fees[22] paid by woman i who resides in sub-district s, in dis-

[21] Conditional on using doctors, households spend about *Rp.* 1,000,000 ($100) for delivery assistance. Conditional on using midwives, households spend about *Rp.* 300,000 ($30). Conditional on using traditional birth attendants, households spend about *Rp.* 140,000 ($14).

[22] Although the use of log prices allows for a clearer interpretation of the price changes, using log prices results in the loss of observations with zero prices. Consistent with increased use of trained delivery attendants, the program is associated with a lower probability of paying zero fees to trained

trict d, at time t[23]. CCT_{sdt} takes the value one if the sub-district is randomized into treatment. $\overline{y_{sd1}}$ is the baseline value for the sub-district. α_d is a district fixed effect that captures non time-varying district characteristics. Because of the sub-district randomization, the error term, ϵ_{isdt}, is not correlated with individual treatment status, so δ captures the ITT effect of the program on delivery fees paid by near poor and poor households. All standard errors are clustered at the sub-district level. All prices are expressed in 2007 *Rupiah* (1 USD ~ *Rp.* 10,000). Other outcomes of interest include changes in the probability of using each type of delivery attendant, prenatal care quality, and birth outcomes.

The treatment on the treated effect captures the program effects among program beneficiaries. Because individual participation is endogenous, the estimation uses an Instrumental Variable (IV) strategy. The instrument for program participation is the sub-district randomization[24]. There were no refusals from eligible households, so there is no selection into initial compliance among program beneficiaries. The following baseline characteristics are included: mother's education, father's education, mother's age, log per capita expenditure, and indicators for asset ownership[25].

This paper empirically estimates the effect of an exogenous demand shock on local healthcare price as measured by changes in delivery fees charged by midwives. Since midwives treat both poor and non-poor households, the fees reported by midwives represent the local price. At the midwife level, the following equation is estimated:

$$y_{msdt} = \beta CCT_{sdt} + \mu\overline{y_{sd1}} + \alpha_d + \nu_{msdt}$$

where y_{msdt} is the delivery fees charged by midwife m at sub-district s, in district d, at time t in public and private practice. $\overline{y_{sd1}}$, and α_d are described in the previous equation. ν_{msdt}, the error term, is not correlated with the treatment status because

delivery attendants and midwives, so in order to take these changes into account, level regressions are used.

[23]The estimates are smaller, but qualitatively similar using difference-in-differences.

[24]For any given program beneficiary, individual participation status is correlated with the sub-district assignment, since only households in treated sub-districts who were offered the program could enroll, and the random sub-district assignment is uncorrelated with the unobserved characteristics of program participants.

[25]The results are similar when individual characteristics are excluded.

of the sub-district randomization, so β is the ITT parameter for providers, which captures the program effect on midwife fees in sub-districts that are randomized into treatment.

4 Results

4.1 Main Results

The CCT program requires participating households to obtain prenatal care and delivery assistance from trained attendants to ultimately improve birth outcomes, lower maternal mortality and infant mortality. Table 3 presents the program effects on birth outcomes[26]. For infant mortality, this paper replicates the impact evaluation (Alatas et al., 2011) and finds similar results. In addition, the program also has no significant effect on maternal mortality. Estimated program effects using a rare event logit developed by King and Zeng (2001) are qualitatively similar, and the estimates are also not statistically significant. For live births, the program has no significant effect on birth weight[27], which is similar to earlier results on child growth indicators in Brazil, Ecuador, Honduras, and Nicaragua (Fizbein et al., 2009).

To estimate demand changes, table 4 presents changes in the utilization of each trained delivery attendant. Panel A presents the ITT estimate and panel B presents the TOT estimate. Column 1 reproduces the impact evaluation estimates by Alatas et al. (2011) and column 2 replicates the impact evaluation. In the impact evaluation,

[26]The results on birth outcomes may be related to the potential of a perverse incentive on fertility associated with the program. The CCT program may affect fertility by increasing total fertility or reducing birth spacing so as to qualify for the cash transfer. The data does not allow for the first analysis because the women are still in their reproductive years, but birth spacing can be analyzed. Shorter birth spacing is associated with adverse birth outcomes, including low birth weight and infant mortality (Conde-Agudelo et al., 2006). The program affects the timing of birth by increasing spacing, with a larger magnitude among program participants. Similarly, using the Cox survival model to account for the right censored data, the program is also associated with lower hazard of pregnancy in treated sub-districts. To the extent that better birth spacing is associated with better birth outcomes, the results on birth outcomes suggest that changes in birth outcomes are not driven by shorter birth spacing.

[27]Although birth weight is a predictor of infants' long-term health outcomes, the sample is a selected sample because birth weight is observed conditional on being weighed at birth, and the program increases the probability of being weighed at birth. Low birth weight is not used because of measurement error in birth weight.

the initial sub-district randomization is used to estimate the Local Average Treatment Effect (LATE). In this case, LATE captures the program effect on areas that were initially randomized into control that later managed to receive treatment. In the impact evaluation, individual baseline values are included as a regressor, and missing baseline values are imputed based on nearest-neighbor propensity score matching. In the replication, I use the impact evaluation's IV strategy to estimate LATE, using baseline sub-district average as a regressor to avoid imputations of individual baseline values. The point estimates of the average placement effects are similar to earlier results. However, the participation effects are larger than the point estimates in the impact evaluation. These differences are likely to stem from the potentially noisy individual baseline values.

Table 4 also presents changes in the probability of using each type of delivery attendant: doctors, midwives, and traditional attendants. Column 3 presents changes in the probability of using a doctor, followed by changes in the use of midwives, and traditional birth attendants. Since it is possible for women to use more than one type of provider, the probabilities of using each type of provider are not mutually exclusive. In treated communities, the household CCT program is associated with a 50% increase in the probability of using a doctor. Among program participants, the utilization rate increases four-fold relative to their baseline utilization rate. In treated sub-districts, the program is associated with a 15% increase in the probability of using a midwife. Among program participants, the program increases midwife use by 45%, thereby increasing midwife utilization rate to the level of non-participants. Lastly, the CCT program succeeds in lowering the use of traditional attendants by an average of 17% and by 30% among program participants. Therefore, the program has successfully increased the use of doctors and midwives and decreased the use of traditional attendants, which is consistent with program objective to increase demand for higher quality healthcare providers.

To analyze the supply response, table 5 presents changes in the number of delivery attendants and changes in midwives' practice. Columns 1 and 2 present changes in the number of trained delivery attendants attached to sub-district clinics. Columns 3 to 5 present changes in the number of delivery attendants at the village level. The household CCT program has no effect on the number of doctors, but the program

increases the number of midwives affiliated with sub-district clinics by 10%. Villages also consistently report a 10% increase in midwife availability and no significant change in the number of doctors or untrained traditional attendants. We expect the number of midwives to respond more easily than doctors since nurses could receive 1 year of additional training to become midwives. In columns 6 and 7, at the midwife level, there is no statistically significant change in the probability of having dual practice or total hours worked[28]. Overall, the program is associated with increased number of midwives, which should mitigate the price increase in treated sub-districts.

In spite of the supply response, among near poor and poor households, the program is associated with higher delivery fees paid to midwives, which is consistent with increased utilization. Table 6 presents changes in delivery fees, followed by fees paid to a trained delivery attendant, doctors, midwives, and traditional attendants. On average, the program is associated with a 10% increase in total expenditure on childbirth, which is driven by increased fees paid to doctors or midwives. Near poor and poor households residing in treated sub-districts spend 30% more on delivery fees paid to doctors, and 25% more on midwives. These results are consistent with increased utilization of doctors and midwives for delivery assistance. In addition, because the program is associated with lower use of traditional attendants, households in treated sub-districts now spend 30% less on traditional attendants for childbirth. Program participation is associated with a 60% increase in total expenditure on childbirth, driven by a 150% increase in delivery fees paid to midwives. In addition, program participation is associated with a 50% decrease in delivery fees paid to traditional attendants. Program beneficiaries now pay approximately the same fees that non-participants pay to midwives, suggesting that the poor can now afford higher quality delivery assistance. These estimates imply that program beneficiaries who receive the minimum transfer amount spend about 30% of the transfer on delivery fees.

To analyze price changes in the local healthcare market, table 7 presents changes in delivery fees as reported by midwives[29]. The program is associated with 10%

[28]Changes in hours spent in private and public service are also not statistically significant.

[29]Since dual practice midwives may be able to increase price more easily, restricting the sample to dual practice midwives yields similar results. As an alternative specification, the sample is also restricted to panel midwives to include midwife fixed effects, the results are similar to the estimation

higher income for midwives, which may come from increased salary, public, or private practice income. Columns 2 to 4 explore the source of the price increase. As expected, the CCT program has no statistically significant effect on public fees for normal delivery because public fees are often regulated. On the other hand, midwives are able to respond to the demand shock in private practice. The program leads to a 10% increase in private fees for normal delivery and a 5% increase in delivery fees received from the last three deliveries. These results provide evidence that the program is associated with a small price increase in the local healthcare market. Although these price increases are small and do not affect the affordability of care for program participants, this price increase may have implications on healthcare affordability among poor households who are not eligible for the CCT program.

The discrepancy between the midwife and household reports is related to the population that midwives serve and the changes in utilization among poor households. Midwives treat program participants and non-participants, so the price increase reported by midwives represents the estimated program effect in the local healthcare market. However, the larger fee increase reported by households is driven by the increase in utilization among poor households. The indicator for zero fees captures households that report paying zero fees to midwives and those that did not use midwife services. The household CCT program lowers the probability of paying zero midwife fees among poor households. On the other hand, midwives report no statistically significant change in the probability of receiving zero fees. These results suggests that the fee increase reported by poor households is driven by their increased use of midwife services, and not because midwives increase prices for the poor to capture some of the transfers received by households.

Increased utilization and price associated with the CCT program may affect the quality of healthcare provided as measured by prenatal quality. Table 8 presents quality changes as reported by households and midwives. Among program participants, prenatal quality improvements accompany the increased utilization of midwives for

using the full sample. Among panel midwives, the program is associated with increased midwife income and private fees. There is no statistically significant increase in average fees received from the last three deliveries, but there is a 4% increase in median fees, similar to the estimated increase using all midwives.

prenatal care[30] and delivery assistance. Using the prenatal quality index, the program is associated with an average increase of 0.08 standard deviation, and a 0.17 standard deviation increase (columns 1 and 2) among program beneficiaries[31]. On the supply side, using midwives' self-reported quality in their public and private practice, there is no evidence of any significant quality improvement in the local healthcare market (columns 3 and 4). These results suggest that the quality improvements experienced by households result from increased use of prenatal care from trained attendants, instead of improvements in the average quality of care in the local market. This provides suggestive evidence that low quality of care partly contributes to the lack of improvements in birth outcomes in spite of higher utilization of healthcare services.

To further explore the role of midwife quality on program effectiveness, table 9 analyzes changes in midwife characteristics and the possibility of selection. The first possibility is the migration of experienced midwives to treated areas, followed by changes in the qualification and experience of midwives. A midwife is coded as a migrant if she has spent less than 2 years in the sub-district clinic, but has more than 3 years of experience[32]. The program has no statistically significant effect on the probability of midwife migration to treated areas (column 1[33]). I then explore the program effect on midwives' level of education and years of experience as a measure of midwife quality. Before 1998, midwives could be certified with a 1-year diploma, but now midwives are required to complete a three-year diploma program, *Akademi*

[30]The program has increased the probability of obtaining prenatal care from midwives by 7% on average and by 13% among participants, which is consistent with the 13% increase in obtaining at least four prenatal visits (Alatas et al., 2011).

[31]Although the program has no statistically significant effect on the probability of receiving a complete prenatal check, the program is associated with a 30% higher probability of receiving the alternative prenatal check indicator, which excludes external and internal examinations. Among program beneficiaries, the program is associated with an 80% increase in the probability of receiving high quality prenatal care, which increases the average prenatal quality received to the level of non-participants.

[32]Recent graduates are typically assigned to sub-districts and sign a three-year initial contract, while more experienced midwives have higher mobility.

[33]To estimate migration from control to treated areas, I estimate the change in the number of midwives in control sub-districts that are located near a treated sub-district. The distance indicator for takes the value one when a sub-district is within 3.5 miles of a treated sub-district, which corresponds to the median distance. There is also no evidence of control areas losing midwives, which suggests that midwives do not move to treated sub-districts in response to the CCT program.

Bidan[34] (Midwife Academy) (Heywood et al., 2010). The CCT program is associated with an increase in the number of educated midwives (column 2), but the program is also associated with lower levels of experience (columns 3 and 4). The program is associated with more recent graduates who are on their first assignment and the CCT program is also associated midwives with fewer years of experience. These results suggest that the program does little to improve provider characteristics associated with better quality of healthcare service.

4.2 Heterogeneous Treatment Effects

The program increases delivery fees among near poor and poor households, which is a concern if price increases are passed on to the poor and the increase becomes a barrier to healthcare access. In addition, it is also common for healthcare providers in developing countries to price discriminate by charging higher prices to the wealthy and lower prices to the poor (Gertler and Solon, 2000; Killingsworth et al., 1999). Since program beneficiaries now have more resources to pay for healthcare services, healthcare providers may increase the price charged to the poor. To address the possibility of heterogeneous treatment effects, I estimate changes in delivery fees and prenatal care quality among households in the bottom quintile relative to households from the highest expenditure quintile. Although there is evidence of a price increase in the local healthcare market, there is no evidence of heterogeneous treatment effects by household expenditure level[35], so the price increase does not appear to be disproportionately passed on to the poorest households.

The program is associated with improved prenatal quality received by poor households, but for the program to serve the poor and improve equality of healthcare access, it is important to analyze whether the poor benefit from the quality improvements. I find that households in the bottom quintile experience larger quality

[34] Prior to 1989, midwife training only required one year of education after junior high school. In 1989, the government started a midwife program, *Program Pendidikan Bidan* (Midwife Education Program), to provide midwives with basic nursing qualifications. The current workforce consists of midwives trained in all three programs, with an increasing share of midwives with a 3-year diploma.

[35] One concern with the use of household expenditure as a wealth measure is that it may be a poor measure of wealth. To address this concern, the same analysis is run using a wealth index, which is created based on asset ownership using principal component analysis. The results are similar using this alternative wealth measure.

improvements relative to those in the top quintile. The CCT program is associated with a 0.4 standard deviation increase for households in the bottom three quintiles, which is the population most likely affected by the CCT program. Although the quality improvements benefit the poorest households, the program has no differential effect on birth outcomes, which suggests the need to further analyze the link between quality of care and outcomes.

To further explore the interaction between prenatal quality and health outcomes, an interaction term between high quality and treatment status is included. The indicator for high quality takes the value one if households in the sub-district report receiving above-median prenatal quality at baseline. Although there is no statistically significant effect on infant mortality, the program improves some birth outcomes in higher quality areas. The program continues to be associated with a higher incidence of reported low birth weight, but in high quality areas, the program reduces the reported incidence of low birth weight. The program is also associated with higher average birth weight in high quality areas. These results further suggest that prenatal quality is key to improving birth outcomes.

CCT programs require supply-readiness, and areas in Java are more supply-ready than areas off-Java. Consequently, the impact evaluation finds stronger results on prenatal and post-natal visits in Java (Alatas et al., 2011). In terms of price changes, there is a larger price increase off Java as reported by both households and midwives. On the supply side, midwives in Java and off-Java report no change in the quality of care provided. On the demand side, households in Java report a larger increase in prenatal quality received, where the average baseline quality is higher. These results strongly suggests that the program is more effective in areas that are more supply-ready.

5 Discussion

Unlike earlier results that find no substantial price or wage increases in the local economy, Indonesia's CCT program is associated with a small price increase in the local healthcare market, which is directly affected by the program. The price increase is driven by changes in the private market, which suggests that dual practice

contributes to providers' ability to respond to the demand shock. One concern with increased private fees is that higher fees would limit the affordability of healthcare services for the poor. Although private practice seems to be responsible for the price increase, dual practice increases provider availability, since midwives may not enter the profession at all if they were not able to enter private practice to supplement their income (Gruen et al., 2002). The CCT program increases utilization among the near poor and poor households, and the increase in fees paid to providers is driven by increased utilization, suggesting that the price increase does not appear to limit the effectiveness of the CCT program in meeting the targeted indicators.

To explore whether the results are unique to the household CCT program, I compare the household CCT to the community CCT program that was piloted simultaneously in the same provinces. The community CCT program is also a demand-driven program, but it is simpler and cheaper to administer compared to the household CCT program. The community CCT program allows communities to target both demand and supply constraints, so we expect the community CCT program to generate both demand and supply shocks. However, individual participation in the community CCT program is voluntary, so participants are likely to have a higher propensity to use healthcare services. In spite of the differences in mechanism, the two programs are comparable since both programs target the same indicators. The community CCT impact evaluation finds a small and non-significant increase in the use of trained delivery attendants, but the community CCT is associated with a 5% increase in delivery fees with no statistically significant change in prenatal care quality (Olken et al., 2010). Replicating the estimation, I also find that the community CCT program is associated with a price increase. These results provide further evidence that any demand shock in the healthcare market leads to local price increases.

Although Indonesia's CCT program increases the use of trained delivery attendants and prenatal quality among near poor and poor households, these improvements do not translate to better birth outcomes. These results can be partly explained by Indonesia's provider availability compared to other countries that have implemented CCT programs, such as Mexico. Mexico's CCT program has been shown to improve health outcomes (Gertler, 2004), and the improvements in birth outcomes can be explained by improved prenatal care quality (Barber and Gertler,

2010). The CCT program requires supply readiness, so that the local healthcare system would be able to meet the additional demand without increasing price or compromising the quality of care. However, in spite of the selection criteria, Indonesia's provider availability was more limited compared to Mexico's when the CCT program was launched in 1997. In 2000, Mexico had 11 nurses and midwives per 10,000 and 17 physicians per 10,000[36]. In contrast, Indonesia had 8 nurses and midwives per 10,000 and 1 physicians per 10,000 in 2007[37]. These statistics suggest that provider availability needs to be improved as Indonesia's CCT program expands.

To further explore the role of quality of care in producing health outcome, I compare Indonesia's household CCT program to the community CCT program. The community CCT impact evaluation finds no statistically significant change in prenatal care quality (Olken et al., 2010), and consequently, no significant change in low birth weight (Triyana, 2013). However, consistent with results from the household CCT program, reported incidence of low birth weight falls in community CCT areas with higher baseline prenatal quality. These results are consistent with results from Mexico's CCT program that finds that the reduction in low birth weight is driven by improvements in prenatal care quality (Barber and Gertler, 2009, 2010). These results underscore the importance of prenatal care quality in improving birth outcomes.

6 Conclusion

Indonesia's CCT program generates a demand shock in the healthcare market as measured by increased use of trained providers for delivery assistance. Although supply readiness mitigates the price increase in the local healthcare market, the demand shock generated by the program still generates a price increase in the healthcare market. As CCT programs become more widely implemented in developing countries, one key consideration before program implementation is the availability of high quality healthcare providers to meet additional demand so as to mitigate price increases. The price increase in the healthcare market could limit access among the poor who are not eligible for the program, since affordability is one barrier to healthcare access

[36]WHO Health Systems Statistics, 2005
[37]WHO Health Systems Statistics, 2005

among the poor.

The increase in delivery fees paid by near poor and poor households is accompanied by quality improvements as measured by prenatal care quality, but these changes do not lead to improved birth outcomes. Improvements in birth outcomes are linked to higher baseline quality of prenatal care, which underscores the importance of quality of care. Although CCT programs require sufficient provider availability, a more important consideration is the quality of healthcare services. For CCT programs to successfully improve human capital, they need to address both the quantity and quality of healthcare supply in order to translate behavioral changes to improved health outcomes.

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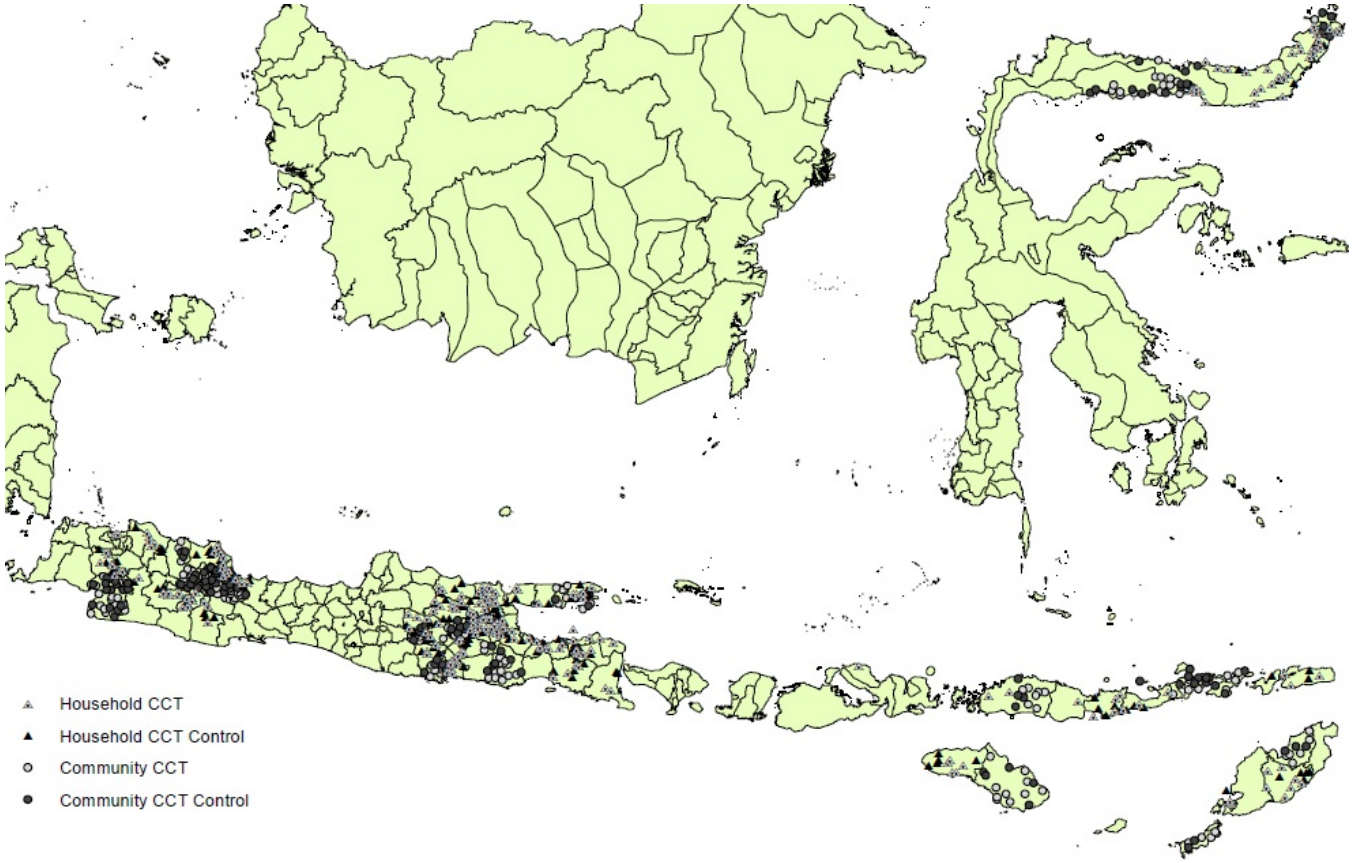
Tables and Figures

Figure 1: Location of Household and Community CCT Programs



Notes: Both programs operate in the same provinces, except the household CCT program includes Jakarta.

Table 1: Baseline Household Characteristics

Panel A. Baseline delivery outcomes

	Control	Treatment	Adjusted Difference
	(1)	(2)	(3)
Infant mortality	0.011	0.013	0.002
	(0.106)	(0.115)	(0.003)
	2,814	2,773	
Maternal mortality	0.001	0.001	0.000
	(0.037)	(0.035)	(0.001)
	2,148	3,183	
Birth weight (grams)	3,180.7	3,167.1	-13.25
	(552.4)	(565.5)	(19.21)
	1,719	1,714	

Panel B. Baseline delivery assistance

	Control	Treatment	Adjusted Difference
	(1)	(2)	(3)
Birth at a healthcare facility	0.440	0.435	-0.011
	(0.497)	(0.496)	(0.018)
	2,301	2,264	
Birth Attendant: Trained Attendant	0.623	0.639	0.013

Notes: Baseline differences in Panels A, B, and C are not jointly significant, F-test p-value 0.704. Column (3) presents the difference between households residing in treatment and control sub-districts with district fixed effects included. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Trained delivery attendants include doctors and midwives. Infant mortality includes stillbirths and infant deaths up to 11 months. Maternal mortality includes all pregnancy-related deaths reported by households. Birth weight in grams as reported by mothers.

Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 1: Baseline Household Characteristics

	(0.485)	(0.480)	(0.015)
	2,301	2,264	
Doctor	0.088	0.079	-0.012
	(0.283)	(0.269)	(0.008)
	2,301	2,264	
Midwives	0.562	0.588	0.024
	(0.496)	(0.492)	(0.015)
	2,301	2,264	
Traditional Attendant	0.431	0.419	-0.008
	(0.495)	(0.494)	(0.018)
	2,301	2,264	

Notes: Baseline differences in Panels A, B, and C are not jointly significant, F-test p-value 0.704. Column (3) presents the difference between households residing in treatment and control sub-districts with district fixed effects included. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Trained delivery attendants include doctors and midwives. Infant mortality includes stillbirths and infant deaths up to 11 months. Maternal mortality includes all pregnancy-related deaths reported by households. Birth weight in grams as reported by mothers.

Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 1: Baseline Household Characteristics

Panel C. Baseline delivery fees

		Control	Treatment	Adjusted Difference
		(1)	(2)	(3)
Delivery fees		298,739	284,611	-17,216
		(766,112)	(573,472)	(17,914)
		2,283	2,238	
Delivery fees paid to:				
	Trained professional	256,255	243,838	-15,902
		(773,842)	(584,289)	(18,123)
		2,283	2,238	
	Doctor	102,722	82,113	-22,163
		(746,292)	(541,178)	(17,339)
		2,283	2,238	
	Midwife	176,276	178,389	-325
		(363,480)	(336,313)	(9,668)
		2,283	2,238	
	Traditional Attendant	40,711	39,192	-1,057
		(90,292)	(81,617)	(2,683)
		2,194	2,171	

Notes: Baseline differences in Panels A, B, and C are not jointly significant, F-test p-value 0.704. Column (3) presents the difference between households residing in treatment and control sub-districts with district fixed effects included. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Trained delivery attendants include doctors and midwives. Infant mortality includes stillbirths and infant deaths up to 11 months. Maternal mortality includes all pregnancy-related deaths reported by households. Birth weight in grams as reported by mothers.
Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 2: Baseline Provider Characteristics

Panel A. Baseline number of providers from the sub-district clinic survey

	Control	Treatment	Adjusted Difference
	(1)	(2)	(3)
Doctors	1.637	1.583	0.018
	(1.009)	(1.030)	(0.074)
	179	179	
Midwives	9.067	8.129	0.140
	(5.844)	(5.320)	(0.470)
	180	180	
Nurses/Paramedics	9.339	9.433	0.213
	(4.941)	(5.208)	(0.436)
	180	180	
F-test			0.677

Panel B. Baseline number of providers from the village survey

	Control	Treatment	Adjusted Difference
	(1)	(2)	(3)
Doctors	0.348	0.406	0.063
	(0.831)	(0.988)	(0.041)
	1,344	1,358	
Midwives	1.200	1.232	0.111
	(1.539)	(1.548)	(0.079)
	1,337	1,358	
Nurses/Paramedics	0.917	0.940	0.029

Notes: Column (3) presents the difference between treatment and control groups with district fixed effects included. All prices and income in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Robust standard errors in parentheses, clustered at the sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 2: Baseline Provider Characteristics

Panel C. Baseline midwife characteristics from the midwife survey

			Adjusted
	(0.508)	(0.583)	(0.020)
	1,354	1,358	
Traditional attendants	0.575	0.559	-0.049
	(0.971)	(0.966)	(0.039)
	1,351	1,358	
F-test			0.188

Notes: Column (3) presents the difference between treatment and control groups with district fixed effects included. All prices and income in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Robust standard errors in parentheses, clustered at the sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 2: Baseline Provider Characteristics

Panel C. Baseline midwife characteristics from the midwife survey

		Control	Treatment	Adjusted Difference
		(1)	(2)	(3)
Midwife practice:	Share with private practice	0.894	0.857	-0.044**
		(0.308)	(0.350)	(0.019)
		696	696	
	Total income	3,036,459	3,079,905	226,836*
		(2,304,431)	(2,477,733)	(123,713)
		702	702	
	Share Private income	0.472	0.468	-0.006
		(0.282)	(0.281)	(0.018)
		698	698	
List price for normal: delivery	Public	128,684	149,758	-18,554
		(146,333)	(201,070)	(13,194)
		603	603	
	Private	295,539	296,371	-2,887
		(141,156)	(139,032)	(5,504)
		665	665	
Transaction price:	Fees received in the last 3 deliveries	335,238	323,457	5,354
		(203,184)	(131,975)	(13,329)
		1,447	1,447	
Number of patients : in the last month	Public	6.577	5.843	2.532
		(21.070)	(18.861)	(1.780)
		702	702	
	Private	3.511	3.657	0.356
		(6.283)	(5.261)	(0.269)
		702	702	

Notes: Column (3) presents the difference between treatment and control groups with district fixed effects included. All prices and income in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Robust standard errors in parentheses, clustered at the sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 2: Baseline Provider Characteristics

Panel C. Baseline midwife characteristics from the midwife survey

				Adjusted
Hours worked in the :	Public	16.776	16.104	0.751
last 3 days		(9.997)	(9.854)	(0.691)
		702	702	
	Private	11.677	11.943	-0.923
		(11.562)	(11.690)	(0.988)
		702	702	
F test				0.377

Notes: Column (3) presents the difference between treatment and control groups with district fixed effects included. All prices and income in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Robust standard errors in parentheses, clustered at the sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 3: Changes in Health Outcomes

	Infant mortality		Maternal mortality	Birth weight
	Alatas et al. (2011)	Replication by Triyana (2012)		
	(1)	(2)	(3)	(4)
Panel A. Reduced Form of CCT Program in Village				
Treatment	0.002	0.003	-0.0004	-0.570
	(0.00)	(0.003)	(0.0008)	(26.04)
Observations	-	8,302	7,896	4,987
R-Squared	-	0.083	0.014	0.089
Baseline Dependent	0.0102	0.011	0.001	3,180.76
Variable		(0.106)	(0.037)	(552.39)
Panel B. IV Effect of Program Participation				
Ever Received CCT	0.005	0.006	-0.0008	-1.307
	(0.00)	(0.007)	(0.0017)	(59.15)
Observations	-	8,302	7,896	4,987
R-Squared	-	0.084	0.014	0.089
Baseline Mean among	-	0.031	0.004	3200.00
Program Participants		(0.173)	(0.063)	(628.78)

Notes: District fixed effects included in all specifications. Infant mortality includes still-births and deaths up to 12 months. Maternal mortality includes all pregnancy-related deaths reported by households. Birth weight in grams, reported by mothers. Sub-district randomization is used as instrument for individual program participation. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership, and land ownership. Robust standard errors in parentheses, clustered at sub-district level, * $p<0.1$, **$p<0.05$, ***$p<0.01$.

Table 4: Changes in the Utilization of Delivery Attendants

	P(Trained Delivery Attendant)		P(Use of Any Doctor)	P(Use of Any Midwife)	P(Use of Traditional Attendant)
	Alatas et al. (2011)	Replication by Triyana (2012)			
	(1)	(2)	(3)	(4)	(5)
Panel A. Reduced Form of CCT Program in Village					
Treatment	0.020	0.037*	0.039***	0.082***	-0.081***
	(0.03)	(0.020)	(0.012)	(0.017)	(0.015)
Observations	-	6,628	6,628	6,628	6,628
R-Squared		0.306	0.120	0.243	0.302
Baseline Mean	0.602	0.623	0.088	0.562	0.431
		(0.485)	(0.283)	(0.496)	(0.495)
Panel B. IV Effect of Program Participation					
Ever Received CCT	0.037	0.092*	0.083***	0.172***	-0.171***
	(0.03)	(0.049)	(0.025)	(0.035)	(0.033)
Observations	-	6,628	6,628	6,628	6,628
R-Squared		0.304	0.117	0.237	0.298
Baseline Mean among	-	0.394	0.025	0.375	0.600
Program Participants		(0.490)	(0.157)	(0.485)	(0.491)

Notes: District fixed effects included in all specifications. Sub-district randomization is used as instrument for individual program participation. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership, and land ownership. Trained healthcare professionals include doctors and midwives. In column 1, Alatas et al. (2011) estimate LATE using all sub-districts in the sample, instrumenting for sub-districts' actual treatment status using the intial randomization. They control for baseline values at the individual level, and missing values are imputed based on propensity score matching. In column 2, Triyana (2012) uses the same IV strategy to estimate LATE, but sub-district baseline values are included to avoid individual baseline imputations. The probabilities of using midwives, doctors, and traditional attendants are not mutually exclusive because women may use more than one type of delivery attendant. Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 5: Changes in the Availability of Providers

	Number of Providers					Midwife Availability	
	Clinic Report (Sub-District Level)		Community Report (Village Level)			Midwife Report (Midwife Level)	
	Doctors	Midwives	Doctors	Midwives	Traditional Attendants	Any private practice	Total Hours
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.029	0.748***	-0.004	0.115***	0.047	0.022	-0.681
	(0.075)	(0.190)	(0.057)	(0.022)	(0.030)	(0.015)	(0.663)
Observations	713	713	5,426	5,434	5,429	2,785	2,790
R-squared	0.717	0.835	0.204	0.123	0.149	0.454	0.203
Mean Dependent Variable	1.637	9.339	0.348	1.200	0.575	0.894	28.453
	(1.009)	(4.941)	(0.831)	(1.539)	(0.971)	(0.308)	(15.541)

Notes: District fixed effects included in all specifications. Treatment indicator equals one when clinics, villages, or midwives are located in sub-districts randomized into treatment. Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 6: Household Report: Changes in Fees Paid for Childbirth

	Delivery Fees	Fees Paid to Trained Attendant	Fees Paid to Doctors	Fees Paid to Midwives	Fees Paid to Traditional Attendants
	(1)	(2)	(3)	(4)	(5)
Panel A. Reduced Form of CCT Program in Village					
Treatment	37,203*	44,484**	32,720*	45,917***	-12,285***
	(20,436)	(20,968)	(18,850)	(13,138)	(2,725)
Observations	6,544	6,544	6,546	6,544	6,247
R-squared	0.166	0.167	0.075	0.182	0.147
Baseline Mean	298,739	256,255	102,721	176,276	40,711
	(766,112)	(773,842)	(746,473)	(363,480)	(90,292)
Panel B. IV Effect of Program Participation					
Ever Received CCT	78,544*	93,919**	69,089*	96,949***	-26,311***
	(43,305)	(44,544)	(39,820)	(28,722)	(5,955)
Observations	6,544	6,544	6,546	6,544	6,247
R-squared	0.163	0.164	0.073	0.174	0.142
Baseline Mean among	114,032	62,359	0	62,359	49,407
Program Participants	(135,320)	(130,049)	(0)	(130,049)	(78,151)

Notes: District fixed effects included in all specifications. Sub-district randomization is used as instrument for individual program participation. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Trained attendant includes doctors and midwives. Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 7: Midwife Report: Changes in Delivery Fees

		Fees for Normal Childbirth		Fees Received from
	Total Income	Public fees	Private fees	Last 3 Deliveries
	(1)	(2)	(3)	(4)
Treatment	335,314***	-3,161	27,062***	14,925**
	(115,473)	(10,554)	(4,488)	(5,806)
Observations	2,790	2,181	2,556	5,884
R-squared	0.277	0.228	0.661	0.269
Mean Dependent Variable	3,036,459	128,684	295,539	335,238
	(2,304,431)	(146,333)	(141,156)	(203,184)

Notes: District fixed effects included in all specifications. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Treatment indicator equals one when midwives are located in sub-districts randomized into treatment. Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table 8: Changes in Prenatal Care Quality

	Household Report		Midwife Report	
	Reduced Form Effect	Effect of Program Participation	Public Practice	Private Practice
	OLS	IV	OLS	OLS
	(1)	(2)	(3)	(4)
Treatment	0.080**	0.167**	-0.009	-0.021
	(0.034)	(0.070)	(0.050)	(0.052)
Observations	8,302	8,302	1,396	1,396
Baseline Mean	0.000	-0.317	0.000	0.000
	(1.000)	(1.122)	(1.000)	(1.000)

Notes: District fixed effects included in all specifications. Complete prenatal check includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, external pelvic examination, and internal examination. The prenatal quality index is constructed using principal component analysis of the following items: all items for a complete prenatal check-up, the number of tetanus toxoid vaccinations received, information on pregnancy complications, and an indicator for receiving any iron pills. Placement effect is the program effect on individuals living in sub-districts randomized into treatment. Participation effect is the program effect on individuals who received the cash transfers. Sub-district randomization is used as instrument for individual program participation. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. Midwives' prenatal quality is only available in the 2009 follow-up survey. Robust standard errors in parentheses, clustered at sub-district level, * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table 9: Changes in Midwife Characteristics

	Migration of experienced midwives	Higher education (3-year diploma)	Less Than 3 years of experience	Years of experience
	(1)	(2)	(3)	(4)
Treatment	0.012	0.139***	0.053**	-0.967*
	(0.023)	(0.036)	(0.025)	(0.559)
Observations	942	955	958	958
R-squared	0.151	0.252	0.112	0.190
Mean Dependent	0.002	0.302	0.085	11.88
Variable	(0.043)	(0.459)	(0.279)	(7.386)

Notes: District fixed effects included in all specifications. Sample restricted to non-panel midwives only. Placement effect is the program effect in sub-districts randomized into treatment. Migration of experienced midwives is an indicator that takes the value one when midwives with at least 3 years of experience have spent less than 2 years at the sub-district clinic. Robust standard errors in parentheses, clustered at sub-district level, * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

A Appendix Tables

Table A.1: Annual Program Requirements

	Frequency per person
Health	
1. Prenatal care visit	4
2. Iron tablets (30 pill/packet)	3
3. Childbirth assisted by trained professional	1
4. Postnatal care visit	2
5. Immunization	12
6. Monthly weighing	12
7. Vitamin A pill	2
Education	
8. Primary school enrollment	1
9. Monthly primary school attendance >= 85%	12
10. Middle school enrollment	1
11. Monthly middle school attendance >= 85%	12
	12

Source: World Bank

Table A.2: Cash Transfer Amounts

Fixed cash transfer		200,000
Cash transfer per household with:		
	Child less than 6 years old	800,000
	Pregnant or lactating mother	800,000
	Child of primary school age (6-12)	400,000
	Child of secondary school age	800,000
Minimum transfer per household:	600,000	
Maximum transfer per household:	2,200,000	

Source: World Bank, Government of Indonesia: Ministry of Social Affairs (*Kemensos*). 1USD $\sim$ 10,000 *Rupiah*.

Table A.3: Household Report: Difference-in-differences estimates

	Delivery Fees	Fees Paid to Trained Attendant	Fees Paid to Doctors	Fees Paid to Midwives	Fees Paid to Traditional Attendants
	(1)	(2)	(3)	(4)	(5)
Treatment	-3,429	7,332	-7,370	6,607	-5,446
	(29,140)	(29,622)	(27,213)	(18,988)	(3,787)
Observations	6,546	6,546	6,546	6,546	6,247
R-squared	0.135	0.135	0.065	0.153	0.138
Baseline Mean	298,739	256,255	102,721	176,276	40,711
	(766,112)	(773,842)	(746,473)	(363,480)	(90,292)

Notes: District fixed effects included in all specifications. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Trained attendant includes doctors and midwives. Robust standard errors in parentheses, clustered at sub-district level, * p<0.1, **p<0.05, ***p<0.01.

Table A.4: Fertility Changes: Birth Spacing

	Reduced Form Effect	IV Effect of Participation	Hazard ratio
	(1)	(2)	(3)
Treatment	130.1***	236.6***	-0.629*
	(13.44)	(25.55)	(0.379)
Observations	3,147	3,147	3,055
R-squared	0.191	0.155	-
Mean Dependent Variable (days)	499.11 (139.13)	515.33 (133.54)	-

Notes: District FE included, all standard errors clustered at sub-district level. Sub-district randomization is used as instrument for individual program participation. The hazard ratio of pregnancy is estimated using a Cox model. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.5: Midwife Report: Changes in Delivery Fees

		Price for normal delivery		Fees Received from Last 3 Deliveries
	Income	Public fees	Private fees	OLS
	(1)	(2)	(3)	(4)
Panel A. Dual Practice Midwives				
Treatment	452,025***	8,937	31,512***	13,849**
	(130,742)	(13,121)	(5,025)	(6,092)
Observations	2,163	1,660	2,066	4,917
R-squared	0.252	0.180	0.514	0.251
Mean Dependent	3,056,130	118,980	295,459	341,737
Variable	(2,318,835)	(146,132)	(138,819)	(163,546)
Panel B. Difference-in-differences				
Treatment	-44,581	-5,256	7,081	3,613
	(147,464)	(11,318)	(5,520)	(8,024)
Observations	2,800	2,188	2,563	5,884
R-squared				
Mean Dependent	3,036,459	128,684	295,539	335,238
Variable	(2,304,431)	(146,333)	(141,156)	(203,184)

Notes: District FE included, all standard errors clustered at sub-district level. Treatment indicator equals one when clinics, villages, or midwives are located in sub-districts randomized into treatment. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.6: Changes in the Probability of Paying Zero Fees

	P(Zero Delivery Fees)	P(Zero Paid to Trained Attendant)	P(Zero Paid to Doctors)	P(Zero Paid to Midwives)	P(Zero Paid to Traditional Attendant)
	(1)	(2)	(3)	(4)	(5)
Panel A. Reduced Form of CCT Program in Village					
Treatment	0.00735	-0.0789***	-0.0259**	-0.0775***	0.0903***
	(0.0157)	(0.0186)	(0.0112)	(0.0181)	(0.0169)
Observations	5,858	5,858	6,546	5,858	6,247
R-Squared	0.180	0.249	0.093	0.205	0.278
Baseline Mean	0.192	0.526	0.946	0.565	0.686
	(0.394)	(0.499)	(0.226)	(0.496)	(0.464)
Panel B. IV Effect of Program Participation					
Ever Received CCT	0.0150	-0.161***	-0.0547**	-0.158***	0.193***
	(0.0317)	(0.0382)	(0.0236)	(0.0374)	(0.0368)
Observations	5,858	5,858	6,546	5,858	6,247
R-Squared	0.180	0.239	0.091	0.195	0.269
Baseline Mean among	0.243	0.691	1.00	0.696	0.500
Program Participants	(0.430)	(0.463)	(0.000)	(0.461)	(0.502)

Panel C. Midwife Report

	All midwives	Dual Practice	Panel
Treatment	-0.0087	-0.0057	-0.0001
	(0.0085)	(0.0071)	(0.0123)
Observations	5,196	4,946	3,507
R-Squared	0.276	0.091	0.603
Baseline Mean		0.0581	
		(0.234)	

Notes: District FE included, all standard errors clustered at sub-district level. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. Sub-district randomization is used as instrument for individual program participation. Treatment indicator equals one when midwives are located in sub-districts randomized into treatment. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.7: Changes in Prenatal Care Provider

	P(Doctors)	P(Midwives)	P(Traditional Attendants)
	(1)	(2)	(3)
Panel A. Reduced Form of CCT Program			
Treatment	-0.00196	0.0456***	-0.00506
	(0.0123)	(0.0135)	(0.00722)
Observations	8,302	8,302	8,302
R-squared	0.174	0.119	0.068
Mean Dependent	0.203	0.735	0.045
Variable	(0.402)	(0.441)	(0.207)
Panel B. IV Effect of Program Participation			
Ever Received CCT	-0.00408	0.0950***	-0.0106
	(0.0255)	(0.0279)	(0.0150)
Observations	8,302	8,302	8,302
R-Squared	0.174	0.119	0.067
Baseline Mean among	0.113	0.724	0.065
Program Participants	(0.317)	(0.447)	(0.247)

Notes: District FE included, all standard errors clustered at sub-district level. The dependent variables are the probability of at least one prenatal visit with a doctor, midwife, and traditional attendant. Individual characteristics include education, husband's education, log per capita expenditure, age, home ownership, and land ownership. Sub-district randomization is used as instrument for individual program participation. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.8: Changes in Prenatal Care Quality

	Household Report		Midwife Report	
	Reduced Form Effect	Effect of Participation	Public Practice	Private Practice
	OLS	IV	OLS	OLS
	(1)	(2)	(3)	(4)
Panel A. Changes in the Probability of Complete Prenatal Check				
Treatment	0.000264	0.000548	-0.00677	-0.00738
	(0.00758)	(0.0157)	(0.00987)	(0.0106)
Observations	8,302	8,302	1,396	1,396
R-squared	0.085	0.085	0.067	0.055
Baseline Mean	0.061	0.055	0.0201	0.0201
	(0.240)	(0.228)	(0.140)	(0.141)
Panel B. Changes in the Alternative Quality Indicator				
Treatment	0.0653***	0.136***	-0.00828	-0.00455
	(0.0150)	(0.0313)	(0.0251)	(0.0259)
Observations	8,302	8,302	1,396	1,396
R-squared	0.152	0.151	0.112	0.105
Baseline Mean	0.248	0.174	0.213	0.194
	(0.432)	(0.381)	(0.409)	(0.396)

Notes: District fixed effects included in all specifications. Complete prenatal check includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, external pelvic examination, and internal examination. The alternative indicator excludes the external and internal pelvic examinations. Sub-district randomization is used as instrument for individual program participation. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home ownership and land ownership. Midwives' prenatal quality is only available in the 2009 follow-up survey. Robust standard errors in parentheses, clustered at sub-district level, * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table A.9: Sub-District Clinic Report: Changes in the Number of Trained Attendants by Proximity to Treatment

	Doctors	Midwives
	(1)	(2)
Treatment	-0.00196	0.965**
	(0.0934)	(0.472)
Near Other Treated	0.177*	1.167**
Sub-District	(0.0964)	(0.521)
Near x Treatment	-0.120	-0.672
	(0.140)	(0.610)
Observations	711	716
R-squared	0.374	0.437

Notes: District FE included, standard errors clustered at sub-district level. Treatment indicator equals one when clinics, villages, or midwives are located in sub-districts randomized into treatment. 'Near' takes the value one when there is a treated sub-district within 3.5 miles, which corresponds to the median distance between sub-districts. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.10: Baseline Heterogeneity

	Delivery Fees	Midwife Fees	Prenatal Quality Index
	(1)	(2)	(3)
$<$ 20th percentile	181,779	245,055	-0.172
	(416,992)	(334,772)	(1.045)
	436	218	536
20-40th percentile	252,029	275,428	-0.035
	(451,255)	(360,830)	(1.013)
	485	279	583
40-60th percentile	263,022	322,536	0.061
	(464,328)	(467,553)	(0.982)
	446	263	536
60-80th percentile	339,830	287,100	0.128
	(727,393)	(333,274)	(0.932)
	450	268	566
$>$ 80th percentile	469,831	418,092	0.014
	(1,360,293)	(346,578)	(1.00)
	436	259	593

Notes: Standard errors in parentheses. The sample in colums 3 and 4 is restricted to households that reported using a midwife for delivery assistance at baseline. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Quintiles based on log per capita consumption expenditure. The prenatal quality index is constructed using principal component analysis, which includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, internal examination, the number of tetanus toxoid vaccinations received, information on pregnancy complications, and an indicator for receiving any iron pills.

Table A.11: Price Changes by Per Capita Expenditure Level

	Delivery Fees	Fees Paid to Trained Attendant	Fees Paid to Doctors	Fees Paid to Midwife
	(1)	(2)	(3)	(4)
Household CCT	21,643	17,412	71,746	49,091
	(107,815)	(109,219)	(105,959)	(65,247)
Quintile 1	-95,852***	-99,906***	-42,645**	-18,855
(Poorest)	(24,035)	(24,400)	(20,290)	(12,336)
Quintile 2	-128,653***	-134,798***	-65,125***	-44,591***
	(23,959)	(24,453)	(19,929)	(12,355)
Quintile 3	-116,241***	-122,148***	-85,079***	-26,677***
	(23,812)	(23,967)	(19,115)	(10,029)
Quintile 4	-80,354***	-81,361***	-46,208**	-25,477**
	(28,953)	(28,688)	(23,055)	(11,619)
Quintile 1	31,713	45,386	-53,025	1,066
x Treatment	(109,989)	(111,307)	(107,699)	(66,809)
Quintile 2	175,694	195,779	36,782	67,335
x Treatment	(139,795)	(141,758)	(125,884)	(84,414)
Quintile 3	-17,383	-7,068	-25,806	-35,283
x Treatment	(116,081)	(117,484)	(112,425)	(71,959)
Quintile 4	102,161	115,424	50,705	34,636
x Treatment	(134,332)	(138,998)	(141,919)	(81,102)
Observations	6,546	6,546	6,546	6,546
R-squared	0.138	0.139	0.066	0.150

Notes: Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01. District FE included, all standard errors clustered at sub-district level. All prices in 2007 *Rupiah* (1 USD $\sim$ *Rp.* 10,000). Quintiles based on log per capita consumption expenditure.

Table A.12: Changes in Quality by Baseline per Capita Expenditure Level

	Quality Index	Complete Prenatal Check	Alternative Prenatal Check Indicator
	(1)	(2)	(3)
Quality Change	-0.136	-0.029	-0.017
	(0.109)	(0.024)	(0.040)
Quintile 1	-0.093**	-0.019*	0.006
(Poorest)	(0.045)	(0.011)	(0.020)
Quintile 2	-0.047	-0.009	0.021
	(0.043)	(0.011)	(0.020)
Quintile 3	0.085*	-0.003	0.018
	(0.045)	(0.010)	(0.019)
Quintile 4	0.046	-0.002	0.021
	(0.044)	(0.011)	(0.020)
Quintile 1	0.309**	0.034	0.102**
x Treatment	(0.125)	(0.026)	(0.047)
Quintile 2	0.254**	0.032	0.080
x Treatment	(0.129)	(0.028)	(0.050)
Quintile 3	0.210*	0.035	0.103**
x Treatment	(0.119)	(0.029)	(0.049)
Quintile 4	0.089	0.023	0.047
x Treatment	(0.136)	(0.029)	(0.054)
Observations	8,302	8,302	8,302
R-squared	0.161	0.076	0.132

Notes: Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01. District FE included, all standard errors clustered at sub-district level. Quality index constructed using principal component analysis based on list of prenatal care items. Sample restricted to women with midwife assistance for delivery. TT estimates use the sub-district randomization as instrument. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home and land ownership.

Table A.13: Heterogeneous Changes in Health Outcomes

	Infant mortality	Birth weight (grams)	Low birth weight (<2,500 gr.)
	(1)	(2)	(3)
Panel A. Placement Effect: Reduced Form of CCT Program in Village			
Treatment	-0.0001	-60.86	0.065***
	(0.0051)	(37.77)	(0.018)
High baseline	-0.0032	-8.335	0.008
quality	(0.0029)	(11.83)	-0.006
Treatment x High	0.0104	118.9**	-0.088***
baseline quality	(0.0081)	(50.60)	(0.024)
Observations	8,302	4,987	4,987
R-Squared	0.044	0.087	0.062
Baseline Dependent	0.011	3,180.76	0.077
Variable	(0.106)	(552.39)	(0.266)
Panel B. Participation Effect: IV Effect of Program Participation			
Ever Received CCT	-0.0003	-134.9	0.145***
	(0.0099)	(82.04)	(0.039)
High baseline	-0.0031	-5.598	0.0055
quality	(0.0028)	(11.65)	(0.0061)
Treatment x High	0.0104	115.2**	-0.0852***
baseline quality	(0.0075)	(48.94)	(0.0235)
Observations	8,302	4,987	4,987
R-Squared	0.044	0.084	0.049
Baseline Mean among	0.031	3200.00	0.061
Program Participants	(0.173)	(628.78)	(0.241)

Notes: District FE included, all standard errors clustered at sub-district level. High quality is an indicator that takes the value one for sub-districts with above median prenatal quality at baseline. The prenatal quality index is constructed using principal component analysis, which includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, internal examination, the number of tetanus toxoid vaccinations received, information on pregnancy complications, and an indicator for receiving any iron pills. Placement effect is the program effect on individuals living in sub-districts randomized into treatment. Participation effect is the program effect on individuals who received the cash transfers. Sub-district randomization is used as instrument for individual program participation. Infant mortality includes stillbirths and deaths up to 12 months. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home and land ownership. Standard errors in parentheses * p<0.1, **p<0.05, ***p<0.01.

Table A.14: Reduced Form Program Effects in Java and off-Java

Panel A. Household Report

	Fees paid to Midwife		Quality	
	Java	off-Java	Java	off-Java
	(1)	(2)	(3)	(4)
Treatment	54,252***	67,390***	0.080**	0.106
	(18,268)	(20,874)	(0.037)	(0.073)
Observations	4,444	2,102	5,659	2,643
Baseline Mean	212,865	85,720	0.078	-0.194

Panel B. Midwife Report

	Private fees		Private Quality	
	Java	off-Java	Java	off-Java
	(1)	(2)	(3)	(4)
Treatment	18,809***	54,823***	-0.027	-0.002
	(4,235)	(11,313)	(0.039)	(0.165)
Observations	1,975	588	1,029	367
Baseline Mean	343,578	146,156	0.258	-0.729

Notes: District FE included, all standard errors clustered at sub-district level. The prenatal quality index is constructed using principal component analysis, which includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, internal examination, the number of tetanus toxoid vaccinations received, information on pregnancy complications, and an indicator for receiving any iron pills. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home and land ownership. Standard errors in parentheses * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table A.15: Community CCT: Heterogeneous Changes in Health Outcomes

	Infant mortality	Birth weight (grams)	Low birth weight (<2,500 gr.)
	(1)	(2)	(3)
Treatment	-0.0012	0.0235*	-45.61
	(0.0048)	(0.0140)	(31.01)
High baseline	-0.0006	0.0092	-24.82
quality	(0.0029)	(0.0091)	(19.83)
Treatment x High	-0.0014	-0.0358**	55.93*
baseline quality	(0.0045)	(0.0144)	(33.51)
Observations	12,532	7,859	7,859
Baseline Dependent	0.015	0.078	3,157
Variable	(0.121)	(0.269)	(589.19)

Notes: District FE included, all standard errors clustered at sub-district level. High quality is an indicator that takes the value one for sub-districts with above median prenatal quality at baseline. The prenatal quality index is constructed using principal component analysis, which includes the measurement of mother's weight, height, blood pressure, fundal height, fetal heartbeat, blood test, internal examination, the number of tetanus toxoid vaccinations received, information on pregnancy complications, and an indicator for receiving any iron pills. Placement effect is the program effect on individuals living in sub-districts randomized into treatment. Participation effect is the program effect on individuals who received the cash transfers. Sub-district randomization is used as instrument for individual program participation. Infant mortality includes stillbirths and deaths up to 12 months. Individual characteristics include education, husband's education, log per capita expenditure, age, and indicators for home and land ownership. Standard errors in parentheses * $p<0.1$, ** $p<0.05$, *** $p<0.01$.