

WORKING PAPER 408

THE RURAL ECONOMY ON THE URBAN FRINGE : NANJING MUNICIPALITY -  
PRODUCTION POSSIBILITIES, MANAGEMENT FORMS  
AND COMMERCIAL ACCESSIBILITY

SIMON POWELL.

School of Geography  
University of Leeds  
Leeds LS2 9JT

November 1984

THE RURAL ECONOMY ON THE URBAN FRINGE : NANJING MUNICIPALITY -  
PRODUCTION POSSIBILITIES, MANAGEMENT FORMS AND COMMERCIAL ACCESSIBILITY

1. Introduction
2. Nanjing municipality : the setting
3. Agriculture in Nanjing municipality
  - 3.1 Crop production
    - (a) Vegetable production
    - (b) Grain production
  - 3.2 The development of sideline undertakings
4. Industrial development in Nanjing municipality
  - 4.1 The overspill of industry into the suburbs
  - 4.2 The development of commune and brigade-run industrial enterprises
5. Commercial development in Nanjing municipality - a key to prosperity
  - 5.1 Physical accessibility to urban markets
  - 5.2 The availability of marketing organisations
6. Some parallel materials from Shanghai
7. Conclusions

References

Figures

1. Nanjing municipality
2. Land use in Nanjing municipality
3. The spread of industry in Nanjing municipality, 1949-80
4. Road transport routes and relief in Nanjing municipality
5. Shanghai municipality
- 6(a) Selected communes West of the Pujiang : the relationship between per capita incomes and distance from the city
- 6(b) Selected communes East of the Pujiang : the relationship between per capita income and distance from the city

#### LIST OF TABLES

- TABLE 1. Development characteristics of the Nanjing city area, city suburbs and city-administered counties, 1981.
- TABLE 2. Crop production characteristics. Nanjing city with city suburbs and the city-administered counties, 1981, 1982.
- TABLE 3(a) The production of Du Jiaying's household. Jiefang production brigade, 1982.
- TABLE 3(b) The income of Du Jiaying's household. Jiefang production brigade, 1982.
- TABLE 4. Han Baofeng - development of beekeeping and income, 1978, 1981, 1982.
- TABLE 5. The relative contribution of industry to the gross output value of Nanjing municipality 1949, 1977.
- TABLE 6. Industrial production characteristics, Nanjing city with the city suburbs and the city-administered counties, 1981.
- TABLE 7. The absolute increase and physical spread of large and medium-scale industrial enterprises in Nanjing municipality, 1949-1978.
- TABLE 8. Commune and brigade-run industrial enterprises in Jiangpu county, 1981.
- TABLE 9. Improvements in the Qiba ferry service between Nanjing city and Shuanglong production brigade. Jiangpu county, 1978, 1979.
- TABLE 10(a) Selected communes West of the Pujiang:distance from the city and average per capita incomes 1981.
- TABLE 10(b) Selected communes East of the Pujiang:distance from the city and average per capita incomes 1981.
- TABLE 11. Zonal classification of the countryside in Shanghai municipality, 1981.
- TABLE 12. Services - selected variables. Nanjing city with city suburbs and the city-administered counties, 1981.

#### DIAGRAMS

- Diagram 1. The official marketing system in Nanjing municipality.

## 1. INTRODUCTION

The basic premise of this study is that, in order to spring the "high output poor" trap common in the Chinese countryside, the way out for rural production units lies in a combination of production possibilities which include industry in the countryside, agricultural sideline production, and economic crops. In other words, the ability of a unit or area to produce cash crops, finished and unfinished industrial goods, sideline products and so forth in addition to meeting state grain quotas as well as its own grain requirements, is a key element in attaining rural prosperity.

To support this kind of development of rural production - both agricultural and industrial - a capacity to market outputs is indispensable. Without adequate commercial facilities, units may produce large quantities of economic crops and so forth but remain materially poor, a point made in the *People's Daily* 6.8.1981 (K.7) and repeatedly since.

From the outset it should be stated that the materials collected for the purposes of this study are neither comprehensive nor quantitative in their nature. They are simply a sample of a variety of production experiences drawn from the Nanjing area, this sample being used to suggest some conclusions about rural production and commercial accessibility in a periurban environment, in particular noting the advantages which the rural production units of the Nanjing area have gained from recent policy changes as well as from their physical proximity to a major city.

In addition, a more quantitative study by Hua Xicheng of rural production in the countryside of Shanghai will be briefly reviewed. The conclusions of this more quantitative and comprehensive analysis of the Shanghai countryside can then be compared with those drawn from the review of materials concerned with Nanjing municipality.

## 2. NANJING MUNICIPALITY : THE SETTING

Nanjing municipality includes the city itself, the suburbs and the three city-administered counties of Jiangpu, Jiangning and Liuhe. Also included within these units in Nanjing municipality are numerous satellite and rural market towns. For the purposes of this paper "Nanjing municipality" will be used when referring to the whole area as described above, while "Nanjing city" will indicate the built-up urban core and the "city suburbs" will refer to the

suburban area outlined in figure 1.<sup>1</sup>

Throughout history Nanjing has been one of China's most important cities. The site has been settled since 472 b.c. and at various times Nanjing has been the capital of China. The old city is situated on a plain some 10 metres above sea level, about 2 km from the Yangzi, and surrounded by a terrain of low hills and rivers. This peripheral area has abundant agricultural production resources and a diversity of mineral wealth including deposits of iron, gypsum, lead, zinc and manganese as well as limestone and sandstone.

A summary of the resource base and development characteristics of Nanjing is as follows:

TABLE 1: DEVELOPMENT CHARACTERISTICS OF THE NANJING CITY AREA, CITY SUBURBS AND CITY-ADMINISTERED COUNTIES 1981

	Area (km <sup>2</sup> )	Population (1000's)	Urban : rural ratio	Population density (persons /km <sup>2</sup> )	Cultivable land (mill.mu.)	Development characteristics
Nanjing city	116	1350	96:4	11637	0.34	Key centre of provincial govt. variety of industrial concerns. Scientific, educational and cultural centre
City suburbs	724	650	46:54	897		Industrial concerns including petroleum, metallurgy and electrical goods industries, vegetable growing base
City-administered counties	3877	1650	7.6 : 92.4	425	2.37	Textiles and agricultural machinery. Agricultural produce processing industries. Collection and distribution centres. Foodstuffs production.
Total area - Nanjing municipality	4717	3650	45:55	773	2.71	Communications hub. Economic base second only to Shanghai in E. China

Compiled from materials in: Yao Shimou et al 308. *Chinese statistical yearbook*, 1982, 59.

<sup>1</sup> The Chinese statistical yearbook 1981 59-62 uses one term "urban" when referring to the city and the suburban area. Since, as will be shown later, the suburban area is a significant agricultural base, this paper has chosen to ignore the Chinese definition.

When studying the development trends of the rural economy in Nanjing municipality, the importance of cash crops, agricultural sideline production and industry becomes apparent. Furthermore, it would appear that the development of Nanjing municipality appears to have been energetically and flexibly promoted. The new management methods available since the third plenary session of the 11th CCPCC of 1978 have been implemented to good effect, a point made for example by Sang Wangbang *et al* in connection with the development of Nanjing municipality's dairy industry.

Indeed, the experience of Nanjing municipality shows present policy in a fairly good light. However, a response to policy as positive as that displayed by the Nanjing municipal authorities is not always to be found and indeed has not always been possible (Yu Huanchun).

### 3. AGRICULTURE IN NANJING MUNICIPALITY

#### 3.1 Crop production

Within Nanjing municipality it is useful to distinguish two zones of crop production. The area immediately adjacent to Nanjing city - the city suburbs - is predominantly a vegetable-growing area although there is also a significant amount of animal husbandry carried out within it (see figure 2). It would appear that grain quotas are not required in such areas although they may be required to be self-sufficient in grain; this point is not made clear.

In the three city-administered counties beyond, local economies are mixed, but have an important grain component - here grain quotas are required to be fulfilled. The distinction between the two zones of crop production is well illustrated in the following table:

TABLE 2. CROP PRODUCTION CHARACTERISTICS, NANJING CITY WITH CITY SUBURBS AND THE CITY-ADMINISTERED COUNTIES, 1981, 1982

	Nanjing city and city suburbs	City-administered counties		
	1981	1982	1981	1982
Cultivable land (1000's mu)	340	260	2370	2560
"Vegetable growing base" (1000's mu)	70	n/a	8	n/a
Grain production (million jin)	217	230	1716	1987
Vegetable production (million jin)	566	595	118	135
Hogs. (year-end totals, 1000's)	160	162.2	460	539.1
Goats and sheep (year-end totals, 1000's)	1.5	1.4	23.9	26.2
Cows (year-end totals, 1000's)	2.928	3.827	0.163	0.224

Compiled from materials in: *Chinese statistical yearbook, 1982*, 59-60.  
*Zhongguo Tongji Nianjian, 1982*, 79-80.

(a) Vegetable production

According to Shan Shumu *et al*, vegetable production is the most profitable type of crop production throughout Nanjing municipality. Vegetables are intensively cultivated with a high degree of mechanisation and labour input, and a high commodity rate. (Similar personal observations were made in a recent visit to China - September 1982 to July 1983 - when I was based in Nanjing). Vegetable production is currently expanding in terms of the area sown with vegetables, output per unit area and quality and quantity of produce. Shan Shumu *et al* argued that in 1978 some 600 million jin (300,000 tons) of vegetables were sold in Nanjing city, such a quantity fully satisfying urban vegetable demands conventionally reckoned at 1 jin daily per person although it was not made clear whether all the vegetables retailed were locally produced. More recent figures of vegetable retail sales are not available but there is no reason to believe that the situation has greatly changed.

For the producers of vegetables - predominantly found in the city-suburbs (see Table 2) - the high unit value of vegetable production, combined with easy access to city markets, makes for comparative prosperity. Although no figures are available for actual incomes, Wu Yiyang notes that in 1982 vegetable growers in Nanjing municipality increased output, with it is claimed a resulting increase in income. The rewards for increased vegetable production appear readily available.

(b) Grain production

As Table 2 illustrates, grain production is concentrated in the three city-administered counties of Jiangpu, Jiangning and Liuhe. Yet, with only 2.56 million mu of cultivable land in 1982, it is not surprising that grain production is insufficient to meet all the grain requirements of Nanjing municipality (Shan Shumu *et al.*).

To achieve grain self-sufficiency, it is hoped that the new production management forms may provide sufficient incentives to encourage an increase in grain production. The "all-round contract system" of production responsibility was introduced into Nanjing municipality in 1982 (Liu Jiaren). The introduction of this form of responsibility system has meant the household emerging as the basic production unit in the countryside of Nanjing municipality with 95% of the production teams having adopted this form of responsibility system (Liu Ning). The advantages of such a responsibility system have been well documented in the Chinese media, such a system being an attempt to redress the lack of material incentives within the rural economy following the egalitarian policies which had previously prevailed and which had depressed production enthusiasm (for a further discussion of such a production responsibility system see Wu Xiang; also Diu Qingqi *et al.*).

The introduction of an all-round contract system of production responsibility into Nanjing municipality was seen as important in encouraging production of grain and increasing output in addition to freeing peasant resources to develop agricultural sideline production, thereby generating income. Nanjing Radio 4.7.1983 reports that summer grain output in 1983 did indeed rise significantly following the introduction of the all-round contract system of responsibility.

Increases in grain output in Nanjing municipality can also be attributed to three developments besides the introduction of the all-round contract system of production responsibility : the development of sideline undertakings; the development of an agricultural service industry; and the development of

grain-producing specialized households.

The development of sideline undertakings has contributed to increased grain production in two ways: first, the fact that such undertakings are possible at all may encourage peasants to engage more enthusiastically in grain production; and secondly, the development of pig production in particular and animal husbandry in general should provide organic fertilizer for grain fields. This in addition to the availability of night-soil from Nanjing city itself.

The development of an agricultural service industry is potentially of great value in any attempt to increase grain yields, especially in the light of some of the faults of the production responsibility system which has been predominantly adopted in Nanjing municipality. Following the introduction of the all-round contract system of production responsibility into the area around Dongshan, Jiangning county, the basic production units were changed from 198 production teams to about 5000 agricultural households. While the change was welcomed by the peasants, Liu Daochun *et al* (1983/5) point out that numerous problems arose in grain production.

First, an investigation into 500 households revealed that only one-fourteenth of the land used in paddy-rice rotation was kept for rice-seedling beds, an insufficient proportion to meet cultivation needs. Secondly, there were problems in the adoption of new and improved seed strains. Many households lacked the technical knowledge to use such seed-strains effectively. Thirdly, similar lack of technical knowledge was also found in such areas as disease protection, pest control and fertilizer application. Finally, there was the problem of ensuring supply and distribution of "planned" materials and goods such as fertilizer, diesel oil, pesticides and so forth. In effect, these were all problems caused by the reduced effectiveness of the collective structure following the increased importance of the household as the basic agricultural production unit.

To solve such problems, Liu Daochun *et al* (1983/5) note that in 1983 an agricultural service industry was established to serve the area around Dongshan. The backbone of the service industry was made up of 769 specialized households contracting out for specific service tasks. Such a company can, for example, by contracting to grow rice-seedlings, maintain rice-seedling beds to ensure sufficient quantities for cultivation needs. Scientific and technical households have been able to spread and popularize agricultural technology and scientific practices. The supply and distribution of fertilizers,

diesel oil and pesticides is said to be guaranteed and so forth. If such companies develop, many production problems can be removed and grain output increased; however, other problems may well supervene such as blackmail, protection and corruption networks.

The development of grain-producing specialized households in the Nanjing municipality rural economy may also be of great significance. The growth of specialized households of all kinds has been an important element in the current phase of Chinese rural development. They are considered to consolidate the collective economy (Wang Jifu); utilise surplus labour, increase incentives and raise the motivation of the peasants (Lin Zili); to use small investments and gain quick returns with low levels of costs and high levels of efficiency (Li Yong); and finally, to increase the commodity circulation rate (*People's Daily*, 23.12.1982).

Liu Jiaren, working from incomplete statistics for Nanjing municipality in 1982, noted that specialized households were beginning to emerge in grain production as well as in the diversified economy. Amongst these grain-producing specialized households, Liu Jiaren comments that 499 households each handed over 10,000 jin (5 tons) or more of grain to the state. This represented a commodity rate of about 50%.

While there is no direct evidence from the Nanjing municipality materials, some form of local incentive - in cash, cheap fertilizer supplies or otherwise-for the grain-producing specialized households is most likely to be in operation. The state pricing system as it stands would not encourage such specialization in grain production. However, production units could offer local incentives, similar to the cash subsidies reported by Lin Zili from nearby Yixing county on the western shore of Lake Tai, to make specialization in grain production sufficiently attractive. This kind of local incentive is only possible in a relatively highly developed rural economy. It will become clear in this paper that Nanjing municipality has such a developed rural economy and that such local incentives would not be unexpected.

Some difficulties still remain with grain administration in Nanjing municipality (*Xinhua Radio* 2.7.1983, *Nanjing Radio* 4.7.1983). Most significantly, good grain harvests prompted some grain offices to increase procurement quotas and withhold payments due to the peasants despite signed contracts. This was seen as seriously reducing peasant enthusiasm for production and the Provincial and city C.P.C. committees issued new

guidelines to redress the wrongs caused by such manqueyres and to prevent further instances of the same kind.

Despite such difficulties, the combination of developments in grain production may lead to grain output rising to meet urban demands, hopefully to be achieved without returning to over-emphasis upon grain production, so leaving peasant resources free to develop agricultural sideline undertakings.

### 3.2 The development of sideling undertakings

The diversity of production possibilities as well as the variety of management forms found in Nanjing municipality is quite noticeable in the materials. In this section it is intended to illustrate the variety of management forms while acknowledging the diversity of production possibilities which have developed since the 1978 reforms lifted previous restrictions placed upon sideline undertakings.

A variety of production responsibility systems have been adopted, in particular, as already noted above, the all-round contract system of production responsibility which has given more freedom to households to develop sideline occupations. Specialized households have also played a major role, especially in increasing the commodity rate of agricultural sideline products. Indeed, the number of specialized households has risen from 4500 in 1981 to 45,000 in 1982, a figure which represents 10% of the total number of agricultural households in Nanjing municipality (Liu Ning). In addition a number of "economic combinations" have emerged, whereby a combination of production units develop a particular undertaking.

The state's argument that an expansion in sideline undertakings can bring increased wealth is well illustrated in the cartoon by Du Chongcai "The more you walk, the richer you become". In this cartoon the peasant develops a variety of sideline undertakings and reaps the appropriate reward.



Liu Jiaren gives an example of such "all round" development in Du Jiaying a peasant of the Jiefang production brigade, Xingdian commune, Jiangpu county. Du Jiaying's household comprises seven persons with a labouring ability of five. In 1981, the household contracted out 14.7 mu of responsibility land as well as signing a contract to fish in 40 mu of reservoir. In 1982, the household's production was as follows:

TABLE 3(a). THE PRODUCTION OF DU JIAYING'S HOUSEHOLD. JIEFANG  
PRODUCTION BRIGADE, 1982 (JIN)

Total grain output	32200
Grain handed over to state	20200
Total output of peanuts/sesame	110
Total output of rapeseed	1110
Total output of freshwater fish	7000
Total output of poultry meat	1100

Compiled from materials in : Liu Jiaren.

The income gained from the production shown in Table 3(a), with the addition of three pigs, was as follows:

TABLE 3(b). THE INCOME OF DU JIAYING'S HOUSEHOLD. JIEFANG  
PRODUCTION BRIGADE, 1982 (YUAN)

Gross income	14600
Net income	11000
Net income per labourer	2200

Compiled from materials in : Liu Jiaren.

As Tables 3(a) and 3(b) illustrate, in Du Jiaying's household incomes are clearly very high while at the same time production costs are noticeably very low. The commodity rate of such a household, according to Liu Jiaren, can be as high as 90%, though this household is, of course, exceptional. Households with such an all-round development of sideline undertakings may be considered quite extreme examples. More often a household tends to concentrate on one particular sideline undertaking even to the extent of becoming a specialized household.

Specialized management forms are becoming increasingly common. *Xinhua Ribao* 29.4.1983 for example comments upon Han Baofeng of Shizilu production team, Jinghua production brigade, Quanshui commune in Liuhe county, Han Baofeng became a specialized producer after increasing the number of bees he kept :

TABLE 4. HAN BAOFENG - DEVELOPMENT OF BEE-KEEPING AND INCOME 1978, 1981, 1982

	1978	1981	1982
Number of hives	18	35	42
Output of honey (jin)			4500
Output of Queen bee syrup (jin)			64
Gross income (yuan)			10300
Net income (Yuan)			8400

Compiled from materials in *Xinhua Ribao* 29.4.1983.

As a result of increased output, Han Baofeng's income improved considerably and once more production costs were significantly low.

The use of specialized households in pig production has been noted by Lin Zili. My own investigation to the south of Nanjing city revealed the use of specialized teams for pig production. Huashenmiao production brigade comprises about 1000 people divided up into 10 production teams. One such team specialized in breeding pigs, more than 300 being bred in 1983. For such work, average per capita incomes in 1983 were expected to be 600 yuan with a further 600 yuan in distributed income. There were clear indications of material prosperity reflecting these high incomes.  
(Conversations with peasants at Huashenmiao).

A further development of management form involves the integration of production units in order to improve production. Zhou Zhengrong gives the example of a group of specialized households from Pukou who combined in order to improve mink production. When these households were engaged in mink-breeding separately many problems arose. There were, for instance, problems with the supply of fish for food. Each day a single mink requires 0.3 jin of fish and this involved a member of each household daily travelling into Nanjing city to the aquatic products factory to buy fish. This daily journey involved travelling expenses as well as manpower. Additionally there were breeding difficulties, not least being the short mating season of the mink.

Twenty such mink-breeding households decided to develop into a "mutual aid" economic unit. The households paid three yuan per mink in association fees, fees which were used to develop breeding techniques. Furthermore, one person is now permanently employed to purchase fish from the aquatic products factory, delivering the fish to three supply points from where various

households collect their own fish supplies. Regular meetings are also held to exchange views on production techniques. Since the association of mink breeding households was established, breeding techniques and incomes have improved. The twenty households now have 253 mink in all, 149 above the 1982 figure.

This form of integration amongst individual producers appears quite straightforward. However, numerous authors comment on a more complex form of integration between various levels of production units. Sang Wangbang *et al* for example comment upon the integration of state, collective and individual dairy producers which they claim has successfully developed the dairy industry of Nanjing municipality. Similarly, She Yong *et al* claim that the integration of the commune, production brigades, production teams and specialized households to develop poultry-breeding on Maiqiao commune has also had favourable results. Detail on these cases are scanty. It may well be that some form of integration has been carried out in the above examples, but it remains unclear as to how such integration has favourably influenced production.

The Nanjing municipal authorities hope that such specialization and integration of production units will considerably improve the range and scale of sideline production in the municipality. A *Xinhua Ribao* 13.4.1983 commentary for example argues that fish-farming by specialized households is the means to full satisfaction of urban demands for fish.

Nevertheless, despite the healthy development of Nanjing municipality's agricultural sector, some comment upon the use of contracts in the current phase must be made. Increasingly it is recommended that agricultural production contracts be signed for periods of fifteen years and more (*Xinhua* 11.6.1984). Indeed, in the development of economic forests on previously barren hillslopes in Nanjing municipality (orchards, tea-gardens and so forth) Liu Daochun *et al* (1983/1) and Gao Tongzhi separately note the use of long-term contracts in order to provide the stability which is so important in this kind of production, when much investment is necessary before returns are possible. Indeed Guo Tongzhi notes that contracts were being signed for up to thirty years.

However, as Xu Zhonghai points out in relation to fish-breeding in Xingdian commune, Jiangpu county, initially there was a reluctance to sign contracts because of a general wariness about the stipulations of such

contracts<sup>1</sup>, concern about additional workload and so forth and those peasants that did sign contracts become responsible for significant amounts of water resources. This initial wariness could have quite significant repercussions. First, as it becomes clear that much prosperity can be gained from developing the breeding of fish, the number of people who want to develop fish-breeding will increase. This increase is likely to be in excess of the number of contracts which are available for the development of fish-breeding. Such contracts have to be limited in order to avoid excessive competition for resources and markets (Xu Zhonghai) - but the means of limitation are problematical, possibly not free from corruption, and certainly not free from some degree of arbitrariness.

The second repercussion reflects the increasingly long-term nature of contracts. If households are unwilling to sign contracts in the current phase of rural development, they may not have the opportunity to do so in the future. This situation clearly leaves much scope for corruption in the allocation of resources and this may become of increasing importance because of the almost inevitable imbalance in rural China between the demand for and supply of resources embodied in contracts. Nevertheless, in Nanjing municipality at the present time there still appears to be sufficient opportunity to develop sideline undertakings and improve livelihoods.

---

<sup>1</sup> Such wariness stemming not only from problems in the current phase as noted above in *Xinhua Radio* 2.7.1983 and *Nanjing Radio* 4.7. 1983, but also as a throwback to the 1950's when the use of contracts experienced a number of difficulties which severely dampened peasant enthusiasm for them (for a detailed summary of the use of contracts in this period see R.M. Pfeffer).

#### 4. INDUSTRIAL DEVELOPMENT IN NANJING MUNICIPALITY

Industry has very much developed in importance since 1949:

TABLE 5. THE RELATIVE CONTRIBUTION OF INDUSTRY TO THE GROSS OUTPUT  
VALUE OF NANJING MUNICIPALITY, 1949, 1977<sup>1</sup> (PERCENTAGES)

	1949	1977
Gross output value:		
1. Agriculture	72	7
2. Industry	28	93
(a) light industry	76	30
(b) heavy industry	24	70

<sup>1</sup> It is unclear from the text if the figures given in Table 5 are for the same area. Certainly, in 1949, Jiangning and Jiangpu counties were not part of Nanjing municipality.

Compiled from materials in : Shan Shumu et al. 155-157.

Two types of industrial development can be distinguished in Nanjing municipality: first, the overspill of large and medium-sized industries from Nanjing city into the city-suburbs and the city-administered counties; and secondly the development of commune and brigade-run industrial enterprises which has principally taken place in the city-administered counties (the areas involved are shown in Figure 2). As the following table illustrates, the industry of Nanjing city and the city suburbs is the more considerable:

TABLE 6. INDUSTRIAL PRODUCTION CHARACTERISTICS. NANJING CITY WITH THE CITY SUBURBS AND THE CITY-ADMINISTERED COUNTIES, 1981

	Nanjing city and city suburbs	City-administered counties
<b>Number of industrial enterprises:</b>		
1. State owned	330	110
2. Collective owned	894	766
<b>Gross industrial output value<sup>1</sup></b> (billion yuan)		
1. Total	7.21	0.44
2. State owned enterprises	5.43	0.18
3. Collective owned enterprises	1.59	0.25
<b>Profits made and taxes paid</b> (billion yuan)		
1. State owned enterprises	1.32	0.06
2. Collective owned enterprises	0.19	0.05

<sup>1</sup> Gross industrial output value at 1970 constant prices.

Compiled from materials in : *Chinese statistical yearbook 1981*, 59.

#### 4.1 The overspill of industry into the city suburbs

Yao Shimou et al propose three stages in the development of industry in Nanjing municipality:

TABLE 7. THE ABSOLUTE INCREASE AND PHYSICAL SPREAD OF LARGE AND MEDIUM SCALE INDUSTRIAL ENTERPRISES IN NANJING MUNICIPALITY 1949 TO 1978<sup>1</sup>

	Newly constructed enterprises		Physical location of industrial enterprises
	Large scale	Medium scale	
1949-57	31	46	Within Nanjing city
1958-68	15	60+	Beginnings of the expansion into the city suburbs
1969-78		30+	Spreading through the city suburbs into the city administered counties

<sup>1</sup> Large and medium-scale enterprises are defined as having over 1000 and 500 employees respectively.

Compiled from materials in : Yao Shimou et al, 306-7.

The physical spread indicated in Table 7 is shown in Figure 3. Yao Shimou *et al* and Shan Shumu *et al* both give examples of the spread of industry into the city suburbs and city-administered counties. Machinery industries for example have spread into the nearby suburbs to the north of Nanjing city. Chemical and smelting industries have been noted spreading further afield in towns such as Dachang, Xishanqiao and Banqiao (Yao Shimou *et al*, 306-7, Shan Shumu *et al*, 155-7).

The large and medium-scale industries which have developed in the city suburbs and city-administered counties are very much features associated with a periurban environment; enterprises of such size would not normally be associated with the rural economy. These enterprises are predominantly in state, provincial or municipal ownership and management. Their rural location must necessarily represent official decisions taken or ratified at levels above the counties.

The advantages that this overspill of industry offers to the rural economy are numerous. It creates a large number of employment opportunities. Indeed, in the case of some towns such as Dachang, Liuzhen, Qixiashan and so forth, so many employment opportunities of urban origin are to be found that according to Li Shunwu, these towns have become "satellite towns". The creation of adequate communications links between such towns and Nanjing city for industrial purposes may be of importance in further developing commune and brigade-run industrial enterprises located in such small towns, as well as improving commercial links for local peasants and enterprises.

#### 4.2 The development of commune and brigade-run industrial enterprises

Much of the development of commune and brigade-run industrial enterprises has been based in what Li Shunwu called small towns, commune headquarters and rural market towns (see Figure 1). Such small-scale industrial enterprises not only provide employment opportunities but can also provide goods and services for agriculture, and their profits may be used to provide accumulation funds with which to strengthen the agricultural resource base or which may be used as subsidies for the costs of grain outputs. Most significantly, these enterprises also raise rural incomes. Consider the following table for Jiangpu county:

TABLE 8. COMMUNE AND BRIGADE-RUN INDUSTRIAL ENTERPRISES IN JIANGPU COUNTY, 1981

Area of Jiangpu county ( $\text{km}^2$ )	737
Population (1000's)	260
Cultivate land per capita (mu per capita)	1.54
Total number of commune and brigade-run industrial enterprises	352
Total employed in commune and brigade-run industrial enterprises	
1. Number	14451
2. As a %age of total labour force	6.7
Gross output value of commune and brigade-run industrial enterprises (million yuan)	29.1631

Compiled from materials in : Zhang Fubao, 143.

According to Zhang Fubao, although no figures are given, the commune and brigade-run industrial enterprises of Jiangpu county are an important source of agricultural construction funds as well as providing employment opportunities for the large surplus labour force.

In the literature concerned with such industrial enterprises in Nanjing municipality, emphasis is placed upon the development of agricultural produce processing industries. The development of these processing industries - often in the framework of Agricultural-Industrial-Commercial integrated complexes - has numerous advantages. Li Shunwu claims that agricultural sideline production and the diversified economy are often promoted by the development of such Agricultural-Industrial-Commercial complexes. Furthermore, they provide an outlet for surplus rural labour; they can reduce transport costs between towns and countryside as a result of the *in situ* processing of agricultural produce; by-products can be more easily utilised for manure or fodder and so forth (for a further discussion of the role of Agricultural-Industrial-Commercial complexes see Wang Songpei). Such benefits are claimed by Zhang Fubao for the agricultural-industrial-commercial complex established at Xinzhuan production team, Jianxiang commune in Jiangpu county.

Yet, in the development of commune and brigade-run industrial enterprises, there are still numerous problems to overcome. Zhang Fubao outlines problems experienced by a variety of industrial enterprises in Jiangpu county; first, poor planning resulted in competition for markets and raw materials between various commune and brigade-run industrial enterprises. Secondly, once established the ensuing levels of environmental pollution were very high.

Thirdly, enterprises were often inappropriately sited next to hospitals or schools for example. Finally, there was often a considerable waste of land when such industrial enterprises were established. Nevertheless, with proper planning Zhang Fubao believes such problems can be overcome and that the prospects for such commune and brigade-run industrial enterprises are bright.

While it is true that the development of commune and brigade-run industrial enterprises in the current phase remains an important development trend in the rural economy of Nanjing municipality and China as a whole, in many ways the full potential of such small-scale industrial enterprises remains unrealised and will remain unrealised while the limits imposed by the state plan, the inadequacy of the state commercial system and so forth continue.

##### 5. COMMERCIAL DEVELOPMENT IN NANJING MUNICIPALITY - A KEY TO PROSPERITY

Thus far, this paper has sought to outline the production possibilities to be found in Nanjing municipality. With the partial exception of the overspill of large and medium-scale industry into the city suburbs and city-administered counties and the significant extent of vegetable production (an exception mainly of degree), the production possibilities in themselves are no different from those of other prosperous rural areas in Southern Jiangsu.

However, the extent to which such production undertakings may be developed and the ability of production units to use certain beneficial management forms to their full advantage will be determined by the effectiveness of the commercial infrastructure. The increasing use of specialized households, the wide-ranging sideline undertakings, the development of agricultural-industrial-commercial complexes, and the growing importance of commune and brigade-run industrial enterprises all represent growing specialization of production and an increasing rate of commodity circulation in the rural economy.

To permit the specialization of production and increasing rate of commodity circulation that has already been demonstrated in the rural economy of Nanjing municipality, the commercial infrastructure in Nanjing municipality has had to handle increasing burdens placed upon it. Further development in production is bound to increase these burdens still more.

Two aspects to this question of commercial effectiveness can be identified: physical accessibility to urban markets, that is the availability of adequate roads, waterways, and vehicles, the versatility of transport systems and so

forth; and the presence of an appropriate marketing organization to market the products of the rural production units and also to supply producer goods from the cities.

#### 5.1 Physical accessibility to urban markets

Inevitably, those areas immediately adjacent to a major city - periurban areas - have relatively easy access to urban markets. This is one of the principal advantages of periurban production units. However, even within Nanjing municipality there are still some problems of physical accessibility. Zhang Fubao notes the problems of road and river communications between Nanjing city and Jiangpu county. Indeed, he describes (p.165) the communications network as "still relatively backward". It seems that 30% of the production teams in Jiangpu county have no ready access to a public highway. Even the road linking Nanjing city and Zhujiang, the county seat, is narrow and poor in quality. Indeed, because of the need to cross the Yangzi river by the Nanjing road and rail bridge, the distance by road between Nanjing city and Zhujiang is some 24 km, considerably further than the distance suggested in Figure 1 (Zhang Fubao). While the river network is better it is not as fully utilised as it might be, and of course its use is confined to its margins.

Shen Xing *et al* also note that in more peripheral areas means of transport are scanty or totally lacking. This situation is illustrated in Figure 4 where major long-distance and rural road routes have been plotted. Off these routes the standard of roads, from my own observations in Nanjing municipality, is likely to be poor and a road journey to the Nanjing city markets difficult and time-consuming. Clearly this situation can only be to the detriment of the rural producers.

However, in recent years there have been claims in the media that improvements have been made in the availability of transport. Hu Xueyi notes that a great deal of money has been invested by the city and the provincial authorities in the improvement of the ferry services between Nanjing city and the city-administered counties. In spite of the construction of the Nanjing road and rail bridge, as Figure 4 illustrates, the Yangzi remains the principal obstruction between Nanjing city and much of Liuhe and Jiangpu counties. New Ferry services have been established and the ferries themselves have been improved, many previously labour-powered ferries being mechanized. The following table gives details of the Qiba ferry which runs between Nanjing city and Shuanglong production brigade, Xiangyang commune, Jiangpu county,

a distance of some 3.5 km :

TABLE 9. IMPROVEMENTS IN THE QIBA FERRY SERVICE BETWEEN NANJING CITY AND SHUANGLONG PRODUCTION BRIGADE, JIANGPU COUNTY, 1978-1979

	1978 Labour powered ferry 8 month flood- water period	1979 Mechanized ferry. No seasonal diff's
Average number of river crossings per day	2-3	3-4
Passengers carried per crossing	10+	10+
Average number of passengers carried per day	20-30	40-50

Compiled from materials in *Li Hu Xueyi*

Since the introduction of the mechanized ferry, services have improved considerably, improving access to markets. This improvement is even greater when considering the fact that crossings were previously stopped if the windspeed was above force 3. With the new mechanized ferries, crossings are now possible in force 4-5 winds.

Shen Xing *et al* note that outlying areas in Nanjing municipality have established transport specialized households to meet the needs of the peasants for transport facilities. Shuangzha commune in the Yuhuatai region for instance has forty households who bought tractors and engaged in commercial transport. (Tractor in this sense most probably refers to the hand-held tractors which are common in Nanjing municipality. The tractors would be attached to a wagon of some sort for transport purposes).

According to Shen Xing *et al*, these transport specialized households charge relatively low transport fees and provide an excellent service, meeting peasant transport needs to carry agricultural sideline produce to urban markets. Similarly, these transport specialized households also sign contracts with commune and brigade-run industrial enterprises to transport their produce.

The development of versatile transport facilities remains an important determinant of the extent of development in the more peripheral parts of Nanjing municipality, where physical accessibility becomes increasingly

difficult. However, as Figure 4 illustrates, such physical inaccessibility can only be due to a lack of adequate capital construction funds for investment in roads, waterways and bridges and not the inhospitality of the terrain.

### 5.2 The availability of marketing organisations

In the past, even where physical accessibility to markets was adequate, marketing organisations were inefficient and ineffective. Liu Daochun *et al* (1983/2) make a standard political comment about the negative impact upon commerce of "leftist influences". This may well be true but the state commercial organs remain grossly inefficient. Whatever the causes of such inefficiency, Liu Daochun *et al* (1983/2) p.?, comment that "the rural economy (of Nanjing municipality) has developed quickly but commodity circulation has remained an outstanding problem". The beneficial impact of the 1978 management reforms comes to nothing unless the commercial system also develops.

To improve commodity circulation, one significant trend in Nanjing municipality has been the recent emergence of individual households specializing in commerce. Such households enliven urban and rural markets and promote rural economic development. Liu Daochun *et al* (1983/2) and Zou Yongxiang *et al* in separate articles are at pains to point out that the development of such commerce specialized households does not hinder state or co-operative commerce. It is difficult to know how true this claim is but the fact that the authors are cautious on this issue indicates the continuing nervousness of the media in criticising state commerce.

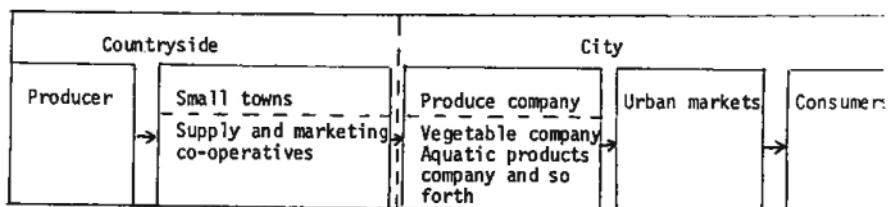
In Jiangning county approximately 130 households were said to be specializing in commerce in 1983 (Liu Daochun *et al* (1983/2)), the corresponding figure for Liuhe county being 739 (Zou Yongxiang *et al*). Such households were mainly concerned with the marketing of fruit, aquatic produce, poultry and so forth, essentially agricultural sideline produce.

Li Shunwu also points out the importance of small towns, commune headquarters and rural market towns as supply and distribution centres in Nanjing municipality. (For a wider discussion of the role of small towns and rural market towns see Zheng Zonghan). It is the hope of Li Shunwu and others that such small towns can act as important links in commodity circulation channels, with supply and marketing co-operatives located in such settlements.

From my own investigation of the official marketing system in Nanjing municipality the role of small towns in that system - in principle at least -

was as follows:

DIAGRAM 1. THE OFFICIAL MARKETING SYSTEM IN NANJING MUNICIPALITY



Compiled from interviews in Nanjing, 1982-1983.

It would appear the functions of small towns are apparently vital, and their potential likely to be great.

Little quantitative data - transport costs, availability of transport and so forth - exists on the adequacy or otherwise of the commercial system in Nanjing municipality. Most authors indicate that the situation is improving, sometimes because of the intervention of bodies outside the official state commercial system, but there are still problems to overcome. These problems will inevitably prevent the rural economy of Nanjing municipality developing to its full potential despite the significant progress which has been made in recent years through the introduction of production responsibility systems into agriculture, the development of specialized and integrated production forms and so forth. The more peripheral areas still experience quite severe commercial difficulties and improvements have yet to be made. This point was argued strongly by Zou Yongxiang *et al* who, while applauding the improved commercial situation in the southern half of Liuhe county, point out the continuing problems of the more distant northern half of Liuhe county, problems which continue to inhibit rural development and prevent the high incomes which exist in the city suburbs and those parts of the city-administered counties close to Nanjing city whose production possibilities have developed to give high incomes. However, the development of northern Liuhe, only 30 to 50 km away from Nanjing city, remains limited.

#### 6. SOME PARALLEL MATERIALS FROM SHANGHAI

Hua Xicheng, using materials for a number of communes in the suburbs of Shanghai, was able to demonstrate a distinct fall in income with distance from the city. He argues that such a fall in income is related to the declining production and marketing possibilities with distance from the urban centre:

TABLE 10(a). SELECTED COMMUNES WEST OF THE PUJIANG<sup>1</sup> : DISTANCE FROM THE CITY AND AVERAGE PER CAPITA INCOMES, 1981

Commune	Distance from the city (km)	Average per capita income (yuan)
Longhua	5.2	400
Hongqiao	8.0	429
Jianguan	8.0	364
Wujiaochang	10.0	438
Dachang	10.0	374
Qiyi	12.0	346
Gongnan	13.6	375
Jiuting	17.2	284
Luonan	20.4	302
Wulitang	29.6	270
Sheshan	30.0	252
Dagang	37.6	250
Xinwu	42.0	235

<sup>1</sup> See Figure 5.

Source : Hua Xicheng, 176.

TABLE 10(b). SELECTED COMMUNES EAST OF THE PUJIANG<sup>1</sup> : DISTANCE FROM THE CITY AND AVERAGE PER CAPITA INCOMES, 1981

Commune	Distance from the city (km)	Average per capita income (yuan)
Liuli	6.0	371
Beicai	10.0	346
Heng	18.0	271
Tanzhi	23.6	242
Liuzao	26.0	259
Sanzao	29.6	226
Siruan	39.2	249
Wanyang	44.4	240
Pingan	44.8	241
Pengzhen	47.2	236

<sup>1</sup> See Figure 5.

Source : Hua Xicheng, 176.

Graphically this information shows clearly the decline in income with distance from the city (see Figures 6(a) and 6(b)). In his article, Hua Xicheng distinguishes four production zones (see Figure 3) : from the edge of Shanghai city to 10 km; 11 km from the city to 20 km; 21 km from the edge of the city to 35 km; and 36 km from the city to the municipality boundary. (More natural breaks are distinguishable at about 12 km, 25 km and 35 km for the communes west of the Pujiang, and 12 km and 35 km for those east of the Pujiang. For current purposes however, the boundaries distinguished by Hua Xicheng will be used).

The characteristics of these production zones can be tabulated as follows:

TABLE 11. ZONAL CLASSIFICATION OF THE COUNTRYSIDE IN SHANGHAI MUNICIPALITY, 1981

Distance from the city	0 - 10 km	11 - 20 km	21 - 35 km	36 km to the edge of municipality
Number of communes:				
1. West of Pujiang	12	18	37	
2. East of Pujiang	7	17	31	54
Average per capita income (yuan) :				
1. West of Pujiang	377	326	248	c.228
2. East of Pujiang	319	292	252	c.232
Production characteristics	Vegetables Dairy farming Horticulture Very strong commune and brigade-run industrial enterprises	Vegetables Cotton, Dairy farming, Well- developed commune and brigade-run industrial enterprises	Grain food- stuffs; Cotton farming, Much less commerce and brigade-run industrial enterprises	Grain foodstuff Cotton; Fisheries, Limited commu- nity and brigade-rur- al industrial enterprises

Compiled from material in : Hua Xicheng, 175-181.

In addition to the fall in income with distance from the city, it is interesting to note from Table 11 that average per capita incomes in zones 0-10 km and 11-20 km are greater in the communes to the west of Pujiang, although in the more distant zones incomes are very similar.

When considering the production undertakings in the zones, as noted in Table 11, some of the reasons for this fall in income with distance from the

city become clear. The areas close to the city not only have a greater number of commune and brigade-run industrial enterprises, but also a greater development of vegetable growing and other commodity products such as dairy produce. The high economic value of vegetable and other commodity produce ensures rural prosperity and high incomes. The State's insistence upon grain production for units which cannot lay claim to supplying urban vegetable needs reduces both incomes and the extent of sideline undertakings. So to a degree, Hua Xicheng's arguments reveal not only the operation of market opportunities, but also administrative action by the State.

Increased distance from the city will also lead to higher transport costs, reducing net incomes. Increased distance from the city also means declining accessibility to urban markets which would inhibit a high commodity circulation rate and also inhibit the development of commune and brigade-run industrial enterprises. Both would tend to reduce potential rural incomes - though to be sure, all Shanghai communes, even those more distant from the city, are still prosperous by Chinese standards.

Though such comprehensive income data is not available for Nanjing municipality, similar observations about rural production possibilities in the municipality can be made. In Nanjing municipality, vegetable growing areas in the city suburbs would be expected to have higher per capita income levels than in the city-administered counties where the State insists on grain production. Furthermore, industrial employment opportunities and the prospect of higher industrial incomes are greater in the city suburbs than in the city-administered counties.

Again, as already noted by several authors, production possibilities and income opportunities tend to fall as the marketing of agricultural sideline produce and the products of commune and brigade-run industrial enterprises becomes more difficult with increased distance from the city, with transport costs also rising. Even so, as in Shanghai municipality, rural incomes are still likely to be higher than in many rural units within China because of Nanjing municipality's superior agricultural resource base.

#### 7. CONCLUSIONS

To sum up, the utilisation of the good agricultural resource base of Nanjing municipality, facilitated by policy changes since 1978 and the availability of new management forms, has resulted in considerable development in the rural economy of the municipality.

Rural incomes are high, a result of the new production management forms which have restored peasant enthusiasm for production, and also the development of rural industrial enterprises, agricultural sideline undertakings, and vegetable production, the marketing of the produce of these various production undertakings facilitated by the proximity of a large urban market.

However, commercial accessibility to the large urban market is limited by the inefficiency of commercial organisations and the inadequacy of transport facilities especially for the more distant production units. Although, even in the more peripheral areas of Nanjing municipality, the agricultural resource base determines that rural incomes remain comparatively high, physical barriers of distance, river courses and so forth limit development in Northern Liuhe and South-Western Jiangpu counties in comparison with North-East Jiangpu, South-Western Liuhe and much of Jiangning counties.

Bearing in mind the good agricultural resource base of Nanjing municipality a distinction between those areas which can benefit significantly from proximity to an urban area and those which cannot, though important, is not as important as it might be in those areas whose agricultural resource base is unable or less able to spring the high output poor trap. In either case, the key factor in making a distinction between areas which do receive significant benefits from their proximity to the urban centre and those which do not is grain production - that is to say, intervention by the state planning machinery. Production units which are allowed to concentrate on vegetable production benefit considerably from their physical location at the expense of production units in which the state insists upon grain quotas. There does not appear to be any explanation as to how the state makes such a fundamental distinction and it appears inevitable that its apparently arbitrary nature opens up further opportunities for corruption.

Commercial inefficiency and inadequacy remains the key limitation upon the potential development of the rural economy in Nanjing municipality. The state's inability or unwillingness to invest in the basic commercial infrastructure of the more peripheral areas, combined with the inability of those peripheral production units to accumulate investment funds for such capital construction, dictate that this weak commercial situation is likely to continue, limiting the potential scale and spread of specialisation and development which might otherwise be possible in Nanjing municipality.

In discussing rural development on the urban fringe, there is also the question of which benefits most, urban or rural area. In Nanjing municipality the urban area gains a stable supply of foodstuffs, industrial raw materials, a variety of finished and semi-finished industrial products and so forth. The rural area, though benefitting from high incomes and employment opportunities, still have difficulty in obtaining consumer and producer goods (personal interviews conducted in Nanjing municipality). Zhang Fubao also points out that standard of hygiene, education, recreation facilities and so forth are still comparatively low. This is also illustrated in the following table:

TABLE 12. SERVICES - SELECTED VARIABLES. NANJING CITY WITH THE CITY SUBURBS AND THE CITY-ADMINISTERED COUNTIES, 1981

	Nanjing city with city suburbs	City-administered counties
Gross capital investment in state-owned cultural, educational, health and research departments (yuan per person)	38.83	1.19
Gross capital investment by civil public utilities department (yuan per person)	22.14	0.52
Secondary schools:		
1. Total number	169	155
2. School:total population ratio	1:12349	1:10277
3. School:secondary students ratio	1:769	1:451
4. Teacher:student ratio	1:12.6	1:18.5
Primary schools:		
1. Total number	456	1225
2. School:total population ratio	1:4576	1:1300
3. School:primary students ratio	1:395	1:163
4. Teacher:student ratio	1:19.8	1:23
Hospital beds:		
1. Total number	11219	3770
2. Beds:population ratio	1:186	1:422

Compiled from materials in *China statistical yearbook 1981*, 59-62.

Thus, while the development of the rural economy on the urban fringe in the current phase as illustrated in Nanjing municipality is considerable, the limitations placed upon such development - similar limitations being found

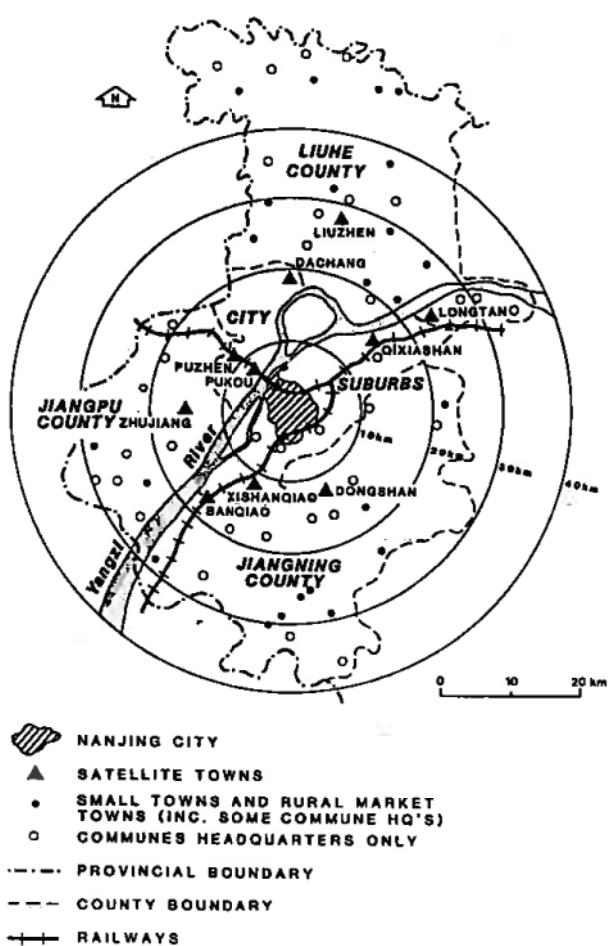
throughout much of the Chinese rural economy - reduce its potential. Nevertheless, the rural economy of Nanjing municipality has been able to spring the high output poor trap and the proximity of a major urban centre is central in this development. But the problems encountered in such a favoured environment must cast some considerable doubt upon the potential for development in less favoured urban fringes, and even more upon exclusively rural environments.

## REFERENCES

- Chinese statistical yearbook, 1982* (Beijing - 1982)
- Diu Qingqai and Yu Zhan "Study comrade Deng Zihui's viewpoint on the agricultural production responsibility system", *People's Daily* 23.2.1982 tr. FBIS/DR/PRC 5.3.1982, k.16-20.
- Du Chongcai - Cartoon "The more you walk, the richer you become" *Xinhua Ribao* (New China Daily) 5.5.1983, p.2.
- Gao Tongzhi "Huashan production brigade plant over 500 mu of tea plants" *Xinhua Ribao* (New China Daily) 20.3.1983, p.1.
- Hu Xueyi "Nanjing and neighbouring counties' river ferries take on a new appearance" *Xinhua Ribao* (New China Daily) 2.4.1983, p.2.
- Hua Xicheng "The model of agricultural allocation and productivity in the suburbs of Shanghai" *Jingji Dili* (Economic Geography) 1982 (3) 175-181.
- Li Shunwu "The distribution of cities and towns in the Nanjing area" *Jingji Dili* (Economic Geography) 1982 (3) 228-232.
- Li Yong "Breeding by specialized households - a good way to develop animal husbandry" *Red Flag* 1.10.1980, tr. FBIS/CR/RF No.19, 41-46.
- Lin Zili "The new situation in the rural economy and its basic direction" *Social Sciences in China* 1983 (3) 112-146.
- Liu Daochun and Sheng Peide (1983/1) "Undertake work on hillslopes - transforming burdens to riches" *Xinhua Ribao* (New China Daily) 24.1.1983, p.2.
- Liu Daochun, Jiang Yanghe and Ruan Yide (1983/2) "Enthusiastically support the peasants who are entering into circulation" *Xinhua Ribao* (New China Daily) 10.2.1983, p.1.
- Liu Daochun and Sheng Peide (1983/5) "Dongshan countryside's agricultural service company's seven points for households" *Xinhua Ribao* (New China Daily) 21.5.1983, p.1.
- Liu Jiaren "10000 character households appear in Nanjing's suburban counties" *Xinhua Ribao* (New China Daily) 1.1.1983, p.1.
- Liu Ning "Nanjing's 84 specialized and key households are elected as agricultural models or advanced production units" *Xinhua Ribao* (New China Daily) 23.1.1983, p.1.
- Nanjing Radio* "Jiangsu's Nanjing city to lessen peasants burden" 4.7.1983, tr. FBIS/DR/PRC 8.7.1983, 0.4-5.
- People's Daily* "Smooth commodity circulation needed in rural areas" 6.8.1981, tr. FBIS/DR/PRC 9.8.1981, k.6-7.
- People's Daily* "Further develop the new phase of agriculture which has already opened up" 23.11.1982, tr. FBIS/DR/PRC 4.1.1983, k.2-20.
- R.M. Pfeffer "Contracts in China revisited, with a focus on agriculture, 1949-62" *China Quarterly* 1966 (28) 106-129.
- Sang Wangbang and Zhou Zhengrong "Nanjing's suburban counties emerge as breeders of popular milk cows" *Xinhua Ribao* (New China Daily) 16.3.1983, p.1.
- Shan Shumu, Wang Weiping, Wang Tinghuai and Bian Zhu *Jiangsu:Dili* (Jiangsu: a geography) 1980 (Jiangsu).
- She Yong and Zhang Zhenshe (picture section) "Poultry-breeding factory" *Xinhua Ribao* (New China Daily) 15.3.1983, p.2.
- Shen Xing and Liu Youde "Shuangzha commune supports peasants engaged in commercial transport" *Xinhua Ribao* (New China Daily) 17.2.1983, p.2.

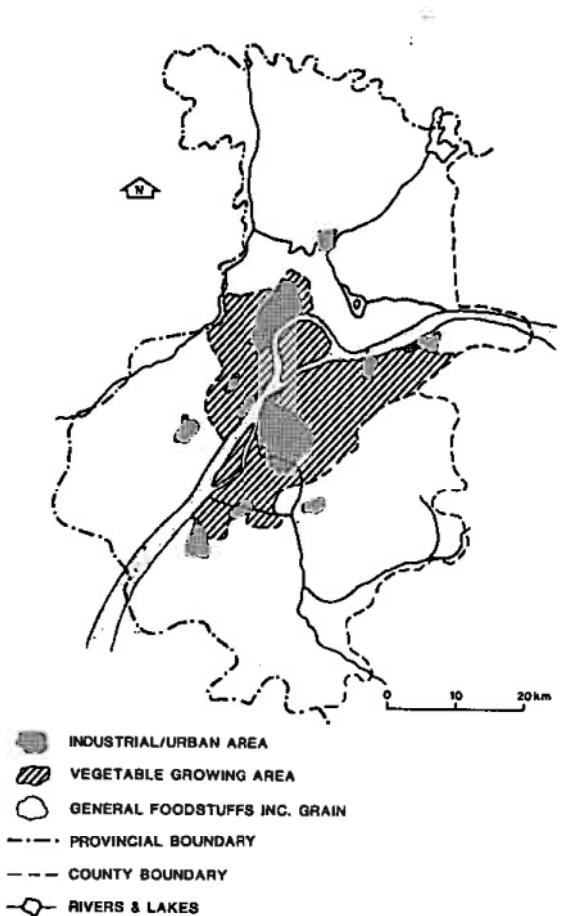
- Wang Jifu "How the system of contracted responsibilities with payment linked to output is implemented in the rural areas of Yantai prefecture" *Red Flag* 16.2.1983, tr. FBIS/CR/RF No.4, 26-33.
- Wang Qiang and Shi Kaixi "The afforestation of Nanjing's suburban counties barren hills" *Xinhua Ribao* (New China Daily) 22.2.1983, p.1.
- Wang Songpeif "China's agricultural-industrial-commercial integrated enterprises" *Jingji Yanjiu* (Economic Research) 1980 (7) 42-47.
- Wu Xiang "The open road and the log bridge - a preliminary discussion on the origins, advantages and disadvantages, nature and future of the fixing of farm output quotas for each household" *People's Daily* 5.11.1980, tr. FBIS/DR/PRC 7.11.1980, L.21-29.
- Wu Yiyang "Nanjing vegetable supply bases offer guarantees" *Xinhua Ribao* (New China Daily) 28.3.1983, p.1.
- Xinhua* "CPC issues 1984 document number 1 circular" 11.6.1984, tr. FBIS/DR/PRC 13.6.1984, K1-11.
- Xinhua Radio* "Jiangsu party circular on peasant's burden" 2.7.1983, tr. FBIS/DR/PRC 8.7.1983, 03-4.
- Xinhua Ribao* "Han Baofeng keeps bees to become wealthy" (New China Daily) 29.1.1983, p.2.
- Xinhua Ribao* commentary "Develop fish production specialized households" (New China Daily) 13.4.1983, p.1.
- Xu Zhonghai "The hard-working style of a female model worker" *Xinhua Ribao* (New China Daily) 4.2.1983, p.2.
- Yao Shimou and Zhang Fubao "The development of Nanjing after liberation and its further rational development" *Jingji Dili* (Economic Geography) 1982 (4), 306-310.
- Yu Huanchun "A prosperous enterprise meets numerous hardships - what Daqiu village in Tianjin municipality's Jinghai county has encountered on the road to prosperity" *People's Daily* 10.6.1984, tr. FBIS/DR/PRC 18.6.1984, k12-16.
- Zhang Fubao "A preliminary research of the development of small towns in Jiangpu county" *Jingji Dili* (Economic Geography) 1982 (2) 139-146.
- Zheng Zonghan "On small towns" *Social Sciences in China* 1983 (4) 164-190.
- Zhongguo Tongji Nianjian 1982* (Chinese Statistical Yearbook 1982) (Beijing 1983).
- Zhou Zhengrong "Peasants from Nanjing voluntarily organize mink-breeding meeting" *Xinhua Ribao* (New China Daily) 4.2.1983, p.2.
- Zou Yongxiang and Wang Yongcong "700 households in Liuhe county engage in trade" *Xinhua Ribao* (New China Daily) 18.5.1983, p.2.

Figure 1. Nanjing municipality



Compiled from materials in Li Shunwu p.231, Japanese military staff maps

Figure 2. Land use in Nanjing municipality



Materials source. Li Shunwu p.231.

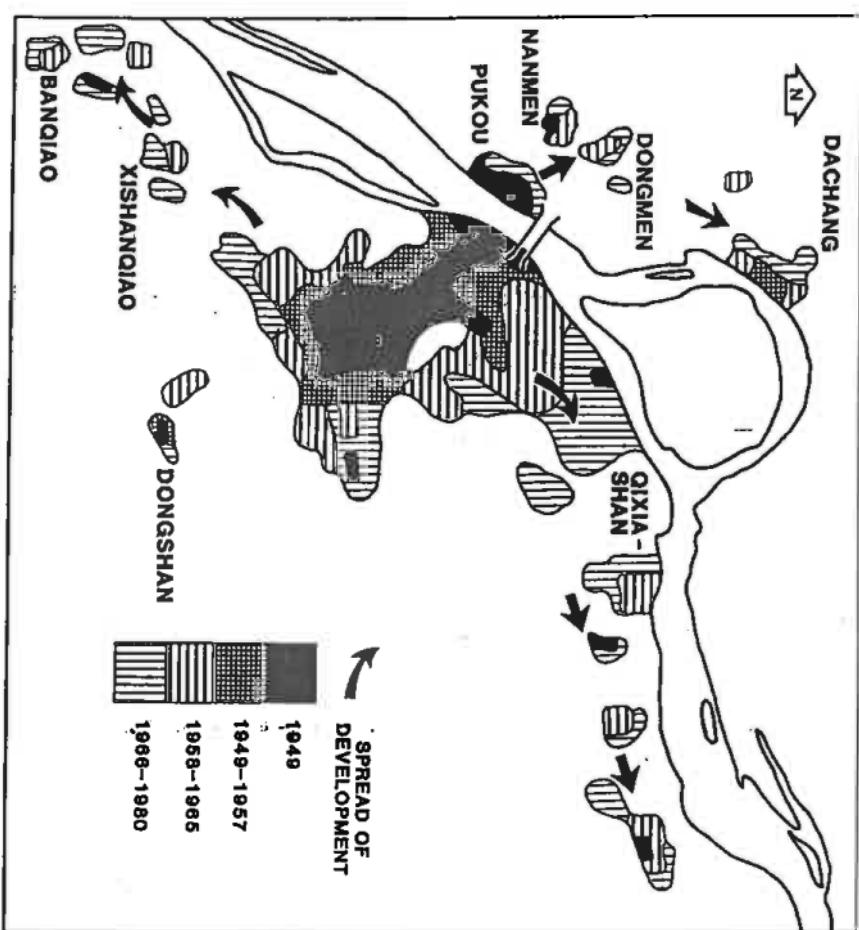
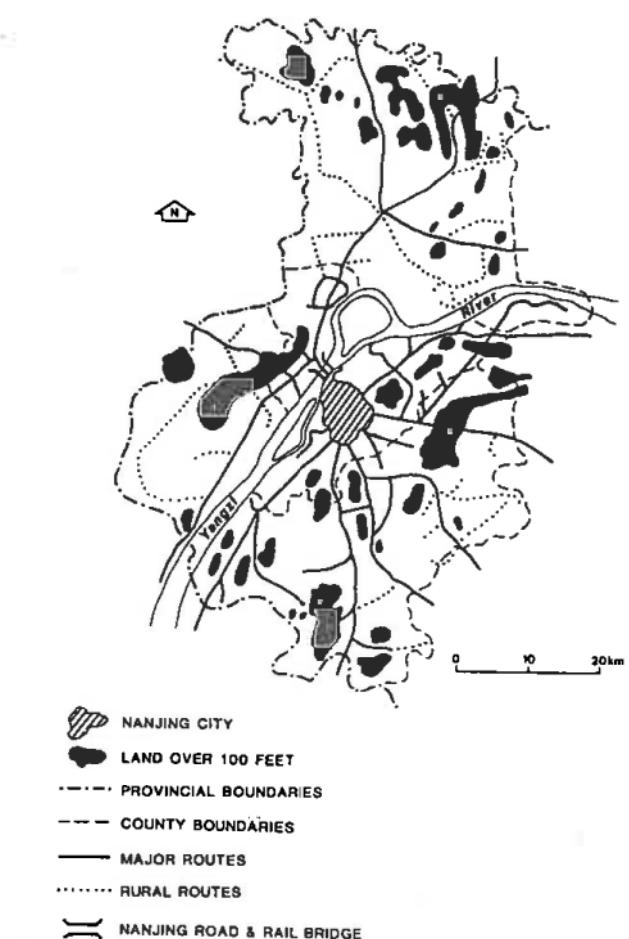


Figure 3.  
The spread of industry  
in Nanjing municipality

1949-1980

Materials source. Yao Shimou et al.  
p.307.

Figure 4. Road transport routes and relief in Nanjing municipality



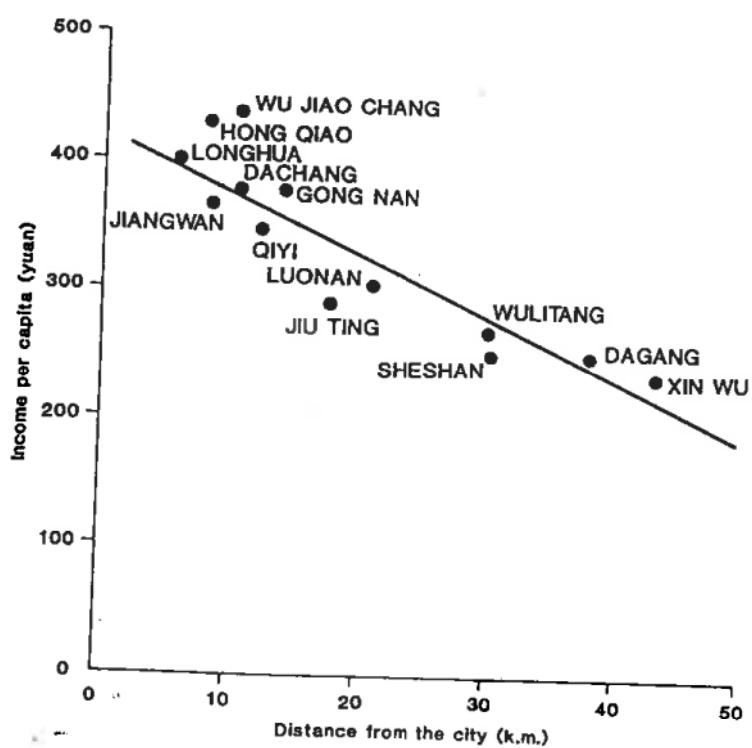
Compiled from Nanjingshi Jiaotongtu (Nanjing city transport map).  
Japanese military staff maps.

Figure 5. Shanghai municipality



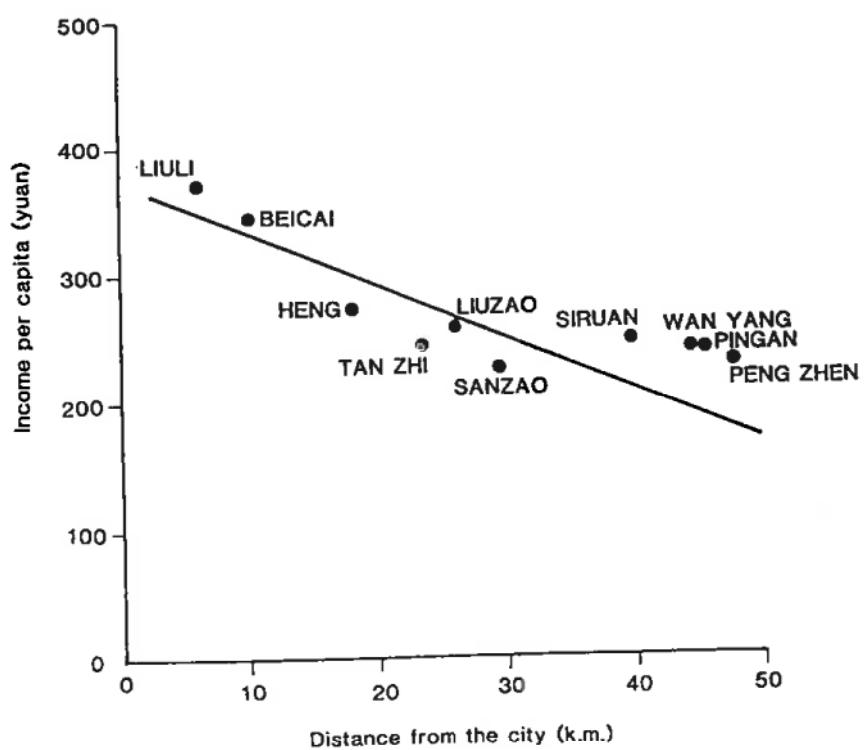
Materials source. Hua Xicheng p.177.

Figure 6(a). Selected communes West of the Pujiang : the relationship between per capita income and distance from the city



Materials source. Hua Xicheng p.176.

Figure 6(b). Selected communes East of the Pujiang : the relationship between per capita income and distance from the city



Materials source. Hua Xicheng p.176