

Policy Alternatives to Agricultural Subsidies and their impact on Farmer Suicides

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Most things, except agriculture, can wait.

—Jawahar Lal Nehru

Introduction

India is an agrarian country with around 70% of its people depending directly or indirectly upon agriculture. But a large section of the population engaged in the field commit suicide every year. As per the Central Government, over 12,000 suicides were reported in the agricultural sector every year since 2013. Farmer suicides account for approximately 10% of all suicides in India. Suicide rates among Indian farmers were a chilling 47 per cent higher than they were for the rest of the population in 2011. In some of the State's worst hit by the agrarian crisis, they were well over 100 per cent higher. The new Census 2011 data reveal a shrinking farmer population. And it is on this reduced base that the farm suicides now occur.

The democratically-elected governments that claim to represent a country where over half the population is dependent on agriculture have tried remedies like waiving of loans to small and marginal farmers ahead of elections, subsidies which reduce the price of inputs like crops, fertilizers, etc. But such schemes are not economically sound and only provide a burden to the coffers of the State and Centre without giving long term relief to the farmers. Sops like loan waivers have been criticized after elections for disrupting credit discipline among the borrowers. The sops help in increasing inflation in the economy by increasing the price of produce. A 2013 study by the Indian Statistical institute showed increase in loan repayment default after the Central government announced farm loan waiver of Rs 60,000 crore in 2008, a year before general election. Honest farmers repaying the loan also turned defaulters after the waiver, the study said. We have to also consider that the poorest farmers in India typically rely on non-institutional sources of credit. Moreover, farm loan waivers can discourage subsequent lending by banks in districts with greater exposure to the debt waiver, harming farmers over the long run.

Subsidies, on the other hand, produce a large no. of negative externalities that far outweigh their benefits. Subsidies tend to reduce incentives for producers to boost efficiency and shift their focus from crops to farming subsidies. As a result, many end up doing less with more. They also affect prices, prices may decrease as a result of subsidies which spells more trouble for the farmers. Apart from these, the governments introduce several different kinds of schemes including: Availability of input including

credit, Land redistribution, Alternate sources of income including husbandry, Technology-Adoption of a new Technology, Debt Restructuring, Price-Based Schemes

Objective of the Study

The study aims to analyse the impact of various types of policies by the government on alleviating farmer distress, measurable through their effect on farmer suicides. We study whether policies, apart from loan waiving, have had a significant impact on reducing suicide rates and helping improve the condition of Indian farmers.

Literature Review

Agriculture in India- Problems

The history of Agriculture in India dates back to Indus Valley Civilization Era and even before that in some parts of Southern India. Today, India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for 13.7% of the GDP (gross domestic product) in 2013, about 50% of the workforce. The economic contribution of agriculture to India's GDP is steadily declining with the country's broad-based economic growth. Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India.

India exported \$38 billion worth of agricultural products in 2013, making it the seventh largest agricultural exporter worldwide and the sixth largest net exporter. Most of its agriculture exports serve developing and least developed nations. Indian Agriculture has made rapid strides in Agricultural Sector since Independence, with the Green Revolution of the 1960s ushering in manifold increase in farm production and productivity. The Indian Agriculture has rallied to become self-reliant in providing overall food security to its population of more than 1 billion. However, inadequacies of serious long-term concern are now affecting Indian Agriculture. The rising input costs and poor pricing mechanism, to be candid, have only increased the plight of majority of the farmers. The Green Revolution has not necessarily translated into benefits for the lower strata in the economic pyramid in terms of greater food security or economic opportunity and wellbeing.

The Indian farmer depends on a lot of variable factors for the successful harvest of his crop. Farmers in India are not big businessmen. They are poor people who own a very small piece of land and toil for a whole season to sometimes ruin their crop because of drought or floods. They take loans every year to buy supplies and have access to very few high grade technology and equipments. If they are not able to profit from their crop they usually don't have any other source of income. They are not able to repay loans and have to borrow more money for the next season leading to a vicious debt cycle. These debt cycles lead farmers to commit suicide.

Agricultural Policies in India

The process of formulating and implementing agricultural policies in India is very complex because several ministries, departments and institutions at both the centre and the 48 state level are involved in the process. The Union Ministry of Agriculture, under the guidance of the Planning Commission (presently NITI Aayog), provides the broad guidelines for agricultural policies. But the implementation and administration of agricultural policies remain the responsibility of respective state governments. The allocation of funds to agriculture is guided by the Planning Commission and is routed primarily through the Ministry of Agriculture to various departments. Since this sector influences the lives of several people, attempts have been made since independence to evolve appropriate agricultural policy which creates incentives for increased production. However, India did not have a comprehensive agricultural policy until National Agricultural Policy 2000. “It is observed that India never had a formal and comprehensive policy on the agriculture in the five decades since Independence. Not that there were no pronouncements of policy on Agriculture. In fact, there were a quite few: some on land redistribution, some on this or that specific input, infrastructure, on technology. Statement on food situation were plenty: but the policies, or absence thereof, they contain concern supplies for that public distribution system and only incidentally, production and productivity. A policy statement defines the role of agriculture in the overall economy and its development is conspicuously absent”. (GOI, 1990 quoted in Deshpande and Prachitha, 2006). Agriculture Sector was given importance in several Five Year Plans, but this was done with an aim to increase self sufficiency and reduce foreign dependence. When the National Agricultural Policy was introduced, even that provided just guidelines under which the respective state governments are expected to prepare their policies. Landes and Gulati (2003) observed that “India’s major domestic agricultural policy instrument include a system of minimum support prices for major crops, input subsidies on fertilizer, power and irrigation water and public investment in surface, and to a lesser extent, ground water irrigation”. Since the National Agricultural Policy, there have been several steps towards drafting policies with an aim to reduce farmer distress. The Government has attempted to increase farmer income through several policies focused on other sources of income, including husbandry, organic farming, horticulture, etc. However, the spate of subsidies and waivers have continued as well. Year after year, several loan waivers are announced by the government of each state. Farm loan waivers touched 0.32 percent of the GDP, or 4.99 lakh crore rupees, In FY18 as against estimates of 0.27 percent. The increasing burden of alleviating farmer distress has to be on drafting of suitable policies rather than announcing loans waivers. Different kinds of schemes based on input and credit subsidy, debt restructuring, other sources of income can help the farmers of India to emerge out of poverty.

Farmer Suicides

Farmer Suicides are the single most important factor analysing rural distress in India. The number of farmer suicides in India has been the only quantifiable factor used to draw attention to the depressing state of agriculture in India. Since the 1990s,

journalist P Sainath has highlighted the alarming increase in suicide rates. But why have suicides recorded a huge increase since the 90s? Research suggests that these suicides are not occurring from more organic processes such as mental health problems, but from socioeconomic and psychosocial circumstances. These circumstances are making the life of the Indian farmer much more precarious, leading many of them to such a desperate situation that they take their own lives.

The cause, according to Sainath and many researchers are the *agricultural policies*.

Post liberalisation, cutbacks in agricultural subsidies combined with the necessity to meet the international standards of quality increased the costs of input. There was also a demand for cash crops like cotton in the global market. Hence, a considerable part of the sector saw a government encouraged shift from foodgrain to cash crop cultivation. However, due to an excess of such products in the market, prices fell making cash crops uneconomical. This was the late 1990's -the time from when farmer suicides began to be recorded on a large scale. Production costs have steadily risen in the years since but market prices have not seen a corresponding increase.

Furthermore, public investment in agriculture gradually reduced - a move that has resulted in the lack of uniform modernisation, irrigation facilities, communications and information systems, and storage facilities. Credit supply to farmers diminished at the same time, forcing them to rely on moneylenders. Private companies and state-run Regional Rural Banks (RRBs) reject many applicants due to the lack of collateral or land titles. The agricultural market structure has played a major role in denying farmers their actual returns. The Agriculture Produce and Market Committee (APMC) act was introduced to ensure fair prices to farmers. But corrupt middlemen have taken advantage of the provisions in the act to exert their influence on the supply chain. They exploit farmers by buying produce at far lower prices than deserved.

The coverage of crop insurance schemes is low. Not only the area covered under the National Agricultural Insurance Scheme (NAIS), even the amount offered to farmers is dismal.

Along with policies, Farmer Suicides are a response to several other factors- the most major being indebtedness. Most studies identified indebtedness as the predominant single factor associated with farmer suicides. Dongre and Deshmukh found that farmers in the Vidarbha region of Maharashtra ranked debt as the most important reason for farmer suicides, followed by addictions, environmental problems, and price issues, amongst others. Two other studies concluded that unpaid loans are a correlate of those who die by suicide.

The increased use of cash crops (which are a higher cost and grown primarily to be exported) as opposed to food crops (low cost and designed to be sold more locally) has been identified as an issue in some studies. The suggestion is that farmers using these are more prone to becoming indebted if one of their high cost crops fails, as they have invested significantly more in their production, and that potentially, their use makes them more vulnerable to global price fluctuations.

Theoretical Framework

Our Dependent Variable is Suicide, showing the number of farmers driven to suicide in a particular year within a particular state. The data on farmer suicides is sourced from the National Crime Records Bureau, which gives the data on farmer suicides in different regions within different states. However, the data considers suicides by only farmers with land holdings, not taking into account tenants and share-croppers. There are a few other problems with the data sets, as highlighted by P Sainath. Introduction of new categories in 2014 makes the data after this period increasingly difficult to compare with the data in the earlier years. This happens simply because of the shuffling of the suicide numbers across new or revised categories in the NCRB tables. The “fall” in farmer suicides accompanies a stunning increase in suicides by “Others”. The data also records thousands of tenant farmer suicides as those committed by “agricultural labourers”. This too helps dilute the numbers in the main “farmers” column in a big way.

Study Design

We analyze the impact of several different types of policies, implemented in 3 different states, on farmers suicide. The impact of each policy is studied State-Wise. The aim of our project is to identify how the different policies affect farmer suicide, and in effect, to suggest which policies are suitable for a State or Central Government to reduce the level of agricultural morbidity. We have finalized the following different policies implemented in the different states for the regression:

State	Scheme	Type of Scheme	Time
Gujarat	Scheme for Integrated Horticulture Development Programmes	Alternate sources of income- Horticulture	2002-12
Punjab	Training Infrastructure in Dairying for Rural Dairy Farmers	Alternate sources of income-Husbandry	2006-11
Madhya Pradesh	Rashtriya Biogas Vikas Yojna	Alternate sources of income	2006-12

After this, we regress each State's suicide rates as follows:

$$SUICIDE_{st} = \alpha + \beta_1 State_s + \beta_2 POST_t + \beta_3 State_s POST_t + \epsilon_{st}$$

Where, $SUICIDE_{st}$ = Suicide in State s in time t

$State_s$ = Dummy for a particular state

$POST_t$ = Dummy for Post Policy Shock years

$State_s * POST_t$ = Interaction of MP and Post period dummies

ϵ_{st} = Random error term clustered at the state level

After finalizing a particular State, we set up the regression by introducing a dummy for the particular State. For example, if we are regressing MP, in the State Dummy, 1 stands for observation from MP and 0 stands for observation from the 3 other controlled states. The second dummy is the Policy Dummy. In the Policy Dummy, 1 is assigned to observations in the Post Policy Period, and 0 to Pre-Policy Period as mentioned above in the table. The final variable is the Interaction Term, showing the impact of a particular policy on the farmer suicides. If State Dummy=1 and Policy Dummy=1, then this interaction term is the Differential Slope Coefficient- it shows how the Policy affects Farmer Suicides in the treatment state.

Our identifying assumption is error term is uncorrelated with any of the 3 dummies. We have also included 3 other States while analysing the impact on each State, these are the group of controlled state. Group of controlled states give us a good counterfactual of what would have happened to the particular State had it not received the policy shock. However, we don't explicitly check for this identifying assumption as the time series data on various state level characteristics is not available for the period that we are analysing. Given the spatial closeness of the controlled state and the similar weather and other phenomenon affecting agriculture, we are reasonably confident that collection of neighbouring states for each treatment state gives a fairly good counterfactual for the treatment state.

Results

1. Madhya Pradesh- Rashtriya Biogas Vikas Yojna

VARIABLES	(1) Number Suicides
mp_dummy	720.3 (554.0)
post_dummy	170.8 (227.3)
1o.mp_dummy	-
1o.post_dummy	-
0b.mp_dummy#0b.post_dummy	0 (0)
0b.mp_dummy#1o.post_dummy	0 (0)
1o.mp_dummy#0b.post_dummy	0 (0)
1.mp_dummy#1.post_dummy	-668.6** (227.3)
Constant	1,191* (554.0)
Observations	105
R-squared	0.032

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For Madhya Pradesh, the Interaction term Coefficient is -668.66, showing that MP had 667 less suicides by farmers post the policy implementation, relative to control states in the pre policy period. The Interaction Term is significant, supporting the validity of our results.

2. Gujarat

VARIABLES	(1) Number Suicides
gujarat_dummy	-145 (543.0)
post_dummy	354.6 (352.5)
1o.gujarat_dummy	-
1o.post_dummy	-
0b.gujarat_dummy#0b.post_dummy	0 (0)
0b.gujarat_dummy#1o.post_dummy	0 (0)
1o.gujarat_dummy#0b.post_dummy	0 (0)
1.gujarat_dummy#1.post_dummy	-273.6 (352.5)
Constant	724 (543.0)
Observations	105
R-squared	0.024

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

For Gujarat, the Coefficient of Interaction Term is -273.6, which is significant at 1%. This means that number of suicides by farmers in Gujarat decreased by 274 post the policy implementation, relative to control states in the pre policy period.

3. Punjab

VARIABLES	(1) Number Suicides
punjab_dummy	-120.0 (129.6)
pos_dummy	-0.552 (33.25)
1o.punjab_dummy	-
1o.post_dummy	-
0b.punjab_dummy#0b.post_dummy	0 (0)
0b.punjab_dummy#1o.post_dummy	0 (0)
1o.punjab_dummy#0b.post_dummy	0 (0)
1.punjab_dummy#1.post_dummy	10.28 (33.25)
Constant	201.2 (129.6)
Observations	105
R-squared	0.043

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

In Punjab, the Interaction Term Coefficient does not have the expected sign of negative, instead it is positive 10.28. However, this is not significant as the Robust SE is 33.25, giving us a t-statistic value of less than 2. Therefore, we cannot reach any conclusive result on whether the impact of the policy had any impact on the no. of suicides within the State. This insignificance can be due to potential endogeneity concerns as the group of neighbouring states might not give us a good counterfactual, i.e., what would have happened with the farmer suicide rates in Punjab in the absence of policy implementation.

Conclusion:

This study contributes to the already existing descriptive studies of impact of various welfare schemes for the farmers by searching for the causal nature of these policies. We use Difference-In-Difference strategy where the two difference come from temporal variation (Pre & Post policy period) and the other one comes from the cross-sectional heterogeneity in suicide rates in various states in India. We provide causal evidence that policies to give alternate sources of income to farmers leads to decline in the suicides committed by the farmers.

While not explicitly testing for the possible mechanisms we give some mechanisms that might lead to decrease in farmer suicides. As is widely accepted, Indian agriculture is

heavily dependent on monsoon. When the monsoon is poor in a particular year and the farmers are not able to recover the input cost also then given the low levels of other skills force them to take loans at exorbitant interest rates from non-institutional credit source(s). Farmers are not able to repay these loans later on and get entangled in a never-ending cycle of debt. When farmers are given other sources of income then they are able to better whether the temporary income shocks and smoothen their consumption and other necessary expenditures.

The present study suffers from some data issues as we are not able to gather the state level data on various characteristics at an annual level. Ideally, we would have liked to control for as many characteristics as possible for the states to get a more precise estimate of the treatment coefficient. This is one area that further studies can seek to improve upon.