Dynamics of Poverty In Rural Bangladesh, 2005-2010: Do Parental Conditions Matter?

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Motivation

- Standard models of poverty traps and poverty dynamics focus on efforts of current generation in explaining current welfare and escape probability from poverty
- It is a long suspect that some of these current generation efforts are in turn influenced by “deeper determinants” such as parental conditions
- This paper explores with a new panel survey data whether parental asset conditions matter for poverty escape and, if so, through what channels
- We use the new panel survey data of 2005 and 2010 generated by BIDS with support from CPRC

Structure of Presentation

- Statistics of Poverty Dynamics
- Correlates of Average Current Welfare
- Inter-Generational Persistence in Asset and Occupational Choice
  - Does Human Capital Channel Matter for IGT Poverty?
- Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics
  - Which Shocks Matter More for Poverty Escape?
- Concluding Remarks

Statistics of Poverty Dynamics

- Trends in Subjective Poverty (as defined by food-intake status)
- Always deficit, occasionally deficit, break-even and surplus in terms of *khoraki* (annual food-consumption need)

Poverty Headcount/Year	**1990 (Rahman et al 1996)**	**2005 (Sen et al 2010)**	**2010 (Sen et al 2010)**
Headcount	73.1	52.9	47.0
Extreme	23.4	22.8	14.2
Moderate	49.7	30.1	32.8
Non-Poor	26.9	47.1	53.0

Statistics of Poverty Dynamics

- Poverty Dynamics Categories: Chronic poor (CP), movers, fallers and never poor (NP):
- In 2005-2010 wave, CP=1013; Movers=670; Fallers=480; NP=1016, Total=3179 households

Dynamic Poverty Category	1987-90 (Rahman and Hossain 1995) 62-Village	1990-94 (Rahman et al 1996) 62-Village	1987-2000 (Hossain and Bayes 2009) 62-Village	2005-2010 (Sen et al 2010) 64-Village
Data Type	Income Data	Income Data	Income Data	Subjective Food Data
Never Poor	24.50	27.60	29.0	32.0
Movers	20.10	18.00	29.2	21.1
Fallers	16.20	16.70	12.0	15.1
CP	39.20	37.70	29.8	31.8
Total	100.00	100.00	100.0	100.0

Statistics of Poverty Dynamics

- Subjective measure is not so subjective!

Dynamic Poverty Category	Average Per capita annual consumption (Taka)	Standard Deviation
Never Poor	17992.59	10216.71
Movers	14142.24	6762.65
CP	11610.82	5513.88

Statistics of Poverty Dynamics

- Son's generation is more educated

Education	**Father**	**Son**
No formal	77.70	51.87
Below primary	6.39	11.36
Primary	6.54	10.98
Below secondary	6.20	16.23
Secondary and above	3.18	9.56

Statistics of Poverty Dynamics

- Son's generation is more non-farm oriented

Status of Employment	Father	Son
agri wage-employed	21.50	16.16
agri self-employed	56.71	37.02
nonagri self-employed	13.74	24.97
nonagri wage employed	7.98	21.84

Correlates of Average Current Welfare

- Taking current per capita annual consumption as welfare measure, one can stipulate current welfare as a function of initial human capital, initial land, non-land assets controlling for household demography (such as household head's age, religion and household size) and geographic fixed effects

- In the second variant, we also consider adding current occupation of household head along with dummy for "split households" and dummy for "influential connections"

- In the third variant, we add shocks experienced by the members of the households during the inter-survey period between 2005 and 2010

Correlates of Average Current Welfare

- The results confirm significant positive effects of human capital (measured as years of schooling completed), log of land owned, and log of value of non-land assets
- Non-land asset is more important than land-asset; non-farm self-employment is more important than farm employment
- Split households warrant additional focus in poverty dynamics. Some "splits" can be opportunity driven (having positive correlation with average welfare) while other split-events can be distress driven (having negative correlation with average welfare). This can be seen by contrasting results for average consumption model vis-a-vis mover's dynamics (more on this later)

Correlates of Average Current Welfare

Correlates	Dependent Variable: Per Capita Annual Consumption Expenditure		
	Variant-1 (with Assets)	Variant-2 (with Occupation)	Variant-3 (with Shocks)
Son's Education	.0249253***	.0227136***	.0219519***
Log of Land Owned (Initial)	.0167731***	.0169583***	.0146439***
Log of Non-Land Assets	.1397995***	.1317511***	.1315534***
Whether in Farm Self-Employment		.0572718**	.0442752
Whether in Non-Farm Self-Employment		.1010095***	.0965873***
Whether in Non-Farm Wage Work		.0813091***	.0809709***
Whether "Split" Household		-.135326***	-.1116077***
Whether "Connected"		.0719911**	.0733424**
R Square	0.31 (N=3177)	0.32(N=2938)	0.35 (N=2938)

Note: The results represent OLS estimates of the standard model of per capita consumption expenditure determination. The model controls for a range of variables of household demography and geographic fixed effects. The statistical significance takes into account the clustered standard errors.

Correlates of Average Current Welfare

- Shocks matter, but some shocks matter more than others, and some shocks have perverse correlation with current welfare
- Being divorced/abandoned, dowry expenses, bribe have significantly negative influence on current welfare
- Some explanations for perverse correlation are possible however. Crop and asset loss due to flood is positively correlated: two possible explanations are (a) crop loss due to flood in the preceding year typically increases land productivity in the subsequent year, (b) government and NGO transfers can be more than compensatory
- Marriage expenditure as shock is positively correlated possibly because it was included in the consumption aggregate in the first place even through money for marriage was raised through borrowing/ dissaving
- Average picture can be misleading: for instance, health shocks are not important on the average, but are strong correlates of differing fortunes between movers vs. chronic poor (more on this later).

Inter-Generational Persistence in Asset and Occupational Choice

- From the preceding analysis we see that son's current assets matter for son's current welfare. The question is whether son's current assets are in turn determined by parental assets. If there is a strong persistence between the two, this will provide initial clue to the inter-generational transmission of poverty and mobility.

- The results suggest strong partial correlation between son's assets and parental assets controlling for household demography and geographical fixed effects. This is true for human capital, land, non-land assets, and occupational choice.

Inter-Generational Persistence in Asset and Occupational Choice

Father's Generation	Son's education	Father's Generation	Son's land asset (2005)	Son's land asset (2010)	Son's Non-Land Assets
Father's Education	.549471***	Father's Land	.5108762***	.699946***	..
Mother's Education	.7508026***	Father-in-Law's Land	.260745***	.2925467***	..
Father-in-Law's Education	.5194329***	Father's Non-Land Assets	..	..	.0788363***
Mother-in-Law's Education	.7166849***		..	..	..

Note: The results represent individual OLS estimates with son's asset conditions as dependent variable. The model controls for a range of variables of household demography and geographic fixed effects. The statistical significance takes into account the clustered standard errors.

Inter-Generational Persistence in Asset and Occupational Choice

Father's Occupation (Farm Wage as Reference Category)	Son's Occupation: Farm Wage	Son's Occupation: Non-Farm Self-Employment	Son's Occupation: Non-Farm Wage
Farm Self-Employment	.1895651***	.3830081***	.5543692**
Non-Farm Self-Employment	.5940835**	2.237424***	1.358638
Non-Farm Wage	.5399876**	1.13801	3.011239***

Note: The results represent multinomial logistic estimates where son's occupation is the dependent variable (with son's farm self-employment as base outcome). The model controls for a range of variables of household demography and geographic fixed effects. The statistical significance takes into account the clustered standard errors.

Does Human Capital Channel Matter for IGT Poverty?

- The results show that both son's education and father's education are important in influencing current welfare when considered separately.
- Apparently, the coefficient on son's education is quantitatively much more important when we simultaneously include father's education in the son's consumption model with various controls

- However, father's education can stand for other things such as the effects of parental land and non-land assets

Does Human Capital Channel Matter for IGT Poverty?

VARIABLE	lpccons2010	lpccons2010	lpccons2010	lpccons2010	lpccons2010	lpccons2010	lpccons2010	lpccons2010 (with shocks)
edu_hh		0.0399***	0.0394***	0.0303***	0.0283***	0.0207***	0.0261***	0.0255***
fathedu	0.0313***		0.0110***	0.00972***	0.00902***	0.00844***	0.00941***	0.00868***
q3_c	0.00145*	0.000612	-0.000139	4.23E-05	-0.000187	0.000555	0.00126	0.000992
agesq	5.37E-06	1.71e-05**	2.79e-05***	-1.62E-06	-1.56E-06	-9.33E-06	-1.11E-05	-1.20E-05
relig	-0.0282	-4.03E-05	0.0258	0.0467**	0.0468**	0.0297	0.0456**	0.0384*
lpop			-0.189***	-0.247***	-0.254***	-0.370***	-0.293***	-0.302***
ltotownland				0.0673***	0.0621***	0.0321***	0.0604***	0.0576***
_loccufathe_2					0.131***	0.0765***	0.112***	0.0923***
_loccufathe_3					0.194***	0.146***	0.156***	0.142***
_loccufathe_4					0.0929***	0.0466	0.0681**	0.0518
_loccufathe_5					-0.0517	0.0583	-0.076	-0.0909
f17_1_2_1						-0.00256	-0.0046	-0.00843
split						-0.0653**	-0.0929***	-0.0846**
ldistdhaka						0.000107	-0.0247**	-0.0365***
_loccuhhhea_2							0.0824***	0.0760***
_loccuhhhea_3							0.139***	0.133***
_loccuhhhea_4							0.111***	0.108***
_loccuhhhea_5							0.00164	0.0117
network								0.0736**
d1								-0.0271

Does Human Capital Channel Matter for IGT Poverty?

	(b) iv_consist~t	(B) ols_effici~t	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
fathedu	**.0449922**	**.0086963**	**.0362959**	**.0102398**
edu_hh	.0113659	.0215502	-.0101843	.0032092
inherlnd	.0258838	.0259006	-.0000168	.002394
lnlandass	.1389871	.1355331	.003454	.004126
q3_c	.0000385	-.0002133	.0002518	.000385
agesq	2.31e-06	5.52e-06	-3.21e-06	4.20e-06
relig	.0187511	.0222891	-.003538	.0106164
lpop	-.3870578	-.3621525	-.0249053	.0112187

Does Human Capital Channel Matter for IGT Poverty?

	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
fathedu	.1196043	.0518108	2.31	0.021	.018057	.2211516
edu_hh	.0010665	.0161681	0.07	0.947	-.0306225	.0327554
q3_c	.0052768	.0040736	1.30	0.195	-.0027074	.0132609
agesq	-.0001578	.0000415	-3.81	0.000	-.000239	-.0000765
relig	.2911511	.1371823	2.12	0.034	.0222787	.5600235
lpop	-.3841661	.1022854	-3.76	0.000	-.5846419	-.1836904
inherlnd	.0734044	.023387	3.14	0.002	.0275666	.1192421
lnlandass	.489385	.0436981	11.20	0.000	.4037384	.5750316
_cons	-5.177311	.4948514	-10.46	0.000	-6.147202	-4.20742

Does Human Capital Channel Matter for IGT Poverty?

- Educated parents may have larger land size, which, in turn, can influence son's current land and current welfare. Parental education can dictate their occupational choice, which, in turn, could influence son's occupational choice. The previous results suggested both the possibilities.
- IV-regression through instrumenting father's education by "father-in-law's education" shows much higher effects of father's human capital on son's current welfare. This result remains valid even when father's occupation and son's occupation are considered as additional controls.
- We also tried IV-Probit (for movers vs chronic poor) where father's education was instrumented by father's occupation showing similar results.

Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

- The results for movers vs. chronic poor confirms further the role of parental conditions as correlates of poverty dynamics

- Parental human capital is an important explanator of mover's dynamics: one year of extra schooling of father is associated with 5% higher probability of escaping poverty controlling for son's education, initial land and non-land assets, household demography and geographical fixed effects. Only the inclusion of occupational categories in the full model for poverty dynamics render it insignificant, which is not unexpected

Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

- Intergenerational occupational persistence has strong bearing on poverty escape probability in current generation: sons of fathers whose occupation were non-farm self-employment have 60% higher probability of escape from poverty compared to fathers whose occupation related to farm wage-work (this is true with and without additional control for son's occupation)
- Parental land (proxied by log of inherited land) is also an important contributor to mover's progress
- Parental or not, in general, non-land assets have twice as higher effects than land assets on the escape probability

Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

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. logistic mover edu_hh fathedu q3_c agesq relig lpop inherlnd lnlandass,
  cluster (dist)

. Logistic regression                                 Number of obs   =       1682
.                                                     Wald chi2(8)    =     209.02
.                                                     Prob > chi2     =     0.0000
. Log pseudolikelihood = -944.62424                   Pseudo R2       =     0.1647

.                                  (Std. Err. adjusted for 64 clusters in dist)
. ------------------------------------------------------------------------------
.              |               Robust
.        mover | Odds Ratio   Std. Err.      z    P>|z|     [95% Conf. Interval]
. -------------+----------------------------------------------------------------
.       edu_hh |   1.041058   .0204343     2.05   0.040     1.001768    1.081888
.      fathedu |   1.048448   .0296307     1.67   0.094     .9919522    1.108162
.         q3_c |   1.011153   .0068274     1.64   0.100     .9978601    1.024624
.        agesq |   .9997188   .0000671    -4.19   0.000     .9995873    .9998503
.        relig |   1.560859   .3503597     1.98   0.047     1.005305    2.423424
.         lpop |   .5193681    .086378    -3.94   0.000     .3748942    .7195181
.     inherlnd |   1.130231   .0464715     2.98   0.003     1.042722    1.225084
.    lnlandass |   2.369976   .1837975    11.13   0.000     2.035781    2.759032
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Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

mover	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
edu_hh	1.032771	.0199825	1.67	0.096	.9943396	1.072688
fathedu	1.027878	.0310292	0.91	0.362	.9688263	1.09053
q3_c	1.010554	.0069897	1.52	0.129	.9969464	1.024346
agesq	.9997185	.0000695	-4.05	0.000	.9995822	.9998547
relig	1.599979	.3651589	2.06	0.039	1.022932	2.502544
lpop	.5028459	.0849265	-4.07	0.000	.3611387	.7001576
inherlnd	1.128206	.0472818	2.88	0.004	1.039239	1.224789
lnlandass	2.307968	.1749902	11.03	0.000	1.98926	2.677736
occufather						
2	1.402818	.2420421	1.96	0.050	1.000311	1.967286
3	1.746641	.3933012	2.48	0.013	1.123398	2.715649
4	1.862418	.4942554	2.34	0.019	1.107088	3.133085

Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

mover	Odds Ratio	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
edu_hh	1.029616	.018843	1.59	0.111	.9933394	1.067218
fathedu	1.041937	.0300606	1.42	0.154	.984654	1.102552
q3_c	1.01092	.0072551	1.51	0.130	.9968	1.02524
agesq	.9996618	.0000705	-4.79	0.000	.9995235	.9998
relig	1.495552	.3587278	1.68	0.093	.9346086	2.393169
lpop	.4695735	.0835694	-4.25	0.000	.3312961	.6655656
inherlnd	1.094467	.04933	2.00	0.045	1.00193	1.195552
lnlandass	2.13832	.1767802	9.19	0.000	1.818452	2.514454
occufather						
2	1.23148	.2113767	1.21	0.225	.8796773	1.723977
3	1.600965	.3755674	2.01	0.045	1.010881	2.5355
4	1.505267	.4274757	1.44	0.150	.8627475	2.626294
occuhhhead						
2	2.830438	.5476928	5.38	0.000	1.93707	4.135824
3	1.627103	.3442532	2.30	0.021	1.074788	2.463244
4	2.076812	.429195	3.54	0.000	1.38512	3.113916
5	1.719536	.5941438	1.57	0.117	.8735733	3.384724

Which Shocks Matter More for poverty escape?

- For poverty escape, the following shocks have negative influence:
- health shocks (death of earning member);
- ecological shocks such as river erosion;
- governance shocks such as litigation costs, court expenses; and
- transfer shocks related to exclusion from targeted programs

Who Moves out, Who Stays in: Role of Parental Conditions in Poverty Dynamics

split	1.613412	.557498	1.38	0.166	.8196369	3.175918
ldistdhaka	.7008613	.1263824	-1.97	0.049	.4921978	.997986
network	1.248301	.3598555	0.77	0.442	.7094766	2.196344
d1	.4888529	.2086537	-1.68	0.094	.2117706	1.128472
d6	.2208089	.1166826	-2.86	0.004	.0783816	.622041
d8	.422667	.2277001	-1.60	0.110	.1470405	1.214953
d9	.657555	.1903464	-1.45	0.148	.3728461	1.15967
d26	.3324116	.2003542	-1.83	0.068	.1020076	1.083229
d27	4.749288	3.012718	2.46	0.014	1.369833	16.46605
d31	.5586037	.1565859	-2.08	0.038	.3224763	.9676308

Concluding Remarks

- We are guided by our past: poverty dynamics of the current generation are influenced by asset conditions and choices made in the previous generation
- Parental assets—human capital, land and non-land assets—matter, so does parental occupations: low parental assets and poor occupational choices lead to low future mobility out of poverty in son's generation
- The results do not necessarily suggest IGT-induced poverty traps, which imply the importance of "threshold conditions". Further work is necessary to explore this aspect.