The poverty-alleviation potential of farm versus nonfarm job creation: A microsimulation analysis

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Summary

We present microsimulation-based estimates of the rural poverty-alleviation potential of job creation in the commercial agricultural versus non-agricultural sectors, examining the effects of male and female employment separately, with applications to Bangladesh, Malawi, Nicaragua, and Tajikistan. New jobs are allocated to likely recipients based on regression estimates of their probability of employment, and taking account of their opportunity costs of accepting the new job. Male non-farm jobs scored better by most measures of poverty reduction than did male farm jobs, despite the fact that farm jobs were better targeted at the poor. Women's farm and nonfarm wage employment were roughly equally effective at reducing poverty. In general, the lower wages paid to women dictate that increases in their employment have a smaller impact on the poverty status of their household's than do increases in the employment of men. The targeting efficiency of employment did not vary greatly by gender in Bangladesh and Malawi, while in Nicaragua and Tajikistan male employment reached the poor at a somewhat greater rate than female. We also show that low levels of education and other labor market disadvantages do not prevent significant numbers of the poor from gaining new employment.

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1. Overview

In recent decades there has been an increasing awareness of the importance of nonfarm income in supporting rural livelihoods. Nonfarm activities generate about 45% of rural incomes in Africa, 35% in Asia (Reardon *et al* 1998), and 40% in Latin America and the Caribbean (Reardon, Berdegué, and Escobar 2001). However, returns to some forms of nonfarm work are not much higher than returns to subsistence farming, while higher paying nonfarm jobs are often thought to be out of reach for the rural poor (Reardon, Berdegué, and Escobar 2001).

The direct, first-order poverty-alleviating potential of any economic activity clearly depends on these two factors: what are the returns to the activity, and what is the likelihood that it can be undertaken by poor households? Jobs held by men, and jobs in the nonfarm sector, typically pay more than jobs held by women, or in the farm sector. But might women's employment, or agricultural wage employment, still be the more pro-poor form of growth, by virtue of its greater accessibility to the poor (better "targeting" of the poor)? In this paper we develop a regression-based microsimulation method to study this question, using household survey data for the rural economies of Bangladesh, Malawi, Nicaragua, and Tajikistan. The change in economic activity we consider is the expansion of rural employment, either in commercial farming or in nonfarm industries, looking separately at the effects of jobs that are captured by women and men. These employment expansions are taken as given: we are not concerned with explaining how they might be generated.

We find that differences in wage levels are more important than differences in targeting efficiency. Men's non-agricultural jobs scored better by most measures of poverty reduction than did men's farm jobs, despite the fact that farm jobs are better targeted. For women, farm and nonfarm wage employment were roughly equally effective at reducing poverty. In both the farm and nonfarm simulations, the lower wages paid to women dictate that increases in their employment have less impact on poverty than do increases in the employment of men.[2] Female jobs were also somewhat less well targeted at the poor than were male jobs in Nicaragua and Tajikistan, while in Bangladesh and Malawi targeting ratios did not differ much by gender.

[2] We measure income poverty in the conventional way, which ignores the issue of intrahousehold distribution. We thus cannot account for any differences in the effect on family wellbeing of an extra dollar brought into the household by a woman versus by a man.

2. Data and Methods

Our data are drawn from the Rural Income Generating Activities (RIGA) project of the Food and Agriculture Organization and the World Bank, which is a set of household surveys chosen in part because of the high quality of their income data, and which have been rigorously cleaned and coded for comparability across countries (Carletto *et al* 2007).[3] Most of these surveys (the RIGA-L subset) also have high quality labor market data, which has been equally carefully cleaned (Quiñones *et al* 2009). We use four such surveys, from Bangladesh (2000), Malawi (2004), Nicaragua (2001) and Tajikistan (2003).

We start by estimating the determinants of employment and of wage rates in both the commercial farm and nonfarm sectors, for men and women separately. Our conclusions, however, are not based directly on the interpretation of these equations. Instead we simulate an expansion of employment, using the regression results to determine who in the dataset is most likely to receive a new job, and at what wage. We then recalculate various measures of poverty, using the actual plus the simulated new wage and employment data, to estimate the marginal social benefits of different forms of job creation. Our reason for preferring this approach over a purely regression-based analysis is the belief that whenever large numbers of people are unemployed, or employed in very low-return activities, regression estimates of the probability of formal employment, or of the determinants of wages, are best understood as estimates of who manages to capture which job, not as estimates of what determines the overall level of employment. Such regressions may, for example, measure the private, labor-market-mediated returns to education, but are unlikely correctly to measure social returns to schooling, even at the margin (Psacharopoulos 1987).[4] Secular growth in employment depends on macroeconomic investment dynamics which are simply not visible in household survey data. In light of this fundamental limitation, we choose to take the employment increase as given, and use the microeconomic data to determine its first-order distributional impact.

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[3] Available online at www.fao.org/economic/riga/en

[4] Datt and Jolliffe (2005) directly model the probability of being poor as a function of various household and personal characteristics, and calculate the impact on poverty of alternative interventions, such as increased education. They note that their estimates could overstate the value of increased schooling for two reasons: large (as opposed to marginal) educational interventions could alter the private returns to education, and omitted ability variables could impart an upward bias to their schooling coefficients. The question of the likely divergence between private and social returns, however, is an additional concern.

Pauw (2010) provides a helpful overview of various ways to simulate changes in the income distribution using microdata. Following Bourguignon and Pereira da Silva (2003), Pauw distinguishes between behavioral and non-behavioral microsimulation models, with the difference being that in non-behavioral models the labor participation decision is taken as given (although one's status as employed or unemployed may vary endogenously). By contrast, a full-blown behavioral approach requires an explicit model of the allocation of individuals into inactivity, unemployment, wage work, or self-employment (see also Bourguignon *et al* 2002). Our approach has a behavioral component that allows people to move from non-participation or self-employment into wage employment in response to increases in labor demand. It thereby reproduces one of the fundamental traits of economic growth, namely, the secular decrease in the prevalence of self-employment in agriculture. We also permit people to move from lower to higher paid forms of wage employment. This latter mechanism introduces a modicum of realism by allowing growth to occur via churning in the labor market, rather than through the awarding of new jobs solely to those who are currently not employed.

Our results describe the first-round, direct income effects of job creation only, and do not measure the multiplier effects that flow from an increase in rural incomes. Thus we are not weighing in on the debate over the dynamic linkages between the farm and nonfarm economic sectors, on which much of the literature has focused since as early as the work of Hymer and Resnick (1969). To do so, one might attempt a full general equilibrium analysis, with intersectoral linkages derived from a social accounting matrix. But as Pauw (2010) notes, it is not feasible directly to incorporate individual level data into a computable general equilibrium (CGE) model. Instead, CGE modelers usually work with representative household groups, leading to very crude approximations of the income distribution, and eliminating the possibility of heterogeneous effects within the group. Moreover, if these groups are defined by their main economic activity, then the models are incapable of capturing the Lewis-style development process, whereby labor moves from smallhold farming into formal wage employment.

In recent years progress has been made in linking CGE models to microdatasets in ways that allow for both intragroup inequality and endogenous changes in labor force participation (Robilliard et al 2001). This approach, however, is costly, particularly if one

wishes to make cross-country comparisons.[5] We thus face a tradeoff between distributional verisimilitude and macroeconomic completeness, and this study prioritizes the former. Compared to CGE-based macro/microsimulation models, our approach is more transparent in the assumptions made, and more limited in its ambitions.

We begin by defining our labor force broadly, to include all those between the ages of 10 and 65, but limiting ourselves to rural areas. We do not seek to determine who is voluntarily out of the labor force (such as students or those who are raising children), in part because surveys differ in how these categories are constructed, and also because we wish to allow for movements into the labor force, as noted. Although this may appear to permit too much flexibility in the size of the labor force, we argue that many of the variables that will be used to determine employment probabilities will also capture participation probabilities, as described below. The decision to collapse the determinants of employment and of participation into one step, however, does preclude working with standard definitions of unemployment, which, in any event, are of questionable value in settings where household-based self-employment is widespread.

For this population we identify those who worked in the past year in agricultural wage employment (and are recorded as receiving a positive wage), and likewise for those who worked in non-agricultural wage employment; the remainder are those who had no wage earnings in the past year in either sector (the non-wage employed)[6]. We then run a probit model of the determinants of wage employment in agriculture, and a separate model for nonfarm employment. Men and women are analyzed separately, because the determinants of wage employment are often quite different by gender.[7]

The full set of right-hand-side variables includes quadratics in age and years of education, an indicator for marital status, household size, the estimated number of children

[5] Another problem is that such models may lead to inconsistency: the allocation of CGE-predicted incomes across a full dataset of households may lead to estimated aggregate consumption levels that are not consistent with the macro results. Similarly, once we endogenize labor supply decisions, changes in participation that are predicted at the micro level may not be consistent with the assumed levels of labor supply (and hence wages) in the CGE. To address this, one may attempt to iterate between the macro-level CGE and the micro-level simulation of labor supply and/or consumption, in search of a mutually consistent solution (Savard 2003), which may or may not exist (Go 2009).

[6] The non-wage employed may be working on household farms or nonfarm businesses, or they may be economically inactive (those who are not earning income from any activity and are not working as unpaid laborers.)

[7] For example, marriage is a positive predictor of wage employment for men in Nicaragua, but a negative predictor for women.

a women might have to care for[8], indicators for female headship and minority ethnic group status, region dummies, the amount of land owned, distance to health facilities, distance to a primary school, distance to a bus station and/or distance to roads, the share of adults in the household (other than oneself) who are employed in commercial agriculture, and the corresponding share employed in nonfarm sectors, and dummies for household participation in government programs, as well as for household participation in programs run by local community organizations or other non-governmental bodies. As noted above, many of these factors will help distinguish between those who are more and less likely to seek employment, as well as those who are more and less likely to obtain it. Regression results appear in Appendix 2.

We then simulate (first) a 15% expansion in wage employment, driven by the creation of agricultural jobs only; and (second) a 15% expansion in employment driven by the addition of nonfarm jobs only. The new jobs are allocated across individuals and their households by randomly sampling among potential recipients, using their predicted probabilities of employment as weights in the sampling process. [9]

Each of these potential recipients of new employment is also assigned a predicted wage for the new job. This wage is based on the fitted value from a log-linear wage equation, run on the sample of wage-employed individuals only, stratifying by sector and gender. The outcome variable is the log of the estimated annual earnings from all wage labor activities in that sector (either agricultural or non-agricultural) and the predictors are the same as listed above. In order that these predicted wages display the same variance, or degree of wage inequality, as does the actual wage distribution, and in order to avoid generating unrealistic spikes in that distribution, we save the residuals from these wage equations and randomly add a given residual to the predicted wage that is awarded each potential new job recipient,

[8] This is a count of the number of people in the household who are younger than the woman in question; it is intended as a proxy for the loss of labor market experience that child-rearing generally entails for women. For men this variable is omitted.

[9] Sampling is done iteratively without replacement. An alternative approach would be to award jobs to people in descending order of their predicted probability of employment, until the required number of jobs has been dispensed. But this is not what an employment probability means: people with low probabilities of employment *do* find jobs sometimes, and we want to recognize this stochastic fact of life so as not to bias our simulations unduly against the poor. Thanks to Mark Howard and Tom Petty for this insight.

separately by gender and sector. We then take the antilog of the sum of these two components, and define this as the simulated wage of the new job.[10]

Each person who has been selected to receive a new job must now decide whether to accept it. This decision is based on a comparison of its simulated wage to their current wage (if currently wage-employed) or to their self-employment earnings (if any). Self-employment earnings are estimated by averaging household income from self-employment across those individuals of working age in the household who reported being involved in a household farm or nonfarm business at the time of their interview. If the simulated wage exceeds their current wage or self-employment earnings by 20% or more (or if they have no current earnings of either kind), the job is accepted, and the difference between the new and old wage earnings is added to household income.[11] The sampling process continues until enough jobs have been accepted to achieve the desired total employment expansion. At this point, household income is recomputed, and any desired income, poverty and inequality statistics can be recalculated for the newly simulated income distribution. Standard errors for these statistics can be obtained through bootstrapping.[12]

In summary, the simulations award either farm or nonfarm wage-paying jobs to likely recipients in a stochastic fashion, respecting their estimated probabilities of employment, and permitting for movement from non-employment or self-employment to wage-employment, and for movements from lower to higher-wage jobs. In this way, we capture a key aspect of the development process, noted by Lewis (1954), in which self-employed farmers are absorbed into a growing wage labor force.[13] A behavioral component is included insofar as individuals choose whether to accept a new job by comparing its wage to their current earnings. This recognition of the non-zero opportunity costs associated with employment growth matters both for determining where in the income distribution the new jobs are likely to land, and for determining the net new income of recipients. It also generates plausible wage dynamics: there is upward pressure on wages because existing

[10] In general, the antilog of a predicted log wage is not a good prediction of the expected wage for a given person, because the expected value of the antilogged residual is not zero. However, because we add a randomly drawn (log) residual to the predicted log wage prior to taking antilogs, our simulated wages will have the same mean as do actual wages, in levels.

[11] The 20% threshold for accepting the new job is arbitrary; future drafts will examine the sensitivity of our results to the choice of this threshold.

[12] Standard errors will be added in next draft.

[13] Our model differs from Lewis' in that we do not assume a zero marginal product to rural self-employment, and (furthermore) do not assume that wage employment exists only in urban areas.

workers are in many cases better qualified for employment, and better positioned to capture the new jobs, and these workers will only switch jobs if their wages rise. Moreover, the process generates empirical estimates of the degree of labor market churning that will be observed, and hence of the difference between gross job creation and the net employment expansion.

One final issue we face is the possibility that we might create and allocate more jobs than the number of people who are truly capable of performing them. We minimize this risk by modeling relatively small expansions in labor demand (a 15% increase) and by monitoring the differences in the average ages, education levels, and estimated probabilities of employment between those who are actually wage-employed and those to whom new jobs are awarded.

3. Results

Table 1 reports the income shares generated by farm and nonfarm employment and self-employment, for rural women and men of working age. The four countries display very different functional and gender income distributions: In Bangladesh, non-agricultural self-employment generates the largest share of income (36%), driven almost entirely by male workers. In Malawi, agricultural self-employment provides half of all income, and is shared equally between men and women. In Nicaragua, nonfarm wage employment dominates, contributing 36% of income, about 1/3rd of which comes from women. Finally, in Tajikistan, wage employment in farming is the largest source (46% of income), with about 1/3rd again coming from women. The contribution of nonfarm income (whether via wage of self-employment) ranges between 32% (in Tajikistan) and 63% (in Bangladesh) of total earned income, confirming Reardon's assessment of its quantitative importance in rural areas. We also confirm his finding that nonfarm wage income is a larger source of income than nonfarm self-employment, except in Bangladesh.

This heterogeneity in the current sources of wage income should be reflected in our employment probability equations, leading one to expect that the poverty alleviation potential of new job creation could differ in interesting ways across countries, sectors, and by gender. The first question we explore is the issue of targeting. Table 2 reports the

baseline poverty rate for each country rates, using $2 and $1 per day poverty lines for purchasing power parity income per capita. The next columns report the targeting ratios, being the share of jobs that are captured by the poor divided by the overall poverty rate. The data relate to two separate simulations, one for farm jobs and one for nonfarm jobs. Each simulation allocates jobs to both women and men as dictated by their employment probabilities. In describing the outcomes, the contributions of the jobs allocated to women and those allocated to men are measured separately. Results may be summarized as follows.

Farm jobs are uniformly biased in favor of the poor; nonfarm jobs are less well targeted; gender differences are mixed.

For farm jobs, targeting ratios are greater than one, and greater in almost all cases than the corresponding figures for nonfarm jobs. Moreover, the lower the poverty line is set the larger is the targeting ratio.[14] In Malawi, female jobs appear to reach the poor at slightly higher rates than male jobs, for both the farm and nonfarm simulations, although these differences are [probably] not statistically significant. In Bangladesh, gender differences are also minimal. In Nicaragua and Tajikistan, however, male job recipients are considerably more likely to live in a poor household than are female job recipients [statistical significance tests pending].

Nonfarm jobs raise average wages much more strongly than do farm jobs

Table 3 reports the average wage rate among the wage-employed, before and after the employment expansion. The addition of farm employment depresses the average wage in Bangladesh (because farm jobs pay poorly compared to jobs in general) but raises them slightly in the other three countries. This increase occurs in part because a large number of jobs are captured by people who are already employed, and will be accepted only if the new wage is higher than the current wage. By contrast, the addition of nonfarm jobs, which generally pay better than average, raises earnings considerably for both men and women in all four countries (by between 6% and 77%). Percentage increases for women are much

[14] Note that these poverty rates reflect the baseline status of future recipients of employment. This is not evidence that people are poor *because* they are employed in agriculture, although some future recipients may well be both poor and already employed in commercial agriculture.

larger than for men in Bangladesh and Malawi, whereas in Nicaragua, where the gender wage gap is very small to begin with, gains for men appear larger than for women.

Women's employment grows at a faster rate than men's in five out of eight cases

Table 4 reports the wage employment rate, and the gender distribution of jobs before and after the employment increases, along with the share of new jobs that went to the already wage-employed, or to people who were previously not wage employed, but were self-employed (i.e. members of Lewis's surplus rural labor force). Initial country-average rates of formal employment vary between 23% and 38%, and are 15 to 35 percentage points higher for men than for women. Women's lowest share of the formal labor market occurs in Bangladesh (at 0.11) and the highest values are in Malawi and Tajikistan (0.40 each). The gross employment increase, meaning the number of jobs that are awarded either to the non-wage employed or to the already-wage-employed, is 15% by construction for all four countries, but varies in its gender bias. In five of the eight cases, women's employment grows faster than men's, meaning that women are over-represented among beneficiaries (in proportion to their initial levels of employment), while in Malawi (nonfarm), Nicaragua (farm), and Tajikistan (nonfarm) men's employment grows more rapidly.[15] The gender differences in the numbers for net increases in employment are qualitatively similar.

A large but plausible share of jobs are captured by the already employed

The share of new jobs (male and female) that are captured by the already-wage employed (who trade the old job for the new one, yielding a new wage that is at least 20% higher) varies between 26% and 43% for Bangladesh, Nicaragua and Tajikistan, but rises as high as 68% in Malawi. The high figure for Malawi reflects the prevalence of *ganyu* labor (short term labor contracts). The lower figures for the other countries, however, are comparable to those observed in surveys of labor turnover for the United States and Germany, where between 30 and 31% of new hires represent job-to-job transitions (Fahr

[15] The fact that women's employment often grows faster than men's is due in large part to the remaining random element in the employment selection process. If jobs were awarded purely at random, women would be selected about as often as men, creating a similar absolute employment increase. When divided by their smaller initial level of employment, this increase is proportionately larger. The fact that men's employment sometimes grows faster reflects the influence of the deterministic aspect of the allocation process, which is favors men.

and Sunde 2005, Anderson and Burgess 2000), suggesting that our simple behavioral model is yielding plausible results. The difference between net and gross job creation is significant, with net employments increase amounting to between 6% and 11% (compared to a 15% uniform gross increase). Moreover, the net/gross gap is larger for men than women, because a greater share of men's jobs are awarded to the already employed.

The simulations reproduced the Lewis transition from self- to wage-employment

The share of beneficiaries who are members of Lewis's surplus labor force, namely self-employed workers with no wage employment in the past year, varies from 30% in Malawi (for farm job creation) to 62% in Bangladesh, with the low figure for Malawi again reflecting the prevalence of *ganyu* labor. This confirms the importance of the move from self-employment to wage employment in the course of economic development; in the next table we look at some characteristics of the newly employed, to determine whether this large movement of people into the wage labor force is plausible in light of low levels of education, and other constraints.

Supply side constraints do not appear to bind

Table 5 reports the age, educational level, and estimated probability of employment (for farm and nonfarm jobs separately) of the workforce, before and after the job creation. We see very little change in the mean age, while average education levels fall slightly (never by more than 0.1 years) in the farm job-creation scenarios, and rise slightly (by about the same amount) in the non-farm job-creation scenarios. This implies that we have not awarded jobs to people with implausibly low levels of education. More general evidence on the level of qualification of the newly employed is found by examining the change in the probabilities of employment. These fall in four cases and rise in the other four cases, never moving by more than 4/10ths of a percentage point.[16] Taken collectively, the dozen or more characteristics that enter our employment probits do not differ greatly between the old and new workforces, suggesting that we have not run into significant constraints from the labor supply side.

[16] The employment probabilities can be understood as propensity scores, and their similarity is evidence of common support for the pre-simulation and post-simulation workforces. [Note: this will be made clearer by reporting the probabilities of employment for beneficiaries alone, as opposed to the full new workforce.]

Table 6 reports the bottom line of this experiment: the change in the $2 and $1/day poverty rates, poverty gaps, and squared poverty gaps[17], due to the addition of women's and/or men's jobs, in the agricultural and non-agricultural scenarios. In all cases the poverty rate is calculated for the full rural population. New employment will have an effect on the poverty rate if it accrues to a currently poor household, and is sufficient to raise that household above the poverty line. Changes in the poverty gap, and the squared poverty gap, reflect these poverty rate reductions, as well as the effects of income gains that fail to lift the household out of poverty. In the upper panel these are expressed as percentage reductions (not percentage point changes) in the listed poverty measure. In the lower panel for each country we divide the actual change in the poverty measure by the gross number of jobs awarded in each category; this allows us to compare across countries, since the impact of a 15% increase in employment depends in large part on the initial employment to population ratio. In Appendix 1 we report results for changes in poverty per *net* job created, which yield qualitatively similar conclusions. Also included are results for inequality measures (Gini coefficients) and further details of the simulation outcomes.

Overall rates of poverty reduction are highest in Nicaragua (where wages are highest and initial poverty is lowest): 14% of the poor are lifted out of $2/day poverty by the agricultural simulation and 11% by the nonfarm simulation (this being the one country in which the farm simulation performs as well as the nonfarm simulation.) Less impressive are the results from Bangladesh and Malawi, where the $2/day poverty rate falls by no more than 3%. These results, however, are not scaled to the number of jobs that are created.

Effects at the $1 poverty line are larger in proportionate terms than at the $2 poverty line

Larger percentage reductions in $1 headcount poverty than in $2 poverty are observed in all countries and all simulations. This is due in part to a higher targeting efficiency at the $1 line than at the $2 line in almost all cases, but could occur even if targeting rates were comparable, given that less income is required to cross the $1 line, and fewer people are

[17] The per capita poverty gap is equal to the total amount of daily income that would be needed to bring each poor person up to the poverty line, expressed as a multiple of that poverty line, and then averaged over the full population. Given a poverty line of $1, a per capita poverty gap of 0.10 implies that poverty could be eliminated by the perfectly targeted addition of an amount of income equal to 10 cents per person per day. For the $2 line, the poverty gap of 0.30 implies the total poverty gap is equal to 60 cents per person per day.

below it. Provided our job allocation mechanism is plausible, this implies that rural job creation favors the poorest of the poor.

Nonfarm job creation performs better than farm job creation in most but not all cases

For jobs awarded to men, the greater effectiveness of nonfarm employment is seen in 20 of the 24 relevant comparisons shown, for which values of poverty reduction per gross male nonfarm job are higher than per gross male farm job. On average, each male nonfarm job raises about 4.1 people above the $2 poverty line, and about 3.8 people above the $1 line, compared to about 2.6 or 2.7 people for male farm employment (based on cross-county averages of the numbers reported in the Table 6). For women the results are more mixed: for half of the 24 comparisons shown, poverty is reduced more effectively by women's nonfarm jobs than by their farm jobs, and for the other half the reverse is true (compare Malawi and Nicaragua). For men and women combined, nonfarm jobs clearly dominate, except in Nicaragua where results are evenly split.

Men's jobs lift more people out of poverty than women's jobs in most but not all cases

As already noted, the overall results, for both farm and nonfarm jobs, tilt in favor of male employment. In Nicaragua, for instance, male jobs achieve greater poverty reduction (per job) than do female jobs in the same sector for 10 out of the 12 relevant comparisons. For all measures shown, male jobs dominate in 38 out of 48 cases; results for net job creation are stronger, favoring men in 47 of 48 cases (see Appendix 1).[18]

4. Conclusions

Our results confirm that increased rural wage employment, whether in commercial farming or in nonfarm enterprises, has significant potential to reduce poverty. Women, the poor, and those not currently working for wages appear able to capture a significant share of the new employment, although to varying degrees across countries. While increased education and training would of course improve their odds of obtaining new jobs, the

[18] This discrepancy arises because net job creation is always less than gross, raising the apparent effectiveness of the scenario, but men's net job creation is *far* lower, because of the higher share of jobs going to the already employed.

results of our simulations suggest that even at current levels of education, and even taking account of many other structural barriers to labor market access such as distance from transportation, women's unpaid childcare, and minority ethnicity, their employment disadvantage with respect to the already employed and the nonpoor is not insurmountable.

One interpretation of these findings is that policies that seek to promote capital investment and labor demand in the rural formal economy deserve equal consideration with policies focused on human capital formation, or on rural small-business development. This includes commercial investment in farming, although in most case results in the nonfarm sector appears more promising, all else being equal. Although we have not addressed the question of how increased labor demand may be achieved, we have quantified its direct distributional impact, showing that its benefits should indeed reach the poor, even at current levels of education, and even in face of other obstacles to labor force participation. The results by gender reveal that despite their under-representation in the current wage labor market, at the margin women's employment grows faster than men's in five of our eight simulations. (Cases in which the *absolute*, not merely the proportionate, increase in employment favors women include Malawi (farm jobs), and Tajikistan (farm jobs), see Appendix 1).

Lastly, the finding that male employment raises more people from poverty than does female employment should not be over-played. Conventional poverty rates, defined on the basis of aggregate household income (or consumption) per capita, do not differ radically by gender, since the majority of households have approximately the same number as men as women. This means that male-female differences in the results of our simulations depend largely on the respective wage rates. Given existing gender wage gaps, which are large in most countries, it is not surprising that male jobs are more effective at alleviating poverty. Arguments about the effects of women's employment on their degree of independence from their male partners, on their ability to feed their children, and on other measures of human development and economic growth are not here addressed.

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Table 1: Farm and nonfarm income shares, wages versus self-employment, by gender

	Shares of total earnings		
Bangladesh	**Female**	**Male**	**All**
Wage Employed Ag.	0.01	0.16	0.17
Wage Employed Non-Ag.	0.02	0.25	0.27
Self Employed Ag.	0.01	0.20	0.20
Self Employed Non-Ag.	0.00	0.35	0.36
Not Employed			
All	0.04	0.96	1.00
Malawi	**Female**	**Male**	**All**
Wage Employed Ag.	0.03	0.11	0.15
Wage Employed Non-Ag.	0.04	0.19	0.24
Self Employed Ag.	0.26	0.25	0.50
Self Employed Non-Ag.	0.04	0.07	0.11
Not Employed			
All	0.37	0.63	1.00
Nicaragua	**Female**	**Male**	**All**
Wage Employed Ag.	0.02	0.22	0.23
Wage Employed Non-Ag.	0.12	0.24	0.36
Self Employed Ag.	0.02	0.23	0.25
Self Employed Non-Ag.	0.08	0.07	0.15
Not Employed			
All	0.23	0.77	1.00
Tajikistan	**Female**	**Male**	**All**
Wage Employed Ag.	0.16	0.30	0.46
Wage Employed Non-Ag.	0.06	0.26	0.31
Self Employed Ag.	0.11	0.10	0.21
Self Employed Non-Ag.	0.01	0.00	0.01
Not Employed			
All	0.33	0.67	1.00

Table 2: Poverty rates and targeting efficiency

		Targeting Ratio: Share of jobs captured by poor / baseline poverty rate					
		Agricultural Jobs			*Non-Agricultural Jobs*		
Bangladesh	***Baseline***	Women	Men	Total	Women	Men	Total
Poor ($2 PPP)	0.81	1.14	1.14	1.14	0.94	0.98	0.97
Very Poor ($1 PPP)	0.39	1.64	1.63	1.63	0.76	0.99	0.93
Malawi							
Poor ($2 PPP)	0.80	1.07	1.03	1.05	0.99	0.97	0.98
Very Poor ($1 PPP)	0.45	1.17	1.14	1.16	1.11	1.05	1.06
Nicaragua							
Poor ($2 PPP)	0.37	1.13	1.35	1.32	0.79	1.06	0.95
Very Poor ($1 PPP)	0.13	1.44	1.59	1.57	1.11	1.36	1.26
Tajikistan							
Poor ($2 PPP)	0.41	1.07	1.29	1.18	1.07	1.14	1.12
Very Poor ($1 PPP)	0.16	1.21	1.76	1.49	1.15	1.58	1.45
4 Country Average							
Poor ($2 PPP)	0.60	1.10	1.21	1.17	0.95	1.04	1.00
Very Poor ($1 PPP)	0.28	1.36	1.53	1.46	1.03	1.25	1.18

Table 3: Earnings at baseline versus in farm and nonfarm simulations

	Baseline			*Agricultural Jobs*			*Non-Agricultural Jobs*		
Bangladesh	Women	Men	Total	Women	Men	Total	Women	Men	Total
Avg. annual wage earnings if employed	$890	$1,639	$1,554	$865	$1,581	$1,486	$1,057	$1,735	$1,643
Percent change over baseline				-2.8%	-3.6%	-4.4%	18.7%	5.8%	5.7%
Malawi									
Avg. annual wage earnings if employed	$134	$363	$272	$147	$364	$276	$236	$484	$386
Percent change over baseline				10.3%	0.4%	1.6%	76.9%	33.2%	41.8%
Nicaragua									
Avg. annual wage earnings if employed	$2,545	$2,598	$2,586	$2,502	$2,932	$2,834	$2,740	$2,904	$2,862
Percent change over baseline				-1.7%	12.8%	9.6%	7.7%	11.8%	10.7%
Tajikistan									
Avg. annual wage earnings if employed	$199	$361	$295	$206	$362	$297	$219	$390	$321
Percent change over baseline				3.6%	0.5%	0.7%	10.2%	8.1%	8.8%
4 Country Averages				2.4%	2.5%	1.9%	28.4%	14.7%	16.8%

Note: Earnings are in $US at year 2000 purchasing power parity exchange rates

Table 4: Rates of employment increase, and initial status of beneficiaries

	Baseline			*Agricultural Jobs*			*Non-Agricultural Jobs*		
Bangladesh	Women	Men	Total	Women	Men	Total	Women	Men	Total
Wage employment rate	0.05	0.40	0.23						
Gender distribution of wage labor	0.11	0.89	1.00						
Percent employment increase (gross)				36.6%	12.2%	15.0%	35.4%	12.4%	15.0%
Share captured by the already wage-employed				0.193	0.288	0.262	0.086	0.325	0.261
Share captured by non-wage emp.self-employed				0.606	0.624	0.619	0.700	0.588	0.618
Percent change in employment (net)				29.6%	8.7%	11.1%	32.3%	8.4%	11.1%
New gender distribution of wage labor				0.133	0.867	1.000	0.135	0.865	1.000
New wage employment rate				0.067	0.434	0.252	0.069	0.433	0.252
Malawi									
Wage employment rate	0.28	0.46	0.37						
Gender distribution of wage labor	0.40	0.60	1.00						
Percent employment increase (gross)				19.7%	11.9%	15.0%	11.5%	17.3%	15.0%
Share captured by the already wage-employed				0.632	0.723	0.676	0.492	0.643	0.596
Share captured by non-wage emp.self-employed				0.340	0.260	0.302	0.471	0.341	0.380
Percent change in employment (net)				7.3%	3.3%	4.9%	5.9%	6.2%	6.1%
New gender distribution of wage labor				0.406	0.594	1.000	0.397	0.603	1.000
New wage employment rate				0.305	0.473	0.387	0.301	0.486	0.391
Nicaragua									
Wage employment rate	0.14	0.42	0.28						
Gender distribution of wage labor	0.23	0.77	1.00						
Percent employment increase (gross)				8.0%	17.1%	15.0%	26.1%	11.7%	15.0%
Share captured by the already wage-employed				0.150	0.466	0.427	0.238	0.451	0.365
Share captured by non-wage emp.self-employed				0.779	0.529	0.560	0.685	0.536	0.596
Percent change in employment (net)				6.8%	9.2%	8.6%	19.9%	6.4%	9.5%
New gender distribution of wage labor				0.227	0.773	1.000	0.253	0.747	1.000
New wage employment rate				0.145	0.458	0.308	0.163	0.447	0.310
Tajikistan									
Wage employment rate	0.26	0.41	0.33						
Gender distribution of wage labor	0.40	0.60	1.00						
Percent employment increase (gross)				18.6%	12.6%	15.0%	11.6%	17.3%	15.0%
Share captured by the already wage-employed				0.310	0.414	0.362	0.245	0.444	0.382
Share captured by non-wage emp.self-employed				0.630	0.534	0.582	0.694	0.515	0.571
Percent change in employment (net)				12.8%	7.4%	9.6%	8.8%	9.6%	9.3%
New gender distribution of wage labor				0.416	0.584	1.000	0.402	0.598	1.000
New wage employment rate				0.290	0.444	0.363	0.279	0.453	0.362

Table 5: Age, education, and probability of employment before and after employment increase

	Baseline			*Add Agricultural Jobs*			*Add Non-Agric. Jobs*		
Bangladesh	Women	Men	Total	Women	Men	Total	Women	Men	Total
Age	33.0	33.1	33.1	33.6	32.8	32.9	32.3	32.8	32.7
Education	1.8	2.7	2.6	1.4	2.6	2.5	2.1	2.9	2.8
Prob. employed in Agric.	0.102	0.326	0.300	0.107	0.323	0.294	na	na	na
Prob. employed Non-Agric.	0.114	0.230	0.217	na	na	na	0.113	0.231	0.215
Malawi									
Age	29.6	30.0	29.8	29.6	29.8	29.7	29.7	30.3	30.0
Education	3.2	5.1	4.4	3.2	5.1	4.3	3.4	5.2	4.5
Prob. employed in Agric.	0.374	0.464	0.428	0.369	0.461	0.424	na	na	na
Prob. employed Non-Agric.	0.041	0.137	0.099	na	na	na	0.044	0.142	0.103
Nicaragua									
Age	30.3	29.8	29.9	30.3	29.8	29.9	30.0	29.8	29.9
Education	5.2	3.5	3.9	5.0	3.4	3.8	5.0	3.7	4.0
Prob. employed in Agric.	0.049	0.362	0.289	0.053	0.361	0.291	na	na	na
Prob. employed Non-Agric.	0.262	0.239	0.244	na	na	na	0.255	0.242	0.245
Tajikistan									
Age	33.1	36.1	34.9	32.8	35.7	34.5	33.2	36.3	35.0
Education	9.9	11.1	10.6	9.9	11.0	10.6	10.1	11.2	10.7
Prob. employed in Agric.	0.362	0.398	0.384	0.360	0.395	0.380	na	na	na
Prob. employed Non-Agric.	0.081	0.196	0.150	na	na	na	0.089	0.202	0.157

Table 6: Changes in poverty

BANGLADESH	***Add Agricultural Jobs***			***Add Non-Agric. Jobs***		
Percent Change in Poverty	Women's Jobs	Men's Jobs	Total	Women's Jobs	Men's Jobs	Total
Poor ($2 PPP)	-0.2%	-0.2%	-0.4%	-0.6%	-2.0%	-2.6%
$2 Poverty gap per capita	-0.8%	-2.1%	-3.0%	-0.9%	-3.9%	-4.7%
$2 Squared poverty gap per capita	-1.1%	-3.3%	-4.4%	-1.0%	-5.0%	-5.9%
Very Poor ($1 PPP)	-1.4%	-4.1%	-5.6%	-0.8%	-5.5%	-6.2%
$1 Poverty gap per capita	-2.2%	-6.8%	-8.8%	-1.1%	-6.6%	-7.6%
$1 Squared poverty gap per capita	-0.7%	-3.2%	-3.8%	-1.2%	-5.5%	-6.7%
People crossing poverty line per job created (gross)						
$2 PPP	0.27	0.09	0.15	0.72	0.91	0.87
$1 PPP	0.81	0.93	0.92	0.47	1.22	1.02
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.50	0.49	0.49	0.53	0.88	0.78
$1 PPP	0.51	0.61	0.57	0.26	0.58	0.49
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.47	0.55	0.52	0.45	0.81	0.70
$1 PPP	0.28	0.47	0.41	0.49	0.80	0.72

Table 6, Continued

MALAWI	***Add Agricultural Jobs***			***Add Non-Agric. Jobs***		
Percent Change in Poverty	Women's Jobs	Men's Jobs	Total	Women's Jobs	Men's Jobs	Total
Poor ($2 PPP)	-0.3%	-0.2%	-0.5%	-0.9%	-2.0%	-2.9%
$2 Poverty gap per capita	-0.9%	-0.7%	-1.6%	-1.6%	-4.0%	-5.6%
$2 Squared poverty gap per capita	-1.2%	-1.1%	-2.3%	-1.9%	-5.0%	-6.8%
Very Poor ($1 PPP)	-1.2%	-0.8%	-2.1%	-2.2%	-5.0%	-7.2%
$1 Poverty gap per capita	-1.8%	-1.8%	-3.5%	-2.6%	-6.8%	-9.2%
$1 Squared poverty gap per capita	-1.4%	-1.4%	-2.8%	-1.8%	-5.2%	-6.8%
People crossing poverty line per job created (gross)						
$2 PPP	0.13	0.11	0.11	0.71	0.66	0.67
$1 PPP	0.31	0.24	0.27	0.96	0.96	0.96
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.21	0.19	0.20	0.67	0.72	0.70
$1 PPP	0.21	0.22	0.21	0.51	0.59	0.55
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.21	0.21	0.21	0.57	0.64	0.61
$1 PPP	0.17	0.20	0.18	0.38	0.49	0.44

Table 6, Continued

NICARAGUA	*Add Agricultural Jobs*			*Add Non-Agric. Jobs*		
Percent Change in Poverty	Women's Jobs	Men's Jobs	Total	Women's Jobs	Men's Jobs	Total
Poor ($2 PPP)	-0.8%	-12.8%	-13.5%	-2.8%	-8.0%	-11.0%
$2 Poverty gap per capita	-1.5%	-13.5%	-14.8%	-4.0%	-9.2%	-12.9%
$2 Squared poverty gap per capita	-0.9%	-7.0%	-7.7%	-2.1%	-8.3%	-10.2%
Very Poor ($1 PPP)	-2.4%	-16.5%	-18.1%	-7.8%	-9.6%	-16.6%
$1 Poverty gap per capita	-1.8%	-13.8%	-14.9%	-3.8%	-11.8%	-15.5%
$1 Squared poverty gap per capita	-0.2%	-2.0%	-2.1%	-0.4%	-7.1%	-7.5%
People crossing poverty line per job created (gross)						
$2 PPP	0.87	1.89	1.73	0.88	1.73	1.43
$1 PPP	0.87	0.84	0.81	0.86	0.72	0.74
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.68	0.88	0.85	0.56	0.88	0.74
$1 PPP	0.47	0.50	0.47	0.30	0.63	0.49
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.55	0.63	0.60	0.40	1.08	0.80
$1 PPP	0.33	0.42	0.39	0.17	2.16	1.36

Table 6, Continued

TAJIKISTAN	***Add Agricultural Jobs***			***Add Non-Agric. Jobs***		
Percent Change in Poverty	Women's Jobs	Men's Jobs	Total	Women's Jobs	Men's Jobs	Total
Poor ($2 PPP)	-1.5%	-1.9%	-3.6%	-2.0%	-4.0%	-6.0%
$2 Poverty gap per capita	-3.8%	-4.6%	-8.2%	-2.6%	-8.9%	-11.2%
$2 Squared poverty gap per capita	-5.1%	-6.4%	-11.1%	-3.1%	-12.2%	-15.0%
Very Poor ($1 PPP)	-5.2%	-6.1%	-11.0%	-3.1%	-11.1%	-13.5%
$1 Poverty gap per capita	-6.8%	-8.5%	-15.0%	-3.9%	-16.2%	-20.0%
$1 Squared poverty gap per capita	-7.0%	-9.4%	-16.0%	-4.3%	-18.4%	-22.7%
People crossing poverty line per job created (gross)						
$2 PPP	0.42	0.55	0.52	0.90	0.84	0.86
$1 PPP	0.57	0.66	0.60	0.55	0.89	0.74
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.47	0.57	0.51	0.52	0.81	0.70
$1 PPP	0.37	0.46	0.41	0.33	0.64	0.54
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.41	0.50	0.44	0.40	0.70	0.59
$1 PPP	0.29	0.39	0.33	0.29	0.55	0.47

Appendix 1: Country details

RURAL BANGLADESH

Baseline	**Women**	**Men**	**Total**	***Baseline***	
Population of working age (10-65)	35,000,398	35,571,816	70,572,214	All Households:	
Employed in wage labor	1,821,610	14,209,128	16,030,738	Gini coefficient	0.383
Gender distribution of wage labor	0.11	0.89	1.00	Per capita income	$720
Wage employment rate	0.05	0.40	0.23		
Avg. wage earnings if employed ($US at PPP, 2000)	$890	$1,639	$1,554	Future Beneficiaries, Agricultural Simulation:	
Poor ($2 PPP)	0.81	0.81	0.81	Gini coefficient	0.370
$2 Poverty gap per capita	0.40	0.39	0.40	Per capita income	$469
$2 Squared poverty gap per capita	0.27	0.30	0.2826		
Very Poor ($1 PPP)	0.40	0.38	0.39	Future Beneficiaries, Non-Ag. Simulation:	
$1 Poverty gap per capita	0.15	0.15	0.15	Gini coefficient	0.409
$1 Squared poverty gap per capita	0.19	0.31	0.25	Per capita income	$678

Simulate 15% Gross Employment Increase:	***Agricultural Jobs***			***Non-Agricultural Jobs***		
	Women	**Men**	**Total**	**Women**	**Men**	**Total**
Jobs created or upgraded (= "gross")	667,449	1,739,035	2,406,483	644,062	1,762,435	2,406,497
Percent employment increase (gross)	36.6%	12.2%	15.0%	35.4%	12.4%	15.0%
Share captured by the already wage-employed	0.19	0.29	0.26	0.09	0.33	0.26
Share captured by non-wage emp.self-employed	0.61	0.62	0.62	0.70	0.59	0.62
Net jobs created	538,453	1,238,726	1,777,178	588,528	1,189,350	1,777,877
Percent change in employment (net)	29.6%	8.7%	11.1%	32.3%	8.4%	11.1%
New gender distribution of wage labor	0.13	0.87	1.00	0.14	0.86	1.00
New wage employment rate	0.07	0.43	0.25	0.07	0.43	0.25
New level of average earnings if wage-employed	$865	$1,581	$1,486	$1,057	$1,735	$1,643
Pcnt. change in average earnings if wage-employed	-2.8%	-3.6%	-4.4%	18.7%	5.8%	5.7%
Targeting: Share of Jobs Captured by Poor Individuals						
Poor ($2 PPP)	0.92	0.93	0.93	0.76	0.80	0.79
Very Poor ($1 PPP)	0.64	0.64	0.64	0.30	0.39	0.36
Targeting Ratio: Above Shares / Overall Poverty Rate						
Poor ($2 PPP)	1.14	1.14	1.14	0.94	0.98	0.97
Very Poor ($1 PPP)	1.64	1.63	1.63	0.76	0.99	0.93
Percent Change in Poverty Due To:	*Female jobs*	*Male jobs*	*All jobs*	*Female jobs*	*Male jobs*	*All jobs*
Poor ($2 PPP)	-0.2%	-0.2%	-0.4%	-0.6%	-2.0%	-2.6%
$2 Poverty gap per capita	-0.8%	-2.1%	-3.0%	-0.9%	-3.9%	-4.7%
$2 Squared poverty gap per capita	-1.1%	-3.3%	-4.4%	-1.0%	-5.0%	-5.9%
Very Poor ($1 PPP)	-1.4%	-4.1%	-5.6%	-0.8%	-5.5%	-6.2%
$1 Poverty gap per capita	-2.2%	-6.8%	-8.8%	-1.1%	-6.6%	-7.6%
$1 Squared poverty gap per capita	-0.7%	-3.2%	-3.8%	-1.2%	-5.5%	-6.7%
People crossing poverty line per job created (net)						
$2 PPP	0.33	0.13	0.20	0.79	1.35	1.17
$1 PPP	1.00	1.31	1.24	0.51	1.81	1.38
Reduction in total income poverty gap per job created (net)						
$2 PPP	0.62	0.69	0.67	0.58	1.31	1.05
$1 PPP	0.63	0.85	0.77	0.29	0.85	0.66
Reduction in total squared income poverty gap per job created (net)						
$2 PPP	0.58	0.77	0.71	0.50	1.19	0.95
$1 PPP	0.35	0.66	0.55	0.54	1.19	0.97
People crossing poverty line per job created (gross)						
$2 PPP	0.27	0.09	0.15	0.72	0.91	0.87
$1 PPP	0.81	0.93	0.92	0.47	1.22	1.02
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.50	0.49	0.49	0.53	0.88	0.78
$1 PPP	0.51	0.61	0.57	0.26	0.58	0.49
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.47	0.55	0.52	0.45	0.81	0.70
$1 PPP	0.28	0.47	0.41	0.49	0.80	0.72
Gini coefficient: All households			0.373			0.383
Percentage change			-2.7%			0.1%
Gini coefficient: Beneficiary households			0.313			0.372
Percentage change			-15.4%			-9.1%
Per capita income ($US PPP): All households			$733			$756
Percentage change			1.8%			5.0%
Per capita income: Beneficiary households			$577			$959
Percentage change			23.1%			41.5%

RURAL MALAWI

Baseline	**Women**	**Men**	**Total**	***Baseline***	
Population of working age (10-65)	3,415,890	3,217,913	6,633,804	All Households:	
Employed in wage labor	971,795	1,473,980	2,445,774	Gini coefficient	0.429
Gender distribution of wage labor	0.40	0.60	1.00	Per capita income	$276
Wage employment rate	0.28	0.46	0.37		
Avg. wage earnings if employed ($US at PPP, 2000)	$134	$363	$272	Future Beneficiaries, Agricultural Simulation:	
Poor ($2 PPP)	0.81	0.79	0.80	Gini coefficient	0.469
$2 Poverty gap per capita	0.44	0.42	0.43	Per capita income	$213
$2 Squared poverty gap per capita	0.32	0.30	0.31		
Very Poor ($1 PPP)	0.46	0.45	0.45	Future Beneficiaries, Non-Ag. Simulation:	
$1 Poverty gap per capita	0.21	0.20	0.21	Gini coefficient	0.485
$1 Squared poverty gap per capita	0.25	0.20	0.22	Per capita income	$246

Simulate 15% Gross Employment Increase:	***Agricultural Jobs***			***Non-Agricultural Jobs***		
	Women	**Men**	**Total**	**Women**	**Men**	**Total**
Jobs created or upgraded (= "gross")	191,775	175,112	366,887	112,125	254,815	366,940
Percent employment increase (gross)	19.7%	11.9%	15.0%	11.5%	17.3%	15.0%
Share captured by the already wage-employed	0.63	0.72	0.68	0.49	0.64	0.60
Share captured by non-wage emp.self-employed	0.34	0.26	0.30	0.47	0.34	0.38
Net jobs created	70,491	48,445	118,936	57,008	91,058	148,066
Percent change in employment (net)	7.3%	3.3%	4.9%	5.9%	6.2%	6.1%
Gender distribution of wage labor	0.41	0.59	1.00	0.40	0.60	1.00
New wage employment rate	0.31	0.47	0.39	0.30	0.49	0.39
New level of average earnings if wage-employed	$147	$364	$276	$236	$484	$386
Pcnt. change in average earnings if wage-employed	10.3%	0.4%	1.6%	76.9%	33.2%	41.8%
Targeting: Share of Jobs Captured by Poor Individuals						
Poor ($2 PPP)	0.85	0.83	0.84	0.80	0.78	0.78
Very Poor ($1 PPP)	0.53	0.52	0.53	0.50	0.48	0.48
Targeting Ratio: Above Shares / Overall Poverty Rate						
Poor ($2 PPP)	1.07	1.03	1.05	0.99	0.97	0.98
Very Poor ($1 PPP)	1.17	1.14	1.16	1.11	1.05	1.06
Percent Change in Poverty Due To:	***Female jobs***	***Male jobs***	***All jobs***	***Female jobs***	***Male jobs***	***All jobs***
Poor ($2 PPP)	-0.3%	-0.2%	-0.5%	-0.9%	-2.0%	-2.9%
$2 Poverty gap per capita	-0.9%	-0.7%	-1.6%	-1.6%	-4.0%	-5.6%
$2 Squared poverty gap per capita	-1.2%	-1.1%	-2.3%	-1.9%	-5.0%	-6.8%
Very Poor ($1 PPP)	-1.2%	-0.8%	-2.1%	-2.2%	-5.0%	-7.2%
$1 Poverty gap per capita	-1.8%	-1.8%	-3.5%	-2.6%	-6.8%	-9.2%
$1 Squared poverty gap per capita	-1.4%	-1.4%	-2.8%	-1.8%	-5.2%	-6.8%
People crossing poverty line per job created (net)						
$2 PPP	0.36	0.38	0.35	1.40	1.85	1.65
$1 PPP	0.83	0.85	0.85	1.88	2.68	2.38
Reduction in total income poverty gap per job created (net)						
$2 PPP	0.57	0.69	0.62	1.32	2.02	1.73
$1 PPP	0.56	0.81	0.65	1.01	1.64	1.37
Reduction in total squared income poverty gap per job created (net)						
$2 PPP	0.57	0.75	0.64	1.11	1.80	1.52
$1 PPP	0.47	0.71	0.56	0.74	1.36	1.10
People crossing poverty line per job created (gross)						
$2 PPP	0.13	0.11	0.11	0.71	0.66	0.67
$1 PPP	0.31	0.24	0.27	0.96	0.96	0.96
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.21	0.19	0.20	0.67	0.72	0.70
$1 PPP	0.21	0.22	0.21	0.51	0.59	0.55
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.21	0.21	0.21	0.57	0.64	0.61
$1 PPP	0.17	0.20	0.18	0.38	0.49	0.44
Gini coefficient: All households			0.424			0.445
Percentage change			-1.0%			3.7%
Gini coefficient: Beneficiary households			0.444			0.524
Percentage change			-5.4%			8.0%
Per capita income ($US PPP): All households			$279			$304
Percentage change			1.3%			10.3%
Per capita income: Beneficiary households			$237			$421
Percentage change			11.3%			71.1%

RURAL NICARAGUA

Baseline	**Women**	**Men**	**Total**	***Baseline***	
Population of working age (10-65)	692,387	745,772	1,438,159	All Households:	
Employed in wage labor	94,101	313,248	407,350	Gini coefficient	0.432
Gender distribution of wage labor	0.23	0.77	1.00	Per capita income	$1,118
Wage employment rate	0.14	0.42	0.28		
Avg. wage earnings if employed ($US at PPP, 2000)	$2,545	$2,598	$2,586	Future Beneficiaries, Agricultural Simulation:	
Poor ($2 PPP)	0.37	0.36	0.37	Gini coefficient	0.423
$2 Poverty gap per capita	0.17	0.16	0.16	Per capita income	$846
$2 Squared poverty gap per capita	0.29	0.16	0.22		
Very Poor ($1 PPP)	0.13	0.12	0.13	Future Beneficiaries, Non-Ag. Simulation:	
$1 Poverty gap per capita	0.10	0.08	0.09	Gini coefficient	0.441
$1 Squared poverty gap per capita	0.77	0.28	0.52	Per capita income	$996

Simulate 15% Gross Employment Increase:	***Agricultural Jobs***			***Non-Agricultural Jobs***		
	Women	**Men**	**Total**	**Women**	**Men**	**Total**
Jobs created or upgraded (= "gross")	7,540	53,666	61,205	24,598	36,519	61,117
Percent employment increase (gross)	8.0%	17.1%	15.0%	26.1%	11.7%	15.0%
Share captured by the already wage-employed	0.15	0.47	0.43	0.24	0.45	0.37
Share captured by non-wage emp.self-employed	0.78	0.53	0.56	0.68	0.54	0.60
Net jobs created	6,406	28,674	35,080	18,753	20,032	38,785
Percent change in employment (net)	6.8%	9.2%	8.6%	19.9%	6.4%	9.5%
Gender distribution of wage labor	0.23	0.77	1.00	0.25	0.75	1.00
New wage employment rate	0.15	0.46	0.31	0.16	0.45	0.31
New level of average earnings if wage-employed	$2,502	$2,932	$2,834	$2,740	$2,904	$2,862
Pcnt. change in average earnings if wage-employed	-1.7%	12.8%	9.6%	7.7%	11.8%	10.7%
Targeting: Share of Jobs Captured by Poor Individuals						
Poor ($2 PPP)	0.42	0.50	0.49	0.29	0.39	0.35
Very Poor ($1 PPP)	0.18	0.20	0.20	0.14	0.17	0.16
Targeting Ratio: Above Shares / Overall Poverty Rate						
Poor ($2 PPP)	1.13	1.35	1.32	0.79	1.06	0.95
Very Poor ($1 PPP)	1.44	1.59	1.57	1.11	1.36	1.26
Percent Change in Poverty Due To:	***Female jobs***	***Male jobs***	***All jobs***	***Female jobs***	***Male jobs***	***All jobs***
Poor ($2 PPP)	-0.8%	-12.8%	-13.5%	-2.8%	-8.0%	-11.0%
$2 Poverty gap per capita	-1.5%	-13.5%	-14.8%	-4.0%	-9.2%	-12.9%
$2 Squared poverty gap per capita	-0.9%	-7.0%	-7.7%	-2.1%	-8.3%	-10.2%
Very Poor ($1 PPP)	-2.4%	-16.5%	-18.1%	-7.8%	-9.6%	-16.6%
$1 Poverty gap per capita	-1.8%	-13.8%	-14.9%	-3.8%	-11.8%	-15.5%
$1 Squared poverty gap per capita	-0.2%	-2.0%	-2.1%	-0.4%	-7.1%	-7.5%
People crossing poverty line per job created (net)						
$2 PPP	1.03	3.53	3.03	1.16	3.15	2.25
$1 PPP	1.02	1.57	1.41	1.13	1.31	1.17
Reduction in total income poverty gap per job created (net)						
$2 PPP	0.80	1.65	1.48	0.74	1.60	1.16
$1 PPP	0.55	0.94	0.82	0.39	1.15	0.77
Reduction in total squared income poverty gap per job created (net)						
$2 PPP	0.65	1.18	1.05	0.53	1.98	1.26
$1 PPP	0.39	0.78	0.68	0.23	3.95	2.15
People crossing poverty line per job created (gross)						
$2 PPP	0.87	1.89	1.73	0.88	1.73	1.43
$1 PPP	0.87	0.84	0.81	0.86	0.72	0.74
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.68	0.88	0.85	0.56	0.88	0.74
$1 PPP	0.47	0.50	0.47	0.30	0.63	0.49
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.55	0.63	0.60	0.40	1.08	0.80
$1 PPP	0.33	0.42	0.39	0.17	2.16	1.36
Gini coefficient: All households			0.426			0.424
Percentage change			-1.4%			-1.9%
Gini coefficient: Beneficiary households			0.415			0.382
Percentage change			-1.9%			-13.4%
Per capita income ($US PPP): All households			$1,206			$1,208
Percentage change			7.9%			8.0%
Per capita income: Beneficiary households			$1,341			$1,489
Percentage change			58.4%			49.5%

RURAL TAJIKISTAN

Baseline	**Women**	**Men**	**Total**	***Baseline***	
Population of working age (10-65)	1,435,944	1,316,628	2,752,572	All Households:	
Employed in wage labor	368,566	544,232	912,798	Gini coefficient	0.379
Gender distribution of wage labor	0.40	0.60	1.00	Per capita income	$223
Wage employment rate	0.26	0.41	0.33		
Avg. wage earnings if employed ($US at PPP, 2000)	$199	$361	$295	Future Beneficiaries, Agricultural Simulation:	
Poor ($2 PPP)	0.41	0.41	0.41	Gini coefficient	0.421
$2 Poverty gap per capita	0.18	0.18	0.18	Per capita income	$197
$2 Squared poverty gap per capita	0.12	0.11	0.11		
Very Poor ($1 PPP)	0.16	0.16	0.16	Future Beneficiaries, Non-Ag. Simulation:	
$1 Poverty gap per capita	0.08	0.08	0.08	Gini coefficient	0.379
$1 Squared poverty gap per capita	0.06	0.06	0.06	Per capita income	$223

Simulate 20% Gross Employment Increase:	***Agricultural Jobs***			***Non-Agricultural Jobs***		
	Women	**Men**	**Total**	**Women**	**Men**	**Total**
Jobs created or upgraded (= "gross")	68,420	68,711	137,131	42,753	94,232	136,985
Percent employment increase (gross)	18.6%	12.6%	15.0%	11.6%	17.3%	15.0%
Share captured by the already wage-employed	0.31	0.41	0.36	0.24	0.44	0.38
Share captured by non-wage emp.self-employed	0.63	0.53	0.58	0.69	0.52	0.57
Net jobs created	47,189	40,281	87,470	32,283	52,351	84,634
Percent change in employment (net)	12.8%	7.4%	9.6%	8.8%	9.6%	9.3%
Gender distribution of wage labor	0.42	0.58	1.00	0.40	0.60	1.00
New wage employment rate	0.29	0.44	0.36	0.28	0.45	0.36
New level of average earnings if wage-employed	$206	$362	$297	$219	$390	$321
Pcnt. change in average earnings if wage-employed	3.6%	0.5%	0.7%	10.2%	8.1%	8.8%
Targeting: Share of Jobs Captured by Poor Individuals						
Poor ($2 PPP)	0.44	0.53	0.49	0.44	0.47	0.46
Very Poor ($1 PPP)	0.19	0.28	0.23	0.18	0.25	0.23
Targeting Ratio: Above Shares / Overall Poverty Rate						
Poor ($2 PPP)	1.07	1.29	1.18	1.07	1.14	1.12
Very Poor ($1 PPP)	1.21	1.76	1.49	1.15	1.58	1.45
Percent Change in Poverty Due To:	***Female jobs***	***Male jobs***	***All jobs***	***Female jobs***	***Male jobs***	***All jobs***
Poor ($2 PPP)	-1.5%	-1.9%	-3.6%	-2.0%	-4.0%	-6.0%
$2 Poverty gap per capita	-3.8%	-4.6%	-8.2%	-2.6%	-8.9%	-11.2%
$2 Squared poverty gap per capita	-5.1%	-6.4%	-11.1%	-3.1%	-12.2%	-15.0%
Very Poor ($1 PPP)	-5.2%	-6.1%	-11.0%	-3.1%	-11.1%	-13.5%
$1 Poverty gap per capita	-6.8%	-8.5%	-15.0%	-3.9%	-16.2%	-20.0%
$1 Squared poverty gap per capita	-7.0%	-9.4%	-16.0%	-4.3%	-18.4%	-22.7%
People crossing poverty line per job created (net)						
$2 PPP	0.61	0.94	0.81	1.19	1.51	1.39
$1 PPP	0.83	1.13	0.94	0.72	1.60	1.20
Reduction in total income poverty gap per job created (net)						
$2 PPP	0.69	0.98	0.80	0.69	1.46	1.14
$1 PPP	0.53	0.78	0.64	0.44	1.15	0.88
Reduction in total squared income poverty gap per job created (net)						
$2 PPP	0.59	0.86	0.69	0.52	1.27	0.96
$1 PPP	0.42	0.66	0.52	0.38	0.99	0.76
People crossing poverty line per job created (gross)						
$2 PPP	0.42	0.55	0.52	0.90	0.84	0.86
$1 PPP	0.57	0.66	0.60	0.55	0.89	0.74
Reduction in total income poverty gap per job created (gross)						
$2 PPP	0.47	0.57	0.51	0.52	0.81	0.70
$1 PPP	0.37	0.46	0.41	0.33	0.64	0.54
Reduction in total squared income poverty gap per job created (gross)						
$2 PPP	0.41	0.50	0.44	0.40	0.70	0.59
$1 PPP	0.29	0.39	0.33	0.29	0.55	0.47
Gini coefficient: All households			0.370			0.369
Percentage change			-2.3%			-2.7%
Gini coefficient: Beneficiary households			0.373			0.353
Percentage change			-11.3%			-7.0%
Per capita income ($US PPP): All households			$229			$233
Percentage change			2.5%			4.5%
Per capita income: Beneficiary households			$228			$248
Percentage change			15.7%			11.1%

Appendix 2: Employment regressions

RURAL BANGLADESH	***Pr(Employed in Agric. | Female)***			***Pr(Employed in Agric. | Male)***			***Pr(Emp. in NonAgric. | Female)***			***Pr(Emp. in NonAgric. | Male)***		
Variable	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**
Age	0.113	0.024	0.000	0.128	0.008	0.000	0.113	0.016	0.000	0.115	0.008	0.000
Age squared	-0.002	0.000	0.000	-0.002	0.000	0.000	-0.002	0.000	0.000	-0.002	0.000	0.000
Education	-0.237	0.067	0.000	-0.085	0.017	0.000	-0.261	0.034	0.000	-0.030	0.014	0.029
Education sqd	0.019	0.008	0.016	-0.003	0.002	0.149	0.029	0.003	0.000	0.006	0.001	0.000
Married	-0.251	0.130	0.054	0.040	0.069	0.561	-0.556	0.083	0.000	0.120	0.064	0.062
HH Size	-0.072	0.038	0.057	-0.063	0.009	0.000	-0.044	0.018	0.015	-0.010	0.007	0.148
Female head	0.986	0.125	0.000	-0.058	0.097	0.545	0.557	0.082	0.000	0.189	0.087	0.030
Minority	0.793	0.100	0.000	-0.156	0.058	0.007	0.184	0.085	0.032	-0.047	0.054	0.385
Child duties	0.013	0.049	0.798	na	na	na	-0.025	0.031	0.418	na	na	na
Share of hh in farm jobs	0.786	0.126	0.000	1.674	0.100	0.000	-0.568	0.158	0.000	-0.603	0.123	0.000
Share of hh in nonfarm jobs	-0.248	0.223	0.266	-0.864	0.130	0.000	0.813	0.109	0.000	1.339	0.101	0.000
Distance to primary school	0.047	0.076	0.534	0.005	0.033	0.889	-0.074	0.072	0.306	-0.073	0.034	0.031
Distance to bus	0.024	0.007	0.000	0.011	0.003	0.000	-0.007	0.007	0.274	-0.012	0.003	0.000
Distance to health center	-0.002	0.005	0.759	0.010	0.002	0.000	-0.008	0.004	0.063	-0.004	0.002	0.117
Own land	-0.273	0.238	0.250	-0.255	0.067	0.000	-0.131	0.061	0.031	-0.217	0.037	0.000
Region dummies	Yes			Yes			Yes			Yes		
N	9113			9256			9113			9256		
Pseudo R-squared	0.35			0.25			0.20			0.12		

RURAL MALAWI	***Pr(Employed in Agric. | Female)***			***Pr(Employed in Agric. | Male)***			***Pr(Emp. in NonAgric. | Female)***			***Pr(Emp. in NonAgric. | Male)***		
Variable	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**
Age	0.102	0.007	0.000	0.147	0.006	0.000	0.063	0.012	0.000	0.116	0.009	0.000
Age squared	-0.001	0.000	0.000	-0.002	0.000	0.000	-0.001	0.000	0.000	-0.001	0.000	0.000
Education	0.020	0.012	0.088	0.017	0.011	0.114	-0.083	0.019	0.000	-0.047	0.013	0.000
Education sqd	-0.006	0.001	0.000	-0.005	0.001	0.000	0.013	0.002	0.000	0.009	0.001	0.000
Married	-0.132	0.043	0.002	-0.173	0.042	0.000	-0.146	0.079	0.065	0.453	0.061	0.000
HH Size	-0.067	0.008	0.000	-0.088	0.006	0.000	-0.042	0.016	0.009	-0.038	0.008	0.000
Female head	0.370	0.039	0.000	0.023	0.039	0.544	0.411	0.076	0.000	-0.074	0.077	0.331
Minority	-0.131	0.034	0.000	0.004	0.033	0.901	-0.030	0.061	0.620	-0.256	0.050	0.000
Child duties	0.027	0.011	0.014	na	na	na	0.062	0.021	0.003	na	na	na
Share of hh in farm jobs	1.208	0.040	0.000	1.251	0.040	0.000	0.065	0.062	0.291	-0.132	0.060	0.029
Share of hh in nonfarm jobs	-0.170	0.080	0.034	-0.206	0.099	0.037	1.021	0.107	0.000	1.299	0.125	0.000
Distance to primary school	0.006	0.003	0.033	0.004	0.003	0.148	-0.001	0.007	0.933	-0.001	0.004	0.759
Distance to bus	na	na	na	na	na	na	na	na	na	na	na	na
Distance to health center	na	na	na	na	na	na	na	na	na	na	na	na
Own land	-0.008	0.005	0.116	-0.011	0.004	0.013	-0.009	0.013	0.481	-0.016	0.010	0.001
Govt assistance	0.146	0.030	0.000	0.166	0.028	0.000	0.066	0.053	0.219	-0.201	0.037	0.000
Region dummies	Yes			Yes			Yes			Yes		
N	14259			13385			14259			13385		
Pseudo R-squared	0.16			0.15			0.14			0.21		

RURAL NICARAGUA	*Pr(Employed in Agric. | Female)*			*Pr(Employed in Agric. | Male)*			*Pr(Emp. in NonAgric. | Female)*			*Pr(Emp. in NonAgric. | Male)*		
Variable	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**
Age	0.122	0.028	0.000	0.155	0.012	0.000	0.210	0.018	0.000	0.170	0.017	0.000
Age squared	-0.002	0.000	0.000	-0.002	0.000	0.000	-0.003	0.000	0.000	-0.002	0.000	0.000
Education	0.140	0.056	0.012	-0.033	0.022	0.122	0.044	0.030	0.152	0.103	0.026	0.000
Education sqd	-0.023	0.008	0.003	-0.004	0.002	0.031	0.004	0.002	0.123	-0.002	0.002	0.312
Married	-0.320	0.165	0.052	0.085	0.081	0.291	-0.603	0.111	0.000	0.199	0.100	0.046
HH Size	-0.031	0.028	0.269	-0.032	0.010	0.002	0.039	0.018	0.032	0.007	0.012	0.580
Female head	0.350	0.135	0.009	0.208	0.077	0.006	0.083	0.100	0.410	0.242	0.094	0.010
Minority	-0.835	0.677	0.217	-0.023	0.336	0.945	-0.493	0.435	0.258	0.751	0.402	0.061
Child duties	0.057	0.035	0.098	na	na	na	-0.041	0.027	0.134	na	na	na
Share of hh in farm jobs	1.397	0.163	0.000	1.968	0.134	0.000	0.274	0.169	0.104	-0.563	0.207	0.007
Share of hh in nonfarm jobs	-0.240	0.309	0.437	-0.293	0.183	0.110	0.945	0.173	0.000	1.507	0.162	0.000
Distance to primary school	-0.027	0.026	0.311	0.014	0.008	0.089	-0.059	0.033	0.073	-0.022	0.014	0.118
Distance to bus	na	na	na	na	na	na	na	na	na	na	na	na
Distance to health center	0.003	0.007	0.698	-0.001	0.003	0.659	-0.009	0.009	0.289	-0.001	0.005	0.840
Distance to road	0.002	0.002	0.205	-0.003	0.001	0.000	-0.001	0.001	0.395	-0.002	0.001	0.062
Own land	-0.016	0.007	0.021	-0.012	0.003	0.000	-0.002	0.003	0.419	-0.006	0.003	0.021
Participate in organizations	-0.210	0.128	0.102	-0.112	0.062	0.073	0.008	0.082	0.925	-0.011	0.075	0.886
NGO assistance	-0.105	0.135	0.439	0.021	0.070	0.762	0.142	0.090	0.116	-0.197	0.083	0.018
Govt assistance	0.030	0.030	0.316	0.030	0.019	0.113	0.003	0.024	0.899	0.061	0.021	0.004
Region dummies	Yes			Yes			Yes			Yes		
N	3381			3685			3381			3685		
Pseudo R-squared	0.24			0.21			0.24			0.27		

RURAL TAJIKISTAN	*Pr(Employed in Agric. | Female)*			*Pr(Employed in Agric. | Male)*			*Pr(Emp. in NonAgric. | Female)*			*Pr(Emp. in NonAgric. | Male)*		
Variable	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**	**Coeff.**	**Std Err**	**P**
Age	0.247	0.015	0.000	0.208	0.012	0.000	0.142	0.022	0.000	0.111	0.016	0.000
Age squared	-0.003	0.000	0.000	-0.002	0.000	0.000	-0.002	0.000	0.000	-0.001	0.000	0.000
Education	0.081	0.033	0.016	0.120	0.040	0.003	-0.177	0.053	0.001	0.007	0.052	0.889
Education sqd	-0.005	0.002	0.015	-0.003	0.002	0.162	0.021	0.003	0.000	0.005	0.002	0.040
Married	-0.352	0.068	0.000	0.272	0.074	0.000	-0.318	0.098	0.001	0.571	0.109	0.000
HH Size	-0.029	0.007	0.000	-0.028	0.007	0.000	-0.019	0.012	0.101	-0.038	0.008	0.000
Female head	-0.042	0.073	0.569	-0.035	0.074	0.639	0.263	0.100	0.009	-0.100	0.097	0.302
Minority	na	na	na	na	na	na	na	na	na	na	na	na
Child duties	na	na	na	na	na	na	na	na	na	na	na	na
Share of hh in farm jobs	2.048	0.104	0.000	1.876	0.105	0.000	-0.453	0.189	0.017	-0.468	0.133	0.000
Share of hh in nonfarm jobs	0.274	0.164	0.094	0.978	0.181	0.000	1.323	0.203	0.000	1.701	0.212	0.000
Distance to primary school	0.000	0.004	0.945	0.000	0.004	0.986	0.009	0.008	0.232	-0.009	0.005	0.090
Distance to bus	-0.003	0.002	0.248	0.002	0.002	0.234	0.000	0.004	0.960	-0.004	0.002	0.140
Distance to health center	-0.009	0.003	0.009	-0.005	0.002	0.056	-0.010	0.005	0.047	0.002	0.003	0.363
Own land	0.342	0.134	0.011	0.006	0.132	0.967	-0.008	0.190	0.966	-0.329	0.179	0.066
NGO assistance	-0.026	0.265	0.923	-0.148	0.250	0.554	na	na	na	-0.013	0.262	0.959
Govt assistance	-0.023	0.051	0.659	-0.009	0.047	0.848	0.021	0.075	0.781	-0.025	0.058	0.669
Region dummies	Yes			Yes			Yes			Yes		
N	5475			5028			5429			5028		
Pseudo R-squared	0.24			0.28			0.27			0.22		