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Effects of Direct Grain Subsidies on Food Consumption of Rural Residents in China

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*Selected Poster prepared for presentation at the 2023 Agricultural & Applied Economics Association
Annual Meeting, Washington DC: July 23- 25, 2023*

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Effects of Direct Grain Subsidies on Food Consumption of Rural Residents in China



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- We use 233,137 rural observations from China's National Rural Fixed Observation Points between 2003-2015.
- We analyze the impact of direct grain subsidy on Chinese rural residents' food consumption and nutritional intake using the high-dimensional fixed effect model.
- Estimation results reveal that direct grain subsidy positively affects Chinese rural residents' dietary imbalance and negatively affects their dietary diversity.
- The primary reason for the observed dietary imbalance is that policy encourages households to rely on self-sufficient grain consumption.



Chinese rural residents are recording their families' daily income and expenditure during the National Rural Fixed Observation Points surveys.

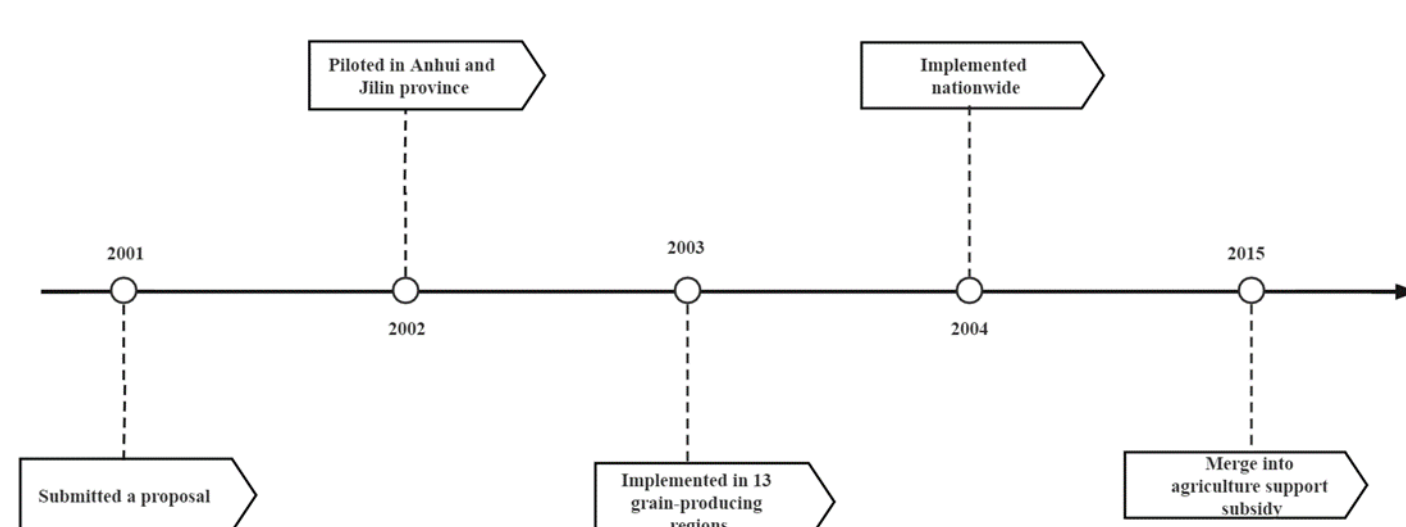
Introduction

> Agricultural subsidy is an important policy instrument that maintains food security and promotes agricultural development in several countries, including China. China introduced its first nationwide agricultural subsidy (i.e., the direct grain subsidy) for farmers in 2004-2015 (see Fig.1).

> As a decade-long agricultural subsidy policy implemented in China, a number of studies have concentrated on the effectiveness of the direct grain subsidy in improving farmers' income and promoting agricultural production (Huang et al., 2011; Qian et al., 2011). Nonetheless, little is known about whether the direct grain subsidy altered farmers' food consumption behavior and nutritional intake on an individual basis in China.

> To help fill the knowledge gap, in this study, we use the high-dimensional fixed-effects model to investigate the effects and mechanisms of China's agricultural subsidy policy, represented by the direct grain subsidy policy, on rural residents' food consumption and nutritional intake.

Fig.1 Implementation Process of Direct Grain Subsidy



Data

> We use data collected from surveys of the National Rural Fixed Observation Points investigated by the Ministry of Agriculture and Rural Affairs since 1986. In this survey, the researchers interviewed more than 20,000 households per year from 31 provinces and investigated annual production, income expenditure, and food consumption.

> To better understand the impact of direct grain subsidy on food nutrition consumption for rural residents, the final sample used in this paper includes 233,137 observations living in the rural area of 31 provinces, autonomous regions, and municipalities of China from 2003 to 2015. And 63% of rural residents received direct grain subsidy among observations. Besides, specific food consumption could see in Fig.2.

Contributions

> This paper is the first attempt to investigate the impacts of the direct grain subsidy on residents' food consumption in China based on an extensive database of Chinese rural households.

> Our study's findings are critical to understanding better the welfare effects of direct grain subsidy on rural residents' food and nutrition consumption, which are valuable to achieving the goals of Healthy China 2030.

Method

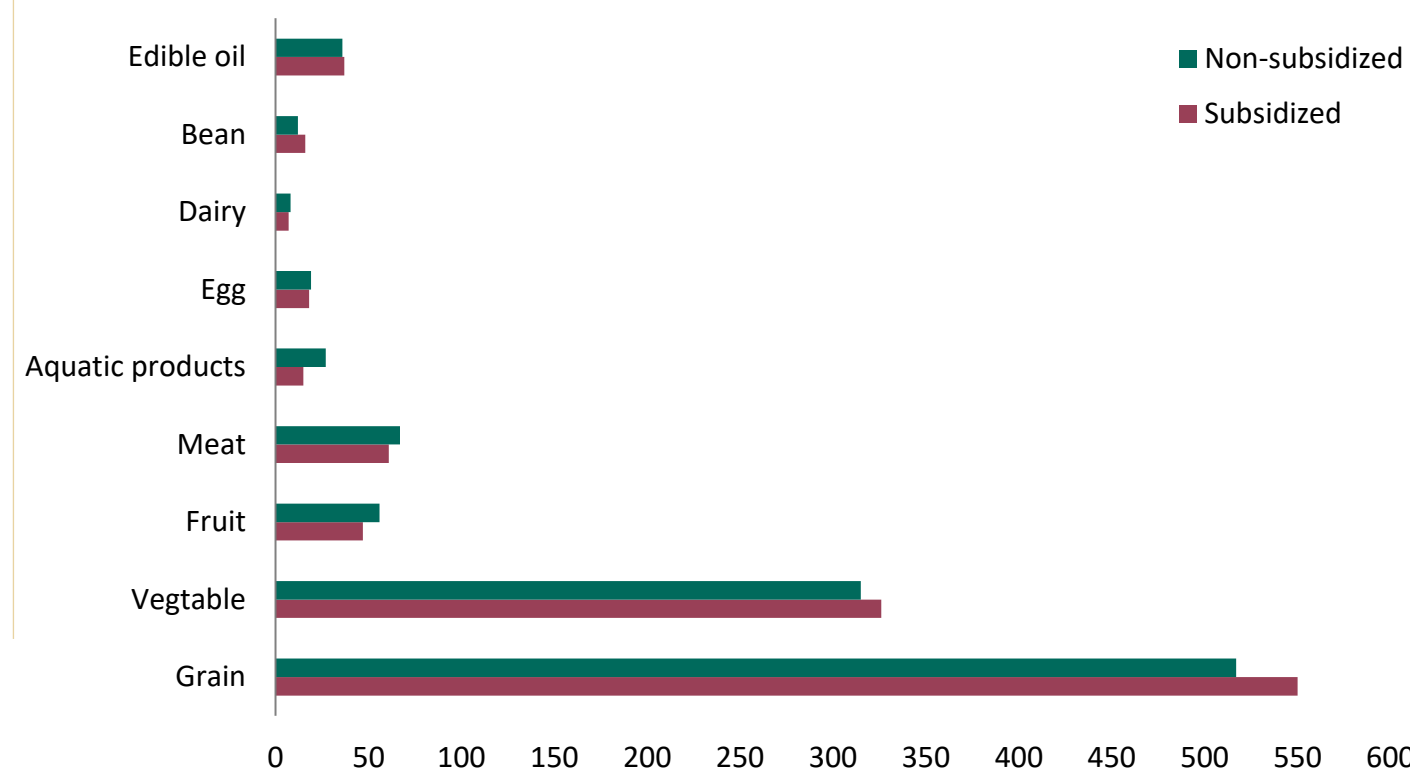
> Dependent variables examined in our paper are the family's daily per capita food consumption, nutrient intake, and dietary quality score. We use the Chinese dietary balance index (Xu et al., 2015) and dietary diversity score to measure dietary quality. Our dietary diversity score is defined as a function of the consumption share w_i of nine food groups (Liu et al., 2014).

$$DDS = \sum_{i=1}^9 w_i * \log\left(\frac{1}{w_i}\right)$$

> To minimize potential threats of endogeneity from the selection bias and unobserved confounders, we adopt the high-dimensional fixed effect model (Guimaraes and Portugal, 2010) and control for hundreds of fixed effects, including village fixed effects, province fixed effects, year fixed effects, village*year fixed effects, etc.

$$Diet_{it} = \alpha_0 + \alpha_1 subsidy_{it} + \alpha_2 Z_{it} + \delta_{it} + \gamma_{it} + \varphi_{it} + \gamma_{it} * \varphi_{it}$$

Fig.2 Rural residents' daily food consumption



Mechanism Analysis

> Direct grain subsidy in China is a production-linked subsidy in some areas, usually paid by the actual planting area of farmers or the quantity of commercial grain delivered, so the direct grain subsidy positively affects farmers' grain production.

> Farmers have two primary food consumption sources: self-production and market purchase. They usually prefer to consume their produced food and sell the remaining food in the market after meeting their self-consumption demand in exchange for income.

> So, we analyze the mechanism of the direct grain subsidy on residents' food consumption based on the households' self-sufficient grain consumption.

> Our results prove that with every 100 CNY increase in the direct grain subsidy, the rural residents' daily per capita self-sufficient grain consumption notably improves by 2.83 grams.

Conclusions

> Chinese direct grain subsidies positively affect per capita daily consumption of grain, vegetables, meat, and soy products and negatively affect fruits, aquatic products, eggs, and dairy products.

> Chinese rural residents' energy, vegetable protein, fat, and carbohydrate intake increase with direct grain subsidies enhance. Conversely, the intake of animal protein decreased.

> The increase in direct grain subsidies intensified the degree of dietary imbalance and decreased dietary diversity among Chinese rural residents.

Discussion

> In reality, Chinese direct grain subsidies that emphasize the production of staple grains may inadvertently skew farmers' food consumption and nutritional intake.

> While the current research takes the Chinese direct grain subsidy as the representation of agriculture subsidy, an analysis that includes all agriculture subsidies may have broader policy implications.

> Additional studies using valid instrumental variables or exogenous shocks are required to support our results further.