

Sustainability of Urban Agriculture : A Comparative Analysis of Tokyo and Shanghai[†]

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Abstract

The role of urban agriculture is highly valued in both developed and developing countries. Urban agriculture is an important aspect of the wider issue of urban sustainability. However, it is considered to be a possible threat to the sustainability of cities, while at the same time it is considered to greatly contribute to sustainable urban development.

In this research, sustainability of urban agriculture will be discussed through a comparative analysis of Tokyo and Shanghai by using an Internet survey method. The function of urban agriculture expected by local residents and its relationship with urban development will be clarified. Furthermore, the effects of urban agriculture on the welfare of residents will also be considered from an economic viewpoint.

JEL Classification : I31, Q15, Q56, R14

Keywords : UPA, Sustainability, Tokyo, Shanghai

1. Introduction

The role of urban agriculture is highly valued in both developed and developing countries. Urban agriculture is an important aspect of the wider issue of urban sustainability. However, urban agriculture is considered both to be a possible threat to the sustainability of cities and to greatly contribute to sustainable urban development.

Although urban agriculture tended to decline with the expansion of cities in developed countries, activities that aim to maintain urban agriculture are being undertaken in many cities. Nevertheless, the functions of urban agriculture expected by urban residents in developed countries are changing mainly from producing agricultural goods to creating scenery, ensuring land conservation, management of renewable natural resources in a sustainable way and providing environmental benefits, etc. On the other hand, along with the rapid urbanization of developing countries, a huge number of people has migrated from rural to urban areas. Such a situation has caused environmental pollution, urban poverty and a shortage of food in cities on the one hand, and an enlargement of urban and peripheral

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agriculture on the other. According to the UNDP, about 800 million people were engaged in urban agriculture worldwide in 1996 [11]. The contribution of urban agriculture to GDP both in developed and developing countries has drawn increased attention.

The economic benefits of urban agriculture are identified as follows: employment, income generation and enterprise development; national agriculture sector and urban food supply; and land-use economics. Generally, urban agriculture is considered to have a low sustainability from the aspect of economic efficiency due to its small scale and high cost of production. However, there is a possibility that sustainable agriculture can be achieved through the fact that the existence of agriculture and farmland improves the welfare of the local population. Some empirical studies from this viewpoint have been carried out by Kiminami and Kiminami [2] in the case of Tokyo and by Kiminami, Kiminami and Zhu [3] and Murayama and Kiminami [4] in the case of Shanghai.

However, the sustainability of urban agriculture needs to be balanced between three aspects: sociality, economic efficiency and environmental protection. The relative importance of each of these three aspects varies depending on the differences of place and time. In this research, sustainability of urban agriculture will be discussed through a comparative analysis of Tokyo and Shanghai by using an Internet survey method. The function of urban agriculture expected by local residents and its relationship with urban development will be clarified. Furthermore, the effects of urban agriculture on the welfare of residents will also be considered from an economic viewpoint.

2. Survey areas and survey method

2.1 Characteristics of the survey areas

The outline of the survey areas is shown in Table 1. Both Tokyo and Shanghai are megalopolises with populations of over 10 million residents, where the agricultural sector of both cities plays an important role.

One feature of the Japanese city is the large amount of farmland. Unorganized progress of turning farmland into housing, from the urban core to the city's outskirts, without sufficient urban infrastructure resulted in the so-called "sprawl phenomenon". Farmland was not absorbed into urban areas according to a plan. On the contrary, farmland was absorbed into urban areas with the expectation of turning the land into housing in the future. However, although most farmland was gradually turned into housing, urban planning did not require this. As a result, urban areas are now dotted with farmland.

Tokyo has about 12 million residents. Of the total employed population of 6 million, those engaged in agriculture number only 17,800. Of the total area of 2,102 km², farmland occupies 85.5 km². In other words, the position of agriculture in Tokyo is weak in terms of land scale and employed population. However, in terms of green spaces, farmland occupies approximately 10% of the total green space in Tokyo, providing valuable green space. Additionally, park area per person is 6.0 m² in Tokyo and 2.9 m² in the 23 Tokyo Wards. These numbers show a significantly lower level of park space compared to other urban cities in developed countries (in 2004).

The total area of Shanghai is 6,340.5 km², of which farmland occupies 1,330 km² (20.9%). Although the proportion of farmland in Shanghai is not low, it is distributed in suburban

Table 1. Outline of survey areas (Tokyo and Shanghai)

	Unit	Tokyo	Shanghai
Population	10,000	1,199.6	1,711.0
Total area : a	km ²	2,102.0	6,340.5
Farmland area : b	km ²	85.5	1,330.0
b/a	%	4.0	20.9
Total employed population : c	10,000	598.3	771.5
Population engaged in agriculture : d	10,000	17.8	73.7
d/c	%	0.3	9.6
Park area per person	m ² /person	6.0	1.1

areas through urban development. Shanghai has about 17 million residents. Of a total employed population of 8 million, the population engaged in agriculture is about 737,000. Among the total employed population, the proportion of population engaged in Primary Industry is 9.1%, and that of Secondary and Tertiary Industry is 39.0% and 51.9%, respectively. The shares of Primary and Tertiary Industry in the total employed population are declining. However, a significant structural transition has occurred in Shanghai's agriculture sector since the 1990s. Agricultural output in Shanghai entered a phase of sharp increase in vegetable production, and conversely a decrease in cereal production.

Along with the rise of land value and the decrease of farmland in suburban areas, agricultural production in Shanghai started to shift from the production of land-intensive crops such as cereal to labor-intensive crops such as vegetables. This kind of transition in agricultural production has caused an increase in regional demand for agricultural labor, while a certain amount of farm labor migrated from outside regions as a result.

2.2 Survey methods

To clarify how local residents value urban agriculture, a questionnaire survey intended for Tokyo and Shanghai residents older than twenty years was executed. The survey in Tokyo and the one in Shanghai were conducted by Macromill, Inc. and Searchina, Inc. respectively. The survey in Tokyo started on March 11, 2005, and the one in Shanghai on July 29, 2005. Both surveys ended when the number of responses reached 1,000. Questionnaires contained questions regarding the profile of the respondent, relationship with agriculture, assessment of the area of residence, assessment of the role of agriculture and urban agricultural policies. Among the respondents, those who were engaged in the agricultural sector, those who did not respond to some items and those who lived in the Tokyo islands were excluded. The sample consisted of 993 respondents from Tokyo and 822 respondents from Shanghai¹⁾ (see Table 2).

¹⁾ The bias of the respondents of the Internet survey to the ages of twenties and thirties may reflect the spread of the Internet in present Shanghai. Therefore, the data has a limit in the point of representative character of the population. On the other side, the reality should also be recognized that

Table 2. Profiles of respondents (% share)

Age	20s	30s	40s	50s	Over 60
Tokyo	19.6	20.2	20.4	19.5	20.1
Shanghai	59.1	26.8	7.1	5.1	1.9
Sex	Male	Female			
Tokyo	57.0	43.0			
Shanghai	57.8	42.2			
Marriage	Unmarried	Married	Living together (Unmarried)	Divorced	
Tokyo	33.1	66.9	-	-	
Shanghai	44.2	51.5	3.2	1.2	
Children	None	Some			
Tokyo	45.6	54.4			
Shanghai	60.5	39.5			
Annual household income	Less than 3 mil. Yen	3 mil.~5 mil. Yen	5 mil.~10 mil. Yen	10 mil.~15 mil. Yen	Over 15 mil. Yen
Tokyo	13.9	25.6	41.2	13.9	5.4
Annual household income	Less than 30 thou. Yuan	30 thou.~50 thou. Yuan	50 thou.~60 thou. Yuan	60 thou.~100 thou. Yuan	Over 100 thou. Yuan
Shanghai	18.6	24.2	17.9	24.6	14.7
Living year	Less than 1 year	1~5 years	5~10 years	10~20 years	Over 20 years
Tokyo	1.5	11.1	10.0	13.4	64.0
Shanghai	20.9	32.1	11.2	6.0	29.8

3. Analysis of the valuation of residents

3.1 Assessment of the living environment

First, how urban residents assess their own living environment is clarified. Table 3 shows the assessment of positive aspects of the living environment by urban residents. This shows the relation of urbanization to external economies and the supply of local public goods. The item that obtained the highest assessment among aspects of living environment both from Tokyo and Shanghai was the development of a transportation network. Other items with a relatively high assessment were an abundant availability of commerce and natural

difficulties exist in strictly knowing the composition of the population by age and in making random sampling under the situation that there is a huge fluid population in Shanghai. Besides, there was no strong correlation between the answers concerning urban agriculture and the respondents' age in the survey items. Nevertheless, the authors agree that a supplementary analysis for overcoming the limit of such Internet survey method is necessary.

Table 3. Positive aspects of the living environment (% share)

	Tokyo	Shanghai
Good transportation network	70.2	60.1
Abundant availability of goods and stores	49.5	54.6
Lively and exciting	21.6	33.2
Many places for education and lifelong learning	19.2	37.6
Lots of greens and nature	40.0	40.5
Good medical and welfare systems	23.0	32.8
Good sports and leisure facilities	15.7	22.0
Many opportunities to enjoy arts and culture	18.4	20.9
Abundance of information	26.2	27.1

Table 4. Negative aspects of the living environment (% share)

	Tokyo	Shanghai
Too many cars and people	33.8	48.8
High prices for commodities and lands	40.8	47.8
Poor security	19.5	27.6
Not enough greens and nature	23.0	26.9
Bad housing conditions	17.9	32.6
Feel uncomfortable with air pollution	33.6	36.7
Feel uncomfortable with noise annoyance	25.0	38.3
Lack of human relationships	21.7	30.0

environment.

Conversely, Table 4 shows the assessment of negative aspects of the living environment by urban residents. This shows the relation of urbanization to external diseconomies and a shortage of local public goods. The most serious problems in the living environment are the escalating prices of commodities and land, air pollution and the excessive concentration of population in Tokyo. For Shanghai, however, the problems of concentration of population, escalating prices of commodities and land and noise pollution seem to be the most serious problems in the living environment. Notably, the problem of housing in Shanghai is more serious than in Tokyo.

3.2 Involvement of urban residents in agriculture

Table 5 indicates the interest of urban residents in agriculture. 80.3% of the respondents in Shanghai responded "Interested in agriculture" which is significantly higher than that of Tokyo (57.7%). As to the question whether urban residents have any experience in agriculture or agricultural work, the use of allotment gardens, the purchase of locally produced vegetables, a higher percentage of respondents was obtained in Shanghai than in Tokyo (See

Table 5. Interested in agriculture (% share)

	Tokyo	Shanghai
Very interested	9.5	16.8
A little bit interested	48.2	63.5
Not so interested	32.7	16.2
Not interested at all	9.6	3.5

Table 6. Experience in agricultural work (% share)

	Tokyo	Shanghai
Doing agricultural work as a hobby	6.9	20.0
Done before	25.3	29.0
Never done before	67.8	51.1

Table 7. Willingness to use allotted gardens (% share)

	Tokyo	Shanghai
Currently using	2.0	3.6
Wish to use in the future	3.8	23.0
Wish to use if close by	24.3	24.8
Wish to use if inexpensive	16.0	18.6
Wish to use if there is an instructor	13.3	13.3
Do not wish to use	40.6	16.7

Table 8. Purchase of locally produced vegetables (% share)

	Tokyo	Shanghai
Always purchase	8.3	38.4
Purchased before	43.6	47.8
Never purchased before	5.6	13.7
Do not know	42.5	—

Table 6, Table 7, and Table 8). It is clear that urban residents in Shanghai are more involved in agriculture than those in Tokyo.

3.3 Assessment of agriculture and farmland by urban residents

Table 9 outlines how urban residents assess the role of urban agriculture and farmland. The function of agriculture and farmland that obtained the highest ranking from urban residents in Tokyo is the ability "to supply fresh and safe agricultural products", followed by "to supply an affluent and healthy environment", "to supply a place for agricultural experi-

Table 9. Role of urban agriculture and farmland (% share)

	Tokyo	Shanghai
To supply fresh and safe agricultural products	75.8	62.5
To preserve living environment	69.1	54.5
To supply an affluent and healthy environment	74.8	54.4
To provide disaster evacuation sites and routes	61.9	29.2
To provide petting zoo and oasis	62.4	37.7
To supply a place for agricultural experience and education	71.8	30.9
To increase living matter and improve the ecosystem	69.0	44.8
To allow recycling of resources such as turning kitchen garbage into fertilizer	64.9	42.5

Table 10. Issues concerning urban agriculture (% share)

	Tokyo	Shanghai
Deterioration of landscape	8.2	38.0
Bad smell	35.1	65.6
Noisy	3.9	25.3
Dispersion of agricultural chemicals	56.7	66.2
Generation of insects	59.1	74.0
Creation of dust	42.5	40.6
Illegal waste disposal	34.4	55.2
Decrease of safety	4.9	32.1

ence and education” and “to preserve living environment”. As for Shanghai, although the functions of agriculture and farmland such as “to supply an affluent and healthy environment” and “to preserve the living environment” were highly valued by urban residents (the same as in Tokyo), the functions “to provide disaster evacuation sites and routes”, “to supply a place for agricultural experience and education”, “to increase living matter and improve the ecosystem” and “to allow recycling of resources such as turning kitchen garbage into fertilizer” were perceived to be of less value.

On the negative side, Table 10 summarizes issues concerning urban agriculture. The problems of insects and the spraying of agricultural chemicals are cited by residents of both cities. However, the issue of “deterioration of the landscape” is pointed out by a relatively high proportion of respondents in Shanghai.

3.4 Perspectives of urban residents concerning urban agricultural policies

The last issue to be examined is the perspectives of residents concerning agriculture and farmland in urban areas in the future.

As shown in Table 11, approximately 60% of urban residents are in favor of preserving urban farmland in Tokyo. Only 5% are against the idea. On the contrary, in Shanghai,

Table 11. Opinions on the existence of farmland in residential area (% share)

	Tokyo	Shanghai
Better to exist	58.8	47.6
Better not to exist	5.0	20.3
Cannot say	36.2	32.1

Table 12. Use of urban farmland in the future (% share)

	Tokyo	Shanghai
Actively produce agricultural goods	29.2	18.9
Keep it and utilize it as green space, allotment gardens, etc.	53.5	61.1
Utilize it as residential land, etc.	4.1	11.1
Do not know	13.2	9.0

Table 13. Residents' preferences concerning urban agriculture

Interested in agriculture	Tokyo < Shanghai
Valuation of the multi-functionality of urban agriculture	Tokyo > Shanghai
Valuation of diseconomy of externalities of urban agriculture	Tokyo < Shanghai
Preserving urban farmland	Tokyo > Shanghai
Utilize urban farmland as green land	Tokyo = Shanghai
Utilize urban farmland for producing agricultural goods	Tokyo > Shanghai
Conversion of farmland to non-farm uses	Tokyo < Shanghai
Mutual exchange between urban residents and farmland	Tokyo < Shanghai

nearly half of urban residents are in favor of preserving urban farmland, while those who are against the idea exceeded 20% as well.

Regarding the utilization of urban farmland, Table 12 indicates that the respondents selected "keep it and utilize it as green space, allotment gardens, etc." exceeds 50% both in Tokyo and in Shanghai. What is sought by urban residents in urban areas, is the function of providing a natural environment, rather than the production of agricultural goods. However, there is a difference between urban residents in Tokyo and Shanghai as to the utilization of urban farmland, with a relatively strong preference for the utilization of farmland for the production of agricultural products in Tokyo, while the preference for utilization for housing is strong in Shanghai (see Table 13). A weak preference for utilization for agricultural production and a strong desire for utilization as residential areas can be explained by the fact that although fresh agricultural products are being provided in Shanghai, a serious housing problem exists. Therefore, it appears that a strong trade-off exists between housing and farmland in Shanghai. Table 13 shows the comparison of

residents' preferences concerning urban agriculture in Tokyo and Shanghai.

4. Evaluation of urban farmland from an economic viewpoint

4.1 Multi-functionality of agriculture and farmland

From a viewpoint of regional economics and urban planning, agriculture and farmland were previously considered to conflict with urbanization. However, in recent years, the importance of the existence of agriculture and farmland in urban areas has been advocated, both in developed and developing countries, through various projects including the UNDP [11] and the APO [1]. The reasons for such development are considered to be the multi-functionality of agriculture and farmland and the multi-functional land use in cities that has started to attract attention [8]. According to the OECD [5] [6], the multi-functionality of agriculture and farmland refers to their functions not only to supply agricultural goods but also to create scenery, to ensure land conservation, to manage renewable natural resources in a sustainable way and to provide environmental benefits such as the conservation of biodiversity. The contents of such multi-functionality are broad and they are summarized in Table 14. In the light of this multi-functionality, agriculture supplies not only agricultural goods but also local public goods and farmland can be seen not only as a space to support

Table 14. Multi-functionality of agriculture and farmland in urban areas

	Contents
<i>Agriculture</i>	
Production of agricultural goods	Basic functions such as production of food, etc.
Communication	Enjoyment of culture and creation of communication through exchange between citizens and between citizens and farmers
Welfare	Prevention of aging through agricultural work, healing effects of plants, gardening therapy
Education	Emotional and environmental education through nature and agriculture and learning agriculture and forestry
Recycling	Organically grown vegetables by turning kitchen garbage into organic fertilizer
<i>Farmlands</i>	
Environmental protection	Preservation of biological resources and natural environment
Creation of landscapes	Creation of pleasant landscapes, scenery of Japanese fields and scenery through which people can enjoy changes of the seasons
Disaster prevention	Providing disaster evacuation sites and routes, creation of green spaces for disaster prevention, to arrest the spread of fire, to provide spaces for temporary housing
History and culture	Preservation of groves of village shrines and continuation of harvest festivals
Support for building residential lands	Promotion of building residential lands, provision of gardens and vegetable gardens that support good rural living
Withholding or controlling of urbanization	Temporary withholding or controlling urbanization for a certain period

agriculture but also as a space that has many other functions. Through the perspectives explained above, a contact point between research on quality of life, including those conducted by Rosen [9] and Roback [7] and those on urban agriculture becomes visible.

In analyzing the quality of urban life, the utility of urban residents U is considered to be determined by composite commodity C , housing services N , pure amenities (such as weather) A and public services G as follows :

$$U = U(C, N, A, G) \quad (1)$$

However, if urban agriculture and urban farmlands supply local public goods GA , the utility is determined by the following formula :

$$U = U(C, N, A, G, GA) \quad (2)$$

The total urban area S is calculated from the residential area SR and agricultural area SA as $S = SR + SA$. Housing services N is a function of residential area SR . A decrease in farmland brings increases in residential land, supply of housing services and utility of residents. Agriculture supplies local public goods GA as well as agricultural goods and GA is a function of SA . However, GA changes depending on the agricultural management method and technologies used for agriculture and hence the supply of local public goods also changes. For example, organic agriculture and allotment gardens are ways to use farmland that can create an excellent supply of local public goods.

In accordance with the above framework, demands for local public goods in urban areas supplied by agriculture and farmlands will depend on the degree of urbanization, preferences of consumers and supply conditions of public goods. In order to supply local public goods properly, it is necessary to resolve any issues regarding market failure and externality as well as to introduce urban agriculture policies in urban planning. Furthermore the continuation of urban agriculture is considered to be supported by urban residents under the condition of the following formula :

$$\partial U / \partial SA > 0 \quad (3)$$

4.2 Regression analysis

Due to the difficulty of measuring urban resident's utility directly, we take the preference of residents' settlement as a proxy variable of utility. Generally, it is considered that the preference of residents' settlement in a certain region is strongly determined by how much utility residents can obtain from the region. This is to say that, residents' preference on settlement is determined by the amount of goods and services that can be provided by the region and the amount of public services that can be provided by farmland on one side, and the amount of diseconomy of externalities that residents have to bear because of it on the other side (see Figure 1). Such an approach is in line with Tiebout's principle of "voting with one's feet" [10].

However, data related to respondent attributes and regional conditions were added to the independent variables because residents' perception of settlement is also considered to be affected by lifestyle and life cycle, and accordingly we have included independent variables like age, sex, and family composition. The variable of respondents' age attained the value

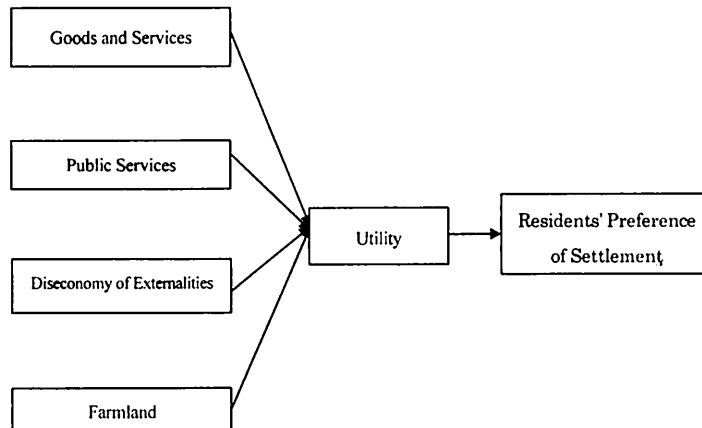


Figure 1. Determinant factors of residents' preference of settlement

1 for 20-29, 2 for 30-39, 3 for 40-49, 4 for 50-59 and 5 for above 60. The variable respondents' sex attained the value 1 for male and 0 for female. The variable of respondents with and without children attained the value 0 and 1 for each state respectively. With regard to the question "how much farmland exists in your area of residence?", values were assigned as 1 for respondents who answered "lots", 2 for "a little", 3 for "not too much" and 4 for "not at all". The dummy variables for reflecting regional conditions attained the value 1 for Tokyo and 0 for Shanghai. Finally, variables for evaluating regional public services were assumed as 1 for positive aspects of residential areas and 0 for others. Conversely, variables for assessing external diseconomies attained the value 1 for negative aspects and 0 for others. Finally, the dependent variable which indicates the preferences of residents' settlement attained the value 1 for a desire of continuing residence and 0 for others. Logit regression analysis was used for the estimation due to the discontinuous dependent variables.

Table 15 gives the results of the estimation. It is clear that the preference of residents' settlement was increased by regional public services and decreased by existing external diseconomies in the region. The fact that the existence of regional farmland has a positive effect on the preference of residents' settlement indicates that urban farmland is considered to increase the welfare of urban residents.

The results of the estimation with pooled data of Tokyo and Shanghai indicate that the preference of regional settlement in Tokyo is stronger than that of Shanghai and that the impact of urban farmland on the preference of regional settlement in Shanghai is stronger than that in Tokyo. It appears that there is significant pressure on turning farmland into residential land in Shanghai due to shortage of land for housing in this city. Therefore, this also indicates that urban farmland in Shanghai creates a higher utility for residents in Shanghai than in Tokyo.

5. Concluding remarks

Agriculture and farmland in urban areas provide public goods to local residents. This means that urban agriculture has the possibility to provide not only agricultural products, but also public goods to local residents if it is an economically efficient industry. However, some

Table 15. Logit regression analysis on preference of regional settlement

	Pooled Data		Tokyo		Shanghai	
	parameter	t-value	parameter	t-value	parameter	t-value
Constant	-0.898***	-3.545	-0.160	-0.438	-0.403	-1.066
Age	0.142***	2.797	0.201***	3.152	-0.049	-0.514
Sex	0.025	0.231	0.293*	1.946	-0.299	-1.906
Children	0.018	0.145	-0.190	-1.072	0.037	0.196
Farmland	-0.207***	-3.377	-0.134	-1.474	-0.304***	-3.431
Regional Public Services						
Transportation network	0.601***	4.626	0.674***	3.562	0.515***	2.700
Goods and stores	0.477***	3.931	0.225	1.286	0.621***	3.492
Live	0.297**	2.234	0.719***	3.135	0.050	0.279
Education	0.384***	2.798	-0.003	-0.016	0.562***	3.159
Lots of greens	0.464***	3.824	0.554***	2.939	0.383**	2.267
Medical system	0.224	1.612	-0.029	-0.142	0.414**	2.141
Amusement	0.130	0.817	0.342	1.372	-0.086	-0.397
Art	0.225	1.369	0.443*	1.834	0.001	0.006
Information	-0.028	-0.187	0.223	0.983	-0.200	-0.919
External Diseconomy						
Excessive concentration	-0.231*	-1.855	-0.133	-0.731	-0.186	-1.024
High prices	0.048	0.419	-0.029	-0.178	0.220	1.333
Poor security	-0.359***	-2.795	-0.277	-1.434	-0.277	-1.529
Not enough greens	0.137	1.036	-0.067	-0.328	0.318*	1.752
Housing conditions	-0.446***	-3.536	-0.607***	-3.132	-0.270	-1.575
Air pollution	0.161	1.275	-0.015	-0.085	0.297	1.642
Noises	-0.449***	-3.551	-0.508***	-2.768	-0.443**	-2.427
Human relationships	-0.434***	-3.476	-0.626***	-3.491	-0.197	-1.087
Regional Dummy	1.021***	8.120				
χ^2	351.05		154.82		92.59	
P	0.0000		0.0000		0.0000	
Sample size	1,815		993		822	

Note: ***, ** and * indicate significance at the 1%, 5%, 10% level respectively.

support measures need to be taken into consideration if the economic efficiency of agriculture is inferior to that of other industries in urban areas. Table 16 summarizes the opinion of residents on the measures necessary to maintain and keep urban agriculture and farmland. Although "improvement of direct sales stores for agricultural goods and labeling of producer information, etc" was selected as the highest ranking item by both cities (which means that policy for improving the production and distribution of agricultural products are of great concern to the urban residents of Tokyo and Shanghai), financial support for improving urban agriculture such as mutual exchange between urban residents and farmers were especially noted in Shanghai. Therefore, the following implication can be drawn from the above results: that direct support policies for improving sustainable development of urban agricul-

Table 16. Measures necessary to maintain urban agriculture and farmland (% share) (multiple choice allowed)

	Tokyo	Shanghai
Use of local vegetables for school-provided lunch	41.3	39.8
Creation of face to face relationship between producers and consumers	35.5	46.2
Improvement of direct sales stores for agricultural goods and labeling producers' information, etc.	48.6	51.8
Measures to revitalize unutilized farmlands	33.0	40.4
Improvement of places for agricultural experience and nature observation	20.8	42.7
Support of participation of citizens in agriculture	19.7	42.5
Increase of opportunities to participate in events, morning markets, lectures, etc.	19.6	26.8
Provision of information regarding urban agriculture	14.1	28.8
Tax incentives and subsidies for farmers	13.5	35.4
No need for such measures	1.9	5.6
Do not know	8.6	4.1

ture are not only necessary but will also possibly obtain the support of urban residents.

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