

MIGRATION AND TRANSFORMATION OF INDUSTRIAL AND OCCUPATIONAL STRUCTURES IN TAIWAN†

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This study attempts to further research on the persistent question of migrant selectivity. Because previous research have shown that migrants are positively selected in terms of demographic characteristics, we thus suspect that migrants and nonmigrants response differently to the transformation of occupational and industrial structures. In addition to the examination of the widely held assumption about migrants' role in supplying needed manpower to the manufacturing and service sectors, two other specific questions are studied in this paper. One is whether migrants are more likely to take jobs with advanced technology than non-migrants? The other is whether migrants are more responsive than non-migrants to industrial change.

Theoretically, it has been proposed that technology does not operate directly on migration but effects migration through changes in organization (Sly, 1972). In his "law of migration", Ravenstein (1889) concludes that technology can contribute to the increase of migration through two channels. One of them is an increase in the means of locomotion; the other is a development of manufactures and commerce. While similar views are held by Kulisher (Jaffe, 1962) and Lee (1966), the mechanism underlying these two channels is further elaborated by Lee (1966). In his terminology, the improvement of transportation and communication can help surmount "the intervening obstacles" and lead to an increase in the volume of migration. The development of manufactures and commerce, as a result of industrialization, will lead to a high "degree of diversity of areas," and thus a high

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level of migration. Migrants who respond to such a consideration of positive and negative factors at origin and destination are positively selected. Later on, in his presidential address to the Population Association of America, Lee (1970) promulgates that a positive relationship between migration and education is important to economic growth. He considers that fluid movement of highly educated persons maximizes the usefulness of human resources and leads to sustained economic growth and development.

Empirically several studies in less developed countries have demonstrated that positive selectivity in terms of demographic characteristics is manifested among rural to urban migrants (Browning, 1971; Connell, et al, 1976; Findley, 1977; Shaw, 1975). Support for the proposition that migration tends to be selective with respect to higher status occupation was also found among studies in developed countries (Rose, 1958; Beshers, 1961; Friedlander and Rosheir, 1966; Tarver, 1964; Miller, 1966). Similar findings about occupational selectivity were also observed among Puerto Ricans and Taiwanese (Macisco, Jr., 1966; Li, 1967; Chen and Speare, 1987). Since the fluid movement of highly educated persons has been observed in Taiwan, the next important question is to what extent migrants have contributed to the transformation of industrial and occupational structures.

In the last century, virtually all developed and developing countries have experienced a striking transformation of industrial structure. Two master trends have been observed. One is the shift of labor out of the primary sector and the other is the movement of labor into the tertiary or service sector (Browning and Singlemann, 1978). By 1985, the proportions of labor force in tertiary industry for many countries have exceeded 50%. For some developed countries, the proportion is as high as 71% (ILO, 1985). Taiwan is not an exception to this trend. The proportion in tertiary industry increased from 27.0% in 1952 to 41.1% in 1985 (CEPD, 1987).

In response to the recent trend of transformation in industrial structure, two types of efforts have been made to modify the traditional primary-secondary-tertiary scheme in order to better interpret the progress of economic development (Fisher, 1935; Clark, 1940). On the one hand, the tertiary sector was further differentiated into more homogeneous units to reflect its rapid increase of share. Following the basic scheme of extraction-transformation-distribution, Browning and

Singlemann (1978) proposed to further divide the tertiary sector into distributive services, producer services, social services and personal services. On the other hand, there is also a need to subdivide the secondary sector because it also increased sharply. Following Miller's (1971) industrial grouping scheme, Moir (1977) suggested that secondary and tertiary sectors were divided into traditional and modern subsectors. The modern sector activities were those in which labor force share rises most with socio-economic development. Chenery and Taylor's scheme seems to be even better. They divided the secondary sector into early industry, middle industry and late industry. The scheme reflected not only the contribution of each industry to the overall growth pattern but also the effects of technological advances (Chenery and Taylor, 1968). In this paper, we will use late industry to indicate the sector which uses more advanced technology.

In addition, a shift-share approach has been developed to examine the relationship between industrial transformation and occupational structure (Gnanasekaran, 1966; Singlemann and Browning, 1980; Singlemann and Tienda, 1985). With the use of standardization methods, changes of occupational structure can be decomposed into industrial shift, occupational shift and interaction effect. It thus offers a means to clearly delineate the relationship between changes in industrial structure and occupational structure.

Taiwan is an ideal setting to apply these approaches for examining the relationship between migration and transformation in industrial and occupational structures. In the past three decades, migration in Taiwan has been both voluminous and characterized by positive selectivity (Chen and Speare, 1988). Meanwhile, Taiwan has also experienced a drastic transformation in industrial structure and sustained economic growth. We thus are able to locate rich data to explore the relationship between migration and transformation in industrial and occupational structures. In this paper, we do not intend to examine their causal relationship. Instead, the following discussion is focused on what kind of niche migrants have found in the overall industrial and occupational structures. Or how migrants' niches differ from general population and nonmigrants. Among our findings, two results are especially interesting. We found that migrants were more responsive to changes in industrial structures and took up more jobs in new industries.

I. DATA AND METHOD

The primary source of data for this paper is from the October round of a monthly labor force survey conducted by the Directorate General of Budget, Accounting and Statistics (DGBAS) in Taiwan. Beginning in 1979, DGBAS has resumed the responsibility of conducting the labor force survey. The survey is intended to be representative of the non-institutional population of Taiwan and involves a two-stage stratified sample design. In the first stage, village level units (Tsun's and Li's) were selected from a list stratified according to degree of urbanization and industrial composition, as indicated in household registration data. In the second stage, households were systematically selected within the sample Tsun's and Li's. In total 511 Tsun's or Li's and about 16,500 households were selected, which is equivalent to an overall sampling fraction of 4 per thousand.

In this paper, analysis is based on data from the migration questions of the surveys of 1980 to 1985 for persons aged 15 and over. The analysis was limited to persons aged 15 and over because only these persons were asked the labor force questions and reasons for moving. In these data, a person is defined as a migrant if he or she moved across a city or township boundary within the preceding year. Each person's occupation and industry were coded basically with 1958 ISCO and ISIC classification (UN, 1968). Respondents were grouped into seven categories, i.e., professional and administrative, clerical workers, sales workers, service workers, agricultural workers, production workers and nonskilled workers. Meanwhile, respondents were classified according to an eight-sector scheme of industry structure including extractive, early industry, middle industry, late industry, distributive services, producer services, social services and personal services. Or we have followed Chenery and Taylor's suggestion to divide manufactures into early industry, middle industry and late industry. Since the placement of construction and utilities were not indicated in their paper, the sectors were included in the category of late industry. Meanwhile, Browning and Singlemann's idea of four-service sectors was adopted without much deviation (see Appendix 1).

As mentioned before, the shift-share approach can be used to delineate the relationship between changes in industrial structure and occupational structure. Although it has been proposed that the method permits the decomposition of differences in occupational structures into three components-industrial-shift effect,

compositional-shift effect and interaction effect, here we assume there is no interaction effect. The first component represents the change in occupational structure between two points of time which is attributable to the transformation of the industrial structure. It is derived by standardizing the occupation distribution of the eight industries at the later point of time on the distribution of occupation at the earlier point of time, controlling for the growth rate of total employment. By subtracting industrial-shift from net shift, which indicated the growth of each occupational group independent of the growth of total employment, we were able to get the occupational shift effect.

II. THE TREND OF TRANSFORMATION IN INDUSTRIAL STRUCTURE

Taiwan was not an exception to the worldwide trend of rapid transformation of industrial structure in the past three decades. The share of its primary sector decreased drastically. On the other hand, both secondary and tertiary sectors have experienced substantial increase. As shown in Table 1, the majority of the labor

Table 1: Labor Force by Industrial Sector, 1952-1985.

Year	Industrial Sector			Total	Number
	Primary	Secondary	Tertiary		
1952	58.0	15.0	27.0	100.0	2,929
1955	55.4	16.2	28.4	100.0	3,108
1960	52.5	18.2	29.3	100.0	3,473
1965	48.7	20.1	31.2	100.0	3,763
1970	38.3	26.4	35.3	100.0	4,576
1975	31.5	33.8	34.7	100.0	5,521
1979	22.4	40.9	36.7	100.0	6,424
1980	20.4	41.5	38.1	100.0	6,547
1981	19.6	41.4	39.0	100.0	6,672
1982	19.7	40.4	39.9	100.0	6,811
1983	19.2	40.5	40.3	100.0	7,070
1984	18.2	41.7	40.1	100.0	7,308
1985	18.0	40.9	41.1	100.0	7,428

Notes:

- Sources:
 - Secondary Source: *Taiwan Statistical Data Book, 1986*. Council for Economic Planning and Development, ROC.
 - Primary source: DGBAS.
- Primary industry includes farming, fishing, forestry and mining.
- Secondary industry includes manufacturing, construction and utilities.
- Tertiary industry includes commerce, transportation and other services.

force were employed by the primary sector in 1952. Meanwhile, the tertiary sector was about twice that of the secondary sector (27% vs 15%). In the next ten years, both sectors grew slowly. In the decade from 1965 to 1975, the secondary sector experienced a rapid increase in share, while the tertiary kept the slow increasing pace. Thus both sectors had about equal shares of the labor force by 1975. In the next five years, the secondary sector still grew rapidly at about twice the speed of the tertiary sector. By 1980, the share of the secondary sector exceeded that of the tertiary by a margin of 3.4% for the first time. However, the share of the secondary sector decreased slightly in the next five years, while the tertiary sector still grew slightly. By 1985, both sectors each had a share of about 41% and the primary sector had only 18%.

Since the share of the primary sector in 1985 was still high relative to developed countries, one may expect its further decline in the future. However, the change in absolute size casts doubt about this expectation. In 1952, 1.7 million persons were employed in the primary sector reached a peak of about 1.9 million by 1964. Later on a drastic decrease occurred reaching its lowest point of 1.3 million in 1981. However, the size of the primary sector was somewhat stationary. It fluctuated in between 1.36 million and 1.31 million in the first half of the 1980s. Whether the fluctuation reflects a cyclical phenomenon or whether further improvements in technology will lead to its decrease in the future is an interesting topic which deserves further observation.

As mentioned before, changes in industrial structure are affected by technological improvement (Sly, 1972). Since we have observed a drastic change in industrial structure, we expect there was also a drastic technological change in Taiwan. Here we use energy consumption to indicate technology. As shown in Table 2, energy consumption in Taiwan has increased drastically in the past three decades. If we take 1980 as the basis, energy consumption in 1952 was only 2.8% of 1980's consumption level. The consumption in 1970 was about one third of 1980's. Even in the first half of the 1980s, energy consumption increased by 32.2%. Such drastic increases in energy consumption reflect the fact that Taiwan experienced a drastic technological changes in the last three decades. However, in the first half of the 1980s we found that a significant technological change began in 1983.

In the following discussion, we shall rely on the 1980 to 1985 DGBAS survey

Table 2: Energy Consumption in Taiwan, 1952- 1985

Year	Energy Consumption (million KWH)	Index
1952	1,076	2.8
1960	3,136	8.3
1970	11,946	31.5
1980	37,949	100.0
1981	37,448	98.7
1982	38,156	100.6
1983	42,319	111.5
1984	45,827	120.8
1985	47,919	132.2

- Sources: 1. Secondary source: Taiwan Statistical Data Book, 1986. Council for Economic Planning and Development, ROC.
2. Primary source: Taiwan Power Company.

data to understand the role of migrants in the industrial transformation. Since migrants in the surveys are defined as those who ever moved within the preceding year, the effects of migrants on industrial and occupational structures cannot be accumulated over years. Therefore, we are forced to use yearly comparisons in order to assess the migrants' effect. Here, we take 1980 as the base year. Data from this year will be compared with data from 1983 and 1985. The selection of 1983 and 1985 for comparison with 1980, on the one hand, reflects that they are the mid- and end-points of our study period. On the other hand, we have found that significant technological change in the first half of the 1980s began in 1983. The two yearly comparisons may reveal the progress in the transformation of occupational structures and confirm the role of migrants in the transformation.

III. THE CHARACTERISTICS OF MIGRANTS' INDUSTRIAL AND OCCUPATIONAL STRUCTURES

Table 3 shows the percentage distributions of industry for migrants and total

Table 3: Percentage Distributions of Industry for Migrants
and Total Sample, 1980, 1983 and 1985

Industry	Year				
	80(all) (1)	83(all) (2)	83(mig) (3)	85(all) (4)	85(mig) (5)
Extractive	20.7	18.5	5.6	17.5	6.3
Early industry	9.7	9.7	14.1	9.6	12.7
Middle industry	8.2	7.4	7.9	8.1	7.9
Late industry	25.1	23.8	28.7	23.4	25.3
Distributive service	16.6	18.0	14.9	17.7	17.8
Producer service	4.0	4.8	5.5	5.0	5.3
Social service	9.0	9.4	10.6	10.2	11.0
Personal service	6.8	8.4	12.8	8.5	13.7
Total	100.1	100.0	100.1	100.0	100.0
N	27,128	30,676	2,271	31,513	2,291

Industry	(2)-(1) (6)	(4)-(1) (7)	(3)-(2) (8)	(5)-(4) (9)	(5)-(3) (10)
Extractive	-2.2	-3.2	-13.1	-11.2	0.7
Early industry	0.0	-0.1	4.4	3.1	-1.4
Middle industry	-0.8	-0.1	0.5	-0.2	0.0
Late industry	-1.3	-1.7	4.9	1.9	-3.4
Distributive service	1.4	1.1	-3.1	0.1	2.9
Producer service	0.8	1.0	0.7	0.3	-0.2
Social service	0.4	1.2	1.2	0.8	0.4
Personal service	1.6	1.7	4.4	5.2	0.9
Total	-0.1	-0.1	-0.1	0.0	-0.1
Index of dissimilarity	4.3	5.0	16.2	11.4	5.0
χ^2	150.2*	216.3*	326.4*	251.9*	14.3

Source: Tabulation from Taiwan Labor Force Survey, 1980-85.

* Significant at 0.01 level.

sample in 1980, 1983, and 1985. If we regroup the categories of industry into primary, secondary, and tertiary sectors, we will find that the percentages of the three sectors are rather identical to their counterparts shown in Table 1. The largest difference is less than 2%. This result implies that sampling and coding system do not cause serious bias.

According to our data, the thesis of migration selectivity was basically supported. Moreover, our data suggested that migrants are more likely to take technologically advanced jobs than are nonmigrants. The differences in industrial distribution between migrants and total respondents were substantial. As shown in Table 3, the indices of dissimilarity for migrants were 16.2% and 11.4% in 1983 and 1985 respectively (see columns 8 & 9). On the other hand, the industrial structure for the total sample changed gradually in the five-year period. The index of dissimilarity for industrial distributions between 1980 and 1983 was 4.3%. It increased to 5.0% when the comparison was made between 1980 and 1985 (see column 7). Chi-square values for the four comparisons were all significant at 0.01 level. It suggests that Taiwan was undergone transformation in industrial structures and migrants were selective in terms of industrial structures.

The selectivity of migrants is not only supported by the summary measures but also by pattern of differences. For the total population, change of industrial distribution simply follows the worldwide trend of shifting labor from primary and manufacturing sectors to the service sectors. As shown in Table 3, the proportion of extractive sector decreased 2.2% between 1980 and 1983 and 3.2% between 1980 and 1985. They accounted for about 50% (2.2/4.3) and 64% (3.2/5.0) index of dissimilarity or total decrease, while the other 50% and 36% of decrease were attributable to manufacturing sectors.

The pattern of differences in industrial distributions between migrants and total respondents in the same year is somewhat different. Migrants were reluctant to join the extractive sector. The proportion in the extractive sector for migrants was 13.1% and 11.2% less than that for total respondents in 1983 and 1985 respectively (see columns 8 & 9). On the contrary, there were more migrants in the manufacturing and service sectors with few exceptions. As shown in Table 3, manufacturing and service sectors have roughly about equal share of increase.

The differential pattern of industrial distribution has two important implica-

tions. On the one hand, it suggests that migrants are more likely to take jobs with advanced technology. On the other hand, it indicates that migrants play a positive role in industrialization. According to Table 3 there were more migrants in early and late industries than respondents as a whole in 1983 and 1985. On the contrary, total respondents were experiencing loss in percentage distribution for these two industries. The differences in late industry suggests that migrants were more likely to take jobs with advanced technology. If the percentages were taken as the probabilities of joining late industry sector, t test of the differences were all significant at 0.01 level. The differences for both early and late industries indicate that migrants played a positive role in industrialization.

Why were there such kind of differentials? Here two demographic variables – age and sex – are used to examine the discrepancy. In Table 4, migrants' industrial distributions by age were compared with that of nonmigrants. In 1983, there were more young migrants aged 15-24 who were employed in the early industry than that of nonmigrants. For other age groups, there were no differences in percentage employed in early industry between migrants and nonmigrants. On the other hand, older migrants were the contributors of larger shares in late industry. As shown in Table 4, 9% (29.9% vs 20.9%) more migrants aged 35-44 than nonmigrants of the same age group were employed in late industry. In 1985, migrants of each age group have slightly greater proportions in early industry. For late industry, the picture in 1985 was somewhat mixed. Older migrants aged 35-44 still had slightly greater proportions in late industry, but younger migrants had smaller proportions in this category.

The influence of sex on the differential proportions in late and early industries has a persistent pattern. We found that male migrants were more likely to join late industry than nonmigrants. But female migrants were major contributors toward greater proportion in early industry. As shown in Table 5, there were 4.1% (30.7% vs 26.6%) and 9.6% (36.1% vs 26.5%) more male migrants than male nonmigrants who were employed in late industry in 1985 and 1983 respectively. For female, migrants had 4.3% (19.6% vs 15.3%) and 8.2% (23.8% vs 15.6%) more than nonmigrants in early industry in 1985 and 1983 respectively.

When we turn to occupational structure, our data still support the thesis of migration selectivity. Substantial differences were found between migrants and

Table 4: Percentage Distributions of Industry by Age for Migrants and Non-migrants, 1983 and 1985

Industry	Migrant 1983			Migrant 1985		
	15-24	25-34	35-44	15-24	25-34	35-44
Extractive	2.8	4.7	9.1	3.6	5.0	8.9
Early industry	20.3	8.6	6.7	18.8	9.3	7.9
Middle industry	7.6	9.3	7.1	8.8	7.6	6.9
Late industry	29.8	29.5	29.9	25.6	28.1	23.4
Distributive service	11.7	17.1	19.7	13.6	19.2	25.4
Producer service	4.4	7.4	5.1	3.2	8.4	3.1
Social service	8.6	13.0	11.8	9.1	12.4	12.7
Personal service	14.9	10.3	10.6	17.3	10.0	11.7
Total	100.1	99.9	100.0	100.0	100.0	100.0
N	1,109	718	254	959	807	291
% to migrants	48.8	31.6	11.2	42.2	35.5	12.8

Industry	Non-migrant 1983			Non-migrant 1985		
	15-24	25-34	35-44	15-24	25-34	35-44
Extractive	8.2	11.2	21.5	6.4	11.0	17.8
Early industry	17.3	8.6	6.7	17.1	8.8	7.3
Middle industry	9.8	8.0	6.5	11.5	8.4	7.6
Late industry	30.4	28.5	20.9	29.0	28.8	21.8
Distributive service	13.0	19.5	22.5	12.7	18.7	21.3
Producer service	5.2	6.8	4.2	5.0	6.7	4.9
Social service	6.1	9.6	9.8	7.0	9.9	10.8
Personal service	10.1	7.8	7.9	11.3	7.6	8.4
Total	100.1	100.0	100.0	100.0	99.9	99.9
N	6,509	8,556	5,463	6,095	9,138	5,842
% to population	22.9	30.1	19.2	20.8	31.2	20.0

Source: Labor Force Survey in Taiwan, 1980-85.

Table 5: Percentage Distributions of Industry by Sex for Migrants and Non-migrants, 1983 and 1985

Industry	Migrants 1983		Migrants 1985	
	Male	Female	Male	Female
Extractive	6.5	4.0	7.6	4.2
Early industry	8.3	23.8	8.6	19.6
Middle industry	8.7	6.5	9.3	5.6
Late industry	36.1	16.2	30.7	15.9
Distributive service	16.1	13.1	18.6	16.5
Producer service	5.4	5.5	4.9	5.9
Social service	8.2	14.5	9.4	13.9
Personal service	10.6	16.5	10.9	18.4
Total	99.9	100.1	100.0	100.0
N	1,421	850	1,431	842
% to migrants	62.6	37.4	63.0	37.0

Industry	Nonmigrant 1983		Nonmigrant 1985	
	Male	Female	Male	Female
Extractive	21.5	15.9	20.3	14.8
Early industry	5.9	15.6	6.1	15.3
Middle industry	7.2	7.7	8.0	8.5
Late industry	26.5	17.7	26.6	17.3
Distributive service	19.3	16.1	18.7	15.9
Producer service	4.2	5.8	4.6	5.6
Social service	8.5	10.8	8.9	12.3
Personal service	6.8	10.3	6.8	10.4
Total	99.9	99.9	100.0	100.1
N	18,272	10,133	18,808	10,432
% to population	64.3	35.7	64.3	35.7

Source: Labor Force Survey in Taiwan, 1980-85.

nonmigrants' occupational structures. Respondents as a whole underwent a gradual change in occupational structure. As shown in Table 6, the indices of dissimilarity for migrants and nonmigrants differentials were 15.3% and 11.5% in 1983 and 1985 respectively. On the other hand, the indices of dissimilarity were 4.5% and 5.4% for 1980 total versus 1983 total and 1980 total versus 1985 total respectively. Again, Chi-square values for the four comparisons were all significant at 0.01 level.

In addition to differences in summary measures, the migrant/nonmigrant differential in occupational structure was different from the overall trend. For total respondents, the pattern of change was a gradual increase for white collar workers but a slight decrease for blue collar workers. As shown in columns 6 & 7 of Table 6, the largest difference was only 2.4%. For migrant/nonmigrant differential, the picture was much different. Migrants' proportions for agricultural workers were 11.1% to 12.2% less than that for total respondents (see columns 8 & 9). Meanwhile, migrants had smaller proportion in the category of sales workers than that of total respondents. For other categories, migrants had greater proportion than that of nonmigrants. Among them, migrants had substantially greater proportions of production workers and unskilled workers indicating that migrants played a positive role in industrialization.

In brief, migrants and nonmigrants differed in their occupational structures. The next step was to find out the major cause of transformation of occupational structures and migrant/nonmigrant differential occupational structures. Although it has been proposed that differences in occupational structures can be decomposed into industrial-shift, occupational-shift and interaction effects. Here we assume that there is no interaction effect. This assumption is based on the fact that each cell in the crosstabulation table for industrial and occupational structures contains only one frequency. We thus are unable to calculate interaction effect.

IV. THE ROLE OF MIGRANTS IN THE TRANSFORMATION OF OCCUPATIONAL STRUCTURE

To assess the contribution of migrants in the transformation of occupational structure, the shift share approach was applied twice. In the first round, the approach was applied to total respondents in 1980 and 1983. The detailed applica-

Table 6: Percentage Distributions of Occupation for Migrants and Total Sample, 1980, 1983 & 1985

Occupation	Year				
	80(All) (1)	83(All) (2)	83(Mig) (3)	85(All) (4)	85(Mig) (5)
Prof. + Adm.	6.0	6.5	7.7	7.1	7.9
Clerical worker	12.4	13.5	14.3	13.5	13.5
Sales worker	12.1	13.5	10.4	13.6	13.2
Service worker	6.8	8.3	10.7	8.5	10.7
Agr. worker	19.1	17.4	5.2	16.7	5.6
Production worker	38.3	36.4	44.6	36.3	40.8
Unskilled worker	5.3	4.4	7.1	4.3	8.3
Total	100.0	100.0	100.0	100.0	100.0
N	27,328	30,828	2,279	31,696	2,291

Occupation	(2)-(1)	(4)-(1)	(3)-(2)	(5)-(4)	(5)-(3)
	(6)	(7)	(8)	(9)	(10)
Prof. + Adm	0.5	1.1	1.2	0.8	0.2
Clerical worker	1.1	1.1	0.8	0.0	0.8
Sales worker	1.4	1.5	-3.1	-0.4	2.8
Service worker	1.5	1.7	2.4	2.2	0.0
Agr. worker	-1.7	-2.4	-12.2	-11.1	0.4
Production worker	-1.9	-2.0	8.3	4.5	-3.8
Unskilled worker	-0.9	-1.0	2.7	4.0	1.2
Total	0.0	0.0	0.1	0.0	0.0
Index of dissimilarity	4.5	5.4	15.3	11.5	4.6
χ^2	156.7*	230.6*	289.6*	264.7*	14.6

Source: Tabulation from Taiwan Labor Force Survey, 1980-85.

* Significant at 0.01 level

tions of the approach is shown in Appendix 2. This step allows us to acquire components of occupational net shift for total respondents. In the second round, we limit our subjects to nonmigrants only. The detailed application of the shift-share approach is shown in Appendix 3. It results in components of occupational net shift for nonmigrants. When the results for nonmigrants are taken away from the results for total respondents, we are able to obtain the contribution of 1983 migrants in the transformation of occupational structure. The rationale for the procedure of subtraction is provided in Appendix 4. In order to make the results of subtraction more meaningful, a relative measure of change was created. For each occupational category, the net shift and each component are further divided by the total number of persons employed in 1980. The net shift and its components are expressed as percentage changes relative to the population of each occupational category in 1980.

In Table 7, changes in the occupational structures and its components between 1980 and 1983 are presented for total respondents, nonmigrants, and migrants. Table 7 confirms the fact that the findings derived from Table 6 are independent of total employment growth. In addition, we are able to assess the contribution of migrants in the changes of occupational structures. Moreover, we find that functions of industrial shift and changes in occupational composition are different for blue collar workers and white collar workers and for migrants and nonmigrants.

As mentioned before, the net shift indicates the growth of each occupational category independent of the growth of total employment. The changes in net shift as shown in Table 7 were similar to changes in percentage distribution of occupation as shown in Table 6. For total respondents, we found that blue collar workers were experiencing substantial loss but white collar workers were having substantial increase in terms of percent net shift. The increase of white collar workers was between 8.1% to 24.3% relative to their employment in 1980 (see panel 1, column 3 of Table 7). However, the loss of blue collar workers was between 5.6% to 19.1%. This pattern of change was similar to that was found in Table 6. The changes of occupational structures in 1980-1983 were independent of total employment growth.

The contribution of 1983 migrants in the transformation of occupational structure was shown in panel 3 of Table 7 which was the difference between panel

Table 7: Changes in the Occupational Structures and its Components, 1980-1983

Occupation	Employees in '80 (1)	Net Shift (2)	% Net Shift (2)/(1) (3)	Component of Change	
				Indust. Shift (4)	Occup. Shift (5)
1983 all					
Prof. + Adm.	1,627	132	8.1	4.5	3.6
Clerical worker	3,354	317	9.5	4.9	4.6
Sales worker	3,294	461	14.0	10.0	4.1
Service worker	1,807	440	24.3	17.2	7.1
Agr. worker	5,194	-493	-9.5	-11.7	2.2
Production worker	10,416	-584	-5.6	-2.4	-3.2
Unskilled worker	1,436	-274	-19.1	-1.4	-17.7
1983 non-migrants					
Prof. + Adm.	1,627	96	5.9	3.1	2.8
Clerical worker	3,354	277	8.3	3.4	4.9
Sales worker	3,294	499	15.2	10.3	4.9
Service worker	1,807	349	19.3	12.4	6.9
Agr. worker	5,194	-177	-3.4	-5.6	2.2
Production worker	10,416	-728	-7.0	-3.8	-3.2
Unskilled worker	1,436	-316	-22.0	-2.8	-19.2
Differences between all and non-migrants					
Prof. + adm.	-	36	2.2	1.4	0.8
Clerical worker	-	40	1.2	1.5	-0.3
Sales worker	-	-38	-1.2	-0.4	-0.8
Service worker	-	91	5.0	4.8	0.2
Agr. worker	-	-316	-6.1	-6.1	0.0
Production worker	-	144	1.4	1.4	0.0
Unskilled worker	-	42	2.9	1.4	1.5

Note: Derived from Appendices 2 & 3.

1 & 2. The pattern of migrants' contribution in the change of occupation was similar to that was found in Table 6. Migrants had the function of decreasing employment of agricultural and sales workers but increasing employment of other occupational categories. The degree of migrants' contribution was substantial for most occupational categories. For example, 1983 migrants accounted for a loss of agricultural workers equivalent to about 6.1% of its employment in 1980. Meanwhile, total respondents experienced a loss of 9.5% in agricultural workers. That is, 1983 migrants accounted for 64% ($6.1/9.5$) of the decrease of agricultural workers. For production and unskilled workers, the contribution of migrants was in a direction which was opposite to the total respondents. For total respondents, a 5.6% and 19.1% decrease of production and unskilled workers relative to their employment in 1980 respectively was observed. On the contrary, migrants accounted for 1.4% and 2.9% increase for production and unskilled workers respectively. In addition, the contribution of 1983 migrants for professional and administrative workers and service workers was more than 20% of change observed for total respondents.

But what we are most concerned about is the relative contribution of migrants to industrial shifts and occupational shifts. According to Table 7, migrants were more responsive to industrial shifts than nonmigrants for most occupational categories. For migrants, the percentages of occupational shift were rather small, while industrial shift accounted for the overwhelming majority of percentage net shift. However, two exceptions to this statement were observed. For skilled workers, the industrial shift and occupational shift had about equal share. For sales workers, although occupational shift was greater than industrial shift, their percentages were insignificant. On the other hand, the picture for nonmigrants was different. The contribution of occupational shift ranged from about one third to two thirds. Exceptions were observed for unskilled and agricultural workers. Occupational shift accounted for 87.1% of total change for unskilled workers. For agricultural workers, the occupational shift had a positive contribution, while the industrial shift lead to its drastic decrease.

The migrant/nonmigrant differential in response to industrial shift was confirmed by 1985 data. As shown in Table 8 which was derived from Appendices 5 & 6, the contribution of the occupational shift was trivial for most occupational categories of migrants. The industrial shift was the major contributor. The exception to this rule also occurred to sales and unskilled workers. For sales workers,

Table 8: Changes in the Occupational Structures and Its Components, 1980-1985

Occupation	Employees in '80 (1)	Net Shift (2)	% Net Shift (3)	Component of Change	
				Indust. Shift (4)	Occup. Shift (5)
1985 all					
Prof. + Adm.	1,627	322	19.8	11.6	8.2
Clerical worker	3,354	360	10.7	7.7	3.4
Sales worker	3,294	492	14.9	10.6	4.3
Service worker	1,807	504	27.9	21.2	6.7
Agr. worker	5,194	-748	-14.4	-17.7	3.3
Production worker	10,416	-622	-6.0	-2.2	-3.8
Unskilled worker	1,436	-307	-21.4	-1.3	-20.1
1985 non-migrants					
Prof. + Adm.	1,627	283	17.4	10.0	7.4
Clerical worker	3,354	336	10.0	6.4	3.6
Sales worker	3,294	465	14.1	4.6	9.5
Service worker	1,807	419	23.2	15.6	7.6
Agr. worker	5,194	-443	-8.5	-11.9	3.4
Production worker	10,416	-684	-6.6	-3.0	-3.6
Unskilled worker	1,436	-377	-26.3	-2.4	-23.8
Differences between all and non-migrants					
Prof. + Adm.	-	39	2.4	1.7	0.8
Clerical worker	-	24	0.7	1.3	-0.6
Sales worker	-	27	0.8	6.0	-5.2
Service worker	-	85	4.7	5.6	-1.0
Agr. worker	-	-305	-5.9	-5.8	-0.1
Production worker	-	62	0.6	0.8	-0.2
Unskilled worker	-	70	4.9	1.1	3.7

Note: Derived from Appendices 5 & 6.

industrial shift and occupational shift were about equal in size but in different directions. For unskilled workers, the occupational shift accounted for about 77% of total change. Probably, their relatively lower educational level results in limited awareness and skill to response to industrial change. On the other hand, the contribution of the occupational shift was substantial for most occupational categories of nonmigrants. Again, they ranged from one third to two thirds of net shift. Exceptions again were observed for unskilled and agricultural workers. For unskilled workers, the occupational shift accounted for about 90% of the net shift. For agricultural workers, the occupational shift again had a positive contribution, while the industrial shift lead to a substantial decrease.

In Table 8, we also found that the transformation of occupational structures was in progress from 1983 to 1985. White collar workers kept gradually increasing in size but blue collar workers were experiencing further loss. For example, the percent net shift for professional and administrative workers was only 8.1% in 1983 (see Table 7). It increased to 19.8% in 1985 (see Table 8). On the other hand, the percent net shift for agricultural workers was -9.5% in 1983. It further decreased to -14.4% in 1985. Toward this trend, migrants had substantial reinforcement function for professional and administrative, service workers, and agricultural workers. On the contrary, migrants had a substantial counteracting function toward the decrease of blue collar workers.

V. DISCUSSION

Evidence presented in this paper indicate that there was a significant technological improvement in Taiwan in the period 1980-1985. The technological change in turn had effects on the transformation of industrial and occupational structures. Change in industrial structures then became pull factors to migrants. Since migrants were selective, they were more likely to take jobs with advanced technology than nonmigrants. They were also more responsive than nonmigrants to shift in industrial structures.

Still, the conclusion about the migrants' contribution is left to be confirmed by other survey data with information about entries and exits of labor force. Basically, transformation in industrial and occupational structures is a dynamic

process. It is subject to the influences of entries of and exits from labor force and growth of the job market. To acquire a complete picture about the migrants' effect, we must consider these factors simultaneously. However, we do not have data about exits and entries for the labor force in this survey. We thus are unable to separate their effect on occupational structure from that of migrants. However, we feel that the degree of contamination caused by failure to take away the effect of entries and exits of labor force is limited for the following three reasons. (1) Only a small proportion of new entries of labor force were migrants. We suppose that most of the entries of labor force are young people aged 15-24. In this survey, migrants aged 15-24 accounted for about 14.5% (1,109/7,668) and 15.7% (959/6,095) of total respondents in this age group in 1983 and 1985 respectively, while they constitute some 40% of migrants. (2) The procedure of taking the differences between total respondents and nonmigrants would cancel out most of the effect of entries and exits of labor force. Since both of them were subject to the influence of entries and exits of labor force who are nonmigrants, the procedure of taking differences between them would result in the cancellation of their effect on occupational structures. (3) The influence of growth of job market was already taken care of by one of the standardization procedures included in the shift-share approach. Based on the reasons cited above, we believe that the differences between nonmigrants and total respondents at least reflect a static picture about the role of migrants at the time of interview.

Finally, the question of why migrants are more responsive to shift in industrial structure is also an interesting research topic. We suspect that information about job vacancies created by occupational shift is diffused heavily through interpersonal communication, while the diffusion of information about opportunities created by industrial shift relies more on mass media. Since migrants suffer from the intervening obstacles of distance, they lack interpersonal communication. They are forced to rely on information diffused by mass media, and therefore become more responsive to industrial shift.

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Appendix 1: Classifications of Industrial and Occupational Structure

I. Industrial structure:

1. Extractive:
Agriculture, hunting, forestry, fishing, coal mining, crude petroleum and natural gas products, metal ore mining, salt industry, chemical fertilizer mining, quarry, other mining.
2. Early industry:
Food manufacturing, beverage & tobacco industry, manufacture of textile, wearing apparel, and leather.
3. Middle industry:
Manufacture of wood, bamboo and non-metal furniture, industrial chemical, chemical products, petroleum and coal products, rubber products, plastic products, non-metallic mineral products.
4. Late industry:
Paper, paper products and printing; basic metal industries; fabricated metal products; machinery and equipment; electrical machinery apparatus, appliance and supplies; transport equipment; precision instrument; electricity, gas & water; construction.
5. Distributive services:
Wholesale trade, retail trade, transport, storage.
6. Producer services:
International trade, communication, financial institutions, insurance, real estate, business services, loan of equipments.
7. Social services:
Public administrative and defense officials, sanitary service, social and community service, international organizations.
8. Personal services:
Restaurant and hotel, personal service.

II. Occupational structure:

1. Professional and administrative workers:
Chemists, physicians, geologists & other physical scientists; architects & engineers; aviation & navigation related workers; biologists; physicians & other medical workers; accountants; statisticians & other related scientists; economists; jurists; teachers; religious workers; writers & related workers; artists; composers & performers; athletes; other professionals; legislators & government officials; directors, managers & working proprietors.

2. Clerical workers:

Supervisors, stenographers & typists; book-keepers & cashiers; other clerical workers.

3. Sales workers:

Managers of international trade, wholesale & retail trades; salesmen, shop assistants & related workers; commercial travellers & manufacturer's agents; auctioneers; other related workers.

4. Service workers:

Owners or managers of restaurants, barber shop & related workers; house-keepers, cooks, maids & related workers; building caretakers, cleaners & related workers; launderers, dry cleaners & pressers; fire fighters, polices, guards & related workers.

5. Agricultural workers:

Farmers & farm managers; farm owners; farming & husbandry related workers; loggers & other related workers; fisherman & related workers.

6. Production workers:

Supervisor & foremen; miners, quarrymen, well drillers & related workers; metal making & treating workers; paper-pulp preparers, paper maker and related workers; chemical & related process workers; spinners, wavers, knitters, dyers & related workers; leather cutters & related workers; food and beverage workers; tobacco preparers; tailors, cutters, sewers, furriers & related workers; shoemakers; carpenters, cabinet makers & related workers; tool makers & related workers; machinists, precision-instrument makers & related workers; electricians & related electric and electronic workers; radio, movie, broadcasting operators; plater, plumbers & related workers; jewellers; potters, glass & related workers; rubber & plastic product workers; printing & related workers; painters; brick layers & other construction workers; generator operators; longshoremem & related freight handlers, workers in transport.

7. Unskilled workers:

Apprentices and unskilled workers.

**Appendix 2: Components of Occupational Net Shift,
1980-1983, for Total Respondents**

Occupation	#	Employee	1983 total weighted by '80 occupa.	1983 total weighted by '80 occupa. in indus.	Actual change (2)-(1)	Expected change (3)-(1)
	1980 (1)	1983 (2)	(3)	(4)	(5)	(6)
Prof. + adm.	1,627	1,973	1,841	1,915	346	214
Clerical worker	3,354	4,121	3,804	3,966	767	450
Sales worker	3,294	4,173	3,712	4,040	879	418
Service worker	1,807	2,495	2,055	2,367	688	248
Agr. worker	5,194	5,336	5,859	5,254	172	665
Prod. worker	10,416	11,196	11,780	11,532	770	1,354
Unskilled	1,436	1,352	1,626	1,606	-84	190
Total	27,128	30,676	30,677	30,680	3,538	3,539

Occupation	Net shift (5)-(6) (7)	Compon. of (7)		% of compon. to (1)		
		Indus. shift (4)-(3) (8)	Occupa. shift (2)-(4) (9)	Net shift (7)/(1) (10)	Indus. shift (8)/(1) (11)	Occupa. shift (9)/(1) (12)
Prof. + adm.	132	74	58	8.1	4.5	3.6
Clerical worker	317	162	155	9.5	4.9	4.6
Sales worker	461	328	133	14.0	10.0	4.1
Service worker	440	312	128	24.3	17.2	7.1
Agr. worker	-493	-605	112	-9.5	-11.7	2.2
Prod. worker	-584	-248	-336	-5.6	-2.4	-3.2
Unskilled	-214	-20	-254	-19.1	-1.4	-17.7
Total	-1	3	-4	-	-	-

Source: Taiwan Labor Force Survey, 1980-85.

**Appendix 3: Components of Occupational Net Shift,
1980-83, For Non-migrants**

Occupation	Employee		1983	1983	Actual change (2)-(2)	Expected change (3)-(1)
	# 1980 (1)	1983 (2)	total weighted by '80 occupa. (3)	total weighted by '80 occupa. in indu. (4)		
Prof + adm	1,627	1,800	1,704	1,755	173	77
Clerical worker	3,354	3,799	3,522	3,636	445	168
Sales worker	3,294	3,936	3,437	3,776	642	143
Service worker	1,807	2,252	1,903	2,218	445	96
Agr. worker	5,194	5,248	5,425	5,136	54	231
Prod. worker	10,416	10,180	10,908	10,513	-246	482
Unskilled	1,436	1,190	1,506	1,466	-246	70
Total	27,128	28,405	28,405	28,410	1,267	1,267

Occupation	Net shift (5)-(6) (7)	Compon. of (7)		% of compon. to (1)		
		Indus. shift effect (4)-(3) (8)	Occupa. shift effect (2)-(4) (9)	Net shift (7)/(1) (10)	Indus. shift (8)/(1) (11)	Occupa. shift (9)/(1) (12)
Prof.+ adm.	96	51	45	5.9	3.1	2.8
Clerical worker	277	114	163	8.3	3.4	4.9
Sales worker	499	339	160	15.2	10.3	4.9
Service worker	349	225	124	19.3	12.4	6.9
Agr. worker	-177	-289	112	-3.4	-5.6	2.2
Prod. worker	-728	-395	-333	-7.0	-3.8	-3.2
Unskilled	-316	-40	-276	-22.0	-2.8	-19.2
Total	0	5	-5	-	-	-

Source: Taiwan Labor Force Survey, 1980-85.

Appendix 4

The differences between the decomposition results of respondent and of nonmigrants is equivalent to the result of standardizing 1983 migrants on 1980's data. The rational is provided as follows:

Let

n_{ij} = number of persons in both the i th category of industry and the j th category of occupation in 1980

N_{ij} = number of persons in both the i th category of industry and the j th category of occupation in 1983

N'_{ij} = number of nonmigrants in both the i th category of industry and the j th category of occupation in 1983

M'_{ij} = number of migrants in both the i th category of industry and the j th category of occupation in 1983

$n_{..}$ and $N_{..}$ = total number of persons in 1980 and 1983 respectively

$N_{ij} = N'_{ij} + M'_{ij}$

Then, the net shift and the industrial shift for 1983 total respondents are as follows:

$$\text{Net shift} = \sum_i N_{ij} - \sum_i \frac{n_{ij}}{n_{..}} N_{..}$$

$$\text{Industrial shift} = \sum_i \frac{n_{ij}}{n_{i.}} N_{i.} - \sum_i \frac{n_{ij}}{n_{..}} N_{..}$$

Here

$\sum_i N_{ij}$ = number of persons in the j th category of occupation in 1983 as shown in column 2 of Appendix 2.

$\sum_i \frac{n_{ij}}{n_{i..}} N_{i..}$ = number of persons in the jth category of occupation in 1980 weighted by 1983 total as shown in column 3 of Appendix 2.

$\sum_i \frac{n_{ij} N_i}{n_i}$ = number of persons in the jth category of occupation within the ith category of industry in 1980 weighted by number of persons in ith category of industry in 1983. As shown in column 4 of appendix 2.

Similarly, the net shift and the industrial shift for 1983 nonmigrants are as follows:

$$\text{Net shift} = \sum_i N'_{ij} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..}$$

$$\text{Industrial shift} = \sum_i \frac{n_{ij}}{n_i} N'_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..}$$

Taking the differences between the above two sets of net shift and components, we are able to show that the results equal to the results of standardizing 1983 migrants on 1980's data.

$$\text{Net shift for migrants} = \left(\sum_i N_{ij} - \sum_i \frac{n_{ij}}{n_{i..}} N_{i..} \right) - \left(\sum_i N'_{ij} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..} \right)$$

$$= \left[\sum_i (N'_{ij} + M'_{ij}) - \sum_i \frac{n_{ij}}{n_{i..}} (N'_{i..} + M'_{i..}) \right] - \left(\sum_i N'_{ij} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..} \right)$$

$$= \sum_i M'_{ij} - \sum_i \frac{n_{ij}}{n_{i..}} M'_{i..}$$

$$\text{Industrial shift for migrants} = \left(\sum_i \frac{n_{ij}}{n_i} N_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} N_{i..} \right) - \left(\sum_i \frac{n_{ij}}{n_i} N'_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..} \right)$$

$$= \left[\sum_i \frac{n_{ij}}{n_i} (N'_{i.} + M'_{i.}) - \sum_i \frac{n_{ij}}{n_{i..}} (N'_{i..} + M'_{i..}) \right] - \left(\sum_i \frac{n_{ij}}{n_i} N'_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..} \right)$$

$$\left(\sum_i \frac{n_{ij}}{n_i} N'_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} N'_{i..} \right) = \sum_i \frac{n_{ij}}{n_i} M'_{i.} - \sum_i \frac{n_{ij}}{n_{i..}} M'_{i..}$$

**Appendix 5: Components of Occupational Net Shift,
1980-1985, for Total Respondents**

Occupation	#	Employee	1985 total weighted by '80 occupa.	1985 total weighted by '80 occupa. in indus.	Actual change (2)-(1)	Expected change (3)-(1)
	1980 (1)	1985 (2)	(3)	(4)	(5)	(6)
Prof. + adm.	1,627	2,215	1,893	2,082	588	266
Clerical worker	3,354	4,272	3,912	4,170	918	558
Sales worker	3,294	4,310	3,818	4,169	1,016	524
Service worker	1,807	2,618	2,114	2,497	811	307
Agr. worker	5,194	5,278	6,026	5,106	84	832
Prod. worker	10,416	11,494	12,116	11,893	1,078	1,700
Unskilled	1,436	1,365	1,672	1,653	-71	236
Total	27,128	31,552	31,552	31,570	4,424	4,423

Occupation	Net shift (5)-(6) (7)	Compon. of (7)		% of compon. to (1)		
		Indus. shift (4)-(3) (8)	Occupa. shift (2)-(4) (9)	Net shift (7)/(1) (10)	Indus. shift (8)/(1) (11)	Occupa. shift (9)/(1) (12)
Prof. + adm.	322	189	133	19.8	11.6	8.2
Clerical worker	360	258	102	10.7	7.7	3.0
Sales worker	492	351	141	14.9	10.6	4.3
Service worker	504	383	121	27.9	21.2	6.7
Agr. worker	-748	-920	172	-14.4	-17.7	3.3
Prod. worker	-622	-223	-399	-6.0	-2.2	-3.8
Unskilled	-307	-19	-288	-21.4	-1.3	-20.1
Total	1	19	-18	-	-	-

Source: Taiwan Labor Force Survey, 1980-85.

Appendix 6: Components of Occupational Net Shift,
1980-85, For Non-migrants

Occupation	# 1980 (1)	Employee 1985 (2)	1985	1985	Actual change (2)-(1) (5)	Expected change (3)-(1) (6)
			total weighted by '80 occupa. (3)	total weighted by '80 occupa. in indus. (4)		
Prof. + adm.	1,627	2,040	1,757	1,919	413	130
Clerical worker	3,354	3,966	3,630	3,844	612	276
Sales worker	3,294	4,008	3,543	3,806	714	249
Service worker	1,807	2,381	1,962	2,244	574	155
Agr. worker	5,194	5,149	5,592	4,973	-45	398
Prod. worker	10,416	10,559	11,243	10,933	133	817
Unskilled	1,436	1,175	1,552	1,517	-261	116
Total	27,128	29,278	29,279	29,236	2,140	2,141

Occupation	Net shift (5)-(6) (7)	Compon. of (7)		% of compon. to (1)		
		Indus. shift (4)-(3) (8)	Occupa. shift (2)-(4) (9)	Net shift (7)/(1) (10)	Indus. shift (8)/(1) (11)	Occupa. shift (9)/(1) (12)
Prof. + adm.	283	162	121	17.4	10.0	7.4
Clerical worker	336	214	122	10.0	6.4	3.6
Sales worker	465	263	202	14.1	4.6	9.5
Service worker	419	282	137	23.2	15.6	7.6
Agr. worker	-443	-619	176	-8.5	11.9	3.4
Prod. worker	-684	-310	-374	-6.6	-3.0	-3.6
Unskilled	-377	-35	-342	-26.3	-2.4	-23.8
Total	-1	-43	43	-	-	-

Source: Taiwan Labor Force Survey, 1980-85.

台灣地區人口遷徙與行職業結構轉型

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(中文摘要)

本文所要探討的主題是——假如遷徙者呈正性選擇，遷徙者在行職業結構中所佔的位置是否不同於非遷徙者？更確切而言，本文除了探討遷徙者能適時供給次級及三級行業所需人力的問題外，還包含兩個特殊的目標。一個是探討遷徙者從事於需要進步科技之職業的比例是否高於非遷徙者？其次是探討遷徙者對行業結構轉變之反應是否快於非遷徙者？透過這二種機能，遷徙者能有助於台灣地區行職業結構之轉型。

本文係利用1980至1985年行政院主計處所舉辦之勞動力調查的遷徙資料進行分析。結果顯示在該期間，台灣地區的生產技術是有顯著的改善，行職業結構也在緩慢轉型中。結構上的改變形成對遷徙者的一種吸力。被吸引的遷徙者是不同於非遷徙者。他們較多從事於需要進步科技的職業，對於行業結構改變的反應也快於非遷徙者。

職業類別 (Occupation)	遷徙者 (Migrants)	非遷徙者 (Non-migrants)	總計 (Total)
Unskilled worker	11	10	21
Low skilled worker	10	10	20
High skilled worker	10	10	20
Professional	10	10	20
Technical	10	10	20
Service	10	10	20
Industrial	10	10	20
Construction	10	10	20
Transport	10	10	20
Information	10	10	20
Health	10	10	20
Education	10	10	20
Government	10	10	20
Other	10	10	20
Total	100	100	200

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MIGRATION AND TRANSFORMATION OF INDUSTRIAL AND OCCUPATIONAL STRUCTURES IN TAIWAN

(ABSTRACT)

This paper is an effort to pursue the question – if migrants are selective, are their niches in industrial and occupational structures different from those of nonmigrants? In addition to the discussion of the role of migrants in supplying manpower to the secondary and tertiary sectors, two other questions are interested in this paper. One is whether migrants are more likely to take jobs with advanced technology than nonmigrants. The other is whether migrants are more responsive than nonmigrants to new industries?

Evidence presented in this paper indicates that there was a significant technological improvement in Taiwan in the period 1980-1985. Meanwhile, industrial and occupational structures have transformed gradually. The structural changes became a pull factor to migrants. Migrants were thus different from nonmigrants. They were more likely to take jobs with advanced technology and more responsive to shift in industrial structure.