DEVELOPMENT AND SOCIETY
Volume 28 Number 1, June 1999, pp. 93~114

EFFECTS OF LABOR OUT-MIGRATION ON INCOME GROWTH AND INEQUALITY IN RURAL CHINA*

LI SHI
The Institute of Economics
Chinese Academy of Social Sciences

Using the 1995 survey of rural household income, this paper attempts an empirical analysis of interactive relations between rural labor migration and income distribution, with emphasis on the effects of rural-urban migration on income growth and income distribution in rural China. The results of our analysis indicate that rural migration makes a contribution to the growth of rural income, not only by raising the labor productivity of migrant workers but also by permitting more efficient allocation of the remaining, non-migrating workers. Faster growth of rural household income resulting from more rural workers moving into urban areas could narrow the urban-rural income gap. Using two different approaches to estimating the contribution of rural migration to changes in rural income inequality, we find that rural migration at least does not cause deterioration in income distribution, and might improve it. Remittances from out-migrant workers have definitely played a role in reducing income differentials among rural households. Our simulation analysis also indicates that the distribution of rural household income in 1995 was more equal than it would have been in the absence of rural out-migration. However, at the provincial level, we find some evidence that rich and poor provinces experience quite different effects of rural migration on income inequality.

INTRODUCTION

Rural labor migration and income distribution are two issues urgently in need of appropriate policies in China. The two issues are mutually interactive and determinative, each playing reciprocally the roles of cause and effect. This paper attempts an empirical analysis of the interactive relations between the two, with the emphasis on the effects of rural-urban labor migration on income distribution in rural China.

The first issue discussed is to what extent rural workers away from their home villages contribute to the growth of their household income. To anticipate, we find that out-migrant workers have not only a direct effect on the growth of their household income but an indirect effect, as well, in that their

*The author is grateful for comments from the editors of the journal, John Knight, Carl Riskin, Zuo Xuejin, and Zhu Ling and appreciative of Carl Riskin for making language correction. Wei Zhong made contributions to the computations in this paper.

out-migration raises the labor productivity of members remaining in their households.

The impact of rural migration on income inequality in rural areas is rather complicated. To a large extent it depends upon whether most of the out-migrant workers are from low-income or high-income families. The data from the 1995 survey of household income indicate that most of the migrants were from households with medium incomes. This is not unexpected, since medium income household members are more likely to have both the incentive to seek improvement and the means to finance travel and job searches.

The inference of the effects of migration on income distribution is not straightforward. We, therefore, investigate two aspects of the problem: first, we estimate the effects of the remittances sent back by the out-migrants; and second, we compare the contribution of the income forgone by out migrants (opportunity cost) to overall income inequality in rural China with that of their actual income. We estimate separately the effects of rural labor migration on overall inequality in rural areas as a whole, on the rural income differentials between different provinces and on the rural differentials within these provinces.

RURAL-URBAN DIVIDE IN THE LABOR MARKET AND THE SIZE OF RURAL MIGRATION

The Urban-Rural Divide and Control of Labor Mobility.

During the twenty years following the implementation of the household registration system in 1958 to the start of the reform in 1978, mobility of the labor force and population in China had been reduced to the lowest level in history.[1] The migration of people within rural areas, within urban areas and between city and countryside was all institutionally controlled.

Although two decades have elapsed since the start of the economic reform in 1978, it has not yet come to terms with one of the biggest institu-

[1] "Regulations on household registration of the People's Republic of China" adopted by the Standing Committee of the National People's Congress in the January of 1958 enacted legal clauses concerning the range, reporting, nullification and change of domicile registrations. It was then, and through the household registration system, that overall control over migration, especially the migration of rural workers, began. In August of 1964, the State Council circularized regulations of the Ministry of Public Security on change of registered permanent residence, and once again stressed the spirit of two "strict restrictions," i.e. strict restriction on both migration of rural inhabitants to cities and towns and migration of town residents to cities.(Wang Jianmin and Hu Qi, 1996).

tional defects in the Chinese socioeconomic system — the rural-urban divide. Ever since the implementation of the household registration system in 1958, rural and urban people have been institutionally separated into two independent and unequal communities with different economic systems.

The first stroke of the rural economic reform that started at the end of the 1970s was to break the institutional deadlock brought about partly by restrictions imposed on labor force mobility. The "household responsibility system" implemented in the villages and the dissolution of the People's Commune System granted farmers more freedom in managing production and in their personal lives and also eased restrictions on the mobility of villagers. Effects of the reform boosted farm production and led to vigorous development of township and village enterprises (TVEs) alleviating tremendously the shortage of consumer goods in urban areas. These developments provided the material conditions necessary for the implementation of urban economic reforms.

Urban economic reform at that time, however, focused on reforming commodity prices while labor price reform — wage setting — was neglected. Neither the rationalization of wages through the establishment of competitive and mobile labor markets, nor the establishment of a unified national labor market so as to utilize the entire urban and rural labor force more efficiently, was considered. In addition, the remaining labor control system in urban China, the institutional obstacles hindering labor from moving from rural to urban areas, and the resulting distortions in labor prices, had all to a large extent misled urban industry into adopting an excessively capital-intensive strategy of development.

Moreover, the reform of urban enterprises at that time emphasized improvements in internal management and in work incentives through such approaches as "decentralization of decision-making rights from the state to the enterprises" and "giving more material incentive to workers." A tendency toward accelerated increases in wages further widened the gap between the labor incomes of urban and rural workers. Even more important is the fact that an ever-growing proportion of the national income had been going back to urban areas through state investment in fixed capital, infrastructure construction and public utility investments. All of these events further widened the gap in overall development level between rural and urban China to a degree well beyond the income gap alone. Thus, while urban residents are new well along in the process of modernization, much of the rural population is still far from entering this process. Such a pattern runs the danger of becoming cumulative and self-reinforcing.

During the early years of reform, the lag in development of an urban

labor market did not have much of a negative effect on the processes of the reform, while the fast-growing TVEs absorbed part of the surplus labor from the agricultural production, thus easing the pressure of rural labor on the land. However, in the second half of the 1980s, rural enterprises changed their development strategy from a labor-intensive to a capital-intensive approach, thus weakening their capacity to absorb surplus labor. On the other hand, due to population growth and the intensification of farming, the absolute size of the rural labor force and the amount of rural surplus labor were still on the increase. So, the migration of part of this surplus labor to urban areas became inevitable.

Although migrant rural workers were not allowed freely to enter the labor market in urban China, they were eagerly demanded by various urban sectors. First and foremost, it was the rapidly growing non-state sectors that demanded large numbers of migrant workers. Second, the migrants themselves created a number of informal urban sectors which they peopled, thus creating their own demand. Third, there were urban job vacancies for dirty, humble, heavy and unprofitable work that full-status urban workers were reluctant to do, and the only alternative was to employ migrant labor. Fourth, financially hard-pressed state enterprises found it cheaper to employ migrants, especially for short-term jobs. For all these reasons, since the late 1980s the rural residents began to pour into urban areas to accept or hunt for new and higher paying job opportunities.

The Size and Pattern of Labor Migration in Recent Years

The size of rural labor migration has not been very clear up to now. One reason lies in conceptual confusion. For example, one of the terms frequently used in the Chinese research literature and the media is “floating population in cities” and another one is “floating labor force in the countryside.” At times these two different concepts have been lumped together as one. But actually they are different because the latter (floating labor force in the countryside) includes those having migrated into the cities and those having migrated to other rural areas or small towns. Further, the concept of “floating population in cities” represents a much wider concept. It covers not only the floating rural labor force but also part of the rural floating population that is not in the labor force, as well as the floating population coming from other cities and towns, including those both within and outside of the labor force. A survey of floating population in 1988 (Li Mengbai and Hu Xin, 1991) showed that there were altogether 7.18 million members in the eleven largest cities, such as Beijing and Shanghai, among which about 4.26

million were from rural areas, constituting 59.3 percent of the total. Again, among the total floating population, 48.3 percent were employable, and part of these had come from other cities and towns. The floating rural workers made up only about 45 percent of the total floating population in cities. Unfortunately, even knowing the above data it is still difficult to estimate the size of the entire migrant rural labor force in urban China.

Since the 1980s, there have been a number of different estimates of the size of the rural floating labor force and the number of rural migrants in urban areas. The estimates of the former during the late 1980s and early 1990s range from 40 million to 80 million people — a puzzlingly large difference, indeed. Further, faced with so many different estimates it is difficult to know the proportions of the rural floating labor force flowing into urban areas and to other rural regions. A 1994 survey of rural labor migration carried out by the Ministry of Labor in eight provinces of rural China indicated that about 20 percent of the total rural labor force were working away from their home villages, among which 40 percent were working within their home counties (Knight, Song, and Chai, 1996). Calculating on this basis, and keeping in mind that the eight provinces surveyed had higher than average proportions of outmigrants, the total number of rural migrants working away from their home villages in the entire country may have numbered roughly 45 to 50 million. In addition, the 1995 survey of household income that is the occasion for this book indicated that rural workers working away from their home villages constituted 9.9 percent of the total labor force, which puts total number for the whole country in that year at about 45 million. However, although these two surveys allow us to estimate the overall size of the rural floating labor force, it is still difficult to get at the number of migrant workers moving into the cities.

EMPIRICAL RESULTS

Table 1 presents information about the magnitude of rural labor migration from the 1995 household income survey[2], including the proportion of migrant workers and of households with migrant workers in each province. Table 2 compares the personal characteristics of the migrant workers with those of non-migrants.

The existing literature has universally regarded rural China as a labor sur-

[2] The survey was conducted by the Institute of Economics, Chinese Academy of Social Sciences, with the assistance of the State Statistical Bureau in Beijing and foreign scholars. The samples were derived from large samples of the State Statistic Bureau. The 1995 survey of rural household income covers 19 provinces and 8, 000 households.

TABLE 1. DISTRIBUTION OF MIGRANT WORKERS BY PROVINCE, 1995

Province	Workers (percent of column total)			Households (percent of column total)		
	Migrant workers	Non-migrant	Total	HH. with Migrant workers	HH. without Migrant workers	Total
Beijing	0.09	1.36	1.25	0.11	1.57	1.25
Hebei	3.97	6.68	6.51	4.70	6.66	6.23
Shanxi	3.79	3.79	3.81	3.95	3.69	3.75
Liaoning	1.53	3.30	3.15	1.43	4.40	3.73
Jilin	2.84	3.43	3.41	3.21	3.90	3.75
Jiangsu	5.37	6.53	6.43	5.33	6.51	6.25
Zhejiang	3.79	5.16	4.98	3.09	5.53	5.00
Anhui	7.62	5.17	5.43	8.31	4.88	5.63
Jiangxi	9.47	4.10	4.47	8.54	3.22	4.38
Shandong	7.94	9.12	8.99	7.62	9.07	8.75
Henan	6.40	9.37	9.13	6.53	9.37	8.75
Hubei	2.12	5.07	4.82	2.06	5.86	5.03
Hunan	7.30	4.95	5.19	7.79	5.82	6.25
Guangdong	10.69	5.63	5.92	9.00	5.48	6.25
Sichuan	14.16	9.20	9.61	13.98	8.86	9.98
Guizhou	4.55	3.87	3.96	4.99	3.40	3.75
Yunnan	1.76	4.77	4.53	1.95	4.25	3.75
Shaanxi	3.97	3.73	3.77	4.24	3.61	3.75
Gansu	2.66	4.78	4.64	3.15	3.92	3.75
National	100	100	100	100	100	100

Source: *1995 Rural Household Income Survey*.
Notes: 1) Migrant workers are those who worked outside their villages or left them to look for work for more than one month in 1995. 2) Households with migrant workers are those having at least one migrant worker, as defined in 1) above.

plus economy. Theoretically, in such an economy, labor out-migration should benefit income growth. However, due to various obstacles to the free movement of productive resources, especially labor, the theoretically expected effect on income growth may not show up clearly in the real economy. We now turn to this issue, using the data from the sample surveys.

Income of Households With and Without Outmigrants

The total rural labor force can be divided into two categories: outmigrants and non-outmigrants. All rural households can correspondingly be divided into households with out-migrant workers (hereafter MH) and those with-

TABLE 2. STATISTICAL DESCRIPTION OF RURAL MIGRANT AND NON-MIGRANT WORKERS , 1995

	Migrant workers (percent)	Non-migrant workers (percent)	Total (percent)
Gender:			
Male	72.1	49.2	51.3
Female	27.9	50.8	48.7
Age group:			
— 18	10.0	7.1	8.3
19 - 25	46.3	18.0	20.5
25 - 30	13.6	10.4	10.7
31 - 35	9.1	10.6	10.2
36 - 40	7.5	11.7	11.3
41 —	13.6	42.0	38.9
Marital status:			
Married	47.5	77.7	73.8
Single	51.5	20.0	23.7
Other	1.0	2.3	2.5
Education:			
College	0.2	0.6	0.6
Professional	1.7	1.2	1.3
Upper middle	11.4	8.3	8.5
Lower middle	55.9	39.2	40.5
Primary	30.5	50.3	48.6
Household. size:			
2 and below	1.62	3.0	2.87
3	12.72	15.4	15.38
4	28.27	33.2	32.95
5	25.29	25.6	25.53
6	14.83	13.2	13.25
7 and above	17.27	9.7	9.98
Minority	5.30	7.5	7.1
Han	93.05	91.1	91.1

Source : *1995 Rural Household Income Survey*.

Notes : 1) Migrant workers are those who worked outside their villages or left them to look for work for more than one month in 1995. 2) Households with migrant workers were those having at least one migrant worker, as defined in 1) above.

out out-migrant workers (NMH). On the basis of these classifications, we first calculate the per capita income of households with and without out-migrant workers and then the income per worker for each province and then the entire sample. These calculations are presented in Table 3.

Table 3 shows that, for China as a whole, the per capita income of MH was slightly (about 1.5 percent) lower than that of NMH, while income per

TABLE 3. INCOME OF HOUSEHOLDS WITH AND WITHOUT MIGRANT WORKERS

Province	Sample size Households:		Income per capita: Households:		Income per worker: Households:	
	(1) With	(2) Without	(1) With	(2) Without	(1) With	(2) Without
Total	1641	6332	2074	2104	3243	3777
Beijing	2	98	2627	4824	4127	7974
Hebei	78	416	1404	1816	2781	3915
Shanxi	51	248	1443	1216	3187	2695
Liaoning	22	277	2251	1977	4034	3369
Jilin	55	244	2366	1963	3795	3797
Jiangsu	90	409	3718	3628	5386	5473
Zhejiang	50	348	2396	3795	3372	6045
Anhui	139	310	1537	1759	2464	3290
Jiangxi	147	202	1800	1617	2844	3149
Shandong	126	570	2906	2560	4098	4151
Henan	102	597	2170	1603	3619	2925
Hubei	36	365	1787	1727	2666	2986
Hunan	129	370	1499	1435	2450	2971
Guangdong	143	354	3671	4306	5709	8564
Sichuan	238	560	1759	1408	2444	2264
Guizhou	80	219	1367	1233	1995	2423
Yunnan	31	268	1189	1391	1698	2481
Shaanxi	67	233	1612	1291	3067	2965
Gansu	55	244	1090	1047	1985	1957

Source : *1995 Household Income Survey*, by Institute of Economics, CASS.

Notes: 1) Migrant workers are those who worked outside their villages or left them to look for work for more than one month in 1995. 2) Households with migrant workers were those having at least one migrant worker, as defined in 1) above.

worker of the former was 16 percent below that of the latter. However, the situation was different in different provinces. Among the 19 sampled provinces, there were six in which per capita income of MH was below that of NMH, most of the six being relatively developed provinces, such as Guangdong and Zhejiang. The last two columns in Table 3 give a very rough indication of the wage gap between out-migrant and non-migrant workers in 1995.[3] In thirteen of the nineteen sampled provinces, per worker income of MH was below that of NMH, and in six it was higher. These six

[3] It should be remembered that "out-migrants" include those looking for work as well as those working. Therefore, the average income per worker of households with out-migrants is lower than the average for those households whose out-migrant members actually found work.

provinces were Gansu, Shaanxi, Sichuan, Henan, Liaoning and Shanxi. All six are relatively backward in economic development and the wages earned by their out-migrant workers were higher than the income of the workers engaged in local farming activities. Moreover, in some provinces such as Jilin, Jiangsu, and Shandong, the income per worker differential between MH and NMH was not very large, suggesting that some outmigrants had failed to find jobs, or had originally earned such low incomes that only through migration could they bring earnings up to the provincial average.[4] Even in more developed provinces, some workers left their home villages to find more lucrative opportunities. Most provinces are large, populous, and divided into geographically and economically diverse regions. Even advanced Guangdong has a poor, hilly hinterland, for instance. Therefore, it is understandable if migrants from such poorer localities, even while raising their household income, cannot bring it up to the provincial average.

The Estimated Effects of Rural Out-migration on the Income Growth of Rural Households.

It should be recognized that the above comparisons are over-simplified, since the factors determining household income, in addition to labor force, include also land, production assets, etc. Besides, the huge regional disparities in rural China, the unbalanced development among different regions and the relatively independent fiscal policy of "linking expenditures to revenues" in individual provinces have all contributed to the formation of the income gaps.

In order to control for factors other than labor force, we estimate the effects of labor migration on household income growth, using a household income function. The income function of rural households includes land (divided into irrigated and non-irrigated land), production assets (in present values) and provincial dummy variables (to control for income differences arising from provincial location). Two different equations are specified. In the first, the number of household out-migrant and non-migrant workers are taken as two independent explanatory variables; their estimated coefficients can be interpreted as their marginal rates of contribution to household income. In the second equation, while taking the total number of working members of the household as the explanatory variable, households with and those without out-migrant workers were introduced as dummy vari-

[4] Small sample sizes for some provinces, including poor provinces such as Yunnan and Gansu, increase the chance of sampling error. The results for these provinces should be regarded only as suggestive, at best.

TABLE 4. RESULTS OF INCOME FUNCTION OF RURAL HOUSEHOLDS IN CHINA, 1995

		Dependent : Household income	
Independent variables	Mean	Equation 1	Equation 2
Irrigated land(mu)	4.20	0.00009	0.00009
Non-irrigated land (mu)	3.35	-0.0064***	-0.0069***
Production assets (yuan)	2727.8	0.00002***	0.000019***
Number of workers	2.45		0.108***
Migrant workers	0.265	0.170***	
Non-migrant workers	2.185	0.076***	
Household with migrants (dummy)	0.21		0.094***
HH. without migrants (dummy)	0.79		—
Province dummies:			
Beijing		—	—
Hebei	0.062	-0.884***	-0.883***
Shanxi	0.035	-1.174***	-1.169***
Liaoning	0.035	-0.803***	-0.837***
Jilin	0.037	-0.905***	-0.917***
Jiangsu	0.063	-0.344***	-0.359***
Zhejiang	0.050	-0.411***	-0.430***
Anhui	0.057	-0.869***	-0.898***
Jiangxi	0.045	-0.802***	-0.823***
Shandong	0.088	-0.729***	-0.751***
Henan	0.087	-0.888***	-0.897***
Hubei	0.051	-0.916***	-0.935***
Hunan	0.062	-1.047***	-1.063***
Guangdong	0.063	-0.105	-0.127*
Sichuan	0.101	-1.188***	-1.213***
Guizhou	0.038	-1.147***	-1.166***
Yunnan	0.038	-1.107***	-1.132***
Shaanxi	0.038	-1.152***	-1.154***
Gansu	0.038	-1.282***	-1.299***
Intercept	1.000	9.345***	9.264***
Adj- R^2		0.232	0.239
F-value		104.0	108.0
Mean of dependent		8.744	8.744
Observations		7825	7825

Source: *1995 Household Income Survey*.

Notes: 1) Migrant workers are those who worked outside their villages or left them to look for work for more than one month in 1995. 2) Households with migrant workers were those having at least one migrant worker, as defined in 1) above. 3) In this and subsequent tables, *** denotes statistical significance at the one percent level, ** at the five percent, and * at the ten percent level .

ables. The estimated results of the two models are presented in Table 4.

The results of model I show that the estimated coefficients of both out-

migrant labor and non-out-migrant labor are highly significant. The marginal contribution of out-migrant workers to total household income is higher, by about 10 percentage points, than that of non-migrant workers. According to the 1995 survey data, household income came to 6270 yuan in rural China, so our estimate implies that an average out-migrant worker earned about 600 yuan more than household members working locally. Therefore, we can conclude that there was a positive wage premium for being an out-migrant worker.

This conclusion is also supported strongly by the results of Model II. When the presence of out-migrant workers is introduced into Equation II as a dummy variable, its estimated coefficient indicates that the marginal contribution to household income from having out-migrant members, compared to not having them, is 9.4 percentage points. The estimated coefficient was highly significant.

The results of the two models in Table 4 indicate that the rate of contribution to income of out-migrant workers was higher than that of non-migrant workers. This is but one effect of rural migration on income rural household income. In addition, rural migration is accompanied by a process of reallocation of production resources within households, and especially of labor. For households with surplus labor, out-migration would reduce the surplus and increase the marginal product of labor of the remaining members, especially those engaged in farming activities. This is another effect of rural migration on rural household income. If this effect exists, then the estimated coefficient of farm labor in the income function of MH should be higher than that for NMH.

To test our hypothesis, the income functions of MH and NMH are estimated separately. In the MH income function, the numbers of outmigrants and non-migrant workers were introduced as explanatory variables along with other production variables and dummies; the NMH income function has the same specification, except that it excludes out-migrant workers. The difference in the estimated coefficients of non-out-migrant workers in the two functions reflects the difference in these workers' marginal rates of contribution to total income in the two types of households. It also reflects the difference in their marginal productivity, resulting from reallocation of labor within the household. Part of the estimated results was significant[5] and is given in Table 5.

[5] Listed in Table 4-3 are the estimated results for nine provinces only. This is because most of the estimated coefficients of labor variables in these provinces passed the statistical test of significance, while those for other provinces were not statistically significant and so are not discussed further here.

TABLE 5. INCOME FUNCTIONS OF RURAL HOUSEHOLDS WITH AND WITHOUT MIGRANT WORKERS

	Estimated coefficients :		Adj-R^2	F-value	Observations
	Migrant workers	Non-migrant workers			
Total sample :					
HH. with migrants (MH)	0.186***	0.099**	0.267	27.0	1641
HH. with no migrants (NMH)		0.069**	0.225	83.8	6184
Anhui :					
MH	0.420***	0.113	0.238	4.07	50
NMH		0.038	0.057	5.64	308
Henan :					
MH	0.248**	0.113**	0.200	6.02	102
NMH		0.064**	0.129	22.5	580
Hunan :					
MH	0.238**	0.130***	0.203	7.51	129
NMH		-0.014	0.034	4.18	358
Guangdong :					
MH	0.214**	0.025	0.130	5.24	143
NMH		-0.032	0.092	9.75	347
Sichuan :					
MH	0.339***	0.083**	0.111	6.93	238
NMH		0.061**	0.088	14.3	553
Guizhou :					
MH	0.190	0.078*	0.125	3.25	80
NMH		0.040	0.014	1.76	217
Yunnan :					
MH	0.272*	0.223**	0.335	4.02	31
NMH		0.029	0.124	10.28	264
Shaanxi :					
MH	0.580**	0.147*	0.091	2.31	67
NMH		-0.0003	0.004	1.23	231
Gansu :					
MH	0.035	0.128**	0.131	2.62	55
NMH		0.033	0.398	40.52	240

Source: *1995 Household Income Survey*.

Notes: In the national and provincial regression models, control variables of land and production assets were introduced. Because of space limitations, the coefficients of the control variables are not presented in this table.

The fit and estimated results of both functions for the entire rural sample — for households with and without out-migrant workers — are quite satisfactory statistically. The value of adj-R^2 means that more than twenty per-

cent of the total variance in household disposable income is explained by the two models. The estimated coefficients of the variables for both out-migrant workers and non-out-migrant workers are highly significant. What is more interesting is that the coefficient on non-migrant workers in the model for MH is 0.099, three percentage points higher than the corresponding figure, 0.069, in the model for NMH. This indicates that the marginal product of non-migrant workers living in households having outmigrants is higher than that of workers in households with no out-migrant workers.[6] Such findings support our hypothesis that the rural migrant workers not only earn higher income outside their households but also raise the productivity of their stay-at-home relatives.

Perhaps a further question should be raised. If education is conducive to labor mobility, it is possible that MH have more human capital than NMH, and that this, rather than the posited reallocation of labor, is what explains the higher productivity of non-migrant workers in MH. To answer this question, the average years of education of migrant and non-migrant workers in the two types of households were compared. Although the average amount of education of out-migrants was 1.2 years more than that of non-migrants in NMH (8.28 years compared with 7.04 years), in MH the average amount of education of non-migrant workers was only 6.14 years in 1995. Thus, the higher productivity of non-migrant workers in NMH than in MH was not due to more human capital. However, we cannot rule out spillover effects from the superior human capital of the out-migrant workers on the productivity of their non-migrant relatives. This would be exceedingly difficult to measure!

Table 5 also presents estimates of the same income functions for nine provinces. Among the nineteen provinces in our survey, the estimated results were unsatisfactory for ten. Some of these had samples that were too small and others had statistically insignificant labor coefficients. Regression results from the remaining nine provinces were significant. The estimated coefficients of non-migrant workers in the income function of MH were higher than those of workers in NMH in all nine provinces, although some of them were not significant. These results further support our hypothesis that rural migration increases productivity of non-migrant relatives.

[6] Due to the very small difference in per capita income between the two groups of households, the absolute amount contributed by a non-migrant worker in a MH is also higher than his (her) counterpart in a NMH.

Effects of Migration on Income Distribution

To what extent has rural migration affected the income distribution in rural China in the 1990s? Has it tended to widen or to narrow income inequality? Has it contributed to reducing the incidence of rural poverty, or has it had no significant role to play in poverty alleviation? Although our hypotheses have touched upon all these issues in our theoretical discussion above, it is necessary to see whether these hypotheses can be verified. Additionally, we must, and seek through empirical investigation to understand better the real situation, which is rather complicated.

The effect of migration on rural income distribution can be analyzed using two approaches. One is simply to examine the effect of income remitted back or brought home by out-migrant workers. Here, such remittances can be counted either as part of the total income of their households or as transfer income from other family members. Thus, the inequality measures can be compared for household income including and excluding remittances, and the effect of the remittances on rural income inequality can be precisely calculated. This approach is frequently seen in the current literature, and is even more applicable to developing countries, where labor mobility takes place through population migration and remittances become the main economic link between the outmigrants and their original families.

Another approach is based on estimating opportunity costs of the outmigrant workers. Knowing the opportunity costs, we can compare the actual income of households with their simulated income derived from substituting the opportunity cost of outmigrants (i.e., the estimated income they would have earned, had they not migrated) for their actual income. We can therefore compute inequality measures for both actual and simulated incomes. We have to assume, of course, that the out-migrant workers, had they remained in their home villages, would have earned only their opportunity cost — which is the income earned in home villages. The difference in some inequality measure, such as the Gini coefficient, between these two incomes, can be regarded as the change in income inequality caused by outmigration. Technically, the analysis required for this approach is more complicated, because the estimation of the opportunity cost of out-migrant workers requires a proper use of the production (income) functions of the rural households.

Fortunately, the 1995 rural household income survey data provide the possibility of attempting both approaches. Remittances from outmigrants were reported as a source of household income, and personal information

TABLE 6. REMITTANCES AND THEIR SHARES IN HOUSEHOLD INCOME IN RURAL CHINA 1995

	Number of HH. receiving remittances	Percent in total HH. (percent)	Average remittances: (yuan) Receiving		Share of remittances in income: Receiving	
			Households	All Households	Households	All Households
Total	1182	14.8	2190	324	25.1	3.8
Province:						
Beijing	1	1.0	2500	25	9.4	0.1
Hebei	50	10.0	2073	208	28.3	2.8
Shanxi	46	15.3	1374	211	27.4	4.2
Liaoning	7	2.3	1695	40	24.0	0.5
Jilin	22	7.3	2380	175	27.5	2.3
Jiangsu	21	4.2	3807	160	27.4	1.2
Zhejiang	46	11.5	2489	286	29.5	2.1
Anhui	132	29.3	2061	604	28.6	8.6
Jiangxi	131	37.4	2219	830	26.6	10.1
Shandong	64	9.1	2221	203	17.7	2.0
Henan	63	9.0	1641	148	18.3	2.0
Hubei	24	6.0	2137	128	23.5	1.8
Hunan	117	23.4	1864	436	29.3	7.3
Guangdong	118	23.6	4045	955	23.0	5.0
Sichuan	198	24.8	2097	520	27.8	9.1
Guizhou	43	14.3	965	138	16.1	2.4
Yunnan	30	10.0	1347	135	24.6	2.2
Shaanxi	41	13.7	1945	266	29.3	4.3
Gansu	28	9.3	1023	95	21.1	1.9

Source: *1995 Household Income Survey*.

was collected that can be used to distinguish permanent household members from non-permanent members. Among the 7998 rural households in the sample, 1181 received remittances from out-migrant members, with the average amount being 2190 yuan, accounting for 25.1 percent of total household income of those households receiving remittances. For all households in the sample, the average remittance came to 25 yuan, comprising 3.8 percent of household total income in 1995. The importance of remittances varied widely among the provinces. Table 6 shows the number of households receiving remittances, their proportions to all households, the size of remittances per household and other relevant information, for the entire sample and for each province in it. It is clear from the amount of regional variation that the impact of remittances on regional income differentials in rural China needs to be investigated, as well.

TABLE 7. DECILE SHARES OF INCOME, WITH AND WITHOUT REMITTANCES, RURAL CHINA, 1995

Decile (ascending order)	Personal income	Personal income after deducting remittances	Share of remittances in income (percent)
1	0.0227	0.0235	17.3
2	0.0394	0.0358	7.1
3	0.0485	0.0448	5.8
4	0.0577	0.0546	6.1
5	0.0676	0.0645	5.1
6	0.0792	0.0760	4.3
7	0.0931	0.0908	4.0
8	0.1114	0.1118	2.9
9	0.1461	0.1485	4.5
10	0.3343	0.3497	1.6
Gini Coefficient	0.411	0.431	
Coef. of Variation	1.218	1.266	

Source: *1995 Household Income Survey*.
Notes: 1) There are totally 34,739 individuals in the rural sample. 2) Deciles are sorted in ascendant order.

For this analysis, we make use of the Gini coefficients and decile distributions of rural personal disposable income, both including and excluding remittances. The Gini coefficient shows how a commonly used aggregate measure of income inequality responds to remittances, while from the decile distribution we can see the changes in each decile group's share of total income due to remittances.

Table 7 shows that the Gini coefficient for personal disposable income in rural China as a whole in 1995 was 0.411. If the remittances sent back by the out-migrant workers are deducted, the Gini coefficient would rise by five percent to 0.431. In other words, the presence of remittances lowers the Gini coefficient of rural personal disposable income by about five percent, suggesting that remittances were helpful in narrowing income differences.

The changes in the decile shares of income shown in Table 7 also support this conclusion. Remittances increased the respective shares of six of the seven lowest decile groups, all but the lowest, by three percentage points per decile group, on average. The share of the lowest income decile was reduced slightly by remittances, even though the remittances were responsible for a far higher share of this decile's total income (17.3 percent) than of any other decile's. This suggests that the size of remittances for this group was very small, relative to the size of remittances for other groups.

Remittances lowered the shares of the richest three deciles. The expensive opportunity cost of migration for these well-off groups may have dampened their enthusiasm to move.

Table 8 shows the concentration ratios of personal income with and without remittances, and of remittances, themselves, as well as their respective shares in total income.[7] The concentration ratio of remittances was rather low — only 0.170 — far smaller than the Gini coefficients for all income and for all income excluding remittances. Although the share of remittances in total income was 3.8 percent, their contribution to the inequality of total income was only 1.57 percent. Clearly, remittances are an "equalizing" source of rural income in the sense that, *ceteris paribus*, an increase in their share of total income would reduce the overall Gini coefficient.

Let us try a simple simulation analysis. Suppose the concentration ratios for the two income sources were unchanged, while the share of remittances in total income increased from the existing 3.8 percent to 10 percent and then to 20 percent. The Gini coefficient of total income would then decline, *ceteris paribus*, from the existing level of 0.411 to 0.396 and then to 0.371, decreasing by 3.7 percent and 9.7 percent, respectively. This suggests that encouraging more migration among low income households would play a positive role in restraining the widening of income inequality in rural China.

The second approach is to estimate separately the income functions of MH and NMH. Then the marginal contributions of out-migrant workers and non-migrant workers to household total income can be estimated. For the NMH, the income function includes only the number of non-migrant workers as the labor variable, the coefficient of which is their marginal contribution to total household income. This can also be regarded as the opportunity cost of migrating. That is to say, if the migrating workers in a household were to stay at home, their marginal contribution to total household income would be equivalent to that of non-migrant workers in NMH. The income function of MH can be expressed as:

[7] We use here the formula for indirect decomposition of the Gini coefficient, which can be written as $G=\sum Ui*Ci$, in which Ui is the share of the ith source of income in total income and Ci is the concentration ratio of that income source. The concentration ratio is analogous to the Gini ratio, except that it measures the inequality in distribution of a given kind of income (e.g., wages) over all income recipients, not only recipients of that source (wage-earners). For example, if wages were very high relative to other kinds of rural income, but distributed very equally among wage-earners, they would have a very low Gini ratio but a very high concentration ratio. The relative contribution of an income source to the inequality of total income can be expressed as $Ri=Ui*Ci/G$. The Ri's for all income sources add up to the Gini ratio of total income. See Khan, et al., 1992.

TABLE 8. CONTRIBUTION OF REMITTANCES TO INEQUALITY OF RURAL INCOME: DECOMPOSITION ANALYSIS

Type of income	GINI or Concentration ratio	Shares of total income (percent)	Contribution to total inequality (percent)
Remittances	0.1702	3.8	1.57
Personal income after remittances	0.4207	96.2	98.43
Personal income	0.4113	100.0	100.0

Source: *1995 Household Income Survey*.

$$Y_n(L_m) = \beta_{mo} + \beta_{m1}L_m + \beta_{m2}L_n + \Sigma\beta_{mi}X_i + \varepsilon \quad (1)$$

Here Y_n is the total income of households; β_{m0} is the intercept; β_{m1} is the marginal contribution of out-migrant workers to household income and β_{m2} is that of the non-migrant workers to household income; X_i is other production inputs and control variables; and (is a random error term.

For NMH, the income function takes the form as follows:

$$Y_n(L_n) = \beta_{no} + \beta_{n2}L_n + \Sigma\beta_{ni}X_i + \varepsilon \quad (2)$$

in which the explanations for the variables and parameters are basically the same as in Formula 4-1. β_{n2} can be taken either as the marginal rate of contribution of workers to the income of their families, or as the opportunity cost of migration for out-migrant workers in MH. The latter interpretation stems from the assumption that if there were no out-migrants among MH, their income function would coincide with Formula 2 and not Formula 1.

From our household income data, two sets of predicted incomes can be derived from the two Formulas. One of the two sets, Yp, is composed of the predicted incomes of the MH derived from Formula 1 and the predicted incomes of NMH derived from Formula 2. The other set, Yo, is composed of the predicted incomes of MH and NMH, both derived from Formula 1. However, the predicted incomes of the MH here are actually the predicted opportunity costs to labor migration — i.e., what those households would earn if their out-migrant workers stayed home. Table 9 also shows some inequality indices of the two sets of predicted income of all the rural samples, as well as the samples for Guangdong and Sichuan province.[8]

[8] There are several reasons for choosing Guangdong and Sichuan as the provincial cases to examine. First, both provinces have high proportions of rural out-migrant workers, as shown

TABLE 9. EFFECTS OF REMITTANCES ON LORENZ CURVES IN RURAL CHINA: INCOME FUNCTION APPROACH

	Total Sample		Guangdong		Sichuan	
Deciles	Yp	Yo	Yp	Yo	Yp	Yo
1	0.0445	0.0445	0.0541	0.0551	0.0517	0.0580
2	0.1016	0.1015	0.1205	0.1219	0.1173	0.1298
3	0.1669	0.1669	0.1938	0.1944	0.1925	0.2108
4	0.2399	0.2395	0.2734	0.2721	0.2761	0.2983
5	0.3207	0.3200	0.3592	0.3584	0.3694	0.3913
6	0.4092	0.4089	0.4511	0.4442	0.4700	0.4969
7	0.5079	0.5079	0.5512	0.5446	0.5788	0.6054
8	0.6249	0.6231	0.6617	0.6564	0.6991	0.7201
9	0.7712	0.7680	0.7935	0.7898	0.8321	0.8505
10	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Gini	0.2686	0.2700	0.2134	0.2180	0.1856	0.1512
C. V!£	0.7454	0.7624	0.4936	0.5479	0.3407	0.3452

Source: *1995 Household Income Survey*.

Notes: 1) Yp = Predicted personal income with income functions of households with and without migrant workers, respectively; Yo = Predicted personal income of all households, using income function of households without out-migrants, thus assuming migrant workers make the same contribution as non-migrant workers. 2) Province dummies were used in the household income functions for total sample. 3) The calculations are for individuals, not households.

In Table 9, the difference between the Gini coefficients for the two sets of predicted incomes is very small, with inequality slightly higher for the second set of predicted incomes. That the Gini coefficients are so similar is in part due to a well-known deficiency of the Gini coefficient itself as an index of inequality, namely, that it is quite insensitive to income transfers among non-extreme groups.[9] The coefficient of variation in Table 9 registers a greater difference in inequality between the two sets of predicted income, with the CV of Yo being 2.3 percent higher than that of Yp. We can therefore conclude that, while changes in inequality as measured by different indices are different, the implications are basically similar. If the out-migrant labor force had remained working at home, overall income inequality in rural

in Table 1. Second, Guangdong is an economically prosperous province on the east coast, while Sichuan represents the underdeveloped west. Third, both provinces have large enough sample sizes, both with and without out-migrant workers, to permit the estimation of household income functions.

[9] The changes in the Lorenz curve for the total rural sample in Table 9 shows that, compared with Yo, the income shares of the 2nd, 4th and 5th decile groups of Yp are higher. However, the reflection of these changes in the Gini coefficient is miniscule.

China could have been somewhat higher than it was in 1995.

This conclusion, drawn from the analysis of the overall rural sample, may not hold for particular provinces with special conditions. Table 9 shows results for Guangdong and Sichuan provinces that mostly tally with theoretical expectations that in more developed provinces (e.g., Guangdong), out-migrants tend to come from lower-income families; with strong feelings of relative deprivation, they have strong motivation to move out, as explained by Stark (1984). The large difference between their expected income from migrating and the opportunity cost of migration promises to narrow the income gap between their families and high-income families. In the backward provinces (e.g., Sichuan), on the other hand, most out-migrant workers are from families with medium-level income and above, rather than those with lowest incomes. This is mainly because of financial constraints facing the poorest families, who lack the means to travel, bear risks and finance job searches. Migration thus tends to raise the incomes of middle-income families relative to low-income ones, which would widen income inequality in these areas.

For Guangdong Province, the Gini coefficient of Yo is 2.2 percent higher than that of Yp, while the coefficient of variation of Yo is eleven percent higher than that of Yp. This indicates that rural migration has narrowed income differences in rural Guangdong. However, for Sichuan, the results are just the opposite. Although the difference in coefficients of variation between Yo and Yp is very small, the 3.4 percent difference in Gini coefficients (that of Yp being the higher) is rather substantial. In Sichuan, it seems, the outflow of rural labor has actually increased rural income inequality. Of course, these results obtain only for the two provinces concerned. Further research is needed before a general conclusion can be drawn that rural migration reduces income inequality in economically prosperous regions while increasing it in backward regions.[10]

CONCLUSIONS

With the enormous gap, including the income gap, between urban and rural areas in China, the migration of rural workers looking for income-earning opportunities will be a long-term and continuing phenomenon. The results of our analysis indicate that rural migration makes a contribution to

[10] Similar estimates for all provinces in the 1995 household data were attempted in order to find the correlation between the difference in Gini coefficients for Yp and Yo, on the one hand, and the income level of the provinces, on the other. However, small sample sizes and other problems led to unsatisfactory results.

the growth of rural income, not only by raising labor productivity of migrant workers but also by permitting more efficient allocation of the remaining, non-migrating workers. Faster growth of rural household income resulting from more rural workers moving into urban areas could narrow the urban-rural income gap.

From our two different approaches to estimating the contribution of rural migration to changes in rural income inequality, we can conclude that rural migration at least does not cause a deterioration in income distribution, and might improve it. Remittances from out-migrant workers have definitely played a role in reducing income differentials among rural households. Our simulation analysis also indicates that the distribution of rural household income in 1995 was more equal than it would have been in the absence of rural out-migration. However, at the provincial level, we find some evidence that rich and poor provinces experience quite different effects of rural migration on income inequality. In rich Guangdong, rural migration reduces inequality, while in relatively backward Sichuan, it appears to increase income inequality, mainly due (we suspect) to the lack of mobility of workers in very low-income households.

REFERENCES

Chai, H., J. Knight, R. Mo, and L. Song. 1996. "The Rural Labour Force Survey for China, 1994: The Main Results." Draft.

Cooperative Research Team of Eight City Governments. 1993. *Labor Employment and Urban Development in the Chinese Large Cities* (in Chinese). Beijing: China Labor Press.

Corden, W., and R. Findlay. 1975. "Urban Unemployment, Intersectoral Capital Mobility and Development Policy." *Economica*, February 1975.

Griffin, K., and Zhao Renwei. 1993. *The Distribution of Income in China.* New York: Macmillan Press.

Katz, E. and O. Stark. 1986. "Labor Migration and Risk Aversion in Less-Developed Countries." *Journal of Labor Economics* 4(1): 134-49.

Khan, Azizur, Keith Griffin, Carl Riskin, and Zhao Renwei. 1992. "Household Income and its Distribution in China." *China Quarterly* 132: 1029-61.

Knight, J. and L. Song. 1996. "Chinese Peasants Choices: Migration, Rural Industry or Farming." Processing.

Li Mengbai, and Hu Xing. 1991. *Impact of Migrant Population on Development of Large Cities and Relevant Policy* (in Chinese). Beijing: Economic Daily Press.

Li Shi. 1997. *Rural Migration and Income Distribution in China.* Research report prepared for the Washington Center for China Studies.

Office of National Population Sample Survey. 1997. *Data of 1995 One Percent National Population Sample Survey* (in Chinese). Beijing: China Statistical Publishing House.

Perkins, Dwight H. 1988. "Reforming China's Economic System." *Journal of Economic*

Literature 26(2): 601-45.
Project Team of Employment Department, Ministry of Labor. 1996. " Opportunity and Ability: Employment and Mobility of Rural Labor in China" (in Chinese). Discussion paper.
Riskin, Carl. 1987. *China's Political Economy*. New York: Oxford University Press.
Shorrocks, A.F. 1980. "The Class of Additively Decomposable Inequality Measures." *Econometrica* 48(3): 613-26.
Stark, O. 1984. "Rural-to-Urban Migration in LDCs: A Relative Deprivation Approach." *Economic Development and Cultural Change* 32(3): 475-86.
Tang Ping. 1995. "Analysis of Income Level and Inequality of Rural Households in China" (in Chinese). *Management World* 2.
Todaro, M. 1969. "A Model of Labor Migration and Urban Unemployment in Less Developed Countries." *American Economic Review* 59: 138-48.
Urban Investigation Team of Beijing. 1995. "Observing Mobility of Talent People in Beijing" (in Chinese). *Capital Economy*, October 1995, pp. 35-41.
Wang Jianmin, and Hu Qi. 1996. *Migrant Population in China* (in Chinese). Shanghai: Shanghai Financial University Press.
World Bank. 1995. *World Dvelopment Report 1995: Workers in an Integration World*. New York: Oxford University Press.
Zhao Renwei, and Li Shi. 1992. "Distribution of Personal income in China: Urban, Rural, and Regional" (in Chinese). *Reform* 2: 46-58.

LI SHI *is currently a professor at the Institute of Economics, the Chinese Academy of Social Sciences. His work on income distribution, inequality, poverty, and rural-urban divide under Chinese reform has been published in numerous academic journals including* Development Economics, Review of Income and Wealth, Asian Economic Journal, Oxford Development Studies, and Jingji Yanjiu *(Economic Research).*