RESEARCH ON DEVELOPMENT CHARACTERISTICS AND BRAND SPILLOVER EFFECTS OF AGRICULTURAL PRODUCT REGIONAL BRANDS IN CHINA
/
中国农产品区域品牌发展特征及品牌溢出效应研究

Ph.D. Chuantong Zhang[1),2)], Ph.D. Prof. Juan Lu[1)]
[1)]College of Economic Management, China Agricultural University / China
[2)]School of Humanities and Social Sciences, Beijing Institute of Petrochemical / China
Tel: +86 133 9190 7937; Email: ywjzct@126.com

Abstract: With the rapid increase in the standard of living and demand for high quality agricultural products in China, the development and protection of agricultural product regional brands (APRB) have begun to receive more and more attention. All developed countries have taken the protection of agricultural product brands in their origins seriously. However, Chinese agricultural brands developed very slowly, and there is little empirical research on APRBs. In this study, an econometric model was established based on data derived from an analysis of 2665 products from 30 provinces of China in order to identify the development characteristics and verify the spill-over effects of Chinese APRBs. The survey results revealed regional imbalances, interregional agglomeration, category diversification of brands, and a shorter industrial chain, with marketing limited to specific seasons, in the development of APRBs. Test results on the empirical models developed for this study show that an APRB is a preferable system design. This can gather small-scale agricultural producers and provide accurate product information to markets at a lower cost within a small region, preventing adverse selections caused by asymmetric information. The added value of agricultural products can be effectively increased by developing APRBs, benefitting of the development of Chinese agricultural product brands as well as positively promoting increases in farmers' income and the further development of the Chinese agricultural economy.

Keywords: agricultural product regional brand (APRB); development characteristics; spillover effect; China

INTRODUCTION

With the continuous development of China's agricultural regional economy, regional image association with unique location and agricultural product regional brands (APRB) are gradually being formed. It is well-known that brands always develop in specific geographic areas within a specific traditional and local situation[1]. Because of the heterogeneous nature of the geographical areas in China however, it is important to identify what the development characteristics of APRB in geographic area are, and what the spillover effects from creating an APRB are. As the Chinese economy has undergone increased development, the demand of citizens for high-end quality agricultural products has increased rapidly. Many internationally famous agricultural product brands have entered China and occupied the high-end market, but the development of Chinese agricultural brands still lags behind. This poses a challenge for agricultural markets and products in China. Previous research shows that using regional branding to develop agricultural product brands has been successful in Europe and United States. Therefore, it is urgent and important to study the formation of APRBs in China. With increasing urbanization and favorable policies concerning agricultural economy and product branding, the objective of this study is to provide theoretical support and recommendations for the further development of these policies.

摘要: *随着居民生活水平的快速提高以及对优质高端农产品需求增加,中国农产品区域品牌的发展和保护越来越引起人们的关注。发达国家都重视对农产品实施原产地品牌保护。中国农业品牌化发展缓慢,缺乏对农产品区域品牌的实证研究。本研究基于中国大陆30个省份2665个农产品区域品牌的截面数据,建立计量模型,对中国农产品区域品牌发展特征与品牌溢出效应进行了实证研究。调查结果显示:中国农产品区域品牌发展在空间分布上存在区域间差异和区域内集聚、品牌类别发展多样化,以及农产品区域品牌存在产业链比较短、以应季营销为主。计量模型分析结果显示:农产品区域品牌是一个更优的制度设计,不仅可以集聚区域内高质量的小规模农业生产者以较低的成本向市场传递清晰准确产品质量信息,以避免市场信息不对称所导致的逆向选择;而且发展农产品区域品牌能够有效增加农产品附加值,促进中国农产品品牌发展,对中国农业发展和农民收入增长均具有显著的正向促进作用。*

关键词:农产品区域品牌 (APRB);发展特征;溢出效应;中国

引言

伴随着中国农业区域经济的不断发展,逐渐形成了独特定位的区域形象联想以及逐渐形成了农产品区域品牌（简称为"APRB"）。众所周知,品牌总是在特定传统性和地方性的情境中形成并发展,并依附于特定的地理区域空间[1]。由于地理区域空间是异质的,农产品区域品牌在地理空间分布上具有何种发展特征?农产品区域品牌发展的品牌溢出效应如何?随着中国经济社会发展升级,城乡居民对优质高端农产品需求增加。大量国际名牌农产品涌入中国高端市场,而中国农业品牌化发展缓慢,农产品卖难问题依然尖锐。欧美发达国家利用区域品牌发展农产品品牌已经被证明为一个重要且成功的方法。这些都显示出研究农产品区域品牌的迫切性和重要意义。在中国城镇化和出台许多有关农业经济和农产品品牌政策背景下,对这两个问题的研究,将会对农业发展和农产品品牌发展提供一个有力的理论依据和决策参考。

MATERIALS AND METHODS
Research on Agricultural Product Regional Brands

The ordinary form of APRB is "region name + the category name". Brand names including a geographical reference can help to better spread and describe the quality characteristics of the agricultural product, such as the flavour, taste and fragrance. For example, branding mutton with the term "New Zealand Mutton" can help consumers more effectively distinguish and selectively purchase mutton from that country[2]. In a generally homogeneous competitive situation this approach can construct customer identity and recognition, and help products sell at high prices by highlighting the differences in their geographical origin [3]. The key point in regional branding is to construct the identity and recognition of such brands[4]. By relating the brand to its geographical origin and using the identity and recognition of regional origin to connote specific qualities, reputation and other characteristics[5], a product can gain a unique local identification[6] that in turn gives consumers a level of quality assurance and wins their trust [7]. For consumers to buy food products such as beef and fresh foods, geographic origin is an important factor in selection[8][9]. More and more agricultural producers have used regional brands to achieve product differentiation to increase profits, and have additionally used regional brands as a marketing tool to build customer loyalty, create product differentiation and provide legal protection [10].

Because agricultural product quality is often concealed until consumption, a kind of signal mechanism must be employed to display quality information. In this way brand and trademark act as signals that transmit agricultural product quality information to consumers. Consumers then assess product quality according to origin and brand information. APRB, as a special identity, has distinct regional characteristics[11]. Its signal display effect and recognition effect are employed to communicate the quality characteristics of particular agricultural products to consumers [12]. An APRB can promote the branding and value of agricultural products, and can gather the intra-area small high-quality agricultural producers to send product quality signals to the market at a lower cost. This helps them avoid the possibility of selection caused by information asymmetry, and is an important and powerful information source for the consumer in making their purchase decisions[13].

Above all, agricultural product regional branding has become a hot research topic in high-end agricultural product development throughout the world.

Data Sources for APRB

In this study, sample data sets for 2012 were obtained mainly from China's Agriculture Ministry, which has assembled information on the most well-known regional agricultural products for thirty provinces (except Tibet). The regional agricultural products selected for this study must have received at least one of the following authentication certifications: Geographical Indications Protection Products, Geographical Indication Proof Trademarks, and/or Agricultural Products Geographical Indications listing. Moreover, the deadline for possession of the above authentication certifications was the end of 2012. Data on a total of 2665 samples of famous regional agricultural products were obtained and divided into seven categories: Fruit, Vegetables, Tea, Grain-Oil, Animal Husbandry, Fish and Other.

材料与方法
农产品区域品牌化的相关研究

农产品区域品牌通常以"区域名+品类名"形式出现，通过为某一农产品冠以地理名称，能更好地传播农产品的风味、口感、香味等质量特征。通过对羊肉冠以原产国名，能帮助消费者更有效区分并重点选购新西兰羊肉[2]。在普遍同质的竞争中，突出产品的地理来源差异可以获得消费者认同和更高的价格[3]。区域品牌的核心就是构建区域品牌识别[4]。把品牌"联系"到它的地理起源地，用地理来源识别表示特定质量、声誉或其它特性[5]，从而成为地方性的独特身份证明[6]，赢得目标消费者的信任，并提供一种质量保证[7]。对购买类似牛肉和新鲜产品等食品产品的消费者而言，地理来源将是一个重要的考虑因素[8][9]。越来越多农业生产者通过区域品牌来实现产品差异化以增加利润，并指出区域品牌作为一个营销工具，有助于建立消费者忠诚、实现产品差异化和创设法律保护[10]。

农产品质量特征的隐蔽性，使得消费者很难完整了解农产品的质量信息，必须借助某种信号机制来传递农产品质量信息。品牌、商标是一种向消费者传递农产品质量信息的标识信号。消费者会依据产品原产地和品牌信息来评估产品质量。农产品区域品牌作为一种特殊的标识，具有鲜明区域特征[11]，利用其"信号显示效应"和"识别效应"，向消费者传递农产品的质量特征[12]。农产品区域品牌促进实现了农产品原产地效应的品牌化和高附加值化经营，集聚区域内小规模的优质农产品生产者以较低成本向市场发送产品质量信号,从而消除因信息不对称而导致的逆向选择，是消费者进行购买决策的一个重要有力的信息源[13]。

总之，农产品区域品牌化已成为当今世界高端优质农产品发展领域的一个研究热点。

农产品区域品牌数据来源

样本数据主要来自于2012年农业部的30个省份（直辖市、自治区）的名优农产品统计。被统计农产品须至少获得以下认证之一：地理标志保护产品、地理标志证明商标、农产品地理标志等，且获得荣誉认证时间截止到2012年底。最终共计获得中国大陆30个省份区域（西藏除外）的2665个农产品数据。因研究需要，将农产品分为水果类、蔬菜类、茶叶类、粮油（粮食油料的简称）类、畜牧类、渔业类和其他共七类。

Development Characteristics of APRB in China
Development Imbalance

The samples of 2665 regional agricultural brands were unevenly distributed throughout East Region Provinces, Middle Region Provinces and West Region Provinces in China, and the inter-regional differences in brand-development are very obvious. The East Eleven Provinces, including Shandong, Fujian, Zhejiang, Jiangsu, Liaoning, Hebei, Tianjin, Beijing, Guangdong, Shanghai and Hainan, provided 1062 APRB samples and accounted for 39.85% of all samples. The Middle Region Provinces, including Shanxi, Hubei, Anhui, Henan, Heilongjiang, Inner Mongolia, Jilin, Hunan and Jiangxi provinces provided 718 APRB samples and accounted for 26.94% of the samples. The West Region Provinces, including Sichuan, Xinjiang, Shanxi, Gansu, Guizhou, Chongqing, Qinghai, Ningxia, Guangxi and Yunnan, provided 885 APRBs samples and accounted for 33.21% of the total samples. These results showed the imbalances of APRB development scales in Eastern Region Provinces, Middle Region Provinces and West Region Provinces. The East Region Provinces produced the most superior regional brands with Middle Region Provinces following, and the West Region Provinces had the minimum number of agricultural brands.

Aggregation Characteristic of APRB

The APRBs had obvious aggregation characteristics, especially in the provinces with rich resources and unique traditions (Table 1). There were five provinces that had more than 100 APRBs in the East Region; Liaoning, Shandong, Fujian, Zhejiang, Guangdong and Shandon, and Shandong province had 298 APRBs by itself. The APRBs of these five provinces accounted for 76.46% of all samples in the East Region, and 30.47% of all samples in China. The two provinces in the Middle Region with more than 100 APRBs were Henan and Hubei. The number of APRBs in these two provinces accounted for 33.29% of all samples in the Middle Region, and 8.97% of all samples in China. The two provinces in the West Region with more than 100 APRBs were Sichuan and Chongqing. There were 228 APRBs in Sichuan. The number of APRBs in these two provinces accounted for 37.74% of all samples in the West Region, and 12.53% of all samples in China.

中国农产品区域品牌的发展特征
区域发展不均衡

2665个农产品区域品牌非常不均衡地、差异明显地广泛分布在中国的东部区域、中部区域和西部区域省份。东部区域包括山东、福建、浙江、江苏、辽宁、河北、天津、北京、广东、上海和海南等11个省份区域，拥有1062个农产品区域品牌，占比为39.85%。中部区域包括山西、湖北、安徽、河南、黑龙江、内蒙古、吉林、湖南和江西等9个省份，拥有718个农产品区域品牌，占比为26.94%。西部区域包括四川、新疆、陕西、甘肃、贵州、重庆、青海、宁夏、广西和云南等10个省份，拥有885个农产品区域品牌，占比为33.21%。以上表明，农产品区域品牌在品牌发展整体规模上在东部区域、中部区域和西部区域的存在差异，东部省份发展最好，西部省份次之，中部省份最后。

地域内品牌发展集聚

农产品区域品牌发展数量在资源禀赋和人文风俗传统独特的省市地域集聚更加明显（见表1）。东部省份品牌数量超过100个以上的省份有5个，分别是辽宁、山东、福建、浙江和广东，其中山东有298个品牌，5个省份的品牌数量占东部省份品牌总数的76.46%，占中国的30.47%；中部省份品牌数量超过100个以上的省份有两个，分别是河南和湖北，2个省份品牌数量占中部省份品牌数量的33.29%，占中国的8.97%；西部省份品牌数量超过100个以上的省份有两个，分别是四川和重庆，其中四川为228个品牌，2个省份品牌数量占西部省份品牌总数的37.74%，占中国的12.53%。

Table 1 / 表1

The aggregation characteristic of APRBs

Region	East Region					Middle Region		West Region	
Brand sum	1062					718		885	
Brand quantity > 100	Liaoning	Shandong	Fujian	ZheJiang	Guangdong	Henan	Hubei	Sichuan	Chongqing
	112	298	154	147	101	115	124	228	106
Proportion in intra-region （%）	10.55	28.06	14.50	13.84	9.51	16.02	17.27	25.76	11.98
	76.46					33.29		37.74	
Proportion in China （%）	30.47					8.97		12.53	

Category of Concentration of APRB Products

In the APRB category, Fruits made up the largest category with 704 APRBs, accounting for 26% of all APRBs. Vegetables contributed 510 APRBs (19%). Tea contributed 209 APRBs (8%). Grains-Oils contributed 373 APRBs (14%). Animal Husbandry contributed 340 APRBs (13%). Fisheries contributed 210 APRBs (8%), and the category contributed 318 APRBs (12%). The above data showed that APRBs have the following characteristics: (1) The product categories are diversifying and showing an expanding trend; and (2)

农产品区域品牌产品类别集中

在农产品区域品牌的七个类别中，水果类是最大的一类，有704个品牌，占品牌总量的26%；依次是蔬菜类有510个品牌，占品牌总量的19%；茶叶类有209个品牌，占品牌总量的8%；粮油类有373个品牌，占品牌总量的14%；畜牧类有340个，占品牌数量的13%；渔业类有210个品牌，占品牌总量的8%；其他类有318个品牌，占品牌总量的12%。农产品区域品牌的种类发展具有如下特点：第一，产品类别发展呈现多样化扩大趋势。七大类中各类都有众多农产品区域品牌，而且每个类别的子类别中又有许多品

APRBs are concentrated in several categories including fruits, vegetables and grain-oils. These three APRB categories accounted for 59% of all the APRBs.

The industry chain of APRBs was shorter and limited to seasonal marketing.

The data show that the industry chains of APRBs are shorter, since the vast majority of APRB products are primary agricultural products. Most regionally branded products were fresh, live, unprocessed or primarily processed foods, and their capacity for development and utilization was seen as being low in the APRB context. It is difficult to store and sell to distant markets and participate in international competition for fresh and live APRB products. In addition, supply is often unstable for APRB products because of seasonal limitations. Therefore, it is important to extend the industry-chain and increase the added value of APRBs to further develop the agricultural sector in China.

APRB Spillover Effect
Theoretical Principles

In information economy theory, the actual quality of goods is often imperceptible, so brands should be used to express product quality characteristics to prevent adverse selection caused by information asymmetry. The system design of APRB, the "public brand", can help small and decentralized agricultural producers to centralize the transmission of product quality information to market at a low cost, and to eliminate the adverse selection caused by information asymmetry.

Methodology

The development of the agriculture economy not only depends on cultivated area (land), total agricultural machinery power, and the input of technology and manpower, but also relies on the improvement of the conditions for agricultural production, such as farmland consolidation, water conservation facilities and climate. When agricultural land resources remain unchanged, product yields and famer incomes will increase through improvements in agricultural infrastructure to the point where inputs of agricultural machinery reach saturation point. However, when the agricultural mechanization level can no longer be improved, further investment will have little impact on agricultural output. As the supply of agricultural products increases (without considering the influence of international agricultural product trade), the market will become glutted, which will cause a decline in the prices of agricultural products and a decrease in agricultural income. As a result, it is essential for China to improve the added value in agricultural products and promote the brand management of these products. Empirical research in many developed countries has verified that the "country of origin effect" promotes agricultural product branding and increases added value. To study the positive spillover effect of APRBs on the development of the Chinese agricultural economy, regional branding was considered to be one of the important input factors in this study. The development effectiveness indexes of the agricultural economy employed were mainly the Gross Agricultural Output Value and Farmer Per Capita Income data supplied by each province, and the other control variables included the number of agriculture workers, the level of agricultural investment, and the area available for Plantation-Breeding.

牌。第二，农产品区域品牌的产品类别存在集中性。农产品区域品牌主要集中于水果类、蔬菜类、粮油类，三类品牌数总占比达到59%，其中水果类占26%，蔬菜类占比19%，粮油类占14%。

农产品区域品牌产业链比较短、以应季营销为主

从区域品牌的描述性统计来看，农产品区域品牌产业链比较短，因为绝大部分品牌产品都是初级农产品。中国农产品区域品牌产品多以鲜活、未加工或初级加工的农产品为主，农产品区域品牌的资源价值的开发利用能力不足。鲜活区域品牌农产品存在不易存储、不易远销和参与国际竞争不足的劣势。而且绝大多数区域品牌农产品营销存在较强季节性，供货不稳定。因此，扩展延伸农产品区域品牌产业链，增加农产品区域品牌产品附加值是未来中国农产品区域品牌发展必须被关注和亟需解决的问题。

农产品区域品牌溢出效应分析
理论基础

信息经济学认为,质量隐蔽性严重的商品需要利用品牌进行产品质量特征的集中表达,以避免由于信息不对称而导致逆向选择。借助农产品区域品牌这一"公共品牌"制度设计,使得区域内分散化的规模小的优质农产品生产者也能以较低的成本向市场集中传递产品质量信号,消除因质量信息不对称所导致的逆向选择。

研究设计

农业经济发展不仅要依靠农作物播种面积（耕地面积）、农用机械总动力、科技与人力投入，而且也离不开农田水利设施等农业生产条件的改善，以及气候环境等其他因素。但在农业土地资源一定、农用机械投入量达到饱和之前，增加和完善农业基础设施既能有效增加农业产量也能相应提高农民收入。但随着农用机械化水平等逐渐趋于饱和，继续追加投入对农业总产值的影响不会很大；而随着农产品供给量的增加（此处不考虑农产品国际贸易的影响），市场达到供过于求必然会导致农产品价格下降和农业收入减少。因此，提高农产品附加值、促进农产品品牌化已成为中国农业发展的一个必须选项。通过利用"原产地效应"促进农产品品牌化和高附加值化,已经得到众多西方发达国家的实证验证。为了考察农产品区域品牌对中国农业经济发展的正向溢出作用，将农产品区域品牌作为一种农业经济发展的投入要素。农业经济发展效益指标主要采用各省份的农业总产值和农民人均收入，其他控制变量包括农业从业人数、农业投资额和农产品种养殖面积。

Data Sources

As noted above, the 2665 APRB samples from 30 provinces in China (except Tibet) used in this study were all obtained from the Chinese Ministry of Agriculture.The agricultural economy development effectiveness indices included Gross Agricultural Output Value (T) and Farmer Per Capita Income (A). The T, A and agricultural investment data were obtained by multiplying the data from 2012 with the average growth rate calculated from 2008 to 2012. Plantation-Breeding Area is the sum of the average agriculture cultivated area, the average aquaculture area, and the average flower planting area between 2008 and 2012. Agriculture Investment is the total amount of agriculture investment that the Central Government directly transferred to all provinces, including investment in fixed assets, agricultural irrigation, water conservation facilities, agricultural machinery and agricultural subsidies. All these data were obtained from the Chinese Statistical Yearbook (Table 2).

数据来源

用中国农业部统计的30个省份（西藏除外）的2665个农产品品牌数据。农业经济发展效益指标采用各省农业总产值（T）和农民人均收入（A）。农业总产值、农民人均纯收入和农业投资额通过2008-2012 年的平均增长率乘以2012年的数据得到。种养殖面积采用2008-2012 年平均耕地面积数据， 再加上平均水产养 殖面积数据和平均花卉种植面积数据，计算所得的平均增长率乘以2012年的数据得到。农业投资是指中国中央政府直接划拨给各省份的农业投资总额，包括固定资产投资、农田水利投资、农机投资、农业补贴等，用来考察其对农业产出的影响。以上数据来源于历年《中国统计年鉴》。各变量描述性统计见表2。

Table 2 / 表2

Statistical results

Variable Name	Unit	Symbol	Sample Size	Mean Value	Standard Deviation	Max.	Min.
Gross Agricultural Output Value	hundred million Yuan	T	30	2082.23	1482.91	6089.00	170.00
Farmer Per Capita Income	Yuan	A	30	5711.22	2387.20	12633.73	3042.87
Agriculture workers	ten thousand	Labor	30	2936.74	2029.75	8330.35	165.47
Agriculture investment	hundred million Yuan	Invest	30	201.58	83.82	389.53	56.46
Plantation-Breeding Area	thousand hectare	Land	30	5481.62	3675.32	14480.11	329.32
Agr-brand quantity	Individual	Agr-brand	30	88.83	57.99	298.00	18.00

RESULTS AND DISCUSSION
Research Model Construction

Two econometric models (1,2) were established. In the two models, Gross Agricultural Output Value (T) and Farmer Per Capita Income (A) are dependent variables. There are four independent variables, including Agricultural Investment (Invest), Agricultural Workers (Labor), Farming Land (Land) and APRB Quantity (Agr–brand). The following relationships were obtained:

结果与讨论
建立研究模型

根据研究需要，建立研究计量模型（1）和（2）。在模型中，被解释变量为农业总产值（简称为"T"）和农业人均收入（简称为"A"），解释变量为农业投资额（简称为"Invest"）、农业从业人数（简称为"Labor"）、种养面积（简称为"Land"）、品牌数量（简称为"Agr-brand"）。

$$ln\,T = C + b_1 lnlabor + b_2 lninvest + b_3 lnland + b_4 ln\,Agr-brand + \varepsilon \tag{1}$$

$$ln\,A = C + b_1 lnlabor + b_2 lninvest + b_3 lnland + b_4 ln\,Agr-brand + \varepsilon \tag{2}$$

Where, "C" is a constant, "b_i" is regression coefficient, "ε" is the interference and "ln" is the natural logarithm.

其中，"C"为常数项，"bi"为回归系数，"ε"为干扰项，"ln"为自然对数。

Regression analysis

Reviews 8.0 software was used to carry out regression analysis and estimation. A weighted least square method (WLS) was then employed to adjust the models to eliminate heteroscedasticity. Finally, the stepwise regression method was used to eliminate multicollinearity between the variables. The results of the regression analysis are shown in Tables 3 and 4.

回归分析

本研究首先通过Eviews 8.0软件对模型及其统计数据 进行回归分析和估计。为了消除异方差性，采用加权最小二乘法（WLS）对模型进行合理修正。继而采用逐步回归法来消除变量间的多重共线性。针对农业总产值和农业人均收入的回归分析结果分别见表3和表4。

Regression analysis Results of Gross Agricultural Output Value

Variable	Gross Agricultural Output Value	
	1.1	1.2
C	4.3866(19.3765)∗∗∗	4.3835(26.5886)∗∗∗
Agriculture workers	0.0231(0.3321)	0.0372(2.3268)∗∗
Agriculture investment	0.2402(1.7154)∗	0.2286(7.6175)∗∗∗
Plantation-Breeding Area	-0.4265(-3.1746)∗∗∗	-0.4333(-8.0046)∗∗∗
Agr-brand quantity	0.1312(1.2412)	0.3613(9.6786)∗∗∗
Sample Size	30	30
R2	0.3168	0.9815
F	3.0237	361.9876
White F	2.6413(0.0328)	
Glejser F	4.1032(0.0104)	

Note: (1) ***, ** and * indicateds 1%, 5% and 10% significance level respectively. (2) The values in brackets are t statistics.

注：（1）***、**和*分别表示1%、5%和10%的显著性水平，（2）括号内为t统计值。

According to the results of the regression analysis of Models 1.1 and 1.2 in Table 3, the R^2 for the former was 0.3168, indicating that the goodness-of-fit of this model is low. Therefore, measures of the quantity of APRB and agricultural workers were statistically non-significant, and the model was not precise enough.

Using weighted least squares for regression analysis in the model 1.2, the R^2 of the model 1.2 is 0.9815 (t value significantly passed the test), the goodness-of-fit of the model 1.2 is significantly higher, and all variables tested were under the 5% significance level. The estimate effect of the model 1.2 is very good.

The regression analysis results of model 1.2 gave values of 0.3613 and t was 9.6786, indicating that APRBs play a significant and positive role in promoting the development of the agricultural economy. The coefficient for the plantation-breeding area was -0.43, meaning that gross agricultural output value would increase by 0.43% for every 1% decrease in this area. This result further illustrates the point that reducing plantation-breeding area through unit efficiency improvements does not directly reduce gross agricultural output value, since the increasing input from other elements partially offsets the negative impact of reducing plantation-breeding areas. Therefore, it is important to improve the quality of cultivated land, especially to improve the added value of agricultural products, and promote the branding of regional agriculture products.

从表3回归分析结果的模型1.1和模型1.2可知，模型1.1的 R^2为0.3168，拟合优度较低，农产品区域品牌数量和农业从业人数在统计上不显著，模型估计效果不佳。

模型1.2采用加权最小二乘法进行回归，R^2为 0.9815（t值都显著通过检验），拟合优度显著提高，所有解释变量均在5%显著性水平下通过检验，模型估计效果良好

由模型1.2回归结果可知，农产品区域品牌数量的回归系数为0.3613、t值为9.6786，表明农产品区域品牌对农业经济发展具有显著正向促进作用。种养面积的系数为-0.43，即在其他要素不变的条件下， 种养面积每减少1%，农业总产值增加0.43%，说明种养面积的减少并不直接带来农业总产出的减少，农业种养面积的单位效益有所提高是因为其他要素的投入部分抵消了种养面积减少的负影响。因此，提高种养面积质量，尤其是提高农产品附加值，推进农产品的区域品牌化成为必需选项。

Regression analysis Results of Farmer Per Capita Income

Variable	Farmer Per Capita Income	
	2.1	2.2
C	0.9867(2.7143)∗∗	1.0436(51.9432)∗∗∗
Agriculture workers	0.0812(0.7312)	0.0132(0.6531)
Agriculture investment	0.5341(2.4213)∗∗	0.5446(9.1021)∗∗∗
Plantation-Breeding Area	0.0542(0.2500)∗∗	0.0812(2.3352)∗∗
Agr-brand quantity	0.3968(2.3379)∗∗	0.3901(19.7857)∗∗∗
Sample Size	30	30
R2	0.7860	0.9976
F	24.3986	3925.6351
White F	1.4275(0.2447)	
Glejser F	2.6958(0.0526)	

Note: (1) ***, ** and * indicates 1%, 5% and 10% significance level respectively. (2)The values in brackets are t statistics.

注：（1）***、**和*分别表示1%、5%和10%的显著性水平，（2）括号内为t统计值。

The regression analysis results depicted in Table 4 show that the R^2 of model 2.1 is 0.7860 and its Glejser F is 2.6958(0.0526), which indicates that there is heteroscedasticity in the model, with a low degree of fit. Model 2.2 was analyzed by the weighted least squares method, and gave an R^2 value of 0.9976. This value indicated a significantly improved degree of fit. Besides, the three contributory variables, agriculture investment, plantation-breeding area and agr-brand quantity, were significant at the 5% level.

The regression results of model 2.2 show an agr-brand quantity regression coefficient of 0.3901 and a t value of 19.7857, which indicates that APRBs play a very significant and positive role in promoting increases in the per capita income of farmers.

CONCLUSIONS

In this study, an econometric model based on selected data from 2665 samples of regional agricultural products from 30 provinces of China was established to empirically identify the development characteristics of Chinese APRBs, and verify their spillover effects. The results revealed regional imbalances, interregional agglomeration, brand category diversification and the shorter industrial chains of APRBs, as well as showing that agricultural regional brand marketing is limited to specific seasons.

Nevertheless, the study shows that APRBs have significant and positive effects on the development of regional agricultural economies, and effectively increases farmers' incomes. This means that APRB is a preferable system design for regional agriculture products. APRB is also useful for obtaining quality information from small-scale agricultural producers who produce high-quality agricultural products within a specific region, and transmit the information to the market at a low enough cost to prevent adverse selection caused by asymmetric information. Therefore, the added value of agricultural products can be increased by developing APRBs, which will further promote the development of Chinese agricultural product brands.

This research shows that every province in China should make full use of current agricultural policies to favor local, high-quality, brand-name agricultural resources. It is also recommended that small and medium-sized agricultural producers should develop APRBs vigorously to form the scale economy of regional branding. At the same time, registration and development of APRBs can promote the transformation of the development and management modes in the agricultural industry through regional branding and protection of intellectual property rights. Resource aggregation, industrialization and increasing productivity distribution in agriculture will transfer the superiority of regional resources to the superiority of regional brands and market competition, contributing to the rapid development of modern agriculture. Developing APRBs based on specific regional cultures and natural geographic resources can not only reasonably adjust and improve local industrial structures to form a better and special agricultural industry economy, but also promote Chinese regional culture and national soft power by active participation in international competition.

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从表4中回归分析结果的模型2.1和模型2.2可知，模型2.1的R^2为0.7860，且Glejser检验结果为2.6958(0.0526)，表明回归拟合优度低且存在异方差。模型2.2采用加权最小二乘法进行回归分析，R^2为0.9976，拟合优度明显提升，农业投资、种养面积和品牌数量均在5%的显著性水平下通过检验。

模型2.2回归结果表明，农产品区域品牌数量的回归系数为0.3901、t=19.7857，表明农产品区域品牌对提高农民收入具有显著正向促进作用。

结论

本文基于中国大陆30个省份2665个农产品区域品牌的截面数据，建立计量模型，对中国农产品区域品牌发展特征与品牌溢出效应进行了实证研究。数据描述性分析结果显示：中国农产品区域品牌发展区域间不均衡，且在区域内集聚，品牌类别发展多样化和集中性，农产品区域品牌产业链比较短且以应季营销为主

计量模型分析结果显示：农产品区域品牌是一个更好的制度设计，不仅可以集聚区域内高质量的小规模农业生产者以较低的成本向市场传递产品质量信息，以避免市场信息不对称所导致的逆向选择；发展农产品区域品牌能够增加农产品附加值，促进中国农产品品牌的发展，对中国农业积极发展和有效提高农民收入均具有显著的正向促进作用。

研究结论表明，中国各个省份区域当前及未来应充分利用现有政策，引导并大力挖掘当地农业名特优农产品资源，组织中小优质农业生产者，大力发展农产品区域品牌，形成农产品区域品牌规模经济。同时，通过注册和发展农产品区域品牌，以区域品牌、知识产权来促进农业发展方式和管理模式转变，推动资源集聚化、产业化发展，形成科学合理的农业生产力布局，把区域资源优势转化为农产品区域品牌优势和市场竞争优势，从而加快现代农业发展步伐。基于特定地域文化和自然地理资源上的农产品区域品牌的发展，不仅能合理调整地方产业结构、形成特色产业经济，而且积极参与国际竞争，成为一个传播展示地域文化和国家软实力的重要载体。

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REFERENCES

[1]. Qian L.Y. and Zhu H. (2011) - *Local and inheritance:Yixing purple sand culture of geographical brand and change*, Journal of geographical science, vol.31, no.10, pg.1166-1171;

[2]. Babcock B.A. and Clemens R. (2004) - *Geographical Indications and Property Rights: Protecting Value-Added Agricultural Products*, Ames: Iowa State University, Midwest Agribusiness Trade, Research and Information Center;

[3]. Amin A. (2004) - *Regions unbound: towards a new politics of place*, Geografiska Annaler (Series B), vol. 86, no.1, pg. 33-44;

[4]. Rainisto S.K. (2003) - *Success Factors of Place Marketing: A Study of Place Marketing Practices in Northern Europe and the United States*, Doctoral Dissertation, Helsinki University of Technology, Institute of Strategy and International Business, Finland;

[5]. Papadopoulous N., Heslop L.A. (1993) - *Product-Country Images: Impact and Role in International Marketing*, Beijing China: International Business Press;

[6]. Massey D. (1994 - *Space, Place and Gender*, Minneapolis: University of Minnesota Press;

[7]. Lury C. (2004) - *Brands: the Logos of the Global*, Economy, London: Routledge;

[8]. Wolfe K. and McKissick J. (2001 - *An Evaluation of the 'Grown in Georgia' Promotion (CR-01-39),* University of Georgia, Center for Agribusiness and Economic Development, (September);

[9]. Hayes D.J. and Lence S.H. (2002) - *A new brand of agriculture? Farmer-owned brands and reward innovation*, Iowa Ag Review, vol. 8, no. 4, pg. 20-110;

[10]. Jay M. Lillywhite, Candra Ilison and Anita G. Rodrigue (2008) - *Regional Branding in a Global Marketplace,* New Mexico Chile Task Force Report, pg.21;

[11]. Hu Z.M. and Wang Y.Z. (2010) - *Research on the formation and growth path of agricultural product regional brand,* Journal of Jiangxi University of Finance and Economics, no. 6, pg. 64-68;

[12]. Li Y.L. (2010) - *Agricultural product regional brand: the connotation, characteristic and function*, Journal of Cuide to Business, no. 2, pg.107-108;

[13]. Huang J. (2008) – *Research on the establishment of agricultural product regional brand*, Master thesis of Business Management in Jiangxi University of Finance and Economics, Nanchang, China.

参考文献

[1]. 钱丽芸, 朱竑. （2011）-地方性与传承：宜兴紫砂文化的地理品牌与变迁[J]. 地理科学, 第31卷, 第10期, 1166-1171；

[2]. Babcock B.A. & Clemens R (2004) - 地理 标志和知识产权：保护农产品增值[R]. 艾姆斯：爱荷华州立大学, 中西部农业贸易、研究和信息中心, (五月)；

[3]. Amin A. (2004) - 地域解放：地方政治的一个新 方向[J].地理学纪事(系列B). 第86卷, 第1期, 33-44；

[4]. Rainisto S.K. (2003) 区域营销的成功因素：在北欧和美国的一个营销实践研究[D]. 赫尔辛基科技大学，战略与国际商务学院, 博士论文， 芬兰；

[5]. Papadopoulous N., Heslop L.A. (1993) - 原产国形象：对国际市场的影响和作用[M]. 中国北京：国际商务出版社；

[6]. Massey D.(1994) - 空间、 地方和性别[M]. 明尼阿波利斯：明尼苏达大学出版社；

[7]. Lury C. (2004) - 品牌：全球经济的标志[M]. 伦敦：劳特利奇出版社；

[8].Wolfe K. & McKissick J. (2001) - 对生长在格鲁吉亚促销的一个评价(CR-01-39)[R]. 乔治亚大学， 农业和经济发展中心, (九月)；

[9]. Hayes D.J. & LenceS.H. (2002) - 个农业新品牌?农场自有品牌和奖励创新[M].爱荷华银评论，第8卷， 第4期, 20-110；

[10]. Jay M. Lillywhite, Candra Allison and Anita G. Rodrigue (2008) - 区域品牌在全球市场[M]. 新墨西哥州智利工作组报告, 21；

[11]. 胡正明，王亚卓. (2010) - 农产品区域品牌形成 与成长路径研究[J].江西财经大学学报,第6期,64-68；

[12]. 李亚林. (2010) - 农产品区域品牌:内涵、 特征和作用[J].企业导报,第2期,107-108；

[13]. 黄洁. (2008) - 农产品区域品牌创建研究[D] .江西财经大学企业管理专业硕士论文,中国南昌.