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Living Standards, Labor Markets and Human Resources in Taiwan

Gary S. Fields
Cornell University, gsf2@cornell.edu

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Living Standards, Labor Markets and Human Resources in Taiwan

Abstract
[Excerpt] This paper has three general aims: to demonstrate that standards of living have continued to improve during Taiwan's recent economic growth, to analyze the causes of improvements in the 1980s and before, and to discuss some specific issues which are likely to arise and which will need to be resolved in the years ahead.

Keywords
Taiwan, labor market, economic growth, human resources

Disciplines
International and Comparative Labor Relations | Labor Economics | Labor Relations

Comments

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Living Standards, Labor Markets and Human Resources in Taiwan

Gary S. Fields

1. Introduction

This paper has three general aims: to demonstrate that standards of living have continued to improve during Taiwan's recent economic growth, to analyze the causes of improvements in the 1980s and before, and to discuss some specific issues which are likely to arise and which will need to be resolved in the years ahead.

Section 2 presents evidence on standards of living and economic growth in Taiwan. It is shown that the improvements registered in the 1960s and 1970s continued in the 1980s. As a result, social indicators have improved and poverty rates have fallen. Inequality in Taiwan remains the lowest of any country in the world for which we have data. These improvements are explained by the choice of appropriate development policies, the resultant intersectoral shifts of production, and the consequent growth of demand for labor. The section concludes by speculating on the possibilities for Taiwan to sustain export-led growth in the future.

Section 3 turns to an analysis of the Taiwanese labor market, for it is there that standards of living are to a large degree determined. It is shown that differences in income among households are accounted for in the first instance by differences in the amounts of their labor incomes. This finding directs our attention to the functioning of labor markets and the determination of labor market rewards. I present alternative models of labor markets and conclude that Taiwan's is best characterized as an integrated, well-functioning one rather than a segmented one. Consequently, I see the economic growth that has taken place in Taiwan as having been transmitted throughout the economy by an integrated labor market, with the results that full employment has been maintained, the mix of jobs has improved, and real labor earnings have risen in all major sectors. Section 3 concludes
with a look at the future functioning of Taiwan's labor market in the context of the recently-legislated Basic Labor Standards Law and other attempts to regulate the terms and conditions of employment.

Conditions on the supply side of the labor market will also change in the future. Section 4 deals with three of these human resource issues: the supply and demand of skills, the supply and utilization of female labor, and the aging of Taiwan's work force and population. These issues are unified by a common feature: the fact that future changes in living standards in Taiwan are constrained by the economy's ability to mobilize and deploy a sufficient quantity and quality of human resources. Section 4 also analyzes one key government program -- regulations regarding pensions and old-age benefits -- which, though still in flux, is certain to become a leading issue for public policy in the coming years.

A concluding section summarizes the main findings.

2. Poverty, Inequality, Living Standards and Economic Growth

Continued Improvements

Taiwan's record of improving standards of living is an enviable one. This section documents these changes in some detail.

As is well-known, Taiwan's economy has enjoyed sustained economic growth since the 1950s. Per capita national income increased in real terms by approximately a factor of seven from 1952 to 1987 (Tsian 1986; Statistical Yearbook of the Republic of China, various issues).

The benefits of this growth in the 1960s and 1970s were widespread. During that time, full employment was attained, the mix of jobs improved, real wages increased several-fold, absolute poverty fell, and income inequality fell to the lowest level of any economy in the world. See Fei, Ranis, and Kuo (1979), Kuo (1983), and Fields (1984, 1985) for details regarding this earlier period.

In the 1980s, the record remained an enviable one (Table 10.1). In the early 1980s, growth nearly halted in the aftermath of the second OPEC oil-price shock, growth of wages in excess of productivity increases, and decreased investment rates in light of uncertainties brought about by the agreement on Hong Kong between the PRC and the UK. But then, in 1983, the rate of growth accelerated, reaching double digits in 1986 and 1987. GNP per capita was 60 percent higher in real terms by the end of the decade than it was at the beginning.

Growth of this magnitude would be expected to reduce poverty and raise standards of living. Indeed it did. Taiwan has no official poverty line; the
TABLE 10.1 Rate of Growth of GNP Per Capita (in 1981 constant prices)

<table>
<thead>
<tr>
<th>Year</th>
<th>Growth (%)</th>
<th>Per Capita GNP, in 1981 prices (NT$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>5.1</td>
<td>94,580</td>
</tr>
<tr>
<td>1981</td>
<td>3.8</td>
<td>98,179</td>
</tr>
<tr>
<td>1982</td>
<td>1.5</td>
<td>99,687</td>
</tr>
<tr>
<td>1983</td>
<td>6.2</td>
<td>105,893</td>
</tr>
<tr>
<td>1984</td>
<td>8.9</td>
<td>115,356</td>
</tr>
<tr>
<td>1985</td>
<td>3.7</td>
<td>119,606</td>
</tr>
<tr>
<td>1986</td>
<td>10.4</td>
<td>132,019</td>
</tr>
<tr>
<td>1987</td>
<td>10.7</td>
<td>146,111</td>
</tr>
<tr>
<td>1988 (preliminary)</td>
<td>5.9</td>
<td>154,783</td>
</tr>
</tbody>
</table>

Source: National Income in Taiwan Area, the R.O.C. 1988, Table 2, p. 13.

TABLE 10.2 Proportion of Households With Income Below Specified Amounts in Specified Year (at 1981 constant prices in percentages)

<table>
<thead>
<tr>
<th>Year</th>
<th>Less than 100 thousand NT dollars</th>
<th>Less than 200 thousand NT dollars</th>
<th>Less than 300 thousand NT dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>6</td>
<td>35</td>
<td>68</td>
</tr>
<tr>
<td>1981</td>
<td>6</td>
<td>37</td>
<td>69</td>
</tr>
<tr>
<td>1982</td>
<td>7</td>
<td>36</td>
<td>69</td>
</tr>
<tr>
<td>1983</td>
<td>6</td>
<td>33</td>
<td>65</td>
</tr>
<tr>
<td>1984</td>
<td>5</td>
<td>28</td>
<td>60</td>
</tr>
<tr>
<td>1985</td>
<td>5</td>
<td>27</td>
<td>59</td>
</tr>
<tr>
<td>1986</td>
<td>5</td>
<td>24</td>
<td>55</td>
</tr>
<tr>
<td>1987</td>
<td>4</td>
<td>21</td>
<td>49</td>
</tr>
</tbody>
</table>

Gary S. Fields

closest it has is an income cut-off for public assistance of approximately NT$3,000 per household member per month. But because only about 1.5 percent of households are below this line (Chu 1987), a higher poverty line might be preferable. A plot of the income distributions shows that the fraction of poor fell from 1980 to 1987 for all poverty lines. To illustrate for three poverty lines (annual household incomes of NT$100,000, 200,000, and 300,000, in 1981 prices), we find that poverty fell from 6 percent of households to 4 percent using the first line, from 35 percent to 21 percent using the second, and from 68 percent to 49 percent using the third (Table 10.2). Thus, Taiwan's already impressive record of poverty reduction continued unabated through the 1980s.

Poverty did not decline uniformly, however. Between 1980 and 1982, when the economy was barely growing, the rate of poverty increased. An important point to note, though, is that the slowdown in economic growth in Taiwan in 1980-1982 and the concomitant increase in poverty were much milder than the declines that took place in many other economies at that time. But since 1982 poverty rates have fallen steadily.

Using other social indicators, the data presented in Table 10.3 also show that standards of living continued to improve from 1980 until 1987, the most recent year for which information is available. The infant mortality rate fell from 11.0 per thousand to 5.6. Life expectancy at birth increased from 69.6 to 71.1 for males and from 74.5 to 76.3 for females. The number of hospital beds per person doubled. School enrollment rates remained at virtually 100 percent for children aged 6-14 and increased from 27.0 percent to 35.7 percent for young people aged 15-24. As a result, by 1985, the adult literacy rate had reached 85 percent for females and 96 percent for males (UNICEF 1989). These improvements reflect Taiwan's continued investment in health and human resources.

In sum, by all these measures -- poverty rate, infant mortality rate, life expectancy, hospital beds per capita, school enrollment rates and adult literacy rates -- living standards have continued to improve in Taiwan in the 1980s.

Turning now to income inequality, Taiwan has now, and has had in the past, an extraordinarily equal distribution of income. In fact, among the countries for which we have data from household surveys or censuses, Taiwan's distribution is the most equal of any. Measuring inequality by the Gini coefficient, we find that Taiwan's Gini was 0.30 in 1987. No other non-socialist country, developed or developing, has a Gini coefficient that low. To put Taiwan's inequality in perspective, the Gini coefficient for household income is 0.42 in Singapore, 0.50 in Mexico, 0.51 in Malaysia, and 0.57 in Brazil. It should be noted that Taiwan's inequality remains lower than in any other country, even though inequality has been increasing slowly but steadily throughout the 1980s (from 0.277 in 1980 to 0.299 by 1987) (Table 10.4).
TABLE 103 Changes in Social Indicators in the 1980s

<table>
<thead>
<tr>
<th>Year</th>
<th>Infant mortality (per thousand)</th>
<th>Life expectancy at birth</th>
<th>Population per hospital bed</th>
<th>School enrollment rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>11.0</td>
<td>69.6</td>
<td>450</td>
<td>99.5, 27.0</td>
</tr>
<tr>
<td>1981</td>
<td>10.1</td>
<td>69.7</td>
<td>412</td>
<td>99.7, 30.3</td>
</tr>
<tr>
<td>1982</td>
<td>9.0</td>
<td>69.9</td>
<td>345</td>
<td>99.7, 29.5</td>
</tr>
<tr>
<td>1983</td>
<td>8.3</td>
<td>69.9</td>
<td>326</td>
<td>99.9, 30.6</td>
</tr>
<tr>
<td>1984</td>
<td>7.5</td>
<td>70.5</td>
<td>304</td>
<td>99.9, 31.4</td>
</tr>
<tr>
<td>1985</td>
<td>7.4</td>
<td>70.8</td>
<td>260</td>
<td>99.9, 32.5</td>
</tr>
<tr>
<td>1986</td>
<td>6.6</td>
<td>71.0</td>
<td>240</td>
<td>99.9, 34.5</td>
</tr>
<tr>
<td>1987</td>
<td>5.6</td>
<td>71.1</td>
<td>228</td>
<td>99.7, 35.7</td>
</tr>
</tbody>
</table>

Source: Statistical Yearbook of R.O.C. 1988, Tables 19 and 53 and Supplementary Table 7.

TABLE 10.4 Gini Coefficient of Income Among Households

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>0.277</td>
</tr>
<tr>
<td>1981</td>
<td>0.281</td>
</tr>
<tr>
<td>1982</td>
<td>0.283</td>
</tr>
<tr>
<td>1983</td>
<td>0.287</td>
</tr>
<tr>
<td>1984</td>
<td>0.287</td>
</tr>
<tr>
<td>1985</td>
<td>0.290</td>
</tr>
<tr>
<td>1986</td>
<td>0.296</td>
</tr>
<tr>
<td>1987</td>
<td>0.299</td>
</tr>
</tbody>
</table>


Improvements in Standards of Living Through Policies Promoting Intersectoral Shifts

Taiwan's development policies have fostered rapid economic growth of a type that has engendered large-scale, broad-based improvements in standards of living. Among the policies responsible for these improvements are Taiwan's extensive land reform from 1949 to 1953, and the consequent equalizing of initial incomes; the labor intensity of growth in both agri-
culture and industry; and the decentralization of industry. Noteworthy in the history of Taiwan's development policy is the adaptiveness of both planners and entrepreneurs to changing economic circumstances.

When Taiwan's modern growth epoch began in the 1950s, the dominant strategy chosen was import substitution. Policies to achieve this included high tariffs and quantitative restrictions to protect domestic industries, overvalued exchange rates to encourage the use of imported raw materials and intermediate goods, artificially low domestic interest rates to encourage capital deepening, and other measures aimed at increasing production at home of goods that had been previously imported. By around 1960, these policies had succeeded, domestic markets had been satisfied for many products, and the prospects for further import substitution were considerably less rosy. Taiwan's policy makers had thus reached a critical decision point: were they going to continue into "secondary import substitution" or switch to a more export-oriented strategy? The latter was chosen. Fei (1989, pp. 36-37) cites two reasons for this: the negative reason that "secondary import substitution" was not seen as promising, and the positive reason that learning-by-doing by both entrepreneurs and workers rendered economically viable the transition to an external orientation. To effectuate outward-oriented growth, around 1962 exchange rates were made more realistic, interest rates were reformed, and barriers to trade were reduced. Export-led growth took off rapidly and has continued ever since.

The growth phase from 1962 to 1980 is seen differently by different groups of observers. Some (e.g., Ranis 1974, 1979, 1989; Kuo 1983; Krause 1985; Fei 1989) stress that 1962-1980 marked a period of export-led growth with new industries emerging to compete in world markets. These authors emphasize the outward-oriented policies used to achieve these results. Others (e.g., Schive 1985; Bradford 1986; Wu 1986, 1989; and Gereffi 1988) stress that policy measures for import substitution and export promotion existed concurrently. Wu (1989, pp. 71-79) cites import restrictions and tariffs on the import substitution side and rebates of tariffs, low-interest export loans, and the establishment of export processing zones on the export promotion side. To this second group of authors, this policy mix facilitated development by providing domestic entrepreneurs with the opportunities of learning how to export while operating behind protective barriers.

However, by the 1980s, as liberalization proceeded and protection waned, the life cycle of transition to modern economic growth has been largely completed. In the words of Ranis (1989, p. 19): "By 1983, [the government of Taiwan] could take on entirely new and unprecedentedly ideological appeal by accepting the principle of the survival of the fittest and the discipline of international competition in the domestic market -- a far cry from the xenophobia and autarkic appeal of the early import substitution era." This must now be understood.

The subsequent rapid growth of Taiwan has been ongoing. Table 10.3 lists the rate of annual growth of GDP and its components for Taiwan during the period 1970-1983. Table 10.4 shows the distribution of GDP among the principal economic sectors during these years. Taiwan's growth is essentially an export-led growth in agriculture and industry.

Another important point is that Taiwan's industrial development between 1962 and 1980 grew at an annual average rate of 7.8% in GDP and 8.2% in its industrial output as calculated by Bluechip (1983). Within this period, the industrial sector grew at an annual average rate of 7.3% and its output increased at an annual average rate of 8.1%.

Another important finding is that although Taiwan's exports comprised only about 22.5 percent of its GDP during the 1970s, this share had increased to over 70% by 1983.

Within this period, Taiwan's exports comprised only about 22.5 percent of its GDP during the 1970s, this share had increased to over 70% by 1983.
The problems of modern economic growth in a mature economy must now be faced.

The success of these development policies over the years has brought about major intersectoral shifts of production and employment which have been ongoing for the last three decades. Data for the 1980s appear in Table 10.5. For earlier data, see, for instance, Kuznets (1979) and Kuo (1983).

Let us look first at broad sectoral aggregates. One change we observe is a shift from agriculture to manufacturing. Between 1980 and 1987, real GDP in the economy as a whole grew by 69.6 percent. Manufacturing GDP grew at a disproportionately high rate, 883 percent. Meanwhile, agricultural production has increased, but barely (8.5 percent increase in seven years). Employment has shifted accordingly. Overall, employment grew by 22.5 percent. But manufacturing employment grew by 32.0 percent, while agricultural employment fell by 0.9 percent. Thus, the rapid economic growth in manufacturing continued to draw labor away from agriculture.

Another structural shift that has taken place is the growth of services and commerce. In both sectors, we find that output and employment both grew at above-average rates: output and employment in commerce grew by 78.1 percent and 37.2 percent, respectively; output and employment in financial and related services grew by 66.2 percent and 64.7 percent, and output and employment in public administration and personal services grew by 81.1 percent and 37.8 percent.

Within manufacturing, major substitutions are taking place. Most pronounced are the decline of textiles and the growth of electronics and electrical products. In 1975, the five two-digit industries with the highest employment levels were textile mill products (20.2 percent of manufacturing employment), electrical and electronic equipment (11.2 percent), plastic products (8.7 percent), food and kindred products (6.3 percent), and apparel and other textile products (6.3 percent). Between 1975 and 1987, the manufacturing sector experienced major shifts: employment in electrical and electronic equipment grew by 5.6 percentage points and plastic products by 2.8 points, while employment fell in apparel and other textile products by 0.1 points, in food and kindred products by 2.0 points, and in textile mill products by 7.7 points. Taiwan's comparative advantage is thus shifting toward more high-tech and less basic manufactured production.

What characterizes these intersectoral shifts in production is that they induce changes in the mix of employment opportunities, enabling workers to leave the lower-paying sectors of the economy and move into better-paying jobs and thereby improve their standards of living. Of the five manufacturing industries, textiles and apparel were the lowest-paying sectors in 1975 (average earnings levels of NT$2,785 and NT$2,357 respectively) and electrical and electronic equipment the highest (average earnings of
### TABLE 10.5 Changes in Output and Employment by One-digit Industry

<table>
<thead>
<tr>
<th></th>
<th>Real GDP&lt;sup&gt;a&lt;/sup&gt; (NT millions)</th>
<th>Employment&lt;sup&gt;b&lt;/sup&gt; (thousands)</th>
<th>Monthly earnings&lt;sup&gt;c&lt;/sup&gt; (NT dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, fishing</td>
<td>129,974</td>
<td>141,074</td>
<td>8.5</td>
</tr>
<tr>
<td>Mining &amp; quarrying</td>
<td>15,196</td>
<td>14,359</td>
<td>-5.5</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>582,802</td>
<td>1,097,584</td>
<td>88.3</td>
</tr>
<tr>
<td>Electricity, gas &amp; water</td>
<td>57,075</td>
<td>108,414</td>
<td>90.0</td>
</tr>
<tr>
<td>Construction</td>
<td>98,634</td>
<td>112,565</td>
<td>14.1</td>
</tr>
<tr>
<td>Commerce</td>
<td>220,677</td>
<td>392,967</td>
<td>78.1</td>
</tr>
<tr>
<td>Transport, storage &amp; communication</td>
<td>95,632</td>
<td>167,281</td>
<td>74.9</td>
</tr>
<tr>
<td>Finance, insurance, real estate &amp; business service</td>
<td>184,020</td>
<td>305,888</td>
<td>66.2</td>
</tr>
<tr>
<td>Community, social &amp; personal service</td>
<td>67,539</td>
<td>122,326</td>
<td>81.1</td>
</tr>
<tr>
<td>Overall</td>
<td>1,451,549</td>
<td>2,462,548</td>
<td>69.6</td>
</tr>
</tbody>
</table>

<sup>a</sup>In 1981 constant prices.

<sup>b</sup>Employment includes wage and salaried workers, the self-employed, and unpaid family workers.

<sup>c</sup>Nominal earnings.

Source: Real GDP: Statistical Yearbook of the Republic of China, 1988, Supplementary Table 9; Table 20, Table 29-30.
The movement of workers from textiles and apparel to electrical and electronic equipment thus represents an improvement in earning opportunities for workers.

As for services, the major growth areas are expected to be financial, insurance, real estate, and business services, as well as transportation, storage, and communications (CEPD 1986). This is a welcome development, for these sectors offer higher earnings and shorter work hours. Labor in the service sector is disproportionately well-educated and female, which presents both challenges and opportunities; see Section 4.

These processes of structural change are expected to continue, even accelerate, in the future. I would thus forecast the persistence of an intersectoral shift process which elsewhere I have called "high-income sector enlargement" (Fields 1980).

To bring about these changes, Taiwan's planners have been required to face new problems and challenges for development policy. Labor market conditions have become so tight that it is no longer economically attractive for Taiwan to continue to seek to expand production through labor-intensive methods. Making more effective use of the labor force is now the prime necessity of the economy's growth strategy. The main mechanisms for achieving this are the upgrading of skills, capital-deepening, and research and development (Kuo 1983; Ranis 1989; Li 1989). In addition, excess savings have appeared, which needed to be channeled into investment. And then, on the international front, Taiwan has been recording such large trade surpluses that the NT dollar is appreciating, discouraging exports and posing the risk of inflation.

Taiwan's policy-makers have responded to these changed conditions by a three-pronged strategy of "liberalization, internationalization, and systemization." Trade liberalization is being pursued by opening the domestic market through decontrol of imports and lowering of import tariffs. Foreign exchange controls are being relaxed. Relative prices are being freed up. Investment is being liberalized so that the flow of private investment will be guided completely by market forces free of government intervention. State-run firms are being privatized. The export performance requirement and the domestic content requirement which had previously applied to direct foreign investment in Taiwan have been completely abolished. Large-scale public infrastructure projects are under way. In general, the economic system is being depoliticized.

The government of Taiwan has encouraged capital-deepening as a means of raising the productivity of labor and thereby maintaining international competitiveness. This has indeed happened. High rates of physical capital formation and human capital formation have been registered. As a result, in the 1980s, real wages and productivity grew apace of one another.

Continuing investments in physical and human capital, encouraging
research and development, and constantly probing for new markets domestically and abroad, hold out great hope for Taiwan's future economic development and continued improvements in standards of living for its people.

The point to be made from this review is that Taiwan's development policies have been changed repeatedly to fit changing circumstances, facilitating intersectoral shifts and permitting improvements in standards of living. The switch from import substitution to export-led growth, intensive in unskilled labor, and then to export substitution favoring more capital-and technology-intensive development has reflected the policy response to changing domestic and world economic conditions. Taiwan's policy-makers, more so than those in most other countries, have been extraordinarily responsive to new events and changing comparative advantage.

Sustaining a Growing Demand for Labor Through Export-Led Growth in the 1990s

For nearly three decades, living standards in Taiwan have been improved through export-led growth. At first, this benefitted workers by increasing the number of manufacturing jobs. Afterwards, once full employment was attained, workers benefitted from rapidly-rising real wages. I am convinced that an export-oriented development strategy remains a viable option for the future.

An outward-oriented trade strategy is predicated on the continued openness of world markets to Taiwan's products. I am quite optimistic about this. Markets for industrial products and consumer electronics have been kept open to Taiwan's goods. In most of the world's markets, the constraints to Taiwan's exports have been not because of barriers to trade in the recipient country (tariffs and quotas) but rather because of limitations on the supply side, that is, in Taiwan's ability to produce products of suitable quality and lower price than the competition. When Taiwan has done this in the past, world markets have proved to be open. Should Taiwan's manufacturers continue in this direction with new product lines in the future, I predict comparable success.

Take the case of automobiles, which Taiwan is now trying to develop for export to North America. I see no reason why Taiwanese manufacturers in the future should not be able to repeat the successes of Toyota, Nissan, and Honda before them, provided that they build an automobile which is truly better than the competition's. And the same is true in a great many other product areas as well.

Given the importance of exports to Taiwan's economic growth, the government is ever-vigilant about the possible closure of overseas markets. At the time Taiwan passed its Basic Labor Standards Law (discussed further below), the then-Minister of Interior, Mr. Po-Hsiung Wu, stated that
markets domestici
economic development for its people.

Economic development in its
markets, facilitating standard of living in the U.S. media.

A more serious concern, I think, than the closure of developed country markets is competition from below from the "next-NIEs" (or "near-NIEs"). The Philippines, Malaysia, Indonesia, Thailand and many other countries have tried to get into markets which Taiwan once held, and in many cases are succeeding. The reverse side of full employment and rising real wages in Taiwan is labor abundance and lower real wages elsewhere. These other countries are coming to dominate markets in which Taiwan can no longer compete efficiently, such as garments and low-quality, low-tech manufactures. In these product areas, comparative advantage is changing, and Taiwan's manufacturers will have to change with it.

Looking ahead, I would predict that, although economic growth in Taiwan will surely continue, Taiwan will not be able to maintain the same high growth rate in the future as was the case in the past. The engine of growth in the Taiwan economy has been the export sector. Certain important industries -- among them textiles, assembly, and light manufacturing -- face increasing competition from other Asian countries aspiring to emulate Taiwan's success. To the extent that the next-NIEs succeed in penetrating these export markets -- and I think they will -- Taiwan's growth will be slowed. It will not, however, be halted. There is every reason to believe that Taiwan's entrepreneurs and planners will continue to do in the future what they have done so well in the past: examine markets for possible new niches and seek to do better than others are now doing.

The ability to adjust rapidly -- getting into profitable markets at the right time -- is essential. Both the government of Taiwan and its industrialists have recognized this and are seeking to respond as quickly and flexibly as possible.

3. Labor Market Issues

The Primary Importance of Labor Incomes

The sources of income inequality in Taiwan have been examined in depth by past researchers. Decomposition studies have been conducted by Fei, Ranis, and Kuo (1978) and by Pyatt, Chen, and Fei (1980). These authors have decomposed the Gini coefficient into "factor inequality weights" associated with wage income, profit income, agricultural income, and all other income.2

Table 10.6 presents the results of the decomposition using Taiwan household survey data for 1976. We see that the bulk of inequality of household
TABLE 10.6 Decomposition of Income Inequality in Taiwan, 1976

<table>
<thead>
<tr>
<th>Income source</th>
<th>Share of total income (1)</th>
<th>Pseudo-Gini coefficient (2)</th>
<th>Factor inequality weight (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wage</td>
<td>.591</td>
<td>.269</td>
<td>.55</td>
</tr>
<tr>
<td>Profit</td>
<td>.107</td>
<td>.418</td>
<td>.05</td>
</tr>
<tr>
<td>Agriculture</td>
<td>.09</td>
<td>.097</td>
<td>.03</td>
</tr>
<tr>
<td>All other (including mixed)</td>
<td>.211</td>
<td>.362</td>
<td>.26</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>


Incomes in Taiwan is accounted for by labor income inequality. The reason for this is that most households in Taiwan receive most if not all of their income from the work they do. These findings direct our attention to the labor market to understand the sources of improvements in economic well-being. This is the subject of the next section.

Improvements in Labor Market Conditions with Economic Growth

What stands out about Taiwan's labor market is how well the economy has done in generating improved labor market opportunities. Nearly full employment has been maintained since the late 1960s -- the unemployment rate has hovered between one and two percent. But with the recession of 1982, the unemployment rate rose, approaching 3 percent by 1985 (Table 10.7). It has since come down, to 1.3 percent by mid-1989. The labor force participation rate has increased as more workers have been drawn into the labor market in response to persistent labor shortages and the opening up of employment opportunities to women. This means that the economy has succeeded not only in creating enough jobs for all who were already seeking employment but in going beyond that to create new job opportunities for an expanding labor force.

Real labor earnings have risen throughout Taiwan's economy. The engine of growth in Taiwan's recent economic development has, of course,
been the manufacturing sector. Real earnings of manufacturing workers have doubled approximately every decade. The data show that between 1980 and 1987, real earnings of manufacturing workers in Taiwan increased by more than 50 percent, continuing a prior trend dating back to the 1960s (Table 10.8). Overall, real earnings of manufacturing workers are six times higher now than they were in 1961. Since then, employment in manufacturing has more than tripled. This implies that manufacturing earnings were not pushed up artificially at the expense of employment. Rather, wages in manufacturing sector have increased significantly.

### Table 10.7: Unemployment Rate (in percentages)

<table>
<thead>
<tr>
<th>Year</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>1.2</td>
</tr>
<tr>
<td>1981</td>
<td>1.4</td>
</tr>
<tr>
<td>1982</td>
<td>2.1</td>
</tr>
<tr>
<td>1983</td>
<td>2.7</td>
</tr>
<tr>
<td>1984</td>
<td>2.4</td>
</tr>
<tr>
<td>1985</td>
<td>2.9</td>
</tr>
<tr>
<td>1986</td>
<td>2.7</td>
</tr>
<tr>
<td>1987</td>
<td>2.0</td>
</tr>
</tbody>
</table>

*Source: Statistical Yearbook of R.O.C. 1988, Table 21, p. 5.*

### Table 10.8: Real Average Monthly Earnings in Manufacturing (in 1986 NT dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (NT dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>9811</td>
</tr>
<tr>
<td>1981</td>
<td>10007</td>
</tr>
<tr>
<td>1982</td>
<td>10659</td>
</tr>
<tr>
<td>1983</td>
<td>11182</td>
</tr>
<tr>
<td>1984</td>
<td>12912</td>
</tr>
<tr>
<td>1985</td>
<td>12697</td>
</tr>
<tr>
<td>1986</td>
<td>13874</td>
</tr>
<tr>
<td>1987</td>
<td>15141</td>
</tr>
</tbody>
</table>

facturing were pulled up in response to increased demand in the labor market.

Besides rising real wages, Taiwan's labor market shows improvements in the types of jobs workers were engaged in. The lowest-paying sector in Taiwan's economy is agriculture. Because agricultural jobs pay the least, a fall in agriculture's share of total employment can be regarded as an improvement in employment opportunities. In the 1980s, the share of agriculture in total employment continued its long term decline, decreasing from 20 percent to 15 percent (Table 10.9).

During this same time, the labor force came to be employed in better occupations. The top occupations are professional and technical, administrative and managerial, clerical, and sales. Whereas 32 percent of employed persons were found in these occupations in 1980, by 1987 the share had increased to 35 percent (Table 10.10).

We find too that workers have been employed in better occupational positions. Paid employees earn more than own-account workers and unpaid family workers do. We may therefore regard an expansion of the share of paid employees in total employment as an improvement in labor market conditions. Indeed, such an expansion has occurred, albeit slowly (Table 10.11).

In sum, Taiwan's economy has done extraordinarily well in generating improved employment opportunities, thereby relaxing some of the previous constraints on living standards. In the 1980s, as before, economic growth has increased the derived demand for labor. The continued increase in demand for labor in growing sectors and increased competition for workers throughout the labor market has maintained full employment, raised earnings, and improved standards of living overall.

**TABLE 10.9 Agriculture as a Percentage of Total Employment**

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>19.5</td>
</tr>
<tr>
<td>1981</td>
<td>18.8</td>
</tr>
<tr>
<td>1982</td>
<td>18.9</td>
</tr>
<tr>
<td>1983</td>
<td>18.6</td>
</tr>
<tr>
<td>1984</td>
<td>17.6</td>
</tr>
<tr>
<td>1985</td>
<td>17.5</td>
</tr>
<tr>
<td>1986</td>
<td>17.0</td>
</tr>
<tr>
<td>1987</td>
<td>15.3</td>
</tr>
</tbody>
</table>

*Source: Calculated from Statistical Yearbook of R.O.C. 1988, Table 20, p. 4.*
Living Standards, Labor Markets and Human Resources

TABLE 10.10 Professional and Technical, Administrative and Managerial, Clerical, and Sales Occupations as a Percentage of Total Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>31.8</td>
</tr>
<tr>
<td>1981</td>
<td>32.7</td>
</tr>
<tr>
<td>1982</td>
<td>33.1</td>
</tr>
<tr>
<td>1983</td>
<td>33.4</td>
</tr>
<tr>
<td>1984</td>
<td>33.7</td>
</tr>
<tr>
<td>1985</td>
<td>34.2</td>
</tr>
<tr>
<td>1986</td>
<td>34.3</td>
</tr>
<tr>
<td>1987</td>
<td>35.1</td>
</tr>
</tbody>
</table>

"Sales" is listed as "trades."

Source: Statistical Yearbook of R.O.C. 1988, Supplementary Table 23, p. 57.

TABLE 10.11 Paid Employees as a Percentage of Total Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>64.4</td>
</tr>
<tr>
<td>1981</td>
<td>64.3</td>
</tr>
<tr>
<td>1982</td>
<td>64.1</td>
</tr>
<tr>
<td>1983</td>
<td>63.8</td>
</tr>
<tr>
<td>1984</td>
<td>64.4</td>
</tr>
<tr>
<td>1985</td>
<td>64.1</td>
</tr>
<tr>
<td>1986</td>
<td>64.7</td>
</tr>
<tr>
<td>1987</td>
<td>66.7</td>
</tr>
</tbody>
</table>

Source: Calculated from Statistical Yearbook of R.O.C. 1988, Supplementary Table 25, p. 58.

Taiwan’s Integrated Labor Market: Theory and Evidence

The Taiwan economy has achieved its enviable labor market record by establishing policies conducive to the smooth functioning of labor markets. Supply and demand have largely been allowed to set wages and working conditions for Taiwan’s work force. To quote at length from a recent study by Fields and Wan (1989):
The four East Asian NIEs [Hong Kong, Korea, Singapore, and Taiwan] are frequently grouped together in the literature. Indeed, we would note certain similarities about wage-setting institutions among these four economies. Minimum wages exist in some of the countries, but their levels are so low as to be meaningless (Starr 1981). Only in Hong Kong does trade union bargaining over wages take place free of government restraint. Public employees receive wages comparable to those in the private sector, but not higher. Multinational corporations also follow market forces. Labor codes have not prevented employers from making desired labor market adjustments. Thus, at the risk of overgeneralizing, we would conclude that market wage determination has generally prevailed in the East Asian NIEs.

Similar conclusions have been voiced by Kuo (1983, Chapter 4), Hou and Wu (1985, p. 6), Wu (1986, p. 51), Kuznets (1988, pp. S27-29), Deyo (1989), and Li (1989, p. 143), among others.

What these labor market policies have done is to facilitate full employment, followed by a many-fold increase in real earnings among a fully-employed labor force. Real earnings of manufacturing workers are now six times higher in Taiwan than they were in the early 1960s.

Wage differentials between sectors are also smaller in Taiwan than elsewhere. Workers in manufacturing earn about 20 percent more in Taiwan than do workers in agriculture. This contrasts with a manufacturing-agriculture differential of approximately 100 percent in much of Latin America and Africa. Taiwan's labor market is thus much more balanced than are labor markets in these other regions.

The improvements in labor market conditions in Taiwan have taken place in an environment in which supply and demand have generally been free to reign. In this subsection, I demonstrate why Taiwan's labor market is best characterized as an integrated, well-functioning one.

The empirical basis for this claim comes from an examination of intertemporal data on various sectors' growth performances. For simplicity, I shall talk about two productive sectors: a "growing sector" and a "stagnant sector." This dualistic characterization is a stylized version of the pattern of intersectoral shifts described above, with industry in Taiwan expanding rapidly while the agricultural sector grew only slowly in output terms and contracted in employment terms. The growth of the "growing sector" in terms of output generated an outward shift in that sector's demand for labor. The effects of such shifts are analyzed below in three alternative labor market models. The three models are of a segmented labor market, a Harris-Todaro-type labor market, and an unsegmented labor market.

A segmented labor market has two defining characteristics: (1) Real earnings levels differ between segments, and (2) Barriers to mobility pre-
vent earnings levels from equalizing. There may be institutional forces such as minimum wages or collective bargaining keeping earnings levels in some sectors above market-clearing levels. Firms might pay higher-than-market-clearing levels (so-called "efficiency wages") in order to induce employees to work harder, quit less, or be more careful with equipment. Or the mobility of labor from the relatively low-paying sectors to the relatively high-paying ones may itself be restricted by direct migration restrictions, housing limitations, transportation costs, or discrimination.

One version of a segmented labor market model is illustrated in Figure 10.1. The "growing sector" (which may be thought of as "industry") is assumed to have experienced economic growth, which has resulted in the supply and demand for labor intersecting at a relatively high earnings level. By contrast, earnings are lower in the other sector, called the "stagnant sector" (which may be thought of as "agriculture"). Model 1 is constructed on the following assumptions: (1) Each sector has its own market-clearing earnings level, (2) There exist barriers to intermarket mobility so that this earnings differential is not competed away, and (3) Any worker not employed in the high-paying sector takes up employment in the lower-paying sector.

Suppose now that the high-paying sector continues to achieve growth of output, some fraction of which is exported, and that the stagnant sector continues not to. In the sector that experiences economic growth, the demand for labor curve shifts from $D$ to $D'$. Employment and earnings within that sector both increase, as shown in Figure 10.1. In this way, the growth of output, exports, employment, and wages all coexist in the growing sector, whereas in the stagnant sector, all of these remain constant.

If the segmented labor market model just described is an accurate characterization of how Taiwan's labor market has functioned in the course of economic growth, it would lead to the following empirical prediction: we would expect to find that sectoral output, employment, wages, and wages would grow together at high rates in some sectors and all grow at low or negligible rates in others.

To test the empirical validity of this hypothesis, I have assembled data at the one-digit level for eight economic sectors: mining and quarrying; manufacturing; electricity, gas, and water; construction; commerce; transport, storage, and communication; finance, insurance, real estate, and business services; and public administration, social and personal services. I have also assembled data at the two-digit level for seventeen manufacturing industries (examples are textile mill products, plastic products, and electrical and electronic equipment).

Growth rates of output, employment, and earnings over the period 1980-1987 are available at the one-digit level; at the two-digit level, we have this information plus the growth rate of exports.
FIGURE 10.1 A Segmented Labor Market with Market-Clearing Earnings Within Sectors

Growing Sector

Earnings

Labor

W
W'

D' D

Stagnant Sector

Earnings

Labor

S

D
At both the one-digit and two-digit levels, the data do not support the segmented labor market hypothesis. The correlation coefficients and the associated statistical significance levels are shown in Table 10.12. The only relationship found to be statistically significant is between output growth and employment growth (statistical significance level = .001 in the one-digit analysis and .007 in the two-digit analysis). This means that labor is a normal input in the productive process, so that when output increases, so too does labor usage. However, the rate of growth of earnings exhibits no statistically significant relationship with either the rate of growth of output, the rate of growth of exports, or the rate of growth of employment.

In sum, the correlations predicted from Model 1 are not found. This suggests that the particular segmented labor market model posited in Figure 10.1 is not the correct one for Taiwan.

Why? One possibility is that Taiwan's labor market is segmented but in a different way. An alternative segmented labor market model is shown in Figure 10.2. (This is essentially the model of Harris and Todaro, 1970.) In this model, earnings in the growing sector are set at higher-than-market-clearing levels by a union, a minimum wage authority, or some other institutional force. Given the high wage, workers queue up for the available jobs, resulting in search unemployment.

If an economy with these characteristics experiences export-led economic growth of a labor-intensive type, the demand curve for labor in the growing sector will shift from $D$ to $D'$. Employment will increase directly with faster output growth, but earnings levels within that sector will remain unchanged. Thus, in this model, higher output growth will lead to higher employment growth but not to higher earnings growth.

The empirical evidence presented in Table 10.12 is consistent with this, so the problem encountered with Model 1 is overcome by Model 2. However, another problem remains: Model 2 predicts rising unemployment rates in the growing sectors, and this has not happened in Taiwan. As noted above,

<table>
<thead>
<tr>
<th>Correlation between</th>
<th>One-digit analysis</th>
<th>Two-digit analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correlation</td>
<td>Significance level</td>
</tr>
<tr>
<td>Output growth and employment growth</td>
<td>+.92</td>
<td>.001</td>
</tr>
<tr>
<td>Output growth and earnings growth</td>
<td>+.37</td>
<td>.37</td>
</tr>
<tr>
<td>Earnings growth and employment growth</td>
<td>+.42</td>
<td>.30</td>
</tr>
<tr>
<td>Export growth and employment growth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export growth and earnings growth</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 10.2 A Segmented Labor Market with Search Unemployment
except for a brief recession, open unemployment has been very low throughout the course of Taiwan's economic development. Model 2 cannot be the correct empirical characterization either. A different model is needed.

The model of Figure 10.3 is constructed on the assumption of the absence of labor market segmentation. In such an integrated labor market, earnings are determined by supply and demand in both sectors and earnings are equalized across the two (at level $W^*$).

Using this model, suppose that the economy continues to grow and that as a result the growing sector's labor demand curve shifts from $D$ to $D'$. If the labor market is very tight, employers will be in keen competition with one another for labor. Firms in the growing sector will offer higher earnings to try to increase employment.

In an integrated and well-functioning labor market, the demands expressed for workers in one sector of the economy will have effects in other sectors. What happens in this case is that the supply curve of labor to the stagnant sector shifts leftward from $S$ to $S'$, because some workers are induced to leave that sector and take up jobs in the growing sector. Employers in the stagnant sector have to pay more if they are to retain their work forces. Those firms which are unwilling or unable to do this must either contract in size or go out of business entirely.

In this way, heightened competition for workers in an integrated labor market leads to a generalized increase in earnings throughout the economy. These sectoral earnings growth rates would be found to be uncorrelated with sectoral employment, output, or export growth. This is exactly what has happened in Taiwan — which is why the integrated labor market model (Model 3) is arguably the better characterization of how Taiwan's labor market evolved in the 1980s.8

Summing up, the Taiwanese labor market is better characterized as integrated and well-functioning rather than segmented and pathological. The major institutional interventions that segment labor markets in other countries — minimum wages, unions, public sector pay policies, multinational corporations, and labor codes — have little distortionary effect in Taiwan. The Taiwan labor market is almost a textbook case of a smoothly-operating labor market in which employment and earnings reflect the scarcity value of labor.

The Future of Taiwan's Labor Market

Will the smooth functioning of labor markets in Taiwan continue into the future? There is good reason to expect that the labor market will remain tight in the 1990s and that improvements in labor market conditions will therefore continue, provided that present policies are continued. This
FIGURE 10.3 An Integrated Labor Market with Market-Clearing Earnings

Growing Sector

Earnings

W

Labor

Stagnant Sector

Earnings

W

Labor

S

D

S'
presupposes that no major change in labor market policy takes place in Taiwan. If it does, and there is some risk that it might, labor market conditions might slacken. In 1984 the Taiwan government passed a far-reaching Basic Labor Standards Law, modifying or superseding several earlier laws.

The stated purposes of the new law were "to provide minimum standards of labor conditions, protect workers' rights and interests, strengthen labor-management relationship, and to promote social and economic development." These are laudable goals. They are also issues which the government of Taiwan takes extremely seriously.

At issue are whether the law will be enforced and, if so, if it will help achieve its stated goals. Provisions regarding labor relations and protective labor legislation are taken up now; discussion of the economic security aspects of the law is deferred until Section 4.

The percentage of employees who are members of unions in Taiwan is 34 percent, compared to less than 20 percent in the United States. Moreover, the rate of unionization in Taiwan is rising (it is now two-thirds higher than it was in 1970), whereas union membership in the United States has fallen over the same period of time (by about one-fourth). Labor unions in Taiwan are coordinated by the Chinese Federation of Labor, to which all unions must belong. Only 24 unions (out of 3,076 in all) belong to the Taiwanese Association for Labor Movement, which is an independent association of unions. Those in the Chinese Federation of Labor receive most of their funding from government grants and hardly ever call strikes. Consequently, labor actions in Taiwan, although now more numerous by Taiwan standards, are by no means serious by international standards (Deyo, 1989, Chap. 2).

An industrial or craft union is required in any factory or geographic area with more than thirty adult workers (Union Act of 1929, as amended). In addition, all workers over the age of 16, male or female, have the right and obligation to join the labor union for the industry or craft in which they work, except in the public or quasi-public sector. However, the law provides no penalty for non-adherence, and in fact the law is not adhered to. If it were, we would find unionization rates approaching 100 percent, which we do not.

Why do workers not form unions or join existing ones? The simplest plausible answer is that they do not find it worthwhile to do so. The underlying economic forces in Taiwan assuredly work against strong unions. Well-known in labor economics (e.g., Ehrenberg and Smith 1988) are the four "Hicks-Marshall Laws of Derived Demand" which determine when the own-wage elasticity of demand for a category of labor is apt to be high and consequently when the bargaining power of a union is apt to be low:
1. When the price elasticity of demand for the product being produced is high;
2. When other factors of production can be easily substituted for that particular category of labor;
3. When the supply of other factors of production is highly elastic; and
4. When the cost of employing that category of labor is a large share of the total costs of production.

In a highly-open economy such as Taiwan's, which relies on labor-intensive production methods for a large fraction of output, these conditions are likely to hold. It would be expected, therefore, that unions would have only limited ability to raise wages much above market levels without inducing substantial unemployment among union members.

Another reason that the labor movement is not strong in Taiwan is that the unions are covered by exclusive jurisdiction clauses; that is, only one union has jurisdiction over workers in a particular work place, industry, or geographic area. Given the lack of competition among unions for the right to represent a particular group of workers, and given that most union leaders are appointed by the government, the exclusive jurisdiction clause can become a tool for enterprises to establish docile unions rather than a means by which workers can choose to be represented by the strongest possible organization.

Yet another reason for weak unions in Taiwan is that unions have very limited means for improving the wages and working conditions of their members. The Chinese Federation of Labor does not enter into bargaining on behalf of workers, which implies that individual unions are on their own. This is one of the reasons that only 0.2 percent of firms have signed collective bargaining agreements with their unions. In addition, the threat of a strike -- the major weapon of unions -- is all but absent. This is despite the fact that previous limitations on strikes appear to have been revoked. (The prohibition of strikes under martial law was lifted in 1987 and restrictions on strikes under the National Mobilization Act are seldom applied.) However, mediation is required in the event of a labor dispute. If this breaks down, the authority in charge can refer the dispute to compulsory arbitration, the decision of which cannot subsequently be appealed. Lockouts and strikes are outlawed during arbitration.

A somewhat different list of reasons for weak unions is given by San (1989). He cites suppression of the labor movement by the ruling KMT party, the impassiveness of the worker toward unionization, the prevalence of small and medium size enterprises, the high rate of labor turnover, and the competitiveness of the labor market.

Because of these various economic forces and institutional limitations on union power, it would not be surprising to find that unions have had little effect on the wages and conditions of employment of workers in Taiwan.
Econometric evidence shows that indeed this is the case. One study by Lin (1989) found that union employees in Taiwan earn only 0.3 percent to 1.9 percent more than do non-union employees. Another study by Lin (1988) found that the Basic Labor Standards Law had no effect on wages or working hours during the period 1980-1988. Thus far, unions have made little difference to labor market conditions, and the same is true of the Basic Labor Standards Law.

There are signs, though, that the labor movement is becoming more militant. Strikes have occurred in the Taiwan Railroad Company, in many local bus companies, in some utility industries, and in certain public enterprises. Typically, these have been over worker rights issues rather than wages. For example, workers have struck over whether companies have the right to transfer them unilaterally from one location to another. These work disruptions are noteworthy precisely because they have been so infrequent. Whether they will grow into something more substantial is hard to foretell. But if the experience of the Republic of Korea is any guide, the probability is high that labor relations in Taiwan will become more confrontational and less stable.

Overall, one observer has concluded thus: "The termination of the martial law and the revision of the Labor Dispute Law [in Taiwan] have done little to change the legality of unionization and strikes. We are therefore forced to search for the true cause of the recent labor movement. The best reason that we can find is the political democratization that started in 1987 and the ending of authoritarian rule in 1988. What we are less certain about is the impact of the labor movement on the function of the labor market and eventually on economic development." (Chang 1989, p. 17).

Looking ahead, one can imagine a number of possible scenarios. One is a scenario of escalating conflict, growing union militancy, increasingly frequent work disruptions, more employer lockouts, and repression of the labor movement by the State -- in short, a highly confrontational pattern. Another is a more harmonious relationship, with employers, workers, and the State continuing to regard themselves as partners in the economic development effort but adapting their behavior to changed circumstances. In my view, the harmonious approach in a highly competitive labor market has served the people of Taiwan extremely well in the past -- which is the best reason to stay the present labor relations course in the future. Will it happen? Labor unrest in Taiwan reportedly is on the wane, which augurs well for the future.

Turning now to protective labor legislation and workers' rights issues, we find that the 1984 Basic Labor Standards Law has come under attack, not only from industrialists but also from independent economists in think-tanks and universities. Maintaining a flexible, competitive labor market is
essential to facilitating the kinds of adjustments Taiwan's economy will be
called upon to make in the years ahead. If regulations regarding layoffs,
dismissals, severance pay, and other workplace issues impede the econ­
yomy's ability to respond to overseas challenges and opportunities, Taiwan
will suffer. The last thing Taiwan wants to do is to introduce rigidities
of the type that have produced hysteresis in Europe.

Whether this will happen is an open question, in part because of widely
variable enforcement of the programs and protections under the Basic
Labor Standards Law. For some, there is little problem. For example, the
injury compensation provisions under the law appear to be complied with.
According to a study by Lin (1989), only 0.14 percent of collective labor­
management disputes were caused by injury compensation cases. For other
programs, though, non-enforcement is a serious issue. Minimum wages
(in the form of a Basic Wage Scale) have been declared. Their amounts
have become more sizeable than in the past, and now amount to nearly
half the average wage. Yet minimum wages do not receive attention in
public discourse in Taiwan, for the simple reason that they are a non-issue:
no employer has ever been reported to have been punished for violating
the scale (Chang 1989, p. 20).

Mention may be made as well of an obvious loophole in the guarantee­
ing of workers' rights. Workers become eligible for benefits and protec­
tions only after a certain length of time on the job. Firms apparently are
 dismissing workers just before they become eligible for benefits and then
re-hiring them afresh, still without benefits. Out-sourcing is another
commonly-practiced method of evading the law.

Taiwan will have to strike a balance between adversarial or cooperative
structures, between regulatory or market approaches, and between protec­
tive or flexible arrangements. A healthy debate on these issues lies ahead.

4. Human Resource Issues for the 1990s

The continued improvement of standards of living in Taiwan in the 1990s
will depend importantly on the economy's ability to supply adequate human
resources to meet the demands of employers. By all accounts, the labor
force will have to be increasingly skilled; labor shortages will have to be
met by inducing women to enter the labor force and by discouraging em­
ployers from exercising some of their traditional discriminatory practices
against women; and provisions will have to be made to lure more prime­
age persons into the work force to support an ever-aging population.
These issues, along with the related question of how to fund adequate
living standards for retirees, are treated in turn in the balance of this
section.
Taiwan has invested heavily in human capital throughout the post-World War II period. These investments have facilitated improvements in standards of living in two major ways: by assuring functional literacy and numeracy at the lower end of the distribution and by expanding the supply of educated and technically-trained personnel at the upper end.

According to the Constitution of the Republic of China, all children from 6 to 12 years of age are required to receive free elementary education. In 1968, the period of free education was extended from 6 years to 9 years, including elementary school and junior high school. Although junior high school is not compulsory, the school enrollment rate is 93.8 percent in the 12-17 year age category. Beginning in 1993, the period of free education will be extended from 9 years to 12.

Along with this numerical expansion is attention to educational quality. The average number of students per teacher in elementary school fell from 42 in 1968 to 31 in 1987. At the junior high level, the reduction has been from 33 students per teacher in 1968 to 22 in 1987.

The result of these investments in education has been a marked improvement in the quality of Taiwan's labor force at the lower end. The percentage of employed workers with no schooling decreased in the 1980s from 10 percent to 7 percent, and the percentage illiterate from 7 percent to 5 percent (Table 10.13).

<table>
<thead>
<tr>
<th>Year</th>
<th>Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>9.8 (6.7)</td>
</tr>
<tr>
<td>1981</td>
<td>9.4 (6.5)</td>
</tr>
<tr>
<td>1982</td>
<td>8.9 (6.3)</td>
</tr>
<tr>
<td>1983</td>
<td>8.9 (6.5)</td>
</tr>
<tr>
<td>1984</td>
<td>8.6 (6.2)</td>
</tr>
<tr>
<td>1985</td>
<td>8.2 (6.0)</td>
</tr>
<tr>
<td>1986</td>
<td>8.0 (5.6)</td>
</tr>
<tr>
<td>1987</td>
<td>7.1 (5.1)</td>
</tr>
</tbody>
</table>

*Includes illiterates and self-educated.

Source: Statistical Yearbook of R.O.C. 1988, Supplementary Table 25, p. 61.
At the upper end, the government aims to meet the seemingly insatiable demand of private employers for well-educated labor with vocationally-useful skills. Taiwan has rapidly increased the numbers of vocational schools and junior colleges. Two-thirds of students are in vocational schools. The emphasis on vocational education is also indicated by the growth of the share of secondary vocational education in the government's budget. Interestingly, although the higher education system has been expanded, it has been at a below-average rate. The share of higher education in total educational expenditures has fallen, from 27.3 percent of the education budget in 1971 to 21.4 percent in 1986.

These investments in education have entailed an extraordinary commitment of resources. Taiwan spent 5.1 percent of its GNP on education in 1988, much higher than the average for middle-income countries. More than 80 percent of Taiwan's education expenditures were made by the public sector. Moreover, international comparisons of student achievement show that the students in Taiwan perform much better on standardized tests than do students in the United States (Stevenson et al. 1986). This shows that Taiwan is genuinely succeeding in educating its people, which bodes well for improvements in standards of living in the future.

At present, Taiwan is encountering an imbalance between the skills offered by workers and employers' demands for them. The Report on the Manpower Utilization Survey, Taiwan Area, R.O.C., 1988 has defined labor as underutilized if a worker falls into one of the following categories: (i) unemployed; (ii) employed but working under 40 hours and willing to increase working hours; (iii) employed below a certain income level; (iv) employed in an occupation not matching the worker's educational attainment. According to this survey, the underutilization rates by level of education were: primary school, 17.1 percent; junior high school, 11.9 percent; senior high school, 18.8 percent; vocational school, 32.2 percent; junior college, 37.1 percent; college and graduate school, 28.8 percent. The reason for the higher reported rates of underutilization among those with greater educational attainments is that their employment is judged to be in occupations below those for which they are qualified. Within this group, there is a clear distinction between graduates in scientific and technical subjects, for whom the demand is very great, and graduates in the arts and the humanities, for whom job opportunities are much more limited.

According to a DGBAS survey in 1987, 66 percent of manufacturing firms reported having labor shortages. Those manufacturing industries with the most acute shortage rates are textiles, apparel and other textile products, plastic products, and electrical and electronic equipment. In construction, 86 percent of firms report labor shortages.

According to a Ministry of Economy survey in 1988, the main labor shortages are in the unskilled labor market. Junior high school, senior high学校, ans supply.

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This suggests that three groups be distinguished: high-education labor with general skills, highly-educated labor with technical skills, and unskilled labor. At present, those in the first category are in excess supply, whereas those in the latter two categories are in excess demand.

Looking ahead, this structural mismatch will probably become a more severe problem unless steps are taken soon to deal with it. One way of resolving the shortage of educated labor with needed skills is through domestic educational policy and further expansion of scientific and technical faculties in universities, colleges and junior colleges, and secondary vocational schools. Another is by encouraging the return of overseas Chinese with the desired qualifications. Countries such as the United States are now the beneficiaries of large influxes of Taiwanese with valuable skills in such areas as engineering, computer science, and economics. Many of these people study in the United States and remain after graduation because labor market opportunities are so favorable for them. But if Taiwan's economy continues to grow by expanding those activities which make intensive use of highly-skilled and technical personnel, earnings and other conditions of employment in Taiwan might rise to the point where many of these overseas Chinese might return home. Indeed, there are already signs that such a "reverse brain drain" has begun.

Mention should also be made of possible immigration from Hong Kong. Events in Tiananmen Square in the summer of 1989 have cast doubt on the security of Hong Kong after 1997. If Hong Kong's best-educated and best-skilled people cast about for a secure home, Taiwan will face a unique opportunity to receive an exceptionally-talented group of people. Only time will tell whether this eventuality actually comes to pass.

At the lower end of the skill ladder, changes are needed. Taiwan may need to revise its immigration policy. It is illegal now for employers to hire immigrants, whether from mainland China or from other countries. In fact, though, immigrants from other Asian countries are known to be working in Taiwan in large numbers. The Council of Labor Affairs estimates that there exist somewhere between 10,000 to 30,000 foreigners, mostly from Southeast Asia, working illegally in Taiwan at the present time. Newspaper reports place the number of illegal foreign workers at about ten times that number. Regularizing these workers' immigration statuses and regulating the flow would be preferable to pretending that immigration is not going on. Taiwan's immigration policy needs to be seriously revised in light of labor market realities, now and in the years ahead. For some theoretical speculations on the subject (but little data), see Chang (1988).
Utilization of Female Labor

One factor responsible for continued economic growth and improved standards of living is the rising rate of utilization of women in the Taiwan economy. From 1980 to 1988, the total labor force participation rate increased from 58.3 percent to 60.2 percent. During this time, the male labor force participation rate decreased from 77.1 percent to 74.8 percent, whereas the female labor force participation rate increased from 39.3 percent to 45.4 percent. Therefore, the increase in the rate of labor force participation in the 1980s was due entirely to an increase in the labor force participation of women.

Among the reasons cited in the literature for decreasing labor force participation of males in Taiwan are the continued expansion of educational opportunities, which increases the share of young men in school, thereby postponing males' age of entry into the labor force, and continued improvements in life expectancy, which increases the 65+ population. Both push-side and pull-side factors have caused the increase in females' labor force participation. On the push-side are the decrease in the fertility rate, changing social attitudes toward women's work, improvements in home-production technology, and the increase in females' educational attainment. On the pull-side are the labor-intensity of economic development (for both sexes) and the rapid growth of female-intensive industries.

This last point merits further attention. Studies by Liu (1984) and Wu (1988) have shown that those sectors of the economy which traditionally have employed large numbers of women have expanded most rapidly. Those sectors include manufacturing industry, commerce, business services, and other services.

In the future, rising female labor force participation can facilitate the growth of the economy by alleviating labor shortages. The recent trend toward greater female labor force participation may be coming to an end, though. Between 1987 and 1988, the rate of female labor force participation fell from 45.8 percent to 44.5 percent, reversing the previous secular increase. It is not clear at present whether the recent trend toward greater equality between the sexes will continue in the decade ahead.

Population Aging and Retirement Income Policy

Taiwan's population has been aging. Whereas the ratio of elderly (65 years and over) to prime-age people (15-64) was 4.8 percent in 1961, that ratio has risen to 5.2 percent in 1971, 6.9 percent in 1981, and 8.4 percent in 1987. Demographers expect that the rate of population aging will accelerate in the future.
Population aging has important implications for Taiwan's retirement income system which, in the last few years, has been very much in flux. Until 1984, the most important source of retirement income was the Labor Insurance Law. This law requires that pensions be provided to workers in covered employment. In 1988, six million workers were in jobs covered by labor insurance, out of a labor force of somewhat more than eight million. Approximately 60 percent of persons aged 65 and over received old-age benefits under the Labor Insurance Law.

Old-age benefits consist of medical insurance and a retirement benefit, paid on a lump-sum basis. The retirement benefit amounts to one month's earnings for each of the first 15 years of service, plus two months' earnings for each additional year of service, up to a maximum benefit of 45 months' earnings. Employers pay 80 percent of the premium for this insurance and workers 20 percent. For the self-employed, the insured pays 60 percent of the premium and the government the remaining 40 percent.

The Basic Labor Standards Law of 1984 stipulated that employers provide an additional retirement pension to any worker who has served in the same enterprise unit for fifteen years or more, who has worked twenty-five years or more overall, and who has reached age 55. This pension is payable on a lump-sum basis. The amount of the benefit is equal to the worker's final-year monthly wage multiplied by the number of pension points, defined as follows. A worker who retires with exactly fifteen years of service receives thirty pension points. He or she receives one additional pension point for each additional year of service, up to a maximum of forty-five points (i.e., a cash retirement benefit of forty-five months' wage).

To finance these pensions, employers are required to contribute reserves to a retirement fund. There is some question, though, as to whether firms are actually complying. San (1987) collected data from ninety-nine firms, mostly in manufacturing. His survey showed that only nineteen firms have made the full contributions required of them. Ko (1989) reports that only 11 percent of firms made the required contributions under the Basic Labor Standards Law in 1988.

This pension system has a number of defects. One is that pensions are lump-sum payments rather than annuities. An annuity is a promise to make regular payments to a retiree for as long as he or she lives. Annuities provide retirees with insurance against the economic risk of living too long and thereby outliving their resources. Replacing lump-sum payments by actuarially-fair annuities with the same expected present value would have the same total cost while at the same time providing retirees with insurance against the economic consequences of living too long. Such a change in Taiwan's retirement income system merits serious attention.

Other problems with the present system are touched upon in two other
papers by San (1988, 1989). One concern is that workers receive pensions only after fifteen years in the firm. In Taiwan, 98 percent of enterprises are small or medium size. The expected life of these enterprises is well under fifteen years. Therefore, the requirement that pensions be paid only after fifteen years of service leaves a large fraction of Taiwan's workers without pension coverage. Another problem is that the fifteen year stipulation imposes the heaviest pension obligations on firms with the most stable work forces -- in all likelihood, precisely those firms that offer the highest wages and best working conditions to begin with. Yet another problem is that the required contributions take no account of the firm's past pension funding. Consequently, some firms will overfund their pension funds and some underfund them. Another concern is that pension obligations are being imposed upon firms retroactively; that is, workers already on the payroll who subsequently retire are entitled to receive pension benefits based on their years of service since joining the firm, not the years of service since the enactment of the Basic Labor Standards Law. Finally, because pension benefits are calculated as a fraction of the last year's earnings, firms cannot forecast their obligations accurately and set aside actuarially-appropriate contributions.

The type of pension plan which Taiwan has set up is called a defined benefit pension -- that is, the benefits are determined according to a defined formula. These benefits are financed by employer contributions. The possible disparity between promised benefits and required contributions is enormous. Indeed, by 1985, the Old Age, Survivors', and Disability Benefit Payments Fund was already paying out more than it took in, leading to predictions that the fund will soon be depleted (Cheng 1987, p. 532). For this reason, it might be better for Taiwan to move to a so-called defined contribution pension scheme. This is where the contribution rate is specified, and the subsequent pension benefit is determined on an actuarial basis from the amount contributed, after allowing for interest accumulations. One advantage of this would be to assure that future pension benefits will be fully funded. Also, this would internalize the costs and benefits of pensions into a single decision, and perhaps help avoid the mistake the United States has made in giving older people the false impression that because they have contributed to the Social Security system, they have paid fully for all of the old-age benefits they are receiving.

The aging of Taiwan's labor force will accelerate in the future. For this reason, serious attention should be given now to the specific benefit and financing provisions of the pension law, since they will gain in importance as a larger fraction of Taiwan's population reaches retirement age and qualifies for these benefits.
5. Conclusions

Taiwan's economy has continued to raise standards of living. Social indicators have improved. Poverty has continued to fall. Inequality has remained low.

These improvements have continued even through the difficult times of the 1980s, during which many newly-industrializing economies have fared much less well. Proximate determinants for Taiwan's success include the economy's ability to sustain macroeconomic growth with only a minimal recession and the continued participation of the poor in the growth process, primarily through the labor market. Underlying determinants include appropriate policies with respect to development strategies, labor market institutions and human resource utilization.

Taiwan's macroeconomic policies have continued to foster rapid economic growth. Past phases of import substitution industrialization and promotion of labor-intensive exports have given way to an increasingly skill-, capital-, and technology-intensive development path. While there is no good reason to expect that economic growth will halt, I would forecast that because of competition from the next-NIEs, Taiwan will not be able to maintain as high a level of economic growth in the future as was the case in the past.

In the 1980s, as before, economic growth has increased the derived demand for labor. The continued increase in demand for labor in growing sectors and increased competition for workers throughout the labor market have maintained full employment, raised real earnings, improved standards of living, and lessened poverty. Taiwan's labor market is better characterized as integrated and well-functioning rather than segmented and pathological. In all likelihood, the labor market will remain tight in the 1990s and improvements in labor market conditions will therefore continue. However, there is now considerable pressure for additional protective labor legislation and greater call for attention to workers' rights. It is possible, therefore, that the labor market regulations now being promulgated under the 1984 Basic Labor Standards Law may be pushed further than is warranted by competitive forces, jeopardizing both labor market progress and industrial peace.

Intersectoral shifts of production and employment have been sustained in the 1980s and will continue in the years ahead. As manufacturing exports grow and agricultural production increases but at a slower rate than total production, employment will continue to shift away from agriculture and toward manufacturing and services. Within manufacturing, major substitutions are taking place. Taiwan's comparative advantage is shifting toward more high-tech and less basic manufactured goods production. These intersectoral shifts induce changes in the pattern of employment, enabling...
workers to leave the lower-paying sectors of the economy and move into better-paying jobs, thereby improving their standards of living. Such shifts should be facilitated to the maximum extent possible in the years ahead.

Educational policy has facilitated improvements in standards of living, both by assuring functional literacy and numeracy at the lower end of the distribution and by expanding the supply of educated and technically-trained personnel at the upper end. Graduates of higher education with training in the arts and the humanities are experiencing difficulties in finding jobs commensurate with their training. On the other hand, graduates in technical areas find fierce competition for their services. Perhaps the mix of subject areas should be changed accordingly. At the lower end of the job ladder, shortages of unskilled workers at prevailing wage rates are widely reported. Either wages will have to rise, or the supply of unskilled labor will have to be expanded, or both. Policies for the 1990s with respect to immigrants, female labor, and older persons will have to be carefully considered to assure that labor market opportunities are maximized and bottlenecks to economic expansion minimized.

As the population continues to age, increasing demands will be placed on Taiwan’s retirement income system. Social insurance programs are sure to acquire ever-greater importance in the future as the economy gets richer and these programs become more affordable. The pension system established thus far has some serious design problems. If these are not rectified in the near future, old-age economic security may be more a mirage than a reality. In other areas of social insurance, Taiwan would do well to study other countries’ programs, borrow their best features, and avoid others’ and its own, mistakes.

For nearly three decades, Taiwan has prospered through export-led growth. Such a strategy will probably be appropriate for the future. But an outward-oriented trade strategy is predicated on the continued openness of world markets to Taiwan’s products (about which I am quite optimistic) and the continued competitiveness of Taiwan’s products vis-a-vis other producers (which will probably suffer erosion in certain sectors from the next-NIEs). Shifting in accordance with changing comparative advantage is and will continue to be essential.

Notes

I am deeply indebted to Gustav Ranis for helpful comments, to Henry Wan for many insightful discussions, and to Ping-Lung Hsin for invaluable research assistance.

1. Unfortunately, the data are not presented in disaggregated enough fashion to permit calculation of other, more comprehensive, poverty measures such as the addition to the poverty shortfall (which I am quite optimistic) and the continued competitiveness of Taiwan’s products vis-a-vis other producers (which will probably suffer erosion in certain sectors from the next-NIEs). Shifting in accordance with changing comparative advantage is and will continue to be essential.
ures such as the Sen index or the $P_a$ class. These two measures include, in addition to the fraction of the population which is poor, the average income shortfall of the poor, and the extent of income inequality among the poor. These latter two components cannot be calculated reliably from published tabulations.

2. The decomposition formula used is:

$$G = G_1\Phi_1 + G_2\Phi_2 + G_3\Phi_3 + G_4\Phi_4,$$

where $G$ is the Gini coefficient, $G_i^*$ is the "pseudo-Gini" (F-R-K terminology) or "concentration ratio" (P-C-F terminology) of the $i$-th income source, and $\Phi_i$ is the share of that income source in total income. The "pseudo-Gini" or "concentration ratio" is equal to the product of the true Gini for that income source ($G_i$) and a relative correlation coefficient $R_i$.

$$G_i^* = G_iR_i.$$

For each income source, the relative correlation coefficient $R_i$ is the ratio of two other correlations:

$$R_i = \text{cor}(Y_i, \rho)/\text{cor}(Y_i, \rho_i),$$

where $\text{cor}(Y_i, \rho)$ is the coefficient of correlation between a household's income from the $i$-th source and its rank in the total income distribution and $\text{cor}(Y_i, \rho_i)$ is the coefficient of correlation between a household's income from the $i$-th source and its rank in the distribution of income from that same source. Substituting (2) and (3) into (1) and dividing through by $G$, we obtain

$$100\% = FIW_1 + FIW_2 + FIW_3 + FIW_4,$$

where $FIW_i = \Phi_i G_i[\text{cor}(Y_i, \rho)/\text{cor}(Y_i, \rho_i)]/G$. The $FIWs$ are the so-called "factor inequality weights" of wage income, profit income, agricultural income, and all other income respectively.


6. Because these variables are jointly determined, and therefore no one variable is obviously a dependent variable and another an exogenous variable, correlative rather than causal analysis is used to analyze the data.
Ideally, this analysis would use multivariate methods to control for differences in productivity among workers. The data sets presently available to me do not permit such an analysis.

7. When job aspirants leave low-wage sectors in which jobs are available in order to search for jobs in higher-paying sectors elsewhere, those who cannot find such jobs and end up unemployed are said to be experiencing "search unemployment."

8. It would be interesting to know whether the integrated labor market characterization also applies to the pre-1970 period (before full employment was reached), but data are lacking with which to determine this.

9. On the labor supply decisions of women, see the papers by Su-Mei Chang, Ying-Chuan Liu, Gee San, and Ching-Lung Tsay in the *Taiwan Economic Review*, June, 1988 and the references cited therein.

References


