Wheels of power
Long-term effects of targeting girls with in-kind Transfers

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PRELIMINARY AND INCOMPLETE WORK IN PROGRESS

1 Introduction

What determine girls' abilities to live prosperous lives? At least two factors must be important; the life opportunities they are offered and their aspirations to utilize them. Wide opportunities and reasonably high aspirations may lead to more prosperous lives. But both opportunities and aspirations are embedded in economic and social conditions in society.

Acquired aspirations, for instance, may not only be affected by the distribution of opportunities, but may also be seriously hampered by social constraints and norms, and by what others do either they function as role models or just as part of the social pressure. All of these factors constitute life frames that may affect everybody, or may be specific for certain groups, classes, or casts. In addition, the aspirations may relate to income, wealth and the social identity of the family and its placement in society.

Taken together girls' opportunities, aspirations, and earnings can constitute an equilibrium that is contingent on norms and the distribution of social constrains and power across gender within the local community and the households. In this paper we discuss

how an intervention that empowers the girls may change the entire equilibrium. The intervention we consider is the cycle program in the state Bihar in India

The Mukhyamantri balika cycle yojana was initiated by the Nitish Kumar government of Bihar in 2006. Under the scheme every girl who enrolled in class 8 would receive a cash amount of Rs. 2000 (later increased to Rs.2500) to buy a cycle that she would use to go to school. The initial reports for the success of the scheme were very favourable. Enrollment increased by over 30% in the first year itself (Murlidharan and Prakash, 2016). Further, leakages from the scheme were contained to well below 5% (Ghatak, Kumar and Mitra, 2013).

To assess the impact of the cycle program as a mere increase in enrolment numbers would be limiting the scope of this scheme. A girl on a cycle is not just a girl going to school; she signifies a change in attitude in the society to make this possible. The total impact of such a scheme would include an assessment of the changes in attitudes of both men and women towards the role of women in society. It is in this broader context that we study the long-term impact of the cycle program.

Ten years since its inception, the first beneficiaries of the scheme would now be in their early twenties. Many important life decisions would have been taken by them, including the decision to continue studying and in some cases decisions relating to marriage and children. We compare the outcomes of girls who benefited from cycle program with those that just missed it, being older by a few years (15-16 years as opposed to 13-14) in 2006. We also compare the girls from Bihar with those from Jharkhand and Uttar Pradesh where there was no such scheme.

To do all this we collected a huge dataset of 10 000 girls. Our Survey was conducted between January-April, 2016 in three states- Bihar Jharkhand and Uttar Pradesh. We used six districts in the 3 states, the districts were: Muzzafarppur and Madehpura (in Bihar), Chatra and Giridih (in Jharkhand) and Sultanpur and Ghazipur (in Uttar Pradesh). The districts in Bihar were chosen so that they represent different levels of development. We put restrictions on the selection of districts. First, we chose districts that were not adjacent to Patna. This was done to ensure that were capturing the

effects of the scheme in a typical Bihar setting without the influence of the capital of the state or neighbouring districts. The second condition, was that we did not chose any district that shares a border with any other state. This was done to reduce the spillover from the neighbouring states. Within these conditionalities one low development district (Madhepura) and one high development district (Muzzafarpur) were chosen.

The basic results of our investigation provides a very positive and optimistic picture. The differences in probability for a girl with a cycle to complete school/ college compared to a (hypothetical) girl who did not get the cycle, even if everything else about these two girls was the same. For example a girl who got a cycle under this scheme has nearly 30 percent higher chance of completing class 10 than a girl who did not get a cycle. Further, a girl who went to school after the cycle yojana was introduced is almost 25 percent more likely to go ahead and complete her school education than a girl who did not get a cycle.

Girls who got the cycle have a fine percent higher chance of completing college than girls who did not get cycles. Given the low percentage of girls who actually go to college in Bihar, this is not a small number though it does point to supply side constraints to studying beyond school. Cycle yojana is able to change attitudes towards education, as is evident from the increased completion of school rates but the sudden drop in completion of college may be indicative of absence of colleges in the area rather than the disinclination towards letting girls study further.

We also find that that girls with cycle are more than four percent less likely to be working in agriculture. However when asked why they were not working, almost half of the girls say that they would like to work but their families do not give permission and more than ten per cent say that they have not found suitable work. These three facts together point to the following hypothesis: girls with cycles would like to find work outside of agriculture but face family resistance to do so and also find it hard to get such jobs. This again points to other policies that can supplement the work done by the mukhyamantri cycle yojana. The girls have been empowered but now need to be given the means to become independent. This will require increased efforts by the state towards job creation.

Overall the cycle yojana has resulted in changes in attitudes towards women. Girls are more likely complete school, attend college and look for productive work outside of agriculture. In the social context as well, it has brought about some changes with girls being less likely to be married early and delay having children. However the above analysis has also reflected other bottlenecks that the girls face in pursuing their dreams. Some of these may be the insufficiency of good colleges in the areas where they are and the difficulty they face in finding jobs.

Previous findings of the program are necessarily more short run as none have had access to a broad survey based on long term results. Ghatak, Kumar and Mitra (2013) build on ...... They show that the scheme was very well implemented with only three per cent of eligible households not having received the cash and only two per cent of household having received the cash without buying a cycle.

Murlidharan and Prakash (2016), use data from 2007-08 to show that immediately after the introduction of the program there was a 32 per cent increase in enrollment of girls into secondary school. There is also an 18 per cent increase in the number of girls who show up for the secondary school certificate exam.

More generally our paper belongs to a literature focusing on female empowerment in India by mandatory representation in politics with clear effects on the selelction of political projects at the panchayat level (Chattopadhyay and Duflo, 2004), on attitudes towards women (Beaman, Chattopadhyay, Duflo, Pande, Topalova, 2009), on parents' aspirations for sons versus daughters (Beaman, Duflo, Pande, Topalova, 2009), on the reporting of violence against women (Iyer, Mani, Mishra, and Topalova, 2012)

Revue of the theoretical literature on aspirations — to be added.

2 A model of aspirations, norms and empowerment

Consider a girl who may face opportunities V in the marriage market and the job market. An aspiration is a threshold that she aims at achieving. With an aspiration a it is difficult for her, or her family, to accept anything less valuable for her life choices than a. Let the aspiration be expressed by the same metric as the possible values v of the opportunities

V that she may be offered. For example, if she aspires for y years of schooling, we express this as an aspiration $a_i = a(y)$, meaning that she will complete y years of schooling unless she gets an offer – a job, or a marriage – that is considered better than a_i when in school, and having finished school she only accepts offers $v \geq a_i$.

We can write the gross value of following the aspiration a_i as

$$W(a_i) = \mathrm{E}[\max[a_i, V]] \tag{1}$$

where V may be stochastic. To follow the aspiration may be costly. We focus on two types of costs.

The first type of costs stems from efforts. It arises simply from the attempt to qualify for the aspiration and to find the opportunity that fulfills it. This cost is increasing in the level of aspirations, and we denote it $c_i = c(a_i)$. If the aspirations concern schooling the costs c_i would include the traveling costs that may arise when there is no school in the neighborhood.

The second type of cost is social. It may arise because aspirations beyond a certain level may violate norms m_i for girls in a social group, or caste, i. Upper castes and richer households may have higher values of the norm than others. The social costs are captured by $\beta_i(a - m_i)$ where the parameter β_i is the strength of the social pressure behind the norm.

How is the aspiration level for the girl set by the family? We suggest that the family follows the principle of indifference: having received an offer exactly equal to the optimal threshold a_i, the family should be indifferent between accepting this opportunity and rejecting it and continue looking for better opportunities, in which case it obtains the expected gross value of the aspiration minus the costs of holding it: $W(a_i) - c(a_i) - \beta_i(a_i - m_i)$. The principle of indifference implies that the optimal aspiration should be set such that

$$a_i = W(a_i) - c(a_i) - \beta_i(a_i - m_i) \tag{2}$$

In other words, the family will rise aspirations as long as the excess return of a certain aspiration $W_i - a_i$ is higher than the pecuniary and moral costs $c(a_i) + \beta_i(a_i - m_i)$ of the aspiration. Thus the optimal aspiration is where the access return equals the costs:

$$W(a_i, c_i) - a_i = c(a_i) + \beta_i(a_i - m_i) \tag{3}$$

If the opportunities have a cdf denoted F, we can use partial integration on (1) inserted in (3) to obtain the optimality condition

$$\int_{a_i} (1 - F(v))\, dv = c(a_i) + \beta_i(a_i - m_i) \tag{4}$$

Observe first that there is no gain of holding a more ambitious aspirations — the left hand side is declining in aspirations a_i. The gain of the aspiration comes from being more choosy in the opportunities the family accept. Considering both sides of (3) we see that the optimal aspiration

- declines in the costs c_i: cycles to girls reduce c for each level of a_i and thus raise the aspiration level (to take education),

- increases in the norm m_i: cycles to all girls are likely to raise the norm m_i making it more socially acceptable to take more schooling etc

- increases in the power of girls, as empowering them reduces the effective strength of the social pressure β_i, to follow the norm: cycles to girls increase their power in the household

Clearly, when aspirations are connected to years of schooling the three bullet points emphasize how cycles may i) reduce the cost of schooling, ii) change the norms that constrain families' decisions to educate girls, iii) empower girls to follow their possible wishes to take education.

When aspirations are connected to the 'quality of the spouse' in the marriage market the three bullet points emphasize how cycles may i) may the family more choose about

the groom, ii) affect the time of child bearing, and iii) empower the girls to have more of a say in possible choice of grooms.

The little toy-model is only meant to set the stage for a a more basic discussion of how programs like the cycle program may alter several aspects of the life chances of girls —-including how girls are treated, how they may be harassed. [To be included in later versions] An obvious extension of this set-up is to include how the aspirations of the local community, as represented by the vector **a**, where the norms of each group or cast is given by

$$m_i = F(\mathbf{a}) \tag{5}$$

Likewise, the empowerment of each girl, is also likely to depend on what the other girls are doing, or what the families of the other girls allow them to do, for instance represented by

$$\beta_i = G_i(\mathbf{a}) \tag{6}$$

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The two effects captured by (5) and (6) are likely to reinforce and to magnify initial changes. While the two types of indirect effects obviously are long term, we concentrate most of the empirical discussion what our survey can say about the effects of cycles on school enrollment and completion, on the timing of marriage and child bearing

3   Data

The Survey was conducted between January-April, 2016 in three states- Bihar Jharkhand and Uttar Pradesh. We used six districts in the 3 states, the districts were: Muzzafarppur and Madehpura (in Bihar), Chatra and Giridih (in Jharkhand) and Sultanpur and Ghazipur (in Uttar Pradesh). The districts in Bihar were chosen so that they represent different levels of development. We put restrictions on the selection of districts. First,

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Once the districts in Bihar were chosen , the districts in Jharkhand and Uttar Pradesh were chosen so as to have similar relative development as the ones in Bihar. So Chatra and Ghazipur were at similar levels of development as Madhepura; Giridih and Sultanpur are similar to Muzzafarpur. The matching was based on access to public services as given by the 2001 Census (which pre-dates the period we are interested in) . A total of 150 villages was surveyed and 3500 households within these villages were surveyed. The villages were randomly selected from each district and 20 households were randomly selected from each village, as long as they had at least one member of the household between 12-35 years present. Figure 1 shows the villages that were surveyed in the six districts covered by the survey.

Table 1: Demographics of the population.

	Bihar	Jharkhand	Uttar Pradesh
No. of Observation	2461	2098	2329
General Caste (%)	14.019	7.960	6.144
OBC(%)	38.033	53.098	39.073
SC/ST(%)	20.236	15.920	31.430
Hindu (%)	89.679	79.743	94.161
Average age	19.886	19.694	20.079
	(7.374)	(7.205)	(6..803)
Average household agricultural land	2.056	3.073	2.300
	(3.158)	(4.033)	(2.850)
PCE on only basic goods	63.256	57.685	43.950
	(52.544)	(150.33)	(34.904)
Asset Index	2.902	3.108	4.444
	(1.58)	(1.602)	(2.01)
Female (%)	58.635	60.724	59.081

This is based on the data for girls and boys aged 12-35 years in the data from the Survey. The numbers in parenthesis are standard deviations.

Table 1 shows that Bihar and Jharkhand have been at similar levels of development on

educational and other social outcomes prior to the 2005. The old state of Bihar bifurcated into Bihar and Jharkhand in 2000, so it is not surprising that they still look similar to each other. However, the language and culture in most parts of Jharkhand are dissimilar to that of Bihar. The language spoken in Jharkhand is different and the state has a large proportion of tribals with approximately 30% of the population belonging to the scheduled castes.[1] The social norms between Bihar and Uttar Pradesh are similar and the languages and customs overlap significantly.

Table 2: Descriptive Statistics: of some of the outcome variables

	Bihar		Jharkhand		Uttar Pradesh	
	Boys	Girls	Boys	Girls	Boys	Girls
Completed School	21.135	10.085	23.383	9.192	51.779	40.604
Completed college	7.181	1.824	9.477	1.871	27.952	19.585
Currently studying	63.065	47.609	64.320	47.410	63.169	50.872
Married (%)	25.540	45.877	25.728	46.154	22.455	36.192
Average marriage age	19.504	16.568	19.374	15.978	19.254	16.816
	(3.254)	(2.466)	(3.271)	(2.584)	(4.00)	(3.498)
Average no. of children		3.076		2.905		2.713
		(1.484)		(1.328)		(1.291)
Working(%)		19.930		15.756		13.606
Percentage got cycle		18.780		13.579		3.125

This is based on the data for girls and boys aged 12-35 years in the data from the Survey. The numbers in parenthesis are standard deviations.

Table 2 shows the differences between girls and boys in the data for some of the outcome variables for the three respective states. We see that for most of the education variables boys outperform girls. There are significant differences between completion of school rates for girls and boys in all three states. Further the completion rates for Uttar Pradesh are more than double those that for Bihar and Jharkhand. However the difference between the three states as far the percentages of children currently enrolled is smaller, implying that there might be some convergence that will happen over time in the completion rates. The percentage of girls and boys who have completed college is very low in Bihar with less than 2% of the girls having completed college. The number of boys

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[1]In the survey we use only self reported caste group status so we have several people in Jharkhand reporting that they don't know which group they belong. This explains the lower number of self-reported SC/STs in Jharkhand in the sample here.

is also low when we compare it to Uttar Pradesh. In this milieu there are similarities between Jharkhand and Bihar, with both having a small population of individuals with college degrees. Table 2 also shows that there are about 20% girls in Bihar who work in the age group 12-35 years. The numbers are lower for both Uttar Pradesh and Jharkhand.

The last row of table 2 gives the percentage of girls in the sample who have been given cycles by the government. For all girls between ages 12-35 years in the sample, 18.78% of the girls from Bihar have been provided cycles whereas 13.6% for girls in Jharkhand and 3.1% girls in Uttar Pradesh have had access. However one has to not confuse this number with uptake of the scheme. First this group includes all girls in the age group 12-35 years, however since the scheme was started in 2006 for girls entering grade 9, girls about 25-26 years in 2016 are girls who completed grade 9 before the program was rolled out. Further girls under age 14 are unlikely to have reached grade 9 and so are also ineligible. Further among the girls between ages 14 and 25 we would have to exclude the girls who went to private schools, since they were also ineligible. Among the girls that were eligible, figure ?? shows the percentage of girls who got cycles by age. We see that in more recent times (for the younger cohort) the uptake has been higher than it was earlier.

4 Empirical Specification

The Mukhyamantri cycle yojana was launched in 2006 across the whole state of Bihar. It was targeted at girls enrolling into class 9. Given this all girls who were 12-13 years old or younger have benefited from the the program over the last 10 years of its continuous operation. Ten years on, the first cohort of beneficiaries would now be 22-23 years old and girls who where a year or so older that is girls 25 years and above would be the one who would have missed out on the program. This forms the core idea behind our identification strategy. We compare girls who are 25 and above (but under 35 years) with girls who are younger. Secondly we compare them to the boys in their respective cohorts to difference out the effects on any universal schemes. And finally we compare them to girls and boys from Jharkhand and Uttar Pradesh. Though Jharkhand would be more suitable for some questions like those relating to higher education, it may provide less of

a comparison for other questions relating to the general social status of women. This is so, since Jharkhand has a higher tribal population, that generally has customs different from non-tribal groups. For these questions we can use districts in Uttar Pradesh as the comparison. Uttar Pradesh also shares a border with Bihar and along the border the language spoken is the same and sometimes marriages occur across the state border, so we have more reason to believe that the social norms would be similar.

$$y_i = \beta_0 + \beta_1 f_i + \beta_2 c_i + \beta_3 s_i + \beta_4 f_i c_i + \beta_5 s_i c_i + \beta_6 f_i s_i + \beta_7 f_i s_i c_i + \alpha \mathbf{X_i} + \epsilon_{\mathbf{i}} \qquad (7)$$

where i subscripts that individual between ages 12 and 35 years. f_i is a dummy variable that takes the value of one if the observation is female; c_i is a dummy variable that takes the value one if the person got a cycle from the government; s_i is a dummy variable that takes the value on one if the observation is from Bihar, zero otherwise. These three partial effects and the four interactions together give us the triple difference estimates.$\mathbf{X_i}$ is a set of individual and household level controls and ϵ_i is error term.

The dependent variables of interest here are educational, occupational and social outcomes such as whether the individual has completed school or college, is currently studying, is working or not; age are marriage, whether they are married or not, the number of children they have. Some of these may be binary variables in which case we use the above structure in a probit framework rather than a linear OLS model.

Since it is a triple difference framework, the partial effects of gender, belonging to Bihar and access to the cycle through the cycle program are not just one coefficient but represented by the following equations. Equation 8 is the difference between boys and girls in their achievement of the outcome variable.

$$\beta_1 + \beta_4 c_i + \beta_5 s_i + \beta_7 s_i c_i \qquad (8)$$

Equation 10 is the difference between an individual being from Bihar or not on their achievement of the outcome variable. In other words this represents the partial effect of

being in Bihar on the outcome variable. Similarly equation 9 is the effect of having a a cycle through the Bihar cycle program on the specific outcome variables.

$$\beta_4 f_i + \beta_7 s_i \tag{9}$$

$$\beta_3 + \beta_5 c_i + \beta_6 f_i + \beta_7 f_i c_i \tag{10}$$

To be added:a further discussion with illustrations .....

5   Results

The outcomes of interest for us can we divided into three broad categories: Choices and outcomes related to education, labor force participation and social and family choices of marriage and children. We will address all three broad categories in order.

The direct of effect of girls being able to get cycle would be that we would see more girl completed the class 10 exam. This is the intended consequence of the cycle program. Table 3 shows the probabilities of completing at least Grade 10 or high school.

In general girls are less likely to have completed high school and students in general from Bihar are less likely to have completed high school. However when we look at the effect of having access to cycle program on the probabilities we see that girls from BIhar who have had access to cycle program are more likely to have at least completed high school. The magnitude of the partial effect of girls having access to cycles is of the order of 1.5 in all specifications, which implies that a girl on a cycle in Bihar is 27% more likely to have at least completed class 10 compared to a girl who did not have access to the program.

This naturally shows that cycles in Bihar have removed some of the bottlenecks to completing school. In fact the probability of girls with cycles completing high school is 91% compared to the probability of a girl without a cycle completing high school is 64%. This shows that girls with cycles are less likely to drop out of school before class 10. This results is in fact a direct validation of the Murlitharan and Prakash (2016) result that

they obtained by using secondary data. The control variables have the predicted sign on the coefficient, with married people less likely to have completed high school, SCST caste the lest likely to have completed high school and the more prosperous are more likely to have completed school.

Table 3: Completed High school

	[1]	[2]	[3]	[4]	[5]
Female	-0.504***	-0.676***	-0.578***	-0.379***	-0.453***
	-0.044	-0.048	-0.052	-0.058	-0.061
State = Bihar	-0.524***	-0.631***	-0.525***	-0.507***	-0.838***
	-0.081	-0.081	-0.098	-0.106	-0.115
Received cycle from Govt		1.293***	0.831***	0.699***	1.029***
		-0.116	-0.119	-0.14	-0.137
Female*Bihar			-0.374***	-0.245**	-0.199*
			-0.109	-0.118	-0.118
Female*Bihar* Cycle			1.072***	0.829***	0.516**
			-0.21	-0.229	-0.224
State = Jharkhand					-0.779***
					-0.096
Whether Married or Not				-0.915***	-0.821***
				-0.057	-0.058
General Caste				0.722***	0.672***
				-0.105	-0.103
OBC Caste				0.376***	0.433***
				-0.068	-0.067
Muslim				-0.464***	-0.245**
				-0.1	-0.103
Total Agricultural land in Acres				0.025***	0.035***
				-0.007	-0.008
Number of observations	3,871	3,871	3,871	3,871	3,871
Log-Likelihood	-2,474.24	-2,351.69	-2,330.58	-2,054.86	-1,967.58

Since the cycle program has been continuously running for ten years the first cohort of girls have not only completed high school they have already made choices to continue studying further or not. Table **??** gives the probability of a currently being enrolled in school or college. Controlling for this basic demographic characteristics such as age, caste,religion, and wealth (as measured by total agricultural land holding) we see that girls from Bihar who have had access to the cycle program are more likely to be currently enrolled in school. Independently girls are less likely to enrolled in school or college in the age group and less likely that people from Bihar are currently pursing education. However,

	[1]	[2]	[3]	[4]	[5]
Female	-0.379***	-0.458***	-0.379***	-0.056	-0.048
	(0.028)	(0.032)	(0.039)	(0.054)	(0.054)
State = Bihar	-0.031	-0.072**	-0.018	0.047	0.128*
	(0.037)	(0.035)	(0.051)	(0.066)	(0.068)
Received cycle from Govt		0.699***	0.114	-0.097	-0.168
		(0.081)	(0.082)	(0.107)	(0.111)
Female*Bihar			-0.241***	-0.127*	-0.133*
			(0.061)	(0.076)	(0.076)
Cycle*female*Bihar			1.273***	1.312***	1.386***
			(0.139)	(0.217)	(0.22)
State = Jharkhand					0.185***
					(0.055)
Whether Married or Not				-2.477***	-2.493***
				(0.054)	(0.054)
General Caste				0.192***	0.215***
				(0.056)	(0.058)
OBC Caste				0.249***	0.241***
				(0.047)	(0.047)
Muslim				-0.145**	-0.195***
				(0.066)	(0.068)
Total Agricultural land in Acres				0.022***	0.020***
				(0.006)	(0.006)
Number of observations	6,888	6,888	6,888	6,888	6,888
Log-Likelihood	-4,669.72	-4,606.99	-4,559.37	-2,622.77	-2,616.10

the effect of cycles on girls from Bihar is positive telling us that girls are more likely to be studying if they have had access to cycle program. we can supplement this by looking at secondary school completion rates. Table ?? gives the probabilities of completing secondary school for people in the age groups 18 to 35 years. We see that having a cycle gives the girls an advantage, they are more likely to complete school. The magnitude of the effect reduces awe go from the direct completion of class 10 to the completion of twelve years of school. However, Girls getting cycle are in general more likely to complete school.

Till the level of school, there are usually schools within a manageable distance of the villages. However when we look for colleges in the districts we find that there are fewer and students need to travel long distances to attend college. At this level, of course the cycle itself ceases to help as mode of transport. Therefore with the completion of college

Table 5: Completed school

	[1]	[2]	[3]	[4]	[5]
Female	-0.409***	-0.499***	-0.411***	-0.239***	-0.326***
	(0.047)	(0.05)	(0.055)	(0.06)	(0.064)
State = Bihar	-0.588***	-0.641***	-0.535***	-0.510***	-0.865***
	(0.089)	(0.089)	(0.108)	(0.118)	(0.119)
Received cycle from Govt		0.640***	0.309**	0.189	0.600***
		(0.101)	(0.131)	(0.141)	(0.138)
Female*Bihar			-0.406***	-0.313**	-0.260**
			(0.114)	(0.123)	(0.124)
Female*Bihar* Cycle			0.881***	0.668***	0.278
			(0.18)	(0.192)	(0.187)
State = Jharkhand					-0.961***
					(0.089)
Whether Married or Not				-0.680***	-0.568***
				(0.058)	(0.058)
General Caste				0.661***	0.611***
				(0.103)	(0.096)
OBC Caste				0.389***	0.468***
				(0.07)	(0.069)
Muslim				-0.540***	-0.276***
				(0.101)	(0.095)
Total Agricultural land in Acres				0.018**	0.029***
				(0.007)	(0.008)
Number of observations	3,873	3,873	3,873	3,873	3,873
Log-Likelihood	-2,068.76	-2,040.99	-2,026.51	-1,856.97	-1,740.31

we are now moving from direct impacts to how the cycle program is able to change how people perceive things. For education at this level, the bottlenecks remain as the growth of colleges has not been much in between 2001 and 2011 Impact of the cycle program on the completion of college as show in table 6 show the changes in attitude towards the importance of education of girls that in the society as a whole and also the perceptions of mobility. If distance was perceived to be a reason for not sending their daughters to college, then together with the fact that not many new colleges have been built, this means that it is the social norm that has changed as what is thought to be acceptable in terms of mobility of the girls. We come back to mobility later and discuss it more concretely.

Education by itself is not usually an end goal, the idea is that education is values as a way to get work outside agriculture. Therefore given that girls are getting more educated

Table 6: Completed College

	[1]	[2]	[3]	[4]	[5]
Female	-0.396***	-0.412***	-0.370***	-0.200**	-0.271***
	(0.066)	-0.067	-0.074	-0.089	-0.094
State = Bihar	-0.739***	-0.743***	-0.636***	-0.582***	-0.882***
	-0.117	-0.118	-0.149	-0.155	-0.156
Received cycle from Govt		0.203	0.197	0.121	0.383*
		-0.159	-0.18	-0.195	-0.198
Female*Bihar			-0.236	-0.227	-0.18
			-0.173	-0.169	-0.172
Female*Bihar* Cycle			0.08	-0.189	-0.415
			-0.401	-0.407	-0.41
State = Jharkhand					-0.967***
					-0.121
Whether Married or Not				-0.643***	-0.526***
				-0.088	-0.089
General Caste				0.598***	0.549***
				-0.106	-0.101
OBC Caste				0.268***	0.342***
				-0.088	-0.09
Muslim				-0.519***	-0.219
				-0.171	-0.169
Total Agricultural land in Acres				0.022**	0.032***
				-0.011	-0.011
Number of observations	2,995	2,995	2,995	2,995	2,995
Log-Likelihood	-922.07	-921.25	-920.34	-848.18	-791.22

is it also the case that they are more likely to go out and work. Is there an effect on labour force participation from the long term effect of the cycle program. In the survey we ask if the responded (female) is engaged in any work for pay (where pay could also be in-kind). For the girls who are not in school or currently studying we find that the they are less likely to working for pay if they had access to the cycle program (see Table 7). This goes contrary to our notion of social change at first pass. However, there are two crucial point to be kept in mind which make it reasonable to see this result. First, if the cycles result in more girls completing school and going to college, then those girls are less likely to be working currently since they may enter the labour force later. Second, when we see the kind of work done by most women who say that they work for pay, they are mostly (ADD NUMBERS HERE) agricultural labourers. To explore why we don't see any other type of employment we investigate the reasons provided for not working.

The two predominant reason given are that we do not have family permission to work and secondly that there is no "suitable" work available. Both of these point to a positive attitude of the women where they feel they want to work and are constrained by either the societal norm that has not changes as fast or there are supply side problems where not enough "good" jobs are being generated.

Table 7: Working in Agriculture: For women only

	[1]	[2]	[3]	[4]	[5]
State = Bihar	0.053**	0.064***	0.072***	0.047**	0.060**
	-0.023	-0.023	-0.024	-0.024	-0.028
Received cycle from Govt		-0.104***	-0.074***	-0.032*	-0.042**
		-0.018	-0.019	-0.019	-0.021
Cycle*female*Bihar			-0.058	-0.024	-0.015
			-0.035	-0.036	-0.037
State = Jharkhand					0.028
					-0.025
Completed school (ssc)				-0.031*	-0.022
				-0.019	-0.02
Age				0.011***	0.011***
				-0.001	-0.001
General Caste				-0.101***	-0.099***
				-0.021	-0.021
OBC Caste				-0.049***	-0.051***
				-0.017	-0.018
Muslim				0.022	0.015
				-0.028	-0.03
Total Agricultural land in Acres				-0.010***	-0.010***
				-0.002	-0.002
Number of observations	4,055	4,055	4,055	4,055	4,055
Log-Likelihood	-1,725.43	-1,708.74	-1,707.43	-1,568.59	-1,566.94

Another life choice that girls and boys have to make the decision to get married and have children. These are important decisions in the life of the girls and boys in rural areas, where marriage decisions are not always taken independently of family. In fact in most cases it the family that makes the decision with or without consulting the bride or groom. Table 8 shows that girls who had access to cycles are delaying marriage and decisions to have children.

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Table 8: Marraige and child bearing decisions

	Married or not			Age at Marriage			No. of Children		
	Probit [1]	Probit [2]	Probit [3]	OLS [4]	OLS [5]	OLS [6]	OLS [7]	OLS [8]	OLS [9]
Female	0.498***	0.644***	0.685***	-3.032***	-2.723***	-2.724***	0.453***	0.332***	0.337***
	-0.04	-0.063	-0.066	-0.186	-0.193	-0.194	-0.062	-0.056	-0.057
State = Bihar	0.05	0.168	0.460***	0.193	0.422	0.368	0.12	0.105	0.215**
	-0.064	-0.108	-0.122	-0.291	-0.289	-0.309	-0.129	-0.091	-0.104
Received cycle from Govt	-0.244**	0.289**	0.086	1.170***	0.252	0.274	-1.105***	0.196*	0.134
	-0.104	-0.115	-0.12	-0.311	-0.274	-0.275	-0.147	-0.114	-0.113
Female*Bihar	0.214***	0.188*	0.179	-0.054	-0.073	-0.075	0.153	0.072	0.073
	-0.072	-0.107	-0.11	-0.264	-0.265	-0.266	-0.122	-0.09	-0.09
Cycle*female*Bihar	-0.712***	-0.624***	-0.436***	0.713	0.495	0.475	-0.705***	-0.541***	-0.487***
	-0.137	-0.166	-0.168	-0.439	-0.428	-0.427	-0.205	-0.171	-0.171
State = Jharkhand			0.593***			-0.105			0.215***
			-0.097			-0.224			-0.077
Completed school (ssc)		-0.446***	-0.292***		2.186***	2.154***		-0.531***	-0.468***
		-0.075	-0.073		-0.25	-0.254		-0.065	-0.067
Age		0.282***	0.285***		-0.077***	-0.078***		0.164***	0.166***
		-0.012	-0.012		-0.012	-0.012		-0.006	-0.006
General Caste		-0.375***	-0.349***		0.691***	0.683***		-0.514***	-0.497***
		-0.112	-0.114		-0.203	-0.204		-0.095	-0.096
OBC Caste		0.064	0.019		0.238	0.247		-0.235***	-0.254***
		-0.062	-0.06		-0.154	-0.152		-0.066	-0.066
Muslim		-0.126	-0.253*		-0.017	0.007		0.438***	0.383***
		-0.131	-0.137		-0.252	-0.26		-0.09	-0.095
Total Agricultural land in Acres		0.014*	0.006		-0.045**	-0.044**		-0.007	-0.009
		-0.008	-0.008		-0.02	-0.02		-0.006	-0.006
Number of observations	6,888	6,888	6,888	2,302	2,302	2,302	2,059	2,059	2,059
Log-Likelihood	-4,287.33	-1,532.70	-1,497.02	-5,822.79	-5,701.91	-5,701.71	-3,530.55	-2,988.18	-2,982.21

6   Conclusion

We have explored how an in-kind transfer program – cycles to girls — can affect schooling, and how it also may change both the girls own aspirations and those of their families. The indirect effects, including how the attitudes towards girls seem to have changed,. As we have seen, in the longer run the program may affect labor force participation and life choices (marriage and child bearing).

We discuss possible effect of the program as seen through the lenses of a small theoretical model of the determination of aspirations. To be continued ...

7   References

To be added....