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Impact of India's Food Security Policy across Household Types

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Abstract

With global population expected to reach 9 billion by 2050 (UN, 2009), achieving food security for all, while addressing competing priorities for land and other resources, is a key challenge of the 21st century. Most of the growth in demand for food is expected to come from the developing countries. The rural-urban divide in terms of food security, among the poor households, in these countries is often found to be considerable. India is a key global player, as a leading emerging economy, with a strong impact it had on the World Trade Organization's (WTO) latest negotiations, in the food security context. Until 2013, India followed a welfare based approach of distributing food grains to its low income group at an issue price which is much lower than its market price or procurement price. Then, the Government of India passed the National Food Security Act 2013 (NFSA, also called the Right to Food Act due to its rights based approach). The NFSA entails providing subsidized food grains to nearly 75% of the rural population and 50% of the urban population. There is a disconnect in the literature between two sets of hypotheses – household-type-level differences in food security to be addressed by policies such as NFSA and the distortions arising from it. In this study, we attempt to bridge this gap by examining the economy wide and household level implications of India's NFSA within the context of global food security challenges. We utilize MyGTAP data program (Minor and Walmsley, 2013), and MyGTAP model (Walmsley and Minor, 2013) to demonstrate implications of implementing NFSA by introducing equivalent food consumption subsidies in India in the place of any existing subsidies. Our analysis may help addressing global debate on subsidizing food consumption, particularly in the context of concerns articulated mainly by India on behalf of the developing countries, on the Trade Facilitation Agreement (TFA) clauses on food subsidies.

Key Words: *Food Security, India, Computable General Equilibrium*.

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Introduction

With global population expected to reach 9 billion by 2050 (United Nations [UN], 2009), achieving food security for all, while addressing competing priorities for land and other resources, is a key challenge of the 21st century. Most of the growth in demand for food is expected to come from the developing countries (D'Odorico et al., 2014). The rural-urban divide in terms of food security, among the poor households, in these countries is often found to be considerable (Smith et al., 2005; Maxwell, 1999; Garret and Ruel, 1999). India is a key global player, as a leading emerging economy, with a strong impact it had on the World Trade Organization's (WTO) latest negotiations, in the food security context.

Despite surplus production of food in India, achieving food security at the micro level has been a continual challenge. Until 2013, India followed a welfare based approach of distributing food grains to its low income group at an *issue price* which is much lower than its *market price* or *procurement price*. Then, the Government of India passed the National Food Security Act 2013 (NFSA, also called the Right to Food Act due to its rights based approach) with an objective of providing food and nutritional security by ensuring access to adequate quantity of quality food at affordable prices (Government of India [GOI], 2013). The NFSA entails providing subsidized food grains to nearly 75% of the rural population (with at least 46% belonging to *priority households*) and 50% of the urban population. An estimate from GOI (2013) indicate that to provide 5 kg of food grains per person per month, nearly 49 million tons of food grains needed which costs about USD 15 billion (Table 1). If this entitlement were to increase from 5 kg to 7 kg or 11 kg per person, then the food grain requirements would be about

68 million tons to 107 million tons. In addition, another 8 million tons of grains are estimated to be required under other welfare schemes. Currently, about 30% of the food grains production in India are being procured by the government through Food Corporation of India (FCI) for the public distribution system (PDS).

Table 1. Estimated Requirements of Food Grains and Subsidy.

Entitlement (kg per person per month)	Estimated requirement under TPDS (million tons)	Estimated food subsidy (USD billion)
5	48.8	14.80
7	68.32	20.72
11	107.36	32.56

Source: Based on estimates from Government of India (2013)

There is a disconnect in the literature between two sets of hypotheses – household-type-level differences in food security to be addressed by policies such as NFSA and the distortions arising from it. In this study, we attempt to bridge this gap by examining the economy wide and household level implications of India's NFSA within the context of global food security challenges.

The use of computable general equilibrium (CGE) modeling provides an appropriate analytical framework for developing a fuller understanding of interactions in the global food market and repercussions on the rest of the economy. Global CGE models are helpful in understanding the complex linkages across food, energy, and land use sectors and have been used in many applications to analyses of climate change, trade policy, biofuels expansion, among other policies and programs. However, the majority of these models consider economic activities at level too aggregated to answer some of the key questions for food security, which require more disaggregated information to identify how impacts vary across household types and income

levels. The purpose of this paper is to analyze food security impacts for multiple household types in a global CGE framework. Specifically, we will build on "MyGTAP" model (Walmsley and Minor, 2013), a comparative static CGE model based on the standard Global Trade Analysis Project (GTAP) model (Hertel, 1997), which offers a unique strength by focusing on a single country of interest and classifying its households into more detailed segments (e.g., rural and urban) within the global model. This classification of private households is helpful to analyze the distributional impacts of a policy such as NFSA.

Further, MyGTAP accounts for transfers between households and government, among other features. The disaggregation into various households is based on India's Social Accounting Matrix for 2007-08 (Pradhan et al., 2013) and National Sample Survey (NSSO, 2013, 68th round, 2011-12) dataset. It is important to note that in order to preserve the global economic consistency, we use the shares implied in the SAM to split GTAP values for India. This extra layer of detail will complement the dynamic simulations agnostic of the rural-urban divide, even for results aggregated from such analyses. We will demonstrate implications of implementing NFSA by introducing equivalent food consumption subsidies in India in the place of any existing subsidies. Our analysis may help addressing global debate on subsidizing food consumption, particularly in the context of concerns articulated mainly by India on behalf of the developing countries, on the Trade Facilitation Agreement (TFA) clauses on food subsidies. This study helps in understanding how providing selected food grains at extremely low prices to the most vulnerable households would impact their consumption pattern across rural and urban India. The results also provide better understanding on the consequences of India's NFSA on inflation, GDP, and change in trade pattern of food commodities.

[Paper will be updated soon]

Figure 1. Distribution of Rural and Urban Households in India

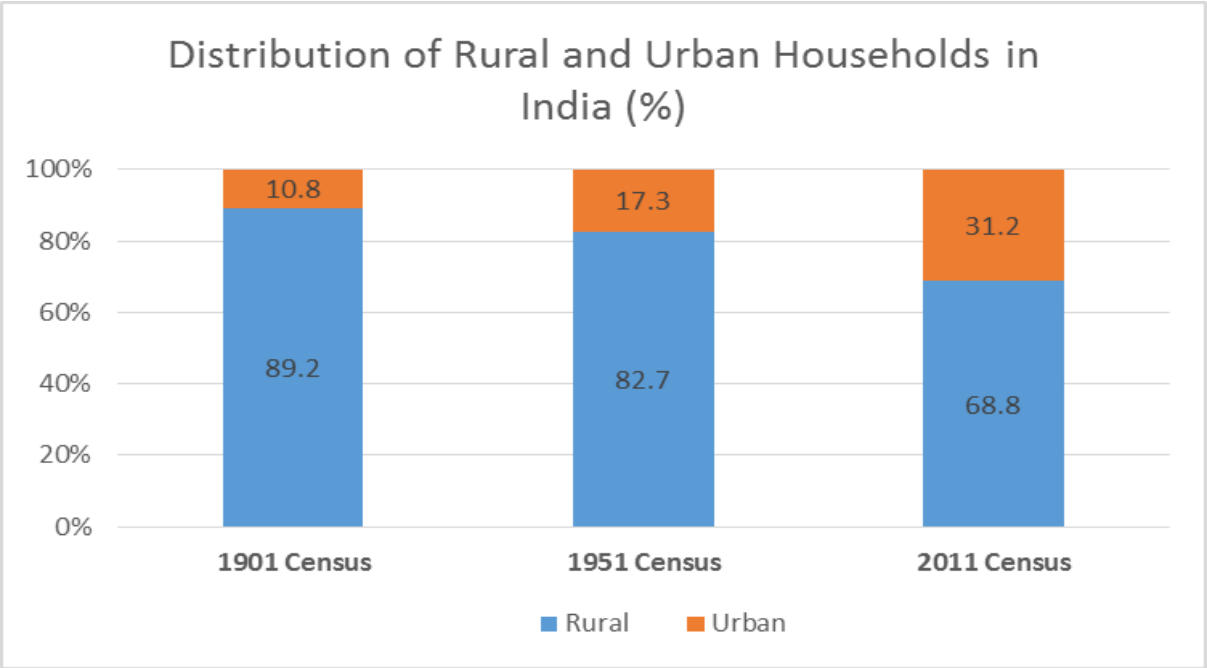

Figure 2. Distribution of Annual Household Income in India

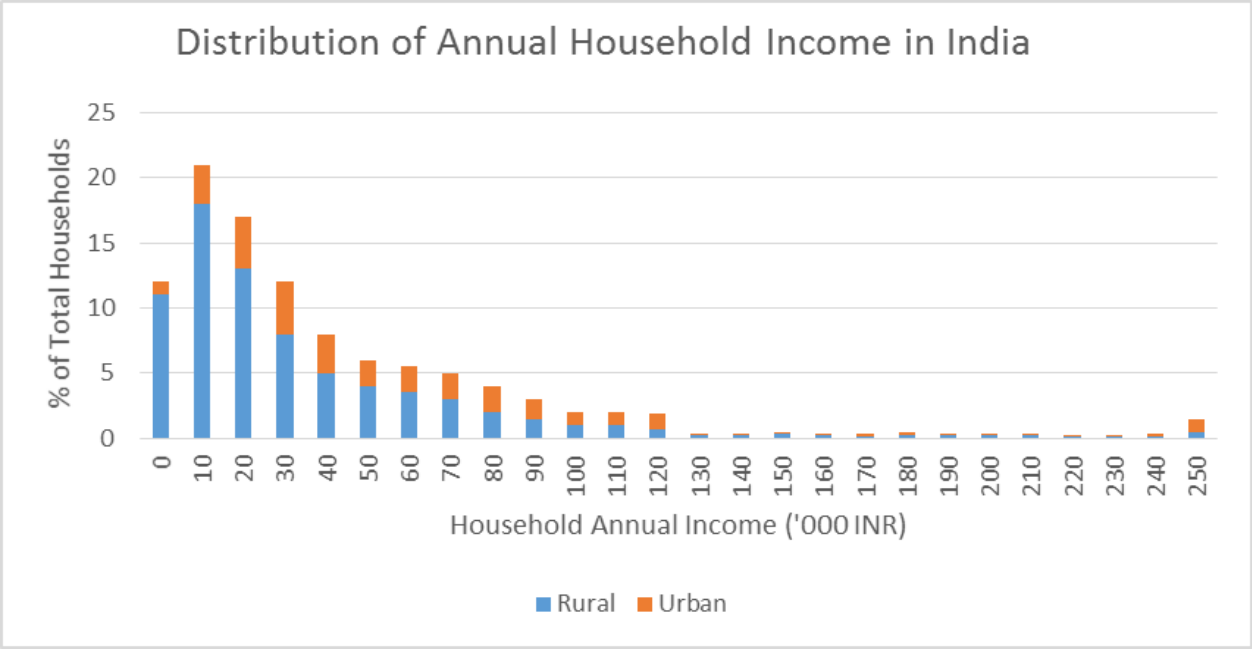

Table A1. Aggregation of Regions in the Model

	Regions	Description	Comprising GTAP regions
1	India	India	ind
2	USA	United States of America	usa
3	EU27	European Union 27	aut bel cyp cze dnk est fin fra deu grc hun irl ita lva ltu lux mlt nld pol prt svk svn esp swe gbr bgr rou
4	China	China and Hong Kong	chn hkg
5	RoSEAsia	Rest of South & East Asia	jpn kor mng twn xea khm idn lao mys phl sgp tha vnm xse bgd npl pak lka xsa
6	MENA	Rest of Middle East & N Africa	bhr irn isr kwt omn qat sau tur are xws egy mar tun xnf
7	SSAfrica	Sub-Saharan Africa	ben bfa cmr civ gha gin nga sen tgo xwf xcf xac eth ken mdg mwi mus moz rwa tza uga zmb zwe xec bwa nam zaf xsc
8	Brazil	Brazil	bra
9	LatinAmerica	Latin America	mex xna arg bol chl col ecu pry per ury ven xsm cri gtm hnd nic pan slv xca xcb
10	RestofWorld	Rest of World	aus nzl xoc can che nor xef alb blr hrv rus ukr xee xer kaz kgz xsu arm aze geo xtw

Table A2. Aggregation of Sectors in the Model

No.	Sectors	Description	Comprising GTAP sectors
1	PaddyRice	Paddy rice	pdr
2	Wheat	Wheat	wht
3	CrGrains	Cereal grains	gro
4	VegsFruits	Vegetables & fruits	v_f
5	Oilseeds	Oilseeds	osd
6	Sugarcrops	Sugar crops	c_b
7	PlantFibres	Plant Fibers	pfb
8	OthAgri	Other Agri. Crops	ocr
9	Ruminant	Ruminant Livestocks	ctl wol
10	NonRumnt	Non Ruminants	oap
11	DairyPrdts	Dairy Farms & its products	rmk mil
12	Forestry	Forestry	frs
13	Fishery	Fishing sector	fsh
14	FoodPrd	Food products	ofd
15	BeverTobac	Beverages & tobacco	b_t
16	ProcRice	Processed Rice	pcr
17	VegOil	Other food products	vol
18	Sugar	Processed Sugar	sgr
19	ProcRum	Processed Ruminants	cmt
20	ProcNRum	Processed Non Ruminants	omt
21	Coal	Coal	coa
22	CrudeOil	Crude oil	oil
23	Electricity	Electricity	ely
24	NGas	Natural Gas	gas gdt
25	Oil_pcts	Petroleum & coal products	p_c
26	Water	Water sector	wtr
27	En_Int_Ind	Energy intensive industries	crp i_s nfm
28	Oth_Ind_Se	Other industry and services	omn tex wap lea lum ppp nmm fmp mvh otn ele ome omf cns trd otp wtp atp cmn ofi isr obs ros osg dwe

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