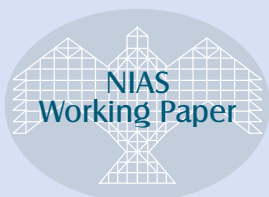


WP5-2016



Debosree Banerjee

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NATIONAL INSTITUTE OF ADVANCED STUDIES

Bengaluru, India

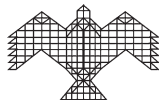


**NIAS Working Paper: WP5-2016**

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**Debosree Banerjee**

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# INEQUALITY AND FARMERS' SUICIDES IN INDIA

## Introduction

The phenomenon of suicide by farmers has in recent years tended to dominate the discourse on rural India. Between 1995 and 2014, more than 300,000 farmers have committed suicide in the country (Basu, Das, & Misra, 2016). There have been several studies pointing to the significance of the phenomenon as well as the magnitude of the distress that goes with it. Underlying several of these studies is a role for inequality in this phenomenon. The emphasis on farmers' suicides suggests that there is an inequality in the vulnerability of different groups to suicide, with farmers having a greater vulnerability than others. Again, the presentation of farmers' suicides as a national crisis suggests that while there may be regional inequality in the vulnerability to suicide, all states face the same crisis. And if we were to go beyond the existing literature, there is the question of whether inequality can be a cause of farmers' suicides. This paper seeks to explore each of these roles for inequality in the patterns of farmers' suicides. While such an exploration may help us better understand the nature of farmers'

suicides, this paper does not claim to provide a comprehensive explanation for the phenomenon. It begins with an exploration of the relative vulnerability of different groups to suicide; it then explores the nature of regional inequality in farmers' suicides; before ending with a preliminary exploration of the relationship between inequality, poverty and farmers' suicides.

## Inequality in the Vulnerability to Suicide

Much of the literature on farmers' suicides has tended to focus on capturing the extent and nature of distress caused by the crisis. The intensity of the crisis has drawn researchers to investigate individual cases in great detail. This has led to a number of qualitative studies particularly in areas where incidence of farmers' suicide is high, such as Deshpande, 2002 for Karnataka; Gill & Singh, 2006 for Punjab; Mishra, 2006 for Maharashtra, Mohan Kumar & Sharma, 2005 for Kerala, and Sridhar, 2006 for Andhra Pradesh. These are typically village level studies analysing the local conditions either with small scale surveys

and descriptively describing the data or with ethnographic methods. The depth of analysis of these studies has provided several insights into the nature of the crisis, but they are not very helpful in providing a comprehensive picture of the national phenomenon that would capture the relative vulnerability of farmers to suicide or the regional variation in the phenomenon. This is not to suggest that there have been no studies that have gone beyond village level analysis and tried to capture the national picture. There have been a few studies that have tried to present the larger picture, usually based on a combination of data from the National Crime Records Bureau and the Census of India (Nagaraj, 2008; Mishra, 2014; Sadanandan, 2014). But these studies do not look at the relative vulnerability of farmers to other groups, nor do they adequately analyse the regional variation in this vulnerability, and they do not provide even a preliminary impression of the possible role of inequality in this process.

The relative vulnerability of farmers becomes particularly important in the Indian context because of the high levels of suicide in the country as a whole. It has been argued in some of the literature that the rate of suicide in India is somewhere in the middle in a

ranking of all countries (Mayer, 2016), but there is reason to believe that this ranking is based on estimates that are less than accurate. It has been known for a while that many deaths go unrecorded in India, thereby making data that relies on the reporting of deaths unreliable. This weakness can be overcome to a great extent when enumerators go out and collect the data. To the extent that this advantage of sample surveys is greater than the sampling error, it is preferable to follow data from large samples that seek out this information. The Million Death Study (MDS) covering 1.1 million households over the period 1993 to 2003 comes up with an estimate of suicides per 100000 population of around 22 (Patel, et al., 2012) which is nearly twice the figure provided by Mayer. Even when using a lower figure than the MDS, the World Health Organization (WHO) has come up with a ranking that shows India much closer to the top of a list of countries ranked by their suicide rates. In terms of suicides rates, as another report by WHO, using data from 2012 has pointed out, India ranks as high as 11<sup>th</sup> (WHO, 2014). There is then little doubt that India is among the more suicide prone countries in the world.

The question that then arises is: are the high suicide rates of farmers a part of

this larger suicide crisis in the country, or is it that they face even higher suicide rates in a generally adverse environment? On the face of it, the answer to this question should be easy to find. We only need to take the ratio of the suicide rate of farmers to the suicide rate of others to get a clear picture of the relative importance of farmers' suicides. If the ratio is above 1, farmers' suicides clearly have their own thrust and demand a separate analysis. If the ratio is much below 1 too there would be a need for a separate analysis of why farmers are relatively immune to the factors raising the overall suicide rate. And if they are around 1, we would need to focus on the general suicide crisis more than on farmers alone. It is important then to begin our analysis by calculating the ratio of farmers' suicide rates to the suicide rates of others.

The trouble is that this ratio is, in practice, not easy to arrive at. Conceptually there is no great difficulty in defining the ratio. The numerator of this ratio – the farmers' suicide rate – can be arrived by computing the farmers' suicides rates as a proportion of farmers' suicides to the total number of farmers. This is the suicide mortality rate (SMR) of farmers. The denominator – the non-farmers' suicide rate – is the ratio of the number

of non-farmer suicides to the non-farm population, or the SMR of non-farmers. The ratio of the two SMRs has been termed the Suicide Mortality Rate Ratio (SMRR) (Basu, Das, & Misra, 2016). The difficulty lies in getting the appropriate data for each of these variables.

### **Concepts from NCRB and Census data**

The main source of data for suicide deaths is Accidental Deaths & Suicides in India (ADSI), which is an annual publication of the National Crime Records Bureau (NCRB), Ministry of Home Affairs, and Government of India. The reliability of the NCRB data has been questioned because they are based on reports made to the police rather than independent enquiries. There is thus likely to be significant variation between states depending upon the levels of reporting. The effects of this difficulty can be reduced if we recognize that farmers' suicides have received considerable attention because of an implicit belief that this group is more prone to suicides than others in the state. The severity of the problem of farmers' suicides is then better captured by the ratio of farmers' suicide rates to the non-farmers' suicide rates. When this ratio is calculated separately for each state, and there is no reason to expect significant

differences in the reporting of specific types of suicides within a state, the errors due to underreporting will occur both in numerator and denominator and thus cancel each other out.

NCRB has been publishing the ADSI, which contains data on suicides in India, disaggregated by states and major cities, since 1967. However, more detailed data by sex, age, causes, marital status, and educational level and, importantly, by profession were not made available for the years before 1995. Since data on farmers' suicides as a separate category is only available after that year, I restrict our study to the period 1995-2014. Non-farm suicides deaths were derived by subtracting state-wise farmers' suicides from the total number of suicides in that state. The absolute figures were then normalised by using farmers and non-farmers' population data from the Census of India for 1991, 2001 and 2011 census, with the population data for the intervening years being interpolated.

There has also been some lack of clarity about who exactly the NCRB takes as farmers. The Bureau has not provided any clear explicit definition of farmers. Until 2013, the relevant category was termed 'self-employed (farming/agriculture)'. While there were a few minor changes in

the overall categorisation, this category – 'self-employed (farming/agriculture)' – remained the same over the 20-year period 1995-2014. The NCRB did not make explicit who exactly were included in this category. Some studies have assumed that the data in this category pertained to the cultivators who owned some land or at least leased in land to cultivate. They have then gone on to use the number of cultivators, as counted in the Census of India, as the normalising factor in calculation of farmers' suicide rates. Correspondingly, the non-farm population were taken to be the entire non-cultivator population. It was assumed that since agricultural labours are generally employed by someone, they would not have been categorised as self-employed.

In its data for 2014, however, the NCRB came up with different categories, with the figures for the new categories suggesting that the earlier assumption was incorrect. In the data for 2014, the NCRB came up with a category, 'self-employed persons (agriculture)', which in turn consisted of two sub-categories, 'self-employed persons (agriculture (agricultural labourers))', and 'self-employed persons (agriculture (farmers))'. (The latter category was further subdivided into those owning land, and those



with contract/ leased in land.). When we compare this data with that of the earlier classification provided in the 2013 data, it is difficult to believe that the category of 'self-employed (farming/agriculture)' in 2013 is the same as the category of "self-employed persons (agriculture (farmers))' in 2014. The numbers in the two classifications were so substantially different that they suggest more than year-on-year variations. At the same time when the totals in overall category of 'self-employed persons (agriculture)' in 2014 were compared with that in 'self-employed (farming/agriculture)' in 2013, clear similarities were found. It would thus seem that the farmer in the NCRB data includes both agricultural labourers and cultivators, and what was implicit in earlier years has been made explicit in 2014.

Furthermore, in the Census of India data main workers are those who work for more than six months a year. Correspondingly, cultivators are those who meet the definition of cultivators for more than six months a year. Thus a landowner who cultivates his or her own land for less than six months a year and works on another person's land for the rest of the year would be classified as agricultural labour and not as a cultivator. Even if we were to assume that the NCRB only classifies

all those who are involved in agriculture and own land as farmers, this category would include those who the Census data would list as agricultural labourers. Ignoring agricultural labour would then underestimate the total farmers, and thereby overestimate the rate of suicides. This would suggest that farmers' suicide rates are overestimated in studies carried out by Mishra, 2014 and Nagaraj, 2008. In order to correct this overestimation, Basu, Das, & Misra, 2016 have included not just main workers classified as agricultural labour but marginal workers as well. This might however be an overcorrection. Several marginal workers in agriculture may well be identified with other categories in the suicide data, particularly among women classified as housewives. Including marginal workers who are agricultural labour into the overall category of farmers could then overestimate the number of farmers, and thereby underestimate the rate of suicides. It may be prudent then to take the sum of main cultivators and main agricultural labour as the total farmers. This may still not be identical to what the NCRB considers as farmers but it is a more reasonable estimate than either of the two extremes of excluding agricultural labour or including marginal workers. In this paper, I have normalised the farmers' suicide data with the sum of

main cultivators and main agricultural labour. Non-farmers' population is then derived by subtracting total number of farmers from the total population.

### **Place of Farmers in the Overall Picture of Suicides**

When calculated on the basis of the method outlined above, it becomes clear that the significance of farmers' suicides does not lie in their overall numbers for the country as a whole alone. Contrary to the popular perception that farmers are the most vulnerable category in India's larger suicide crisis, the data suggests that there are other groups that are in a deeper crisis. Indeed, if we trace the Suicide Mortality Rate Ratio of farmers and non-farmers, the rate for farmers, for the country as a whole, remains consistently lower than the rate for non-farmers. This can be seen in Figure 1 which traces the suicide rates for farmers and non-farmers separately over the 20 year period, as well as the ratio of farmers' suicides to that of non-farmers through the SMRR. The SMRR of farmers to non-farmers is consistently below 1. Even when in the initial years of the twenty-first century the ratio rose to approach 1, it never crossed that mark.

The need to see farmers' suicides in context is particularly evident when we consider some of the other groups that

have been more adversely affected. It has been argued that farmers' suicides have gained greater attention than other more vulnerable groups like housewives. Mayer (2016) points to the fact that the number of suicides by housewives is three times that of farmers' suicides in some years. The statistical inadequacy of this comparison is quite obvious. The higher number of suicides among housewives could simply be the result of there being a larger number of housewives than farmers. But the basic argument of housewives being more vulnerable to suicide than farmers stands more rigorous statistical scrutiny as well. A meaningful evaluation of the relative vulnerability to suicide of farmers and housewives requires us to compare the rate of farmers' suicides with that of housewives' suicides. Such a comparison does come up against another data roadblock. The Census does not provide readily available data on the number of housewives, making it difficult to calculate the proportion of them that have committed suicide. All that is possible is to take the number of married women as a proxy for the number of housewives. This would of course be a gross overestimate of the number of housewives. While most Indian women have the responsibility to do household work, those of them who also work outside the home are not

usually classified as housewives. Taking all married women as a proxy for housewives thus substantially overestimates the number of housewives. This in turn

severely underestimates the rate of housewives' suicides. But what makes this figure striking is that even this gross underestimate is generally well above the

**Figure1: Farmers' and non-farmers' suicide rate in India  
(per lakh population), 1995-2014**



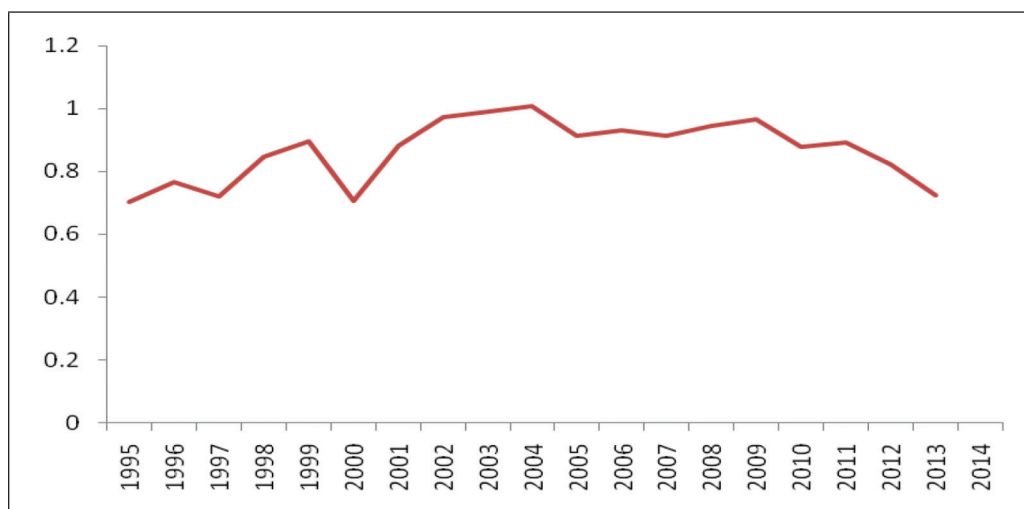
Source: National Crime Record Bureau, Census of India

suicide rate for farmers. This is evident in the ratio of the suicide mortality rate of farmers to the same rate for housewives over the twenty-year period 1995 to 2014. As can be seen in Figure 2 this ratio is consistently below 1, except for 2004 when the ratio is marginally greater than 1 at 1.006. In all other years it is below 1 dipping to 0.7074 in 2000.

The fact that farmers as a group are not the most vulnerable to suicides in the country does not in any way diminish the urgent need to take a closer look at this phenomenon. This result must itself be seen in context. While farmers may not be the most vulnerable group, the number of farmers' suicides in India is nevertheless

significant. And the relevance of these numbers grows, when seen in the larger context of the pressure on farmers. The relative benefit of India's economic growth has worked substantially against farmers. The share of the agriculture sector in Gross Value Added in 2014-15 is now as low as 15.35 percent (at 2011-12 prices) while cultivators and agricultural labourers together accounted for over 50 percent of the population in 2011. The relatively higher proportion of the workforce in agriculture is despite the fact that a substantial section has moved into non-agricultural activities in the village or outside. Caught between agriculture that is under pressure and the uncertainties of moving out of a traditional occupation,

**Figure 2: Suicide mortality rate ratio of farmers to housewives**



Source: National Crime Record Bureau, Census of India

farmers do find themselves in a vulnerable situation. Farmers' suicides may well turn out to be one manifestation of a larger agrarian crisis. If the rates of farmers' suicides is less than other vulnerable groups it cannot be taken as a sign of their not being worthy of greater attention, but rather an indication of the resilience of this community.

This case for a detailed analysis of farmers' suicides gets stronger when we move beyond overall national figures to look at the picture in individual states. Even if farmers are not the category most vulnerable to suicide in the country as a whole, they can remain a serious problem in individual states. A detailed analysis of farmers' suicides is then demanded not just to capture the distress that causes and is caused by this phenomenon, it is also needed to better understand the transition from an agrarian to a non-agrarian economy, as well as the regional unevenness in the vulnerability of farmers to suicide.

### **Regional Inequality in the Vulnerability of Farmers to Suicide**

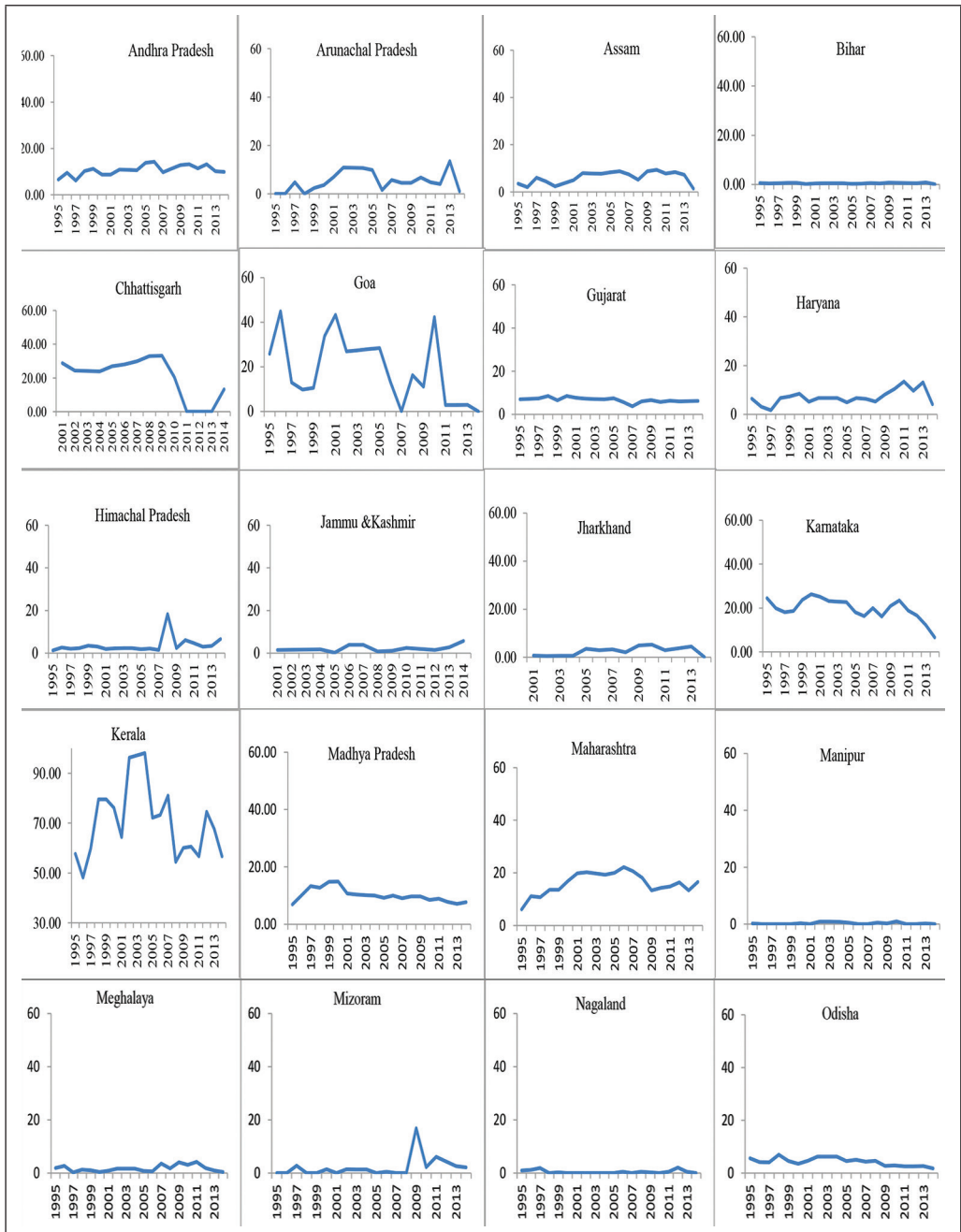
The regional variation in the vulnerability to farmers' suicides becomes immediately evident when we look at the graphs of the rates of farmers' suicides over the

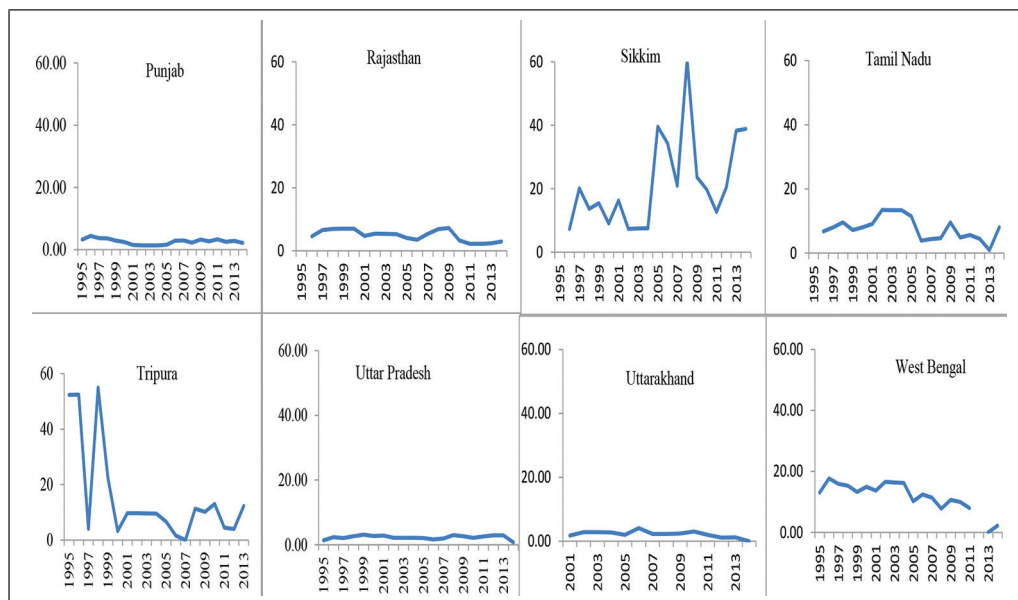
twenty-year period provided in Figure 2. There is considerable variation in the rates of farmers' suicides, the trends over time, and magnitude of the fluctuations.

### **Fluctuations in the Rates of Farmers' Suicides**

A striking feature of this composite chart is the sharp variation in the extent of yearly fluctuations in rate of farmers' suicides across states. There are some states, such as Bihar and Uttar Pradesh, where the rates of farmers' suicides do not vary very substantially from year to year. At the other extreme there are states, such as Tripura, Goa or Sikkim, where the variations from year to year are very significant. In this apparently diverse pattern, it is difficult to miss the fact that a large number of the states with very high fluctuations in farmers' suicides are small both in terms of population and geographical size. Indeed, if we use a comprehensive measure of fluctuations, like the coefficient of variation, the small states typically have the highest values. As can be seen in Table 1, the smaller states of the Indian union Arunachal Pradesh, Goa, Manipur, Meghalaya, Mizoram, Nagaland, Himachal Pradesh, Sikkim and Tripura all have a coefficient of variation above 0.7. It could be argued that since several of these states

Figure 3: State-wise variation in farmers' suicide rates (per lakh population)





Source: National Crime Record Bureau, Census of India

are in remote parts of the country the process of reporting can be uneven, leading to greater fluctuations in the rates of farmers' suicides. But this would not explain the presence of a well-connected state with high levels of tourism, like Goa, being a part of this list; or for that matter, Himachal Pradesh which has sometimes been seen as a state with an effective administrative set up. All that can be said at this stage is that the relationship between the size of a state and the degree of fluctuation in the annual rates of farmers' suicides merits closer attention than this paper can provide.

The problem of uneven reporting need not be confined to small, remote states. It is also possible for the reporting of suicides, or indeed other deaths, to be adversely affected in times of social turmoil. In such cases there would be generally low levels of fluctuations in the suicide rates with sharp drops in years when reporting is affected by social conflict. It would appear that Chhattisgarh could be a case in point. The coefficient of variation of the annual rate of farmers' suicides over the twenty-year period of this study is, at 0.59 not among the highest in the country. But as can be seen in Figure 2, it has seen sharp dips in some years.

**Table 1: Coefficient of variations in annual farmers' suicide rates in States**

| States            | Coefficient of variation | States        | Coefficient of variation |
|-------------------|--------------------------|---------------|--------------------------|
| Andhra Pradesh    | 0.20                     | Maharashtra   | 0.26                     |
| Arunachal Pradesh | 0.76                     | Manipur       | 1.26                     |
| Assam             | 0.41                     | Meghalaya     | 0.70                     |
| Bihar             | 0.39                     | Mizoram       | 1.78                     |
| Chhattisgarh      | 0.59                     | Nagaland      | 1.51                     |
| Goa               | 0.77                     | Odisha        | 0.34                     |
| Gujarat           | 0.16                     | Punjab        | 0.33                     |
| Haryana           | 0.42                     | Rajasthan     | 0.44                     |
| Himachal Pradesh  | 1.01                     | Sikkim        | 0.72                     |
| Jammu & Kashmir   | 0.68                     | Tamil Nadu    | 0.52                     |
| Jharkhand         | 0.69                     | Tripura       | 1.15                     |
| Karnataka         | 0.24                     | Uttar Pradesh | 0.26                     |
| Kerala            | 0.21                     | Uttarakhand   | 0.46                     |
| Madhya Pradesh    | 0.23                     | West Bengal   | 0.40                     |

Source: National Crime Record Bureau, Census of India

### Trends in States

When analysing farmers' suicides in terms of determining the nature of intervention it is important to recognize any trends that may be inherent in the existing patterns. If there is a declining trend the problem can be seen as a self-correcting one. In states with a declining trend, which have relatively low rates of farmers' suicides to begin with, only limited interventions may be necessary. In states that have a high rate but a declining trend there would be a case for a strong intervention to accentuate the already existing declining trend. The

states with a high rate and an increasing trend would of course be ones requiring the greatest attention. There would also be a need to keep a watch on states where the rates of farmers' suicides are currently low but there is a rising trend.

When we take this classification into the empirical reality, though, the picture tends to get blurred. Inconsistencies appear at the very first step of ranking the levels of vulnerability of farmers to suicide. On the face of it this should be captured by the Suicide Mortality Rates for farmers in individual states.



**Table 2: State-wise averages of farmers' suicide rates in India  
(per lakh population), 1995-2014**

| States            | Coefficient of variation | States         | Coefficient of variation |
|-------------------|--------------------------|----------------|--------------------------|
| Manipur           | 0.29                     | Assam          | 6.13                     |
| Nagaland          | 0.42                     | Gujarat        | 6.68                     |
| Bihar             | 0.49                     | Haryana        | 7.05                     |
| Meghalaya         | 1.73                     | Tamil Nadu     | 7.35                     |
| Uttarakhand       | 2.15                     | Madhya Pradesh | 10.08                    |
| Mizoram           | 2.15                     | Andhra Pradesh | 10.68                    |
| Uttar Pradesh     | 2.31                     | West Bengal    | 11.88                    |
| Jharkhand         | 2.56                     | Tripura        | 14.94                    |
| Punjab            | 2.61                     | Maharashtra    | 16.05                    |
| Himachal Pradesh  | 3.67                     | Goa            | 19.19                    |
| Odisha            | 4.27                     | Karnataka      | 19.72                    |
| Rajasthan         | 4.67                     | Chhattisgarh   | 20.41                    |
| Jammu & Kashmir   | 5.01                     | Sikkim         | 20.70                    |
| Arunachal Pradesh | 5.34                     | Kerala         | 70.69                    |
| <b>ALL INDIA</b>  | <b>8.88</b>              |                |                          |

Source: National Crime Record Bureau, Census of India

As can be seen from Table 2, there is a clear regional dimension to the crisis of farmers' suicides. Farmers in some states are far more significantly prone to suicide than those in other states. There are states where the average of their annual suicide rates over the twenty year period are well above the average of the all India rate over the same period, and some that are well below. The state where the vulnerability to suicide among farmers is most significant is undoubtedly Kerala which has a much more significant

level of farmers' suicides across the twenty-year period than any other state. The other states where the levels are above the national average are Kerala, Sikkim, Chhattisgarh, Karnataka, Goa, Maharashtra, Tripura, West Bengal, Andhra Pradesh and Madhya Pradesh. At the other end of the spectrum are states with much lower suicide rates, particularly Manipur, Nagaland and Bihar. It may be argued that the rates in Bihar are low because these relatively backward states are prone to underreporting of all deaths.

**Table3: Comparison of Suicides by farmers and non-farmers**

| States            | Average SMRR farmers to non-farmers | Number of years SMRR>1 in twenty years | States        | Average SMRR farmers to non-farmers | Number of years SMRR>1 in twenty years |
|-------------------|-------------------------------------|--|---------------|-------------------------------------|--|
| Andhra Pradesh    | 0.64                                | 0                                      | Maharashtra   | 1.18                                | 13                                     |
| Arunachal Pradesh | 0.64                                | 4                                      | Manipur       | 0.19                                | 0                                      |
| Assam             | 0.59                                | 0                                      | Meghalaya     | 0.5                                 | 2                                      |
| Bihar             | 0.52                                | 1                                      | Mizoram       | 0.38                                | 4                                      |
| Chhattisgarh      | 1.1                                 | 9                                      | Nagaland      | 0.21                                | 1                                      |
| Goa               | 0.88                                | 9                                      | Odisha        | 0.37                                | 0                                      |
| Gujarat           | 0.65                                | 0                                      | Punjab        | 0.37                                | 0                                      |
| Haryana           | 0.65                                | 2                                      | Rajasthan     | 0.7                                 | 4                                      |
| Himachal Pradesh  | 0.52                                | 1                                      | Sikkim        | 0.86                                | 7                                      |
| Jammu & Kashmir   | 1.16                                | 7                                      | Tamil Nadu    | 0.36                                | 3                                      |
| Jharkhand         | 0.84                                | 5                                      | Tripura       | 0.83                                | 0                                      |
| Karnataka         | 0.91                                | 9                                      | Uttar Pradesh | 1                                   | 10                                     |
| Kerala            | 2.78                                | 20                                     | Uttarakhand   | 0.78                                | 4                                      |
| Madhya Pradesh    | 0.9                                 | 7                                      | West Bengal   | 0.66                                | 3                                      |

Source: National Crime Record Bureau, Census of India

Note: Farmers suicide numbers are normalised by total agricultural population consisting of main agricultural labour and main cultivators. Accordingly, non-farmer's population were calculated from the census population data and used in normalisation of non-farmers' suicide numbers.

But it may not be prudent to dismiss the data on this score as other backward states have recorded higher suicide rates.

Some of this clarity is lost when we remember our distinction between the larger problem of suicides in the state as a whole and that of farmers' suicides alone. A general problem of suicides will call for a very different policy response than one of farmers' suicides alone. This

distinction becomes particularly critical in understanding patterns in states like the united Andhra Pradesh (including what was to later become Telangana). As can be seen in Table 2, the rate of farmers' suicides in the united Andhra Pradesh may be considered high when seen in isolation, being noticeably above the national average. But this rate is overwhelmed by the higher rate of suicides in other categories. This is quite

evident from Table 3, where the Suicide Mortality Rate Ratio of farmers to non-farmers in the united Andhra Pradesh is well below 1, and Andhra Pradesh is not the exception. In the ten states in which the average of the Suicide Mortality Rate of farmers is higher than the national average, the Suicide Mortality Rate Ratio of farmers to non-farmers in as many as seven states is less than 1. Madhya Pradesh, West Bengal, Tripura, Goa, Karnataka and Sikkim join Andhra Pradesh in this category. It is only in Kerala, Chhattisgarh and Maharashtra that the Suicide Mortality Rates of farmers are above the national average and the Suicide Mortality Rate Ratio of farmers to non-farmers are also above 1. The state where this is most dramatically the case is Kerala. The average rate of farmers' suicides over the twenty-year period in that state is 2.78 times the rate of non-farmer suicides.

It is interesting to note that the national problem of the suicides by housewives being an important reason for the Suicide Mortality Rates of others being greater than farmers is a fairly widespread national phenomenon. The average of Suicide Mortality Rate Ratio of housewives to farmers over the twenty-year period is greater than 1 for a vast majority of the states. As can be seen in

Table 4, in as many as 22 out of 28 states for which there is data from 1995 the ratio of the suicide rates of housewives to the suicide rates of farmers is above 1, and in some cases well above 1. In terms of the patterns I am seeking in this paper though, the six states which go against the general trend – Chhattisgarh, Karnataka, Kerala, Maharashtra, Punjab, and Sikkim – are worth noting. They include the three states – Kerala, Maharashtra and Chhattisgarh – which meet the twin criteria of having an average Suicide Mortality Rate for farmers which is higher are also the national average, and a Suicide Mortality Rate Ratio of farmers to non-farmers that is greater than 1. Kerala again demands special mention. In a larger national pattern where suicides by housewives are consistently above that of farmers, in the case of Kerala the rate of suicide of housewives is less than a fourth of the rate of suicides of farmers.

Parenthetically, it is important to note that the problem of housewives' suicides vis-a-vis farmers' suicides is particularly severe in parts of the northeast, such as Manipur, Meghalaya, Tripura and Nagaland. But the more developed parts of the country are not immune to this trend as well, as can be seen in the fact that the state with the highest ratio of housewives' suicide rates to

**Table 4: Ratios of housewives' suicide rates to farmers' suicide rates across states in India**

| States            | SMRR<br>(Housewives/Farmers) | States        | SMRR<br>(Housewives/Farmers) |
|-------------------|------------------------------|---------------|------------------------------|
| Andhra Pradesh    | 1.08                         | Maharashtra   | 0.92                         |
| Arunachal Pradesh | 1.79                         | Manipur       | 2.14                         |
| Assam             | 1.43                         | Meghalaya     | 2.17                         |
| Bihar             | 2.01                         | Mizoram       | 1.14                         |
| Chhattisgarh      | 0.58                         | Nagaland      | 2.13                         |
| Goa               | 1.61                         | Odisha        | 2.17                         |
| Gujarat           | 1.81                         | Punjab        | 0.85                         |
| Haryana           | 1.26                         | Rajasthan     | 1.83                         |
| Himachal Pradesh  | 1.75                         | Sikkim        | 0.55                         |
| Jammu & Kashmir   | 1.79                         | Tamil Nadu    | 2.57                         |
| Jharkhand         | 1.7                          | Tripura       | 2.14                         |
| Karnataka         | 0.76                         | Uttar Pradesh | 1.24                         |
| Kerala            | 0.24                         | Uttarakhand   | 1.59                         |
| Madhya Pradesh    | 1.39                         | West Bengal   | 1.36                         |

Source: National Crime Record Bureau, Census of India

farmers' suicide rates is one of India's more economically advanced states, Tamil Nadu. The tendency to ignore housewives' suicides points to a serious gender bias in defining the boundaries of public discourse in India. Mayer may also be right to find fault with the media for highlighting farmers' suicides over that of other more vulnerable groups. What is clear from even our preliminary analysis of data on housewives' suicides is that it merits much closer attention than it has received so far, though that is not the purpose of this paper.

Taken as a whole when we seek to identify states in which the rates of farmers' suicides are high and the ratio of suicides of farmers to non-farmers is greater than 1, I am left with just three states. And once we seek out trends in each of the states our ability to classify states in terms of the schema I had listed earlier diminishes further. In order to capture the trend we can estimate the direction and extent of change by the beta values of the linear trend line. The beta values (slope of the trend lines on farmers' suicide rate) have thus been

**Table 5: Over time trend in farmers' suicide rates**

| States         | Estimated beta | States            | Estimated beta |
|----------------|----------------|-------------------|----------------|
| Chhattisgarh   | -1.91(0.01)    | Bihar             | 0 (0.93)       |
| Tripura        | -1.88(0.008)   | Manipur           | 0(0.76)        |
| Goa            | -1.25(0.02)    | Uttar Pradesh     | 0(0.91)        |
| West Bengal    | -0.67(0.00)    | Meghalaya         | 0.05(0.26)     |
| Karnataka      | -0.48(0.005)   | Jammu & Kashmir   | 0.14(0.13)     |
| Tamil Nadu     | -0.28(0.05)    | Assam             | 0.19(0.04)     |
| Kerala         | -0.27(0.64)    | Jharkhand         | 0.2(0.08)      |
| Madhya Pradesh | -0.22(0.007)   | Arunachal Pradesh | 0.21(0.17)     |
| Rajasthan      | -0.2(0.003)    | Himachal Pradesh  | 0.22(0.01)     |
| Odisha         | -0.16(0.002)   | Maharashtra       | 0.23(0.14)     |
| Uttarakhand    | -0.13(0.03)    | Mizoram           | 0.25(0.08)     |
| Gujarat        | -0.10(0.007)   | Haryana           | 0.27(0.13)     |
| Punjab         | -0.04(0.30)    | Andhra Pradesh    | 0.21 (0.008)   |
| Nagaland       | -0.01(0.57)    | Sikkim            | 1.32(0.02)     |

Note: Probability values of the significance of the estimated coefficients of years are in the parentheses.  
Source: National Crime Record Bureau, Census of India

estimated separately for each state from the fitted linear equation (see Table 5).

When seen in terms of the twenty-year period as a whole, a comprehensive classification of the states into the four categories of high-level-positive-trend, high-level-negative-trend, low-level-positive-trend, low-level-negative-trend is not possible, with as many as 11 of the 28 states not having significant trends. Certain patterns in the trends are, no doubt, worth noting. If we focus only on the states with significant trends there are no states in the high-level-positive-

trend-category and Chhattisgarh is the only state in the high-level-low-trend category. Among the states where the rate of farmers' suicides is less than the rate of other suicides, and the trends are significant at 10 per cent, Assam, Jharkhand, Himachal Pradesh, Mizoram, Andhra Pradesh and Sikkim have positive trend. The other states with relatively low levels of farmers' suicides and significant trends (noted in Table 3) all have negative trends. But given the absence of distinct trends in nearly 40 per cent of the states, it does not help us in arriving at a comprehensive classification of states

by the extent of the problem of farmers' suicides.

A major factor contributing to the relative lack of clarity when seen in terms of averages over the twenty-year period is that the patterns in individual states need not be consistent over the entire period. This would be particularly true if the rates of farmers' suicides are influenced by factors like the monsoons. We cannot then be certain that in states in which the average rate of farmers' suicides over 20 years is less than the average non-farmer suicide rates, this pattern holds consistently in each of the years. It is quite possible that there will be years when farmers' suicides demand greater policy action. It is thus necessary to also look at the years when the ratio of the farmers' suicide rate to the non-farmers' suicide rate is greater than one. If a state has several such years there is a need to focus on the specifics of farmers' suicide even if the ratio of the average farmers' suicide rate to non-farmers' suicide rate is less than 1. We could use the frequency of the years when the ratio is greater than 1 as indicator of the seriousness of the crisis.

It should then be possible to get a comprehensive picture of the extent of the crisis in farmers' suicides in a state by

looking at two factors. First, we need to place the magnitude of farmers' suicides in the context of the overall suicide rates in the state. This is achieved by using the ratio of the farmers' suicide rate to the non-farmers' suicide rate. It must be emphasised that the focus here is entirely on farmers' suicides and states, like the united Andhra Pradesh, which have a general problem of suicides will not rank high on this list. And second, we need to see how frequently this ratio exceeds 1. Using these two criteria I classify states into five categories.

In the first category are states where the problem of farmers' suicides is **chronic**. These states would have recorded a ratio of Suicide Mortality Rate Ratio of more than 1 consistently in all the 20 years for which we have data. The only state that meets this criterion is Kerala.

In the second category would be states where the problem of farmers' suicides is **acute**. In these states the Suicide Mortality Rate Ratio is more than 1 in at least 10 of the 20 years but not in all 20 years. The states in this category are Maharashtra and Uttar Pradesh.

In the third category would be states where the problem of farmers' suicides is **less acute**. In these states the Suicide

**Table 6: Categorisation of states by the persistence of the severity of farmers' suicide, 1995-2014**

|                   |  |
|-------------------|--|
| Chronic (20)      | Kerala   |
| Very Acute(11-19) | Maharashtra, Uttar Pradesh   |
| Acute(5-10)       | Chhattisgarh, Goa, Karnataka, Jammu & Kashmir, Madhya Pradesh, Sikkim, Jharkhand   |
| Prone (1-4)       | Arunachal Pradesh, Mizoram, Rajasthan, Uttarakhand, Tamil Nadu, West Bengal, Haryana, Meghalaya, Bihar, Himachal Pradesh, Nagaland |
| Less prone (0)    | Andhra Pradesh, Assam, Gujarat, Manipur, Odisha, Punjab, Tripura   |

Mortality Rate Ratio is more than 1 in 5 to 9 of the 20 years of our analysis. The states in this category are: Chhattisgarh, Goa, Karnataka, Jammu & Kashmir, Madhya Pradesh, Sikkim, and Jharkhand

In the fourth category would be states that are **prone** to the problem of farmers' suicides. In these states the Suicide Mortality Rate Ratio is more than 1 in 1 to 4 of the 20 years of our analysis. The states in this category are: Arunachal Pradesh, Mizoram, Rajasthan, Uttarakhand, Tamil Nadu, West Bengal, Haryana, Meghalaya, Bihar, Himachal Pradesh, and Nagaland.

In the fifth category would be states that are **less prone** to the problem of farmers' suicides. In these states in no year is the Suicide Mortality Rate Ratio more than 1 in the 20 years of our analysis. The states in this category

are Andhra Pradesh, Assam, Gujarat, Manipur, Odisha, Punjab, and Tripura.

The regional inequalities in the vulnerability of farmers to suicides that are captured in the above classification of the states been summarized in Table 6.

### Impact of Poverty and Inequality in States on Farmers' Suicide

A growing body of literature has suggested that farmers' suicides are one of the consequences of inequality in rural areas. In some cases, the implicit argument is that the inequality related to extreme poverty drives farmers to suicides. This is particularly true of some studies that focus on indebtedness among the poor (Deshpande 2002). The Situation Assessment Survey of Farmers, 2003 carried out by the National Sample Survey Organisation, also finds that half of the farmers who committed

suicide were indebted and much of the indebtedness was due to agricultural expenses; inequality in income between the rural and urban households; and inequality between cultivators and non-cultivators (Suri, 2006). The process of poverty pushing farmers towards suicide can also be the result of declining crop income and the non-availability of non-farm income (Mishra, 2008). With lower income opportunities in agriculture and resultant poverty, farmers find it difficult to meet their family needs for food, health, education etc. and the welfare outcomes of their families get adversely affected. This might be one of the reasons why we find higher suicide rates among male farmers, who are more responsible for managing the economics of their families, than the female farmers (Mishra, 2014).

The impact of inequality on farmers' suicides need not be only at the lower end in the form of an increase in poverty. Inequality can also increase when the rich get richer. As this could affect the relative status of a family in the village, there would be pressure on those in the middle and lower ends of the income hierarchy to match the successes of those at the higher end. These aspirations could prompt farmers to seek out options with a high return, even if that means

greater risk. In such cases, an increase in inequality brings with it enhanced aspirations. Failed aspirations could push farmers to make extreme choices such as suicide (Suri, 2006). Other studies too have shown that crop failure (Mohanty, 2005; Parthasarathy & Shameem, 1998), investment failure (Vaidyanathan, 2006) have been causes of farmers' suicides. There have been several other studies that have confirmed such hypotheses (Nirmala, 2003 in Andhra Pradesh; Mohanty, 2001; 2005 in Maharashtra). To the extent that such aspirations have been linked to economic liberalization, there have been several studies linking the spurt in farmers' suicides to the process of liberalization (Kennedy & King, 2014; Deshpande, 2002; Reddy & Mishra, 2009; Mishra, 2008).

It is useful then to look at the relationship between inequality per se and farmers' suicides alongside the effect of poverty on farmer's suicides.

I first consider the impact of poverty on farmers' suicides. In Table 7, I present a panel data analysis of poverty and farmers' suicide. The panel on poverty ratio (= proportion of population below poverty line) has been obtained from Planning Commission of India for three years 2004, 2009 and 2011. I separately



**Table 7: Impact of poverty on the overall rate of suicides and farmers' suicides**

|               | Suicide rate of all | SMRRF     |
|---------------|---------------------|-----------|
| Rural poverty | 9.74E-08            | 0.0098565 |
| p-value       | (0.80)              | (0.02)    |
| Urban poverty | -1.08E-06           |           |
| p-value       | (0.27)              |           |
| Observations  | 84                  | 84        |
| Group         | 28                  | 28        |
| R-sq overall  | 0.0981              | 0.0118    |

**Table 8: Impact of inequality on overall and farmers' suicide**

|                           | Suicide rate of all | SMRRF  |
|---------------------------|---------------------|--------|
| Rural Gini of consumption | 0.0002              | 4.22   |
| p-value                   | (0.32)              | (0.01) |
| Urban Gini of consumption | -0.0003             |        |
| p-value                   | (0.17)              |        |
| Observations              | 72                  | 72     |
| Group                     | 28                  | 28     |
| R-sq overall              | 0.0136              | 0.10   |

estimated impact of rural poverty on farmer's suicide and impact of rural and urban poverty on overall suicide rates at the state level to investigate whether poverty has any differential impacts on farmers and the general population. Our estimation result shows that while poverty affects Suicide Mortality Rate Ratio of farmers significantly and positively, there is however no similar significant relationship between the general rate of suicides and poverty.

Neither rural nor urban poverty seem to exert any significant impact on general suicide rates at the state level. This would indicate that farmers' suicides, in general, are caused by a different set of factors from those influencing the suicide rates of non-farmers.

The results are similar when we consider overall inequality. In Table 8, I present the estimates of the impact of overall inequality, measured by the Gini

**Table9: Impact of poverty and inequality on overall and farmers' suicide**

|                           | Suicide rate of all | SMRRF            |
|---------------------------|---------------------|------------------|
| Rural poverty             | -1.07E-06           | 0.01             |
| p value                   | (0.28)              | (0.08)           |
| Urban poverty             | -8E-07              |                  |
| p value                   | (0.63)              |                  |
| Rural Gini of consumption | 0.0004              | 4.95             |
| p value                   | (0.15)              | (0.06)           |
| Urban Gini of consumption | -0.0003             |                  |
| p value                   | (0.17)              |                  |
| Observations              | 56                  | 56               |
| Group                     | 28                  | 28               |
| R-sq overall              | 0.02                | 0.11             |
|                           | F(4,27) = 0.60      | chi2( 2) = 15.95 |

coefficient of consumption, on farmers' and general suicides. The rural Gini coefficient is used as a proxy for rural inequality and the urban Gini for urban inequality. Data on Gini coefficients of consumption were collected from the Planning Commission of India for the years 1999, 2004 and 2009. I estimated a three year panel model for Indian states to investigate the impact of inequality on both farmers' suicides (captured by the Suicide Mortality Rate Ratio of farmers to non-farmers) and on general suicide rates. Our result shows that rural inequality affects the Suicide Mortality Rate Ratio of farmers positively indicating that inequality does

have an adverse impact. As in the case of poverty levels, inequality (captured by the Gini coefficient of consumption) does not seem to affect overall suicide rate at the state level.

In order to see which of the two independent variables – overall inequality and poverty levels – has the greater impact on farmers' suicides; it is necessary to develop a joint model of the impact of inequality per se and poverty levels on farmers' suicides. Table 9 shows us the result of a joint estimation of the impact of poverty and inequality on farmers' suicides and overall suicides. The rural poverty ratio

and the rural Gini have been regressed on the extent of farmers' suicides, captured by Suicide Mortality Rate Ratio of farmers to non-farmers. I have a two year panel with data for poverty ratios and Gini coefficients for 2004 and 2009 collected from the erstwhile Planning Commission of India. Our results do not show any divergence from the bivariate regression results presented in Table 7 and 8. Both rural poverty and inequality have significant impacts on the Suicide Mortality Rate Ratio of farmers to non-farmers, confirming our conjecture that both poverty and inequality adversely affects farmers. In the panel estimation, the impacts of these two factors on farmers' suicides are jointly significant with a chi square value significant at less than 1%. Both the rural and urban poverty ratios and the Gini coefficients of consumption were also regressed on overall suicide rates in the states. And once again as in the case of the bivariate analysis, the same does not hold true for overall suicide rates in states. This reconfirms our hypothesis that general suicides and farmers' suicides are caused by separate factors.

What is more interesting, though, is the difference in the effects of overall inequality and poverty levels on farmers' suicides. Between the two factors

inequality has a greater impact than the poverty levels. As can be seen in Table 9, the impact of rural inequality on the Suicide Mortality Rate Ratio of farmers to non-farmers is significantly higher than that of rural poverty; a result that is confirmed at a 10% significant level ( $p$ -value 0.06). This would suggest that failed aspirations are an important part of the pressure that drives farmers to suicide.

## Conclusion

A striking result of our study is that when seen in terms of the country as a whole, farmers are not the most vulnerable group to suicides. The ratio of farmers' suicides to that of non-farmers is generally less than 1 for the twenty-year period of the study. There is also evidence that, for the nation as a whole, housewives have a higher suicide rate than farmers.

This is not to suggest that the problem is not severe in some parts of the country. In four states – Kerala, Maharashtra, Jammu and Kashmir, and Chhattisgarh – the ratio of the average of the annual farmers' suicide rates across the twenty-year period to that of non-farmers is greater than 1. In Kerala in particular, it is as high as 2.78. And the ratio in Uttar Pradesh is equal to 1. In terms of

specific comparisons with the suicide rates among housewives, the ratio of the average of farmers' suicide rates over the twenty-year period to the corresponding rates for housewives is greater than 1 in Chhattisgarh, Maharashtra, Punjab, Karnataka, Kerala and Sikkim. Thus any meaningful policy to address farmers' suicides must take into account the regional variation in the phenomenon.

It is possible, though, to find patterns in this regional variation itself. There is a sharp difference even within the states where farmers' suicides are an important issue, with the situation in Kerala being far more severe than that in Maharashtra. In order to capture these variations I have suggested a five-fold classification of these states based on frequency of the years in which the rates of farmers' suicides have been greater than the rates of suicides among non-farmers over the twenty-year period of our study. The five categories we then arrive at are chronic, very acute, acute, prone and less prone. My categorisation shows that while Kerala, Uttar Pradesh, Maharashtra are highly prone to farmers' suicides; Andhra Pradesh, Assam, Gujarat, Odisha and few others are relatively at lower risk. It must be stressed that these categories are based on severity of farmers' suicides in comparison to other suicides. It does

not go into the issue of states where the overall suicide rates, that is, of both farmers and non-farmers, is high.

As the paper has looked at inequalities in the vulnerability to suicides both across different categories and across states, it was thought it would be useful to see if inequality within states played a role in the phenomenon as well. Utilising a two year panel, this study suggests that both rural inequality and rural poverty have been significantly contributing to increasing farmers' suicides in Indian states over the twenty-year period. However, when the magnitudes of the impact of these two are compared rural inequality turned out to be impacting significantly more than rural poverty. To the extent that inequality generated by the rich getting richer can result in optimistic aspirations, our results suggest that we should not underestimate the role of failed aspirations in the analysis of causes of farmers' suicides in India.

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