Raskin Welfare Reform
Program Evaluation Pre-Analysis Plan
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I. Background

Raskin (*Beras Untuk Rumah Tangga Miskin*, or "Rice for the Poor") is Indonesia's largest targeted transfer program, providing a monthly allocation of subsidized rice to eligible households. Raskin is the first of five social protection programs that the Government of Indonesia has designated to transition to electronic distribution by 2022: the previous in-kind program is to be transformed into an electronic transfer known as *Bantuan Pangan Non Tunai* (BPNT, or Non-Cash Food Social Assistance).

The Government of Indonesia first rolled out the BPNT transition to a small set of pilot districts in 2017, covering more than 1.4 million beneficiaries. An expansion of the program, part of which was randomized at the district level in 105 districts, took place in 2018. The Government of Indonesia plans to roll out the transition to BPNT nationally in 2019, at which point BPNT will cover more than 60 million beneficiaries (15 million households).

Our evaluation of the experimental expansion of BPNT aims to identify the effects of the transition from in-kind assistance (Raskin) to the electronic benefit transfer (BPNT). The present analysis plan applies only to this randomized program evaluation; a subsequent academic paper may involve analyses not outlined herein.

II. Empirical Strategy

A. Experimental Design

We worked with the Government of Indonesia to randomly select districts that would receive BPNT as part of the 2018 rollout. The rollout took place in four phases, with our treatment districts undergoing the transition in phases 2-4. The Government of Indonesia identified a set of districts that would definitely receive BPNT; we exclude these districts from our experimental sample.

Our randomization procedure was stratified primarily by province (some geographically adjacent provinces were grouped into the same stratum). Moreover, for strata with more than 10 districts, we further stratified the randomization according to the number of Raskin beneficiaries in the district. In order to meet the target number of beneficiaries to be covered under the BPNT transition, we also randomly "held out" a sample of districts, then randomly treated districts from this sample until almost exactly 8.3 million beneficiaries were to be covered under the treatment.

These hold-out districts are grouped into their own stratum. In total, our experimental sample contains 105 districts: 42 treatment and 63 control districts.

B. Primary Regression Specifications

Our primary regression specification is as follows:

$$y_{huds} = \beta_0 + \beta_1 TREAT_{huds} + \boldsymbol{X'_{huds}}\gamma + \alpha_s + \varepsilon_{huds} \quad (1)$$

where y_{huds} is the outcome of interest for household h with urban/rural status u in district d in stratum s, $TREAT_{huds}$ is a dummy variable indicating whether household h is in a district randomized to receive BPNT, α_s is a set of stratum fixed effects, and $\boldsymbol{X'_{huds}}$ is a vector of controls selected through a double LASSO procedure (see Belloni et al. 2014). We subject the stratum fixed effects to penalization during lasso selection but include them in the "amelioration set" so that they are always included in our post-LASSO regression (Belloni et al. 2014). The pool of variables from which LASSO will select includes baseline SUSENAS variables averaged at the district by urban-rural level, village-level variables from the May 2018 PODES survey of villages, and household-level covariates from the UDB. Further details regarding the pool of LASSO covariates are provided in section III below.

Standard errors will be clustered by district, the unit of randomization. We will also report randomization inference p-values calculated using 1,000 simulated randomizations.

Equation (1) will be estimated in three samples:

1. All households in the 105 treatment and control districts
2. Households in experimental districts that have a PMT (proxy means test) score from the UDB (Indonesia's Unified Database for Social Protection Programs) of 30 or below
3. Households in experimental districts that do not have a PMT score or have a PMT score above 30.

We estimate regressions in samples 2 and 3 in order to examine heterogeneity in the treatment effect between expected program recipients and non-recipients. BPNT is targeted at the poorest 30% of households, and we believe that this corresponds to households with a PMT score (from the UDB) of 30 or below (if district-specific eligibility cutoffs used for BPNT eligibility exist, we will use these instead). We will report results from equation (1) in samples 1, 2, and 3 as the primary specifications, except for certain outcomes where this may be inappropriate (outlined below). We will also estimate heterogeneity based on whether the district is a net rice producer or net rice consumer (see below).

For the variables total value of subsidy received (rp) and the amount of subsidized rice (kg) purchased (outcomes B1 and C3 in Section III below), we will additionally report quantile regressions at each percentile (1 to 99). The specification will follow equation (1), except that we will not include LASSO-selected controls. Standard errors will be clustered at the district level. These regressions will be reported graphically, showing the point estimates and confidence intervals of the quantile regressions of each percentile.

C. Additional Specifications (to be included in the appendix)

We will report results from three other regression specifications in the appendix.

1. Specification with only stratum fixed effects:

$$y_{huds} = \beta_0 + \beta_1 TREAT_{huds} + \alpha_s + \varepsilon_{huds} \quad (2)$$

This resembles equation (1), except that LASSO-selected controls will not be included.

2. Specification with stratum FE and the baseline (March 2018) value of the outcome:

$$y_{1,huds} = \beta_0 + \beta_1 TREAT_{huds} + y_{0,uds} + \alpha_s + \varepsilon_{huds} \quad (3)$$

Where $y_{0,uds}$ is the baseline (March 2018) value of the outcome variable, averaged at the district by urban/rural level, and $y_{1,huds}$ is the current value of the outcome variable for household h. Note that LASSO-selected controls are not included.

3. Equation (1) with weighted least squares: We will estimate equation (1) above but with weighted least squares, using household weights from the SUSENAS.

For each of these three specifications, we will report results for the three samples described above (except for specific variables where this would be inappropriate, described below).

In addition to the experimental evaluation, we may also explore regression discontinuity- or difference-in-differences-based evidence from the BPNT rollout process during the same time period.

III. Data, Outcomes of Interest, and Controls

A. Data

Our primary data will come from the March 2018, September 2018, and March 2019 National Socioeconomic Survey (SUSENAS), which is administered every six months to over 250,000 households in Indonesia. The SUSENAS contains more than 20 modules on a wide variety of household-level measures including self-reported Rastra and BPNT receipt, as well as a detailed module on household consumption. Included among these variables is the baseline value (March 2018) of the outcome variables (except average number of cigarettes smoked per week, which only appears in March 2019).

We will include potential controls for LASSO selection from three different datasets:

1. The 2016, 2017, and 2018 March SUSENAS, which include variables related to household assets, sanitation, water access, and electricity/internet access. Since the SUSENAS is not a panel survey of households, we will average these baseline controls at the district by urban/rural level, the finest level of geographic precision that we observe in the data.
2. The May 2018 PODES, a census of villages conducted three times in each decade. This includes covariates related to transportation conditions, access to bank agents, and internet signal strength.

3. The UDB (Indonesia's Unified Database for Social Protection Programs), which includes socioeconomic variables for nearly 25 million of Indonesia's poorest households. We obtained May 2018 UDB data merged with the March 2018, September 2018, and March 2019 SUSENAS from Statistics Indonesia (BPS) and TNP2K. The May 2018 UDB, includes data from a survey of households ending in April 2018 (before the beginning of the experiment). Approximately 35% of households in our sample appear in the UDB. These variables cover a wide range of socioeconomic characteristics, including asset ownership and social program eligibility.

B. Primary Outcomes

For each of the following outcomes, we will construct a single dependent variable for households in both Raskin and BPNT districts; we indicate the SUSENAS question(s) from which we will construct the outcome below. Given small changes in the SUSENAS survey from year to year, we may update the indicated question numbers accordingly.

1. Total value of subsidy received (Rp.)
    - For each household, we will sum the value of Raskin and BPNT subsidies received, if any.
    - We will calculate the value of Raskin subsidies as follows:
        - Within each district, we will calculate the current market price of rice from the SUSENAS consumption module. To do so, for each household, we will divide the total amount spent on rice in the last week (**line 2, column 6** in Block IV.1 of the consumption module in both 2018 and 2019) by the total amount of rice purchased in the last week (**line 2, column 5**). We will then compute district-by-urban/rural-level average market prices using household weights provided in the SUSENAS, *excluding* households that reported receiving Raskin or BPNT.
        - For each household, the value of the Raskin subsidy received is equal to the total weight of Raskin rice purchased (question **1602A** in 2018, question **2102A** in 2019) times the district-level market price of rice, minus the amount paid for the Raskin rice (question **1602B** in 2018, question **2102B** in 2019).
        - The SUSENAS asks respondent households to report the amount of Raskin rice purchased in each of the previous four months. However, it is frequently the case that households will report their cumulative purchases over the previous four months in the single question corresponding to the previous month. For this reason, we will sum households' Raskin purchases over all four previous months, then calculate their average monthly Raskin purchase over this period.
    - We will obtain the value of BPNT received from question **1605A** in the 2018 SUSENAS and question **2110A** in the 2019 SUSENAS.
        - These survey questions also ask households to report the amount of BPNT subsidy received in each of the previous four months. For the same reason as described above, we will sum the households' reported amount of

BPNT received over the previous four months and calculate the average monthly BPNT receipt over this period.
    - We will report results for equation (1) in samples 1, 2, and 3: all experimental households, households with a PMT score of 30 or below, and households without a PMT score or with a PMT score above 30
    - As discussed above, we will report results for quantile regressions of this variable at each percentile

2. Self-reported quality of rice for the most recent rice purchase
    - Raskin: question **1603** in 2018, question **2103** in 2019
    - BPNT: question **1605F** in 2018, question **2110G** in 2019
    - This variable is only defined for households that receive either program. We will report results for those who received either program.
3. Food insecurity indicators
    - Questions **1401-1408** in 2018, questions **1701-1708** in 2019.
    - Each of these survey items is a yes/no question about the respondent household's experience with food insecurity (for example, "in the last year, have you or your family worried you will not have enough food due to lack of money?"). We will re-code these variables to "1" if the respondent has experienced a particular circumstance of food insecurity and "0" otherwise.
    - To account for the fact that we have a series of indicators for food insecurity, we will estimate the average standardized effect of BPNT transition on food insecurity, following the joint-estimation approach laid out by Kling, Liebman, and Katz (2007).
    - We will report results in samples 1, 2, and 3.

C. Secondary Outcomes

1. Total value of subsidy received (rp), BPNT and Raskin recipients only
    - This variable is the same as above (primary outcome #1), except the variable is only defined for households that report receiving Raskin or BPNT
    - We will report results in samples 1, 2, and 3
2. Receive either BPNT or Raskin
    - Raskin: question 2001 in 2018, question 2101 in 2019
    - BPNT: question 2003 in 2018, question 2109 in 2019
    - We will report results in samples 1, 2, and 3
3. Amount of subsidized rice purchased (kg) per month
    - Raskin: question **1602A** in 2018, **2102A** in 2019
    - BPNT: question **1605C(ii) (Beras)** in 2018, **2110C(ii) (Beras)** in 2019
    - For each of the questions above, the SUSENAS asks households to report the amount of rice purchased in each of the previous four months. However, it is frequently the case that households will report their cumulative purchases over the previous four months in the single question corresponding to the previous month. In order to obtain an accurate measure of monthly rice purchases, we intend to sum this variable over all four months and calculate the average monthly amount of rice purchased over this period.

- We will report results in samples 1, 2, and 3.
- We will report results for quantile regressions of this variable.

4. Unit price of rice of subsidized rice (BPNT or Raskin) purchased (Rp./kg) per month
   - Raskin: question **1602B** divided by **1602A** in 2018, **2102B** divided by **2102A** in 2019.
   - BPNT: question **1605C(i) (Beras)** divided by **1605C(ii) (Beras)** in 2018, **2110C(i) (Beras)** divided by **2110C(ii) (Beras)** in 2019.
   - For the same reasons as outlined above, we will sum this variable over all 4 previous months and calculate the average monthly unit price of rice over this period.
   - This variable is only defined for households that receive either program. We will report results for those that received either program.
5. Average daily per-capita protein consumption (g)
   - **PROTEIN** variable computed in Blok 43 file of SUSENAS data.
   - We will report results in samples 1, 2, and 3.
6. Egg consumption per capita
   - Egg consumption is recorded in **lines 63-66, column 9**, in the SUSENAS consumption module in both 2018 and 2019.
   - We will calculate the standardized number of eggs consumed per capita within the household by applying the same weights to each category of egg that are used for calculating household per capita protein consumption.
   - We will report results in samples 1, 2, and 3.
7. Cigarette and other tobacco consumption per capita (Rp.)
   - **Lines 184-188, column 10** in Block IV.1 of both the 2018 and 2019 SUSENAS consumption module measure the total value of tobacco consumed within the past week. We will sum total consumption of these various categories and analyze households' total amount spent on cigarettes and tobacco in the past week, per capita, as a single outcome.
   - We will report results in samples 1, 2, and 3.
8. Average number of cigarettes smoked per week, per capita, in household
   - **Question 1207** in the 2019 SUSENAS records the average number of cigarettes (including electronic cigarettes) smoked per week by each household member aged 5 years and older over the past month. We will sum this variable within each household and divide by the number of household members in order to obtain the average number of cigarettes smoked per capita, per week, over the past month.
   - We will report results in samples 1, 2, and 3.
9. Savings account ownership
   - **Question 717** in the 2018 SUSENAS and **question 808** in the 2019 SUSENAS records whether each household member possesses a savings account. We will code a dummy equal to "1" if at least one household member reports owning a savings account and "0" otherwise.
   - We will report results in samples 1, 2, and 3.
10. Poverty status
    - **KAPITA** variable computed in Blok 43 file of SUSENAS data reports household average monthly per-capita expenditure.

- Statistics Indonesia (BPS) reports yearly poverty thresholds at the province-times-urban/rural level. Using these thresholds, we will code a dummy variable to indicate if a household falls below the poverty line for the province and urban/rural zone in which it lives.
- We will report results in samples 1, 2, and 3.

11. Unit price of rice (household-level)
    - As outlined above, for each household, we will divide the total amount spent on rice in the last week (**line 2, column 6** in Block IV.1 of the consumption module in both 2018 and 2019) by the total amount of rice purchased in the last week (**line 2, column 5**).
    - We will report results in samples 1, 2, and 3.

D. Potential Additional Outcomes

Depending on data availability, we will also analyze the effect of BPNT transition on the following district-level outcomes:

1. Amount of rice planted in district (possibly using remote sensing data to measure land area under rice cultivation)

IV. Treatment Effect Heterogeneity

A. Our primary heterogeneity analysis will be based on subsamples of <=30 PMT score, and rest of sample, as described above.

B. *Heterogeneity by district-level net producer of rice status*

In addition, we also plan to analyze potential heterogeneity of the impact of the BPNT transition on the district-level market price of rice. The BPNT transition may have a different effect on rice prices in districts that are net producers of rice and districts that are net consumers. We will first determine which districts were net producers of rice in 2013. We assume that a district's net producer-status is relatively stable over time, and thus a district's 2013 status is a good proxy for its status in 2018 and 2019 (the midline and endline years). In order to calculate net producer status, we will utilize 2013 district-level rice production data from the 2013 agricultural census. On the consumption side, we will use data from the 2013 SUSENAS, which includes data on rice consumption at the household level. Rice consumption (reported as rice consumed over the last four months) will be extrapolated to yearly totals by household. Then we will calculate a weighted sum to estimate rice consumption at the district level, using household weights provided by SUSENAS. District-level consumption of rice will be subtracted from district-level production to calculate whether each district is a net producer or consumer of rice.

We will estimate the following regression:

$$y_{ds} = \beta_0 + \beta_1 Treat_{ds} + \beta_2 Net\ Producer_{ds} + \beta_3 Treat_{ds} \times Net\ Producer_{ds} + X'_{ds} + \alpha_s + \varepsilon_{ds}$$

Where y_{ds} is the market price of rice in district d in stratum s (calculated as described in *III.C.10*), $Treat_{ds}$ is a dummy variable indicating whether a district was assigned to the treatment, $Net\ Producer_{ds}$ is a dummy variable indicating whether a district was a net producer of rice in 2013, $\boldsymbol{X'_{ds}}$ is a vector of household-level baseline controls, collapsed at the district level, to be selected according to the double-LASSO procedure described in Section III, and α_s is a stratum fixed effect. The coefficient of interest is β_3, which represents the additional effect of the treatment in districts that are net producers of rice.

V. References

Banerjee, Abhijit, Rema Hanna, Benjamin A. Olken, and Sudarno Sumarto. 2018. "The (lack of) Distortionary Effects of Proxy-Means Tests: Results from a Nationwide Experiment in Indonesia." NBER Working Paper #25362.

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