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**Work and Empowerment:
Women and Agriculture in South India**

Smriti Rao¹

Abstract

This paper explores the implications of women's work in agriculture in Telangana, a region in the state of Andhra Pradesh, India. I suggest that higher capital costs for cultivators post-liberalization increased the pressure to contain wage costs in a region where women form the majority of the agricultural wage labour force. Under such conditions, when women perform both own-cultivation as well as agricultural wage work in the fields of others, they face pressure to restrict bargaining for higher wages, contributing to a widening gender wage gap. To the extent that wages shape intra-household bargaining power, the empowering effect of workforce participation for such women would thus be blunted. From available NSS data I provide some preliminary evidence in support of this argument.

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Introduction

There now exists a significant body of work studying the determinants of women's bargaining power within households and evaluating the conditions under which labour force participation may or may not translate into women's increased bargaining power in developing country contexts. While wage employment is considered an important potential determinant of increased female bargaining power within the household, it has become clear that its impact depends upon the pecuniary and non-pecuniary conditions under which women work, as well as the reasons why they participate (Agarwal 1997; Charusheela 2003).

This paper attempts to contribute to this literature through a study of women's work in rural Telangana, a relatively poor, agrarian region in the state of Andhra Pradesh, India. This region, along with other parts of India, has witnessed two rounds of economic reforms or liberalization policies beginning in the early 1990s, first at the national and then at the regional government level. The main effect of these policies upon Telangana agriculture in the 1990s was 'immiserising growth' with a sharp increase in the input costs of agriculture at a time when yields and output prices either fell or remained stagnant, exacerbating the problem of indebtedness amongst farmers (Vakulabharanam 2005, Rao and Suri 2006). The effects of this agrarian crisis, compounded by the weakened political voice of farmers in post-liberalization India, are seen as contributory factors in the complex phenomenon of the suicides of male farmers in the region (Suri 2006, K Nagaraj 2008). This paper adds a gender dimension to the analysis of agrarian distress in the 1990s, focusing on the economic role of women in cultivator households during this period.

While the debate over the causes of farmer suicides has focused attention on the plight of male cultivators, I argue that the mechanism of transmission of this agrarian crisis is gendered. Apart from the personal and economic consequences of high debt, I argue that there have also been specific implications for the wages of women workers in agriculture. Based on observation in the field, I suggest that the higher capital costs for cultivators post-liberalization have increased

the pressure to contain wage costs in a region where women form the majority of the agricultural wage labour force. Under such conditions, when women perform both own-cultivation as well as agricultural wage work in the fields of others, they face greater pressure to restrict bargaining for higher wages. To the extent that wages are a determinant of intra-household bargaining power, a widening gender wage differential reduces the chances that wage work will increase women's bargaining power within the household. As a result the empowering effect of workforce participation for such women may have been blunted in the aftermath of liberalization.

I use village level field observations to motivate the study and individual level National Sample Survey(NSS) wage data to test the argument. While the availability of data does limit the strength of the findings, they do suggest the validity of more research on women's changing roles as cultivators in India.

The literature on rural livelihood diversification suggests that older models of rural households that assumed clear separations between different occupations, and the specialization of household members in particular tasks may not be valid in many contexts (Ellis 1998). The workers in Telangana I discuss were certainly engaged in the pursuit of multiple occupations. This paper explores the implications of one subset of occupations performed by female workers in the region's agriculture.

The Agricultural Workforce in Telangana

Telangana is an interesting region to study, not just because of its long history of political mobilization around issues of land redistribution, but also because Telangana, to an even greater extent than other parts of South India, has a history of women's participation in the agricultural labour force (Sundarrayya 1972; Mies 1986; Lalitha and Kannabiran 1989). According to the Indian Census, the female workforce participation rates of women in rural Telangana have been around 40% over the last two decades, the highest rates of Andhra Pradesh's three sub-regions.

In this section I trace the broad trends in the agricultural labour force in Telangana before and immediately after liberalization using individual level data provided by the National Sample

Survey (NSS)Quinquennial Employment and Unemployment Household Surveys. The NSS ‘rounds’ used for analysis in this chapter are the 38th round (83-84), the 43rd round (1987-88), the 50th round (93-94) and the 55th round (99-00). Given that liberalization policies were instituted at the national level in 1991 but at the state level in 93-94, the 99-00 round is treated as the post-liberalization period. Adults are defined as persons aged 15 and above in accordance with the convention in Indian social science research.

In this paper, the term ‘economically active’ includes as workers both those performing domestic/ household reproductive labour as well as non-domestic work. The term ‘non-domestic worker’ excludes those engaged principally in reproductive work. 1% of the total male and 0.79% of the total female worker population also reported their status as unemployed. Since their occupational-type cannot be determined, they are excluded from the analysis in this paper.

The NSS surveys provide us with data on the ‘principal usual status’ of employment of each member of the households surveyed. This is the occupation the respondent reports having pursued for a majority of the year (i.e. 183 days or more). The NSS also asks respondents to list their ‘daily status’, or the four most significant activities for the week in which they are being interviewed. The survey then asks for the days they spent on each activity, and the total weekly wages earned in the activities performed for hire. The occupation followed for a majority of days in the week is then listed as the respondent’s ‘current weekly status’(cws).

Researchers of households in poor agrarian economies cast doubt upon the conceptual usefulness of a ‘principal status’ classification, arguing that it obscures the multiple other forms of work that respondents may be engaged in (Ellis 1998). Feminists have meanwhile long argued against the use of such categories, given that women have almost always pursued multiple occupations simultaneously indeed often and reported domestic work as their ‘principal status’ while engaging in different forms of part-time or seasonal non-domestic work. I combine ‘principal’ and ‘weekly’ status data in the initial analysis of macro-level trends to try to widen the category somewhat. However, given the diversity of livelihood strategies pursued by rural

households and particularly by women in these households, I later shift to the use of NSS 'daily status' data. This allows me to include as wage labourers or cultivators those who report it as being any one of their four activities in the week. The 'daily status' data also allows us to try to explain the determinants of wages paid to individual workers.

Due to a steady increase in the number of adults reported as continuing students, the more conventional female labour force participation rate (i.e. participation in non-domestic work) did not increase. However, the percentage of principal and weekly status female non-domestic workers within the pool of economically active adult women has risen over successive rounds, i.e. the share of women reporting their occupation as domestic work has correspondingly fallen (Table 1). The rise has been particularly steep after 1987-88 with up to 83% of economically active women engaged primarily in non-domestic work by 99-00.

(Table 1 about here)

Combining principal and weekly status, we see a rising percentage of economically active adult women and men employed in agriculture between 93-94 and 99-00 (Table 2). This trend is quite the opposite of that predicted by proponents of liberalization in Andhra Pradesh who expected the share of the population in agriculture to fall steadily and go down to 20% by 2020 (GoAP 1999).

(Table 2 about here)

In line with historical trends, women comprised 55% of the agricultural wage labour force in 99-00 while men were in a majority when it came to own-account cultivators (Table 2). While participation in the wage labour force did not change much post-liberalization, the share of both men and women reporting cultivation did increase, although the increase for women was slightly higher. Thus, between 93-94 and 99-00 it was cultivation that absorbed the bulk of the shift of both men and women into agricultural employment. This, combined with the decline (as per NSS estimates) in the absolute number of men and women reporting performing principal or

weekly status non-agricultural work suggests increasingly reliance upon agriculture for rural families, and thus an increased vulnerability to agrarian distress.

To summarise, the data for the period 93-94 to 99-00 shows i) the deepening reliance upon agriculture as a source of livelihood in rural Telangana; ii) the persistence of a historically feminized agricultural wage labour force and iii) the rising share of women and men in own-account agricultural work.

The decrease in women reporting their principal or weekly status occupation as 'domestic' work may account for at least part of the inflow of female workers into agriculture. Supporters of liberalization have certainly pointed to the movement of women into the workforce as one of the primary benefits of increased liberalization (World Bank 2000).

Given the prior discussion of the diversity of women's occupations, one caveat here is that this change more likely reflects an increase in hours devoted to non-domestic work, rather than a shift from purely domestic to primarily non-domestic work. However, it certainly could be the case that the increases in agricultural work were driven by increased demand and thus had positive rather than negative welfare implications. What complicates the picture in Telangana is that changes in agricultural wages in this period do not support such an interpretation. I now turn to a discussion of the changes in real agricultural wages to more closely examine the welfare implications of the increased participation in agriculture.

Agricultural Wages in Telangana

Telangana witnessed significant agricultural real wage growth during the 1970s – the time of a violent Maoist peasant struggle and associated redistributions of land – as well as through the 1980s when a wave of commercialization under the newly small-farmer dominated agrarian structure commenced. In the 1990s however, one of the most significant changes in the agrarian economy was the slowing of real wage growth for both male and female agricultural labourers. From average exponential rates of growth of 4.5% from 1980 to 1989, real wage growth slowed to around 1.5% between 1990 and 2000 (Vakulabharanam 2004). Indeed there

was a negative correlation between agricultural output growth and real wage growth from 1994 to 2000 for this region (Vakulabharanam 2004).

Recent reviews of wage data from different sources indicate that this overall slowdown in agricultural wage growth in the 1990s has been accompanied by a widening of the gender wage differential at the wider Andhra Pradesh state level (Chavan and Bedamatta 2006; Srivastava and Singh 2006). In Telangana too, both the NSS data for 'daily status' agricultural wage labourers and annual district level agricultural wage data collected by the Ministry of Agricultural Statistics suggest that in real terms, the gap between male and female wage growth widened over the period. The district level data shows some fluctuations, but indicates overall an average annual growth of 3% in the real gender wage differential from 93-94 to 00-01 (Figure 1). NSS data points to a sharper increase of 14% in the gender wage gap between 93-94 and 99-00 (Table 4).

(Fig 1 about here)

Within a demand and supply perspective, the trends noted earlier of increasing shares of the work force reporting agricultural work in general and own-account agriculture in particular, point to one possible explanation for stagnant agricultural wage growth. The increased use of family labour in agriculture has countered the wage effects of increased demand for labour within agriculture. To the extent that this trend is stronger for women, the impact on female agricultural wages is greater.

However, there may be a different way in which the increased use of female family labour in agriculture impacts the agricultural wage labour force.

If we shift our attention away from purely supply and demand factors to the underlying institutional factors that influence wage setting in these markets, we could argue that the persistent and widening gender wage gap implies that women agricultural wage labourers were less successful in negotiating wage increases in the post-liberalization period. In a period when rates of inflation observed for the Consumer Price Index (Agricultural Labourers) from 1993 to 2001 averaged 9% p.a., close to double those observed in the 80s (Reddy, Galab and Rao 2003),

agricultural wage labourers would have had to negotiate significantly higher nominal wage increases in the 1990s to be able to account for increased inflation rates in this period. Perhaps women wage workers have been less able to do so in 1990s Telangana.

Previous research has suggested that socialization processes that emphasise female obedience and passivity may explain why women workers do not push for higher wages (Seguino 2000). Without denying the importance of socialization, I argue based on my fieldwork data that as a result of the division of labour within cultivator households in Telangana, many women agricultural labourers who also perform cultivation work are under greater pressure to restrict wage bargaining. Farms in the region are relatively female-labour intensive implying that a rise in female wages has a greater negative impact upon farm profits. I also argue that this pressure may have intensified post-liberalization. The conventional understanding of women and men from cultivator households is that they have stronger fallback positions than those with no cultivable land and thus are better able to negotiate favourable economic outcomes. My hypothesis is that this relationship does not necessarily hold given the particular gender division of labour in the region and rising capital costs for farmers post-liberalization.

The NSS data used later in the paper to test this hypothesis does limit the study in at least two ways. The gender wage gap being analyzed here may partly be the result of gendered migration trends putting upward pressure on male wages. There is no direct evidence on migration in the NSS data for 93-94, preventing this hypothesis from being tested. However, as seen earlier, the NSS employment data indicate increasing absolute numbers as well as percentages of men involved in agriculture (and specifically in cultivation) between 93-94 and 99-00. Even if the survey misses some men who have migrated, the ones who remain are more rather than less involved with agriculture compared to the previous round, mitigating any upward pressure on male wages due to migration. Indeed, as discussed earlier, the literature on the region suggests that the wage increases even men experienced were smaller than increases experienced in the 1980s.

A second caveat is that the NSS data only partially accounts for differing workday lengths, differentiating between a ‘half day’ (counted as 0.5 days) and a ‘full day’ (counted as 1 day). However, it does not capture finer variations in hours within those two categories. Part of any gender wage gap observed may be a result of differing lengths of the ‘full’ work day for women and men. However, given that the measurement is done in a consistent manner across the two rounds, any changes in the gender wage gap from one period to another would have to result from a reduction in average daily hours of work for women in 99-00 compared to 93-94, while male hours remained the same or increased. There is little evidence from non-NSS sources to suggest that this may be the case. One study that does evaluate male and female work hours in the neighboring region of Rayalseema argues that in the early 1990s female work hours in agriculture actually increased (DaCorta and Venkateshwarulu 1999). While there is no way to directly test this hypothesis with the available NSS data for Telangana, if women’s work hours as cultivators actually increased as a means of cutting wage costs, then this study would tend to underestimate the gender wage gap.

I now turn to my fieldwork to present a more micro-level picture of the conditions under which men and women labour in Telangana.

The View from the Field

The Gender Division of Labour in Agriculture

My fieldwork took place in two Telangana villages, Nayanunipalle and Khanapur, located in Mahbubnagar district where I spent nine months from July, 2001 to March 2002 as part of dissertation work on gender, liberalization and agrarian change in Telangana. It included participant observation as well as surveys and interviews conducted over this period. I use this fieldwork to provide the context for the hypothesis being tested in this paper.

As other studies in South India have noted, while male tasks in the agricultural cycle vary by crop, they most often include ploughing, transport, clearing of fields, digging irrigation ditches and guarding the crops at night (Kapadia 1995; DaCorta and Venkateshwarulu 1999). The first of

these tasks has, to some extent, been taken over by the tractor, the most important reason I was given for the reduced demand for male agricultural labour in recent times. On the other hand, a different aspect of men's work as cultivators was becoming increasingly important. It was only men who travelled outside the village both to buy crucial inputs into production – fertilisers, pesticides, seeds – as well as to sell the harvested crop in wholesale markets. Negotiating these deals was crucial to the success of the farm -- the process of 'immiserising growth' in Telangana's agriculture discussed earlier is believed to be a result of the structural inability of farmers in this region to negotiate favourable terms with suppliers of credit and other inputs (Vakulabharanam 2005).

Despite men owning land and listing themselves as cultivators more often than women, women's work is crucial to agricultural production due to the "sex-sequential" (Agarwal 1994) nature of agricultural tasks. The important operations of sowing, weeding, transplanting and harvesting are performed by women as has been documented by various studies on Telangana (Mies and Lalita 1986; Revathi 1994; Ramamurthy 2000). Apart from women workers being required to perform the above tasks in the agricultural cycle, women in a farmer household are responsible for another key task -- the recruiting, supervision and payment of female agricultural labourers.

Most of my interviews with women took place early in the morning before women left for work, and during the peak agricultural season these interviews were constantly punctuated by visits from other women seeking to recruit the group of ten or so female labourers that most small farms required to carry out sowing or transplanting work for the day. Given the simultaneous peaking of demand, this was not always an easy task, and I witnessed long drawn out arguments between the women about promises to come to work made and broken. For women in cultivator households, significant time and energy thus went into the recruitment of other women workers. The best way to secure labour seemed to be to agree to work on a woman's field to ensure her reciprocity when it came to one's own labour needs.

Better-off, upper caste women did not perform labour in the fields of others even though their supervisory role was extremely important. I closely observed three 'kapu' (landlord) women from families with landholdings of greater than 50 acres. They were always there when women labourers were performing the tasks of transplanting and weeding; they supervised the ploughing of rice fields by male labourers; and when the family's cattle were brought home every night by their 'jeetagadu' or male hired labourer, they kept an eye on whether they were all back safely. Their husbands travelled a great deal to the urban centres of Mahbubnagar and Hyderabad, involved, as many other men seemed to be, in negotiations around procuring inputs for the farm, diversifying the family's investments in the city and building and maintaining networks of family and friends that were crucial to success in both of those endeavours.

Given that they did not actually hire their own labour out, however, in seasons of high labour demand these upper-caste women needed ways of recruiting women without just the incentive of very high wages. Recruiting women labourers under these circumstances depended a great deal upon the relations that the women of the household maintained with women in the village through the year. Whether it was letting women watch television in the house or lending them money or milk, there were a variety of ways in which relationships of trust and dependence were established between the women of these large powerful households and other women of the village despite the decline of more obvious relations of dependence such as bonded labour. The success of the family farm thus depended in both more and less obvious ways upon the women of the household.

Implications of the gender division of labour for wage bargaining

While numerous field studies document women's role as agricultural workers in India, economic models of small farm production that explain the impact of economic policies such as structural adjustment while taking into account women's role as producers are less common. Such models have been developed for the African context to show that taking the gender division of labour into account helps to explain the 'perverse' supply response of food output in Africa

(Darity 1995, Warner and Campbell 2000, Evers and Walters 2001). Unlike Africa, however, crops are not defined as ‘male’ or ‘female’ in India. Instead tasks within the work cycle for each crop are defined as ‘male’ or female so that any crop cultivated requires a certain amount of male labour and a certain amount of female labour.

Models of rural household production decisions that extend beyond the African context have tended to focus upon the implications of women’s contributions to the production of household goods and thus the impact of macroeconomic policies upon their leisure time and intensity of work (Floro 1995; Braunstein 2004). In this paper the focus is on women’s contribution to farm output rather than to household goods. The underlying argument links female work and wages using a ‘bargaining power approach’ (Seiz 1994). While Appendix 1 provides a formal mathematical model, in this section I discuss the logic of this underlying model in non-mathematical terms.

The fundamental insight of bargaining models is that economic outcomes – intra-household allocation of resources, for example – are negotiated rather than being simple responses to prices and relative differences in productivity (Quisumbing 2003). Empirical evidence has cast doubt upon traditional “unitary” models of the household, leading to the increasing use of collective models of the household in which the preferences of individual household members can differ, and income streams are not wholly pooled (Quisumbing and Maluccio 2000). For feminists this approach has proved to be an interesting way to raise issues of power despite concerns about methodological individualism and the emphasis upon quantifiable ‘material’ bases of bargaining power rather than contestation over symbolic meanings (Charusheela 2003).

Along with education and asset ownership, wages are widely seen as an important determinant of bargaining power, but, as Agarwal (1997) points out, they also need to be bargained for, setting up the possibility of virtuous or vicious cycles in which the outcomes of intra-household bargaining affect and are affected by extra-household outcomes such as wages.

Research in rural South India suggests that wages in the region are impacted both by the forces of demand and supply as well as by explicit bargaining (Ramamurthy 2000; Kapadia 1995). The effect of the former was seen in the fact that in both Telangana villages discussed above, there was a clear ‘peak’ wage that corresponded to the period of high agricultural demand. Villagers pointed to the impact upon wages of seasonal out-migration and construction work in nearby towns. But I was also told by Dalit women “haven’t the prices of chillies and salt risen? We all got together and made the ‘kapollu’ (large farmers) pay us more”. While I did not have the opportunity to study the influence of work gangs (“guttis” in Telangana) several respondents did mention that wages were higher “since we have ‘guttis’”, implying that bargaining by workers did matter.

An important implication of the nature of women’s involvement in the agrarian economy in Telangana is that we do not find a gender differentiated employer–worker relationship within agriculture, but instead a network within which wage workers in agriculture are predominantly women, as are those who most directly recruit, supervise and pay them. In fact in villages like Nayanunipalle where most households own and farm some land, women from a cultivator household typically accompany the group of female wage workers recruited for the day to the farmland and work alongside them till the end of the day before paying them, only to reverse the process the next day as part of a group recruited to work on another woman’s farm.

In conversations with women and NGO workers this emerged as a possible reason for the persistent gender wage differential that remained in agriculture. Several women justified rather than protested against the existence of the gender wage differential, repeating the statement that “men do heavier work” even in the face of NGO workers’ arguments that women’s work was just as burdensome and “heavy”. One could argue make the ‘false consciousness’ argument that gendered processes of socialization blind women to the parity between the work they do and the work that men do (see Agarwal (1997) for a critique). However, context does seem to matter here. Hart (1991) describes the situation in Malaysia where women agricultural workers seemed

to exhibit greater signs of class consciousness than male workers. Within Telangana, the reluctance of agricultural workers to organize contrasted sharply with successful union organizing of women 'beedi' (home-rolled cigarettes) workers in the very same villages.

Caste and class clearly play a crucial role in segmenting the female agricultural labour force, with even women agricultural workers from the same caste divided by class (Agarwal 1994; Kapadia 1995). Telangana is no different – 'beedi' work was dominated by Dalits, who are also less likely to own land – but discussions with NGO workers regarding the practicalities of organizing female agricultural labourers brought up another possible explanation for women's reluctance to organize.

For women who are both own-account farm workers as well as wage workers, the economic benefits of increases in real wages are ambiguous. The wage they receive today must be paid out to someone else tomorrow. A family farm of an acre would employ perhaps one day of male labour to dig ditches or help the man of the household complete ploughing. The same farm, on the other hand, would employ at least ten women days of labour to complete weeding and transplanting alone. Of the wage cost of this farm, men's wages would account for a much smaller share. The stakes these women have as workers in rising agricultural wages are thus offset by their concern for keeping the costs of production down – particularly as the costs of inputs such as fertilisers and electricity have gone up post-liberalization. Under conditions of reduced profitability in agriculture increases in female own-account cultivation work may then be accompanied by widening gender wage differentials in agriculture and, as a consequence, possibly even falling female intra-household bargaining power.

Testing the Hypothesis

The hypothesis being tested here is that the broad climate of agrarian distress in Telangana in the post liberalization period has resulted in female agricultural wage workers from cultivator households facing greater pressure to restrict bargaining over agricultural wages. Given that some men also occupy this 'dual class' status, the negative impact of own-account cultivation

upon male agricultural wages may exist, but the greater impact of higher female wages upon farm profits implies that such effects would be stronger for women.

Given that many women and men from cultivator households may only perform occasional agricultural wage work, I use the NSS' 'daily status' data to identify economically active, adult men and women who report any agricultural wage work at all, whether for a minority or majority of their working week. Similarly, I use the same daily status data to identify male and female adult workers who perform some own-account agricultural or cultivation work (including as unpaid helpers on their family farms).

For both men and women, there was a sharp and almost identical increase in the percentage of 'daily status' agricultural wage workers reporting some cultivation work as well (Table 3). The percentage for men started out a little higher and remained so in 99-00. However, given the larger number of female agricultural wage labourers, in absolute terms NSS estimates the number of such 'dual class' female workers increased by more.

(Table 3 about here)

Using the individual level NSS data on 'daily status', I also obtained agricultural wage data from the responses of those who reported agricultural labour as any one of their top four activities for the week. An average agricultural daily wage was calculated for each such respondent. This was deflated using the Andhra Pradesh Consumer Price Index for Agricultural Labourers with a base year of 86-87 (=100), so that the real wage figures reported below are in 86-87 rupees. To provide a comparison to current prices, the index was 4.5 times larger in 2008-09 (448) than in 86-87(100).

(Table 4 about here)

As can be seen in Table 4, the gender wage differential widened in 99-00. Table 5 suggests that average wages did not rise as much for female wage labourers overall, and marginally less for women reporting some cultivation work, when compared to their male counterparts. While in both NSS rounds male 'dual class' workers had higher average wages, for

women this was, if at all, only the case in 93-94. While higher average wages for ‘dual class’ male workers confirm the conventional hypothesis that such workers have higher fallback positions, the evidence for women is less clear. A two-sample group mean test did not confirm that this difference was statistically significant.

(Table 5 about here)

To more rigorously test the hypothesis that the unfolding of liberalization in this region may have negatively impacted the underlying bargaining position of ‘dual class’ women, I turn to regression analysis. I use the wage data to evaluate the extent to which the wages of women may be held down, post-liberalization, by their dual role as both own-account as well as wage workers in agriculture.

Regression Analysis

The analysis of agricultural wage work differs from regression analysis of wages in formal industrial or service sector contexts, in that compensation is unlikely to depend upon conventional measures of skill such as years of education. Unsurprisingly, a majority of both men and women in this dataset had not completed even primary school. Age provides the best proxy for experience, but at the same time can be a liability in what is physically taxing work. Trying to explain the wage earned by a worker in this context is thus likely to be challenging.

In this paper I use a standard ordinary least squares(OLS) regression technique, with the dependent variable being the log average agricultural wage reported. I restrict the sample to adult men and women who report performing some daily status agricultural wage labour. An alternative to the use of OLS would be to use a correction for sample selection bias in a double selection framework, given that workers must first choose to be economically active and then choose to perform agricultural wage labour. Results using this double selection method are available upon request from the author but since they did not differ from those obtained using OLS, I report only the latter in this paper.

Turning to the independent variables used in the wage regression, the variables relevant to the hypothesis being tested are:

- i) A dummy variable to indicate whether daily status agricultural workers (male and female combined) also reported any daily status cultivation work and thus occupied this 'dual class' status. As mentioned earlier, members of cultivator households are generally believed to have higher fallback positions and thus better able to bargain for higher wages.
- ii) A time, gender and occupation interaction dummy that tests whether such the effect of being such a dual-class status worker had a negative effect for women in 99-00. My hypothesis suggests that this variable would have a negative and statistically significant coefficient.

I also use conventional group and household level characteristics to control for other possible determinants of wages earned.

(Table 6 about here)

I use the district within which the worker resides to control for possible regional variations in wages. Apart from age (along with a squared term) and primary school completion, I include the worker ratio, assuming that larger households with higher worker ratios may have better fallback positions and thus allow workers greater bargaining power and wages. Female headed households are, however, generally considered to have lower fallback positions, increasing the 'push' to obtain work.

Membership in the least privileged scheduled caste/tribe groups could have a negative effect upon wages if such workers have lower bargaining power because of their lower social status. However, sociologists have pointed out a different, perhaps looser, model of patriarchy at work in lower caste groups that may result in female workers from these groups more effectively pushing for higher wages.

I also include dummies indicating whether the worker was unmarried, as well as whether the spouse (or household head if unmarried/spouse not specified) had completed at least primary school, and whether the spouse (or household head if unmarried/spouse not specified) was a

principal or weekly status agricultural worker. Given the linkage between marriage and status in Indian households, being unmarried may in fact decrease bargaining power for women, although the impact for men is less clear. The impacts of spousal education and occupation upon fall back positions depend upon the workings of patriarchy in these households and are thus theoretically ambiguous in a sample that combines men and women.

A dummy variable indicating whether the worker was female tests whether a gender wage differential remains after controlling for these individual and household characteristics. A time interaction term for gender tests whether the gender wage differential increased in 99-00, all else constant.

Results of Regression Analysis

The results of ordinary least squares regression with robust standard errors are reported in Table 7, Regression 1. The overall fit of the regression appears acceptable based upon F-test and adjusted R- square results. The fact that the adjusted R-square is 0.31 is not surprising since agricultural wage earnings in developing countries tend to be difficult to explain fully.

(Table 7 about here)

Age has a positive effect upon wages, as it would if it was a proxy for experience, but the effect diminishes with years. This is expected given the physically taxing nature of the work. Also as expected, the completion of primary school did not have a statistically significant effect upon wages earned. Somewhat surprisingly, caste, the household worker ratio and being from a female headed household did not have statistically significant effects upon wages earned. Being unmarried had a statistically significant negative effect upon wages, while the education and occupation of the spouse/household head did not.

The time dummy tells us that wages did rise in 99-00, as we saw in the tables earlier, but female workers earned less after controlling for these other individual and household level

variables. The statistical significance of the time and gender interaction dummy confirms that the gender wage differential widened in 99-00.

Overall, cultivation work did indeed have a positive effect upon wages as usually expected. However, the negative and statistically significant coefficient for the time, gender and cultivation interaction term indicates that women who reported some own-account work did see a greater decline in wage growth in 99-00. F-tests confirmed that both the coefficients were statistically significantly non-zero.

These results are in accordance with the hypothesis presented earlier, even though the effect does not appear to be very large. Importantly, if female cultivator work days increased in length, this may lead to an underestimation of this effect. Furthermore, the lowered bargaining power of 'dual class' female workers does not completely explain the increased gender wage differential in 99-00, given that the time_gender interaction dummy continues to be statistically significant. As previously discussed, gendered migration trends may play a role as well. However, this result does point to one possible way that women's wages have been adversely affected in aftermath of liberalization and suggests the need for further research on the changing nature of women's role as cultivators.

Alternative Specification

In the specification above, the time, gender and cultivation dummy could simply be picking up the impact of increased cultivation work by both genders in the 99-00 period. Controlling for this possibility requires the inclusion of an additional interaction term, time_cultivation, which is the product of the time dummy and the dummy for reported cultivation work. Including this term proves to be problematic due to the high correlation (0.7) between the time_cultivation and time_gender_cultivation dummies. Given my argument that in absolute terms more women became 'dual class' workers between NSS rounds 50 and 55, this high correlation is not surprising. However, it means that the inclusion of both these interaction terms raises the problem of multicollinearity. As seen in Table 7, Regression 2, after including

time_cultivation term, both time_gender_cultivation and time_cultivation become insignificant at the 5% level (and the confidence intervals vary across zero).

To resolve this specification issue therefore, Table 7, Regression 3 reports the results of dropping the time_gender_cultivation term. The time_cultivation interaction term alone is statistically insignificant, indicating that the effect upon agricultural wages of being a ‘dual class’ worker is likely to be specific to the women in the sample.

Implications of the results

In this paper I attempt to understand the implications of the agrarian distress experienced in the Telangana region post-liberalisation for women in cultivator households. The empirical analysis above suggests one possible mechanism by which the pressures faced by farm households affected women workers. To the extent that wage growth for women is restricted to a greater degree, and to the extent that wage earnings do in fact impact women’s bargaining power, the regression results imply that wage work for these women became less rather than more empowering. As the wider feminist literature on the effects on economic crises suggests, the transmission mechanisms of crises, in this case in agriculture, are likely to be gendered and women often bear the burden of adjusting to crises in ways that are not obvious to policy makers.

In the last four years the national and state governments in India have paid greater attention to the generation of rural employment and limited social safety net programs. This paper restricts itself to the immediate aftermath of liberalization in Telangana. Further research is required to examine the impacts of programs such as the National Rural Employment Guarantee Scheme(NREGS) upon women workers in this region. However, while the NREGS provides much-needed additional rural employment, this paper focuses more on the pressures faced by cultivators and the ways in which the deterioration of conditions for cultivators in the region can undermine efforts to prop up real wages. The problem of rising capital costs for cultivator households has still not received sufficient attention from policymakers.

The result also suggests that while the unionization of agricultural wage labourers is one of the most important outstanding tasks of the labour movement in India, in regions like Telangana women agricultural workers face contradictory pulls and may or may not respond to calls to organise.

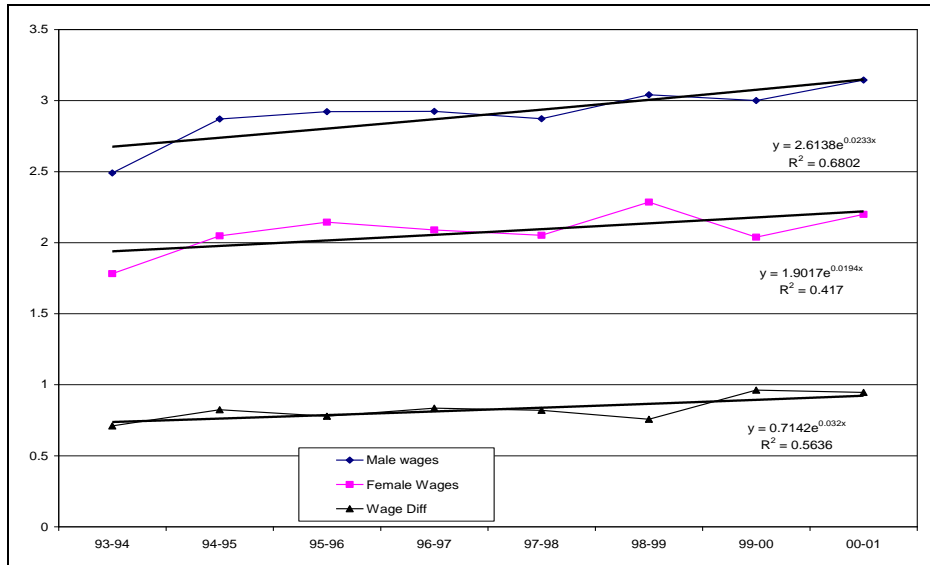
Conclusions

Women's labour force participation is a potentially important determinant of improved bargaining outcomes for women. The literature suggests both that the conditions under which women labour and the reasons why they participate shape the extent to which this potential for empowerment is realised. Rural Telangana, the part of India studied in this paper has traditionally had a feminized agricultural labour force. However, agricultural wage growth in Telangana slowed in the immediate aftermath of liberalization, while the gender wage gap widened.

Based on field observation of the gender division of labour within agriculture in the region, I use a household model to explore the link between women's roles in own-farm work, women's wage labour in agriculture and their bargaining power within the household. Given the pressure on profit margins as a result of rising input costs post-liberalization, I argue that female labourers' ability to bargain for higher wages within agriculture is adversely affected by the dual position several of these women occupy in being both cultivators and agricultural wage labourers. Despite data limitations, NSS surveys provide some evidence for the latter hypothesis suggesting that there is a need for further research that takes into account the impact of economic policies upon women, not just as consumers or as wage labourers, but as important contributors to small farm agriculture in India.

Tables

**Fig 1: Real Wage Growth in Telangana from 1993 to 2001
(with exponential growth trend lines fitted)**



Source: Agricultural Wages in Andhra Pradesh, Hyderabad: Directorate of Economics and Statistics.

Table 1: Rural Telangana: Participation in the labour force

	The economically active as a share of adults		Non-domestic workers as a share of all economically active adults		
	Male	Female	Male	Female	
82-83	91.5	92.7	99.7	79.3	
87-88	91.2	91.3	99.8	79.6	
93-94	89.8	91.7	99.8	81.4	
99-00	87.8	88.9	99.8	82.8	

Source: NSSO, various years

Table 2 Rural Telangana: Agricultural work as a share of economically active adults

	Principal and weekly status cultivators			Principal and weekly status agricultural wage labour			All agricultural work		
	Male	Female	Female share	Male	Female	Female share	Male	Female	Female share
82-83	41.2	30.5	44	35.7	38.9	53.6	61.3	47.1	44.9
87-88	41.5	28.8	41.7	35.0	40.6	54.4	62.1	48.2	44.5
93-94	41.3	31.9	44.6	36.8	41.3	53.9	65.6	57.8	47.9
99-00	42.7	33.9	45.6	35.6	41.5	54.8	68.4	62.5	48.7

Source: NSSO, various years

Table 3: Rural Telangana: Agriculture in ‘daily status’ data (percentages of economically active adults)

	Agricultural wage labour			Cultivation work			Percentage of wage labourers reporting some cultivation work		
	Male	Female	Female share	Male	Female	Female share	Male	Female	
93-94	32.6	33.3	51.6	41.7	29.5	42.5		7.2	6.58
99-00	32.9	36.6	53.6	46.4	34.5	43.6	14.34		13.56

Source: NSSO, various years

Table 4: Rural Telangana: Real average agricultural wage per day (in 86-87 rupees) (Adult, economically active, daily status agricultural workers)

	Male	Female	Female share of male wage
93-94	8.68 Rs	6.44 Rs	74.2%
99-00	12.15 Rs	7.78 Rs	64.0%

Source: NSSO, Rounds 50 and 55. Deflated by AP CPI(AL).

Table 5: Rural Telangana: Real average agricultural wage per day by occupation of worker (in 86-87 Rupees) (Adult, economically active, daily status agricultural workers)

	Male agricultural labourers		Female agricultural labourers	
	No reported cultivation	Cultivation work reported	No reported cultivation	Cultivation work reported
93-94		8.6	6.4	6.5
99-00		12	7.8	7.8

Source: NSSO, Rounds 50 and 55. Deflated by AP CPI(AL).

**Table 6: Descriptive Statistics of variables used in regression
(Adult, economically active, daily status agricultural workers)**

Variable	Number of observations	Mean	Standard Deviation	Minimum	Maximum
(Log) Average agricultural wage per day	2663	2.07	0.45	-0.47	3.83
District	2770	22.05	4.01	2	30
Age	2770	33.23	12.50	15	80
Age squared	2770	1260.55	949.77	225	6400
Caste group (SC/ST)	2770	0.46	0.50	0	1
Primary school completed	2770	0.15	0.35	0	1
Household worker ratio	2768	0.70	0.22	0.2	1
Female headed household	2770	0.095	0.29	0	1
Gender: woman	2770	0.53	0.50	0	1
Cultivation work also reported	2770	0.11	0.32	0	1
Unmarried	2770	0.12	0.32	0	1
Spouse/Household head primary school completion	2770	0.15	0.36	0	1
Spouse/Household head agricultural worker	2770	0.84	0.36	0	1
99-00 time dummy	2770	0.52	0.50	0	1
Time_gender interaction term	2770	0.28	0.45	0	1
Time_gender_cultivation interaction terms	2770	0.040	0.20	0	1
Time_cultivation interaction term	2770	0.08	0.27	0	1

Table 7: Regression results
Dependent variable: Log average real agricultural wage

	<i>Regression 1</i>		<i>Regression 2</i>		<i>Regression 3</i>	
	Number of obs	2661	Number of obs	2661	Number of obs	2661
	F(12, 2648)	85.04	F(13, 2647)	79.92	F(12, 2648)	84.56
	Prob > F	0.000	Prob > F	0.000	Prob > F	0.000
	R-squared	0.3101	R-squared	0.3103	R-squared	0.3098
	Root MSE	0.37238	Root MSE	0.37241	Root MSE	0.37247
Independent variable	Coefficient	Robust std. error	Coefficient	Robust std. error	Coefficient	Robust std. error
region	0.014***	0.002	0.014***	0.002	0.014***	0.002
age	0.011***	0.004	0.011***	0.004	0.011***	0.004
age-squared	-0.0001***	0.000	-0.0001***	0.000	-0.0001***	0.000
scheduled caste/tribe member	-0.014	0.015	-0.014	0.015	-0.014	0.015
primary school completed	0.035	0.023	0.036	0.022	0.036	0.022
household worker ratio	0.001	0.035	0.002	0.035	0.002	0.035
Female-headed household	0.022	0.024	0.023	0.024	0.024	0.024
gender: woman	-0.314***	0.024	-0.314***	0.024	-0.315***	0.024
cultivation work also reported	0.109***	0.028	0.131***	0.045	0.131***	0.045
Unmarried	-0.071**	0.031	-0.072**	0.031	-0.073**	0.031
Spouse/Household head primary school completion	-0.016	0.021	-0.016	0.021	-0.016	0.021
Spouse/Household head agricultural worker	-0.031	0.020	-0.031	0.020	-0.032	0.020
99-00 time dummy	0.327***	0.021	0.332***	0.022	0.337***	0.022
time_gender interaction term	-0.117***	0.030	-0.120***	0.030	-0.131***	0.029
time_gender _cultivation interaction term	-0.095**	0.046	-0.074	0.050		
time_cultivation interaction term			-0.044	0.056	-0.082	0.051
_constant	1.607***	0.089	1.605***	0.089	1.605***	0.089

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Appendix

The Model of the Household

Let us assume a two-person peasant household in which the primary source of income is cultivation and sale of a single crop. For simplicity, let us assume that women contribute labour to

the farm but also perform agricultural wage labour while, due to the feminised nature of the agricultural workforce, men perform only own-account farm work. Thus only female wage workers are hired for farm work. Furthermore, agricultural wages are the same across female workers in a region so that all women are paid the same daily wage.

Following Warner and Campbell (2000), the husband and wife maximise individual utility functions within a Stackelberg framework. The man has first mover advantage, deciding how many hours of female labour L_{fn} will be hired for the family farm. Women can then decide how many hours they will contribute to the farm, L_{fo} , taking L_{fn} as a parameter and then spend the rest of their fixed extra-household time in agricultural wage work (L_{fw}). The woman's reaction function becomes an input into the man's prior decision.

Women contribute all of their wage earnings to the household pool and these earnings, together with farm profits, constitute the household income, I . Men spend some portion of the combined household income upon male consumption goods (such as tea, snacks, cigarettes and alcohol) and the remaining is handed over to the woman, whose responsibility it is to buy the food and other consumption items jointly consumed by the members of the household. The share of combined household income that the woman receives, μ_f , is an outcome of household bargaining and thus, like bargaining power, is in turn a function of the female wage w_f such that $\delta\mu_f / \delta w_f > 0$.

While bargaining power is an increasing function of wages, it is less clear whether bargaining power shows diminishing or increasing returns to wages. The feminist literature tends to conclude that at low levels of wages and in the absence of 'decent' work, the empowering impact of wage work is likely to be small (Charusheela 2003). Thus at low wage levels, $\frac{\partial\mu_f}{\partial w_f}$ is also likely to be small – i.e. incremental increases in wages when wages are low do not increase

intra-household bargaining power by as much as when wages are high. That is, bargaining power shows increasing returns to wages so that at low wage rates, $\frac{\partial \mu_f}{\partial w_f}$ is small.

The woman uses her share of household income to buy C_f , the household's consumption of food while the man uses his share to buy G_m , goods that are only consumed by the man and only enter into his utility function.

Household Maximization Problem

The woman and man each maximise utility subject to time and budget constraints.

Thus the woman's maximization problem is:

$$\text{Max } U(C_f)$$

$$\text{Where } \frac{\partial U_f}{\partial C_f} > 0, \frac{\partial^2 U_f}{\partial C_f^2} < 0$$

s.t.

$\bar{T} = L_{fo} + L_{fw}$, where \bar{T} is the fixed total extra-household work time available to the woman and

$$P_f C_f = \mu_f(w_f) I$$

$$\text{where } I = PQ(L_{mo}, L_{fo}, L_{fh}, K) - w_f L_{fh} - P_k K + w_f (\bar{T} - L_{fo})$$

$$P, P_f, w_f, P_k, Q, L_{fo}, L_{mo}, L_{fh} > 0$$

K is fixed in the short run and L_{fh} is determined by the husband so that $L_{fo} = f(L_{fh})$.

Q is a production function that exhibits diminishing returns in each input.

The man's maximization problem becomes:

$$\text{Max } U(C_f, G_m)$$

$$\text{Where } \frac{\partial U_f}{\partial C_f} > 0, \frac{\partial^2 U_f}{\partial C_f^2} < 0; \text{ and } \frac{\partial U_f}{\partial G_m} > 0, \frac{\partial^2 U_f}{\partial G_m^2} < 0.$$

s.t.

$\bar{T} = L_{mo}$, where \bar{T} is the total non-leisure time available to the man and is fixed.

and

$P_m G_m = (1 - \mu_f(w_f)) I$, where K and L_{m0} are fixed and $L_{f0} = f(L_{fh})$.

By substitution,

$$C_f = (\mu_f(w_f) / P_f) I$$

$$\text{And } G_m = \frac{(1 - \mu_f(w_f)) P_f}{\mu_f(w_f) P_m} C_f$$

The first order condition for an optimal solution for the woman is:

$$\delta U_f / \delta L_{f0} = 0;$$

$$\delta U_f / \delta C_f > 0 \Rightarrow \delta C_f / \delta L_{f0} = 0$$

$$\Rightarrow \delta Q / \delta L_{f0} = w_f / P \dots\dots\dots(i)$$

and the first order condition for the man's optimization problem is:

$$\delta U_m / \delta L_{fh} = 0;$$

$$\delta U_m / \delta C_f > 0 \text{ and } \delta U_m / \delta G_m > 0$$

$$\Rightarrow \delta Q / \delta L_{fh} = w_f / P \dots\dots\dots(ii)$$

Taking the total derivative of (i) and (ii) with respect to the wage,

$$\frac{dL_{f0}}{dL_{fh}} = - \frac{\frac{\partial^2 Q}{\partial L_{f0} \partial L_{fh}}}{\frac{\partial^2 Q}{\partial L_{f0}^2}}$$

If female own-farm labour is at least partly supervisory, it would seem reasonable that the marginal productivity of hired labour is increased by an incremental increase in own farm labour.

$$\text{Thus, } \frac{\partial^2 Q}{\partial L_{f0} \partial L_{fh}} > 0, \Rightarrow \frac{dL_{f0}}{dL_{fh}} > 0.$$

$$\frac{dL_{fh}}{dw_f} = \frac{1}{P \left(\frac{\partial^2 Q}{\partial L_{fh}^2} \right)} < 0$$

$$\text{and } \frac{dL_{f0}}{dw_f} = \frac{1}{p\left(\frac{\partial^2 Q}{\partial L_{f0}^2}\right)} \left[\frac{\frac{\partial^2 Q}{\partial L_{fh}^2} - \frac{\partial^2 Q}{\partial L_{f0}\partial L_{fh}}}{\frac{\partial^2 Q}{\partial L_{fh}^2}} \right] < 0$$

Thus the amount of female labour the man wishes to hire for the family farm decreases with an increase in the female wage, while on the other hand, increases in the wage rate increase women's desire to supply agricultural wage work.

We assume that female workers bargain for higher wages if wage increases result in an increase in utility. At least for those women from peasant households, however, the change in utility as a result of increases in wage may or may not be positive.

$$\frac{dU_f^*(C_f^*)}{dw_f} = \frac{\partial U_f}{\partial C_f} \frac{dC_f}{dw_f}$$

By assumption, $\frac{\partial U_f}{\partial C_f} > 0$.

$$\frac{dC_f}{dw_f} = \frac{\partial C_f}{\partial w_f} + \frac{\partial C_f}{\partial L_{fh}} \frac{dL_{fh}}{dw_f} + \frac{\partial C_f}{\partial L_{fo}} \frac{dL_{fo}}{dw_f}$$

From first order conditions, $\frac{\partial C_f}{\partial L_{fh}} = 0$ and $\frac{\partial C_f}{\partial L_{fo}} = 0$.

Thus

$$\frac{dC_f}{dw_f} = \frac{1}{P_f} \left[\frac{\partial \mu_f}{\partial w_f} (I^*) - \mu_f (L_{fh}^* + L_{fo}^*) \right]$$

$$\text{Let } Z = \frac{1}{P_f} \left[\frac{\partial \mu_f}{\partial w_f} (I^*) - \mu_f (L_{fh}^* + L_{fo}^*) \right]$$

Thus for

$$\frac{dU_f^*(C_f^*)}{dw_f} > 0, \text{ or for rises in wages to be welfare enhancing for these women,}$$

it must be the case that $Z > 0$

$$\text{or } \frac{\partial \mu_f}{\partial w_f} (I^*) > \mu_f (L_{fh}^* + L_{fo}^*) \dots\dots\dots(iii)$$

If bargaining power shows increasing returns to wages, at low wage rates, $\frac{\partial \mu_f}{\partial w_f}$ is small in equation (iii) above. At low levels of wages I^* is likely to be high but so is L_{fh}^* . The relative sizes of each would determine whether or not condition (iii) will hold and $\frac{dU_f^*(C_f^*)}{dw_f} > 0$. An increase in wages thus may or may not result in increases in female welfare overall, and thus lowers the incentive to participate in the process of bargaining for higher wages.

The situation would be different for women from non-cultivating households for whom rising real wages in agriculture would be unambiguously welfare enhancing. However, if a significant share of the female agricultural labour-force is comprised of women from peasant households, the ability of women workers to effectively bargain as a unit would be influenced by the incentives of the latter.

Impact of Liberalization

Belief in the empowering effects of female labour force participation is an important aspect of the claim that liberalised economies are associated with increases in women’s well-being. Liberalisation is linked to increased labour force participation, and reduced gender wage differentials. Women’s labour force participation is in turn linked with improved bargaining outcomes for women (World Bank 2001). The impact of liberalisation in rural Telangana may, however, have a less positive impact upon the bargaining power of women.

As discussed earlier, the price of important capital inputs such as electricity and fertilizer in the Telangana region rose in the aftermath of liberalization, while output prices remained stagnant (Vakulabharanam 2004, Rao and Suri 2006). In the model above, taking total derivatives of the first order conditions with respect to P_k ,

$$\frac{dL_{fh}}{dP_k} = 0 \text{ and } \frac{dL_{fo}}{dP_k} = 0$$

$$\text{and } \frac{dI^*}{dP_k} = - (\mu_f / P_f) K, < 0$$

$$\text{Thus } \frac{dZ}{dP_k} = - \frac{\partial \mu_f}{\partial w_f} \mu_f K / P_f, < 0$$

A rising price of capital makes it less likely that the condition (iii) above under which increases in wages would increase women's utility will be satisfied. Thus the unfolding of liberalization in Telangana, given the highly feminised agricultural wage labour-force, could imply that women are dissuaded from bargaining for higher wages as workers, thus contributing further to the widening of the gender wage differential.