

# *The* 农业水资源

Economic有效配置的经济分析

Analysis of Efficient Allocation of Agricultural  
Water Resources

马培衢◎著

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# 序

中国是农业大国，又是世界上最为缺水的国家之一，决定了治水乃国之根基。20 世纪中叶以来，持续的人口增长和快速的工业化进程，加剧了农业水资源的稀缺性和竞争性；农业水资源是农业生产的基础资源、国民经济的战略资源和生态环境的控制性要素，作为社会主义农业大国，中国能否通过界定农业水资源产权进入市场交易追求效率？怎样的交易制度和交易组织模式才能实现农业水资源配置的效率与公平？

这不仅对中国农业水资源配置方式构成挑战，而且对农业水资源交易体制创新提出新要求。本书从新制度经济学的崭新视角来探究、诠释农业水资源有效配置的内在经济机理这一重大的现实问题，不仅体现了选题的学科前沿性，而且折射出本书的理论价值和实践意义。

本书把农业水资源配置与交易契约选择紧密联系起来，既有研究方法的突破，又有研究思路和内容体系的创新，在以下几方面形成了自己的特色：首先，找出了农业水资源配置困境的根源。立足于中国社会经济转型中水资源配置理论研究困境，创新性地提出农业水资源

短缺、配置效率低、工程与技术双重失灵的根源在于交易缺失，切中中国市场经济建设时期水资源配置方式变革的核心问题，深化了对水资源危机及其实质问题的认识。其二，原创性地构建了农业水资源有效配置的理论分析框架。本书系统分析了农业水资源的经济、社会和生态等多重属性，界定了农业水资源配置的契约性质，从农业水资源配置的交易契约性质出发，以农业水资源交易合约选择为中心，构建了农业水资源有效配置的经济分析框架，探讨了农业水资源配置的组织体制、水权结构和交易机制问题。该理论框架将制度变量内生于农业水资源配置活动分析之中，对于创新农业水资源配置的研究范式，具有重要理论价值。其三，提出并实证了合作治理是农业水资源有效配置的关键。本书采用数理分析方法论证了政府、市场与农户分工合作的治理体系是农业水资源配置的有效形式，并根据实地采集的灌区农户水资源配置活动的微观数据，采用计量分析的方法，实证了现实经济制度条件下，农民联户合作灌溉组织使农户以最小化的交易成本实现了农业水资源的最优化配置。其四，本书的对策研究具有重要现实意义。本书从制度经济学的角度，研究了如何协调政府、市场和农民组织在农业水资源配置活动中的契约关系，提出的构建政府、用水户与市场三元合作的配置组织体系、扁平化的水权制度和三元耦合配置机制等策略建议，对于协调

农业水资源配置过程中政府、市场和农户之间的关系，对于统筹农业水资源配置中的公平和效率问题，具有重要的现实指导价值。

学术上的进步不仅需要睿智，更需要勤勉。本书作者马培衡是我的博士研究生，他善于思考，刻苦钻研，系统而深入地学习了相关研究领域的专业知识，具备了比较深厚的理论功底和较强的研究能力。目前，他运用产业经济学、新制度经济学和计量经济学的方法对水资源配置问题，进行了较深入的研究，在该领域研究中的突破得到同行的认同，活跃于国家相关学科研究中，具有较强的创新发展潜力。

在资源管理学中水资源管理是一门恒久而又非常活跃的领域，闪光的思想比成熟的理论更有价值。一种新的管理思想和制度设计是在其传播过程中通过与人们的思想的撞击和应用而发挥其巨大社会经济效用并得以发展的。本书以交易契约选择为主线对农业水资源配置制度框架和交易基础的开创性研究，必将激发后来者的关注和思考。这是一本既有理论深度又有现实价值的学术专著，我愿将此书推荐给农业经济理论界和政府有关部门的同仁志士。

雷海章

2008年1月

# 摘 要

本书从经济学角度研究农业水资源有效配置之道。中国的治水历史与华夏文明一样源远流长，其中农业水资源的合理配置和有效利用历来是中国治水事务中最为紧要的方面。20 世纪下半叶以来，持续的人口增长和快速的工业化进程，加剧了水资源利用的竞争性和水环境的恶化，使水资源短缺问题日益突出。农业占社会总用水量的 70%，提高其水资源配置效率成为中国水资源可持续利用的第一要务。

随着中国向市场经济转型的快速推进，引入市场机制、创新配置手段来优化水资源配置的思路，得到理论界和实践界的广泛认同。水权和水市场自然被视为农业水资源有效配置的关键。问题是，在交易成本普遍存在的现实世界，农业水资源具有自然流动性、生命资源、经济资源和生态资源等多重属性，决定了完全界定产权的成本是非常高的，甚至是不可能的，总有难以界定的权利留在“公共领域”，因而，水权及其交易市场可能并不是唯一的主要问题。相对的，由一定的组织和集体行动协调机制将剩余权利所蕴涵的资源价值内部化为组织租金，可能是以最小化的交易成本实现水资源有效配置的更为现实的办法。本研究从寻求农业水资源配置低效率的根源而起，在回顾和反思相关研究成果基础上，采用规范研究与实证分析相结合的方法，运用交易费用理论、产权理论、产业组织理论、集体选择理论、福利经济学等理论，构建了以交易成本为中心的农业水资源配置分析框架，展开了对农业水资源有效配置的经济分析。本书的内容结构安排如下：

## 农业水资源有效配置的经济分析

第1章导论旨在提出问题和介绍研究思路。本章概述了本书研究背景,指出当代中国正面临着水资源危机和用水低效率并存的矛盾。在评论和反思相关研究成果的基础上,文章指出对农业水资源配置的组织结构认识的缺乏制约了人们对农业水资源配置低效率根源的理解和突破困境思路的拓展。然后,本章交代了本书的研究思路、假设、方法、内容,以及可能的创新。

第2章构建农业水资源有效配置的理论分析框架。本章以新制度经济学、农业经济学、水利工程学等理论为基础,从交易契约的角度界定了农业水资源的交易特性,并以此为逻辑起点,采用交易成本分析方法,以产权理论、交易成本组织理论、福利经济学等理论为支撑,构建了农业水资源有效配置的理论分析框架,阐释农业水资源交易特性、水权制度、组织结构、组织行为和配置绩效之间的因果互动关系。

第3章研究农业水权制度有效性决定的内在机理。本章在回顾现代产权理论关于产权制度影响资源配置效率的机理基础上,探讨了农业水资源交易特性是如何影响农业水权制度的资源配置效率的;进而,构造了农业水权制度有效性分析模型,论证了农业水权制度有效性决定的内在机理:有效反映水资源交易特性及其相对价值的变化并被良好执行的水权制度才有可能激励配置决策者有效地配置农业水资源。针对中国灌区农业水权制度现状,运用模型解释了农业水权制度非效率的成因。最后,本章提出并解释了构建可交易农业水权制度和扁平化水权结构的设想。

第4章研究农业水资源配置组织的选择理论。本章从农业水资源配置组织的契约性质出发,探讨了配置组织有效边界的决定问题;根据组织治理结构与交易特性相匹配的交易成本最小化效率原则,本章提出农业水资源配置决策的交易成本最小化的组织结构将是相对有效率的,从而可以最大化农业水资源配置的社会福利,据此构建了农业水资源配置组织有效性分析模型,运用模型分析了现行农业水资源配置组织存在的缺陷及其运行低效率的



成因；进而，提出构建三元合作治理的农业水资源配置组织体系的思路。

第5章是农业水资源配置机制有效性的比较分析。在比较分析不同配置机制特点的基础上，构造农业水资源配置机制有效性分析模型，论证了任何单一的配置机制都不可能实现农业水资源的有效配置，政府、用水户和市场三元耦合机制是农业水资源的有效配置机制；并实证分析了农业水价的政府决定机制的非效率；提出并论证了基于农户的农业水资源特许经营配置机制是农业水资源有效配置的现实可行选择。

第6章是农业水资源配置组织有效运行的机制分析。本章从农民用水户组织发展现状出发，主要采用交易成本理论和集体行动的逻辑理论，解析了农民用水户组织是完善农业水资源配置组织体系、大规模节约交易成本的制度需求。在对灌区农民用水者协会发展困境实证分析的基础上，指出组织定位、产权明晰度、制度供给和财政自生能力是制约农民用水户组织生存和发展能力的重要因素。基于此，提出中国农民用水户组织有效发展的对策。

第7章是基于农户的水资源配置行为的实证研究。本章根据灌区农户灌溉用水的微观数据，采用计量分析方法，以交易成本和集体行动合约选择为核心，分析了农业水资源配置行为选择的影响因素及其内在机理，实证了现实经济制度条件下，农民联户合作灌溉组织是以最小化的交易成本实现农业水资源配置的有效组织形式，从微观层面揭示了合作治理的水资源配置组织是农业水资源有效配置的关键。

第8章是本书的研究结论和政策建议。这一章归纳本研究的重要结论和观点，并对提高中国农业水资源配置的有效性提出具体政策建议，包括构建扁平化的农业水权结构，加快可交易的水权制度建设，构建农业水资源多元合作治理结构，实施农业水资源特许经营配置机制，强化政府在农业水权制度、交易组织建设

## 农业水资源有效配置的经济分析

和农田水利基础工程建设等方面的职能。最后，文章指出有待深入研究的方向。

本研究在借鉴国内外已有研究成果的基础上，以交易成本与合约选择为主线，积极探索了农业水资源有效配置的制度条件和组织基础，为农业水资源配置研究提供了新颖的视角。本书在以下几方面可能有所创新：一是创新性地界定了农业水资源交易特性，构建了农业水资源有效配置的制度分析框架；二是首次实证分析了合作制经济组织是农业水资源配置的有效形式；三是首次综合运用相关理论论证了农业水资源的有效配置机制；四是提出扁平化分权决策的农业水权结构的构建思路。

**关键词：**农业水资源；有效配置；交易成本；组织结构；水权

# ABSTRACT

This book is to expose the intrinsic mechanisms of allocating agriculture water resources effectively from the economic view. The water-control history of China is as long as Chinese civilization, and reasonable disposition of agricultural water resource is always the most critical aspect in general affairs of water control. Since the 1950s, continued increase in population and fast industrialization process have aggravated the environment of water and the competitiveness of water resource, making the shortage of water resource an increasingly noticeable problem. Agriculture is the major industry to use water, so to raise its resource disposition efficiency has become the first business to make Chinese water resource use continuously. Along with China's fast transition to market economy, introducing market mechanism and innovating disposition to optimize water resource to get the extensive identification of theoretical circle and practical circle.

Water rights institution is one of important factors that affect agricultural water resource disposition efficiency by nature. But there are some problems, the complex property of natural mobility, life resource, economic resource and ecological resource that agricultural water resource has. They decide high cost of water resources evaluation and discovery, and always have the right that is hard to make boundary to stay in "public

field". Therefore the only realistic method that water resource value realizes fully is through coordinative mechanism of certain organization and collective action and internalizes the resource value within surplus right to organizational rent, with minimum transaction costs which is the only practical way of achieving the optimization of water resource disposition. Obviously, proper disposition organization structure has possibly become the most crucial factor that affects agricultural water resource disposition efficiency. Just thinking deeply for above-mentioned problem, this paper construct the frame of agricultural water resource disposition analysis with the center of transaction costs, spread out economic analysis of agricultural water resource effective disposition seeking the source of inefficient agricultural water resource disposition, based on looking back and reviewing research literature, associating theory analysis with demonstration analysis, using the transaction costs theory, property right theory, collective option theory, welfare economics theory. The structural arrangement of this book is as follows:

The first chapter aims to put forward problems and introduce research thoughts. This chapter introduces the background of the paper, and points out that at present China faces water resource crisis directly and uses water inefficiently. Based on the comments and review related research literature, this chapter points out that lacking of organization structure knowledge of agricultural water resource disposition restricts people to understand primary low collocation of agricultural water resource and develops to breach scrape thoughts. Then this chapter has explained research thoughts, assumptions, methods and contents, as well as possible innovation.

The second chapter has constructed the theoretical analysis frame of agricultural water resource effective allocation. This chapter has adopted transaction costs analysis method, selected theories such as right theory, transaction costs theory, collectivity choose theory and welfare economics theory, put forward the concept of agricultural water resource trade property, and pointed out that agricultural water resource disposition is that related benefit parts using the trade contract of right to select agricultural water resource behavior on essence, and use it as logic starting point, constructs the theoretical analysis frame of agricultural water resource effective disposition, explains agricultural water resource trade property, water rights system, organization structure and cause and effect connection among organization performance.

The third chapter has studied inner mechanism of agricultural water rights system validity decision. This chapter has looked back the modern theory about inner mechanism of property right that affects resource disposition efficiency, discussed the water rights system restraint condition that affects water resource disposition efficiency and how agricultural water resource trade property affect the resource disposition efficiency of agricultural water rights system. And then, it has constructed agricultural water rights system validity analysis model, expounded and proved the inner mechanism that agricultural water rights system validity deciding; Effectively reflecting water resource trade property and the change of relatively worth and encourage disposition policymakers deploy agricultural water resource efficiently if water rights system is possibly well conducted; According to present situation of agricultural water rights system in district

China, using model to explain agricultural water rights system is not the cause of inefficiency. Finally, this chapter has put forward to the suggestion of constructing an agricultural water rights system and flat water rights structure.

The forth chapter has studied the option of agricultural water resource disposition organization theory. This paper has started from the trade nature of agricultural water resource disposition organization, discussed the decision of effective boundary problem of disposition organization. According to the organization administration structure and minimum transaction costs efficiency principle matching trade property, this chapter has put forward in transaction costs generally existent realistic world, the minimum transaction costs of resource disposition decision organization structure will be relatively effective; so it can reach the biggest social welfare of agricultural water resource disposition. Accordingly this paper has constructed agricultural water resource disposition organization validity analysis model, and used this model to analyze the current inefficient cause of defect and operation of agricultural water resource disposition organization form. And then, this chapter has put forward to found the central cooperative administering agricultural water resource disposition organization structure.

The fifth chapter is the agricultural theory analysis and experience investigation of water resource disposition mechanism validity. On the foundation of comparing different disposition mechanism characteristics, it has constructed agricultural water resource disposition mechanism validity analysis model, expounded and proved any unitary disposition mechanism can impossible to realize the effective agricultural water resource disposition,

## ABSTRACT

and suggested that the market disposition mechanism of government control is possible and efficient; And through experience demonstration agricultural water price decision mechanism is inefficiency. Therefore this chapter has put forward to found the agricultural water resource operation of special permission based on contract disposition mechanism, mold the agricultural water resource manager of special permission, promote the realization of agricultural water resource effective disposition.

The sixth chapter is the demonstration analysis of agricultural water resource disposition organization condition. This chapter has begun from the present situation of peasant use water household organization, mainly adopted transaction costs theory and collective action theory, parsed peasants' using water household organization which is the perfect agricultural water resource disposition organization system, large-scale economize the system demand of transaction costs. Based on the demonstration analysis of district peasant use water association difficult condition, it has pointed out that organization position, the system supply and finance and clearly ownership levels, institutional supply and finance autogenic ability important factors to restrict using water peasant household organization survival and the developing ability. Based on this, it has suggested that the countermeasure of Chinese peasant organization to develop effectively.

The seventh chapter is the empirical research based on the water resource disposition behavior of peasant household. Based on the microcosmic data of district irrigation water use of peasant household, This chapter has demonstrated influencing factor of agricultural water resource disposition behavior. On the condition

of water rights loses, collective action system shortages and organization inefficiency of water supply, the economic rational peasant household can only cooperate in narrow scope to deploy water resource. But peasant household from organization behavior has not yet risen the water efficiency and benefit. So this chapter suggested that, cultivating rural water trade market, raising the collective action of peasant ability, joining the network that realizes scale water conservancy are the inevitable routes of optimizing agricultural water resource disposition behavior.

The eighth chapter has put forward the policy suggestions and the research conclusions of paper. This chapter has concluded the viewpoints and the important view of research. It has suggested that the specific policy to raise the validity of Chinese agricultural water resource allocation, including founding flat agricultural water rights structure, accelerating the water trade right system construction, founding agricultural water resource central cooperation to administer structure, implementing the agricultural water resource operation of special permission. And also it important to reinforce the government's power, such as the basic project, water rights system and trade organization construction of irrigation and water conservancy. Lastly, paper showed the some advices for the future study.

The research explored the system condition and organizational basis for agricultural water resource by referring to the already-made research results. The following aspects are presumably new in history in this article: first, based on defining the trading characteristics of agricultural water resource, it constructed the theoretical analysis framework of effective allocation



## ABSTRACT

for agricultural water resource; second, it initially analyzed that Cooperation organizational structure is the key to the effective allocation of agricultural water resource; third, it firstly used related theories to prove the mechanism of effective agricultural resource allocation; fourth, it suggested and proved the effectiveness of franchising mechanism of agricultural water resource.

**Key words:** agricultural water resource; effective allocation; transaction costs; organizational structure; water rights