



Is there a role for caste and religion in food security policy? A look at rural India

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ABSTRACT

This paper finds that factors such as caste and religion influence food security at the regional level. Thus defining affirmative action within food security programs may be necessary as the current practice of designing food security programs around the poverty line is shown to deliver limited results. In this regard, another lack of consideration is region-specific analysis within the rural areas which shows varied influence, thereby cautioning against a 'one size fits all' general policy of the central government. Evidence also shows that socio-economic factors and social assistance programs had different impacts on calorie gap depending on one's nutritional status. This nonlinear relationship has been neglected in most studies on food security and thus raises doubt on past assessment and policy implications.

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1. Introduction

The global food crisis of 2007–08 followed by the price volatility in domestic staple foods of 2009–2010 has firmly placed food security on the agenda of policy makers and researchers, particularly in the developing countries. In fact, the number of undernourished was expected to rise to 1.02 billion during 2009 and this is one sixth of all humanity representing the highest level of chronically hungry people since 1970. While some studies have looked at the issue of food security from a microeconomics perspective,² there is a dearth of studies that explicitly examines the role of caste and religion in this context. This paper's first contribution is that it takes the issue a step further to consider the regional dimension in the analysis by using India as case study. This is done for the following reasons. First, India is home to more than 200 million hungry people making it the world's largest food insecure population (IFPRI, 2008). Second, apart from the Hindu majority, Muslims are the other minority

religion in India (about 13.4% of the population) and a recent report (GOI 2006) from a high level committee appointed by the Prime Minister found that Muslims were seriously lagging in most of the human development indicators and it was mandated that the needy within this group be helped. Lastly, heterogeneity in social affiliation is deeply rooted in the form of the caste system more so in India than anywhere else in the world.

While recent empirical research on India has focused on caste and religion, this has primarily been on issues related to the labor market, education, health services, and poverty.³ Thus this study's second contribution is to fill an important gap on caste and religion in the food security literature. Food security is a priority in the Indian policy agenda given the President's announcement in June 2009 that the government proposes to enact a National Food Security Act.⁴ Focusing on caste and religion in food security has implications for India's inclusive growth strategy underlying her Eleventh Plan for 2007–2012 in terms of sustainable and equitable growth while taking into account the needs of all sections of society.

The issue of caste has always featured prominently in Indian history and this is set to reach new heights given India's bold new move to collect data separately by caste in the recent 2011 population census.⁵ The caste system in India is believed to be more than 3000 years old and

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² See Abdulai and Aubert (2004), Variyam et al. (2002), Gibson and Rozelle (2002), Garret and Ruel (1999), Adelaja et al. (1997), Nayga (1994), and Kyereme and Thorbecke (1991). Unlike this paper, studies such as Kirkpatrick and Tarasuk (2008), and Frongillo and Nanama (2006) used the US food security core module as a direct measure of food security for analysis. Livelihood approaches and coping strategies in food security on the other hand have been the focus in Maxwell (1996), Devereux et al. (2004) and Qureshi (2007).

³ See Borooah (2005), Kijima (2006), Banerjee and Somanathan (2007), Luke and Munshi (2007), Gang et al., 2008; Ito (2009) and Bhalotra et al. (2010).

⁴ This entitles every family below the poverty line either in the rural or urban areas to 25 kg of rice or wheat per month at 3 Indian Rupees/kg by law.

⁵ The last census in 2001 collected data on religion which raised a political storm in the media, bringing out different perspectives on the matter.

originates from the societal divisions in the occupations of Hindu tradition. Broadly speaking, the hierarchy from lower to upper caste in India is: the Scheduled Caste (SC) — so called untouchables, the Backward Caste (BC), the forward caste (FC), plus the Scheduled Tribes (ST) who are outside the traditional hierarchy but are generally placed below the SC. Since India's post-war independence in 1947, the SC and ST have been protected by Article 46 of the 1950 constitution, with a quota in government jobs and higher public educational institutions and this was later extended to the BC in 1990 based on the 1980 Mandal Commission.⁶ Despite those opportunities, inequality in areas such as living standards, basic amenities, access to regular employment and wages persists (Deshpande, 2001; Ito, 2009; Iversen et al., 2010; Kijima, 2006; Srinivasan and Mohanty, 2004; Thorat and Attewell, 2007). Banerjee and Somanathan (2007), however, note some progress towards equalization by disadvantaged castes as evidenced by the broad convergence in access to public goods.

Not surprisingly, caste plays a role in determining physical and economic access to food (Swaminathan, 2008). While 60% of the SC in rural India were found to be effectively excluded from access to the public distribution system (ibid), what is more disturbing is that, Thorat and Newman (eds. 2010) note that the problem of dominant castes sabotaging the progressive potential of the food security programs through discriminatory and exclusory practices towards Dalits (or untouchables) remains pervasive. These observations and the impacts on food security have yet to be empirically tested and here we explore some of these issues in rural India. The use of quantile regression for analysis also addresses some econometric issues not considered before and sheds new light for policy on effective hunger reduction.

Apart from Variyam et al. (2002), all previous studies (see footnote 1) have used the ordinary least square (OLS), probit and logit regressions for their analysis. These analyses do not capture the nonlinearities which characterize the relationship between calories and some of the socio-economic variables thus resulting in heteroskedasticity. For instance, the least well-nourished persons are likely to make the largest nutritional response as their income increases (Gibson and Rozelle, 2002). Thus the marginal effects of the various factors may not be the same throughout the distribution of calorie intake. From a policy perspective, the location of intergroup difference along the whole distribution is arguably more important than the average between-group difference.

While standard regression analyses (such as OLS, probit and logit) may attempt to treat various parts of the conditional distribution differently by categorizing various levels of calorie inadequacy (mild, average, severe), several problems may still exist. First, the categorizations are often *ad hoc*.⁷ Second, distributional differences in the errors between each category are still ignored and this is important for hypothesis testing. Third, the estimation for each category is not necessarily robust when there are outliers. One can argue that the outliers may be easily detected and removed from the sample but in some cases this would dramatically reduce the number of observations. The quantile regression adopted in this paper deals with all these problems and the use of the improved methodology is the third contribution of the paper.

To date, studies on India include Gosh and Guha-Khasnobis (2006) and Jha et al. (2011) but their focus and empirical methodology differs considerably from this paper. The first paper used a binary logit estimation for food insecurity in only four rural Indian states based on an earlier data set of 1999/2000 to investigate how far the public work program targets food insecure households. The second paper

used the OLS to analyze the impact of the public distribution system and the more recent employment program based on 2007–08 survey data undertaken in three Indian states. As explained above, these empirical methods are problematic and hence our paper uses a more robust empirical method. In addition, a different measure of calorie gap (difference between calorie consumption and the average caloric requirement) and an extensive data set of five different regions comprising 17 rural Indian states are used to shed light on regional policy and capture the nonlinear relationship discussed earlier.

Data for empirical analysis are drawn from the 61st Round of the National Sample Survey (NSS) which is a unit household database of 2004/05. The rest of the paper is organized as follows. The next section provides some background on food security in India and section three describes the methodology used. Section four discusses the data and variables used while section five presents the empirical results before the conclusion.

2. Understanding food security in the Indian context

The term 'food security' has been used in nearly 200 different ways across the world (see Smith et al., 1993) but the most commonly cited definition comes from the 1996 World Food Summit which proposed that food security 'exist when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.' This definition is sometimes translated to the three pillars of food security: food availability, adequacy and absorption. Food availability refers to domestic food production and imports of food; food adequacy refers to the amount of food consumed and food absorption refers to how well food is utilized by the body and this depends on factors such as sanitary and environment conditions and nutrient knowledge for dietary adequacy. The measure of food absorption is the health condition of the person often given by the body mass index.

It is not possible to include all three aspects of food security — food availability as a macro variable is not compatible with the household level survey data used here; body mass index to measure food absorption is available from the National Health Family Survey and is thus not compatible with the NSS survey that measures food adequacy. In this paper, food security is measured by calorie adequacy and we follow the NSS (2001) in setting the requirement at 2700 kilocalories per day per consumer unit. This norm based on the consumer unit is an attempt to obtain an adult equivalent measure and is computed by the national authority (NSS, 2001) responsible for collecting nationwide data. This norm captures differentials in the calorie requirements associated with age, sex and activity level in a household where an average male in the age group 20–39 doing sedentary work was used as the norm (see details in NSS, 2001).

Although nutritional security is not the focus in this paper, there is wide consensus that reducing calorie deficit among poor households remains very important for the removal of nutritional deprivation in India (Deaton and Dreze, 2009). However, there exist studies on India that have used micronutrient data in addition to calories (Jha et al., 2009, 2011). Heald and Lipton (1984) and Maxwell et al. (1999) argue that in any analytical discussion in food security, the main concern has always been with calories (based on the principle that other needs are usually satisfied when calorie intake is sufficient) and not with proteins or micronutrients or food quality or safety (Eide, 1990).

Rural India is chosen as a case study for the following reasons. First, "India lives in her villages", a maxim attributed to Mahatma Gandhi rings true even today as close to 69% of Indians — 743 million people or 138 million households live in rural areas and they generate 56% of the national income (Shukla et al., 2010). Second, rural India is home to the majority of the disadvantaged castes which is the focus in this paper — 91.4% of the ST populations are rural-based and the corresponding percentages for SC, BC and FC are 79.8%, 78% and 62.3% respectively (ibid). Third, Table 1 shows that most rural Indian states have

⁶ Discussions on the proposal to extend the job quotas to private sector jobs and certain privileged institutions of higher education are ongoing.

⁷ Some studies are less *ad hoc* and use lowest 10%, lowest 25%, middle 50%, highest 25% among other variations, for categories. But the problem of outliers and different error distributions within each category may still persist, thereby leading to inaccurate estimates.

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