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Drivers, Trends, and Consequences of Changing Household Employment Patterns in Rural Bangladesh

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Keywords: Rural Non-Farm, Employment Pattern, Salaried Jobs, Mixed Households, Bangladesh

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ABSTRACT

This paper focuses on rural nonfarm development via the route of salaried employment. The analysis is at the rural household level for two types of households: “mixed” households whereby some workers remain in the farm sector and others pursue nonfarm activities and the rural households who are exclusively dependent on nonfarm employment (rural nonfarm). The study has produced three major findings. First, compared with the mixed or farm-only households, nonfarm households seem to have more income. Second, nonfarm households discourage unpaid work, especially among female workers, in sharp contrast to the increasing share of unpaid work in both farm and mixed households. Third, nonfarm households increasingly rely, for their livelihoods, on salaried employment, which is likely to be of a more durable nature than the juggling of multiple occupations observed in the case of mixed households. Analysis of possible factors influencing the formation of nonfarm households shows the importance of human capital, non-land assets, and proximity to larger towns, while natural shocks seem to encourage the formation of mixed households and remittance from abroad tends to stimulate the farm orientation.

Keywords: Rural Non-Farm, Salaried Work, Mixed Household, Human Capital, Urban Proximity, Rural Structural Transformation

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ACRONYMS

BBS Bangladesh Bureau of Statistics

HIES Household Income and Expenditure Survey

LFS Labor Force Survey

MH Mixed Households

PSU Primary Sampling Units

PF Pure Farm

PNF Pure Nonfarm

RMG Readymade Garments

SME Small and Medium Enterprise

1. INTRODUCTION: NEW DEVELOPMENTS IN RURAL NONFARM EMPLOYMENT

The underlying focus of the traditional literature on the rural nonfarm sector has been on the "local demand" and "local economy" as the prime movers for rural nonfarm development.[1] The argument is that the rural nonfarm economy is mainly developed for the local economy and to meet the local demand arising out of local growth linkages (Hazell and Haggblade 1991; Hazell and Haggblade 1993; Hossain 1988; Hossain 2002; Osmani 1990; Mahmud 1996; Sen 1996). With rapid urbanization and industrialization, however, non-rural factors become increasingly important in shaping the development of rural nonfarm sectors. With the reduction of physical barriers (for example, the improvement in roads and other rural infrastructures) and the development of a modern communications/information system (for example, mobile phones and the internet), the connection between rural and urban areas has become easier to make, and the rural nonfarm economy is not necessarily limited to local markets. As the economic transformation proceeds, towns become important centers of demand creating new market opportunities for both production inputs and consumption goods originating in the rural agricultural and nonfarm sectors (Islam 2006). Urban proximity can enhance productivity of rural nonfarm labor by reducing costs and expanding communications and market reach (Deichmann et al. 2008). Development of small towns can have positive effects on rural nonfarm employment growth by offering larger markets for a wide variety of rural nonfarm products and services (Christiaensen et al 2013; Christiaensen and Todo 2014; Christiaensen and Kanbur 2017). Increased proximity to urban areas also expands the scope for employment in rural towns and peri-urban areas for those residing in rural areas (Fafchamps and Shilpi 2013; Ingelaere et al 2018).

The present study highlights two recent trends in the rural nonfarm sector in the context of rapid urbanization and industrialization in Bangladesh.[2] First, there has been a discernible overall shift towards salaried wage employment and away from self-employment and casual wage employment. Such a shift is prominent for households with exclusive nonfarm involvement, termed here as "pure nonfarm households." They constitute about a quarter of all rural households in 2013. Although the share of pure nonfarm households (as measured by primary occupation) remained stable during 2000-2013, there has been a silent compositional shift within the rubric of these households. Our study shows that the proportion of workers with salaried work has gone up sharply in cases of "pure nonfarm" households—from 21 percent in 2000 to 37 percent in 2013. Second, there has been a rapid overall rise of "mixed"

The authors are grateful to Katrina Kosec and Xinshen Diao for their comments on the draft. The usual disclaimer applies.

[1] In this paper, we use the terms rural nonfarm and rural nonagricultural sector interchangeably.

[2] On the increasing importance of urbanization and industrialization, see Hossain et al (2016).

households in the rural economy from 23 percent to 39 percent between 2000 and 2013. These households have both farm and nonfarm workers and hence cannot be bracketed under either pure farm or pure nonfarm. Both these structural changes—the rise of salaried employment and the growth in mixed households—have not been studied adequately in the Bangladesh literature.

However, it is important to study both these phenomena, although for separate reasons. The rise of salaried employment in cases of pure nonfarm households in rural areas is a recent development and is due largely to the expansion of small and medium enterprises (SMEs) in rural and peri-urban areas as a source of regular nonfarm wage employment. According to the 2013 Economic Census, the number of such enterprises hiring wage workers in rural areas has increased impressively between 2004 and 2013 (BBS 2016). Since the average income of the workers in salaried employment is higher than the average income of the workers in casual wage-employment, the well-being implications of the growth of enterprises hiring salaried workers can hardly be overstated. The same cannot be said of the rise of "mixed households" in rural areas. The group of mixed households can be of any combination of the three—(a) some are farm workers and others are nonfarm casual wage workers, (b) some are farm workers and others are nonfarm self-employed, and (c) some are farm workers and others are nonfarm salaried workers. Given this heterogeneity of nonfarm workers within the mixed category, it is difficult to anticipate the well-being consequences of the rapid growth of mixed households.

The rising importance of the mixed sector may indicate two contrasting possibilities: (a) an act of desperation: an expression of accentuating poverty in which mixed households are more likely to be engaged in occupations that are possibly in gradual decay, resulting in a series of *residual activities*; or (b) an act of moving out of poverty, driven by capability and diversification, and responding to economic opportunities. In case (b), mixed households are a set of enterprising workers who are more likely to be in *productivity-enhancing activities*. After all, "mixed-ness" may be interpreted as weakness (an inability to specialize) or strength (an ability to diversify)—which is the driving force, on balance, we do not know. In short, we need to know whether there are real economic gains in moving into mixed household status from pure farm status; and depending on the answer, we need to frame the issues for policy support to this sector.

Similarly, our paper points to the rising share of salaried work (and declining share of self-employment) in the pure nonfarm category during the period between 2000 and 2013. The paper also notes the noticeable drop in the share of female unpaid work in the pure nonfarm category. All this suggests an improvement in the quality of labor force participation in the nonfarm sector.

Accordingly, we focus on answering the following two broad questions concerning two aspects of rural nonfarm sector development in Bangladesh:

(A) What are the correlates of nonfarm orientation and the "mixed" status? Specifically, should the rise of pure nonfarm and mixed households be read as a short-term coping response to shocks or does it represent more long-term responses to opportunities informed by human capital, rural-urban migration, and remittance?

(B) Are there any welfare gains in shifting to nonfarm and mixed categories from farm households? Specifically, do pure nonfarm and "mixed households" have higher economic benefits—measured in terms income, assets, and other well-being characteristics—compared to pure farm households?

We focus on pure nonfarm and mixed households in a comparative perspective throughout the subsequent sections of the paper, since they represent the two distinct paths in the farm-nonfarm transitions.

Structure of the Paper

The introductory section notes the *rapid rise* of mixed households in rural Bangladesh along with the compositional shift within the camp of pure nonfarm households towards more *salaried* employment. The second section discusses the definitional issues involved in demarcating "mixed households" (MH) from pure farm (PF) and pure nonfarm (PNF) categories. The third section sketches out the evolving context of rural labor markets within which the occupational choices of rural workers are decided. The fourth section presents the profile of pure nonfarm and mixed households seen through the prism of demographic, human capital, and labor market characteristics. The fifth section presents a conceptual framework for studying the rise of pure nonfarm (with salaried bias) and mixed (with nonfarm bias) households, building on the past development literature. It also discusses the estimation strategy and presents the main results relating to the potential drivers of the rise of mixed households. The well-being consequences of self-selecting into the pure nonfarm and mixed categories (as opposed to staying in the farm sector) are summarily captured in the sixth section. The seventh section presents the concluding remarks on the outcome of the present exercise and pinpoints the lines of future research.

2. DEFINING THE "PURE NONFARM" AND THE "MIXED" CATEGORIES

How to define "mixed households" is itself a topic of methodological research. Mixed households may be defined by several criteria. First, they can be defined by considering whether a household derives incomes from both farm and nonfarm sources. Second, they can be defined by whether a household has some workers that are engaged in farm occupation and other workers employed in nonfarm occupations. Third, consideration may be given to principal as opposed to secondary occupations in rating the mixed status of a household. The fourth criterion would be to consider whether household workers themselves are engaged in both farm and nonfarm occupations simultaneously.

What is the definition of "mixed household" adopted in this paper and why? The definition of "mixed household" adopted here is based on the *principal occupation* of household members. Based on the latter criterion, a*ny household where some members are engaged in farm as their principal occupation and some others are found in nonfarm sectors as their principal occupation would be classified as a "mixed household."*[3] Why did we opt for principal occupation criterion and not the income criterion? Our choice is dictated by two considerations. First, we used the Labor Force Surveys (LFS), which do not include information on income earned from farm and nonfarm self-employment activities and hence the income criterion cannot be applied. Second, Labor Force Surveys are ideally suited to capture the labor market characteristics, that is, sector of employment, gender and labor status of a worker, mode of wage payment, and seasonality of employment. Hence, arguably, the LFS can shed better light on the movement of labor between farm and nonfarm sectors, which is at the heart of the question regarding structural transformation.

It may be noted that the LFS is conducted every 3 to 5 years and was piloted in 1980. In the initial years, the LFS survey used the sampling framework of the Household Income and Expenditure Survey (HIES), but in recent years the LFS sampling framework has been extended to 1,000 Primary Sampling Units (PSUs) based on the sampling frame of the population census. The LFS sample is usually much larger in scope than the HIES. For instance, in the 2010 LFS, 43,925 households (9,325 in urban areas and 34,620 in rural areas) were covered. This may be compared to 12,240 households (4,400 in urban areas and 7,840 in rural areas) covered by the 2010 HIES.[4]

Based on the principal occupation criterion, the share of "mixed households" in total rural households is found to be considerable. The issue is not just in the static share of mixed households at a

[3] It may be mentioned that we checked the robustness of our conclusions by considering the *secondary occupation of household members* as well.

[4] The conventional HIES is better suited for the analysis of poverty and income distribution, but the HIES is not ideally suitable for the analysis of labor markets.

given point in time. What is happening to its share in the dynamic context of growth and development is an equally intriguing question. In Bangladesh, the matched share has almost doubled between 2000 and 2013—a time of considerable acceleration of economic growth and impressive strides towards human development. Thus, per the "primary occupation" criterion, the share of mixed households in total rural households has increased from 15 percent in 2000 to 24 percent in 2013 (Table 2.1). If we consider, in addition, the secondary occupation criterion, the matched figure would rise from 14 percent to 26 percent. In both variants, there has been an almost doubling of the incidence of mixed households.[5]

Table 2.1. Percentage distribution of rural households by household types

	Rural		
With primary occupation only	**Pure farm**	**Mixed**	**Pure nonfarm**
LFS 2000	53.2	14.9	31.9
LFS 2013	43.7	24.1	32.2

Source: Estimated from the primary data of LFS 2000 and 2013.

A similar increase is reported when we consider the mixed status at the worker level (Table 2.2). As a proportion of total workers, about 23 percent of rural workers belonged to *mixed households* in 2000; the matched ratio has gone up to 39 percent in 2013. In other words, rural households have become remarkably more heterogenous than before, combining both farm and nonfarm workers within the same households, as if they have one foot in the farm and another foot in the nonfarm categories. Further disaggregating the workers within the set of mixed households, we see that 52 percent of the workers in the mixed category have farm occupations, while the remaining 48 percent are engaged in nonfarm occupations. However, if one considers only the male workers, the picture within the mixed households is overwhelmingly biased towards the nonfarm sector (Table 2.3). Thus, 57 percent of male workers in the mixed category have nonfarm occupations as opposed to only 32 percent recorded for the female workers, indicating possibly the gender dimensions of barriers to entry into the nonfarm sector.

Table 2.2. Percentage distribution of rural workers by household types

	Rural		
	Pure farm	**Mixed**	**Pure nonfarm**
LFS 2000	45.8	23.3	30.9
LFS 2013	36.4	38.6	25.0

Source: Estimated from the primary data of LFS 2000 and 2013.

[5] Originally, we expected an even higher increase of mixed households in the scenario where secondary occupation was considered. The estimate of mixed households did not vary much when one switches from "primary only" to "primary and secondary" occupations. Whether this is just a reporting bias of the Labor Force Surveys (under-reporting the extent of secondary occupation) or it represents a broad trend towards specialization is worthy of further consideration. One explanation is that the incidence of multiple occupations has declined in the 2000s, which is suggestive of trends towards one occupation giving year-round employment (Hossain and Bayes 2009).

Table 2.3. Percentage distribution of rural workers by household types and farm-nonfarm sectors, 2013

Household types	All workers		Male workers		Female workers	
	Farm	Nonfarm	Farm	Nonfarm	Farm	Nonfarm
Pure farm	100.00	-	100.00	-	100.00	-
Mixed	51.89	48.11	43.26	56.74	67.87	32.13
Pure Nonfarm	-	100.00	-	100.00	-	100.00
All	56.45	43.55	52.82	47.18	65.21	34.79

Source: Estimated from the primary data of LFS 2013.

If we want to further check the occupation of the workers in the mixed category, broken down by farm/nonfarm category, we find that 48 percent of workers (other than household head) belong to nonfarm occupations. However, there is a marked variation in nonfarm status between male and female workers within mixed households. In the mixed category, male workers engaged more in nonfarm occupations than female workers (57 percent as opposed to 32 percent). It seems that mixed households encourage more nonfarm orientation through the channel of male labor and more farm orientation through the channel of female labor.

We argue that the sharp rise of mixed households is one mechanism through which the rural sector transforms itself along the path of modernization. In other words, a mixed household is not merely a descriptive idea but could be one *distinct pathway* through which the farm-nonfarm transition proceeds.

In contrast to the mixed households, the pure nonfarm category is defined in a straightforward way. If all the earning members in a rural household are engaged in nonfarm occupations irrespective of their labor status—that is, self-employment, casual wage employment, and salaried employment—then that household is classified as a pure nonfarm (PNF) household. The overall share of the PNF households in rural areas show little change during the period between 2000 and 2013. According to the criterion of primary occupation, their share in rural areas has slightly increased from 31.9 to 32.2 percent.[6] However, beneath the surface of seeming stability there has been a sea change in the quality of nonfarm employment. The importance of the traditional route of rural nonfarm self-employment has declined noticeably (from 59 to 40 percent) over this period. This has been contrasted with the spectacular rise of nonfarm salaried employment from 21 to 37 percent (Table 2.4). There has also been a modest increase in casual wage employment from 13 to 18 percent during this period. It may be noted that the impressive rise of rural nonfarm *salaried* employment during 2000-2013 is true for *both* male and female workers (see, Tables 3.2 and 3.3 discussed later). Clearly, analysis of the pure nonfarm category must take the differences in labor status into account.

[6] Adding a secondary occupation criterion, however, shows that the share of PNF households has been modestly declining from 35 to 31%. This is possibly due to the compositional shifts within the rubric of rural nonfarm sector resulting from a substantial drop in self-employment activities (Table 2.4).

Table 2.4. Distribution of rural workers by household types and labor status

Household types	2000				2013			
	Self	Unpaid	Casual	Salaried	Self	Unpaid	Casual	Salaried
Pure farm	42.10	13.95	42.10	1.85	49.76	26.33	22.52	1.39
Mixed	44.80	20.98	18.84	15.38	39.31	27.84	16.13	16.72
Pure Nonfarm	59.30	7.21	12.75	20.74	39.56	5.32	18.35	36.76
All	48.04	13.51	27.61	10.84	43.18	21.66	19.01	16.15

Source: Estimated from the primary data of LFS 2000 and 2013.

3. STRUCTURAL CHANGES IN THE RURAL LABOR MARKET

Before we proceed to discuss the correlates of mixed and pure nonfarm households in rural Bangladesh, it would useful to highlight the broad trends in the rural labor market. Several features are noteworthy. First, the pace of the farm-nonfarm transition has been slower in Bangladesh compared to historically known transitions in South Korea and China, though the pace is similar to India's (Khan 2015). Thus, agriculture's share in total rural employment has dropped from 62 percent to 56 percent, that is, by about 6 percentage points, in the 13-year period between 2000 and 2013. This implies that 44 percent of the rural labor force in engaged in the rural nonfarm economy. The extent of nonfarm involvement is much larger in the case of male workers compared with female workers (47 percent vs. 35 percent as in Table 3.1).

Second, the crop sector accounted for 50 percent of total rural employment in 2013. However, there is divergent trend between male and female workers with respect to crop sector participation. There is a clear trend towards the feminization of agriculture—*not just for non-crop agriculture but also for the crop sector*—which is a remarkable change in the movement of labor compared to the 1980s and 1990s (Table 3.1).

Table 3.1. Distribution of rural workers by household types and sector of employment

Sector of employment	Male workers		Female workers	
	2000	2013	2000	2013
Agriculture:				
Crop	59.50	49.32	31.56	54.65
Livestock	1.53	0.64	25.29	10.25
Fishery & forestry	2.25	2.85	1.72	0.31
Industry:				
Manufacturing	5.77	11.79	15.99	19.07
Construction	2.98	17.69	1.24	5.05
Service:				
Transport	19.19	7.55	6.00	0.46
Formal—Public & private	5.38	5.91	8.06	3.95
Hotel, restaurant & other services	3.40	4.24	10.13	6.25
Total	100.00	100.00	100.00	100.00

Source: Estimated from the primary data of LFS 2000 and 2013.

Third, the LFS data indicates the rising importance of manufacturing in both male and female employment in rural areas. For the male workers, the matched share has doubled—from 6 percent to 12 percent. For the female workers, the initial participation in the rural manufacturing sector was higher than for male workers (16 percent as opposed to 6 percent). Although male participation increased dramatically in the 2000s, the female edge was still discernible in 2013, with about one-fifth of female employment originating in rural manufacturing (Table 3.1). It may be noted that rural manufacturing represents a spectrum of diverse activities with vastly different technologies, involving cottage, small-

scale, and medium-sized enterprises, and encompasses sectors ranging from rice and food processing to weaving and tobacco manufacturing.

Fourth, the other sector which has registered rapid growth in the 2000s was construction. For the male workers, its share in total male employment increased from 3 percent to 18 percent, and for female workers, it increased from merely 1 percent to 5 percent. The demand for construction activities has gone up considerably during this period, thanks to robust growth of foreign remittances into rural economy. As per the HIES data, the share of remittance in total rural household income has increased from 7 percent to 13 percent—that is, almost doubled—between 2000 and 2010 (Sen 2015; Khan 2015).

Fifth, there has been a significant shift in the labor status in rural Bangladesh during this period. Thus, the proportion of self-employed workers has declined from 48 percent to 43 percent. This is roughly balanced by the rising weight of salaried employment (ensuring regular wages), which has increased from 11 percent to 16 percent (Table 2.4). The share of casual wage employment, by contrast, has dropped by 8 percentage points. This is in line with declining trends in rural extreme poverty during this period (casual wage earners have made up the poorest category in rural areas). What is intriguing in this dynamic is the rising share of "unpaid workers" between 2000 and 2013. Upon closer scrutiny, this is related to the rising trend in the female labor force participation rate during this period. Participation of female workers, even as "unpaid workers" unshackled from the confines of domesticity, represents a necessary stepping stone into the labor market within the dynamics of rural structural transformation (Tables 3.2 and 3.3).

Table 3.2. Distribution of male workers by household types and labor status in rural areas

Household types	2000				2013			
	Self	Unpaid	Casual	Salaried	Self	Unpaid	Casual	Salaried
Pure farm	46.46	8.09	43.45	2.00	63.41	6.97	28.08	1.54
Mixed	52.88	8.57	21.63	17.22	55.87	6.98	19.68	17.48
Pure nonfarm	63.52	4.14	12.84	19.50	47.35	2.60	17.92	32.13
All	53.15	6.92	29.27	10.66	56.39	5.79	22.35	15.47

Source: Estimated from the primary data of LFS 2000 and 2013.

Table 3.3. Distribution of female workers by household types and labor status in rural areas

Household types	2000				2013			
	Self	Unpaid	Casual	Salaried	Self	Unpaid	Casual	Salaried
Pure farm	19.04	44.92	34.94	1.11	13.29	78.08	7.64	0.98
Mixed	27.08	49.24	12.50	11.17	8.66	66.45	9.56	15.33
Pure nonfarm	38.22	22.51	12.30	26.96	14.05	14.27	19.76	51.91
All	27.02	40.59	20.81	11.58	11.30	59.98	10.95	17.77

Source: Estimated from the primary data of LFS 2000 and 2013.

How do the mixed and pure nonfarm households fare in the above gendered farm-nonfarm transitional matrix? A first-order answer to this question may be anticipated by looking at the profile of mixed households in comparison to pure farm and pure nonfarm households.

4. PROFILE OF THE MIXED AND PURE NON-FARM HOUSEHOLDS

The first research question is whether the phenomenon of pure nonfarm households is a product of alienation from land and consequent pauperization or represents a trend towards specialization based on nonfarm skills and human capital. Both possibilities present themselves. The second research question is whether the mixed households represent an expression of greater poverty or a sign of households strategizing to move out of poverty by combining farm and nonfarm sectors. To this end, we must unpack the black box of this "mixed state." A starting point in answering these two questions would be to contrast these categories by conducting a "profile analysis." The profile can be captured through several dimensions, including the demographics, human capital and access to material assets, sector of employment, and labor status. The profile analysis has been conducted based on 2013 LFS data.

Demographics

The average age of household heads does not vary much between the pure farm and mixed categories, but the workers in the mixed group and pure nonfarm group tend to be younger. This suggests a positive correlation between being young (irrespective of gender) and being in the nonfarm sector (Table 4.1).

Table 4.1. Average age by household types, 2013

Household types	Workers (male)	Workers (female)	Household head (male)	Household head (female)
Pure Farm	26.01	34.20	45.09	45.85
Mixed	26.22	31.94	45.26	50.70
Pure Nonfarm	25.87	28.29	40.90	42.69

Source: Estimated from the primary data of LFS 2013.

The most striking aspect of the household demographics is the higher household size—involving an *addition of almost one worker per household*—in the mixed category compared to both pure farm and pure nonfarm groups. This addition came from the increase in the supply of both male and female workers, but mixed households tend to do better in advancing female workers vis-à-vis the other two categories. Female workers represent an untapped source of labor supply in the traditional context of rural society. Thus, in the mixed category, about 35 percent of household labor supply is accounted for by female workers (Table 4.2); this is considerably higher than in the case of the pure nonfarm group (23 percent) and pure farm group (27 percent). A supporting role of female workers has been found to correlate with moving out of poverty in the Indian context (Narayan 2009); perhaps this is true of the mixed category of households as well.

Table 4.2. Average number of workers by household types, 2013

Household types	Average number of male workers	Average number of female workers	Average number of workers
Pure farm	1.14	0.43	1.58
Mixed	1.63	0.88	2.51
Pure nonfarm	1.10	0.34	1.44

Source: Estimated from the primary data of LFS 2013.

Access to Human Capital

The general pattern is that mixed households occupy *an intermediate position* in the ranking of asset endowments—better than the pure farm but worse than the pure nonfarm category. In contrast, the pure nonfarm category is marked by greater human capital endowments. This is normally expected in an urban context with more opportunities for salaried jobs. However, it is remarkable that even in rural Bangladesh an average worker from a pure nonfarm household appears to be better educated (however "educated" is defined) than their counterparts in farm and mixed households. This is the opposite of the traditional poverty-stricken picture associated with pure nonfarm households—lacking land/non-land physical assets and relying consequently on selling wage labor to residual jobs—in the Bangladesh literature of the 1970s and 1980s (Osmani 1990; Mahmud 1996; Sen 1996).

Thus, in 2013, 62 percent of workers residing in the mixed group had literacy (the ability to read and write). This may be compared to the 47 percent literacy rate observed for the pure farm group and 73 percent for the pure nonfarm category. This is clearly supported by the distribution of education among individual workers (Table 4.3). Around 38 percent of workers in the pure farm group have no formal education, which may be contrasted to 24 percent and 17 percent in mixed and pure nonfarm groups, respectively. If we define "SSC and above" (having a qualifying certificate of 10 years of education) as a threshold measure of human capital, then only 6 percent of the pure farm category would satisfy this criterion in contrast to the matched figures of 13 percent and 21 percent in mixed and pure nonfarm households, respectively.

Table 4.3. Distribution of rural workers by household types and human capital, 2013

Household types	Percentage having literacy	Level of education				
		No formal	Primary	Secondary	SSC and above	Total
Pure farm	47.07	37.49	34.06	22.47	5.99	100.00
Mixed	62.44	24.20	33.81	28.71	13.28	100.00
Pure nonfarm	72.72	17.12	25.68	36.43	20.77	100.00
All	59.41	27.27	31.87	28.37	12.49	100.00

Source: Estimated from the primary data of LFS 2013.

However, it is less obvious whether lower educational attainment, on average, for the workers in the mixed category compared to the nonfarm category is due to differences in nonfarm activities between mixed and pure nonfarm households demanding varying human capital, or is simply attributable to the confounding presence of farm workers in the mixed category (the latter lowering the education score in the mixed category).

Choice of Occupation and the Farm-Nonfarm Transition

Similar human capital endowment leads to similar distribution of jobs. Thus, nonfarm workers of mixed and pure nonfarm categories display similar sectoral distribution of jobs *within the* nonfarm sector. The current pattern (as of 2013) roughly looks as follows: about one-third are engaged in manufacturing, another one-third find employment in construction, and the remaining one-third are evenly distributed among three sub-sectors, namely, formal employment (both public and private), transport, and services. However, as noted earlier, there is considerable difference in the gender distribution of nonfarm jobs.

Shifts in Labor Status

In the decade of the 2000s, as noted earlier, the general pattern in the rural labor market attested to a drop in the share of self-employment and casual wage-employment, with a rise in the share of salaried wage employment in rural areas along with the growth of the share of unpaid workers (family helpers), driven by increased participation of female workers. Several additional features are noteworthy from the descriptive statistics in labor status across mixed vs. pure categories.

The first aspect to note is the polarity between pure farm and pure nonfarm categories. Thus, there has been a sizable drop in *self-employment* in the pure nonfarm category but an increase of the same in the pure farm category. This has been mirrored in the commensurate rise of casual and salaried wage employment in the pure nonfarm category (see, Table 2.4). The declining pattern of self-employment within the rubric of the nonfarm sector is in sharp contrast to the "mass exodus" into nonfarm self-employment observed in the 1980s and 1990s (Osmani 1990; Sen 1996). Second, in tandem with the above trend in self-employment, the proportion of unpaid family workers in the rural labor force has also declined in the pure nonfarm category but almost doubled in the pure farm households. The corresponding share also increased in the mixed category but to a lesser extent. In short, the quality of labor force participation—by the explicit preference of paid over unpaid work--has increased during this period only in the case of the pure nonfarm category. Third, there is a gendered pattern in the pattern of unpaid work, however. Thus, for the male workers, the proportion engaged as unpaid family workers has declined across the farm/nonfarm categories between 2000 and 2013 (Table 3.2). It is only in the case of

female workers that the incidence of unpaid work has gone up considerably (from 40 to 60 percent). This increase was entirely due to the pure farm and mixed categories. In contrast, the share of unpaid work among female workers in the nonfarm category has gone down over time (from 22 to 14 percent) setting a remarkable example of going against the current (Table 3.3).[7] Fourth, in the mixed category, female workers have started leaving casual wage employment and entering salaried employment. However, as noted earlier, this shift of female workers from casual to salaried work has been more prominent within the pure nonfarm category. Most of the increase in salaried jobs for female workers has taken place in the *rural* manufacturing sector (female workers in the readymade garments [RMG] sector are likely to be captured in the urban module of the LFS survey).

In general, the pure nonfarm households could induce both male and female workers to go into casual and salaried work, and move away from self-employment and unpaid work, compared to the mixed and pure farm categories. What is the key to their success? For one, they have a higher initial share of secondary and post-secondary education among their workers (see Table 4.3). Furthermore, all the labor force in the pure nonfarm group is engaged in nonfarm sectors; in addition, as the LFS data shows, about 17 percent of these nonfarm workers is employed by the *formal* sectors (this ratio is almost twice as high compared to the mixed group). All this may be suggestive of hidden network externalities in accessing salaried jobs.

[7] In both mixed and pure farm categories, female workers have been entering the sphere of unpaid female labor in large numbers. For the segment hitherto excluded from the labor force, the status of "unpaid female workers" may have been the stepping stone into full-time self-employment in agriculture. It may be termed as the *first stage* of the feminization of agriculture.

5. FACTORS INFLUENCING THE RISE OF PURE NON-FARM AND MIXED HOUSEHOLDS

In this section, we address the first research question, namely, who opts for pure nonfarm status and who gets into mixed status and why. The ultimate question of causality would remain, given the cross-sectional setting of the data—at best, we can pinpoint some correlates that have robust association with the emergence of the new nonfarm category as well as the rise of mixed households. To this end, we consider diverse pointers from the literature that may be pertinent in explaining the trends in nonfarm orientation.

A Conceptual Framework

We identify six factors that may explain the trends in pure nonfarm and mixed categories in rural Bangladesh. These include (a) human capital endowment, (b) the role of nonfarm assets, (c) urban proximity, (d) susceptibility to natural shocks, (e) access to migration, especially international migration, and (f) the psychological factor of "aspiration" shaped by the predominance of a youthful labor force. The relevance of these factors is indicated by the development literature on the role of the nonfarm sector in the process of rural structural transformation.

Role of Human Capital

The relevance of educational human capital is long recognized for explaining the transition of the rural population—especially over the generations—from the farm to the nonfarm sector (Galor and Zeira 1993; Narayan 2009). This is because nonfarm work such as regular wage employment (salaried work) in nonagricultural sectors requires some threshold level of educational human capital. This is true for formal service sectors in general but is also applicable in the case of manufactured export sectors such as RMG. Access to such manufacturing jobs is usually conditional on having some forms of human capital. Thus, most of the female workers employed in the RMG sector have at least primary education (Heath & Mobarak 2015). However, it remains unclear which aspect of human capital is crucial to accessing nonagricultural jobs—beyond literacy and numeracy. Whether it is the power of reasoning that comes with exposure to education, or the capacity to receive on-the-job training, or simply a screening device for recruiting relatively unskilled workers in nonagricultural jobs requires further scrutiny. The upshot of the above is that human capital increases the chances of being in the nonfarm sector and, through that channel, raises the probability of a worker being in the mixed household.

Role of Non-Land Assets

Occupation choice—the choice of self-employment as opposed to wage employment—depends critically on initial asset endowments and the type of endowments and ultimately on the initial distribution of assets (Banerjee and Newman 1993). Access to nonfarm assets can encourage a worker to get involved in nonfarm self-employment activities. The greater nonfarm orientation due to access to non-land assets can also be brought about by the access to financial capital provided by MFIs. In either case, the presence of non-land assets would encourage the formation of mixed households and pure nonfarm households. However, whether the category of mixed or pure nonfarm will experience a greater influence of nonfarm asset endowments cannot be anticipated beforehand.

Influence of Urban Proximity

Urban proximity—including the development of rural towns—may matter for the formation of mixed households, for at least three reasons. First, it directly increases the likelihood of finding nonfarm jobs in the urban sector through the migration channel. Commuting to nearby urban areas for daily work becomes feasible with closer proximity. Second, it increases the productivity of existing rural nonfarm production through improved marketing and technology linkages with upstream urban markets (World Bank 2009). Third, as the economic transformation proceeds, towns become important centers of demand, creating new market opportunities for both production inputs and consumption goods originating in the rural sectors (Islam 2006). Urban areas start subcontracting many lower-level manufacturing processes to rural nonfarm enterprises that, in turn, can boost mixed households in rural areas (Otsuka 1998). The combined outcome of these three effects will tend to increase the share of "mixed" and/or "pure" nonfarm households in rural areas, especially near towns that have marketing and employment links to the rural neighborhoods. However, it is not clear whether the effects of urban proximity on the formation of mixed households tend to vary by the "size" of cities. Another question remains about the trigger point behind the "size" issue—is it the proximity to "ports," "seats of political power," "market concentration," or simply "infrastructural development" that is driving the potent effects of larger agglomerations?

Susceptibility to Natural Shocks

Movement out of the farm sector is often seen as a response to shocks, especially to natural shocks. Drought, flood, or salinity intrusion make farm households vulnerable, depreciates farm assets, and discourages farm production. In contrast, shocks can encourage the accumulation of "portable assets" such as human capital which, in turn, puts a worker in the pathway out of agriculture. Rural nonfarm activities such as trading and manufacturing are often considered more resilient to natural shocks. In some contexts, moving out of the farm sector is a gendered phenomenon: while male workers leave for work in nonfarm sectors outside of villages, female workers remain behind in the rural areas. Thus, one often sees

a sharp rise in the female work force participation rate, especially as the "unpaid family helper" both in farm and rural nonfarm sectors. The current discussion of the feminization of agriculture may be in part due to the long-term effects of natural shocks on Bangladeshi agriculture. The uncertain part in this story is that one does not know, on balance, which way a household evolves—towards mixed or pure nonfarm status—after experiencing natural shocks. The other consideration is whether the type of shocks matters, that is, farm-nonfarm transition paths are different for different agroecological shocks (drought-prone vs. flood-prone areas, for example). The third important consideration is whether shocks lead to merely short-term coping responses while remaining within the farm sector or influence long-term exit decisions out of the farm sector. To the extent shocks are trigger points to opt for nonfarm jobs, they can be considered as potential correlates of the rise of mixed households in rural areas.

Access to International Migration

The preceding discussion suggests that domestic migration—induced by natural shocks—may encourage job-search in the nonfarm sector and consequently may accelerate the formation of mixed households. The question that springs up is whether the same holds for international migration. In a sense, there is no puzzle here. After all, international migration is mostly related to nonfarm activities abroad and, through that channel, may be considered as a benefactor of mixed households. This equation of international migration prompting the formation of mixed households breaks down once we consider the empirical fact that such migrants generally stay outside of village for more than six months. Any member that stays outside of the household beyond this threshold period would not technically count in the list of household members and hence would be automatically excluded from the consideration of mixed households. However, international migration can still influence the formation of mixed households through the channel of remittance use (for example, transfers from abroad). To the extent remittance is used for nonfarm production purposes, it may encourage the formation of mixed households. Nevertheless, the reverse possibility also exists: income received through transfer from abroad may be used for buying land or agricultural machinery and hence proportionately benefit the farm households more.

Role of Youth Aspiration

A spate of recent studies show that aspiration matters for moving out of poverty (Narayan 2009; Kosec and Khan 2016). While the capability approach focuses on the *ability* to undertake initiatives to move up the income ladder, the aspiration approach focuses on the *willingness* to undertake such initiatives. The importance of the aspiration factor is starkly visible in the case of the youth population. We indirectly capture the aspiration factor by considering whether the worker belongs to the youth group.[8] The

[8] Since the LFS did not include any questions regarding aspiration, we take youth-age as the proxy for aspiration compared to the old-age workers.

hypothesis here is that being young would induce a worker to opt for nonfarm activities and, through that channel, contribute to the formation of a mixed household.

Estimation Strategy

To understand the drivers of recent rural transformations towards a nonfarm sector–dominated economy in Bangladesh, we analyze the determinants of household's types (that is, farm, nonfarm, and mixed) using labor force survey data from Bangladesh with the application of a multinomial logit framework. The rural households are grouped into three distinct categories based on the sector of employment (considering both primary and secondary occupation) of individual working members of the households: farm, mixed, and nonfarm. If all individual working members in a household are involved in the agriculture sector only, then the household is grouped as a pure farm household. Alternatively, if all working members in a household are involved in the nonagricultural sector only, then the household is categorized as nonfarm household. If working members in a household have associations with both the sectors, then the household is categorized as mixed household.[9]

Let s_i be a sector (s=farm, mixed, nonfarm) to which a rural household belongs and the association of a household with a specific sector depends on a number of demographic, socio-economic, agro-climatic, and other factors X. The general form of the multinomial logit model expresses the following relationship between the probability of choosing option s_i and the set of explanatory variables X.

The general form of the equation is:

$$\log\left(\frac{\pi_{si}}{\pi_{fi}}\right) = \sum \alpha_{jk} + \sum \beta_{ji} X_i + e_{ji},$$

where π_{si} is the probability that household i is not a pure-farm household (s = mixed or pure nonfarm), π_{fi} is the probability that household i is a pure farm household. Even though the choice of base category does not make any difference in the results, we use farm as a base category to understand what factors play an important role in moving rural farm households towards nonfarm households. X_i are exogenous variables, e_{ji} is the error term, and α_{jk} and β_j are parameters to be estimated.

We have added controls for both individual level characteristics (for example, youth, gender, household head, marital status, religion, schooling, and so on) and household level characteristics (for

[9] A household can be mixed in two different ways: first, the same individual member works in both sectors or multiple individual members in the same household work in different sectors. In most cases, individual members have only a principal occupation.

example, number of working members, land assets, non-land assets, migration, electricity, and so on). We also include two measures of monsoon rainfall (mean and standard deviation) at the district level to control for districts' agroecological environments. We have included various measures of urban proximity as explanatory variables to understand the spatial pattern of rural transformation. In addition, we control for division level fixed effects in all models to consider unobserved factors common to each division.

To identify the determinants of households' sectoral orientation, the study used rural samples from two rounds of labor force survey (LFS) from Bangladesh. The study used the labor force survey of 2000 (LFS 2000) and 2013 (LFS 2013) to better understand the changes that have taken place in the last decade. In LFS 2000, there are 4,876 rural households and 7,372 employed individuals; while in LFS 2013, there are 17,761 households in the rural areas, of which there are 31,774 employed individuals included in the sample. We have utilized information about households' demographic characteristics, labor endowment characteristics, land and non-land assets, human capital, migration, and urbanization to identify the driving factors behind the households' sectoral orientation to learn recent rural transformations in Bangladesh.

Discussion of Main Results

Table 5.1 presents the main results of the above approach implemented for 2000 and 2013. The estimated model is largely identical, but not the same, and hence, we should be cautious in comparing the regression coefficients across the two models. However, we can still learn a great deal about the *directionality* of the statistical association of nonfarm and mixed households with different factors that were outlined earlier. Several findings are noteworthy.

Table 5.1. Marginal effects from multinomial logit models at individual level 2000 LFS & 2013 LFS (Main results)

	LFS 2000						LFS 2013					
Dependent variable: Household types	**Farm**		**Mixed**		**Nonfarm**		**Farm**		**Mixed**		**Nonfarm**	
Sex of the individual (female=1)	-0.065***	(0.016)	0.023**	(0.011)	0.042***	(0.015)	-0.017**	(0.008)	0.040***	(0.007)	-0.022***	(0.007)
If the individual is household head (yes=1)	-0.073***	(0.017)	0.003	(0.012)	0.070***	(0.016)	-0.034***	(0.008)	-0.022***	(0.008)	0.056***	(0.007)
Marital status (reference category: unmarried)												
Married (yes=1)	-0.013	(0.017)	-0.012	(0.012)	0.025	(0.015)	0.038***	(0.009)	0.028***	(0.008)	-0.066***	(0.008)
Widowed/separated (yes=1)	-0.071**	(0.032)	-0.050**	(0.022)	0.120***	(0.032)	-0.028*	(0.015)	-0.015	(0.014)	0.043***	(0.015)
If the individual is youth worker (yes=1)	-0.035***	(0.011)	-0.012	(0.008)	0.047***	(0.010)	-0.030***	(0.006)	0.011*	(0.006)	0.018***	(0.005)
Number of working members in the HH	-0.082***	(0.006)	0.142***	(0.003)	-0.060***	(0.006)	-0.086***	(0.003)	0.174***	(0.002)	-0.088***	(0.003)
Religion (non-Muslim=1)	-0.112***	(0.016)	0.017	(0.011)	0.095***	(0.016)	0.044***	(0.008)	-0.058***	(0.007)	0.014**	(0.007)
Education group (base: no formal schooling)												
Primary schooling	-0.088***	(0.011)	0.006	(0.008)	0.082***	(0.011)	-0.056***	(0.007)	0.003	(0.007)	0.053***	(0.006)
Secondary schooling	-0.164***	(0.014)	0.024**	(0.011)	0.140***	(0.014)	-0.138***	(0.007)	-0.008	(0.007)	0.147***	(0.006)
Secondary plus	-0.302***	(0.019)	0.065***	(0.016)	0.237***	(0.021)	-0.230***	(0.009)	0.021**	(0.009)	0.209***	(0.009)
If the individual received training (yes=1)							-0.218***	(0.010)	0.101***	(0.012)	0.117***	(0.011)
Log (own land in decimal)	0.035***	(0.002)	-0.004***	(0.001)	-0.031***	(0.002)	0.015***	(0.001)	-0.003***	(0.001)	-0.012***	(0.001)
Non-land asset quintiles (reference: lowest quintile)												
2nd quintile	-0.037**	(0.016)	-0.018	(0.013)	0.055***	(0.013)	0.002	(0.008)	0.002	(0.008)	-0.004	(0.007)
3rd quintile	-0.090***	(0.015)	-0.008	(0.012)	0.098***	(0.013)	-0.006	(0.008)	-0.013	(0.008)	0.019***	(0.007)
4th quintile	-0.118***	(0.017)	-0.010	(0.014)	0.128***	(0.015)	-0.043***	(0.008)	0.005	(0.008)	0.038***	(0.007)

5th quintile	-0.156***	(0.018)	-0.022	(0.014)	0.178***	(0.016)	-0.105***	(0.009)	-0.014	(0.009)	0.119***	(0.008)
Percent of households with electricity in the district	-0.425***	(0.047)	0.145***	(0.031)	0.280***	(0.042)	-0.092***	(0.019)	-0.042**	(0.019)	0.135***	(0.017)
Migration (reference: non-migrant households)												
Domestic migration (yes=1)							0.017	(0.012)	-0.016	(0.012)	-0.001	(0.011)
Foreign migration (yes=1)	0.082***	(0.027)	-0.010	(0.019)	-0.072***	(0.023)	0.113***	(0.011)	-0.039***	(0.011)	-0.075***	(0.008)
Log (mean monsoon rainfall in the district in last 10 years, in millimeters)	-0.120***	(0.038)	-0.051*	(0.027)	0.171***	(0.035)	0.147***	(0.025)	-0.179***	(0.024)	0.032	(0.021)
Standard deviation of mean monsoon rainfall in the district in last 10 years	0.001***	(0.000)	-0.001***	(0.000)	-0.000	(0.000)	-0.001***	(0.000)	0.000	(0.000)	0.000***	(0.000)
Metro adjacency (reference: Workers in districts that are far from Dhaka/Chittagong and other big cities)												
Workers live in or adjacent districts of Dhaka/Chittagong	-0.007	(0.020)	-0.024*	(0.012)	0.031	(0.019)	-0.101***	(0.010)	-0.021**	(0.010)	0.123***	(0.010)
Workers live in districts of top ten cities other than Dhaka/Chittagong	-0.031***	(0.011)	0.036***	(0.009)	-0.005	(0.011)	0.023***	(0.006)	0.004	(0.006)	-0.027***	(0.005)
Division (reference: Dhaka)												
Barisal	0.051**	(0.022)	-0.105***	(0.014)	0.054**	(0.022)	-0.045***	(0.011)	0.017	(0.011)	0.028***	(0.010)
Chittagong	0.031*	(0.016)	0.016	(0.014)	-0.047***	(0.014)	-0.065***	(0.009)	0.073***	(0.009)	-0.008	(0.007)
Khulna	0.089***	(0.024)	-0.130***	(0.013)	0.041*	(0.024)	-0.006	(0.010)	-0.022**	(0.010)	0.028***	(0.010)
Rajshahi	0.056***	(0.017)	-0.098***	(0.012)	0.042**	(0.017)	0.025**	(0.012)	-0.050***	(0.011)	0.025**	(0.011)
Rangpur	0.067***	(0.021)	0.006	(0.019)	-0.073***	(0.018)	-0.012	(0.011)	-0.042***	(0.011)	0.054***	(0.011)
Sylhet	0.080***	(0.023)	-0.057***	(0.018)	-0.024	(0.021)	0.001	(0.014)	0.021	(0.014)	-0.022**	(0.011)
Observations	1,0248		1,0248		1,0248		3,1774		3,1774		3,1774	

[a] Metro adjacency variable is generated as follows: 1 for districts in/around Dhaka and Chittagong (Dhaka, Chittagong, Narayanganj, Gazipur, Munshiganj, Manikganj, Narsingdi), 2 for districts of other top ten cities (Rajshahi, Khulna, Barisal, Sylhet, Rangpur, Bogra, Comilla, Dinajpur, Jessore, Mymensingh), and 0 for rest of the districts. The last category serves as a reference category.

Note: Authors' calculations from LFS 2000 and 2013.

First, the role of human capital in the formation of nonfarm as well as mixed households is supported by our evidence. Access to human capital reduces the likelihood of being in the pure farm household in both 2000 and 2013. Aversion to the farm sector increases with each successive level of schooling. Correspondingly, *education enhances the chances of being in the pure nonfarm categories; the matched effect is amplified with each successive level of schooling*. Thus, in 2013, having a secondary education enhances the probability of being in a pure nonfarm household by 3 times compared to having only primary schooling. Education, however, has a positive effect on the mixed household only selectively: only secondary-plus education seems to matter in 2013. The matched impact of secondary-plus education is much less in the case of mixed household compared with pure nonfarm household. This suggests that human capital is not the main route for moving into a mixed household, but it is one of the main pathways to move out of the pure farm into the pure nonfarm category. The latter farm-nonfarm transition mediated by human capital is likely to be intergenerational in nature because the formation of human capital takes time to develop.

Second, training can help in the meantime. The evidence for 2013 suggests that access to vocational training has significant and sizable positive effects on the likelihood of being in mixed households even after controlling for schooling effects (Table 5.1).

Third, different asset dynamics seem to be at work in shaping household categories. While non-land assets decrease the chances of being in the pure farm category, they increase the probability of being in the pure nonfarm category. Similarly, access to land assets increases the chances of becoming a pure farm category but decreases the likelihood of transition into the pure nonfarm category. Both results are predictable and robustly observed in both 2000 and 2013, suggesting the emergence of two *polar social categories*—pure farm and pure nonfarm—in the course of rural structural transformation. However, for mixed households, we can observe asymmetric development in terms of asset dynamics. While lack of land assets prompts the workers to be in the mixed category, accumulation of non-land assets seems to have no effect on them. Perhaps this indicates that managing non-land assets requires specialization that is found only in case of pure nonfarm households.

Fourth, in the main empirical exercise, we use "metro adjacency" as the indicator of urban proximity for the sake of comparing results between 2000 and 2013. The results show proximity to metro centers matters more for nonfarm households and this trend has become prominent in 2013. To explore further, we consider the size of the cities in the context of 2013 data (Table 5.2). The results show that proximity to large cities (with a population of more than 500,000) encourages nonfarm orientation and discourages farm as well as mixed orientation. However, small cities (with a population of less than 250,000) have no such discouraging or encouraging effect on mixed households. Development of smaller

towns as hubs of local-market demands for agricultural goods and potential destinations for subcontracting nonfarm work could benefit the mixed households in the future.

Fifth, to the extent rainfall is correlated with farm productivity, it is likely to encourage being in the farm category. We find the matched effect was negative earlier, but it turned positive in recent years. This suggests that the persistence of pure farm households in today's Bangladesh is not an expression of subsistence agriculture but is driven by farm productivity. For similar reasons, increasing farm productivity discourages the formation of mixed households, the latter being more shaped by part-time agriculture. Again, this result indicates trends towards specialization, with pure farm households thriving on harnessing farm productivities, while pure nonfarm households capitalize on human capital and accumulation of nonfarm assets.

Sixth, the incidence of natural shocks—approximated here by the fluctuation in rainfall—tends to discourage pure farm status and encourage mixed as well as nonfarm status. This suggests that the formation of mixed households is also associated with coping responses to shocks. The case of a dramatic rise in unpaid family helpers among the female workers—often seen as a response to natural shocks—is also vindicated by the fact that the presence of female workers positively influences the formation of mixed households while discouraging the pure farm and nonfarm categories.

Seventh, it is striking that international migration of a household member encourages the household to be in the farm category. In contrast, domestic migration does not have any tangible effect in catapulting the household towards one direction or the other. In case of international migration, two opposing tendencies are at work. Migrant members are likely to be employed in the nonfarm sectors abroad and this can send a signal to the remaining household members about the potential benefit involved in nonfarm orientation. In that sense, foreign remittance can encourage nonfarm orientation and stimulate mixed households. However, the signaling can be weak in the rural context, since remittance money can be used to buy farm assets (investments) or support immediate agricultural production (current inputs). This will encourage the formation of pure farm households and discourage the mixed households. It appears that the latter trend may be happening in contemporary rural Bangladesh.[10] The other possibility is that international migration (mostly consisting of male workers) and the agricultural orientation of the sending household (mostly run by female workers) is a joint decision process. The mechanism could be as follows: remittance receiving households are mainly sending male workers abroad for nonfarm work. In response to this, female members of the household are now entering the labor force,

[10] The supplementary evidence from HIES data suggest that households receiving foreign remittances have higher agricultural investments (such as purchase of land) and higher financing of current input use in the farm sector compared to households without such access.

often as unpaid family helpers, for agricultural work that was done previously by the emigrant male worker. Seen this way, international migration may influence greater farm orientation and hence the formation of pure farm households, which is what we see in our model estimates for both 2000 and 2013.

Eighth, some of the demographic changes in the 2000s—a declining demographic dependency ratio and increased female participation in the labor force—have been instrumental in giving rise to the phenomenon of mixed households. As the number of workers per household increases due to the declining demographic dependency ratio, the possibility of farm-nonfarm combination also increases and with it the chances of forming mixed households. This explains why a higher number of workers is positively correlated with being in mixed households—a result consistently showing up in both 2000 and 2013. Similarly, we see that the marginal effect of having an extra female worker would be positively correlated to the formation of mixed households, presumably through the combination of males working in the nonfarm sectors and females working in the farm sector.

Ninth, the presence of a young worker encourages the formation of pure nonfarm households much more than the formation of mixed households. Due to the higher aspirations of youth workers, they are more willing to engage themselves in nonfarm work. This is clearly supported by an additional probit model exploring the choice of occupation by youth workers for both 2000 and 2013 with a similar set of regressors used in Table 5.3. The results show that nonfarm orientation has become more pronounced in recent years. This can be seen from the higher effects of schooling, migration, and urban proximity on opting for nonfarm jobs in the case of youth workers in 2013 compared with 2000 (Table 5.3). Given the demographic bulging of the youth in the labor force such trends are likely to continue in the future bringing about significant rural structural transformation in Bangladesh.

Table 5.2. Marginal effects from multinomial logit models at individual level with different measures of urban proximity: 2013 LFS

	Distance to the nearest city with 500 thousand or more population						Distance to the nearest city with 250 thousand or more population					
	Farm		**Mixed**		**Nonfarm**		**Farm**		**Mixed**		**Nonfarm**	
Sex of the individual (female=1)	-0.021***	(0.008)	0.039***	(0.007)	-0.018***	(0.007)	-0.022***	(0.008)	0.038***	(0.007)	-0.017**	(0.007)
If the individual is household head (yes=1)	-0.036***	(0.008)	-0.023***	(0.008)	0.058***	(0.007)	-0.036***	(0.008)	-0.023***	(0.008)	0.059***	(0.007)
Marital status (reference: unmarried)												
Married (yes=1)	0.040***	(0.009)	0.029***	(0.008)	-0.069***	(0.008)	0.041***	(0.009)	0.029***	(0.008)	-0.070***	(0.008)
Widowed/separated (yes=1)	-0.025*	(0.015)	-0.014	(0.014)	0.039***	(0.015)	-0.024	(0.015)	-0.014	(0.014)	0.038**	(0.015)
If the individual is youth worker (yes=1)	-0.030***	(0.006)	0.011*	(0.006)	0.019***	(0.005)	-0.030***	(0.006)	0.011*	(0.006)	0.019***	(0.005)
Number of working members in the HH	-0.087***	(0.003)	0.174***	(0.002)	-0.087***	(0.003)	-0.087***	(0.003)	0.174***	(0.002)	-0.086***	(0.003)
Religion (non-Muslim=1)	0.036***	(0.008)	-0.060***	(0.007)	0.024***	(0.007)	0.036***	(0.008)	-0.060***	(0.007)	0.024***	(0.007)
Education group (base: no formal schooling)												
Primary schooling	-0.058***	(0.007)	0.003	(0.007)	0.055***	(0.006)	-0.058***	(0.007)	0.003	(0.007)	0.056***	(0.006)
Secondary schooling	-0.141***	(0.007)	-0.008	(0.007)	0.149***	(0.006)	-0.141***	(0.007)	-0.009	(0.007)	0.150***	(0.006)
Secondary plus	-0.232***	(0.009)	0.020**	(0.009)	0.211***	(0.009)	-0.232***	(0.009)	0.020**	(0.009)	0.212***	(0.009)
If the individual received training (yes=1)	-0.217***	(0.010)	0.103***	(0.012)	0.114***	(0.011)	-0.217***	(0.010)	0.103***	(0.012)	0.114***	(0.011)
Log (own land in decimal)	0.015***	(0.001)	-0.003***	(0.001)	-0.012***	(0.001)	0.016***	(0.001)	-0.003***	(0.001)	-0.012***	(0.001)
Non-land asset quintiles (reference: lowest quintile)												
2nd quintile	-0.002	(0.008)	0.000	(0.008)	0.002	(0.007)	-0.004	(0.008)	-0.001	(0.008)	0.004	(0.007)
3rd quintile	-0.011	(0.008)	-0.014*	(0.008)	0.025***	(0.007)	-0.011	(0.008)	-0.015*	(0.008)	0.025***	(0.007)
4th quintile	-0.046***	(0.008)	0.003	(0.008)	0.043***	(0.007)	-0.046***	(0.008)	0.003	(0.008)	0.043***	(0.007)
5th quintile	-0.116***	(0.009)	-0.017**	(0.009)	0.134***	(0.008)	-0.118***	(0.009)	-0.019**	(0.008)	0.137***	(0.008)
Percent of households with electricity in the district	-0.098***	(0.019)	-0.040**	(0.019)	0.138***	(0.018)	-0.134***	(0.019)	-0.063***	(0.019)	0.198***	(0.018)
Migration (reference: non-migrant households)												
Domestic migration (yes=1)	0.018	(0.012)	-0.015	(0.012)	-0.003	(0.011)	0.019	(0.012)	-0.015	(0.012)	-0.004	(0.011)
Foreign migration (yes=1)	0.112***	(0.011)	-0.038***	(0.011)	-0.074***	(0.008)	0.111***	(0.011)	-0.038***	(0.011)	-0.073***	(0.008)
Log (mean monsoon rainfall in the district in last 10 years, in millimeters)	0.104***	(0.025)	-0.194***	(0.023)	0.090***	(0.020)	0.087***	(0.025)	-0.207***	(0.023)	0.121***	(0.020)
Standard Deviation of mean monsoon rainfall in the district in last 10 years	-0.001***	(0.000)	0.000	(0.000)	0.001***	(0.000)	-0.001***	(0.000)	0.000**	(0.000)	0.000***	(0.000)
Log (travel time to the nearest city of 500 thousand or more population)	0.042***	(0.006)	0.016***	(0.006)	-0.058***	(0.006)						
Log (travel time to the nearest city of 250 thousand or more population)							0.019***	(0.005)	0.005	(0.005)	-0.023***	(0.005)
Division (reference: Dhaka)												
Barisal	-0.044***	(0.011)	0.018	(0.011)	0.026**	(0.010)	-0.031***	(0.011)	0.024**	(0.011)	0.007	(0.010)
Chittagong	-0.059***	(0.009)	0.080***	(0.009)	-0.021***	(0.007)	-0.054***	(0.009)	0.084***	(0.009)	-0.030***	(0.007)
Khulna	-0.012	(0.011)	-0.023**	(0.010)	0.035***	(0.010)	-0.010	(0.011)	-0.022**	(0.011)	0.032***	(0.011)
Rajshahi	0.016	(0.012)	-0.050***	(0.011)	0.034***	(0.012)	0.039***	(0.012)	-0.044***	(0.011)	0.004	(0.011)
Rangpur	-0.017	(0.011)	-0.043***	(0.010)	0.060***	(0.010)	0.009	(0.011)	-0.035***	(0.011)	0.026**	(0.011)
Sylhet	0.058***	(0.014)	0.037***	(0.014)	-0.095***	(0.009)	0.044***	(0.013)	0.036***	(0.013)	-0.080***	(0.009)
Observations	3,1774		3,1774		3,1774		3,1774		3,1774		3,1774	
Standard errors in parentheses												

Table 5.2 (Contd.). Marginal effects from multinomial logit models at individual level with different measures of urban proximity: 2013 LFS

	Categorical variable of distance to cities					
	Farm		**Mixed**		**Nonfarm**	
Sex of the individual (female=1)	-0.020**	(0.008)	0.040***	(0.007)	-0.020***	(0.007)
If the individual is household head (yes=1)	-0.035***	(0.008)	-0.022***	(0.008)	0.056***	(0.007)
Marital status (reference: Unmarried)						
Married (yes=1)	0.040***	(0.009)	0.028***	(0.008)	-0.068***	(0.008)
Widowed/separated (yes=1)	-0.025*	(0.015)	-0.015	(0.014)	0.040***	(0.015)
If the individual is youth worker (yes=1)	-0.030***	(0.006)	0.012**	(0.006)	0.018***	(0.005)
Number of working member in the HH	-0.086***	(0.003)	0.175***	(0.002)	-0.089***	(0.003)
Religion (non-Muslim=1)	0.042***	(0.008)	-0.057***	(0.007)	0.015**	(0.007)
Education group (base: No formal schooling)						
Primary schooling	-0.054***	(0.007)	0.005	(0.007)	0.050***	(0.006)
Secondary schooling	-0.136***	(0.007)	-0.006	(0.007)	0.143***	(0.006)
Secondary plus	-0.228***	(0.009)	0.022**	(0.009)	0.206***	(0.009)
If the individual received training (yes=1)	-0.217***	(0.010)	0.103***	(0.012)	0.114***	(0.011)
Log (own land in decimal)	0.015***	(0.001)	-0.003***	(0.001)	-0.012***	(0.001)
Non-land asset quintiles (reference: Lowest quintile)						
2nd quintile	-0.002	(0.008)	0.002	(0.008)	0.000	(0.007)
3rd quintile	-0.012	(0.008)	-0.014*	(0.008)	0.026***	(0.007)
4th quintile	-0.046***	(0.008)	0.003	(0.008)	0.043***	(0.007)
5th quintile	-0.113***	(0.009)	-0.013	(0.009)	0.126***	(0.008)
Percent of households with electricity in the district	-0.093***	(0.019)	-0.027	(0.019)	0.121***	(0.018)
Migration (reference: Non-migrant households)						
Domestic migration (yes=1)	0.018	(0.012)	-0.016	(0.012)	-0.002	(0.011)
Foreign migration (yes=1)	0.113***	(0.011)	-0.038***	(0.011)	-0.075***	(0.008)
Log (mean monsoon rainfall in the district in last 10 years, in millimeters)	0.147***	(0.025)	-0.162***	(0.024)	0.015	(0.021)
Standard deviation of mean monsoon rainfall in the district in last 10 years	-0.001***	(0.000)	0.000*	(0.000)	0.000***	(0.000)
Urban proximity[a] (reference: Remote workers)						
Workers within 2 hours of travel time to a city with 500 thousand or more population	-0.072***	(0.009)	-0.035***	(0.008)	0.107***	(0.009)
Workers within 1.5 hours of travel time to a city with 250 thousand or more population	0.009	(0.007)	0.021***	(0.007)	-0.030***	(0.006)
Division (reference: Dhaka)						
Barisal	-0.031***	(0.011)	0.020*	(0.011)	0.011	(0.010)
Chittagong	-0.062***	(0.009)	0.067***	(0.009)	-0.005	(0.008)
Khulna	0.024**	(0.011)	-0.009	(0.010)	-0.015	(0.010)
Rajshahi	0.039***	(0.012)	-0.050***	(0.011)	0.011	(0.011)
Rangpur	0.006	(0.011)	-0.039***	(0.010)	0.033***	(0.010)
Sylhet	0.047***	(0.013)	0.034**	(0.013)	-0.081***	(0.009)
Observations	3,1774		3,1774		3,1774	
Standard errors in parentheses						

[a] Urban proximity variable is created as follows: 1 for households that are within 2 hours of distance from a city with a population of 500,000 or more, 2 for households that are within 1.5 hours of distance from a city with a population of 250,000 or more but not within 2 hours' distance of a city with a 500,000 or more population, 0 is for households that live neither within 2 hours' distance from a city with 500,000 or more population nor within 1.5 hours' distance of a city with 250,000 or more population. The last category serves as a reference category.

Note: Authors' calculations from LFS 2013.

Table 5.3. Marginal effects from probit models for the choice of occupation by youth workers.

	LFS 2000		LFS 2013	
	Nonfarm		Nonfarm	
Sex of the Individual (female=1)	0.080***	(0.014)	-0.157***	(0.007)
Marital status (reference: unmarried)				
Married (yes=1)	-0.005	(0.016)	-0.069***	(0.008)
Widowed/separated (yes=1)	-0.039	(0.057)	0.004	(0.025)
Number of working members in the HH	0.042***	(0.007)	0.019***	(0.003)
Religion (non-Muslim=1)	-0.000	(0.022)	-0.030***	(0.010)
Head's occupation (nonfarm=1)	0.471***	(0.014)	0.433***	(0.008)
Education group (base: No formal schooling)				
Primary schooling	-0.003	(0.015)	0.042***	(0.010)
Secondary schooling	0.023	(0.019)	0.164***	(0.011)
Secondary plus	0.118***	(0.029)	0.183***	(0.014)
If the individual received training (yes=1)			0.262***	(0.014)
Log (own land in decimal)	-0.016***	(0.003)	-0.003***	(0.001)
Non-land asset quintiles (reference: Lowest quintile)				
2nd quintile	0.019	(0.021)	-0.042***	(0.011)
3rd quintile	0.003	(0.021)	-0.029***	(0.011)
4th quintile	-0.004	(0.024)	-0.019*	(0.011)
5th quintile	-0.017	(0.025)	-0.008	(0.012)
Percent of households with electricity in the district	0.182***	(0.062)	0.027	(0.025)
Migration (Ref: Non-migrant households)				
Domestic migration (yes=1)			0.042**	(0.018)
Foreign migration (yes=1)	-0.011	(0.042)	-0.003	(0.015)
Log (mean monsoon rainfall in the district in last 10 years, in millimeters)	0.018	(0.052)	-0.060*	(0.032)
Standard deviation of mean monsoon rainfall in the district in last 10 years	-0.001***	(0.000)	0.000***	(0.000)
Metro adjacency (Reference: Workers in districts that are far from Dhaka/Chittagong and other big cities)				
Workers live in or adjacent districts of Dhaka/Chittagong	0.050*	(0.029)	0.126***	(0.014)
Workers live in districts of top ten cities other than Dhaka/Chittagong	0.031**	(0.015)	-0.021**	(0.009)
Division (reference: Dhaka)				
Barisal	-0.059**	(0.030)	-0.016	(0.015)
Chittagong	-0.042*	(0.023)	0.017	(0.012)
Khulna	-0.098***	(0.030)	0.025*	(0.014)
Rajshahi	-0.028	(0.023)	-0.022	(0.016)
Rangpur	-0.049*	(0.028)	0.004	(0.015)
Sylhet	0.028	(0.033)	-0.035*	(0.018)
Observations	4,766		1,4771	
Standard errors in parentheses				

Note: Authors' calculations from LFS 2000 and 2013.

6. WELL-BEING CONSEQUENCES

So far, we have discussed the demographic and economic drivers that can account for the rise of mixed households in rural Bangladesh. Now we turn to the second research question: what are the effects on well-being of moving into mixed households?

Although we are limited here by the coverage of Labor Force Surveys, we can still anticipate some of the measures that are related to household well-being. For instance, the LFS dataset has information on wage-employment and assets, which may be compared across three household categories. Table 6.1 presents monthly income per worker in three sets of households for both 2000 and 2013. The results show that the average wage worker in the mixed category has almost 17 percent higher income than an average wage worker in the farm category in 2013. However, the average worker in the pure nonfarm category earns a wage income that is 7 percent higher than that for the mixed household category. This pattern holds true for both 2000 and 2013 and is valid for both male and female workers.

Table 6.1. Average monthly wage taka income per rural worker by household types

Household types	All workers		Male workers		Female workers	
	2000	2013	2000	2013	2000	2013
Pure Farm	1,275	8,871	1,358	8,909	715	8,521
Mixed	1,869	10,360	2,090	10,457	1,005	10,075
Pure nonfarm	2,162	11,099	2,396	11,303	1,105	10,632
All	1,634	10,267	1,770	10,292	911	10,186

Source: Estimated from the primary data of LFS 2000 and 2013.

A comparison of well-being exclusively based on wage income is not adequate, because income earned from self-employment is excluded in the definition of LFS income. We can circumvent this problem by looking at assets owned by these three groups of households. Surely incomes earned through self-employment will also be reflected in ownership of assets. In the LFS 2013 we have information on various type of assets (like the asset module in Demographic and Health Surveys), and one can construct principal component analysis to compute a composite asset score. These asset scores can, in turn, be used to construct asset quintiles, which is what is reported in Table 6.2. Asset-based findings confirm the previous wage-income based findings. Pure farm households are poorer than mixed households and pure nonfarm households are richer than mixed households. Thus, about 50 percent of workers of the pure farm category belonged to the two lowest asset quintiles compared to 38 percent in the mixed category. On the other hand, 51 percent of the workers of the pure nonfarm category belonged to the two top asset quintiles compared to the 44 percent in the mixed category and 30 percent in the pure farm category. It appears that in the ladder of well-being mixed households occupy an intermediate position—they are better off than pure farm households but worse off than pure nonfarm households.

Table 6.2. Distribution of rural workers by household types and asset quintiles, 2013

Household type	1st asset quintile	2nd asset quintile	3rd asset quintile	4th asset quintile	5th asset quintile	Total
Pure farm	24.39	26.14	19.73	17.33	12.41	100.00
Mixed	17.11	20.78	18.29	21.08	22.74	100.00
Pure Nonfarm	16.92	16.25	15.33	19.52	31.97	100.00

Source: Estimated from the primary data of LFS 2013.

Such a stable pattern of well-being rankings among these three categories of households hold out a few macro lessons as well. First, increased well-being consequences can be considered as *incentives* in making occupational choices in the course of structural transformation. Thus, the above ordering of well-being payoffs—favoring mixed households over pure farm households—should encourage an exit out of the farm sector and provide incentives to move into the pure nonfarm sector. Second, the rise of mixed households has been an important pivot point in this decade of long transition between farm and nonfarm sectors. Our results show that being in this transit point is not a waste of time but is truly welfare enhancing compared to the previous state of being limited only to the farm sector. Third, from a macro point of view it is not then coincidental that rural poverty has declined at a faster rate in the 2000s compared to the 1990s. We argue that one of the additional sources for rural poverty reduction came from these mixed households. After all, this is also the period when the share of mixed households in the rural society almost doubled. Combined with the fact that the transition to the mixed category has been income/asset increasing, the growth of mixed households played an important role in rural poverty reduction during this period.

Fourth, although mixed households played a noticeable role in reducing rural poverty, the greatest poverty eradication has been shown by the strategy adopted by the pure nonfarm households. After all, these households exhibit higher levels of wage income and higher levels of assets. Besides, there has been a noticeable shift within the rubric of pure nonfarm orientation: workers in this category have become more prone to salaried jobs; they are less likely to be engaged in self-employment; and even the women workers are less likely to be in unpaid work. In short, not only the income/asset level is higher in the pure nonfarm category, they also display better terms and conditions of labor force participation.

7. CONCLUDING REMARKS

The paper explores possible factors that have influenced the current trends in rural nonfarm sector development. We attempt to ascertain who—and under what conditions—self-select themselves into pure nonfarm as opposed to pure farm and mixed households. In this exercise, we use the recent rounds of Labor Force Survey data, which is more appropriate to capture the movement of labor and labor market characteristics than the HIES (more suitable for consumption and income estimates).

We highlight four groups of findings from the above exercise. The first group of findings relate to the pure nonfarm households. Although the share of the latter has remained stable at 32 percent during 2000-2013, there has been a noticeable compositional shift in the type of employment. There has been a *substantial decline in the share of self-employment* within the category of pure rural nonfarm households. This has been matched by a sharp rise in the share of *salaried employment* and the trend cuts across the gender lines. The declining pattern of self-employment within the rubric of the nonfarm sector is in sharp contrast to the "mass exodus" into nonfarm self-employment observed in the 1980s and 1990s. The main driver behind the salaried work orientation of pure nonfarm households lies in greater human capital accumulation compared with mixed and farm households.

The qualitative shift is reflected not just in the rising share of salaried work but also in the noticeable drop in the share of unpaid work—both for male and female workers—in the case of pure nonfarm households. In contrast, the share of unpaid work has risen in the case of both farm and mixed households. There is also an emerging trend towards specialization in the rural areas, with pure farm households thriving on harnessing farm productivities based on the accumulation of land-assets, while pure nonfarm households capitalize on human capital and accumulation of nonfarm assets.

The contemporary demographic scenario also favors nonfarm households. For example, the presence of a young worker encourages the formation of pure nonfarm households much more than the formation of mixed households. Due to the higher aspiration of youth workers they are more willing to engage themselves in nonfarm work.

The second group of findings relate to the mixed households. The share of mixed households almost doubled between 2000 and 2013. They currently occupy an intermediate position between pure farm and pure nonfarm households both in terms of asset endowments and sectoral orientation. Mixed households seem to be transforming in the direction of the pure nonfarm category. Thus, they are accumulating more human capital and own more physical non-land assets than the pure farm category; both assets enable them to undertake nonfarm activities. Natural shocks-prone areas also seem to encourage the formation of mixed households. Our interpretation of this finding is that the mixed

households are more successful in coping with natural shocks through a more diversified asset portfolio (mix of farm, nonfarm, and human assets).

The third group of findings relates to the effects of urban proximity and foreign remittances on the formation of household types. It is the pure nonfarm households that benefit most from the spatial linkages with the larger towns. One possible explanation is due to network externalities available in job searches to the members of pure nonfarm households who are better educated than those in the mixed households. In contrast, development of small towns can offer better prospects for the mixed households. The latter would benefit from the growing demand for rural farm and nonfarm products and services originating in the small and rural towns in the future. Remittance from abroad, on the other hand, encourages the formation of farm households through the acquisition of land and other agricultural assets.

Finally, our results show that nonfarm orientation has considerable well-being consequences in the rural context. Compared to pure farm and mixed categories nonfarm households have higher wage income and physical asset ownership. In turn, mixed households are better off than pure farm households. All this suggests that formation of nonfarm (and mixed) households are not a residual sector phenomenon. It represents a progressive institutional development in the transformation of a traditional agrarian setting. Our findings indirectly suggest that the development of the rural nonfarm sector has been conducive to faster poverty reduction in the rural areas witnessed in the decade of the 2000s and 2010s compared to the preceding decades.

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