

## **Determinants of Women's Work in Rural India: Examining Links between Agrarian Distress and Feminisation of Low Productive Employment**

### **Abstract**

The paper argues that in India, the impact of the structural adjustment packages and stabilisation policies has resulted in a prolonged agrarian stagnation, leading to a relatively greater increase in women's work participation rates compared to their male counterparts in the rural areas. The pattern of this increase is a symptom of the added worker effect observed especially in those rural regions affected severely by the agrarian crisis and rural distress. The impact has also been felt in terms of overall rural wage depression affecting the male wages adversely and resulting in a simultaneous decline in gender wage gap. The tendency has further induced a feminisation of low productive activities by pushing more women into the un/low skilled paid work. The paper attempts to examine the character and sustainability of such increases in women's work participation rates in rural India differentiated into rural distress affected and not affected regions. The paper adopts a logit exercise to examine the determinants of women's work across the differentiated regions. The findings are based on the empirical evidences provided by secondary Employment-Unemployment estimates from the National Sample Survey, Government of India. The period of analysis is from 1993-94 to 2004-05.

**Keywords:** Rural distress, added worker effect, feminisation of low productive Activities, India

**JEL codes:** J16, J43

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## **Determinants of Women's Work in Rural India: Examining Links between Agrarian Distress and Feminisation of Low Productive Employment**

It is by now common knowledge that the shocks of adjustment related distress have been and still are mainly borne by the women in the developing countries as compared to their male counterparts (Beneria and Feldman, 1992; Moser, 1991; Elson, 1993) and that during periods of rising prices and falling real wages, one of the consequences of the structural adjustment processes observed in developing nations, have been an increase in the double burden of women's work (Floro, 1995; Beneria, 1999). While policies to curtail fiscal deficit resulted in large expenditure cuts in social service sectors, it simultaneously increased the burden of women's work in the care economy (Antonopoulous and Hirway, 2010). On the other hand, stringent demand deflationary policies as part of the stabilization and adjustment programmes had a negative impact upon household incomes (Patnaik, 2002; Cornia et al, 1987) which again pushed more women into the workforce, a phenomena referred to as the 'added worker effect', in order to add to declining household incomes (Mincer, 1962; Lundberg, 1985). Decomposition of demand induced employment loss consists of two components, namely the 'discouraged worker effect' and the 'added worker effect'. While a widespread deterioration of employment opportunities caused due to demand deflation results in the discouraged workers, who drop out of the work force due to declining real wages, additional work force participation occurs among the previously unemployed to supplement to the reduced real income of a household, due to job loss or reduced wages.

In a static model of household labour supply, an added worker effect arises when the working head of the household (usually male member) experiences unemployment or income loss. One way in which the loss of income within the household is typically adjusted, is by an increase in the labour supply of the non-participant member (typically female member) of the household (Lundberg, 1985; Mincer, 1962). This in turn alters the labour supply behaviour of the economy as a whole with increased workforce participation rates. Thus in a macro sense, an aggregate loss of income due to demand deflationary policies result in an added worker effect by increasing the labour supply in an attempt to supplement the reduced income at the household levels. The added worker effect is often used to explain an increase in the participation of women in the

labourforce, specifically of married and older women who join the labour supply in order to supplement the household income. This is a strongly gendered argument stemming from a 'male breadwinner bias' where the job loss or reduced wages of the 'breadwinner husband' results in an increase in wives' labour supply (Lundberg, 1985). However, an increase in female work participation as a result of the added worker effect has been a common trend all across the major developing regions, attempting to survive the distress caused due to the adoption of the stabilization and adjustment packages.

The fiscal correction measures and the liberalization policies, as part of the structural adjustment and stabilization policies, adopted by the developing countries all across the world, have resulted in long term recession of the rural sector, specifically in a stagnation of the agrarian sector. Given the fact that agriculture remains the backbone of most rural economies in the developing regions, the impact of structural adjustment processes resulted in a prolonged stagnation of the agricultural sector due to severe cuts in public expenditure and investment in agriculture, waning away several food subsidies and input subsidies and other forms of support to the farmers with a simultaneous withdrawal of the state from the agrarian sectors. The deflationary monetary policies further resulted in reduced access to credit to the farmers (Patnaik 2002). Such recessionary trends in agriculture resulted in increased economic activities in non-agricultural occupations thus raising non-farm incomes or non-farm employment rates in several countries (Bryceson et al., 2000). Bryceson's (1999) 'depeasantisation' thesis of Sub-Saharan African countries show increased non-farm activities in many African countries due to agrarian stagnation. On the other hand in Latin America and Asia, country case studies on rural development and rural non-farm employment show increased employment and income diversification having several characteristics (Haggblade et al., 1989; Lanjouw, 2001; Berdegue et al., 2001; Islam, 1987; Kabra, 2005). While Kay (1997) reports a feminization of agricultural labour in Latin America due to increased commercialization of agriculture, Katz (2003) delves upon the changing role of women in the rural areas of Latin America. Katz study shows that in rural areas while there has been an increase in women's participation in non-traditional agricultural exports (NTAEs), there has been a simultaneous increase in non-farm self employment among women. In the African countries however, while women were significantly

employed in traditional agricultural activities involving mostly production of food, the feminization has been in newer avenues in agriculture, mostly in the NTAEs (Spieldoch, 2007). Several studies have shown that these activities are often low remunerative and temporary or seasonal in nature. Apart from the labour intensive export crop sector women are also involved in off-farm self employment options of petty retailing, beer brewing etc, which are again less remunerative than the other forms of off-farm wage employment options which are taken away mostly by the men (Bryceson, 1999).

The World Development Report 2008 also shows similar trends of rapid diversification of rural employment out of agriculture. In some Latin American countries, rural non-agricultural activities grew at more than 10 percent a year between 1980 and the early 2000s. In Chile, they rose from 25 percent of total rural employment in 1960 to 49 percent by 2002, and in Brazil from 14 percent to 31 percent. Even within Asia, Indonesia went through a period of rapid growth in the non-farm share of rural employment prior to the 1997 financial crisis (from 30 percent in 1990 to 40 percent in 1995), before falling to 32 percent in 2003. In Bangladesh, rural non-farm employment increased at a 0.7 percent annual rate during the 1990s while agricultural employment increased at 0.1 percent. However, confirming the Katz argument, the WDR, 2008 also shows that non-farm employment tends to be more important for women than for men in Latin America. In contrast, non-agricultural employment favors males in Sub-Saharan Africa. Among the Asian regions, particularly in South Asia, where trends in female employment are usually affected by the opportunities available to the males in the household, a feminization of agriculture is observed. This is primarily due to the movement of men out of agriculture into non-farm work leaving the women to meet the demand for agricultural labor.

In India, the structural adjustment programmes were adopted in 1991, much later than in several other developing countries. As the long term fiscal adjustment and stabilization processes began in India, a major expenditure cut was faced by the agrarian sector which had long term recessionary impacts upon the sector. Such policies of reduced public investment in agriculture led to an acute agrarian crisis marked by reduced rate of returns, high indebtedness for the agro-based communities, low access to credit facilities and extension services, and finally culminating into a large number of

farmers' suicides in several parts of the country (Patnaik, 2002; Banerjee, 2009; Ramakumar, 2010). According to the Mid-term Appraisal of the Eleventh Five Year Plan (2007-12), published by the Government of India, the rate of growth of the GDP in agriculture and allied sectors is a mere two percent during 2007-10 (an increase by one percent from the growth rate of agriculture in the previous Plan period). Both the Tenth and the Eleventh Plan MTAs noted that output deceleration was greater for food grains than agriculture as a whole. As a result, per capita availability of foodgrains decreased. While farm income fluctuations increased in the post reforms period, after agricultural trade opened under the WTO regime, agriculture was no longer profitable due to the fall in the price of farm products (Banerjee, 2009). Consequently, the number of people employed in the primary sector decreased, which in turn caused a decline in overall rural employment, specifically rural male agricultural employment (discussed in detail in the following section). Such stagnation of the agrarian sector affected the entire rural economy in terms of increased vulnerabilities felt upon the livelihood and employment patterns which resulted in a similar sort of diversification of livelihoods out of agriculture as observed in other developing regions.

However trends have been different in India in terms of women's participation in the workforce. Although the adjustment processes did not quite result in a formal feminization of work as was observed in parts of Latin America, South and South-east Asia (Ghosh, 2002), the impact of reforms was felt on women's employment in certain specific sectors. Unni and Rani (2009) emphasize the argument that feminization of the informal sectors of the economy, more specifically the rise in home-based work of women, has been an outcome of the trade and industrial reforms which took place in the early nineties. Since then there has been an increase in women's home-based work. This has also been reported by several microstudies, specifically in the export-oriented manufacturing and IT enabled services (ITeS) (Shah, et al. 1994; Gothoskar, 2000; Neetha, 2002; Mazumdar, 2004; Chacchi, 2006) in the urban areas. In the rural areas, however, contrary to the male employment trends, there has been an increase in overall women's work participation. While a feminization of the agricultural labour is reported in some studies (Garikipati, 2008), the employment-unemployment surveys in India show marginal increase in rural women's overall work participation. The increases are not

marginal and more prominent for married and older women, which may be termed as fallout of the ‘added worker effect’.

In this paper we argue in the context of India, that the impact of the structural adjustment packages and stabilisation policies in the rural sector has resulted in an increase in women’s work participation rates due to the added worker effect emerging from a prolonged agrarian stagnation, specifically in certain regions affected severely by agrarian crisis. It has further induced a ‘feminisation of low productive activities’ by pushing more women into the low paid, un/low skilled economic activities. The paper attempts to examine the increases in women’s wage and self-employment in both agriculture and non-agriculture and tries to examine a link between agrarian distress and non-farm employment of women workers. The paper is based on the National Sample Survey estimates of employment and unemployment, as provided by the Government of India for various years.

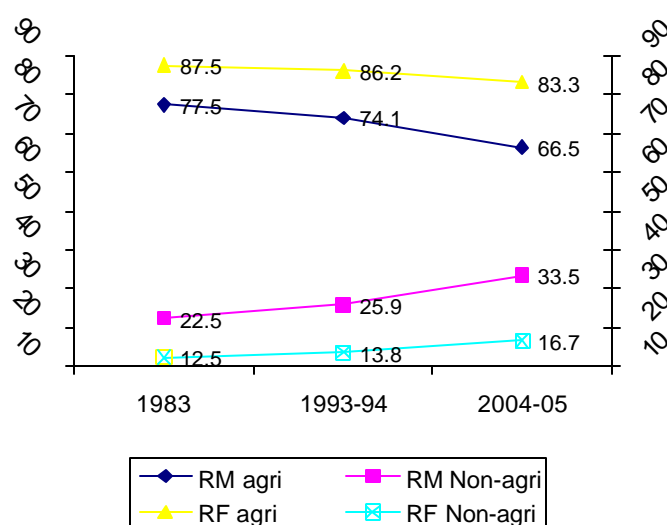
The paper has been divided into four sections. In the first section, an analysis of the employment and wage conditions of rural men and women workers have been provided to examine the added worker effect and its implications on women’s work in the overall rural sector. The second section compares the employment situation prevailing across regions affected severely by agrarian distress and others. The third section is an attempt to explain the broad determinants of women’s non-agricultural and wage employment in the distress affected and non-affected regions with the help of a logit exercise. The last section is the conclusion emphasizing the evident linkages between agrarian distress and women’s increased participation in low productive activities, mainly in non-agricultural employment, culminating in a feminisation of petty activities in rural areas, especially across area of distress.

### **I. Employment situation, Work Participation Rates (WPRs) and Wage Differentials: Comparison across Distress and Non-distress Regions**

Employment in rural India is primarily dominated by the agricultural sector. According to the employment estimates released by the National Sample Survey for its seventh quinquennial round (61<sup>st</sup> round, 2004-05), approximately 66 percent of the rural male workers and 83 percent of the rural female workers are still engaged in agrarian

activities (Figure 1). The figure shows that the proportion of rural male workers engaged in the non-agricultural sector has increased by 11 percent between 1983 and 2004-05 compared to only 5 percent for rural women. It shows that over the last two decades the decline in women's engagement in agriculture has been marginal while it has been relatively higher for the male workers. However, such trends also suggest that there has been very limited movement of women workers out of agriculture in India.

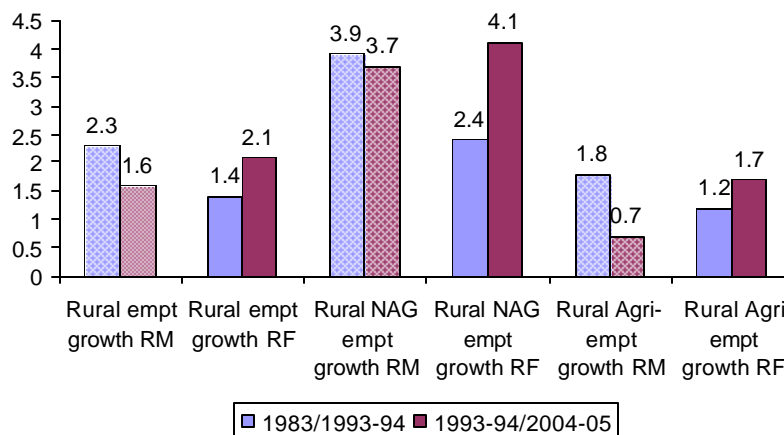
**Figure 1: Sex Disaggregated Distribution of Workers in Agriculture and Non-Agriculture**



Source: NSSO estimates for the respective years

In terms of employment growth rates, given in figure 2, the overall rural employment growth rate for male workers have declined whereas for the women it shows marginal increase. In agriculture, the rate of growth of employment for both men and women are abysmal. While the agricultural growth rates have declined below one percent for male workers it has increased slightly for the women in the past decade. In non-agriculture however, while male employment growth has almost remained the same, for women the same shows considerable increase of around 1.7 percent. However, given the distribution of workers across sectors, it is amply clear that there is an overdependence on agriculture, specifically for the women workers.

**Figure 2: Annual Average Rate of Growth of Rural Employment**



Source: Calculated from Census data and NSSO estimates for the respective years

In terms of the work participation rates, the rural women work participation rates are much lower than its male counterparts. The official figures provided by the employment-unemployment survey of the NSSO show a decline for the rural males while the rate remains the same for rural women, over the last decade. In the working age group of 15-59, the rural male WPRs decline by two percentage points while that for the women workers remain the same (Table 1).

**Table 1: Rural Work Participations Rates for Men and Women Workers**

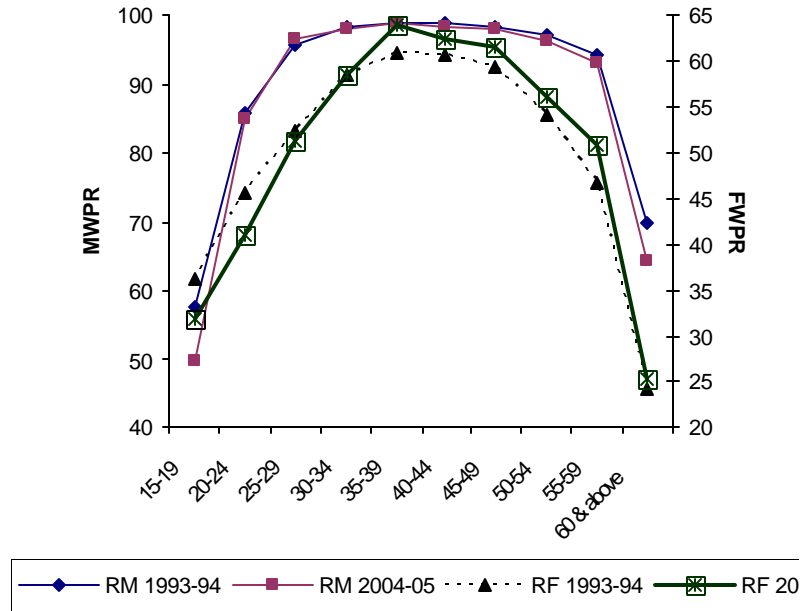
WPRs	RM		RF	
	1993-94	2004-05	1993-94	2004-05
15-59	86.4	84.6	48.6	48.5
all	55.3	54.6	32.8	32.7

Source: NSSO estimates for the respective years

However in the age-specific WPRs one notes interesting trends revealing an increase in older women's participation, which might be responsible for the marginal rise in rural women's employment growth (Fig. 3). It is evident from the figure below that while for male workers, the employment situation in rural areas has not been favourable showing a decline in WPRs in the younger age groups, for women, on the other hand shows a decline in WPRs for younger age groups and substantial increase in older age groups. The chart below shows that the curve for rural female WPR in 2004-05 intersects the 1993-94 curve at 30-34 age group, and thereafter remains above it signifying higher WPRs in the rest of the older age cohorts.

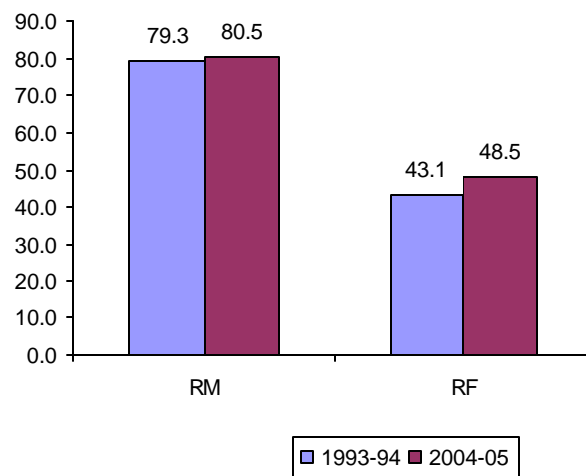
**Figure 3: Age-specific Work Participation Rates of rural men and women workers**





It is also interesting to note substantial increase in WPRs among the married women since 1993-94 (Figure 4). While the figures for men remain almost similar across the two time points, there has been an increase of around five percent among the women’s work participation rates among married women.

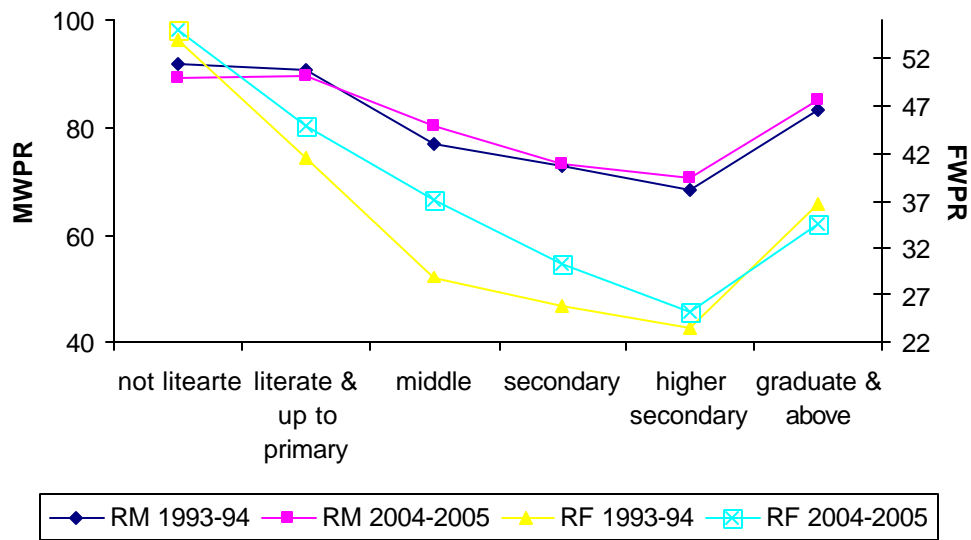
**Figure 4: Work Participation Rates of Rural Married Workers**



In terms of education specific WPRs, one observes that for women workers the WPRs are higher at lower education levels. As the education level increases the WPRs

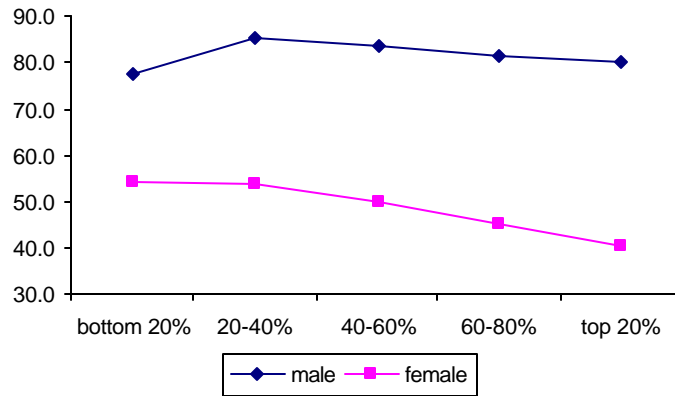
decline (Figure 5). The graph also shows an increase in WPRs among women for 2004-05 compared to the 1993-94 figures. However at the graduation and above education level, the female WPRs of 2004-05 are lower than the 1993-94 rates. For the male workers on the other hand, the WPRs show marginal increases in WPRs at higher levels of education since 1993-94. Such trends are a pointer to the fact that there has been increase in women’s participation in un/low/semi skilled work, while for men skilled employment options have been relatively better.

**Figure 5: Education Specific Work Participation Rates of Rural Workers**



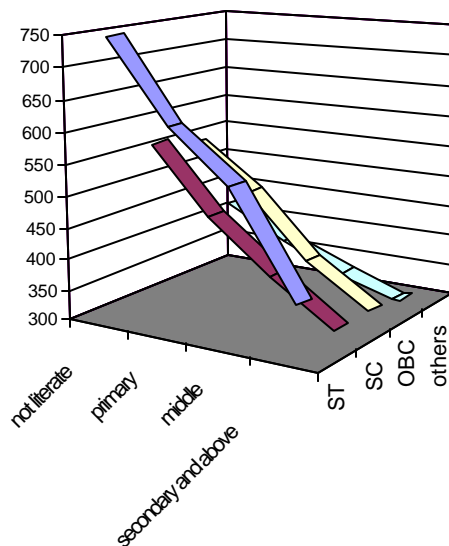
Simultaneously, a look at the WPRs by MPCE classes show that while for the men, WPR is the lowest in the bottom 20 percent and remains almost the same across classes, for women workers on the other hand, the curve steadily declines with the rising MPCE cohorts (Figure 6). It is amply clear from the graph that at lower MPCE levels, economic participation of women is the highest.

**Figure 6: Work Participation Rates by MPCE Class**



Further, the precariousness of the rural employment situation gets apparent as we look at the work participation rates by social groups. The economic reforms and adjustment programme resulted in a grave situation for low caste group especially for the low caste women, who traditionally heavily depend upon agriculture. The NSS estimates show that out of the total tribal women workers in rural areas, almost 90 percent remain engaged in agriculture and among the women workers in the lowest caste groups, the Scheduled Castes, 83 percent of women workers are engaged in agrarian activities. On the contrary, among the general caste women workers, only 78 percent is engaged in agriculture. Therefore the incidence of non-agricultural employment is comparatively higher among women from higher caste groups. This is evident from the figure below.

**Figure 7: Work Participation Rates of Women Workers by Caste Groups and Level of Education**



In figure 7, plotting the work participation rates by social groups across various education levels shows negatively sloped curves. This essentially implies work participation is the highest at lowest education level and declines as education level rises. While the curve for the general caste group is relatively flatter, that belonging to the STs show the steepest curve. Such trends imply that skilled employment options for women as such is low in the rural areas, more so for the lower caste groups. The high work participation rates for low level of education imply more women in the un/low skilled jobs which are generally not enough remunerative and generally involve longer hours of work. Such activities may be associated within both agriculture or non-agricultural sectors with the same characteristics of being low paid and tedious.

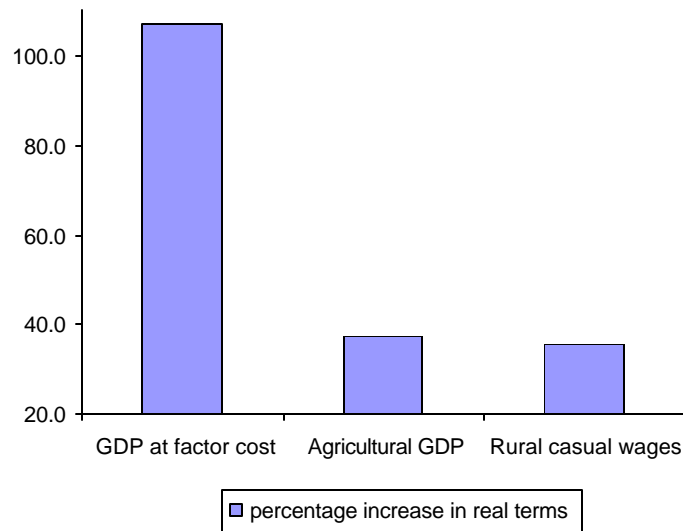
Lastly, in terms of rural wages, while nominal wages seem to have more than doubled from Rs.20.5/- in 1993-94 to Rs.48.9/- in 2004-05, wages in real terms have increased by 35 percent over the period<sup>1</sup>. While the overall real GDP at factor cost show a massive increase of around 107 percent, the disaggregated real GDP for agriculture and allied activities has increased by only 37 percent. The figure clearly indicates that the share of wages in total output has declined over the period. It further confirms the agrarian stagnation which in turn has not only affected employment generation but has also induced a wage depression in the rural areas (Figure 8)<sup>2</sup>.

***Figure 8: Percentage increase in GDP and wages in real terms, 1993-94 to 2004-05***

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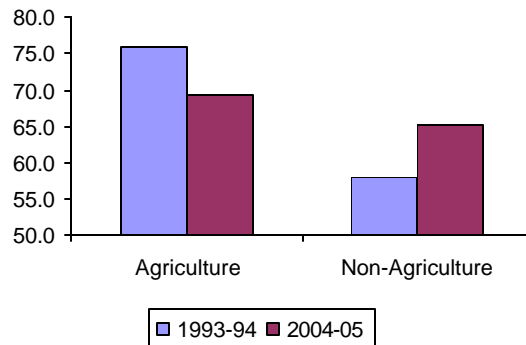
<sup>1</sup> As rural wages, we refer to rural casual wages, as regular employment is quite low consisting of less than 10 percent of rural workers.

<sup>2</sup> Wages in real terms refer to nominal wages of 2004-05 deflated to 1993-94 prices using the CPIAL, provided by the Labour Bureau, GOI. Similarly, GDP at current prices for the year 2004-05 has been deflated using the same CPIAL to make it comparable with the change in real wages. The nominal wage estimates are given by the Employment and Unemployment in India, report # 515, part 1, NSSO, GOI. The nominal GDP estimates are provided by NAS, CSO, GOI.



Given that gender wage gap in rural areas (Figure 9) has been declining, is an indication that male wages have been affected adversely in the rural areas. The Figure 9 below shows female wages as percentage of male wages in agriculture and non-agriculture. Although in agriculture the share of female wages have declined signifying increased gender wage gap, in non-agriculture the share of female wages have increased resulting in a decline in the male-female wage gap. Such decline in the wage gap signifies worsened wages for male workers. It is obviously not due to increased female wages. It has been observed from several instances in developing countries that in times of crisis, occupational segregation reduces which in turn plays a role in reducing gender wage differences (Blau and Kahn; 2000). When women take up the so-called stereotypical 'male jobs' mostly due to a reduction in wages in those sectors, it creates an impact upon the overall wage gap by reducing it temporarily.

***Figure 9: Female Wages as Percentage of Male Wages***



From the above discussion on rural employment and wages, it becomes clear that rural male employment is in a dismal state. While agriculture no longer remains a profitable option for the rural workers, a prolonged stagnation in agriculture has also resulted in a failure to successfully develop the rural non-farm sector to provide productive employment options. Although the male presence in non-agriculture is substantially higher than women, yet it is not enough to sustain livelihoods in the long run. The increase in women's work participation in such a situation marked with specific characteristics of age group, marital status, education, MPCE class and social groups, can be then argued as an impact of the added worker effect in the economy that induces more women to participate in the workforce in order to supplement the household income. However it has also induced a feminization of low productive activities, where more women workers are concentrated in the low paid and less remunerative activities associated with longer hours of work. It is obviously a manifestation of the prolonged recessionary trends in the rural agrarian sector that has had a deteriorating impact upon the male employment situation, which has consequently ushered more women into the rural workforce. This explains the typical increases in women's work participation in certain specific cohorts that were insignificant earlier.

Given this caveat, when we look at the entire rural sector divided into distress affected and non-distress regions, the argument of added worker effect inducing feminization of low productive activities gets further substantiated. It also reveals a greater connection between the rural distress and feminization of petty non-farm activities. In the following sections we analyse the rural sectors differentiated into

distress affected and less affected regions consisting of the rest of the regions. We refer to it as distress and non-distress regions.

The distress and the non-distress differentiation of the districts has been done based on the list of 95 districts identified by the Expert group on Agricultural Indebtedness set up by the Ministry of Finance, Government of India in 2006 under the chairmanship of R. Radhakrishna to look at the problems of agricultural indebtedness in its totality and suggest measures to provide relief to farmers across the country. The Expert Committee submitted its report in July 2007 recommending several measures to improve the situation of farmers and agricultural workers throughout the country. Additionally, it identified districts with acute agrarian distress stemming out of not only agricultural indebtedness but an overall stagnation of agricultural growth. The Committee's findings suggested that indebtedness was among the symptoms and not the cause of agrarian distress in the areas. The underlying causes have been identified as stagnation in agriculture, increasing production and marketing risks, institutional vacuum and lack of alternative livelihood opportunities. Based on this the 100 distress districts were identified by the committee. For our analysis the five districts of Jammu and Kashmir have been omitted as the study does not include the state in its analysis of seventeen major states of India. The list of ninety-five distress districts has been provided in the Appendix Table 1.

## **II. Comparison across Distress and Non-distress Regions**

The previous section also highlights the fact that the movement out of agriculture has been limited for the rural workers, especially for the women. Such tendency of women workers' inability to move out of agriculture has also been noted by Garikipati (2008). The study argues that feminization of agriculture has taken place among agricultural wage labourers and better paying work like self-employment and seasonal migrations out of agriculture and into non-farm employment have been beyond the reach of most women workers. However, given the wage depression and reduced gender wage differences in non-agriculture, one can argue that the meager increase in non-farm activities has also been a manifestation of the rural distress, more specifically, the

agrarian distress that has pushed more workers out of agriculture, rendering even part of the non-farm sector as a low productive alternative.

This argument becomes clear as we discuss the distribution of workers and their wage conditions across disaggregated regions and sectors. The work participation rates for women in the distress regions given in figure 10 below confirms our argument of added worker effect operating in distressed regions in terms of increased participation of women in the workforce when compared to the male WPRs. While in both distressed and non-distressed regions, men's participation has remained almost same, women's participation in the workforce has been greater in the distressed regions compared to the less affected regions. However it is also important to examine this increase in the light of the presence of women workers in agricultural and non-agricultural activities.

**Figure 10: Work participation of men and women workers in distress and non-distress regions, 2004-05**

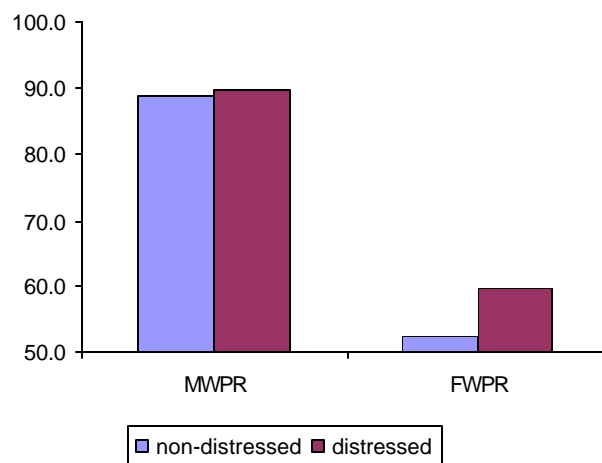
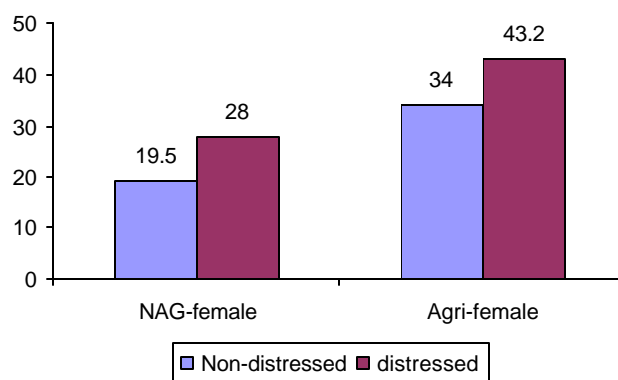


Figure 11 below shows that both in agriculture and non-agriculture the percentage of women workers are greater in the distress regions as compared to the rest of the regions. While out of total workers in non-distress regions, 19.5 percent are women, the figure increases to 28 percent of the same in the distressed areas. Even in agriculture the figure is 43 percent in the distress regions compared to 34 percent in the less affected regions. However, the increase in both agriculture and non-agriculture in distressed regions have taken place in activities essentially situated at the low end of the production cycle in both sectors.

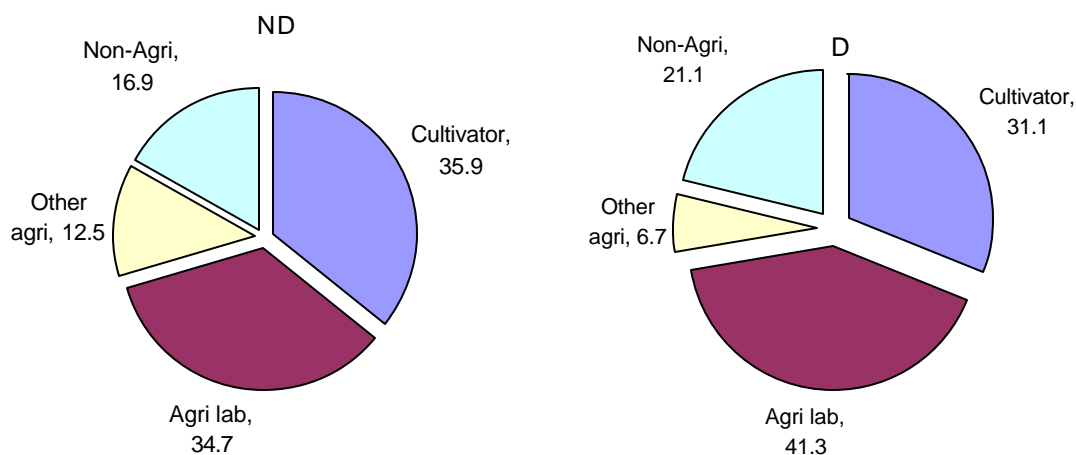


**Figure 11: Percentage Distribution of Usual Status female Workers by Sectors in Distress affected and non-distress regions, 2004-05**



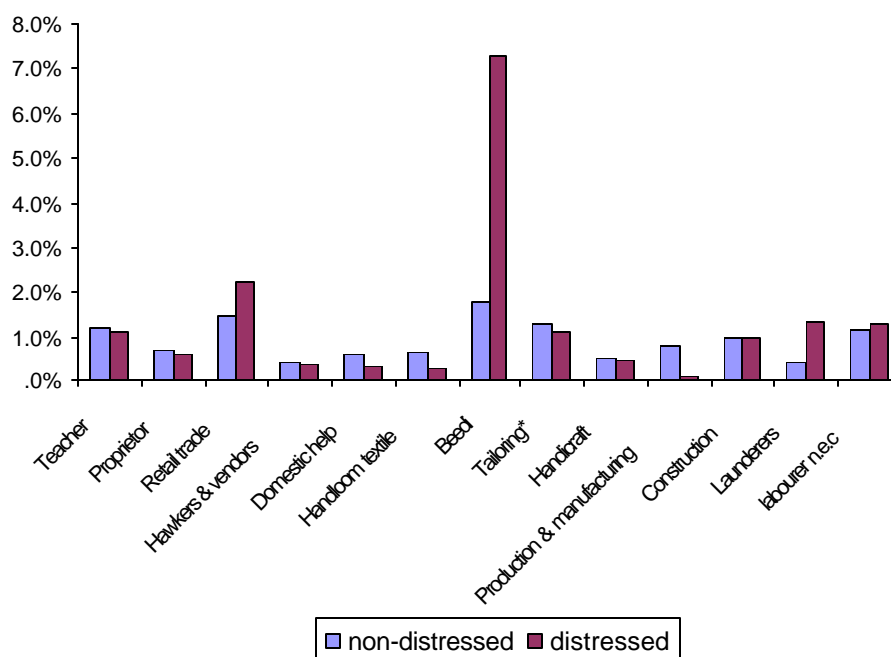
The two pie charts below (Figure 12) show the percentage distribution of women workers across occupations in distressed and non-distressed areas. While the pie charts in both the regions show concentration of women workers in more or less the same occupations, the degree of involvement is different. In the distressed regions there is a greater presence of agricultural labourers than cultivators as compared to the rest of the regions. Further, other occupations related to other agricultural activities are also less in the distressed regions. In the agrarian sector, agricultural labourers constituting the casual daily wage labourers, often landless, working on others' land are the worst off section in terms of returns and remunerations, cultivators are usually better off given that they have some amount of land at their disposal.

**Figure 12: Percentage distribution of women workers by occupations across regions**



So while there is concentration of more women in low paid vulnerable activities in agriculture, the percentage of women engaged in non-agricultural occupations is considerably greater in distressed districts. Among the non-agricultural occupations, women are mainly involved in *beedi* (indigenous cigarette) rolling and manufacturing, weaving and embroidery in textiles, handicrafts, petty retailing of vegetables, fruits, etc., construction workers and in services where gender stereotypes are stronger, in activities such as domestic helps, primary school teachers and private tutors and as launderers. From figure below (Figure 13) it is clear that in distress regions, apart from beedi rolling, there is no presence of women engaged in any manufacturing activity. It is however significant to note that while in the distress regions, manufacturing activities are in general lower compared to the less affected areas, yet a sudden surge in beedi making and petty retailing indicates signs of added worker effect inducing concentration of women in low productive activities. The trends also suggest presence of women workers in casual employment, specifically in beedi and construction.

**Figure 13: Percentage distribution of women workers across select non-agricultural activities in distress and non-distress regions**

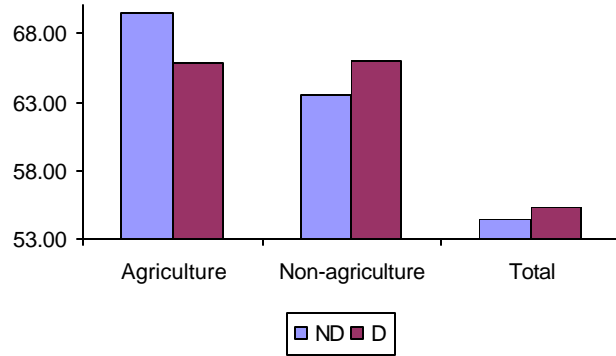


It is also interesting to note that while all across the country there has been a substantial increase of self-employed women workers with a simultaneous decline in the

percentage of casual women workers, in the distress regions, the presence of casual workers are substantial, nearly 45 percent of total women workers compared to 39 percent in the less affected regions. However the presence of self-employed women workers is also nearly 50 percent of the women workers which is less compared to the presence in rest of the regions. While this trend suggests that incidence of self-employment in distress regions are lesser in distress districts, it also suggests that incidence of casual wage employment is relatively greater in those regions. However, it is also evident that the nature of casual work usually comprise of petty activities and inferior quality employment, which essentially calls for increased vulnerabilities and worsened wages for women workers.

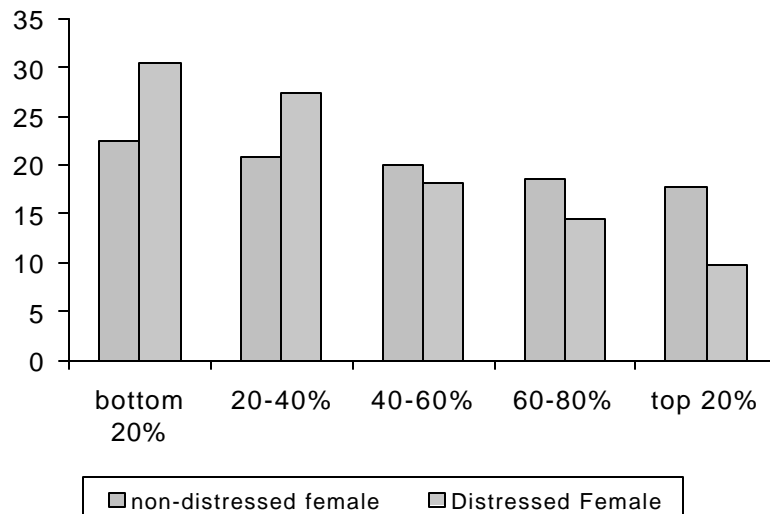
The average daily wages in non-agriculture, although higher than that in agriculture in both the regions, however show that in distressed regions it is nearly 19 percent lower than that in the rest of the districts. However, the notable point is the lower gender wage gap in the distress regions (Figure 15). While a reduced gender wage gap maybe an outcome of the added worker effect, it certainly causes an increase in low paid activities in women resulting in poorer wage conditions for women workers. In the non-agricultural sector in the distress regions the average daily wages for casual women workers as percentage of male wages are higher than that in less affected areas. On the other hand in agriculture, the share of female wages is lower in distress regions signifying a widening wage gap. Both trends however point towards worsened wages for women. While a wage depression in rural areas have kept male wages stagnated, a widening wage gap signifies lowered female wages, as is evident from agricultural wages. On the other hand a reduced wage gap under such a scenario does not necessarily show an improvement in female wages in absolute sense. In this situation it is more probable that lesser wages have affected the men in non-agriculture more than women resulting in increased female share of wages.

***Figure 15: Female Wages as Percentage of Male Wages across Regions, 2004-05***



Incidentally such trends also have an impoverishing impact on women in terms of increasing women’s double burden of work by escalating their work hours. As a consequence, it also has a bearing upon women’s class positions. The figure below shows a greater concentration of women workers towards the bottom quintiles for distressed regions. The percentage of women workers in the lowest quintile is more than 30 percent in the distressed areas signifying the poverty of women. It is also evident from the figures that while in non-distress regions percentage of women in the top 20 percent is still visible at 18 percent, in distress regions it is even below 10 percent. It is also significant to note that almost 75 percent of women workers fall in the lowest quintiles in distress affected regions compared to 63 percent in non-distress regions. Figure 16 makes it obvious that greater percentage of women workers in distressed regions are situated at the bottom quintiles substantiating higher incidence of poverty among women workers in those regions.

**Figure 16: Percentage distribution of female workers by MPCE class, 2004-05**



Thus the increased participation of women in low paid activities in distress districts in both agriculture and non-agriculture indicates crisis indeed pushes more women into the workforce, especially into more vulnerable activities. In the next section we examine the factors that determine women's employment in rural areas trying to establish the linkage between agrarian distress, non-farm employment and women's greater participation in un/low skilled activities.

### **III. Determinants of Women's Work: Explaining the Logit Model**

In this section, we attempt to examine the factors that determine women's non-agricultural employment as well as women's wage employment using a logit model. In our logistic regression, we take women workers as the dependant variable. There are two cases: a) when women workers are either engaged in agriculture or non-agriculture and b) women workers are wage employed or self-employed. The framework is based on the model initially described by Maddala (1983). The database used is the NSSO unit level data on employment and unemployment for the year 2004-05. We consider the total number of women workers in the rural areas in the seventeen major states of India. The total number of observations is 43558 women workers falling in the age group of 15-59 years.

#### ***The model***

In formulating the model, we assume that  $P_i$  represents the binary dependant variable, that is, if  $P_i = 1$ ,  $E(Y=1/X_i)$  for the  $i^{\text{th}}$  female worker to be in non-agriculture, otherwise  $P_i = 0$ . It depends on  $X_i$ , which is a vector of factors determining the engagement of women workers in non-agriculture. The  $X_i$ 's represents the predictors of the model which are both numerical and categorical in nature. Conceptually, the logit model of determinants of women's work in non-agriculture can be represented as:

$$\ln\left[\frac{P_i}{1-P_i}\right] = Z_i = \beta_0 + \beta_1(\text{MAR\_STA}) + \beta_2(\text{Social\_grp}) + \beta_3(\text{LNDCUL\_STA}) + \beta_4(\text{AGE\_GRP}) + \beta_5(\text{BR\_REG}) + \beta_6(\text{lnRDE\_PC}) + \beta_7(\text{QUINTILE}) + \beta_8(\text{GEN\_EDU}) \quad (1)$$

A similar second model is also used to determine wage employment among women workers,  $P_i = 1, E(Y=1/X_i)$  for the  $i^{\text{th}}$  female worker to be in wage employment and otherwise to be in self-employment. The vector  $X_i$ 's of independent variables used in the regression consist of marital status (MAR\_STA), Social group (Social\_grp), size of land cultivated (LNDCUL\_STA), age group (AGE\_GRP), region (BR\_REG), per capita rural development expenditure normalized by natural log (lnRDE\_PC), MPCE quintile (QUINTILE) and general educational status (GEN\_EDU). In our analysis, we have used the independent variables to obtain results in two separate situations for both the models. In the first case we have used the observations in the rural areas not affected by the agrarian distress for first the female worker being in non-agriculture or agriculture and second for the worker to be a wage worker or a self-employed worker. In the second scheme of analysis, we have repeated the technique in the rural areas affected by agrarian distress.

The analysis is an attempt to explain the reasons for women's engagement in non-agricultural and agricultural employment and also being in wage or self employment in the distressed and the non-distressed districts and analyse the reasons behind the lack of mobility of women workers out of agriculture. It also attempts to explain the reasons behind the choice of the worker being a wage worker or a self employed worker. The dependant variable has been regressed for 4808 women workers in the distressed regions and for 38750 women workers in the non-distressed areas of the seventeen major states. The results of the logistic regressions have been presented below in Table 2 in the form of odds ratios and their significance level.

**Table 2: Results (Odds ratio) of logistic regression for women workers, 15-59 years, 2004-05\***

Non-Distress Region (1)			Distress Region (2)		
Independent Variables	Dependant Variables		Independent Variables	Dependant Variables	
	1=non-agricultural women worker: 0=Agricultural women worker	1=wage employed; 0=Self employed		1=non-agricultural women worker: 0=Agricultural women worker	1=wage employed; 0=Self employed

MAR_STA(Ref: single)			MAR_STA(Ref: single)		
Married currently	1.505	1.310	Married currently	1.444	1.358
Social group (Ref: ST)			Social group (Ref: ST)		
SC	.506	2.169	SC	.639	2.519
OBC	.485	2.430	OBC	.461	2.840
Others	.687	1.265	Others	1.149	1.415
LND CUL_STA (Ref: Landless)			LND CUL_STA (Ref: Landless)		
small n marginal	.182	.115	small n marginal	.187	.124
semi medium	.082	.076	semi medium	.080	.121
Medium n large	.053	.043	Medium n large	.044	.089
AGE_GRP (Ref: 15-29)			AGE_GRP (Ref: 15-29)		
30-44	1.158	1.231	30-44	1.476	1.307
45-59	1.169	1.212	45-59	1.426	1.131
BR_REG (Ref: Central)					
North	.782	1.332	BR_REG (Ref: Central)		
West	.745	.277	West	.489	.888
East	.450	.972	East	1.232	2.922
South	1.841	.797	South	1.884	.470
lnRDE_PC**	1.985	1.539	lnRDE_PC**	1.511	1.265
MPCE Quintile (Ref: Bottom 20%)			MPCE Quintile (Ref: Bottom 20%)		
20-40%	.509	2.371	20-40%	.470	2.124
40-60%	.727	2.070	40-60%	.583	1.692
60-80%	.838	1.679	60-80%	.706	1.450
Top 20%	.866	1.386	Top 20%	.975	1.262
GEN_EDU (Ref: Not literate)			GEN_EDU (Ref: Not literate)		
below primary	.040	.212	below primary	.062	.080
higher secondary	.059	.193	higher secondary	.074	.050

graduation and above	.096	.161	graduation and above	.158	.041
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Note: Only those results have been presented which are significant at .001%. Ref: signifies reference group for the dummies created for qualitative variables.

\* Detailed tables of results for the regressions are given in Appendix Tables 2-5.

Source: Computed from Employment-Unemployment unit level data provided by NSSO, 2004-05.

\*\* Data Obtained from National Accounts Statistics, CSO, GOI

### *Interpreting the odds ratio*

The odds ratio is the ratio of the probability of an event occurring to the probability of the event not occurring. In a logistic regression the results are obtained in the form of the log of odds ratio. As the natural logarithm of odds ratio is also a monotonic transformation of the odds ratio which again implies that as log odds increases, probability also increases. However, the log odds can be easily converted into the odds by exponentiating the logarithmic values. In this model, each estimated coefficient is the expected change in the log odds of being a non-agricultural worker or a wage worker for a unit increase in the corresponding predictor variable holding the other predictor variables constant at certain value. Each exponentiated coefficient is therefore the ratio of two odds, or the change in odds in the multiplicative scale for a unit increase in the corresponding predictor variable holding other variables fixed at certain value.

For example, in our model 1, we see that the log of odds for the predictor marital status (MAR\_STA) is .409(Appendix Table 2) and odds ratio for the same is  $\text{Exp}(.409)=1.505$  (Table 1). This essentially implies that in percent terms we can interpret that holding all other predictors at a constant (reference value), a unit increase in the currently married status of the women workers increases the odds for the woman worker being a non-agricultural worker by 51% in a non-distressed region. In general, the percentage is obtained from the following expression:

$[\{\text{Exp}(0.409)-1\}*100]\% = [\{1.505 -1\}*100]\% =50.5\%$ . As the odds ratio is greater than 1, a unit increase in the predictor increases the odds in favour of the event by the



percentage so obtained. Similarly if the odds ratio is less than 1, a unit increase in the predictor reduces the odds. Given this, we proceed to explain the results for the four cases of logistic regression. As mentioned earlier, the logistic regression has been done for the non-distress and the distress regions separately. For both the regions the probability of being a non-agricultural worker and the probability of being in wage employment has been separately modeled using same predictors. Table 2 has tabulated the detailed odds ratio for all the four cases. The predictors are mainly the supply side factors like marital status, social group, age group, education, etc. We treat the per capita rural development expenditure as the employment demand generating factor. The non-distress region characteristics are explained first for both non-agricultural workers and wage workers. We then discuss the distress regions.

#### ***Non-distressed regions: Non-agricultural workers***

Among the individual characteristics, it has been observed from table 1 that currently married women and women in the higher age groups have higher odds ratios (greater than 1) as compared to the rest of the variables. If we consider the independent variables one by one, it is observed that keeping all other variables constant, a unit increase in the number of currently married women increases the odds in favour of the woman worker being in non-agriculture by 51 percent as compared to single or unmarried women. This essentially implies that the status of being married is one of the strong factors for being in non-agricultural occupation for the women workers than that for unmarried/single women workers. Again higher odds ratio for higher age groups is an indication of the fact that women workers in the higher age group are more likely to be in non-agricultural employment as compared to younger women. For example, the odds for women in the age group 30-44 years is 1.158 which implies that women in the age group 30-44 are almost 16 percent more likely to be in non-agriculture than agriculture as compared to women in younger age groups. Similar is the situation for the age group 45-59, which shows women workers to be 17 percent more likely to be in non-agriculture.

On the other hand the rest of the predictors show lower odds ratio (less than 1) implying inverse relation between the predictor and the dependant variable. For instance, the predictor social group suggests, keeping all other factors constant, that SCs, OBCs

and others are less likely to be engaged in non-agriculture as compared to the STs, if there is an increase in the number of these workers. More explicitly, it is observed that compared to lower caste groups, the higher caste groups are less likely to remain in non-agricultural work. For example if the worker happens to be a general caste worker, the odds of being a non-agricultural worker are 31 percent less as compared to the ST worker. Similarly, compared to the landless workers, the predictor variable on status of land cultivated (LNDCUL\_STA), those who cultivate land show lower odds ratio indicating lesser likelihood to be in non-agriculture. The odds ratio reduces with rise in the amount of land cultivated.

In a similar manner, analyzing the MPCE quintile, it is observed that the odds ratios are less than 1 and rises as the quintiles rise. The trend implies that as one moves up the quintile there is less and less chance of being a non-agricultural worker as compared to the lowest quintile worker. Likewise the results also suggest that as the educational level increases, the odds in favour of being a non-agricultural worker decreases. Considering that the observations in the logit analysis belong to non-distressed areas, such patterns are not usual. Normally, with increases in MPCE quintile, or with rising educational level, the probability of being a non-agricultural worker increases. Similar is the case with higher caste groups. But here we see the reverse happening. This has a direct implication of non-agricultural work options being either limited or a low return option for women workers in rural areas. Now, we have already seen the types of activities pursued by women in non-agricultural sector and given the results women with higher education, upper caste and upper class women workers have lesser likelihood of taking up such options is a reflection of the poor quality as well as poor rate of return from such petty activities.

The results also show a regional pattern. We have already seen that non-agricultural work options are better developed in the southern states. The results corroborate this fact. The independent variable region (BR\_REG) shows that if the worker belongs to the Southern region; she has 84 percent more likelihood to be a non-agricultural worker compared to women in Central region. The eastern region has the least likelihood of being into non-agriculture and we have already observed that non-

agricultural work participation among women in eastern states are much lower compared to rest of the states.

However, all the variables discussed till now constitute the supply side factor of women's work participation in non-agriculture. The other predictor used in our analysis is the per capita rural development expenditure, which is essentially a demand side factor in the sense that more spending generates demand for employment. In our analysis, the per capita rural development expenditure has been calculated from the rural development expenditure data provided by the CSO for all states. Natural logarithm of the per capita RDE (lnRDE\_PC) is used as a proxy for the per capita rural development expenditure in our analysis for ease of interpretation of the results. It has been observed from our result that a unit increase in per capita rural development expenditure raises the odds of a woman being in non-agriculture almost by 99 percent. This essentially implies that some amount of public investment in rural areas has a huge potential to create job options for women workers out of agriculture.

Therefore, while the supply side determinants of women's involvement in non-agriculture shows that job options are limited, the demand side implies potential of improvement in such a situation. It has been already observed that rural development expenditures have declined in almost all the states which have had its impact on rural employment creation.

### ***Non-distress region: Wage employment***

Another important trend observed in the employment of women in rural areas has been the increase in self employment among the women workers, especially the increase in self employed in agriculture. Self-employed in agriculture in rural areas consist mostly of unpaid family labour. Wage employment is mostly casual, daily wage-based in nature. There is a substantial presence of casual women workers in the rural areas. As has been explained in the previous chapter, casual workers constitute mostly the daily wage workers. In our logistic analysis we examine the determinants of wage employment in the rural areas. In this section we discuss the same in the non-distress rural areas.

The results show high odds ratio for currently married women workers, older age groups, higher MPCE classes and also for some caste groups implying that the likelihood

of being in wage employment increases if workers belong to married category, older age groups or higher quintiles. Also the odds for per capita rural development suggest that a unit increase in the per capita RDE raises the odds in favour of the worker being in wage employment by 1.539 times or by 54 percent approximately. The educational qualification (GEN\_EDU) however shows that the below primary group are the least likely (79 percent) to be in wage employment whereas the highly educated are 84 percent unlikely to be in wage employment when compared to the reference group not literate workers. In our analysis, wage employment consists mainly of casual wage worker and hence with rising levels of education, the likelihood of being in wage work for women reduces. The results also suggest that the workers cultivating some amount of land have lesser likelihood to be in wage employment.

Given these factors, the determinants of wage employment in rural areas pertain mostly to the age group, marital status, MPCE quintile and also on the rural development expenditure. Educational level and land cultivation also impacts directly on the choice of a woman opting for wage employment. However, with higher education, the probability to remain in casual wage work or low return non-agricultural work reduces and hence we see this pattern in the results of the logit. While the per capita rural development expenditure raises the probability of women being engaged in more non-agricultural work and wage employment indicates lack of proper non-agricultural or wage employment options for women in rural areas, which would earn substantially higher wage and non-wage benefits for the workers.

### ***Distress regions: Non-agricultural Employment***

The distress regions comprise of mainly Andhra Pradesh, Maharashtra, Madhya Pradesh, Chhatisgarh, Jharkhand, Orissa, Karnataka, Kerala and few districts in Rajasthan, Uttar Pradesh and Bihar (Appendix table 1). In the distress regions, a logit exercise shows almost similar results in terms of determinants of women's work in non-agriculture and in terms of wage employment. However, certain aberrations have also been observed. The determinants that significantly impact on women's likelihood of being engaged in non-agricultural work are similar to those in the non-distress regions, although the extent and relationships are not similar in certain cases.

The results suggest that married women are more likely to enter non-agricultural work compared to unmarried women as also women workers in older age groups. Similarly we find the odds against women joining the non-agricultural employment rising with increased levels of education and higher MPCE class. In case of land cultivation also it is observed that compared to landless, the workers cultivating even a small amount of land have lesser likelihood to be a non-agricultural worker. Further the results also show that a unit increase in per capita rural development expenditure increases the odds in favour of the worker being in non-agriculture by 51 percent. All these results are in tandem with the observations made in non-distressed regions.

The difference in the distressed region appears in case of social groups where it is observed that as compared to the STs, for the group general caste the odds are 1.149 times or 15 percent more in favour of a woman worker to be in non-agriculture. However SCs and OBCs are less likely to be in non-agricultural work compared to the STs. Also considering the regions, it is observed that compared to the reference group central region, the workers belonging to East and South have 23 percent and 88 percent more likelihood to be engaged in non-agriculture respectively.

### ***Distress regions: Wage Employment***

Wage employment in the distress regions also show similar trends for women workers as we have observed in non-distressed areas. It shows that currently married women and women in the age group 30-44 years are more likely to be in wage employment compared to unmarried and younger women. It also suggests that compared to ST women workers, women of other castes, especially the SCs and OBCs are more likely to be engaged in wage work. Further, wage work is more likely for women in the higher MPCE class as compared to the bottom 20 percent women workers. But the likelihood decreases as the MPCE class rises. For example women workers in top 20 percent of the MPCE class are 26 percent likely to be in wage work compared to women workers in the second quintile from below (20-40 percent) who are 112 percent more likely to be in the same with reference group as the bottom 20 percent workers. The result also shows a positive relation between per capita rural development expenditure

and women's engagement in wage work. It shows an increase in the odds in favour of women in wage employment by 27 percent due to a unit increase in per capita RDE.

On the other hand, women workers cultivating land have a negative relation with wage employment. With relation to landless women workers, even small and marginal land cultivating women have lesser likelihood of being in wage employment. Also similar relation is observed between rising education levels and wage employment. With greater educational qualification, it has been observed that women are less likely to remain in wage work compared to not literate women workers. As has been already mentioned, in our model wage employment consists mainly of casual wage work both in agriculture and non-agriculture, hence with an increased in educational level, the likelihood for opting wage employment reduces. If we consider the regional variable, it is observed that with reference group as the central region, apart from east, all others show lesser likelihood of being in wage employment.

The logit exercise therefore establishes strong correlation between women's work and its determinants. The results also establish the robustness of the logit model (appendix Tables 2-5). Based on these results of the model, we find that the determinants of wage employment and non-agricultural employment for women workers are mainly the supply side factors like marital status, age group, educational qualification, and also sociological factors like caste and class. Further in the distress regions, the regional factor also has a bearing upon determining women's non-agricultural employment. On the demand side however, although the positive relation between the per capita rural development expenditure and employment shows that there is a potential of increasing non-agricultural and wage employment options for women, yet the extent is lower when compared to non-distress regions. While, apparently there is no such difference in the results within the distress and the non-distress regions in terms of determinants of women's work, the coefficients of the independent variables suggest that lack of employment is far more severe in the distress regions as compared to non-distress regions. While the correlation between the independent and the dependant variables remain more or less similar in both the regions, the higher odds for most determinants in distress regions present the severity of the situation in distress districts. The results of the model in fact corroborates the earlier findings of greater involvement of women in non-

agriculture and casual wage employment in the distress regions compared to the non-distress regions thus establishing strong links between agrarian distress, added worker effect and feminization of low paid activities.

#### **IV. Discussing Linkages: Rural Distress, Added Worker Effect and Feminisation of Low Productive Employment**

From our discussion of the rural employment scenario for women a few important observations are made. Firstly it has been observed that prolonged agrarian recession arising out of the policies followed as part of the structural adjustment and stabilization policies have resulted in an absence of adequate productive employment and a consequent wage depression in the rural areas as a whole. While the male employment has faced severe crisis in terms of reduced rate of growth of employment and stagnation in wage earnings, it has induced an added worker effect where participation of women workers have increased. It has been observed in terms of increases in women's work participation rates and increased rate of growth of rural female employment over the period of analysis. However, another significant point that has emerged from the discussion has been about the specific characteristics of this increase. Mostly it has been among the older, married, less educated, low skilled women belonging to low MPCE class and caste groups. Given such characteristics, the increases have resulted in women participating mostly in the jobs at the lower end of the economic chain initiating a process of feminization of low productive activities in the rural areas. In a situation of rural wage depression for male workers, this argument gets substantiated from the declining gender wage gap in non-agriculture signifying women accepting lower wages resulting in a situation of overall wage depression. Simultaneously widening wage gap in agriculture also suggest worsening wages for women, when male wages are almost stagnant.

Such arguments get strengthened from the analysis of the situation of women's work in rural regions disaggregated into agrarian crisis affected and rest of the relatively less affected regions. While an increase in both agriculture and non-agriculture sectors is witnessed in the distress regions, the presence of women workers in non-agriculture is relatively more in these regions when compared to the less affected areas. Further in the

distress districts, an increased presence of women workers in casual employment and reduced gender wage differences especially in non-agriculture, also point towards similar tendencies. It is clear that in the crisis affected areas, conditions of women's paid work and remunerative work has evidently declined, both in agriculture and non-agriculture.

The results of the logit exercise also suggest greater likelihood of women being in non-agriculture in the agrarian distress affected regions. The analysis of the determinants of women's work in non-agriculture and as wage worker in India disaggregated into agrarian distress affected regions and not affected regions establishes the factors like education, age group, marital status, caste group and class groups as important determinants of women's engagement in wage work or non-agricultural work. While these supply side factors show that options of employment are lacking in both regions, the only demand side determinant, which is the rural development expenditure shows a potential of employment creation in these areas for the women workers. However, the significant point that emerged from the analysis has been that in both the regions the older women and married women were more likely to remain engaged in non-agricultural work and wage work, compared to younger unmarried women, the higher caste groups were less likely to be engaged in non-agriculture and more likely to be engaged in wage work. However the degree represented by higher odds in distress regions marks the enormity of the problems.

This is a clear manifestation of the 'added worker effect' where falling income levels of households or unemployment or out-migration of men workers due to lack of employment opportunities have pushed the older and married women into paid work in order to take care of the households. In the distress regions, in terms of agricultural employment, it has mostly been as agricultural wage labour where wages for women are worse. In non-agriculture, the only options for women have been in low remunerative, low productive economic activities like rolling beedi or petty retailing and other low/unskilled options. While self-employment among women workers, with all its associated difficulties, has been viable in less affected regions, indicated by relatively higher participation of women workers, in distress districts even that option remains non-existent. Even in the non-distress areas, where agriculture has not suffered as badly as the less developed distress regions, women are more engaged in agriculture than non-



agriculture and mostly as self employed workers in household enterprises which is basically unpaid family labour. This however indicates longer work hours for women at lesser wages.

The cause of such predicament finds its roots in policies that have been implemented for the last two decades. The policies have been instrumental in increasing the regional, social, and also rural-urban inequalities which has had its direct impact upon gender inequalities as well. There are obvious linkages between agrarian crisis producing an added worker effect in the rural economy whereby increases in women workers' participation has taken place in certain specific low end production activities thus generating a 'feminisation of un/low skilled and low productive activities'. Such activities are also not any source of sustainable livelihood for women in the long run with scope of improvement in the nature and characteristic of the activities. This kind of increase in women's work participation cannot be seen as an improvement or betterment of women workers in the economy. Rather it points to an increased hardship for women workers due to an increase in the works hours resulting in 'double burden'.

**Appendix****Table 1: LIST OF AGRICULTURALLY LESS DEVELOPED AND DISTRESSED DISTRICTS**

No	State	District	No	State	District
1	Andhra Pradesh	Adilabad*	49	Madhya Pradesh	Balaghat
2	Andhra Pradesh	Anantapur*	50	Madhya Pradesh	Barwani
3	Andhra Pradesh	Chittoor*	51	Madhya Pradesh	Betul
4	Andhra Pradesh	Cuddappah*	52	Madhya Pradesh	Burhanpur
5	Andhra Pradesh	Guntur*	53	Madhya Pradesh	Chhatarpur
6	Andhra Pradesh	Karimnagar*	54	Madhya Pradesh	Chhindwara
7	Andhra Pradesh	Khammam*	55	Madhya Pradesh	Dindori
8	Andhra Pradesh	Kurnool*	56	Madhya Pradesh	Jhabua
9	Andhra Pradesh	Medak*	57	Madhya Pradesh	Katni
10	Andhra Pradesh	Mahaboobnagar*	58	Madhya Pradesh	Mandla
11	Andhra Pradesh	Nalgonda*	59	Madhya Pradesh	Panna
12	Andhra Pradesh	Nellore*	60	Madhya Pradesh	Rewa
13	Andhra Pradesh	Nizamabad*	61	Madhya Pradesh	Seoni
14	Andhra Pradesh	Prakasam*	62	Madhya Pradesh	Shahdol
15	Andhra Pradesh	Ranga Reddy*	63	Madhya Pradesh	Sidhi
16	Andhra Pradesh	Warangal*	64	Madhya Pradesh	Umaria
17	Bihar	Banka	65	Maharashtra	Akola*
18	Bihar	Bhagalpur	66	Maharashtra	Amravati*
19	Bihar	Darbhanga	67	Maharashtra	Buldhana*
20	Bihar	Jamui	68	Maharashtra	Gadchiroli
21	Bihar	Lakhisarai	69	Maharashtra	Gondia
22	Bihar	Madhubani	70	Maharashtra	Nanded
23	Bihar	Saran	71	Maharashtra	Nandurbar
24	Chattisgarh	Bilaspur	72	Maharashtra	Osmanabad
25	Chattisgarh	Janjgir	73	Maharashtra	Wardha*
26	Chattisgarh	Jashpur	74	Maharashtra	Wasim*
27	Chattisgarh	Kanker	75	Maharashtra	Yavatmal*
28	Gujarat	Dahod	76	Orissa	Boudh
29	Gujarat	Patan	77	Orissa	Koraput
30	Jharkhand	Deoghar	78	Orissa	Malkangiri
31	Jharkhand	Gumla	79	Orissa	Nawapara
32	Jharkhand	Hazaribag	80	Rajasthan	Churu
33	Jharkhand	Lohardaga	81	Rajasthan	Dungarpur
34	Jharkhand	Pakaur	82	Rajasthan	Jaisalmer
35	Jharkhand	Sahib ganj	83	Rajasthan	Nagaur
36	Jharkhand	Seraikela	84	Rajasthan	Pali
37	Jharkhand	Simdega	85	Rajasthan	Rajsamand
38	Karnataka	Belgaum*	86	Rajasthan	Sikar
39	Karnataka	Chikmagalur*	87	Rajasthan	Udaipur
40	Karnataka	Chitradurga*	88	Tamil Nadu	Sivaganga
41	Karnataka	Hassan*	89	Uttar Pradesh	Banda

42	Karnataka	Kodagu*	90	Uttar Pradesh	Chitrakoot
43	Karnataka	Shimoga*	91	Uttar Pradesh	Hamirpur
44	Kerala	Kasargod*	92	Uttaranchal	Almora
45	Kerala	Palakkad*	93	Uttaranchal	Pauri Garhwal
46	Kerala	Wayanad*	94	Uttaranchal	Rudraprayag
47	Madhya Pradesh	Anuppur	95	Uttaranchal	Tehri Garhwal
48	Madhya Pradesh	Ashoknagar			

*Note* : The above list includes the 31 distressed districts identified by the Government of India where the Prime Minister's special rehabilitation package has been implemented in 2004 (these districts are marked with\*). The remaining 69 districts have been included on the following criteria: (i) the district ranks low on the three-year average land productivity for 2001-02 to 2003-04, (ii) the credit-deposit ratio of the district is less than 60 per cent for 2006, (iii) the proportion of urban population in the district is less than 30 per cent in 2001. For districts formed after 2001, the urbanisation rate of the original undivided districts has been used. For our purpose we have dropped the 5 districts in the state of J&K as we do not include it in the analysis of seventeen major states.

Source: Report of Expert Group on Agricultural Indebtedness, MoF, GOI, 2007

**Table2: Results of Logit Regression on Women Workers**

ND_NAG		Variables in the equation				
		B	S.E.	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	MAR_STA(1)	.409	.001	1	.000	1.505
	Social_grp			3	.000	
	Social_grp(1)	-.681	.001	1	.000	.506
	Social_grp(2)	-.724	.001	1	.000	.485
	Social_grp(3)	-.375	.001	1	.000	.687
	LND_CUL_STA			3	.000	
	LND_CUL_STA(1)	-1.705	.001	1	.000	.182
	LND_CUL_STA(2)	-2.504	.002	1	.000	.082
	LND_CUL_STA(3)	-2.946	.003	1	.000	.053
	AGE_GRP			2	.000	
	AGE_GRP(1)	.147	.001	1	.000	1.158
	AGE_GRP(2)	.156	.001	1	.000	1.169
	BR_REG			4	.000	
	BR_REG(1)	-.246	.001	1	.000	.782
	BR_REG(2)	-.295	.001	1	.000	.745
	BR_REG(3)	-.798	.001	1	.000	.450
	BR_REG(4)	.610	.001	1	.000	1.841
	lnRDE_PC	.686	.001	1	.000	1.985
	qntile1			4	.000	
	qntile1(1)	-.676	.001	1	.000	.509
	qntile1(2)	-.319	.001	1	.000	.727
	qntile1(3)	-.177	.001	1	.000	.838
	qntile1(4)	-.144	.001	1	.000	.866
	gen_edu			3	.000	
	gen_edu(1)	-3.225	.002	1	.000	.040
	gen_edu(2)	-2.831	.002	1	.000	.059
	gen_edu(3)	-2.342	.002	1	.000	.096
	Constant	-.745	.007	1	.000	.475

a. Variable(s) entered on step 1: MAR\_STA, Social\_grp, LND\_CUL\_STA, AGE\_GRP, BR\_REG, lnRDE\_PC, qntile1, gen\_edu.

## ND\_Wage Variables in the Equation

		B	S.E.	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	MAR_STA(1)	.270	.001	1	.000	1.310
	Social_grp			3	.000	
	Social_grp(1)	.774	.001	1	.000	2.169
	Social_grp(2)	.888	.001	1	.000	2.430
	Social_grp(3)	.235	.001	1	.000	1.265
	LNDCUL_STA			3	.000	
	LNDCUL_STA(1)	-2.161	.001	1	.000	.115
	LNDCUL_STA(2)	-2.575	.001	1	.000	.076
	LNDCUL_STA(3)	-3.142	.002	1	.000	.043
	AGE_GRP			2	.000	
	AGE_GRP(1)	.208	.001	1	.000	1.231
	AGE_GRP(2)	.192	.001	1	.000	1.212
	BR_REG			4	.000	
	BR_REG(1)	-1.285	.001	1	.000	.277
	BR_REG(2)	.287	.001	1	.000	1.332
	BR_REG(3)	-.029	.001	1	.000	.972
	BR_REG(4)	-.227	.001	1	.000	.797
	lnRDE_PC	.431	.001	1	.000	1.539
	qntile1			4	.000	
	qntile1(1)	.863	.001	1	.000	2.371
	qntile1(2)	.728	.001	1	.000	2.070
	qntile1(3)	.518	.001	1	.000	1.679
	qntile1(4)	.326	.001	1	.000	1.386
	gen_edu			3	.000	
	gen_edu(1)	-1.550	.002	1	.000	.212
	gen_edu(2)	-1.643	.002	1	.000	.193
	gen_edu(3)	-1.828	.002	1	.000	.161
	Constant	-.935	.006	1	.000	.393

a. Variable(s) entered on step 1: MAR\_STA, Social\_grp, LNDCUL\_STA, AGE\_GRP, BR\_REG, lnRDE\_PC, qntile1, gen\_edu.

## D\_Wage Variables in the Equation

		B	S.E.	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	MAR_STA(1)	.306	.002	1	.000	1.358
	Social_grp			3	.000	
	Social_grp(1)	.924	.003	1	.000	2.519
	Social_grp(2)	1.044	.003	1	.000	2.840
	Social_grp(3)	.347	.002	1	.000	1.415
	LND CUL_STA			3	.000	
	LND CUL_STA(1)	-2.084	.002	1	.000	.124
	LND CUL_STA(2)	-2.112	.003	1	.000	.121
	LND CUL_STA(3)	-2.414	.005	1	.000	.089
	AGE_GRP			2	.000	
	AGE_GRP(1)	.268	.002	1	.000	1.307
	AGE_GRP(2)	.124	.002	1	.000	1.131
	BR_REG			3	.000	
	BR_REG(1)	-.118	.003	1	.000	.888
	BR_REG(2)	1.072	.005	1	.000	2.922
	BR_REG(3)	-.754	.002	1	.000	.470
	lnRDE_PC	.235	.004	1	.000	1.265
	qntile1			4	.000	
	qntile1(1)	.753	.003	1	.000	2.124
	qntile1(2)	.526	.003	1	.000	1.692
	qntile1(3)	.372	.003	1	.000	1.450
	qntile1(4)	.233	.003	1	.000	1.262
	gen_edu			3	.000	
	gen_edu(1)	-2.520	.010	1	.000	.080
	gen_edu(2)	-2.996	.010	1	.000	.050
	gen_edu(3)	-3.188	.010	1	.000	.041
	Constant	1.155	.023	1	.000	3.173

a. Variable(s) entered on step 1: MAR\_STA, Social\_grp, LND CUL\_STA, AGE\_GRP, BR\_REG, lnRDE\_PC, qntile1, gen\_edu.

## D\_NAG Variables in the Equation

		B	S.E.	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	MAR_STA(1)	.367	.002	1	.000	1.444
	Social_grp			3	.000	
	Social_grp(1)	-.447	.004	1	.000	.639
	Social_grp(2)	-.775	.003	1	.000	.461
	Social_grp(3)	.139	.003	1	.000	1.149
	LND CUL_STA			3	.000	
	LND CUL_STA(1)	-1.679	.002	1	.000	.187
	LND CUL_STA(2)	-2.528	.005	1	.000	.080
	LND CUL_STA(3)	-3.130	.009	1	.000	.044
	AGE_GRP			2	.000	
	AGE_GRP(1)	.389	.003	1	.000	1.476
	AGE_GRP(2)	.355	.003	1	.000	1.426
	BR_REG			3	.000	
	BR_REG(1)	-.716	.005	1	.000	.489
	BR_REG(2)	.209	.006	1	.000	1.232
	BR_REG(3)	.633	.002	1	.000	1.884
	lnRDE_PC	.412	.004	1	.000	1.511
	qntile1			4	.000	
	qntile1(1)	-.754	.003	1	.000	.470
	qntile1(2)	-.539	.003	1	.000	.583
	qntile1(3)	-.349	.003	1	.000	.706
	qntile1(4)	-.026	.003	1	.000	.975
	gen_edu			3	.000	
	gen_edu(1)	-2.779	.009	1	.000	.062
	gen_edu(2)	-2.608	.009	1	.000	.074
	gen_edu(3)	-1.847	.009	1	.000	.158
	Constant	-.209	.023	1	.000	.812

a. Variable(s) entered on step 1: MAR\_STA, Social\_grp, LND CUL\_STA, AGE\_GRP, BR\_REG, lnRDE\_PC, qntile1, gen\_edu.

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