

Cash versus Kind: Understanding the Preferences of the Bicycle- Programme Beneficiaries in Bihar

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Motivation for the study

- The 'Mukhyamantri Bicycle Yojna' is one of the very few 'universal' conditional cash transfer schemes in India
- It has been projected as a successful programme by media but reports are based on anecdotal evidence
- Politically very popular and many other states are interested in replicating
- Very little hard evidence
- Muralidharan & Prakash (IGC working paper) has looked at the impact of the programme on enrolment rates
 - Bicycle programme has led to 40% (5 percentage points) increase in girls enrolment in secondary school
 - This paper doesn't provide any information on logistics/quality of programme implementation

Main objectives of the study

- To ascertain whether the programme has really been ‘successful’
 - whether the money has reached intended beneficiaries?
 - Whether the money was used to purchase a bicycle?
 - Whether the beneficiaries liked receiving cash instead of a bicycle itself?
 - What are the determinants of beneficiaries’ preference for cash versus kind?
- To study the relative importance of demand-side and supply-side factors
 - Most studies on transfer programmes mainly focus on supply-side issues such as inefficiencies/corruption
 - Demand-side factors such as distance from market, intra household conflicts tend to receive less attention
- To identify problems (if any) associated with implementation of a cash transfer programme
- Implications of the findings on theory of transfer programmes
- Cross sectional household level data – no attempt at causal identification
- Descriptive statistics and some simple regression results

Summary of findings

- The bicycle programme has performed very well in terms of coverage rate and curtailing direct forms of corruption
 - Only 3% of eligible beneficiaries did not receive it
 - 93% received the correct amount, the rest less
 - Only 9 percent of the households had any kind of grievances related to the programme
- Still a majority (55%) of the beneficiaries stated their preference in favour of receiving the benefits In-Kind instead of Cash

Summary of findings (contd.)

- Demand-side factors (access to credit, distance from a bike store) play a dominant role in shaping beneficiaries' preferences over cash versus kind
- Programme implementation on the ground differs considerably across districts in terms of level development
 - 99% in high HDI districts received cash; only 80% in low HDI districts(20% received bike/coupon)
 - More grievances in high HDI districts

Background: The Bicycle Programme

- This was launched in 2006 for all the girls enrolled in standard 9th in a government school.
- Under this scheme, all the 9th grade girls were provided Rs 2,000 in cash to buy a bicycle
- In 2009-10, the boys were also included under the scheme
- The money has been increased to Rs 2,500 from 2011-12
- The money is disbursed by the school authorities in the form of cash or a cheque

Background: Bicycle Programme contd..

- Three conditions attached to the transfer
 - The beneficiary should be enrolled in 9th grade in a Government run/aided school
 - should have at least 75 per cent attendance rate (this conditionality was added in academic year 2012-13)
 - Submit a receipt as evidence of having purchased a bicycle

Survey Design

- The primary survey was conducted in 36 villages, spread across six districts of Bihar, during September-October, 2012
- Multistage sampling technique was adopted to select the districts, villages and households
- All districts of Bihar were categorised in three groups (High HDI, Medium HDI and Low HDI) and two districts were randomly selected from each group
 1. Muzaffarpur and Lakhisarai (high HDI)
 2. Sheikhpura and Banka (medium HDI)
 3. West Champaran and Araria (low HDI)

Selected Districts



Survey Design

- PPS (Probability proportional to size) method was used to decide the number of villages in each group using the list of villages available from the census data
- The number of villages turned out to be 14, 7 and 15 for Group 1, Group 2, and Group 3 respectively.
- The villages were randomly selected from the complete list of villages from each group
- At village level, we first surveyed all households using a short questionnaire
- This village census helped us identify all the bicycle programme beneficiary households in each village

Survey Design

- Sample for the main household survey was drawn from these beneficiary households using random sampling
- PPS method gave us number of households to be selected from each village (based on total number of households in each village as per census data)
- In total we surveyed 840 households
- Many households had multiple beneficiaries so we have data for 958 beneficiaries

Results: Exclusion and Corruption

- The exclusion rate seems to be very low. Only 3 percent of the beneficiaries reported not having benefitted under the programme despite meeting the eligibility criteria
- Four potential channels of corruption
 - school authorities can inflate enrolment rate by adding ‘ghost beneficiaries’
 - potential beneficiaries can also enrol themselves in multiple schools
 - school authorities can transfer less than the entitled amount
 - the school authorities can provide coupons/bicycles to the beneficiaries instead of money and perhaps earn a commission from the bicycle stores

Results: Corruption

- Our data doesn't provide any evidence on the first two forms of corruption
- According to media reports Education Department detected around 3.36 lakh fake students in early 2012
 - Both students and school authorities can collude to siphon of money
 - This form of corruption can be controlled by increased monitoring from the top
 - The department has taken several steps such as creating master database of beneficiaries to curtail this form of corruption

Results: Corruption

- The programme has done well in terms of curtailing the third form of corruption – transferring less than the entitled amount.
- 93 percent of the beneficiaries received right amount of money
- 10 percent of the beneficiaries received coupons/bicycles instead of cash
- The phenomenon of providing coupon/bicycles is mainly concentrated in underdeveloped districts

Results: Corruption

Table 4: Form in which Benefitted under the programme

Form in which Benefitted	Frequency	Percentage
Money	849	89.84
Coupon	54	5.71
Cycle	42	4.44
Total	945	100

Table 5: Variation in forms of transfer across district categories

Form in which benefitted	High HDI	Medium HDI	Low HDI
Money	99.01%	90.27%	79.27%
Coupon	0.5%	0%	14.57%
Cycle	0.5%	9.73%	6.16%

Results: Grievances

- Only 9 percent of the households had any kind of grievances related to the programme, which suggests that most of the beneficiaries were in general satisfied with the programme

Table 6: Whether had any grievance regarding the bicycle programme

Whether had any grievance	Frequency	Percentage	Cumulative
No	746	90.42	90.42
Yes	79	9.58	100
Total	825 ⁵	100	

Was the bicycle purchased?

- Most of the households did buy a bicycle using the programme money
- 98 percent of the beneficiaries purchased a bicycle
- This might be biased as beneficiaries may not want to report that they 'misused' the programme money
- Our analysis suggest that the size of this bias is not likely to be very big
- Those who never purchased a bicycle using the school money are unlikely to report it while giving asset details
 - Households were not told that the focus of the study was only on bicycle programme
- We compare number of bicycles reported under 'assets' block that of 'bicycle scheme' block
- We do not find much discrepancy

Was the bicycle purchased?

Table 9: Difference in bicycle ownership across asset and bicycle scheme block

Difference in bicycle ownership	Frequency	Percentage	Cumulative
Overreported	11	1.31	1.31
No Difference	803	95.37	96.67
Underreported	28	3.33	100
Total	842	100	

Cash versus Kind: Beneficiaries' preferences

- Despite a reasonably good performance of the programme, only 45 percent of the beneficiaries preferred cash over kind
- The stated preference is therefore hypothetical
- Beneficiaries' stated preference for cash versus kind is not only influenced by the functioning of the scheme underway, but also by their view of the alternative
- Most govt run in-kind transfers tend to perform poorly, and given this the 55% number preferring in-kind is interesting

Is cash a better option ?

Table: Whether cash is a better option than receiving a bicycle itself

Is cash a better option than cycle	Frequency	Percentage	Cumulative
No	512	54.94	54.94
Yes	420	45.06	100
Total	932	100	

Table: Variation in preference for cash across district categories

Is cash a better option than cycle	High HDI	Medium HDI	Low HDI	Total
No	73%	30%	47.16%	54.94%
Yes	27%	70%	52.84%	45.06%

Cash versus Kind: Beneficiaries' preferences

- So why do majority of the beneficiaries state preference for kind?
- A wide range of factors can shape their preference
- Can be broadly classified in two categories: Demand-side and Supply side
- Demand side includes factors relating to various household and village characteristics: income level, access to credit, distance from market
- Supply side includes factors that determine the effectiveness and efficiency of the programme from the delivery point of view

The Supply side

- The way a transfer programme is implemented can shape preferences
- Enforcement of conditions
 - Beneficiaries are supposed to submit a receipt after the transfer
 - Data shows that 30 percent of beneficiaries had to submit a receipt *before* receiving money
 - Enormous variation across districts
 - Nevertheless a large number of beneficiaries are forced to arrange for a receipt before the transfer

Supply side: conditionality

Table 10: Whether submitted the receipt if received money under the programme

Whether submitted Receipt	Frequency	Percentage	Cumulative
After Receiving Money	565	68.48	68.48
Before Receiving Money	249	30.18	98.67
Did Not Submit	11	1.33	100
Total	825	100	

Supply Side: delays in payment

- Ideally the transfer should be made within the first 6 months after enrolling in grade 9
- Half of the beneficiaries reported that they received the money after they had entered Grade 10th
- Interestingly, the delay in disbursement of money is substantially higher in high HDI districts

Supply Side: delays in payment

Table 12: Whether received money in the same year

Year in which received money	Freq.	Percent
Grade 9	462	49.57
Grade 10	470	50.43
Total	932	100

Table 13: Delay in receiving money across district categories

Year in which received money	High HDI	Medium HDI	Low HDI
Grade 9 th	21.86%	46.49%	82.81%
Grade 10 th	78.14%	53.51%	17.19%

Supply side: inadequacy of transfer

- The data reveals that almost every beneficiary (98 per cent) had to add money in order to purchase a bicycle
- On an average the beneficiaries spent additional Rs 979 to purchase a bicycle.
- Rs 979 is partly a result of the fact that some of the beneficiaries may opt for expensive bicycles
- But even the cheapest bicycle costs around Rs 3100 so clearly the current amount of transfer is inadequate to purchase a bicycle

Demand Side

- Even a well-functioning transfer program may not satisfy all beneficiaries since some might be constrained by a variety of household specific factors
- Income: since most beneficiaries have to add money, their income level and access to credit can play a big role in shaping preferences
- About 25 percent of the beneficiaries had to borrow money to the additional money needed to purchase a bicycle
- Households with greater intra-household conflicts or self control problems may prefer receiving benefits in-kind as it works as a commitment device

Regression results

- We run Probit regressions where the dependent variable is whether the household think receiving cash is a better option than receiving a bicycle
- Column 1 has only household level explanatory variables; Column 2 has both household and village specific variables. Column 3 has only household specific variables but with village fixed effects
- No causal inference can be made from these given the nature of the data – they provide some suggestive correlations only

Table 16: Determinants of Households' Preference for Cash over Kind for Bicycle

Variables	(1)	(2)	(3)
Dependent Variable: Whether cash is a better option than giving a bicycle			
Supply-Side			
Amount of money received (Rs Thousand)	0.000615 (0.01)	0.0110 (0.11)	0.0717 (0.68)
Whether received less than the entitlement (d)	0.0321 (0.38)	-0.0348 (-0.39)	-0.0370 (-0.38)
Whether had a grievance regarding scheme (d)	-0.0520 (-0.77)	0.0248 (0.33)	0.0731 (0.82)
Amount of money beneficiaries had to add (Rs Thousand)	-0.195*** (-3.03)	-0.0436 (-0.63)	0.000929 (0.01)
Whether received money within one year (d)	0.137*** (3.13)	0.0215 (0.42)	-0.0270 (-0.46)
Receipt Submitted Before Receiving Money (d)	-0.217*** (-4.94)	-0.170*** (-3.27)	-0.203*** (-3.33)
Did Not Submit a Receipt (d)	0.128 (0.75)	0.107 (0.61)	0.184 (0.93)

Demand-Side

Per capita household income (Rs Thousand)	0.0000683*** (4.12)	0.0000542*** (3.15)	0.0000617*** (3.17)
Whether lived in a pucca house (d)	-0.0409 (-0.78)	0.00450 (0.08)	0.0142 (0.22)
Whether lived in a semi-pucca house (d)	0.116** (2.27)	0.149*** (2.62)	0.155** (2.49)
Land	-0.00000993 (-0.02)	-0.000295 (-0.43)	-0.000741 (-1.01)
Whether borrowed the additional money (d)	-0.185*** (-3.83)	-0.179*** (-3.37)	-0.152** (-2.31)
Number of Beneficiaries in HH	0.0324 (0.82)	0.0597 (1.37)	0.0728 (1.53)
Household Size	0.0540*** (3.73)	0.0578*** (3.70)	0.0558*** (3.18)
Ratio of Dependent Members in HH	-0.519** (-2.14)	-0.595** (-2.33)	-0.498* (-1.84)
Share of Working Female Members in Total Working Members of HH	-0.277* (-1.80)	-0.352** (-2.18)	-0.458** (-2.56)
Household Head is Male (d)	-0.238** (-2.44)	-0.214** (-2.01)	-0.193 (-1.53)

Village Level

Distance from the District Town		0.00170 (1.06)	
Distance from a Bicycle Store		-0.0127*** (-3.41)	
Share of SC population in Village		0.0205 (0.07)	
Share of other caste population in Village		0.417*** (2.59)	
Share of HHs with agriculture as main occupation		1.671*** (4.14)	
Share of HHs with wage labour as main occupation		1.132*** (2.88)	
Share of Landless HHs		0.659*** (3.41)	
Share of HHs with pucca houses		-0.341 (-1.52)	
Share of HHs with semi-pucca houses		0.384* (1.81)	
village fixed effect	No	No	Yes
Observations	705	705	682
Pseudo R^2	0.159	0.248	0.318

Marginal effects; t statistics in parentheses

(d) for discrete change of dummy variable from 0 to 1

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Regression Results

- Results (column 3, with village FE) reveal that most supply side factors do not seem to have an impact except the way the condition related to receipt submission was enforced – village FE likely soaks up most supply side factors
- Beneficiaries who had to submit a receipt even before receiving the money were 20 percentage points less likely to prefer cash
- Several demand-side factors have significant effects
- Beneficiaries belonging to the richer households are more likely to prefer cash over kind
- They probably value the freedom of choice & the topping up is not costly for them

Regression Results

- In fact beneficiaries who had to borrow the additional money required to purchase a bicycle were 16 percentage points less likely to prefer cash over kind
- The household size variable is also positive and significant.
 - Possible reason it is a useful asset that can be used by several members
- Several other demand side variables such as age of household head, average age of working members, share of working females have significant coefficients
- These variables perhaps capture the intra-household conflict along the lines of age and sex, which play an important role in shaping household preferences
- Accessibility to market is important: an increase in the distance from a bicycle store reduces the likelihood of preferring cash

Demand Side Vs Supply Side

- The supply-side and demand-side factors may interact
- It is possible that some of the demand-side factors would behave differently depending on the level of certain supply-side variables
- Regression model with village fixed effects may not be appropriate to study the role of supply-side factors as they are unlikely to vary much within a village
- Several supply-side factors indeed become significant in regression model 1.
- But their significance disappears on including some village level variables (Column 2) that are unlikely to be correlated with the supply-side variables (one high school caters to students from 10-15 villages)

Implications for Theory

- Relationship between forms of transfer and corruption
- Universality and corruption
- Nature of goods and conditionality
- Ingredients of an analytical framework that can help us systematically explore how various forms of transferring benefits interact with a wide range of household and community-level factors to determine the outcomes we observe

Why is the 'Bicycle Programme' marked with lower leakage?

- Cash transfers have some inherent advantages in reducing the leakage
 - it removes the need for public procurement & transportation and therefore the authorities have lesser scope to divert the resources
 - it is relatively easy to monitor a cash transfer program -- both by the top-down and bottom-up institutions -- as entitlements are easy to measure
- Despite these other cash transfer programmes such as IAY continue to be plagued by corruption
- What is unique about the 'bicycle programme'?

Why is the 'Bicycle Programme' marked with lower leakage?

- The universality ensures that the school authorities have no discretionary power in identifying beneficiaries and therefore little scope of extracting money from them.
- This programme manages to solve the collective action problem by design
 - the beneficiaries of this programme are part of an institution (the school) and identify themselves as group
 - universality of program and a strong group identity among the beneficiaries lowers the cost of mobilization
 - it is for the beneficiaries to come together and raise their voice against irregularities in the programme
 - anecdotal evidence to support this

Universality and corruption

- Results presented in the paper show that demand side factors play an important role in determining households' preference for cash versus kind
- An ideal cash transfer program should take into account the varied needs of households
- But it may also create more opportunities for corruption
 - by introducing new exceptions in the program the implementing officials gain some discretionary power that could be misused
 - the variation in benefits for different types of households may confuse many beneficiaries about their actual entitlements, which can be exploited by officials
- It is important to assess potential costs and benefits before introducing variation in the programme for different groups

Nature of Goods and Conditionality

- There are two types of conditions
 - the behavioural conditions that require beneficiaries to avail certain services
 - the utilization conditions that require the beneficiaries to use the money for a specific purpose
 - in case of the bicycle programme, both types of conditions have been imposed
- The economic logic behind attaching the utilization condition under the bicycle programme seems to be flawed
- Conditions related to utilization are attached when one believes that the conditioned-on good may be consumed less than its optimal level due to factors such as intra-household conflicts and/or self-control problems
 - Eg cash transfer program that aims to improve the nutritional status of children or pregnant women
- Bicycle is a visible good, for which peer pressure effects may be very strong and even in absence of conditionality beneficiaries are likely to purchase a bicycle

Towards an analytical framework for transfer programmes

- It can help us understand how different modes of transfer interact with various socio-economic factors to determine the outcomes
- Modelling the mechanisms through which the final outcomes come about, it would explicitly show the trade-offs involved while choosing between different types of transfer programs to achieve a particular goal
- The outcomes of a particular ‘transfer programme’ can be modelled as a function of several (interactive) processes
 - Intra household conflicts
 - Characteristics of goods and services
 - physical infrastructure and social and cultural norms of the region/community – e.g., access to markets

Conclusions and policy implications

- The bicycle programme has performed well in terms of coverage rate and curtailing direct forms of corruption
- Majority of the beneficiaries stated their preference in favour of receiving the benefits In-Kind instead of Cash
- Demand-side factors (access to credit, accessibility of markets) also play an important role in shaping beneficiaries' preferences
- A few supply-side factors related to how conditions are imposed also seem to matter

Conclusions and policy implications

- Consider removing the conditionality related to receipt submission and greater attention should be paid in enforcing conditions related to enrolment and attendance.
- Worth thinking whether to make the cash transfer unconditional on bike-purchase – let those who need it buy a bike
- The amount of transfers should be reviewed every year to ensure that it is sufficient to purchase a bicycle
- households who live in remote villages should be compensated for the relatively high transportation cost they incur to purchase a bicycle.
- However, one should note that this creation of exceptions increases possibilities for implementing officials to misuse power and funds