

中国农业 补贴政策的影响研究： 宏观效果与微观行为

彭 超 ● 著

The Impacts of
Agricultural Subsidy in China:
Macro Effects and
Micro Behaviors

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自序

农业补贴政策是当今世界各国普遍采取的农业支持保护工具之一。中国政府以往对农民从事农业生产并不实施直接补贴，反而是征收农业税费。这种“皇粮国税”甚至可以追溯到 2 600 多年前的战国时代。党和国家在总结世界各国历史发展经验之后，做出了“工业反哺农业，城市支持农村”的两个趋势的判断。农业补贴政策，正是党和国家顺应这一历史趋势采取的具体强农惠农富农政策体系的重要组成部分。

农业补贴政策于 2002 年在吉林和安徽的部分县市进行试点，2004 年在全国范围内推开。2013 年恰好是农业补贴政策在中国实施的第 13 个年头，也恰好是农业补贴政策在全国推开的第 10 个年头。目前，关于农业补贴政策，学术界和政策界有诸多讨论，政策本身也在不断调整和完善之中。本书在这一背景下出版，力图能够为有关这一政策的讨论提供一些理论观点和经验证据。本书分析了补贴的宏观效果，指出补贴在粮食生产和农民增收中起到了一定的作用，然而其相对效率依赖于财政状况。作为最重要的创新，本书研究了农业补贴政策对农户微观行为的影响，即对农户生产经营行为的影响。在中国人多地少、资源稀缺的背景下，我选择并扩展了农户模型作为理论基础，应用农户追踪调查系统形成的面板数据，进行微观计量经济分析，从而指出了农业补贴政策起作用的路径。本书尝试建立一种范式，从而可以分析政策影响农户生产经营行为的路径。

从政策内容上看，目前的农业补贴已由开始的直接补贴，纳入了良种补贴、农机具购置补贴，增加了农资综合补贴，形成了以“四补贴”为基本内容的补贴制度。如果将生产性补贴的范围扩大，甚至可以将农业保险保费补贴和农业重点生产环节补贴纳入农业补贴的政策体系。在生猪生产继续扶持的时期，国家还实施过的能繁母猪补贴。近年来，防灾减灾稳产增产重大关键补贴又成为关键农时支持农业生产的重要补贴手段，这一补贴有望实现常态化。遗憾的是，本书主体部分写成于 3 年前，受到时间和精力所限，更新的工作只有留待今后完成了。

本书主体部分是基于我的博士论文，因此，本文在致谢部分保留了对求学经

历的描述。然而，本书能够最终完成并出版，我需要感谢两个大家庭和一个大家庭对我的理解和支持。两个大家庭是中国人民大学农业与农村发展学院和农业部农村经济研究中心。一个小家庭就是我的爱人和我刚刚出生的孩子。也是作为对致谢部分的一个补充，我要感谢两个大家庭和一个大家庭的老师、领导、前辈、兄弟姐妹和亲人们对我的关怀和帮助。

彭 超

2013年9月8日于北京西四砖塔胡同

前言

如何评估农业补贴政策的效果？在此基础上，如何健全和完善农业补贴政策？这是中外农业政策研究中引起广泛讨论的核心领域之一。经过 2002 年以来的探索和发展，中国目前已经基本形成了以直接种粮补贴、良种补贴、农机补贴和农业生产资料补贴等为主要内容的农业补贴新制度，新制度区别于中国传统农业补贴制度的最主要特征是直接补贴中国最重要的农业生产者——大量分散的小规模农户。在中国这样一个以小农为粮食主要供给者的发展中国家，亟须对这一政策的微观效果进行评价，并提出建立在科学评价基础上的政策建议。探讨补贴对农户生产经营行为影响的现有理论和实证文献提供了一定启示，但是多数研究要么是以欧美大规模农场为背景的，要么是针对中国补贴政策的浅层次分析。很少有研究可以深入中国的国情，并给出结论及其推论与现实情况取得一致的解释。为了给目前的农业补贴政策给予科学的评价，并在此基础上为健全和完善中国的农业补贴制度提供智力支持，同时为了丰富农业经济学和发展经济学中关于农户生产经营行为的文献，有必要对补贴作用于农户生产经营行为的“路径”从理论和实证两个层面给予讨论。

本书的研究从中国补贴政策的落实情况开始。补贴政策从 2002 年在吉林和安徽试点以来，大致可以划分为 3 个阶段：探索阶段，成本上升压力下不断提高的阶段，健全和完善的阶段。目前，农业补贴制度正处于健全和完善的阶段。2009 年的数据显示，中国亩均的农业补贴已经大幅度超过了美国的亩均农业补贴。但是，关于农业补贴的效果却争议很大。本书在前人研究的基础上，对农业补贴的宏观效果进行了再确认。之后，又基于实地调查研究，对我国农业补贴的操作模式进行了细致地整理和描述。

然而，要研究补贴的效果，仍然需要从农户微观生产经营行为入手。本书研究的一个主要问题是：农业补贴对农户的生产经营决策究竟产生了怎样的影响？问题的另一个表述是，农业补贴对农户生产经营行为发生作用的路径是什么？

通过对以往文献的综合评述，作者发现：目前国内对农业补贴的讨论多是初步的和浅层次的，需要进一步深入分析农户生产经营行为发生变化的路径；国外对农业补贴的讨论则多是针对美国等发达国家的，这些国家农业生产的基础是大

规模农场和完善的农产品及生产要素市场，这些研究的结论及其推论不能告诉我们，小规模农业生产者对补贴如何做出反应；它们也不能告诉我们，农业补贴通过怎样的路径驱动小规模农户参与土地流转市场，调配家庭不同性别成员的劳动力配置，以及投入化肥等农业生产资料；它们更不可能告诉我们，中国的农业补贴制度该做出哪些健全和完善？因此，我们需要从理论上进一步深入探讨补贴和农户生产经营行为的关系，分析农业补贴影响农户生产经营行为变化的路径，进而形成健全和完善农业补贴制度的政策建议。

本书认为，市场不完全性是目前中国农村和农业各种生产要素配置的基本背景，人地关系紧张的压力是中国农业政策起作用的现实依据。在人地关系紧张且市场不完全的背景下，所谓的脱钩补贴是不存在的。不能单纯从对生产的刺激来理解农业补贴起作用的路径，也不能单纯从农业劳动的艰辛和收入能够带来的消费主观均衡中来寻找补贴起作用的路径。我们应该在家庭生存发展的基础之上，从农业补贴对各种生产要素投入回报的影响上，来寻找补贴起作用的路径。这需要搞清楚土地、劳动、资本等不同的生产要素如何受到补贴影响。在此之前，我们需要明了这些投入的回报如何受补贴作用。

为此，我们完成了理论的新扩展。在本书中，农户模型及基于农户模型的结构化实证研究方法被开创性地用于农业政策的评估中。首先，我们检验了每一种农业生产投入的市场完全性。在市场不完全性的基础上，将农户模型中连接生产与效用的要素从劳动扩大到土地、不同性别家庭成员的劳动以及资本投入。基于这一系列扩展，我们对生产要素的影子价格进行了估计。这包括：土地的影子地租、劳动力的影子工资以及生产资料的影子价格。从而，我们在土地、劳动和资本 3 个维度上扩展并应用了农户模型。在我们的研究中，农业生产中的投入通过其影子价格，而不是市场价格来进行评估。

在这一工作的基础上，我们对补贴的效果取得了新认识。我们将农业补贴作为一种农业收入的提高，或者在根据播种面积补贴的地区，作为一种投入回报的提高。之后，把这一提高嵌入农业生产要素的影子价格中。我们选择了 3 种要素投入中的 3 个分量，来展现补贴起作用的路径和效果。我们的新认识简述如下：

1. 由于市场不完全性这一现实背景，导致了补贴对农户经营行为起作用的媒介不是市场价格，而是影子价格。一方面粮食播种后发放到户的补贴会提高种粮农户从投入土地中得到的回报，即影子地租；另一方面，这种补贴会提高种粮农户从投入劳动中得到的回报，即影子工资。人地关系紧张这一政策发生作用的现实依据导致：影子地租的提高阻碍了农地流转，而影子工资的提高促进了土地流转。从而，补贴在土地流转的维度上是在两个方面起作用。

2. 同理, 种粮直接补贴提高了农户中不同性别的劳动力的影子工资。但是, 由于人地关系紧张、家庭男女成员从事劳动的比较优势以及男女家庭成员的谈判能力, 补贴对粮食生产方面的“农业女性化”有推动作用。

3. 也是基于相同的原因, 种粮直接补贴提高了农户化肥投入的边际回报。本来可以缓解目前严重的化肥滥用问题。但是, 由于人地关系紧张的压力, 补贴在总体上鼓励农民过量使用化肥。

总结上述研究结论, 作者发现补贴的整体作用比较模糊。但是, 由于洞悉了补贴发生作用的路径, 我们仍然能够对补贴制度健全和完善提出很多有建设性的政策建议。最重要的, 并且具有可操作性的政策包括: 把土地流转后补贴归谁所有的问题留给农民自行商定; 提高家庭妇女对补贴的支配权; 实施测土配方施肥补贴。

本书为相关研究提供了一种可供参考的新框架。如果评价一项与生产相关的农业政策, 可以通过其对农业产值或者农业收入发生的影响, 来将政策嵌入农业投入的影子价格, 并计算影子价格对农户生产经营行为的影响。而且, 可以通过对影子价格的加总检验, 来判断农业政策的整体效果。

为了将农业补贴对农户生产经营行为的影响构成一个完整论述, 本书的叙述逻辑构建如下:

第1章承担导论的功能: 介绍所要研究的问题、概述已有研究成果, 同时提出本书的研究思路和目标, 并概览全文主体内容。

第2章承担文献综述的功能: 通过对文献的梳理, 提炼本领域的研究范式, 吸收既往研究所开发的一系列分析手法和技巧, 并指出现有理论模型分析中若干假设上的缺漏、实证文献中数据获得、变量选取和计量分析中的不足。

第3章承担宏观效果的功能: 对补贴效果进行大致描述, 运用数据包络分析对农业补贴的效率进行分析, 从而评估了农业补贴效果的宏观效果。

第4章承担调查研究的功能: 在实地调研的基础上, 针对直接补贴、农资综合补贴、良种补贴以及农机购置补贴, 在地方上的操作模式进行描述, 以案例研究的方式, 厘清我国农业补贴的具体操作方式。

第5章承担微观理论基础的功能: 主要是农户模型的扩展, 这将成为我们分析的基础。数理分析中, 我们将对补贴可能对农户生产经营行为造成的影响进行初步的预测; 图形分析中, 我们将进一步明确这种预测, 并试图找到影响的路径。

第6章、第7章、第8章在内容上并列, 但在逻辑上有递进关系。我们扩展后的农户模型可以通过土地、劳动和资本连接生产与消费, 所以我们的扩展也将

在土地、劳动和资本这三个维度上进行。与这三种要素相关的农户生产经营行为可谓数之不尽，对每一种行为都进行讨论并不现实。我们在每个维度上选择一种行为进行分析讨论。我们的讨论将包括：农户土地租出和租入行为、农户家庭不同性别成员劳动力配置行为以及农户化肥投入行为。

第6章的方法和分析将成为微观计量分析的轴心。首先，我们利用面板数据，估计粮食生产函数。之后，我们将补贴嵌入生产要素投入的影子价格。最后，我们基于在土地维度上扩展的农户，验证理论分析中得出的土地租入租出行为变化的预测。在这样一种预测的基础上，我们对补贴引发的土地租入租出行为进行评估，探索研究对补贴和土地制度有可能提供的政策意义。

第7章以第6章的粮食生产函数估计为基础，并在区分家庭不同性别成员的劳动的基础上进一步扩展粮食生产函数的估计。之后，基于在劳动维度上扩展的农户模型，验证补贴对家庭不同性别劳动力投入的影响。在这样一种验证的基础上，我们对补贴引发的家庭不同性别成员劳动配置进行评估，发现补贴对“农业女性化”发生作用的路径和相关政策启示。

第8章也是以第6章的粮食生产函数估计为基础，同时基于在资本维度上扩展的农户模型，验证补贴对化肥过量使用的影响。之后，运用测度计量方法验证结论是否成立。在结论的基础上，我们也提出了相关的政策建议。

第9章承担国际经验的功能：着重描述美国的目标价格补贴政策，重点在于目标价格和市场价格、补贴面积和补贴单产的确定依据与调整方式。在此基础上，将分析其对我国农业补贴政策的借鉴意义。

第10章总括全文，提炼核心结论并进行阐发，形成对健全和完善中国补贴政策的建议，讨论分析研究的不足之处，提出后续研究的方向。

关键词：农业补贴政策；农户生产经营行为；农户模型；宏观效果；微观动机

Preface

How can we estimate the effect of agricultural subsidy? And also, based on the estimation, how can we improve and perfect agricultural subsidy policies? This is a focus of agricultural policy study at home and abroad. The Chinese government started a pilot policy in 2002 to cancel all agricultural taxes, and began to extend that policy and a subsidy policy to the whole country in 2004. Nowadays, the subsidy policies consist of Direct Subsidy, Subsidy for Special Seeds, Machinery Subsidy and Comprehensive Input Subsidy. The most significant characteristic of the new policy which is different from traditional policy is that the farmers are subsidized directly. These beneficiaries of subsidy are decentralized, small-scale rural households. These small-scale farmers are still the main force to feed China. The effects of subsidy policies in micro-level should be estimated. And, based on these estimations, some policy proposals should be generated. So, our research is really urgent and necessary. The related theoretical and empirical literatures have offered some inspirations. However, in these literatures, the authors either took the big-scale farms in the US and Europe as objects of studies, or did slight apprehension for Chinese subsidy policy. Few researches could go down into fundamentals of real situation in China. Their conclusions may be not consistent with the reality. In our research, we would like to offer a proper evaluation to subsidy policy. Taking the valuation, we want to support the related policy making. We would also like to contribute to the application and extensions of Agricultural Household Model (AHM). Our research will be launched in both theory and application. The “paths” from subsidy to the behavior of rural household will be analyzed.

Our research began from the operation of China’s subsidy policies. This pilot policy was taken as experiments in Jilin province and Anhui province. We divided it into three stages: exploration stage; increasing with the cost; improving and perfecting. So far, the subsidy policy is in it improving and perfecting stage.

From the data in 2009, if we compare the amount of Chinese and the US subsidy collected per acre, Chinese subsidy is much more than US subsidy. But researchers have different views on the effect of such large amount of subsidies. In this book, based on former researches, we redetected the macro-effect of agricultural subsidy. And then, we launched a field survey for agricultural subsidy specifically. By so doing, we illustrated the details for implementation of agricultural subsidy policy.

In our opinion, we should go to the fundamentals of rural households' behaviors. What kind of effects has agricultural subsidy made on agricultural household's behavior? In another word, what is the implication of subsidies for behavior changing of agricultural household?

In the literature review, we found that the research about the agricultural subsidy at home is superficial. A research in depth needs to be launched. We also found that the research abroad was focusing on the subsidy policies in some developed countries such as the US and so on. The basis for these researches was big-scale farmers and perfect market. The conclusions and their deductions will not tell us something about the reacts to agricultural subsidy made by small-scale farmers. By reviewing these researches, we can not generate the paths by which the agricultural subsidies motivate small-scale agricultural households to participate the land rental market. The labor supply of different family members in small-scale rural household will be remained as a black box against the background of subsidy policies. By reviewing these researches, we will not have some ideas about other agricultural factors, such as fertilizer, which will be changed by subsidy policies. Another very important thing is that we will not get the policy implications from the researches for large farms. Facing to these drawbacks of former literature, we need to discuss subsidy and its implication on agricultural households' behavior. Moreover, we will analyze the paths from agricultural subsidy to the production and consumption of farmers. Last but not least, we will give suggestions about improving and perfecting agricultural policies.

In our paper, we assume that the implementation of the market is the basic background for the supply and demand of any production factor. We do some research on the agricultural policies in China. We should pay attentions to the

tight relationship between land and population. Too many labors are grabbing too little land. Though there may be no decoupled subsidy in small-scale agriculture, the policies may be not able to become something that will cause distortion of market. It is because that the tight land-labor ratio will distort the said market incentives. First, we should not consider subsidy only as an incentive to production. Second, we should not link the subjective utility only with labor input. We should seek the implication of subsidy from the return to agricultural input. These decisions will be made after the survivals and development of families. We should found out how land, labor and capital are affected by subsidy. Before doing this, the effect of subsidy on these returns should be clarified.

For the above purpose, we have done something on the theoretical extension. In our research, the AHM was adopted into agricultural policies. First, we test the market completeness. Based on the imperfect market, we extend the links between production and utility. Before our research, the links were always labor. In our research, the links are land, labor of different genders and fertilizer input. Drawing from the extended AHM, we applied the model for empirical studies. In our research, the agricultural input is not evaluated by market price but by the shadow price.

After those pilot works, we got a new understanding about the effect of subsidy. We will consider agricultural subsidy as a kind of agricultural income. In the areas where the subsidies are distributed according to acreage, subsidy can be considered as a kind of return from inputs. And then, the inputs will be nested into the shadow prices of agricultural production factors. We have chosen three components in the three dimensionalities. The paths and effects of subsidy will be shown based on those researches. Our new findings could be summarized as below;

i) Against the background of market imperfection, subsidy will not affect the behavior of rural household through market price. It is shadow prices that will be improved by subsidy. One on hand, after planting, the subsidy will improve the grain farmers' marginal returns to land input which could be described by the terminology, "Shadow Rental". On the other hand, subsidy will improve the grain farmers' marginal returns to labor input which could be

described by “Shadow Wage”. Because the tight relationship between land and population, subsidies result in: Shadow rental will help land transferring, Shadow wage will prevent farmers from transferring their land. So the subsidy policies have dual implications.

ii) In a similar way, the direct payment will be a margin for shadow wages of different family members. But we need to pay attention to the tight land-population ratio, the competitive advantage of different genders and the different bargaining power of different genders. To sum up, subsidy will push the feminization of agriculture.

iii) Against the same background, the direct payment will make the returns to fertilizer input increase. It should make abusing of fertilizer decrease. However, because of tight land-population ratio, farmers are encouraged to abuse fertilizer by subsidy.

If we consider subsidy as a whole, agricultural subsidy has a vague effect on agricultural households’ behavior. However, we have found the paths by which subsidy takes effects. We are able to propose some innovative policy suggestions for subsidy policies.

Our paper has offered an innovative framework to related researches. If we would like to evaluation a production related agricultural program, we can adopt our framework. The benefit from the program will be nested into the shadow prices of agricultural policies. Every shadow price could be calculated. By so doing, the changing of farmers’ behavior could be estimated. For the general effect of agricultural program, the shadow prices could be combined and tested.

We would like to construct a complete argument for the implications of agricultural subsidy on farmers’ operation behaviors. Our paper will be arranged as following,

Chapter 1 serves as an introduction. We introduced the problems we are focusing on. The former literature will be briefly summarized. A background of subsidy policy was offered. In this part, we also proposed our outline and main target. The main body of this paper was overviewed.

Chapter 2 is a literature review. We reviewed former literature. The paradigm was refined. Some of the methodologies and technologies were absorbed. There were some drawbacks in former theory. The former literature

could not solve the problems existed in data availability, variable choosing and econometric analysis either.

Chapter 3 is about the macro-effects of agricultural subsidy. We described the effect of the policy in a macro-level view. By using Data Envelopment Analysis (DEA), we evaluated the comparative efficiency of subsidy. Hopefully, the macro-effects have been generated by our research.

Chapter 4 is based on field surveys. We launched field surveys to seek for the details of policy implementation. Case studies for direct payment, comprehensive input subsidy, subsidy for high-quality seeds, machinery subsidy have been made to illustrate the policy implementation.

Chapter 5 is the theoretical basis for micro-econometrics in this book. We extended the Agricultural Household Model and took the extended model as our basic model in our paper. In mathematical analysis, we predicted the effect of subsidy on agricultural household's behavior. In graphical analysis, we will identify this prediction and find the path by which subsidy policy take effects.

Chapter 6, Chapter 7 and Chapter 8 are paralleling chapters though they may go forward one by one. As we mentioned above, the extended Agricultural Household Model could link production with consumption through land, labor and capital. So our extension will be made in these three dimensions. These different behaviors are countless. It is impossible to make more than wildest guess to discuss every behavior. We have to choose one kind of behavior in every dimension. Our discussion will include: farmers' behavior in the land rental market, the labor supply of different rural family members and fertilizer input by farmers.

Chapter 6 will set an example for our research. To begin with, we estimated the production function of grain by panel data. Moreover, we nested agricultural subsidy into the shadow prices of input. And then, drawing from the extended AHM, we constructed an empirical model for land renting behaviors. Based on the anticipation and test, we explored the implication of our research for subsidy and land institutions.

Chapter 7 follows the methodology of Chapter 6. We distinguished the family members with different genders in the production function estimation. And then, we tested the subsidy's effect on labor supply in the framework of

extended AHM. After these, we evaluate the labor supply of different genders. We will try to discover the paths of subsidy on the feminizations of agriculture. The inspiration for policy making is also one of our aims.

Chapter 8 follows the methodology of Chapter 6 and Chapter 7. In this chapter, we extended AHM in the dimension of capital. We predict subsidy's effect on fertilizer abuse. And then, using econometric methodology, we tested our prediction. By so doing, we give our policy proposal on subsidy policy and other policies.

Chapter 9 is about the international experiences. In this chapter, the US target price subsidy was introduced in details. We described how the policy instruments were defined by US government, such as target price and market price, payment area and payment yield. The process and adjustment were emphasized. By so doing, we evaluated reference meaning of the US target price subsidy for China.

Chapter 10 serves as a conclusion. We summarized the whole book and refined the core conclusion. We presented our policy proposal about improving and perfecting Chinese subsidy policy. And the defects of our research were also paid attention to. The future of our research was also pointed out.

Key Words: Agricultural Subsidy, the Farmer's Behavior of Production and Operations, Agricultural Household Model, Macro-level Effects, Micro-level Motives

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