From labour surplus to labour shortage economy: the case of Japan

Keichi INOUE¹

It is not very long since Japan made the transition from a labour surplus to a labour shortage economy. This is most strikingly illustrated by the fact that it was only in 1961 that, for the first time since the Second World War², the number of vacancies notified to the employment exchanges exceeded the number of job applications. The purpose of the present article is to look at this process more closely, analyse the various factors which account for it and consider whether it has any lessons for developing countries engaged in working out their employment strategies.

The discussion that follows may require a few qualifications. Clearly, in addition to the factors examined here there are a number of others that contributed to this important shift in the labour market—the educational system, entrepreneurial initiative, the lifetime employment system, capacity to transform (in Kindleberger's phrase), the industrial infrastructure, etc. Also it may be objected that rather excessive emphasis is placed on the period between 1956 and 1961, whereas the influence of the various factors and elements discussed in the text continued to make itself felt in more or less the same manner in subsequent years and in this sense the process really continued. All this will be readily conceded by the author, whose purpose in focusing on the period mentioned and on those elements that had direct relevance to the transition process is simply to highlight the essentials of the situation as clearly and concisely as possible.

Owing to the present depression the vacancy/application ratio has recently fallen below 1 again, but it seems that this is merely a passing phenomenon and that once the economy has recovered the above trend will be reversed.

¹ International Labour Office.

² Japan did in fact enjoy full employment during the period just before the Pacific War, but this was an exceptional situation mainly caused by the expansion of war industries.

Unemployment after the Second World War

The unemployment situation immediately after the Second World War, with vast numbers of demobilised soldiers, civilians repatriated from abroad and workers laid off from war industries crowding on to the labour market, was one of the worst in Japanese history. It is estimated that at that time the existing labour force was swollen by approximately 10 million more people in need of employment.¹ Most of them were gradually absorbed into (under)employment in the agricultural sector, but not all of them could find a job. According to a population survey conducted in April 1946, the number of unemployed was 1,600,000, or 5.3 per cent of the total labour force, and if those who worked only one to seven days per month were added, the proportion rose to 12 per cent. The corresponding figures for the nonagricultural sector only were 10 per cent and 17 per cent.²

Although this situation gradually improved as the Japanese economy recovered from the damage caused by the war, the number of job vacancies registered with the employment exchanges in 1955, ten years after the end of the war, was still only 40 per cent of that of all applications. During the next five or six years, however, an extraordinary change took place.

The investment boom, 1956-61

Although its productive capacity was seriously impaired during the war period, the Japanese economy managed to recover and expand its industrial activities quite rapidly, mainly by repairing existing equipment and facilities. The production increases made possible in this way are considered to have reached a limit around 1952, however.³ During the war Japan had also been isolated from the technological progress made in more advanced countries, and there was an urgent need to make up the leeway by importing modern technologies if Japan was to compete effectively in the international market. At the same time there was a change in consumers' behaviour. Demand had so far concentrated to a very large extent on basic necessities such as foodstuffs and clothing. However, as income levels rose, consumer demand was geared increasingly to leisure and luxury goods such as radios, television sets, cars and refrigerators. It was the combination of these factors that caused an investment boom between 1956 and 1961. During this period private fixed investment increased at an average *annual* rate of 30 per cent in current prices.

¹ Shôwa Dôjin Kai: *Wagakuni kanzenkoyô no igi to taisaku* [Full employment in Japan: significance and policy] (Tokyo, 1957), p. 626.

² Mataji Umemura: Sengo Nihon no rôdôryoku [The labour force in postwar Japan] (Tokyo, Iwanami Shoten, 1963), pp. 71-72.

^a Research Bureau, Economic Planning Agency: *Keizai hakusho nijyugonen* [Twenty-five years of the White Paper on the economy] (Tokyo, Nihon Keizai Shimbun Sha, 1972), pp. 162-163.

Two important factors made this rapid rate of investment growth possible. First, during the period in question there was a sharp rise in the personal savings ratio, which had already been high by international standards.¹ This is one of the reasons why the Japanese economy could sustain a high rate of economic growth without, at least initially, bringing about inflation and deficits in the balance of payments in spite of the rapid growth of fixed capital formation.²

Second, in their financing activities the commercial banks gave priority to big enterprises with which they had a special relationship³ and poured a tremendous amount of investment capital into them. In turn they were backed by the Central Bank which made loans available to them. It has been pointed out that if enterprises had had to rely entirely on their own savings or on the capital market for the financing of their investment, the rapid growth of capital formation referred to above would not have taken place.⁴

Employment effects of the investment boom

The employment implications of the investment boom may be examined with the aid of the 1960 input-output tables.⁵ To start with, however, the following three terms should be defined:

- (i) capital dependency of employment;
- (ii) labour coefficient; and
- (iii) index of the power of dispersion.

Capital dependency of employment. In 1960 there were 23,395,200 wage and salary earners, of whom 6,771,100 were directly or indirectly dependent on final demand for fixed capital formation. It can be said, therefore, that in that year 28.9 per cent of all wage and salary earners were dependent on fixed capital formation for their livelihood. The balance was dependent on private consumption, government consumption, net increase in stocks, exports, etc. This ratio, which may be called the capital dependency of employment, can also be obtained for individual industries. For example in the case of the electrical machinery sector it was 58.7 per cent.

Labour coefficient. Needless to say, this refers to the volume of labour required to produce a given unit of output. (This is the average labour

¹ See for instance Miyohei Shinohara: Structural changes in Japan's economic development (Tokyo, Kinokuniya, 1970), pp. 40-77.

² Cf. ibid., p. 93, and Ryûtarô Komiya: Sengo Nihon no keizai seichô [Economic development in postwar Japan] (Tokyo, Iwanami Shoten, 1963), p. 158.

^a In Japan most of the major banks belong to one or other of the leading industrial groups. Although smaller enterprises are not excluded from access to the commercial banks, they tend to rely on smaller financial institutions.

⁴ Miyohei Shinohara: Nihon keizai no seichô to junkan [Growth and cycles in the Japanese economy] (Tokyo, Sôbunsha, 1961), p. 106.

⁵ Labour Statistics and Research Division, Ministry of Labour: *Rôdôryoku no* sangyôrenkan bunseki [An input-output analysis of the labour force] (Tokyo, 1965).

coefficient. The marginal labour coefficient indicates the volume of additional labour required to increase output by one unit.) For instance, in 1960 it was 47.474 persons per 100 million yen in the case of the electrical machinery sector.

Index of the power of dispersion.¹ The power of dispersion of a given sector is defined as the average of the additional volume of labour in all sectors that is directly and indirectly induced by a given increase in the final demand for the products of that sector.² For ease of comparison between sectors the above figure is further divided by the average of all the elements of the inverse of the Leontief matrix.³ The average of the figures thus obtained for each sector $(U.j)^4$ is 1, so that if U.j is greater than 1 it implies that the power of dispersion of the sector in question (j) is above average: in other words an increase in the final demand for the products of that sector directly and indirectly creates more employment than the same increase in an average sector does. In the present analysis a figure which represents only *indirect* effects on the *other* sectors is used.⁵ (That is to say, this figure does not cover either direct or indirect effects on its own sector.)

A clear idea of the relationship between the capital dependencies of employment and labour coefficients of different sectors in 1960 may be had from the input-output analysis referred to earlier. This shows that, of the

 ${}^{2}\frac{1}{n}\sum_{i}l_{ij}$, where n = number of sectors and l_{ij} = an element of $l(I-A)^{-1}$.

⁸ In this case the inverse matrix which has taken into account the input coefficients of labour, i.e. $\hat{l}(I-A)^{-1}$.

$$U.j = \frac{\frac{1}{n} \sum_{i} l_{ij}}{\frac{1}{n^2} \sum_{i} \sum_{j} l_{ij}}$$

⁵ This is calculated from $(l' - \hat{l}')$, where $l' = \hat{l} (l - A)^{-1}$ and $\hat{l}' = \begin{pmatrix} l_{11} & 0 & \dots & 0 \\ 0 & l_{22} & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \dots & \vdots & l_{nn} \end{pmatrix}$.

¹ This notion is based on Rasmussen's index of the power of dispersion; see P. N. Rasmussen: Studies in inter-sectoral relations (Copenhagen, Einar Harcks, 1956), pp. 134 and 141. Comparing it with the well-known concept of (backward) linkage effects Hirschman has this to say: "A more refined measure of backward linkage can be obtained by considering the inverse of the input-output matrix. This inverse matrix makes it possible to estimate the direct and indirect repercussions of an increase in final demand requirements for any one industry on the other sectors of the economy. Since indirect repercussions are not taken into account when one computes simply the ratio of an industry's purchases from other industries to the total value of its output, the measure derived from the inverse matrix is more comprehensive. A Danish economist has proposed this measure-he calls it 'power of dispersion '—as one way of identifying ' key industries ', and has argued that knowledge of these measures could be of value in a depression because it would permit us to focus recovery policy on those industries whose expansion would ' lead to a general increase in economic activity embracing all or at least most industries '. In addition, we believe that computation of these indexes may be of interest not only to those who seek to reactivate a developed economy but also to those who attempt to activate an underdeveloped economy." See A. O. Hirschman: The strategy of economic development (New Haven and London, Yale University Press, 1958), p. 108.

40 sectors used in the breakdown, those that clearly were labour intensive (or not particularly capital intensive) and capital dependent were the following:

- 5 Metallic and non-metallic minerals
- 12 Lumber and wood products
- 20 Ceramic, stone and clay products
- 24 Fabricated metal products
- 25 Machinery
- 26 Electrical machinery, equipment and supplies
- 27 Transport equipment
- 30 Building construction
- 31 Engineering construction.

There is therefore a presumption that these sectors were potentially capable of above-average manpower absorption once an over-all expansion of fixed capital formation should get under way. Of course, the extent to which this potential was realised depended on the pattern of investment expansion, and it was theoretically possible for an investment boom not to affect these sectors very much. However, what actually happened confirmed the hypothesis and, between 1955 and 1960, operated very much in favour of sectors 24, 25, 26 and 27 in particular, and of sectors 30 and 31 to a lesser extent. Final demand in respect of fixed capital formation for the products of these sectors expanded rapidly, as shown in column 2 of table 1, and as a result, since the sectors in question were relatively labour intensive, they absorbed a large volume of additional manpower (see column 3). Moreover, these sectors were not only labour intensive themselves but, as may be seen from column 4, their indirect dispersion effect on other sectors was above average.

It may therefore be safely concluded that not only were these sectors themselves given a shot in the arm by the investment boom but their activation had strong indirect stimulative effects on the other sectors of the economy, inducing a great deal of manpower demand among them as well. The result was a considerable expansion of employment in the Japanese economy as a whole.

A further factor contributing to over-all employment expansion during this period was the special relationship between smaller and larger enterprises.

In Japan most smaller enterprises have close links with the larger firms—frequently acting as subcontractors ¹—and are heavily dependent on them. Mainly because of the credit system, which as mentioned earlier discriminates in favour of the larger enterprises, it was the latter in the metal, machinery and construction sectors that first benefited from the investment boom, but the ripple effect immediately spread to their subcontractors (and the firms subcontracting to *them*) and produced a great deal of employment

¹ An excellent review of this phenomenon may be found in S. Watanabe: "Subcontracting, industrialisation and employment creation", in *International Labour Review*, July-Aug. 1971.

Sector (1)	Increase (times) in	Dispersion		
	Final demand for fixed capital formation	Employment (3)	(1960)	
	(2)		(4)	
24	6.0	1.8	1.006	
25	3.5	1.6	1.110	
26	3.3	2.2	1.214	
27	2.7	1.6	1.421	
30	2.3	1.6	2.000	
31	2.2	1.6	1.451	

Table 1.	Final demand for fixed capital formation, employment and dispersion index, selected
	sectors, 1955-60

demand among them—all the more so because generally speaking they were far more labour intensive than the "parent" enterprises. The same process was repeated in other sectors which were indirectly activated by the metal, machinery and construction sectors.

From surplus to shortage

Mainly as a result of the expanding economy's increased demand for manpower, the labour market gradually became tighter and, as we have seen, the number of job applications finally matched that of vacancies in 1961.¹ It was largely due to this change in the labour market that wages started increasing at an accelerated pace in the same year.²

From what we have seen above and taking into account the various points that will be discussed in the next section, we may safely say that Japan shifted from a labour surplus to a labour shortage economy at the beginning of the 1960s.

A couple of remarks may be necessary in this connection. First, although it is true that this change was caused mainly by the marked increase in new manpower demand, it should not be overlooked that the rapidly rising level of employment itself brought about an increase in manpower demand owing to attrition. It is estimated, for instance, that the replacement demand of salaried

¹ Ministry of Labour statistics give the following vacancy/application ratios as registered by the employment exchanges: 1956, 0.4; 1957, 0.5; 1958, 0.4; 1959, 0.5; 1960, 0.7; 1961, 1.0; 1962, 1.0.

 $^{^2}$ The Monthly Labour Survey conducted by the Ministry of Labour shows that annual real wages rose as follows: 1957, 4.6 per cent; 1958, 3.1; 1959, 6.1; 1960, 6.8; 1961, 11.3; 1962, 10.3; 1963, 10.7; 1964, 10.0; 1965, 9.5; 1966, 10.8; 1967, 11.8. Note the sudden acceleration between 1960 and 1961.

Labour surplus to labour shortage

and wage employment in the non-agricultural sector increased by 1.4 times between 1955/56 and 1960/61 and accounted for 42 per cent of total manpower demand in 1960/61.¹

Second, the manpower supply side did not contribute to the shift from a labour surplus to a labour shortage market as may be seen from the fact that the total number of those who were employed upon completion of their education, who accounted for a major part of the yearly manpower supply, continued to rise fairly steadily throughout the 1950s and the first half of the 1960s.² Therefore it is entirely to the changes on the demand side that the transition must be ascribed. However, after the number of school and college leavers had reached a peak in 1966 it started decreasing rapidly ³, and this contributed to the further tightening of the labour supply and to the maintenance of the labour shortage economy.

Changes in employment structure and conditions of work

The massive increase in manpower demand generated by the various factors referred to earlier not only tilted the demand/supply balance in favour of the latter but also produced important changes in the employment structure. These were due in particular to (i) important shifts in the employment distribution of school and college leavers; and (ii) the acceleration of labour transfers from traditional to modern sectors.

In 1956 21 per cent of junior and senior high school leavers found employment in the agricultural sector, but by 1962 this proportion had fallen to only 6 per cent. On the other hand the manufacturing sector, which had accounted for only 38 per cent in 1956, absorbed 52 per cent in 1962, with half of its share employed in the metal and machinery industries.⁴ Furthermore, an increased proportion of school leavers found employment in larger establishments. For example, in 1957 almost the same proportion of junior high school leavers (nine years of schooling) entered establishments with 14 or fewer employees as entered establishments with 500 or more (18 and 20 per cent respectively). By 1961 the corresponding figures were 6.2 and 33.8 per cent.⁵

⁸ Ministry of Education data show that the numbers completing their education and entering employment rose from 1,124,000 in 1955 to 1,493,000 in 1966, declining thereafter to 1,092,000 in 1972.

⁴ Ministry of Labour: 1962 Rôdô Hakusho [1962 White Paper on the labour economy], p. 113.

⁵ Ibid., 1963, p. 115.

¹ Assuming an attrition rate of 3.5 per cent as shown by the 1956 and 1959 Employment Status Surveys (Bureau of Statistics, Prime Minister's Office) and other sources of information.

 $^{^{2}}$ However, it should be pointed out that since the beginning of this century, including the reference period, population pressure due to natural increase has never been as big a problem in Japan as it has in many other Asian countries. Except for a few years when the natural increase rate reached 1.5-2.0 per cent, it has always been below 1.5 per cent and mostly below 1.3 per cent.

Year	Number of employees				
	5-29	30-99	100-499	500 +	
1956		56.1	72.1	100	
1961	49.3	61.7	74.5	100	
1965	63.2	71.0	80.9	100	

Table 2. Wage differentials by size of establishment¹

¹ Average monthly cash earnings. Establishments with 500 employees or over = 100. Source: Ministry of Labour's Monthly Labour Surveys.

The marked increase in manpower demand also stimulated the turnover at both sectoral and enterprise levels of those who were already engaged in economic activities. For instance, in 1959 146,000 persons shifted from agricultural employment and family employment in the non-agricultural sector to non-agricultural salaried and wage employment. By 1962 this number had risen to 204,000.¹ Again, the number of persons who changed from an enterprise with 99 or fewer employees to one with 100 or more increased from 81,000 in 1959 to 169,000 in 1962.²

Another important consequence of the tighter labour market was that smaller enterprises had to compete with the larger firms and offer improved conditions to attract the necessary manpower. This development is reflected in the contraction of the traditionally wide wage differentials between the larger and smaller enterprises (see table 2).

Some concluding remarks

What major lessons can developing countries draw from the Japanese experience described above?

First, in order for *over-all* and massive employment creation to be brought about, it seems desirable that an economy should have a sufficiently diversified input-output relationship among its various segments both horizontally (i.e. among industries) and vertically (i.e. between larger and smaller enterprises), so that a stimulus given to one of them can spread to the entire economy. Of course, one of the most typical characteristics of developing economies is precisely the lack of this complex interdependence. Then what should be done to create it? One solution might be found in so-called export substitution policy, that is to say, substituting exports of processed and semi-processed

¹ 1963 White Paper on the labour economy, op. cit., p. 109.

² The 1959 and 1962 Employment Status Surveys conducted by the Bureau of Statistics, Prime Minister's Office.

materials for exports of raw materials. Myint advocates this policy in the setting of south-east Asia, but elsewhere also "there would seem to be a considerable scope for increasing the degree of processing done locally in a wide variety of mineral, timber and agricultural products".¹ This would cause a demand for the equipment required to carry out such processing, which should be manufactured locally to the greatest extent possible.

Second, it also seems that, if employment creation is the goal, it is important to stimulate not only labour-intensive industries as such but also those industries whose indirect employment effects are reasonably high. If these two groups of industries happen to be identical, so much the better.

¹ H. Myint: Southeast Asia's economy: development policies in the 1970s (Harmondsworth, Penguin Books, 1972), p. 61.