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RURAL NON-AGRICULTURAL EMPLOYMENT IN INDIA
The Residual Sector Hypothesis Revisited

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ABSTRACT

The literature on Rural Non-Agricultural Employment (RNAE) in India is replete with references as to its nature - whether or not it is residual. Vaidyanathan (1986) advanced the view that for the sector to be termed residual in nature two conditions should be satisfied: (1) the unemployment rate should be positively related to the RNAE and (2) the unemployment rate again should be negatively related to the wage ratio between the non-agricultural and agricultural sectors. These two propositions have become the corner stones of what has come to be termed as the Residual Sector Hypothesis (RSH). While the hypothesis as such seems to be theoretically sound, empirical evidence is rarely, if ever, consistent with the theoretical postulates.

The present paper examines whether the propositions find validity in the NSS data at five different points of time with different statistical tools. The conclusion emerging from the statistical exercises is that the second of the two propositions is not always valid. It is argued that the absence of validity of the second proposition may have to do with the fact that the labour market does not function perfectly and therefore, even if the proposition is not valid one cannot dismiss the possibility that the sector is residual in nature.

By way of conclusion it is noted that RNAS does perform the safety-net function admirably by absorbing those who could not find employment in agriculture in the service sector and, to a lesser extent, in the manufacturing sector. Insofar as this is true, the sector needs to be promoted. While rural non-agricultural activities of high-productive nature demand attention because they are a root out of poverty, the low-productive ones count, for they make critical contribution to the livelihoods of the poor and prevent further destitution.

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RURAL NON-AGRICULTURAL EMPLOYMENT IN INDIA

The Residual Sector Hypothesis Revisited

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The Rural Non-Agricultural Sector: Promises and Problems

It is not without reason that the Rural Non-Agricultural Sector (RNAS) is seen as holding a great hope for a broader and inclusive pattern of development of less developed countries (LDCs) [*Fabella, 1987: 139; Deininger and Olinto, 2001: 464*]. Many arguments, based on both theory and evidence, are advanced in support of this contention. There are, however, some dissenting voices as well. With the purpose of highlighting these contentious views and in our attempt to understand the nature of the RNAS we will cover below a great deal of familiar ground. The justification for a review of the early works arises from the profound effect they have had on the later day writings and from the need to put the analysis of the present paper in proper perspective, which we believe, departs considerably from some of the established works of the past.

The experience of the countries of Africa, Latin America and Asia bear testimony to the many advantages that are thrown open by an expanding RNAS. Rural Non-Agricultural (RNA) enterprises have often exhibited their adaptability to market signals [*Das, 2005: 417*] and, given the high income elasticity of demand for non-agricultural goods, whether of urban or rural origin, they have absorbed increasing proportion of the rural labour force into their fold [*King and Byerlee, 1978: 197-206; WB, 1983: 3*]. In the process, they have moderated the socially and economically harmful rural-urban migration [*WB, 1976: 212; Kabra, 2005: 35*]. Inasmuch as the activities contribute to the all-round development of the rural areas they have the capacity to contain rural-urban disparities.

The activities have demonstrated the capacity to stimulate and get stimulated by the growth of the agricultural sector and, thereby, trigger a virtuous cycle

of growth and development [Mellor, 1976: 161-191; Anderson and Leiserson, 1980: 242; Hazell and Roell, 1983: 9; Islam, 1987: 12; Haggblade et al, 1989: 1184; Reardon et al, 2001: 412; Nayyar and Sharma, 2005: 11]. The income stabilising feature of the RNAS often comes to the fore in several forms. It reduces the distress sale of agricultural produce [Ruben and Berg, 2001: 550], by being a source of employment in the lean agricultural seasons [Anderson and Leiserson, 1980: 241; Escobar, 2001: 531]. It can act as a hedge against crop failure occasioned by vagaries of the monsoon, by contributing to employment and income in such times [Haggblade, 1989: 1185; Parthasarathy et al, 1998: 147; Reardon et al, 2001: 404].

As the RNAS expands, it can impact positively on agricultural wages by tightening the rural wage market [Saith, 1987: 277; Elbers and Lanjouw, 2001: 493; Lanjouw and Proctor, 2005: 51-52] and can be an effective instrument for income redistribution in a context where land reforms prove futile to effect the much-needed structural change in land distribution [de Janvry, 2001: 467-468]. Activities in the sector have few barriers to entry and are accessible to the small and marginal farmers and to the landless [Islam and Shreshtha, 1987: 120; Reardon et al, 2001: 402] and the socially disadvantaged groups [Ferreira and Lanjouw, 2001: 519]. For the reason that the activities can be taken up by female labourers within or closer to their living abodes without disrupting their household chores, they can lessen the gender inequalities as well [Islam, 1987: 4; Reardon et al, 2001: 405; Unni and Rani, 2005: 173].

In China, Japan and Taiwan, RNA enterprises being highly productive, helped reduce rural poverty dramatically [Rao, 2005: 31; Nayyar and Sharma, 2005: 11]. Lanjouw and Proctor [2005: 51-52], arguing from the Latin American experience, note that in a counterfactual sense even the low productive RNAE of the residual variety is beneficial to the poor, for it acts as a safety-net, preventing the poor from falling even further into poverty. Reardon et al, [2001: 405] reviewing again, the Latin American experience make the point that 'more non-farm employment, all else being equal, reduces the incidence of poverty.' The experience of countries in Sub-Saharan Africa also shows that rural poverty has got mitigated as people gained access to RNAE [Haggblade et al, 1989: 1177]. In the Indian context too the RNAS has often been found to perform the safety-net function in that it contributed to raising the absolute income levels of the poor [Eapen,

1996: 1673; Basant, 1993: 385; Kundu et al, 2005: 151]. Interestingly, the incidence of bonded labour is also found to have declined with expansion of RNAE [Bhalla, 1992: 81].

The above review of the advantages that go with the RNAS should be viewed against the perennial problems associated with the sector. It is said that some of these enterprises have survived because workers, both adults and children, work for paltry compensation under unhealthy conditions and because of undue government patronage. The resilience and growth shown by the enterprises are seen as serving no useful purpose because the avowed objectives of mitigating poverty and regional inequalities are barely served by them. Skills of those engaged in the enterprises are very low and large amounts spent towards upgrading their skills have often come to nought [Kashyap, 1988: 677]. It is argued that while labour absorption can be an important goal of development policy in labour surplus developing countries, it is important, simultaneously, also to raise labour productivity and small village units are not particularly well placed in this regard. It is noted that it is the units of medium size, which satisfy the above norms and not the small ones [*ibid*: 678].

Evidence at times is also not conclusive as regards some of the advantages that the RNA activities are supposed to bring forth. As is well understood in the literature, activities in the RNAS are highly heterogeneous in nature – some are high productive and some low productive. The more productive of the activities are the domain of the more educated, the rich and those of high social status; and the illiterate, the poor and the socially lowly placed have to eke out a living in low productive activities, should they decide to venture into them [Verma and Verma, 1995: 423; Unni, 1996: 2249-2250; Deininger et al, 2001: 456-457; Corral and Reardon, 2001: 432-434; de Janvry, 2001: 472; Lanjouw and Proctor, 2005: 51; Thorat and Sabharwal, 2005: 19]. To the extent this is true an expansion of the RNA activities will not abate the trend increase in inter-personal inequalities. Despite their momentous growth and their far reaching contribution to China's overall development, doubts about the sustainability and spread of Township and Village Enterprises (TVEs) linger as increasing number of people leave these enterprises for employment in urban areas [Kabra, 2005: 46].

That RNAE has undesirable impact on rural income inequalities is found expression in some studies. Thus, in the Latin American Ecuador the growth of the modern RNAS has caused rural income inequalities to increase [*Elbers and Lanjouw, 2001: 493*]. In Sub-Saharan Africa the income distribution occasioned by RNA earnings is at times inequality-increasing [*Haggblade et al, 1989: 1177*]. Besides, even where RNAE is negatively correlated with the incidence of poverty, one cannot be certain of the causation [*Lanjouw, 2001: 536*].

Next, even if one concedes that the beneficial effects of an expanding RNAS outweigh the adverse effects, it is doubtful whether the sector expands at all. Hymer and Resnick [*1969: 493-506*] are among the early writers to argue that the goods and services produced in the sector (called 'z' goods) are of low quality, or 'inferior' and as a result people move away from their consumption as their incomes increase and as alluring urban manufactures become available. The likelihood of the products of traditional village industries employing labour intensive techniques of production not finding favour with the rural consumer is quite high as a region progresses [*Vyas and Mathai, 1978: 337; Papola and Misra, 1980: 1737; Murty and Durga, 1992: 6; Bhalla, 1993: 428; Kasyap, 1993: 391*].

The Nature of Rural Non-Agricultural Employment in India: The Residual Sector Hypothesis

If activities in the RNAS are rewarding, people pursue them on a priority basis. But in case they are not, and to engage in them is disadvantageous, they will become less important in the scheme of things of the rural labour force. Such activities will be viewed as 'last resort', 'refuge', or 'residual' and will only be taken up by labourers who cannot get 'adequate' work in the agricultural sector. Thus the characterisation of the sector as residual is rooted in the many disadvantages associated with it.

Vaidyanathan in his seminal essay published in 1986 sought to examine if, in the Indian context, the RNAS in its entirety is of the residual kind. He advanced the view that the sector may be categorised as residual if the following hypothesis, with its two propositions, is valid:

Hypothesis – I:

Proposition 1: Rural Unemployment rate (UR) is related positively to the share of Rural Non-Agricultural Employment (RNAE) in total rural employment or briefly the share of RNAE.

Proposition 2: UR is associated negatively to the wage rate in the RNAS or with the ratio of the wage rates in the RNAS and the agricultural sector or briefly the ratio of the wage rates (or wage ratio).

These two propositions have become the corner stones of the so-called 'Residual Sector Hypothesis' (RSH).

Vaidyanathan's contention is that, in circumstances when familial bonds are weakening, as in areas where commercialisation has taken deep roots, labourers who cannot find 'adequate' work in the agricultural sector, seek employment in the RNAS out of distress, leading to an increase in the share of RNAE. Next, where labourers take to the RNAE out of distress, they bid down the ratio of the wage rates.

Vaidyanathan [1986: 142-143] argues that both the above conditions should be satisfied for the RNAS to be branded as residual. For him, support merely to the first of the two propositions does not validate the RSH. It is possible that an agriculturally prosperous region marked by a high productive RNAS can draw labourers from less prosperous regions. The reservation wage rate in the region could then be quite high [Mahendra Dev, 1990: 1531; Unni, 1991: 114]. So much so, a high UR in the region might coexist with a large share of RNAE and a high wage rate in the RNAS. This is certainly not a case of distress for the labour force of the region and the RNAS there cannot be termed residual.

Testing the Validity of the RSH with the Cross-Section Data of 1977-78

To test the validity or otherwise of the RSH, Vaidyanathan [1986] worked with the Current Daily Status Unemployment Rate (CDUR), the share of RNAE and the ratio of the wage rates. In his exercises with the more reliable National Sample Survey (NSS) data of 1977-78 (32nd Round) pertaining to 15 major states of India, he found evidence to support the first of the two propositions and no striking relationship to validate the second – while CDUR and the share of RNAE were positively correlated, CDUR and

the ratio of the wage rates were not negatively correlated. This mixed evidence made him sceptical of categorising the RNAS as residual. Hypothesis – I thus stands rejected.

Even while Vaidyanathan's state-level data of the year 1977-78 did not support the two propositions underlying the RSH, Mahendra Dev [1990: 1530] and Unni [1991: 116-117] sought to test the hypothesis employing the disaggregated data of 56 NSS regions of the year. Seemingly, their work is constrained by the non-availability of data on the wage rates at the regional level and, therefore, they could not quite test the second proposition underlying the RSH as originally formulated by Vaidyanathan. What is more, the view that it is not possible to test the RSH employing the two stylised propositions of Vaidyanathan using the cross-section data has gained currency [for instance, *Mahendra Dev, 1990: 1531; Unni, 1991: 117; Basant and Parthasarathy, 1991: 113; Visaria, 1995: 408*]. However, the debate surrounding the nature of RNAE as such has never lost focus in the literature with those who earlier addressed to the theme returning to it even while new scholars joined the debate, employing the data from the Census or the NSS and the data at varying levels of aggregation and for different years.

Reasons Why the Negative Effect of a Rising UR on the Wage Ratio can Get Camouflaged

Meanwhile, several reasons are advanced to show why the second of the two propositions contained in the RSH may not be valid even if the RNAS is residual in nature. Some six of these reasons are detailed below:

(1) Some of those pushed out of agriculture take to self-employment in petty production. They do not compete with the wage labour for the wage rates to fall [Unni, 1991: 122; Eapen, 1996: 1673]. So much so, the wage rates may get influenced not only by the URs but by the share of the self-employed among the workforce as well. (2) A surplus labour situation may lead to increased casualisation of the workforce. But increased casualisation need not push down the wage rates, for casual labourers often command high wage rates [Unni, 1991: 113; Basant and Parthasarathy, 1991: 113; Sen, 1997: 88]. (3) Public expenditure to benefit the rural areas might at times moderate the fall in the wage ratio. It is not surprising if government expenditure on drought proofing activities push up the market wage rate [Sen, 1997: 89].

(4) The sector is heterogeneous in nature and is an amalgam of jobs with varying skills and productivities [*Islam and Shrestha, 1987: 132; Sen, 1997: 87; Chandrasekhar, 1993: 207; Elbers and Lanjouw, 2001: 492; Bhalla, 2005: 98*]. It is unlikely that the surplus labour situation pulls down the wage rates of the more productive RNAS jobs. Labour mobility in such jobs being less, the wage rates there may remain unaltered [*Unni, 1998: A41-A43*]. Some of the activities in the manufacturing sub-sector of the RNAS may qualify to be included in this category. Notwithstanding this possibility, the effect of the manufacturing sub-sector of the RNAS on the ratio of wage rates may not be significant if, as it so often happens, rural manufactures face stiff competition from urban goods. In the event, the growth of the sub-sector will be stunted and its capacity to absorb the labour force constrained and therefore the wage rates in the sector may after all get bid down.

(5) Solow [*1980: 5*] argues that the unemployed rarely try to displace their employed counterparts by offering to work for less and that the wage rates may not readily adjust to supply-demand conditions. Besides, the wage rates may be already very low that they cannot fall any further because of institutional factors. If one is to give weight to the above argument (that the market for labour is less than perfect), the second of the propositions in the RSH as formulated by Vaidyanathan – for the reason that it assumes the market forces of the supply of and demand for labour to operate freely – may serve little practical purpose to know whether or not labourers are joining the RNAS out of distress.

(6) Rural services remain largely insulated from the sort of competition that manufactures face. Services, by their very nature, are difficult to move across space and they have the potential to absorb a sizeable segment of the labour force [*Fabella, 1987: 139-142; Haggblade et al, 1989: 1187; Reardon et al, 2001: 395; Corral and Reardon, 2001: 434*]. While the share of employment in new and complementary services is observed to be positively related to per capita income, that of old services (e. g., domestic services) is negatively related to it. The combined effect of these positive and negative influences is that their share increases with economic progress [*Katouzian, 1970*]. This view is no doubt contested at times [*Bauer and Yamey, 1951; Gershuny, 1977*]. It is argued that the share of services need not increase with development because: (i) activities in the sector, in particular,

trade and transport, lose their ground as the distributive task becomes easier and requires less labour and (ii) labour and capital are not always employed in the services in fixed proportions but instead as an economy develops, capital displaces labour. Nevertheless, the development experience of large countries, including India suggests that the share of services has been increasing [Murty and Reddy, 1995, 671]. So even while the unemployed may, in general, take to RNAE out of distress and may have to offer to work at low wages, the distress of those engaged in service sector may be less intense. They may therefore get absorbed without having to offer themselves at low wage rates. In essence what is being suggested is that the service sector can annul the negative influence of unemployment on the ratio of the wage rates, as proposed in the RSH.

The general impression that gained ground over the years is that all or some of the factors listed above could moderate the negative influence of UR on the wage ratio. Yet, earlier works on the RSH seem not to have at all pursued the idea whether the unemployment-wage rate relationship could prove significant when the effect of these factors is controlled for. In fact, it is compelling to examine the relationship between the wage ratio on one hand and one or more of the variables listed above on the other.

Also missing in the earlier studies on RSH is the possibility as to what happens if only the segment of the labour force which is chronically unemployed represented by the Usual Status Unemployment Rate (USUR) – as against the Current Daily Status Unemployment Rate (CDUR) representing the UR among the chronically unemployed and the underemployed – is one's concern while examining the relationship between the wage ratio and the URs.

A brief review of the Indian literature on the residual nature of RNAE may not be out of place here. The first of the two propositions advanced by Vaidyanathan [1986], involving the relationship between the UR – to be specific, the Current Daily Status Unemployment Rate (CDUR) or one of its proxies reflecting the distress conditions faced by the rural labour – and the share of the RNAE, alone has become the basis for categorising the RNAS as residual or otherwise in several writings. For instance, Unni uses the poverty variable to capture the distress conditions but finds no evidence to substantiate even the first of the two conditions underlying the RSH. She,

however, finds some evidence in support of the first condition when landlessness is used as a measure of distress [1991: 120]. Kumar [1993: 453], employing 1987-88 NSS data of major states concludes, based on the observed positive association between CDUR and the share of RNAE, that the hypothesis is generally accepted. Working with the NSS data of 1987-88 pertaining to the eastern region of India, Verma and Verma [1995: 426] find significant positive association between CDUR and the share of RNAE and conclude that the RSH is true for the region.

Parthasarathy et al, [1998: 150] establish the relationship between CDUR and the share of RNAE using the cross-section data of 1987-88 and 1993-94 and view it with the time-series evidence on the ratio of the wage rates in their attempt to test the RSH. Their study leads them to the conclusion that the hypothesis is valid in 1987-88 but not in 1993-94. So they opine that the distress induced phenomenon is on the wane in the RNAS.

There are also studies (though they do not directly address to the UR-RNAE relationship – the one that is useful in part to examine whether or not diversification into RNA activities is distress-led) which seek to identify the nature of the RNAE by studying the statistical relationship between one or the other index of agricultural development and the share of the employment (a relationship that serves in part to test whether or not diversification into the activities is growth- or demand-led). With the state-level data on the rate of growth of agriculture and of RNAE (males), Bhalla [1997: 159-160] concludes that Indian agriculture in the 1980s was residual but at a high level of productivity per acre. Chandrasekhar's [1993: 222] analysis of West Bengal data shows that in years when the agricultural sector flourished in the early 1970s and 1980s there was near stagnation in the male RNAE.

With the district-level Census data of Kerala state, Eapen [1995: 637-638] shows that while the increase in the share of RNAE was caused by both 'demand and distress-induced factors' in 1981; in the year 1991 it was the distress-induced factors that were more important. Shukla [1992: 1487-1488] upon an examination of production and employment data of 1971 and the growth rates of 1971-81 pertaining to the districts of Kerala concludes that the 'perception of the non-farm as a homogenous residual rural sub-sector seems generally unrealistic.' For Visaria, it is *prima facie* difficult to brand the RNAS as residual (*presumably, in its entirety*) [1995: 408]. Thus

the excursions into the theme of the nature of RNAE, though many, do not unexceptionally support the thesis that it is residual in its entirety.

Usefulness of Alternative Measures of UR While Testing the Validity of the RSH

As noted, one striking similarity in most studies seeking to test the RSH is that they use CDUR to reflect the unemployment crisis (distress) in rural areas or 'inadequacy' of work in agriculture without providing justification for using it. It appears that their choice has to do with the belief that those who cannot get adequate work in the agricultural sector spill over into the RNAS and the inadequacy of the work is best reflected by CDUR.

But, is the choice of CDUR *always* appropriate to assess the pressure on labourers to take up work in the RNAS out of distress, considering that the pressure can vary from time to time? Is it possible that use of a *more* or *less inclusive* measure of 'inadequacy' of work as a measure of distress would validate the RSH at a point of time? And, how does one capture the different degrees of seriousness of the 'inadequacy of work'?

Rather than taking the line that RSH cannot be measured in the form it is formulated by Vaidyanathan, because the peculiarities of the labour market exercise a check on the wage rates in the RNAS from behaving as expected, we may take here a moderate view that the hypothesis would be valid if we work with a *less inclusive* measure of UR such as the USUR.

The URs published by the NSS organisation are basically of three types, viz, the Usual Status Unemployment Rate (USUR), the Current Weekly Status Unemployment Rate (CWUR) and the CDUR. USUR is an estimate of labourers who remained unemployed during a major part of the reference year, CWUR of those who did not find work even an hour during the reference week and CDUR of those who did not secure work on a day or some days during the reference week. The USUR is a measure of chronic unemployment during the year and is an indicator of the labour force which is in dire need of regular work. CWUR measures chronic unemployment of the labour force during a week. The reduced reference period makes it a *more inclusive* measure of UR than the USUR, and the difference between the two would provide a measure of seasonal unemployment. CDUR is the *most inclusive* measure of all URs and captures the 'with-in week'

unemployment of those classified as employed on the weekly basis. It is a measure of both chronic unemployment and underemployment and is the *most inclusive* of all unemployment measures [PC, 2002: 39-41].

Unni is apprehensive about the use of NSS URs while testing the validity of the RSH. Drawing upon the views of Parthasarathy, she argues that the NSS rates *only* capture open and visible unemployment [Unni, 1991: 116; 1998: A40]. If we are to take this view as indicating the need for making the unemployment measure *more inclusive* while testing the RSH, CDUR may not adequately serve the purpose. No doubt CDUR as per the NSS is the *most inclusive* of the three URs. But even this measure does not totally account for underemployment among all categories of the labour force. In fact, it is pointed out by Paul [1988: 1475] that there are different degrees of underemployment and the most inclusive 'underemployment rate together with the full UR' – the 'comprehensive UR' – is far removed from CDUR as estimated and presented by NSS. Having said that he suggests a measure to calculate the 'comprehensive UR' and arrives at the rate for the year 1977-78 based on the NSS data [*ibid*: 1475-1477].

The simple correlation coefficient between the 'comprehensive UR' and the share of RNAE is statistically significant for males (at 0.82) but not for females (0.45). More importantly, the relationship between the UR and the ratio of the wage rates is significant neither for males (-0.13) nor for females (0.24). Thus, the use of the 'comprehensive UR' provides no support to the RSH as formulated by Vaidyanathan in the 1977-78 data.

Let us now consider whether we are in the wrong in choosing a measure of UR (such as the 'comprehensive UR' or CDUR) which is *too inclusive* for the RSH to be found valid in the data of 1977-78. To put it differently, considering the residual nature of RNAE as one of *degree*, is it possible that the hypothesis will be found true if we work with a measure of UR which is *less inclusive* than CDUR?

By choosing to leave the agricultural sector, the surplus labour, comprising (1) the chronically unemployed and (2) the underemployed segments, would have to endure loss of harmony and sacrifice familial security that guarantees sustenance. Therefore, it would not like to leave the sector and seek work in the RNAS unless compulsory. No doubt, both the segments of the

surplus labour measured by CDUR are compelled to seek outside work. But the compulsion is more on the chronically unemployed segment measured by USUR. And for the reason of being more compelled, the unemployed measured by the *less inclusive* USUR might put far greater downward pressure on the wage rates in the sector than the unemployed signified by the *more inclusive* CDUR. This is analogous to the view, advanced by Unni [1991, 122], that the part of the surplus labour not taking to self-employment alone joining the wage labour market and putting downward pressure on the wage rates [Unni, 1991].

A brief statement, to reiterate some of the plausible relationships, is in order. Even in case where CDUR is not negatively and significantly related to the wage ratio, USUR could be so related. And, in the event of CDUR being negatively related, USUR also ought to exhibit the same relationship.

Capturing Residual RNAE of Varying Degrees Using Alternative Measures of UR

One reason why the RSH is revisited here is because the earlier works on the theme ignored the possibility that the residual nature of RNAE could be mainly a *matter of degree* and, that if the use of the *more inclusive* CDUR as a measure of UR in testing the validity of the RSH does not satisfy the two conditions put forward by Vaidyanathan, the use of the *less inclusive* USUR might. Another reason that made us to return to the theme lies in the possibility to use a different statistical design while testing for the RSH. Based on this understanding we return to the hypothesis advanced by Vaidyanathan, with its two basic propositions, with the difference that we now work with USUR, besides CDUR, to capture the residual RNAE of lesser magnitude.

Hypothesis – II: The RSH is validated by the 1977-78 data in its *less inclusive* formulation, in the sense that USUR is related: (1) positively with the share of RNAE and (2) inversely with the ratio of the wage rates.

Since the productive efficiency of activities in the RNAS is admittedly of a heterogeneous nature, it is inappropriate to brand the sector in its entirety as 'residual'. Also, the relative share of the high- and low-productive components of the sector can change over time. But at a point of time, the sector in its entirety might as well be residual in nature if it largely encompasses low-productive activities.

In trying to test the validity of the above hypothesis, we will merely employ the cross-section NSS data of major states of the country and base our conclusions on simple correlations to begin with. We present details separately for males and females. Details for 'persons', are not worked out (because, published data on the non-agricultural and agricultural wages for persons – males and females together – is not available). Employment in the RNAS is defined, as in earlier works on the theme; to include workers engaged (on the basis of Usual Principal Status) in agriculture; plantations; livestock production; agricultural services; hunting, trapping, and game propagation; forestry, and logging; and fishing (Major Industry Group with code '0' as in NSS).

Correlation coefficients given in Table – 1, call for attention. First, the USUR and the share of RNAE have a positive and statistically significant correlation both in respect of males and females in 1977-78 (column 3 of the Table). The positive relationship is not unique to our study and the use of CDUR also yields similar results (column 4 in the Table). And, to reiterate, this finding by itself cannot be taken as sufficient proof to say that RNAE is of the residual type. What is of consequence, however, is the second proposition – the negative correlation between UR and the ratio of wage rates.

The observed correlations between USUR and CDUR on the one hand and the ratio of the wage rates on the other are presented in Table – 2 (in columns 3 and 4), both for males (panel I) and females (panel II). The correlation between USUR and the ratio of the wage rates is negative and significant, but the strength of the relationship is relatively weak for males – the coefficient turning out to be significant at only 10 per cent level; and quite strong for females – the coefficient being significant at 1 per cent level. If one employs CDUR instead of USUR, as is done by Vaidyanathan and others, the correlation coefficient between the two variables, though negative, is not statistically significant both in respect of males and females. One needs to be cautious while drawing generalisations from the observed correlations, for one, we worked with simple correlation coefficients and, two, in respect of males, the coefficients are just about significant. By way of conclusion we may say that the data of 1977-78, seem to 'generally' support both the stylised propositions of the RSH, but in only its *less inclusive* formulation.

Again, though statistically not very rigorous, it is possible to look for the validity of the second of the propositions contained in the RSH in the data of 1977-78 in another way. The data of the year pertaining to the wage ratio and the USUR/CDUR pertaining to the 15 states may be classified broadly into two groups based on the value of the wage ratio. The first group may be defined to constitute that with the value of the wage ratio greater than 100 per cent and the second group that with its value less than 100 per cent. The second group – wherein the non-agricultural wage rate is less than the agricultural wage rate – may be seen as comprising those states where the non-agricultural wage rates have already been so very low that they can hardly go down any further. Following the second postulate of the RSH, we examined if the average wage ratio will be low in states where the average USUR/CDUR is high and vice versa. As may be seen from Tables – 3 and 4 the data is indeed consistent with the presumption for both males and females in case of USUR and for males in respect of CDUR. Thus the data of 1977-78 seem to validate the RSH, particularly in its *less inclusive* formulation.

To be more assertive about the conclusions, one has to see if there is empirical regularity of the observations made based on 1977-78 data, in the years since and also whether the conclusions hold if we use slightly more advanced statistical techniques than simple correlations and averages.

Empirical Regularity of the Observed Relationships

Vaidyanathan who was sceptical of branding the RNAS of 1977-78, as residual in its *more inclusive* form, in his contribution of 1986, became even more doubtful to categorise it so in his work of 1994. As the real wage rates of agricultural and non-agricultural labourers rose between 1977-78 and 1987-88, even as there was a rapid expansion of RNAE during the period, he advanced the view that the trend increase in the real wage rates is an outcome of an excess of labour demand over supply and not the opposite for the RSH to be true [1994: 3151]. Since the increase in the wage rates was reportedly triggered by a diversification of the labour force and not so much by an increase in productivity and a more intensive use of capital with the attendant consequence of loss of jobs, Vaidyanathan's argument – that the RNAS was far from being residual in its *more inclusive* form up to 1987-88 – seems to gain credibility. It is, however, useful to note

that the recorded increase in the wage rates was only little, besides being short lived [Unni, 1997: 465; 1998: A41]. It follows, therefore, that the RNAS, even if not residual in its *more inclusive* form, could still be residual in its *less inclusive* form in the years subsequent to 1977-78 and might have even become residual in its *more inclusive* form as well in years subsequent to 1987-88, based on the observation that the ratio of the wage rates of the non-agricultural sector vis-à-vis the agricultural sector has then fallen [Unni, 1997: 465]

The size of the RNAS of 1977-78 in different states could not have been independent of the rapid growth in the agricultural sector made possible by the introduction of HYV technology in the mid-1960s. One expects the technology to have culminated in a buoyant RNAS wherein employment was largely of the non-residual kind in the year 1977-78. This is because agricultural prosperity could make rural inhabitants to invest their surpluses in the RNAS and as a result many workers could get gainfully employed in the sector. A developed agricultural sector itself could absorb into its fold many of the new entrants into the labour force and the hitherto underemployed labourers.

But as we found, labourers seemed to be taking to the activities of the RNAS only because they had nowhere else to go for gainful employment in the year 1977-78. That is, even in 1977-78, contrary to expectations, the RNAS appeared residual in nature [*a la Chandrasekhar, 1993: 221-22*], particularly in a *less inclusive* sense. But the sector that exhibited characteristics of a residual nature in 1977-78 in a *less inclusive* sense need not in theory continue to show the same features in the subsequent years. All or some of the conditions that can shape its nature, viz. the nature of technology that is in use among rural areas, the employment elasticity of output, the land-man ratio, migration of labour into the more prosperous rural parts etc, may have undergone changes since.

That these conditions have worked *increasingly* to the disadvantage of labourers in the countryside is telling the obvious. For instance, the number of tractors per lakh hectares increased from 188 to 1442 and employment elasticity fell from 0.45 to 0.00 between 1977 and 1999-00 and the ratio of gross sown area to rural population fell from 2.64 to 0.30 between 1971 and 2001. These developments may have led to an *increase* in the magnitude

of RNAE of the residual variety. The negative relationship between the wage ratio and USUR which is on the borderline of being statistically significant for males is expected to get strengthened over the years as the conditions for labour absorption have been worsening in the countryside. Also, an increasing proportion of those reporting as unemployed as per the CDUR criterion and experiencing distress may have looked up to join the RNAS, and have exerted downward pressure on the ratio of the wage rates. So much so, the relationship between CDUR and the ratio of the wage rates could also have turned negative over time. What we are suggesting bears emphasis that the RSH which found limited validity and only in its *less inclusive* formulation in 1977-78, should not only get strengthened in that formulation in the following years, but also might come to be valid even in its *more inclusive* sense as well in recent years. Following this understanding, we advance another hypothesis:

Hypothesis – III: The RSH with its two propositions, besides being valid in its *less inclusive* formulation (that is when tested with USUR), in all the years succeeding 1977-78 (and up to 1999-00) will come to be valid even in its *more inclusive* formulation (that is when tested with CDUR) as well in all the years succeeding the one in which it first stands valid for the factors impacting on rural labour absorption seem only to have worked to the disadvantage of the labour force over the years.

As a corollary we may contend thus: Since USUR is *less inclusive* than CDUR, when USUR is negatively correlated with the wage ratio, CDUR need not be correlated with the ratio. And if CDUR is negatively correlated with the wage ratio, USUR ought to be so correlated with the wage ratio.

As we test this postulate below, it is necessary to throw in a caveat here. The agricultural sector of the country received a serious set back in the form of drought in the year 1987-88 and to counter its ill-effects, drought proofing activities were carried out on a more than the usual scale. As a consequence, the share of RNAE of the year might have been higher than what it otherwise would have been. So much so not too much can be read from the results pertaining to the year. Also, subsequent to 1991 the Indian economy has been witnessing dramatic change with the growth rate of the non-agricultural sector becoming resilient. The change may have worked, at least to an extent, to moderate the negative influence of the increasing pressure of the labour force, capital intensive technology etc., cited above.

Now, we may set ourselves the task of testing for the empirical regularity of the RSH. From simple correlations, we find a positive and significant relationship between (1) the share of RNAE and USUR and (2) the share of RNAE and CDUR in all the years under study, from 1977-78 to 1999-00, for both males and females (Table–1). More important, however, is the second proposition of the hypothesis relating to the continued validity of the negative relationship over the years between (1) the wage ratio and USUR and (2) the wage ratio and CDUR. We will now concentrate on this proposition.

Considering males, we find that the correlation between the wage ratio and USUR is found significant, as noted, in the year 1977-78 but at 10 per cent level, and in that abnormal year 1987-88 at 5 per cent level. In the other 3 points of time the relationship, though negative, is not significant. These findings make one sceptical of the validity of Hypothesis – III for males. In respect of females, however, the correlation coefficients are negative and highly significant to leave us in no doubt as to the validity of the hypothesis. Next, when the relationship between the ratio of wage rates and CDUR is examined, it has not been found statistically significant both for males and females, in any of the years under consideration, excepting in 1987-88 (Table–2).

Thus, our simple correlation exercises with the cross-section data of 15 major states seem to lead to the conclusion that the RSH, even in its *less inclusive* formulation, has not been valid for males, but valid for females.

Let us consider now if the grouping of states based on the values of the wage ratio into two would yield an inverse relationship between the (average) wage ratio and the (average) USUR/CDUR – would validate the RSH. To put it differently, we may examine if the average wage ratio will be low in states where the average USUR/CDUR is high and vice versa. Data corresponding to the above averages are shown in Tables – 3 and 4. What comes out from it is that in all the years from 1977-78 to 1987-88 there is an inverse relationship between the averages of USUR and the wage ratio for males and for all the years from 1977-78 to 1999-00 for females. The general conclusion that emerges from an examination of these average values is that males started on a bad note – that is they were taking to RNAE out of distress in the first three points of time but seems to have ended up in

a better position in both 1993-94 and 1999-00 and females have all along been in a distress state. By and large, the same conclusion holds when we examine the relationship between the averages of CDUR and that of the wage ratio – we find the relationship to be negative in the years from 1977-78 to 1987-88 for males and from 1983 to 1999-00 for females. The fact that there is no negative relationship between the wage ratio and the URs should be interpreted cautiously. The absence of the negative relationship might as well be because the labour market is imperfect and is not adjusting itself to labour demand and supply conditions. Thus there is a need to go beyond simple linear correlations and averages to multiple linear regressions in our attempt to examine the robustness of the relationship between the URs on the one hand and the share of RNAE and the wage ratio on the other.

Further Statistical Tests

The regression model employed to capture the variations in the share of RNAE across the major Indian states employs three independent variables in a stepwise regression. The variables are USUR/CDUR, the Net State Domestic Product (at factor cost) from agriculture per agricultural worker averaged over the triennium ending the year of the study in question (in brief PCNSDP-AG) and the percentage of area under Non-Food Grain crops to gross cropped area (briefly, NFG). The regression form is therefore as follows:

Equation – 1: Share of RNAE = f (USUR/CDUR, PCNSDP-AG, NFG)

Our primary objective here is to see if USUR or its variant CDUR influences the size of RNAE. In our statistical exercises we also use the PCNSDP-AG because a large body of literature centres round the theme of the influence of agricultural prosperity (PCNSDP-AG being one such measure) on the share of RNAE. The values of PCNSDP-AG used in the regressions of the years 1977-78, 1983, and 1987-88 are expressed at the constant prices of 1970-71 and those employed in the regressions of 1993-94 and 1999-00 are expressed at the constant prices of 1993-94. We also incorporate another variable in the model that is, NFG. To capture the degree of commercialisation of an economy and its likely influence on the share of RNAE, the percentage area under NFG or its variants is used by Vaidyanathan and others. Working with the variables shown in Equation – 1, we find the values of R^2 , showing the goodness of fit of the equation in

question, is very high and significant. And, among the independent variables both USUR and the CDUR turn out to be positive and highly significant. These conclusions hold whether we work with the data of males or females in all the years that figure in the study. The variable PCNSDP-AG is also positive and statistically significant in many forms of the regression model suggesting that agricultural prosperity has impacted positively on RNAE (Tables – 5 to 8).

The equation used to explain the variations in the wage ratio is given under:

Equation – 2: Wage ratio = f (USUR / CDUR, PCNSDP-AG, NFG, Share of Service Sector in Total Employment [SSB], Share of Manufacturing Employment in Total Employment [MFG])

In the above equation we used the URs as is customary. We also included the variable 'Share of the Service Sector' (SSB). It is defined broadly to include the trade, transport and financial services. It is included among the independent variables because as noted above, it is likely to influence the wage ratio. We also included 'Share of the Manufacturing Sector' in total employment (MFG) for the same reason. Our results presented in Tables – 9 to 12 show that the USUR or CDUR, except in one odd case, does not at all explain the variations in the wage ratio. The results obtained using stepwise regression thus run counter to the proposition – 2 of the RSH as formulated by Vaidyanathan. Either SSB or MFG or both the variables are seen impacting on the wage ratio negatively in all but a few cases.

What these results suggest is that those who are thrown out of the agricultural sector are able to find employment in the service sector or to a lesser extent in the manufacturing sector. In the bargain they depress the wage ratio. Unemployment as such is still not a particular source of worry in the sense that it does not depress the wage ratio. To the extent that the workers are engaged in the lowly paid jobs in the SSB and MFG, the RNAS may be termed as residual.

The question that arises at this stage is when can one call the RNAS as residual? An increase in RNAE occasioned by an increase in UR may be a sufficient proof that the RNAS is residual. The other proposition that the

wage ratio should be negatively related to the UR for the RNAS to be branded as residual is not necessary. Because of the fact that labour market is imperfect wage ratio does not get depressed by an increase in UR. The fact that the unemployed are taking to lowly paid jobs in the service sector and the manufacturing sector is itself enough proof that the RNAS is residual.

Conclusions

In sum, our study shows that there is an unmistakable positive influence of USUR and CDUR on the share of RNAE. That is the first proposition in Vaidyanathan's formulation of RSH stands valid right from 1977-78 to 1999-00. His second proposition signifying the relationship between the wage ratio and the *more inclusive* CDUR or the *less inclusive* USUR is not validated by the regression exercises. But a rejection of the proposition is not a sufficient proof to reject the view that labourers are not taking to jobs in the RANS out of distress.

All indications are that the RNAS has so far been able to absorb the growing labour force into its fold, in the service sector and to a lesser extent in the manufacturing sector. The fact that those employed in the service and manufacturing sectors are pulling down the wage ratio is enough indication of the residual nature of the RNAS.

What emerges from our analysis is that the second of the propositions advanced by Vaidyanathan does not help to know whether the RNAS is residual in nature – a sector of last resort. Since the labour market is less than perfect, it is unlikely that an increase in USUR or CDUR brings down the wage ratio significantly. To brand the RNAS as residual the first of the two propositions advanced by him – that UR should impact positively on the share of RNAE – is itself enough proof that the sector is residual.

There can hardly be any doubt that the RNAS is performing the safety-net function competently and therefore it deserves to be promoted. While RNA activities of high-productive nature demand attention because they are a route out of poverty, the low-productive ones count, for they make critical contribution to the livelihoods of the poor and prevent further destitution.

TABLE – 1: Correlation Coefficients between Alternative Measures of Unemployment Rates and the Percentage of RNAE in Total Rural Employment

Sl. No.	Year	USUR & % of RNAE	CDUR & % of RNAE
(1)	(2)	(3)	(4)
I. Rural Males			
1	1977-78	0.93*	0.90*
2	1983	0.93*	0.89*
3	1987-88	0.78*	0.87*
4	1993-94	0.45***	0.61*
5	1999-00	0.72*	0.64*
II. Rural Females			
1	1977-78	0.91*	0.60*
2	1983	0.91*	0.80*
3	1987-88	0.81*	0.91*
4	1993-94	0.57**	0.66*
5	1999-00	0.72*	0.61*

* Significant at 1% level. ** Significant at 5% level. *** Significant at 10% level.

Note: Data pertaining to all the 15 major states are used while arriving at the coefficients.

USUR: Usual Status Unemployment Rate. CDUR: Current Daily Status Unemployment Rate.

Table - 2: Correlation Coefficients between Alternative Measures of Unemployment Rates and Ratio Non-Agricultural Wage Rate (NAW) to Agricultural Wage Rate (AW) of Agricultural Labourers

Year	Sl. No.	USUR & Ratio of NAW to AW	CDUR & Ratio of NAW to AAW
(1)	(2)	(3)	(4)
Panel I: Rural Males			
1977-78	1	-0.44***	-0.26
1983	2	-0.37	-0.23
1987-88	3	-0.49**	-0.54**
1993-94	4	-0.21	-0.36
1999-00	5	-0.23	-0.28
Panel II: Rural Females			
1977-78	1	-0.73*	+0.09
1983	3	-0.51**	-0.36
1987-88	5	-0.59**	-0.67*
1993-94	7	-0.59**	-0.27
1999-00	9	-0.41***	-0.21

* Significant at 1% level. ** Significant at 5% level. *** Significant at 10% level.

Table – 3: Average Values of USUR and Wage Ratio for the States with Wage Ratio >100 and <100

Sl. No.	Year	Average USUR for states where wage ratio is >100	Average wage ratio for the states where the ratio is >100	Average USUR for states where wage ratio is <100	Average wage ratio for the states where the ratio is <100
Rural Males					
1	1977-78	17.3	129.0 (11)	51.3	93.3 (4)
2	1983	13.0	126.8 (7)	37.3	82.6 (8)
3	1987-88	29.1	113.3 (12)	64.8	85.6 (3)
4	1993-94	23.7	122.2 (15)	n. a.	n. a.
5	1999-00	25.1	125.2 (14)	8.0	87.0 (1)
Rural Females					
1	1977-78	36.3	112.8 (7)	128.8	78.1 (8)
2	1983	8.2	124.8 (4)	37.8	61.9 (11)
3	1987-88	34.5	116.2 (9)	85.1	86.9 (6)
4	1993-94	6.8	118.9 (8)	69.4	63.8 (7)
5	1999-00	6.9	120.7 (8)	62.0	77.0 (7)

Figures in brackets are the number of states falling in the category.

Table - 4: Average Values of CDUR and Wage Ratio for the States with Wage Ratio >100 and <100

Sl. No.	Year	Average CDUR for states where wage ratio is >100	Average wage ratio for the states where the ratio is >100	Average CDUR for states where wage ratio is <100	Average wage ratio for the states where the ratio is <100
Rural Males					
1	1977-78	69.8	129.0 (11)	96.8	93.3 (4)
2	1983	64.0	126.8 (7)	98.2	82.6 (8)
3	1987-88	43.2	113.3 (12)	89.0	85.6 (3)
4	1993-94	62.6	122.2 (15)	n. a.	n. a.
5	1999-00	80.1	125.2 (14)	33.0	87.0 (1)
Rural Females					
1	1977-78	97.0	112.8 (7)	76.5	78.1 (8)
2	1983	77.8	124.8 (4)	110.7	61.9 (11)
3	1987-88	53.3	116.2 (9)	113.7	86.9 (6)
4	1993-94	44.8	118.9 (8)	85.4	63.8 (7)
5	1999-00	50.6	120.7 (8)	116.4	77.0 (7)

Figures in brackets are the number of states falling in the category.

n. a. : None of the 15 observations has the value less than 100% for the wage ratio.

**Table – 5: Dependent Variable: Share of Rural Non-Agricultural
Employment with USUR as one of the Independent Variables:
Results of Stepwise Regression: Rural Males**

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78	(Constant)	14.498	14.365	0.000	0.856	77.254	0.000
	USUR	0.220	8.789	0.000			
1983	(Constant)	16.708	15.203	0.000	0.857	77.865	0.000
	USUR	0.275	8.824	0.000			
1987-88	(Constant)	20.046	8.962	0.000	0.605	19.932	0.001
	USUR	0.220	4.465	0.001			
1993-94	(Constant)	11.391	2.561	0.025	0.597	8.876	0.004
	PCNSDP-AG	0.0004	3.109	0.009			
	NFG	0.286	3.004	0.011			
1999-00	(Constant)	14.916	4.390	0.001	0.719	15.350	0.000
	USUR	0.360	4.097	0.001			
	PCNSDP-AG	0.001	2.926	0.013			

Excluded Variables: 1. 1. PCNSDP-AG, NFG, 2. PCNSDP-AG, NFG,
3. PCNSDP-AG, NFG, 4. USUR, 5. NFG

**Table - 6: Dependent Variable: Share of Rural Non-Agricultural
Employment with USUR as one of the Independent Variables:
Results of Stepwise Regression: Rural Females**

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78	(Constant)	11.087	4.309	0.001	0.879	43.420	0.000
	USUR	0.150	8.280	0.000			
	PCNSDP-AG	-0.005	-2.267	0.043			
1983	(Constant)	11.965	7.754	0.000	0.819	58.712	0.000
	USUR	0.211	7.662	0.000			
1987-88	(Constant)	13.241	5.437	0.000	0.657	24.897	0.000
	USUR	0.147	4.990	0.000			
1993-94	(Constant)	13.919	3.435	0.004	0.327	6.325	0.026
	USUR	0.167	2.515	0.026			
1999-00	(Constant)	5.053	1.214	0.248	0.750	18.009	0.000
	USUR	0.148	3.410	0.005			
	PCNSDP-AG	0.002	3.354	0.006			

Excluded Variables: 1. NFG, 2. PCNSDP-AG, NFG, 3. PCNSDP-AG, NFG,
4. PCNSDP-AG, NFG, 5. NFG

**Table - 7: Dependent Variable: Share of Rural Non-Agricultural
Employment with CDUR as one of the Independent Variables:
Results of Stepwise Regression: Rural Males**

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	7.489	4.431	0.001	0.893	50.138	0.000
	CDUR	0.113	9.228	0.000			
	PCNSDP-AG	0.003	3.138	0.009			
1983 ²	(Constant)	14.896	9.713	0.000	0.797	51.083	0.000
	CDUR	0.109	7.147	0.000			
1987-88 ³	(Constant)	16.483	7.886	0.000	0.759	40.839	0.000
	CDUR	0.221	6.391	0.000			
1993-94 ⁴	(Constant)	11.995	3.329	0.006	0.672	12.294	0.001
	CDUR	0.164	3.722	0.003			
	PCNSDP-AG	0.0004	3.342	0.006			
1999-00 ⁵	(Constant)	12.591	3.156	0.008	0.685	13.039	0.001
	CDUR	0.128	3.698	0.003			
	PCNSDP-AG	0.001	3.214	0.007			

Excluded Variables: 1. NFG, 2. PCNSDP-AG, NFG, 3. PCNSDP-AG, NFG
4. NFG, 5. NFG

**Table - 8: Dependent Variable: Share of Rural Non-Agricultural
Employment with CDUR as one of the Independent Variables:
Results of Stepwise Regression: Rural Females**

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	-5.551	-1.038	0.320	0.658	11.532	0.002
	CDUR	0.120	4.072	0.002			
	PCNSDP-AG	0.009	3.239	0.007			
1983 ²	(Constant)	-2.415	-1.279	0.225	0.933	83.057	0.000
	CDUR	0.101	10.186	0.000			
1987-88 ³	(Constant)	7.272	3.239	0.006	0.821	59.537	0.000
	CDUR	0.181	7.716	0.000			
1993-94 ⁴	(Constant)	-1.079	-0.208	0.839	0.644	10.866	0.002
	CDUR	0.207	3.995	0.002			
	PCNSDP-AG	0.0005	2.649	0.021			
1999-00 ⁵	(Constant)	-4.163	-1.182	0.260	0.861	37.304	0.000
	CDUR	0.003	6.546	0.000			
	PCNSDP-AG	0.117	5.533	0.000			

Excluded Variables: 1. NFG, 2. NFG, 3. PCNSDP-AG, NFG, 4. NFG, 5. NFG

Table - 9: Dependent Variable: Wage Ratio with USUR as one of the Independent Variables: Results of Stepwise Regression: Rural Males

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	141.937	15.401	0.000	0.358	7.259	0.018
	PCNSDP-AG	-0.016	-2.694	0.018			
1983	n.a.				0.624	9.974	0.003
1987-88 ²	(Constant)	147.506	15.995	0.000			
	SSB	-1.411	-2.593	0.024			
	MFG	-2.423	-2.510	0.027			
1993-94	n.a.						
1999-00	n.a.						

Excluded Variables: 1. USUR, NFG, SSB, MFG, 2. USUR, PCNSDP-AG, NFG

Table - 10: Dependent Variable: Wage Ratio with USUR as one of the Independent Variables: Results of Stepwise Regression: Rural Females

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	-128.790	17.101	0.000	0.673	26.776	0.000
	PCNSDP-AG	-0.024	-5.175	0.000			
1983 ²	(Constant)	117.495	10.409	0.000	0.568	17.065	0.001
	SSB	-4.746	-4.131	0.001			
1987-88 ³	(Constant)	118.090	19.383	0.000	0.98	8.583	0.012
	MFG	-1.548	-2.930	0.012			
1993-94 ⁴	(Constant)	118.522	11.059	0.000	0.406	8.894	0.011
	SSB	-2.723	-2.982	0.011			
1999-00 ⁵	(Constant)	122.480	12.720	0.000	0.422	9.481	0.009
	SSB	-1.999	-3.079	0.009			

Excluded Variables:

1. USUR, NFG, SSB, MFG,
2. USUR, PCNSDP-AG, NFG, MFG
3. USUR, PCNSDP-AG, NFG, SSB,
4. USUR, PCNSDP-AG, NFG, MFG
5. USUR, PCNSDP-AG, NFG, MFG

Table - 11: Dependent Variable: Wage Ratio with CDUR as one of the Independent Variables: Results of Stepwise Regression: Rural Males

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	141.937	15.041	0.000	0.358	7.259	0.018
	PCNSDP-AG	-0.016	-2.694	0.018			
1983	n.a.				0.624	9.974	0.003
1987-88 ²	(Constant)	147.506	15.995	0.000			
	SSB	-1.411	-2.593	0.024			
	MFG	-2.423	-2.510	0.027			
1993-94	n.a.						
1999-00	n.a.						

Note: This table is the same as the one we obtained using USUR as one of the independent variables. One of the excluded variables now is CDUR unlike in the earlier table where one of the excluded variables is USUR.

Excluded Variables: 1. CDUR, NFG, SSB, MFG, 2. CDUR, PCNSDP-AG, NFG

Table - 12: Dependent Variable: Wage Ratio with CDUR as one of the Independent Variables: Results of Stepwise Regression: Rural Females

Year	Variables Entered	Regression Coefficients	t-Values	Sig. level of Coefficients	R ²	Value of F	Sig. level of R ²
1977-78 ¹	(Constant)	-128.790	17.101	0.000	0.673	26.776	0.000
	PCNSDP-AG	-0.024	-5.175	0.000			
1983 ²	(Constant)	117.495	10.409	0.000	0.568	17.065	0.001
	SSB	-4.746	-4.131	0.001			
1987-88 ³	(Constant)	118.090	19.383	0.000	0.452	10.733	0.006
	MFG	-1.548	-3.276	0.006			
1993-94 ⁴	(Constant)	118.522	11.059	0.000	0.406	8.894	0.011
	SSB	-2.723	-2.982	0.011			
1999-00 ⁵	(Constant)	122.480	12.720	0.000	0.422	9.481	0.009
	SSB	-1.999	-3.079	0.009			

Excluded Variables:

1. CDUR, NFG, SSB, MFG,
2. CDUR, PCNSDP-AG, NFG, MFG
3. PCNSDP-AG, NFG, SSB, MFG,
4. CDUR, PCNSDP-AG, NFG, MFG
5. CDUR, PCNSDP-AG, NFG, MFG

APPENDIX: TABLE – I
Usual Principal Status Rural Non-Agricultural Employment and
Unemployment rates: All-India

NSS round	Year of reference	Non-agricultural workers as a % of total workers		Usual status unemployment rate		Current daily status unemployment rate		Non-agricultural wage rate as a % of agricultural wage rate	
		Male	Female	Male	Female	Male	Female	Male	Female
55	1999-00	28.8	15.9	21	15	72	70	126.47	101.15
50	1993-94	26.3	15.3	20	14	56	56	108.47	83.71
43	1987-88	26.1	17.5	28	35	46	67	108.60	113.14
38	1983	22.8	13.8	21	14	75	90	126.29	106.79
32	1977-78	19.6	13.2	22	55	71	93	134.72	120.08

APPENDIX: TABLE – II
Rural Non-Agricultural Employment, Unemployment Rates and Ratio of
Non-Agricultural Wage Rate to Agricultural Wage Rate of Agricultural
Labour: Cross-Section Data of Major States

1999-00: Rural								
State	Non-agricultural workers as a % of total workers ¹		Usual status unemployment rate ²		Current daily status unemployment rate ³		Non-agricultural wage rate as a % agricultural wage rate ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
ap	25.6	15.8	12	7	81	81	105.48	95.93
assam	36.3	24.5	47	119	64	125	122.79	76.45
bihar	21.1	15.7	24	6	72	62	128.08	87.57
gujarat	28.6	9.8	8	3	51	42	124.19	112.91
haryana	40.8	28.8	13	5	53	18	143.49	52.44
k'nataka	21.5	12.2	10	3	44	40	133.18	185.06
kerala	58.7	54.8	76	197	200	261	105.68	76.44
mp	15.8	8.1	7	2	40	35	142.95	104.50
m'tra	26.1	5.9	24	11	63	69	154.47	101.94
orissa	22.8	19.7	31	16	76	56	118.58	120.79
punjab	36.4	51.0	23	62	42	17	110.86	59.58
rajasthan	32.8	9.9	8	2	33	19	87.04	107.44
tn	37.9	24.8	30	12	143	123	117.17	110.75
up	28.7	16.4	13	6	40	21	128.48	122.29
wb	33.7	42.8	34	38	152	251	117.29	90.60

Sources: 1, 2 and 3: *Sarvekshana*, Vol. No. 25, Nos. 2 and 3, Issue No. 87, 55th round of NSS, October-March 2002, NSSO, Ministry of Statistics and Programme Implementation, Gol, New Delhi. 4: *Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households*, 55th round of NSS, Gol, Ministry of Labour, Labour Bureau.

APPENDIX: TABLE - III
Rural Non-Agricultural Employment, Unemployment Rates and Ratio of
Non-Agricultural Wage Rate to Agricultural Wage Rate of Agricultural
Labour: Cross-Section Data of Major States

1993-94: Rural								
State	Non-agricultural workers as a % of total workers ¹		Usual status unemployment rate ²		Current daily tatus unemployment rate ³		Non-agricultural wage rate as a % agricultural wage rate ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
ap	24.3	16.7	10	5	59	70	121.96	102.71
assam	22.2	15.4	62	143	70	124	132.47	62.85
bihar	18.2	9.2	23	8	63	46	121.24	135.29
gujarat	28.8	11.8	15	5	60	47	138.79	100.10
haryana	40.1	15.3	24	53	75	32	132.82	62.53
k'nataka	21.2	17.0	13	6	47	39	134.40	130.79
kerala	47.8	49.2	72	158	131	190	107.56	63.88
mp	12.9	6.7	8	2	26	26	136.02	116.47
m'tra	25.0	8.6	17	7	46	40	120.04	143.26
orissa	21.6	16.1	26	17	76	51	117.36	114.64
punjab	32.1	35.5	14	71	27	23	102.19	48.84
rajasthan	30.9	8.7	4	2	15	4	112.59	49.89
tn	36.3	22.5	27	13	128	113	108.81	81.99
up	24.3	11.0	12	4	29	39	138.96	107.75
wb	35.8	55.1	28	46	87	112	108.50	76.67

Sources: 1, 2 and 3: *Employment and Unemployment in India, 1993-94, NSS Report No. 409, 50th round of NSS.* 4: *Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households, 50th round of NSS, GoI, Ministry of Labour, Labour Bureau.*

APPENDIX: TABLE - IV
Rural Non-Agricultural Employment, Unemployment Rates and Ratio of
Non-Agricultural Wage Rate to Agricultural Wage Rate of Agricultural
Labour: Cross-Section Data of Major States

1987-88: Rural								
State	Non-agricultural workers as a % of total workers ¹		Usual status unemployment rate ²		Current daily tatus unemployment rate ³		Non-agricultural wage rate as a % agricultural wage rate ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
ap	26.1	19.3	25.38	44.39	48.87	94.18	110.26	109.92
assam	24.8	22.8	47.34	112.68	41.67	108.11	113.42	106.16
bihar	20.4	10.7	26.32	8.00	36.73	25.86	119.44	103.54
gujarat	32.3	27.9	23.94	17.06	46.73	71.43	102.91	95.07
haryana	30.2	11.4	64.72	43.10	83.16	55.05	127.02	133.16
k'taka	20.7	16.1	15.96	12.82	25.32	15.69	105.03	121.16
kerala	47.8	46.2	125.00	250.00	144.49	233.94	76.82	75.97
mp	14.9	9.5	9.29	11.56	22.94	21.05	126.51	129.66
m'tra	24.9	9.3	20.72	12.08	28.79	35.09	109.75	128.38
orissa	25.5	25.9	38.39	53.81	49.73	91.84	117.30	113.37
punjab	31.9	25.6	28.99	74.07	38.18	65.79	86.20	84.66
r'than	35.1	17	29.59	17.86	59.41	51.77	108.94	97.05
tn	35.2	25.1	40.40	45.45	84.19	106.95	93.80	98.23
up	21.6	9.5	17.75	11.98	29.70	32.89	119.05	100.14
wb	29.2	43.3	30.19	106.19	45.54	152.38	100.42	70.25

Sources: 1, 2 and 3: *Sarvekshana*, January 1992 (Special State Series), NSSO, 43rd round of NSS, Ministry of Statistics and Programme Implementation, Gol, New Delhi. 4: *Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households*, 43rd round of NSS, Gol, Ministry of Labour, Labour Bureau.

APPENDIX: TABLE - V
Rural Non-Agricultural Employment, Unemployment Rates and Ratio of
Non-Agricultural Wage Rate to Agricultural Wage Rate of Agricultural
Labour: Cross-Section Data of Major States

1983: Rural								
State	Non-agricultural workers as a % of total workers ¹		Usual status unemployment rate ²		Current daily tatus unemployment rate ³		Non-agricultural wage rate as a % agricultural wage rate ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
ap	22.85	17.11	14.4	9.1	78.7	105.4	77.68	73.88
assam	21.58	23.14	28.3	37.9	34.7	59.8	87.82	56.88
bihar	19.10	14.53	23.5	5.8	70.6	106.6	73.42	65.22
gujarat	21.50	8.21	10.2	5.3	51.5	47.7	105.33	92.03
haryana	29.49	12.52	38.0	4.5	66.9	29.5	93.64	30.14
k'nataka	18.51	12.98	10.2	6.9	66.1	83.2	131.79	92.86
kerala	44.56	43.54	105.6	170.3	243.1	310.1	90.46	37.32
mp	12.64	6.25	4.3	1.4	20.7	18.1	132.85	102.69
m'tra	20.49	7.31	12.7	1.4	62.5	72.3	130.64	128.57
orissa	21.89	19.01	18.4	12.5	78.2	117.9	74.28	58.94
punjab	24.08	36.09	31.5	116.8	69.7	92.5	78.70	42.54
rajasthan	19.77	6.97	7.5	1.3	35.0	15.5	125.30	157.68
tn	31.55	19.98	33.2	28.5	175.9	205.3	126.40	110.22
up	22.19	12.20	13.1	1.2	36.5	24.6	135.35	76.71
wb	27.40	33.97	38.5	45.2	143.6	240.1	84.54	54.87

Sources: 1: *Sarvekshana*, Vol. No. 14, No. 1, Issue No. 44, July-September 1990; and *Sarvekshana*, Vol. No. 14, No. 2, Issue No. 45, October-December 1990, 38th round of NSS, NSSO, Ministry of Statistics and Programme Implementation, GoI, New Delhi. 2 and 3: *Sarvekshana*, Vol. No. 11, No. 4, Issue No. 35, April 1988. 4: *Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households*, 38th round of NSS, GoI, Ministry of Labour, Labour Bureau.

APPENDIX: TABLE - VI
Rural Non-Agricultural Employment, Unemployment Rates and Ratio of
Non-Agricultural Wage Rate to Agricultural Wage Rate of Agricultural
Labour: Cross-Section Data of Major States

1977-78: Rural								
State	Non-agricultural workers as a % of total workers ¹		Usual status unemployment rate ²		Current daily tatus unemployment rate ³		Non-agricultural wage rate as a % agricultural wage rate ⁴	
	Male	Female	Male	Female	Male	Female	Male	Female
ap	19.71	14.97	20.5	52.2	82.4	143.3	119.30	118.57
assam	14.13	13.95	15.7	58.3	15.6	13.5	95.10	99.55
bihar	16.75	12.51	20.9	39.8	76.4	92.3	129.55	105.99
gujarat	15.72	6.25	11.9	17.4	61.8	56.1	144.85	92.84
haryana	22.95	18.48	36.1	207.9	68.9	31.7	95.66	63.75
k'taka	16.82	13.16	13.8	41.3	76.6	115.4	116.45	125.84
kerala	43.46	44.86	135.5	291.8	250.4	274.1	89.44	74.36
mp	10.77	5.18	2.8	7.5	24.4	33.9	125.46	100.00
m'tra	19.59	8.15	14.1	18.9	58.5	93.1	160.51	119.29
orissa	15.40	17.70	20.2	44.3	74.9	96.7	132.79	93.16
punjab	22.63	21.83	18.0	143.0	52.1	21.1	92.87	49.45
r'than	18.02	5.86	6.4	28.9	30.9	19.6	107.52	89.17
tn	25.91	19.10	27.8	62.7	149.3	171.1	120.41	102.14
up	20.15	11.55	16.2	32.0	39.8	29.8	137.25	118.08
wb	22.46	44.29	35.3	238.6	93.2	99.1	124.76	62.87

Sources: 1: *Sarvekshana*, Vol. No. 6, Nos. 1 and 2, Issue No. 17, July-October 1982; *Sarvekshana*, Vol. No. 6, Nos. 3 and 4, Issue No. 18, January-April 1983; *Sarvekshana*, Vol. No. 7, No. 3, Issue No. 20, January 1984; and *Sarvekshana*, Vol. No. 7, No. 4, Issue No. 21, April 1984, 38th round of NSS, NSSO, Ministry of Statistics and Programme Implementation, Gol, New Delhi. 2 and 3: *Sarvekshana*, Vol. No. 5, Nos. 1 and 2, Issue No. 15, July-October 1981. 4: *Rural Labour Enquiry: Report on Wages and Earnings of Rural Labour Households*, 32nd round of NSS, Gol, Ministry of Labour, Labour Bureau.

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