Globalisation and Suicides in India: An Economic Analysis

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Suicides in India are steadily increasing over the last two decades. This period coincides with the time during which the Indian economy has achieved high growth and integrated globally through fundamental structural changes. This paper examines the pattern of suicides in the country as revealed by the official statistics and finds the relative shares of suicides to have increased in several prosperous states, which are also the more globalised states. It finds suicides in most of these states, which have high urban income inequality, to be largest among self-employed (others). While farmer suicides show a welcome declining trend in recent years, the increasing tendency of self-employed (others) to take their lives in India's prosperous states is a disturbing trend. The paper argues that lack of adequate livelihood opportunities, low skills, limited access to formal credit and absence of social security support are precipitating suicides in the rapidly enlarging informal sector of a restructuring Indian economy.

I. Introduction

India's success in establishing itself as one of the fastest growing emerging market economies in the world is usually attributed to the liberal market-friendly outward-oriented

policies it has adopted over the last two decades. While these policies have been successful in generating high growth, they have also led to major structural changes in the economy. Some of these changes have been hastened and deepened by the economy's gradual integration with the rest of the world. These far-reaching changes can affect existing social and cultural orders leading to occasionally disturbing outcomes like increasing mental distress and increasing suicides.

Suicides, unfortunately, have been a rather neglected aspect of research in India's contemporary political economy. The empirical literature on determinants of suicides in contemporary India is almost non-existent. This is surprising considering that suicides in India exhibit a steady rising trend over the last couple of decades. While considerable attention has focused upon the growing incidence of farmer suicides, there has hardly been any systematic effort to examine suicides across regions and occupations.

This paper examines the recent trends of suicides in India and tries to identify the economic contexts of such suicides. By studying suicides across states and occupations, we aim to detect whether suicidal trends can be associated with Indian states with distinct economic contexts which could have been shaped by globalisation and economic policy changes.

II. **Review of Literature**

The literature on determinants of suicides draws inspiration from both sociological and economic constructs. Eminent sociologist Durkheim (1952) argued that suicides are influenced by changes in social orders and structures produced by major economic processes such as industrialisation, technological modernisation and urbanisation. Economic upheavals reflected in cyclical episodes of contraction and expansion tends to disturb existing social orders. Such disturbances increase the risk of suicides with several individuals experiencing a sudden loss of social status and being unable to accept their inabilities for realising aspirations under the changing circumstances (Durkheim 1952; Chang et al 2009). Suicides manifest through complex combinations of economic, social, cultural and political factors, which influence mental health and well-being. Economic globalisation, which has produced far-reaching changes in national social networks and structures by enhancing cross-border exchange and movement of capital, people, technology and ideas between economies, can generate conditions affecting mental health and precipitating suicides. While these conditions and their impacts would vary across age, occupation, gender and other geographical,

demographic and socio-economic characteristics of individuals, the potential of globalisation in influencing suicides cannot be overlooked.

Globalisation's effect on suicides requires to be assessed through specific characteristics of national economies, which are influenced by globalisation, and which, in turn, can influence suicides. Some of the common characteristics in this regard are economic growth, income, unemployment, work force participation rates and socio-economic inequality. There are several other contextual determinants such as disruptions in social relationships, cultural values and identities, which can affect mental health and provoke suicides. The empirical literature on determinants of suicides produces mixed evidence on the causality between the different national economic characteristics and suicide mortality. The majority of empirical studies employ panel regression techniques for identifying determinants of suicides for a cross-section of countries over a period of time. Noh (2008) reports incomes to be positively associated with suicide rates in the OECD economies with rising unemployment triggering more suicides in relatively higher-income economies. The finding corroborates similar results obtained earlier by Andrez (2005) for European economies with per capita GDP and unemployment being positively significant in determining suicide mortalities. Introduction of country-specific linear time trends in the estimation, however, produces different results, particularly with respect to the association between growth and suicides. The beneficial effect of economic growth on suicides is also noted by Neumayer (2003) as well as by Zhang et al (2009) for the Chinese economy. Chang et al (2009) find high suicide mortality in East Asia (Japan, Hong Kong and Korea) in the aftermath of the Asian financial crisis of 1997-98 to be associated with rise in unemployment. Unemployment was also found significant in explaining suicides (particularly for males) by Milner et al (2011) in their empirical investigation of the effect of globalisation on suicides for a cross-section of thirty-five countries comprising both developed and developing economies from Asia-Pacific, Europe and Latin America. Milner et al (2011) also found countries with a high 'globalisation index'[i] experiencing more suicides though the statistical significance of the index in explaining suicides was found to reduce when assessed along with other social and economic variables. Finally, both Andrez (2005) and Neumayer (2004) report statistical insignificance of income inequality (as measured by the Gini index) in influencing suicides.

Both media and academic attention on the rising trend of suicides in India has tended to focus specifically on suicides of farmers in different parts of the country. A fairly large body of

literature has examined the trend and pattern of farmer's suicides on the basis of statistics provided by official agencies such as the National Crime Records Bureau (NCRB) of the Ministry of Home Affairs in India and also on the basis of select field surveys in states showing higher incidences of farmer suicides. Sahay (2010) presents a detailed review of the literature and concludes that neo-liberal policies introduced since the adoption of economic reforms in India since the early 1990s (the same time from when India begun adopting an outward-oriented approach towards economic growth leading to gradual integration of the Indian economy with the rest of the world) and a steady withdrawal of the state from agriculture, manifesting in low public expenditures, have accentuated economic vulnerabilities for farmers, particularly on occasions of crop failures. Nagaraj (2008)'s detailed analysis of the regional trends in farmer suicides on the basis of NCRB statistics identifies a number of contiguous, dry, semi-arid regions within the states of Maharashtra, Karnataka, Andhra Pradesh and Madhya Pradesh, where incidence of farmer's suicides during 1997-2006 is particularly high. Nagaraj (2008) emphasises the lack of adequate alternative non-farm livelihood opportunities, particularly during times of agrarian crisis, as a critical factor in enhancing existing vulnerabilities like indebtedness and precipitating suicides. Menon (2006) points to the shift to cash crops from food crops, sharp increase in operational costs of farming and lack of institutional credit support as major factors driving suicides from a select sample of households of suicide victims in Andhra Pradesh. Rising indebtedness and the inability to manage the adverse outcomes of crop failures are key determinants of farmers' suicides as highlighted by Mohanty (2005) in his analysis of farmer suicides in Maharashtra.

Despite the focus on farmer's suicides in India, the absence of attention on the non-farmer suicides in the country, particularly those among the employed and professionals is rather surprising. While agrarian suicides in India are serious concerns, it is equally important to analyse whether generic determinants such as lack of alternative employment opportunities, financial indebtedness, inadequate access to formal credit, which influence farmer suicides, are influencing suicides across other occupations as well, leading to overall rates of higher suicides in the country. Indeed, a comprehensive explanation of the rising trend of suicides in India must cover multiple occupations and examine the impact of a complex group of inter-connected factors across India's geographical regions. Such an analysis conducted in the backdrop of a globalising and structurally transforming developing economy like India must

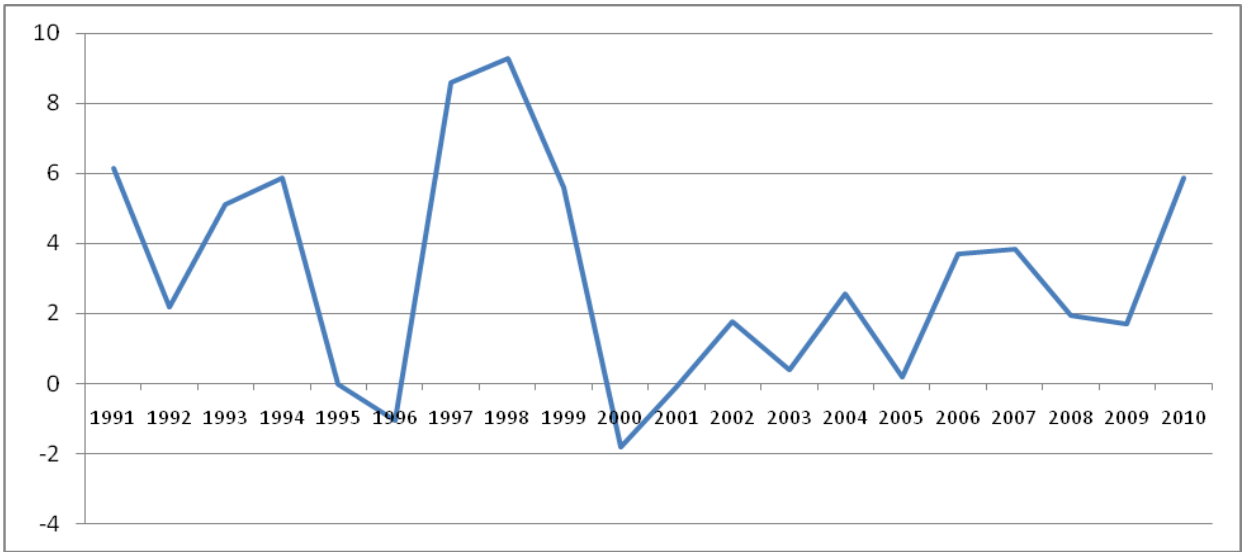
also probe if economic prosperity in India has not resulted in commensurate economic security of individuals and households (Palit and Singh, 2011) and whether the dichotomy in this regard would continue to influence suicides in the foreseeable future.

III. **Suicides and Economic Factors**

Trend Growth in Suicides: All-India

The reference period for empirical analysis of suicides in India in this section has been deliberately chosen as 1991-2010. India begun adopting markedly outward-oriented policies for taking advantage of opportunities created by economic globalisation from the beginning of the decade of 1990s. The last two decades have also witnessed considerable changes in organisation of production in different sectors as well as changes in nature of economic institutions, which have arisen from the Indian economy embracing a more market-oriented and globalised style of functioning. It is therefore appropriate for this paper to focus on the last couple of decades. The All-India trend of suicides reported in Figures 1 and 2a and 2b are based on statistics provided by the National Crime Records Bureau (NCRB).

Figure 1: Year-on-Year (Y-O-Y) Growth (%) in Suicides: All India (1991-2010)

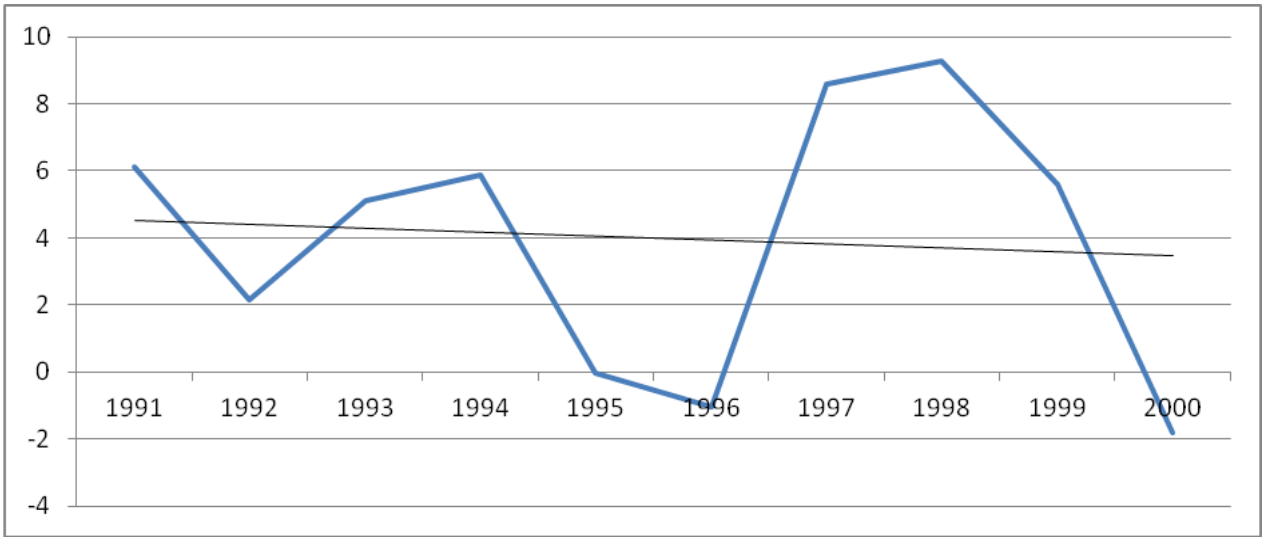


Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau.

Figure 1 shows the Y-o-Y growth in suicides in India during the last couple of decades. The first decade i.e. the 1990s shows a highly fluctuating trend in the Y-o-Y growth. However, a firmer positive upward trajectory is clearly seen taking shape during the first decade of the

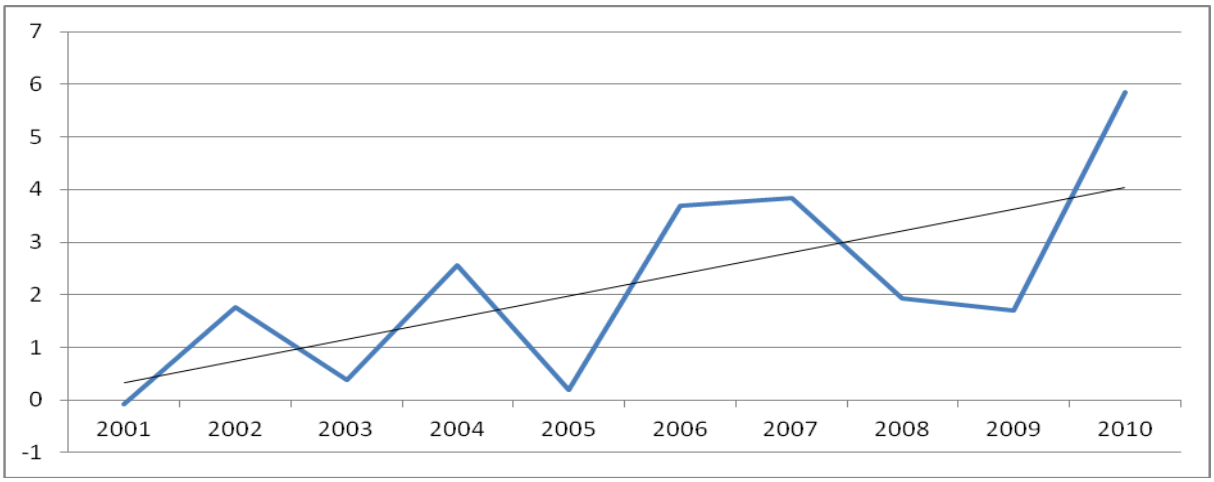
new millennium. Indeed, the difference in trend pattern of growth in suicides between the two decades is easily discernible from Figures 2a & 2b.

Figure 2a: Year-on-Year (Y-O-Y) Growth (%) in Suicides: All India (1991-2000)



Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau.

Figure 2b: Year-on-Year (Y-O-Y) Growth (%) in Suicides: All India (2001-2010)



Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau.

Two differences in the decadal patterns of growth rate in suicides are worth noting. First, the growth rate in suicides exhibited greater volatility during the 1990s compared with the last decade. During the 1990s, the Y-O-Y growth ranged from -1.8 per cent to 9.3 per cent underlining annual variation over a band of more than 10 percentage points. The growth rate

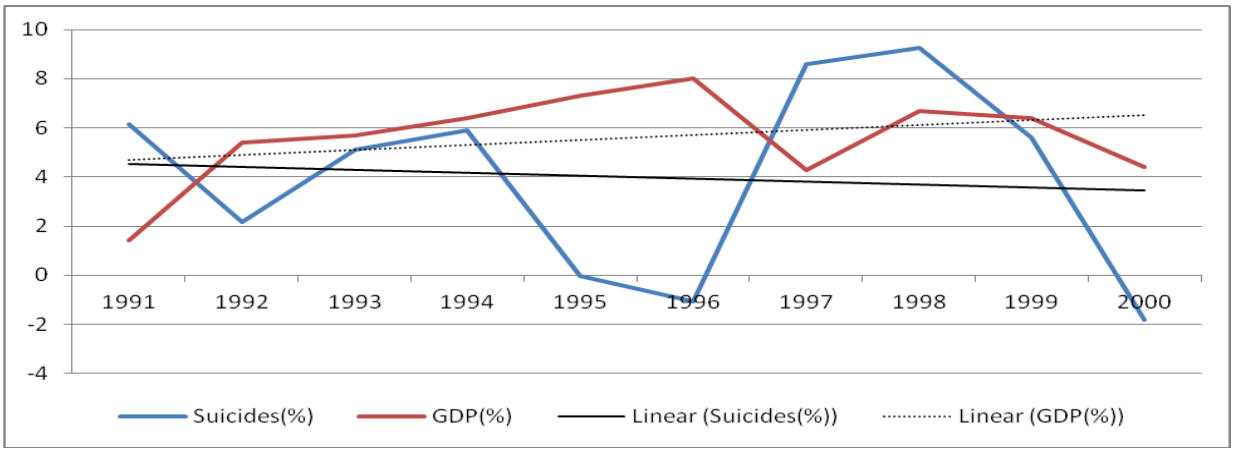
became negative during three years. In contrast, the fluctuation became less and the range became narrower during the decade of the 2000 when the band cramped from -0.1 to 5.9 per cent showing a dispersion range of around six percentage points. Second, as mentioned earlier, the trend in Y-O-Y growth shows a positive and upward trajectory during the decade of 2000 as compared with the 1990s where the trend is marginally negative, almost tending to be flat (Figures 2a & 2b). Thus while there were more instances of 'high growth' suicide years during the 1990s, growth in suicides in India acquired a more stable trajectory during the last decade. Such stability, however, has been accompanied by a steady upward trend in growth of suicides.

Perhaps deflating the numbers by the decadal increase in population may lead to a number of suicides per population headcount that may actually show a decline—it is worth checking out whether this increase is actually borne out taking the total population as a denominator

Suicides and GDP Growth

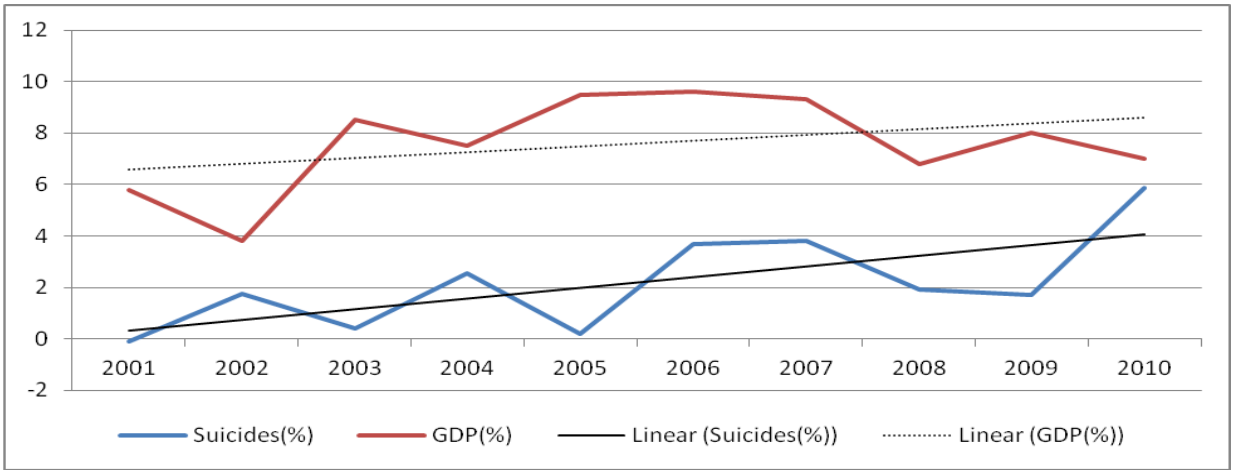
An obvious academic curiosity arising at this juncture is whether India's success in shifting to a fairly stable and sustained high-growth path since the beginning of economic reforms and particularly during the last decade, has any association with the trend pattern of suicides. As mentioned earlier in Section II, the relationship between economic growth and suicides has been a subject of investigation in the empirical literature on determinants of suicide mortality. Do the trend rates of growth in GDP and suicides in India bear any similarities?

Figure 3a: Y-O-Y Growth (%) in GDP and Suicides: All India (1991-2000)



Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau and the Handbook of Statistics on the Indian Economy, Reserve Bank of India.

Figure 3b: Y-O-Y Growth (%) in GDP and Suicides: All India (2001-2010)



Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau and the Handbook of Statistics on the Indian Economy, Reserve Bank of India.

Figures 3a & 3b depict two different stylised observations with respect to trend rates of growth in GDP (measured at constant prices) and suicides. Figure 3a, which reflects the trends during 1991-2000, shows two different trajectories of trend growth. The Y-O-Y growth in GDP shows a positive trend and diverges from a negative trend displayed by Y-O-Y growth in suicides. Clearly, there is no observed structural similarity between the two trends. However, Figure 3b reveals a different pattern. Both GDP and suicide growth reflect positive upward trends with the trend lines having positive coefficients. This indicates that suicides in India have been showing a distinct stable and upward trajectory at a time when GDP growth in India is also showing a similar trajectory. The lack of correlation in the last two years in this graph needs to be explained

It would, however, be presumptuous to conclude from the above that suicides in India have a positive association with high GDP growth. The presence of such an association (or the absence of it) requires deeper examination of the trends in suicide particularly at disaggregated state-level. But before embarking on a more detailed analysis, it is insightful to note that India has been experiencing a higher growth rate of suicides at a time when it has achieved considerable economic success in terms of stepping on to a growth trajectory, which is historically higher than what it has achieved in the past.

State-wise Disaggregated Profiles

Clear impressions on trends and patterns of suicides in India can be obtained only by studying suicides at state-level. Good point.

Table 1 shows the aggregate suicides in 14 major states of India during the period 1991-2010. Aggregate suicides for these states are also shown for two decomposed periods: 1991-2000 and 2001-2010. The 14 states in Table 1 are those that have at least one per cent share in total suicides (combined suicides of twenty five states excluding Chhattisgarh, Jharkhand and Uttaranchal and also the seven union territories)[ii]. The one per cent criteria results in 11 states being left out of Table: Arunachal Pradesh, Goa, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim and Tripura. The remaining 14 states in Table 1 – Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Rajasthan, Uttar Pradesh and West Bengal – with at least one per cent or more share in total suicides are the key 'suicide' states in the country. They account for 97.6 per cent of total suicides during 1991-2010 and 97.7 per cent and 97.5 per cent of total suicides during 1991-2000 and 2001-2010 respectively.

Table 1: State-wise Suicides during 1991-2010

S No.	State	Total (1991-2010)	Rank	Share (%)	Total (1991-2000)	Rank	Share (%)	Total (2001-2010)	Rank	Share (%)
1	Andhra Pradesh	213795	5	10.6	80290	6	8.8	133505	3	12.1
2	Assam	54416	12	2.7	25937	12	2.8	28479	12	2.6
3	Bihar	20516	14	1.0	12825	14	1.4	7691	14	0.7
4	Gujarat	93263	8	4.6	40578	9	4.6	52685	8	4.8
5	Haryana	38138	13	1.9	14773	13	1.6	23365	13	2.1
6	Karnataka	221262	4	11.0	99672	3	10.9	121590	5	11.0
7	Kerala	177631	6	8.9	86616	5	9.5	91015	6	8.2
8	Madhya Pradesh	148638	7	7.4	77365	7	8.5	71273	7	6.6
9	Maharashtra	264303	2	13.1	115973	2	12.7	148330	1	13.4
10	Orissa	76102	10	3.8	32922	10	3.6	43180	9	3.9
11	Tamil Nadu	226077	3	11.2	95154	4	10.4	130923	4	11.8
12	Rajasthan	70802	11	3.5	28944	11	3.2	41858	10	3.8
13	Uttar Pradesh	84493	9	4.2	47078	8	5.2	37415	11	3.4
14	West Bengal	276431	1	13.7	131893	1	14.5	144538	2	13.1

Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau. Note: Shares reflect the proportion of suicides in each state in aggregate suicides of twenty five states. The shares are decadal averages. States that have been excluded from the aggregate computation are Chhattisgarh, Jharkhand and Uttaranchal.

West Bengal recorded the highest number of suicides (276,431; 13.7 per cent) in the country during the last two decades with Maharashtra (264,303; 13.1 per cent) and Tamil Nadu (226,077; 11.2 per cent) at second and third positions respectively. Karnataka and Andhra

Pradesh are two other states accounting for more than 10 per cent shares in total suicides and are ranked fourth and fifth. Kerala, Madhya Pradesh, Gujarat, Uttar Pradesh and Orissa are ranked from sixth to tenth respectively.

Decadal comparisons reveal West Bengal's share in total suicides to have reduced from 14.5 per cent during 1991-2000 to 13.1 per cent during 2001-2010. While West Bengal's share in total suicides has reduced by more than one percentage point between the two decades, those of Andhra Pradesh, Tamil Nadu, Maharashtra, Haryana, Rajasthan, Orissa, Gujarat and Karnataka have increased. For Orissa, Gujarat and Karnataka, the increases have been marginal. The most substantive increases have been for Andhra, Tamil Nadu and Maharashtra. Andhra' share in total suicides has increased by 2.3 percentage points between the two decades, while those of Tamil Nadu and Maharashtra have increased by 1.4 and 0.7 this increase does not seem significant…percentage points respectively (Table 1). These increases have resulted in changes in relative rankings between states with Andhra rising to third position from sixth earlier and Maharashtra displacing West Bengal as the highest suicide state during the period 2001-2010. Tamil Nadu and Haryana's ranks have remained unchanged between the two decades despite their shares in total suicides increasing. A marginal increase of 0.2 per cent in share has resulted in Gujarat's rank changing from 9th to 8th; however, a 0.1 per cent increase in share has resulted in Karnataka's rank dropping from 3rd to 5th.

While shares of several states in total suicides have increased over between the two decades, there are some states in Table 1 whose shares have declined. These include (other than West Bengal), Assam, Bihar, Kerala, Madhya Pradesh[iii] and Uttar Pradesh. Uttar Pradesh and Madhya Pradesh show drops of 1.8 and 1.9 percentage points respectively in their shares. For Uttar Pradesh, this has led to a change in relative rankings with the state moving out of the top ten suicide states in the last decade. Madhya Pradesh, however, has retained the same rank (Table 1). Declines in shares of Kerala and Bihar have also been substantive, while that of Assam has been marginal.

The decadal trend of suicides reveals an interesting insight. States, whose shares in total suicides have increased during the last decade, include those which are recognised as the better economic performers. Andhra, Tamil Nadu, Maharashtra, Gujarat, Haryana and Karnataka are India's more prosperous states in terms of their per capita incomes being

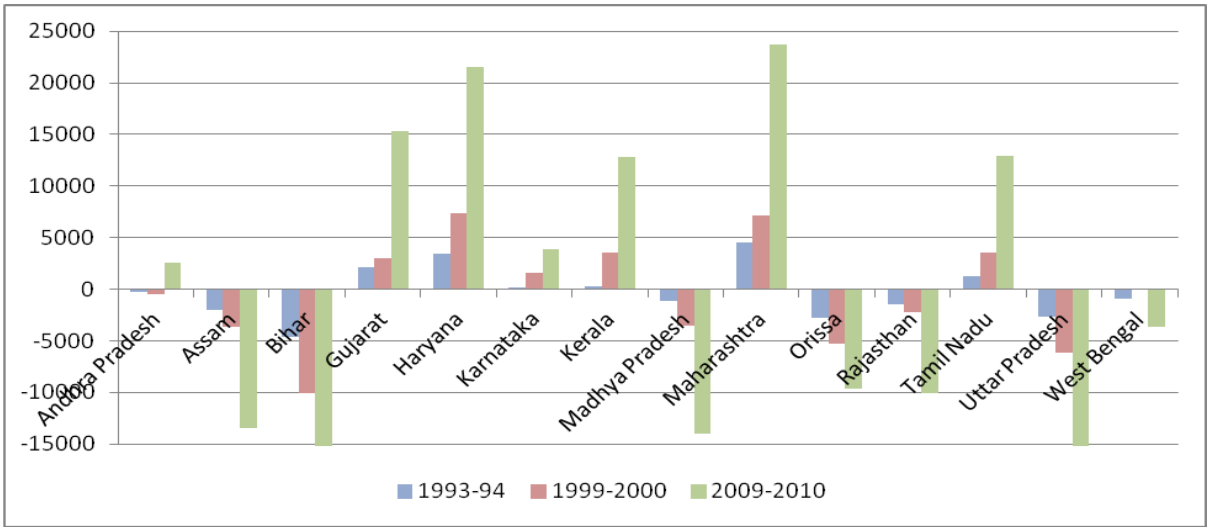
higher than the all-India average (Table 2). But growth in some of the states in suicides is very small—can this argument be forcefully made?As explained later, the gaps between per capita incomes of these states and the national average per capita income have progressively enlarged over time (Figure 4) underpinning the fact that these states are pulling ahead of the rest of the states in the country. Rajasthan and Orissa are the only two states with increasing shares in total suicides whose per capita incomes from the national average are falling behind over time. On the other hand, among states experiencing reductions in shares in total suicides between the two decades, Assam, Bihar, Madhya Pradesh, Uttar Pradesh and West Bengal not only have per capita incomes lower than the national average and are therefore states that are less prosperous or relatively poor, the income gap between these states and the more prosperous ones are becoming larger over time. Kerala, however, is a notable exception to the trend. It is a rare state whose share in suicides has reduced in spite of its per capita income being higher than the national average.

Table 2: State-wise Per Capita Incomes (INR)

S. No.	State	1993-94	1999-2000	2009-2010
1	Andhra Pradesh	7416	15427	36345
2	Assam	5715	12282	20279
3	Bihar	3037	5786	11799
4	Gujarat	9796	18864	49030
5	Haryana	11079	23229	55214
6	Karnataka	7838	17502	37609
7	Kerala	7983	19461	46511
8	Madhya Pradesh	6584	12384	19736
9	Maharashtra	12183	23011	57458
10	Orissa	4896	10567	24098
11	Rajasthan	6182	13619	23653
12	Tamil Nadu	8955	19432	46692
13	Uttar Pradesh	5066	9749	16411
14	West Bengal	6756	15888	30065
15	**All India**	**7690**	**15881**	**33731**

Source: Central Statistical Organisation; Note: Data earlier than 1993-94 was avoided because of the series being on a different base year. The data reported in the above table is for base year 1993-94.

Figure 4: Deviations of State Per-Capita Incomes from All India Income (INR)



Source: Computed from per capita incomes at current prices reported by the CSO. Note: Deviations are measured as the difference between per capita income of a particular state and the All India per capita income for the year.

The state-wise pattern of suicides decomposed over the last couple of decades suggests that in a liberalising and globalising Indian economy, suicides are increasing relatively more in states becoming more prosperous and are declining in states becoming relatively poor. States becoming richer and poorer are respectively those whose income deviations from the All-India level are increasing on either side. There are some exceptions to these trends though (e.g. Rajasthan, Orissa, Kerala). But on the whole, the observed causality between the richer states (incidentally these are also states that are more globally integrated and benefitting from outward-oriented economic policies) and greater incidence of suicides can hardly be overlooked.

The obvious question arising at this juncture is why the economically better-off states are showing relatively higher incidence of suicides. While suicides would be determined by a complex combination of factors, there might be some inherent similarities in economic structures of India's better-off states which can provoke suicides and it is important to identify these triggers. In this respect, it is important to examine the nature of economic inequalities in Indian states and whether any common pattern between these inequalities and suicide mortality can be detected.

State-wise Rural and Urban Inequality

India's economic growth during the last couple of decades has been characterised by increasing inequality in income and consumption. In this respect, the iniquitous nature of growth is not different from what has been experienced by other major emerging market economies like Argentina, Brazil, China, Indonesia, Russia and South Africa. Inequalities measured by Gini coefficients of household incomes in these economies not only show the level of existing inequalities to be much higher than those in the OECD economies, but also find them increasing over time in several instances (OECD 2011). For India, the Gini coefficient is found to have increased from 0.32 in the early 1990s to 0.38 by the late 2000s[iv] highlighting a fairly sharp increase in income inequality in the post-reform period. These results are corroborated by similar estimates made by other agencies and researchers. The Planning Commission of India's estimates of Gini coefficients of distribution of household consumption for rural and urban areas show these to have increased from 0.28 to 0.30 in rural areas and 0.34 to 0.37 in urban areas during 1993-94 to 2004-05 (Planning Commission 2011). Similar results for the same period are reported by Sarkar and Mehta (2010). In addition to these results reporting inequality at the all-India level, Ahluwalia (2000) reports inter-state inequality to have increased significantly during the period 1980-81 to 1997-98.

Accentuation of inequalities has several manifestations. It not only leads to greater inequality among geographical units, but also within these units. For India, the implications point to increasing inter-state, as well as intra-state inequalities. In addition, there are inequalities visible between rural and urban areas and different occupational groups (e.g. agriculturalists, business, self-employed) as well as within these groups. Clearly economic inequalities have different layers some of which could be overlapping. In the context of this paper analysing suicides in Indian states, it is imperative to look closely at the nature of existing inequalities in different states and their potential roles in triggering suicides.

Table 3 reports the Gini coefficients for 14 states in the country along with the All-India coefficient. The latest estimates for Gini coefficients are available only till 2004-05. An interesting point to note from Table 3 would be whether most of the states displaying rising suicides rates, which are also the more affluent ones as noted earlier, are also the ones showing higher income inequalities over time. For Andhra, Gujarat, Haryana, Karnataka, Maharashtra and Tamil Nadu, Gini coefficients in urban areas have increased during 1993-94 to 2004-05, while those in rural areas have also increased for most during the same period[v]. For some states such as Andhra and Haryana, the increase in urban Gini coefficient has been

particularly sharp (Table 3). Other than Andhra and Maharashtra, urban Gini coefficients of none these six states are as high as the All-India urban value of 0.37. On the other hand, rural inequalities, as reflected by the rural Gini coefficients, are found higher than the All-India level for Haryana, Maharashtra and Tamil Nadu. For these six states, which are also the more economically prosperous states and showing rising incidence of suicides over time, urban inequalities are higher than rural inequalities with the former also rising faster than the latter. Urban inequality has also increased rapidly in Rajasthan and Orissa, the two other states showing increasing trend of suicides. While the rural Gini coefficient has increased sharply in Orissa, it has declined in Rajasthan (Table 3).

Table 3: State-wise Gini Coefficients for Rural and Urban Areas

S. No.	State	1993-94		1999-00		2004-05	
		Rural	**Urban**	**Rural**	**Urban**	**Rural**	**Urban**
1	Andhra Pradesh	0.29	0.32	0.24	0.31	0.29	0.37
2	Assam	0.18	0.29	0.20	0.31	0.19	0.32
3	Bihar	0.22	0.31	0.21	0.32	0.20	0.33
4	Gujarat	0.24	0.29	0.23	0.29	0.27	0.31
5	Haryana	0.30	0.28	0.24	0.29	0.32	0.36
6	Karnataka	0.27	0.32	0.24	0.32	0.26	0.36
7	Kerala	0.29	0.34	0.27	0.32	0.34	0.40
8	Madhya Pradesh	0.28	0.33	0.24	0.32	0.27	0.39
9	Maharashtra	0.30	0.35	0.26	0.35	0.31	0.37
10	Orissa	0.24	0.30	0.24	0.29	0.28	0.35
11	Rajasthan	0.26	0.29	0.21	0.28	0.25	0.37
12	Tamil Nadu	0.31	0.34	0.28	0.38	0.32	0.36
13	Uttar Pradesh	0.28	0.32	0.25	0.33	0.29	0.37
14	West Bengal	0.25	0.33	0.22	0.34	0.27	0.38
15	**All India**	**0.28**	**0.34**	**0.26**	**0.34**	**0.30**	**0.37**

Source: The Planning Commission, Government of India 2011.

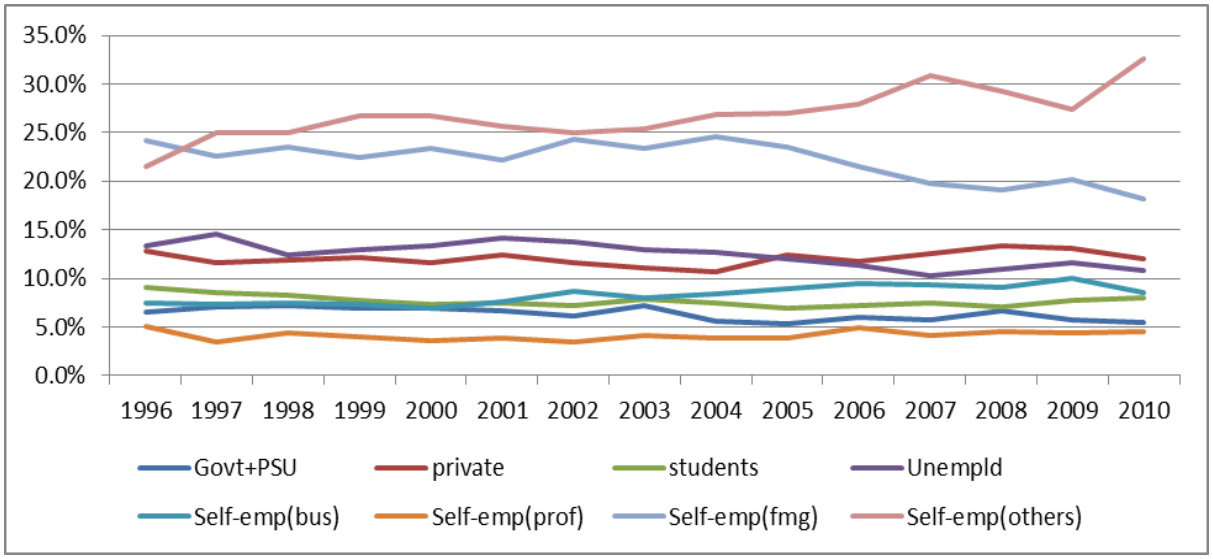
The trend of urban inequality rising faster than rural inequality is also visible for the remaining states in Table 3 – Assam, Bihar, Kerala, Madhya Pradesh, Uttar Pradesh and West Bengal – which are less prosperous and whose shares in total suicides are decreasing over time. The increase in values of Gini coefficients for urban areas in all these states has been particularly pronounced for Kerala, Madhya Pradesh, Uttar Pradesh and West Bengal. Rural inequality in some of these states has actually declined such as in Bihar and Madhya Pradesh. Given that the Gini coefficients are available only till 2004-05 and the suicide and income trends reported in this paper are till 2009-10, it is difficult to arrive at a composite explanation of the trends seen in state-wise suicides in terms of their respective economic

growth, income and inequality over the same period of time. However, there is no denying that rising urban inequality is a feature that is becoming increasingly evident in states that are showing both increasing and decreasing trends in suicides. Indeed, the causality between urban inequality and suicides in India requires deeper examination.not clear that pattern of growth of inequality in the poorer growth states is significantly different from the pattern of growth of inequality in the faster growing states--- not sure that the arguments here are sustainable without further analysis

State-wise Suicides: The Occupational Dimension

The categorisation of suicide victims into different occupational categories is being reported in the NCRB statistics from the year 1996 onward. The suicides are distributed into different categories: housewife, service (government), service (private), public sector undertaking (PSU), student, unemployed, self-employed (business), self-employed (professional), self-employed (farming/agriculture), self-employed (others), retired persons and 'others'. Our analysis does not include housewives, retired persons and 'others' and studies the trends of suicides for the remaining categories. For analytical convenience, the statistical examination groups service (government) and PSU suicide victims in one category. Figure 5 reports the trends in shares of suicides in total suicides for eight occupational categories. Total suicides here represent total suicides in the 14 states of Table 1 for each occupational category.

Figure 5: Shares (%) of Different Occupations in Total Suicides



Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau.

The category of self-employed (others) has the highest share in total suicides followed by self-employment (farming/agriculture), service (private) and unemployed. These four categories had shares of 32.5 per cent, 18.2 per cent, 12.0 per cent and 10.0 per cent respectively in total suicides in 2010. The NCRB statistics do not clearly define which specific self-employment occupations are included in 'others'. Intuitively, however, since the self-employed in business, professional and agriculture are categorised separately, the 'others' are expected to include those who are not classifiable in any of the three above and would therefore cover a wide spectrum of trades essentially in the informal sector. Indeed, it is interesting to note that share of suicide victims from self-employed (others) has always been higher than the corresponding share of self-employed (farming) in suicides, except for the year 1996. At the same time, it is also important to note that the rising trend in share of farmer suicides has given way to a steadily declining trend from the year 2004 onward. From a share of 24.6 per cent in total suicides in 2004, the share of farmers' suicides in the total has reduced to 18.2 per cent in 2010. On the other hand, the share of self-employed (others) in the total suicides has been steadily increasing throughout the period (except for 2008 and 2009, when in spite of brief reductions it still remained way above other categories). This category now accounts for 32.5 per cent of total suicides compared with 21.6 per cent in 1996. It is important to point out here that by definition the group of self-employment (farming/agriculture) includes only those farmers or cultivators that own land. Many of the agricultural labourers and farmers that do not own land are not included in this category and could well be slotted in the self-employed (others) group. Thus even though the share of self-employed (farming) is falling it is difficult to conclude that farmer suicides are genuinely decreasing. Good point.

While self-employed (others) and farmers accounted for more than half of the total suicides in the major 14 suicide states in the country in 2010 and are therefore the categories that need to specially examined, trends in other occupational categories are also important to note. Though private service suicides account for 12.0 per cent of total suicides and are the third highest category, there have not been significant variations in the share of these suicides with the latter varying between 11.1-13.1 per cent during the reported period. Share of suicides by the unemployed, again, while not showing significant variation over the years, does show a declining trend from the middle of last decade. A similar weak trend, though upward, is noticed for self-employment (business) with the share of this particular category rising to

almost 10 per cent of total suicides in 2009, compared with 7.4 per cent in 1996. Both self-employed (professionals) and the combined category of government service and PSUs show declines in their shares in total suicides.

Table 4: Average State-wise Shares (%) of Occupations in Total Suicides (1996-2010)

	Govt/PSU	Private	Students	Unempld	Selfemp(bus)	Selfemp(pro)	Selfemp(fmg)	Selfemp(others)
Andhra Pradesh	0.059	0.116	0.066	0.078	0.100	0.067	0.263	0.251
Assam	0.078	0.059	0.100	0.087	0.159	0.048	0.115	0.354
Bihar	0.062	0.085	0.183	0.163	0.058	0.033	0.172	0.244
Gujarat	0.050	0.143	0.089	0.159	0.083	0.109	0.185	0.182
Haryana	0.109	0.167	0.105	0.198	0.063	0.028	0.151	0.179
Karnataka	0.056	0.127	0.060	0.072	0.073	0.024	0.263	0.324
Kerala	0.039	0.075	0.046	0.223	0.071	0.029	0.185	0.331
Madhya Pradesh	0.067	0.082	0.075	0.072	0.068	0.044	0.337	0.255
Maharashtra	0.046	0.141	0.083	0.091	0.044	0.039	0.334	0.222
Orissa	0.057	0.087	0. 091	0.147	0.090	0.027	0.106	0.393
Rajasthan	0.049	0.138	0.075	0.080	0.073	0.025	0.281	0.280
Tamil Nadu	0.071	0.157	0.050	0.212	0.101	0.038	0.118	0.253
Uttar Pradesh	0.061	0.110	0.101	0.142	0.069	0.029	0.238	0.250
West Bengal	0.107	0.127	0.118	0.117	0.115	0.039	0.140	0.238
Overall	**0.063**	**0.121**	**0.077**	**0.125**	**0.083**	**0.041**	**0.222**	**0.269**

Source: Computed from the annual publications on Accidental Deaths and Suicides in India, National Crime Records Bureau.

Table 4 shows the state-wise average shares of different occupations in total suicides for the period 1996-2010. It also gives the cumulative or overall averages of the different categories. Self-employment (others) has the highest average share among all categories in Assam, Bihar, Karnataka, Kerala, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. Andhra, Gujarat, Madhya Pradesh, Maharashtra and Rajasthan show the highest shares for farmer suicides, while Haryana is the only state with highest average suicide share of the unemployed.

A category-wise comparison of the state averages with the overall average should provide an idea of the states in which suicides from a particular occupational category are figuring more prominently than they are doing so at an aggregate level. For self-employment (others), the category occupying the largest share in the aggregate suicides, five states – Assam (35.4 per

cent), Karnataka (32.4 per cent), Kerala (33.1 per cent), Orissa (39.3 per cent) and Rajasthan (28.0 per cent) – have individual state shares higher than the overall average (26.9 per cent) (Table 4). Thus the suicide mortality of self-employed (others) in these five states are relatively more than the rest in the group of 14. On the other hand, Andhra (26.3 per cent), Karnataka (26.3 per cent), Madhya Pradesh (33.7 per cent), Maharashtra (33.4 per cent), Rajasthan (28.1 per cent) and Uttar Pradesh (23.8 per cent), are the states whose individual shares of farmer suicides are more than the overall state share (22.2 per cent). These are therefore states where suicide mortality of farmers is more than that of the others. It is important, however, to note that a higher average share of the state vis-à-vis the overall average for a particular category does not necessarily imply that the highest number of suicides in that state take place in the particular category. An example is Uttar Pradesh where despite a higher than overall average state share in farming suicides, self-employed (others) have a greater share in total suicides of the state. There has been a lot of talk of farmer suicides--- any analysis of that?

Assam (15.9 per cent), West Bengal (11.5 per cent), Tamil Nadu (10.1 per cent) Andhra (10.0 per cent) and Orissa (9.0 per cent) have higher than overall average state shares for suicides in self-employed (business). Kerala (22.3 per cent), Tamil Nadu (21.2 per cent), Haryana (19.8 per cent), Bihar (16.3 per cent), Gujarat (15.9 per cent) and Uttar Pradesh (14.2 per cent) are the higher states for unemployed suicides. Haryana (16.7 per cent), Tamil Nadu (15.7 per cent), Gujarat (14.3 per cent), Rajasthan (13.8 per cent), Karnataka and West Bengal (12.7 per cent each) have similar higher shares for private business. Bihar (18.3 per cent), West Bengal (11.8 per cent), Haryana (10.5 per cent), Uttar Pradesh (10.1 per cent), Assam (10.0 per cent), Orissa (9.1 per cent) and Maharashtra (8.3 per cent) have higher than overall shares for student suicides.

IV. **Summary and Analysis**

Suicides in India have been increasing during the last two decades. From a rather inconsistent and fluctuating trend pattern during the 1990s, growth in suicides has assumed a stable and positive trajectory since the middle of the last decade. The assumption of the positive trajectory is found to have coincided with a period exhibiting similar positive and stable trend pattern of GDP growth in India. An examination of the patterns of suicides in the 14 significant suicide states of the country reveals perhaps this can be stated less

categoricallyshares of states in total suicides to be changing between the two decades. Many of the states whose shares in total suicides have increased between the two decades are India's more prosperous and better-off states – Andhra, Haryana, Gujarat, Karnataka, Maharashtra and Tamil Nadu – with per capita incomes higher than the All-India average and the income differential increasing over time. On the other hand, most states experiencing a decline in suicides – Assam, Bihar, Madhya Pradesh, Uttar Pradesh and West Bengal – are the relatively poorer states with per capita incomes lower than the national average. There are, however, exceptions to both the observed causalities. Rajasthan and Orissa are low-income and relatively poor states showing increasing incidence of suicides. On the other hand, Kerala, a state with relatively higher per capita income, is showing a lower share of suicides between the two decades.

Notwithstanding the exceptions, the tendency on part of many the better-off states to have higher shares of suicide victims are noteworthy. Our examination of income inequality in these states shows urban inequalities to have accentuated over time particularly in Andhra, Haryana and Karnataka. Rural inequalities, in contrast, have increased by a lesser extent in these states. The differing pace of increase in inequality between urban and rural areas, however, is not exclusive to only better-off states showing rising suicide shares. This is the point. Kerala has experienced sharp increase in urban income inequality as well. Urban inequality has also risen sharply in relatively less prosperous states of Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal. Suicide shares of some these states are increasing, while for others it is decreasing. Thus the observed tendency of relative share of suicides increasing in several better-off states and vice-versa cannot be entirely explained by increasing urban inequality, which cuts across states irrespective of income levels.

The occupational pattern of suicide victims in the high suicide states points to domination by the category of self-employed (others). Farmers??In eight of the 14 high suicide states, suicides are dominated by self-employed (others). These states are a mix of high-income (Karnataka, Kerala, Tamil Nadu) and low-income (Assam, Bihar, Orissa, Uttar Pradesh, West Bengal) states. They are also mix of states showing high shares (Karnataka, Tamil Nadu and Orissa) and low shares (Assam, Bihar, Kerala, Uttar Pradesh and West Bengal) respectively in total suicides. Thus high suicides by self-employment (others) are clearly not exclusive to high income, high-suicide states. Similarly, farmer suicides dominate high income, rising

suicide (Andhra, Gujarat, Maharashtra), low income, rising suicide (Rajasthan) and low income, falling suicide (Madhya Pradesh) states.

It is evident that while some broad conclusions about the trend pattern of suicides in India can be identified in terms of state-level incomes, inequality and occupations of suicide victims, it is difficult to pin these to an exhaustive causality framework that would conclusively explain suicides in India. Our analysis of the trend of suicides in India across the last couple of decades, while revealing some interesting insights, also raises questions, which need to be addressed at the micro-level. Indeed, as the empirical literature on determinants of suicides reveals, most of these determinants are expected to be exerting their influences on suicides at the micro or state-specific levels. A comprehensive explanation of suicides in India across time and states therefore needs to be attempted through more detailed micro-level empirical examinations.

V. **Conclusion**

The incidence of suicides in India has increased during the last couple of decades, which mark India's greater integration with the world economy and increasing shift towards production and distribution characterised by lesser presence of the state. However, it would be erroneous to attribute rising suicides directly to globalisation till more convincing empirical evidence is obtained on the causality. There might well be various national, regional and local factors at work, which are affecting mental health and precipitating suicides in the country. Greater integration with the world economy might have only marginal effects, if none at all, on these factors.

The fact that suicides are increasing is a disturbing feature and reflects that vulnerabilities in the economy and society are increasing. While the common impression might be that suicide mortality would be higher in Indian states that are economically backward and lacking adequate livelihood opportunities, our analysis reveals that many of the better off, higher income states are showing increasing trends of suicide. Suicides in most of these states (as well as in some low-income ones) are being driven by high suicides of self-employed (others), who are expected to be involved largely with the informal sector. India's high economic growth in recent decades has been accompanied by rising inequality, particularly in urban areas, and extensive informalisation of the economy. Lack of adequate livelihood opportunities, low skills, inadequate access to formal credit and lack of social security

support often combine to produce destructive outcomes like suicides. It is important to examine how these factors are instigating suicides in the informal segments of the economy, particularly in the economically better-off states.

Much has been written and spoken on farmer's suicides in India. It is encouraging to note that these suicides are showing a declining trend since the middle of last decade. It would be interesting to examine whether this is a result of the increasing spread of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), which has been assuring employment support in rural areas. Similar state interventions in form of social security support are yet to be implemented in urban areas, which are more iniquitous, and can result in greater and quicker frustrations among residents due to inabilities to meet aspirations and living standards of peers.

Future empirical research on India's suicides and their association with globalisation needs to employ structured estimation frameworks for determining the roles of different economic and social variables in influencing suicides. Such analysis needs to be carried out for individual regions and states for incorporating area-specific demographic, social and cultural features in the estimation framework. Research on suicides also needs to look more closely at the non-farm occupations, particularly in the informal sector, which, till now, have avoided attention, either due to paucity of data or interest.

It may be worthwhile pointing out the significant increase in suicides for other than income factors--- mostly students who fail, don't compete with peers, due to social pressures like ragging etc. perhaps there should be a caveat tahat all the reasons may not be attributable to economic reasons alone.

NOTES

[i] The globalisation index comprises three sub-indices measuring 'economic globalisation' in terms of the country's integration in the world economy, social movement and contact as reflected in the increasing scale of human interaction and information flows and finally social development which includes all processes influenced by globalisation (e.g. computer ownership, telephone coverage etc). See Milner et al (2011) for more details on the methodological construct of the index.

[ii] Chhattisgarh, Jharkhand and Uttaranchal are three new states that have been carved out of Madhya Pradesh, Bihar and Uttar Pradesh respectively. These have been excluded because they do not figure in the time series of

suicides from 1991and can present problems of double-counting in the decadal analysis. The Union Territories have also been left out for avoiding inconsistencies in enumeration.

[iii] The fall in the share of suicides for Madhya Pradesh and Bihar could be attributed to the carving out of the states of Chhattisgarh and Jharkhand.

[iv] Argentina, China, Russia and South Africa's Gini levels are reported to have increased from 0.45 to 0.46, 0.33 to 0.41, 0.40 to 0.42 and 0.67 to 0.70 respectively during the period. Brazil's and Indonesia's Gini coefficients have declined from 0.61 to 0.55 and 0.39 to 0.37 respectively. The current Gini coefficients of all these economies are higher than the OECD level of 0.31 (OECD 2011).

[v] Andhra and Karnataka do not show increase in Gini coefficients for rural areas during the period 1993-94 to 2004-05.

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