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**EDUCATIONAL ACHIEVEMENT AND SECTORAL
TRANSITION IN THE INDONESIAN LABOR FORCE**

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**Educational Achievement and Sectoral Transition
in the Indonesian Labor Force**

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Abstract

This study examines the effects of educational achievement on structural transition in the Indonesian labor force during the process of recent economic development. The paper provides an overview of the educational policy in Indonesia. Then, it discusses the educational achievement of the Indonesian labor force between 1976 and 1989. The subsequent parts examines wages and the effects of this educational achievement on the structural composition of the labor force, labor supply, labor force participation, and unemployment. The final part summarizes the findings in this study and offers some labor and educational policy implications.

The 1976 and 1989 SAKERNAS (Indonesian National Labor Force Survey) data are used in this study. The results show that first, between these years, there was a significant increase in the educational achievement of the Indonesian labor force . While still lagging behind, women's educational achievement grew more rapidly than men's. Second, between 1960 and the mid 1970s, the labor force share of agriculture dropped from 75% to 51%. Between 1976 and the early 1990s, the labor force share of agriculture remained dominant at around 51%. In a longer time perspective, the Indonesian labor force has begun to undergo a structural transition. Third, education increases the likelihood of full time work, even though women had lower hours worked. Fourth, for 1976 and 1989, labor force participation rates were lower for women than for men. Self employment remained dominant for men and women, a likely result of the continuing dominance of agriculture in the economy. Fifth, unemployment rates were high for men and women under 30 years of age in both years, while jobs seemed to be relatively stable for those older than 30. Female unemployment rate was higher than male unemployment rate in both years. Female senior high school graduates were especially affected as their unemployment rate was the highest among all levels of schooling for women in 1989.

Key words: Economic development, educational investment, labor force structure.

The Journal of Economic Literature categories I21, J21, J22, and O15.

Educational Achievement and Sectoral Transition in the Indonesian Labor Force

Introduction

Theories on economic structural transformation maintain that the process of economic development is marked by a continual shift from primary to secondary economic activities. At later stages of economic development, this will be followed by a steady shift to tertiary economic activities (Fisher, 1945). Clark (1940) asserted that the process of economic development is noted by an increase in output per worker in all sectors of the economy, which is then followed by a shift from sectors with relatively low output per worker to those with relatively high output per worker. This process is the result of increases in capital stock per worker and advances in knowledge and technology. In general, it has been observed that an increase in the educational achievement of the labor force in a developing economy will bring about a transition from an economy with a dominant agricultural sector to one in which the manufacturing and modern service sectors are relatively more significant.

The pace with which the structural transition process takes place to a significant degree depends on the size of the agricultural sector. When the agricultural sector is very large relative to other sectors in the economy, the share of the work force in this sector may decrease quite slowly even when the share of the manufacturing and modern service sectors grow very rapidly (Dovring, 1959). The decline in the size of the work force employed in agriculture will first occur in proportion and then in absolute number. Proportional decline of the labor force employed in agriculture would occur gradually while the absolute size still increases. In subsequent stages, the absolute size, and thus the proportion, of the work force in the agricultural sector would begin to decline (Lewis, 1954). In economies where population dynamics imply a rapidly rising labor force, a characteristic of many

developing countries today, a high proportion of the work force may be maintained in agriculture until relatively late in the development process (Booth and Sundrum, 1985).

This paper analyzes the effects of education on structural transition of the Indonesian labor force during the process of recent economic development. The first section of the paper provides an overview of educational policy in Indonesia. The second section looks at the educational achievement of the Indonesian labor force between 1976 and 1989, a period when the Indonesian economy more than doubled in size. The third part examines wages and the effects of this educational achievement on the structural composition of the labor force in the economy. The fourth and the fifth sections examine the effects of the educational achievement of the work force on labor supply and labor force participation, respectively. While education tends to ease the transition from an agriculture-based economy to one with more significant manufacturing and modern service sectors, it may also pose challenges such as high unemployment rate if the supply of more educated labor rises faster than the demand for it. Thus, the sixth section looks at the effects of the educational achievement of the labor force on unemployment. The final part summarizes the findings in this study and offers some labor and educational policy implications.

Theories on labor force structural transformation have not distinguished between male and female labor force while each one may respond differently to economic forces in the working during the process of transition. This study is designed to be gender specific to allow the analysis to capture possible differences in the behavior of the labor force as a result of gender differences.

Educational Policy in Indonesia

The past few decades have been marked by a committed effort by the Indonesian government to accelerate economic growth and reduce poverty. Indonesia was able to sustain a relatively high annual economic growth of 7.2% for the period between 1970 and 1980, 6.1% for the period between

1980 and 1990, and 7.6% for the period between 1990 and 1995 (World Bank, 1995, 1997). During this period Indonesia emerged as a new economic power in Asia, along with Thailand and Malaysia, and slightly behind the Newly Industrializing Economies in East Asia, namely South Korea, Taiwan, Singapore, and Hong Kong (World Bank, 1993). Despite the fact that poverty remains one of the major development issues in this country, the percentage of its population who lived in extreme poverty dropped from 60% in 1970 to less than 20% in the late 1980s (World Bank, 1990).

One of the emphases of economic development policies has been the expansion of Indonesia's educational system (Jones, 1994). This is based on the well-established notion that education increases earnings, and thus economic welfare of the society (Schultz, 1960, 1961a, 1961b, 1963, 1981, 1989; Barro, 1989; Becker, 1964, 1967, 1993; Denison, 1962, 1985; World Bank, 1993; Ogawa, Jones and Williamson, 1993a). Education can also be a powerful tool to promote economic equity. A more equitable distribution of income can be achieved when the government applies an egalitarian educational policy.

Indonesia's achievement in expanding its educational system in the past three decades has been quite noteworthy. As will be apparent in the next sections, its government has opted to apply an educational system that allows a broad participation by the general masses. Emphasis has been put on expanding primary and lower secondary instead of higher levels of education. This is similar to what one observes in Malaysia and Korea, but runs in contrast to educational policies opted by other developing countries such as India and Venezuela (World Bank, 1993), which have been geared toward the expansion of higher levels of education. In 1978, the Indonesian government declared six-year primary education as free and compulsory. This was then expanded to free nine-year education or the equivalent of lower secondary education in 1987 (McBeth, 1994). The latter move proved to be

more difficult to implement as this could compromise the quality of schooling in the face of limited resources. Since then, the main focus has continued to stress universal primary education.

As a result of this policy, gross enrollment rates rose sharply for all levels of schooling. Between 1965 and 1986, Indonesia advanced from last to first place among Southeast Asian countries in enrollment rate for primary education (see Table 1). Indonesia also registered the most rapid advance in secondary school enrollment among these countries, although it still lagged behind Malaysia and the Philippines in total enrollment rate. The World Bank (1993) put gross enrollment rate at 91% for rural areas. But, even though adult literacy rate increased from 54% to 74% between 1970 and 1985, Indonesia still lagged behind South Korea, Thailand, Sri Lanka, Singapore, and the Philippines in this measure (Tan and Mingat, 1992).

Public spending on education in Indonesia was 15% of total government expenditures in 1985, a figure below those for Thailand, Papua New Guinea, South Korea, and Malaysia, but higher than those for Bangladesh, China, India, the Philippines, and Sri Lanka (Tan and Mingat, 1992). By 1992, this number had fallen slightly to 13.1% (Asian Development Bank, 1993). As a share of GNP, public spending on education was 3.7% in 1985. This was substantially lower than figures for Papua New Guinea and Malaysia, but significantly higher than those for Bangladesh, China, India, South Korea, Nepal, the Philippines, Sri Lanka, and Thailand (Tan and Mingat, 1992). By 1992, this number had also fallen to 1.2% (Asian Development Bank, 1993).

Nevertheless, the scale of Indonesia's achievement in advancing its educational system is notable considering the sheer size and the growth of its population. Between 1950 and 1990, Indonesia's population increased from 80 million to 180 million for an annual growth rate of 1.7% (Sanderson and Tan, 1995; Marshall, 1993; Frederick and Worden, 1993). Further, the demographic

nature of this growth resulted in a high proportion of school-age population, putting further pressure on the available resources for education.

Another important point to make is the Indonesian government's emphasis in educating women. Women's educational achievement in Indonesia seems to reflect to a significant degree the country's leadership's belief as well as its political will to provide more equality for women in different aspects of society. Since its independence in 1945, there has seemed to be a strong commitment in elevating the status of women in society. Many prominent female figures from the era of the struggle for independence have been made national symbols of emancipation for women. From very young ages, children are made to be aware and constantly reminded of these role models. The general atmosphere has been quite conducive for young women to achieve. The long period and tremendous effort needed to achieve the goal of equality between genders reflect the complexity of various forces in the society such as social and cultural values, the sheer size of the population, the high rate of population growth, poverty, and the relatively poor infrastructure.

The education of women contributes to social and economic development in several ways. First, education improves their economic and social status in society. This is an important element with regard to the history of women's deprivation, particularly in traditional societies, which originates from social and cultural traditions that value women less than men. In various parts of the world, mortality rates for women and children and fertility rates are still relatively high as a result of these traditions. High fertility rates can put an enormous burden on resources, especially on household resources controlled by women. Education serves as one of the most important variables in helping women improve their quality of life. It increases opportunities for women to earn their own incomes, and therefore be in a stronger position to make social and economic decisions (Summers, 1994).

Gender equality in education is important not only for the welfare of women, but also for the welfare of the whole society, especially of children. This is because women are traditionally assigned the role of the “back bones” of families both in nuclear and broader senses. Most of the general well being of families, both physical and mental, traditionally falls upon the shoulders of women. The distribution of various resources within households is thus generally regarded as mostly the responsibility of women. These traditional roles have led women to have different social and economic behavior than men. For example, studies have found that an increase in women’s earnings tends to bring a larger percentage increase in children’s nutritional intake and health compared with that from a comparable increase in the earnings of household male members (Quisumbing et al., 1995).

The expansion of educational services in an economy is also affected by demand side factors. In a developing country where primary education is free, the main costs of schooling for families appear to be the time spent in school and the financial cost of traveling the often relatively great distances to school. This is especially true in rural areas. These costs are relatively low for primary schooling, but rise sharply for higher levels of education.

Access to higher levels of education often determines enrollment in primary schooling. But, on the other hand, availability of primary and secondary schooling in a community also tends to increase the levels of schooling achieved by individuals. On the whole, a decrease in the distance between schools and students’ homes tends to increase enrollment at every level of schooling significantly. The average family or individual responds to a reduction in the general costs of schooling by demanding more schooling (Lavy, 1992; King and Lillard, 1987).

Quality of schooling, measured by variables such as teachers’ education, has also been found to have a positive correlation with households’ decision to send children to school. Dropout and repetition rates, on the other hand, have been found to have a negative correlation with schooling

quality. High grade repetition rate in turn affects the schooling system's capacity to absorb students. Many prospective students may not be able to obtain schooling when the schooling system is clogged with a large percentage of repeaters (Abadzi, 1994; Hanushek and Lavy, 1994).

Other factors that may affect dropout and repetition rates are those related to family life, such as the load of household chores, sickness, pregnancy, death, as well as the presence of young children in the household. Poverty intensifies the effects of these factors on dropout and repetition rates (Abadzi, 1994).

Relative to men, women in traditional societies face more cultural and socioeconomic constraints in achieving higher levels of education. Low enrollment rates in secondary education limit women's achievement in post-secondary education. For various socioeconomic and cultural reasons, dropout and repetition rates for women are often quite high. In addition to that, the uncertainty of future prospects for female labor often discourages families to invest in higher education for women (Subbarao et al., 1994).

Educational Achievement of the Indonesian Labor Force

The 1976 and 1989 data of the Indonesian National Labor Force Survey (SAKERNAS) are used in this study to examine the effects of education on the Indonesian labor force during the recent period of rapid economic growth. These surveys consist of national stratified random samples of households taken from census lists of households. In each census area, a certain percentage of households is sampled. Labor statistics are collected for members 10 years and older in each household. An assessment of this survey instrument found the data to be of generally high quality and completeness (Korns, 1987). Hill (1992, 1996) also judged the quality of Indonesian economic survey data to be relatively high among developing countries.

Comparison between the educational levels reported in the 1976 and 1989 SAKERNAS surveys confirms a substantial overall increase in educational achievement in the Indonesian labor force. Based on calculations of the survey data as shown in Table 2, the percentage of potential labor force (consisting of individuals above ten years of age in sampled households) without any formal schooling decreased from 24.1% in 1976 to 12.3% in 1989, or by about one-half. The percentage with some but incomplete elementary education also decreased, from 36.6% in 1976 to 28.9% in 1989. At the same time, the percentage with completed elementary education increased from 25.2% to 31.9% and the percentage with completed junior high school education (general and vocational combined) increased from 8.1% to 13.8%. The share of the labor force with completed senior high school education more than doubled from 5.0% to 11.5%. While the share of the labor force with post secondary schooling was still quite small in 1989 (1.6%), this was twice the rate reported in 1976.

At the junior and senior high school levels, most of the growth occurred in general education rather than in vocational education. The percentage of the samples with vocational junior high school education remained unchanged at 1.5% in 1976 and 1989 while the percentage with general junior high school education increased from 6.6% to 12.3% (Table 2). While the percentage of the potential labor force with vocational senior high school education increased between 1976 and 1989, it did not grow as rapidly as that with general senior high school education. This seemed to reflect the policy of the government to emphasize general education, especially at the junior high school level. General education curricula may impart skills more suited to a rapidly changing labor market whereas vocational education often emphasizes particular skills that may easily become obsolete in an economy with emerging industries (McMahon , Jung and Boediono, 1992).

A look at each level of education reveals that the percentage increase in educational achievement was substantially higher for women than for men, although women still lagged behind men

in 1989. In 1976, 31.8% of women in the SAKERNAS survey reported no formal schooling compared with only 16% for men. In 1989, the percentages of women and men without schooling fell to 16.4% and 8.2%, respectively. The percentage of women with completed primary schooling increased from 22.1% to 31.1% while for men, the comparable figures were 28.4% and 32.7%. The percentages of women with junior, senior, and post high school levels of education also increased more rapidly than men, although women still lagged behind. Gains by women in senior and post high school levels of education were especially notable. In 1989, the percentages of female adult population (older than 10 years of age) with senior high school education and post secondary degree were 9.7% and 1.0% respectively, about three times the percentages in 1976.

Further detail in the change in educational status of the Indonesian working-age population can be seen by breaking down educational achievement by age cohort. Table 3 shows the educational status of five-year age cohorts in 1976 and Table 4 shows the same profiles for 1989. The figures show the distribution of the highest educational level completed among the age cohorts. Note that the age cohorts in Table 3 are roughly three cohorts advanced in Table 4, since there are thirteen years between the surveys. The tables show that most of the gains in education were achieved by younger age cohorts. This is to be expected from a policy which emphasizes a rapid expansion of the formal schooling system in which the target groups are boys and girls who have not yet entered the work force, rather than adults who are already in the work force.

In 1989, 99% of the Indonesian population of primary school age had access to at least some primary schooling since only 1.0% of the 10-14 age group reported no schooling at all (Table 4). Nevertheless, completion of primary schooling remained a problem: 10.6% of the 15-19 year-olds and 16.1% of the 20-24 year-olds did not complete primary schooling. The most significant changes between 1976 and 1989 occurred at the junior and senior high school levels. In 1976, 23.6% of the

15-19 age cohort completed general or vocational junior high school education.² In 1989, this figure increased to 48.3%. For senior high school education (general or vocational), 15.7% of the 20-24 year-olds completed this level in 1976, while 40.2% completed at least this level in 1989.

The percentage of individuals with post secondary education was still relatively low in 1989 at around 2% to 4% of the population in the 25-54 age-cohorts. This may have reflected the priority of the government to expand lower level education for the general population. Nevertheless, the percentage of individuals with post secondary schooling in 1989 was about twice the 1976 level for similar cohorts. There also appeared to be a greater tendency for older cohorts to invest in post secondary education. For example, in 1976 only 1.6% of the 25-29 age group completed a post secondary degree. In 1989, 3.0% of this group (roughly the 40-44 age cohort in 1989) completed a post secondary degree.

Occupations and Wages

When divided into the principal occupational categories of agriculture, industry, and services, the Indonesian labor force remained remarkably stable between 1976 and 1989 (Table 5). Although the economy increased its industrial capacity and doubled in size over this period, 51.1% of the labor force was still principally employed in agriculture in 1989. This was a slight increase from 50.8% in 1976.

One important characteristic of the agricultural sector is dual employment. That is, individuals in this sector are often employed in both agricultural and traditional service or non-agricultural sector (White, 1976). The latter includes traditional non-agricultural jobs, such as handicrafts, that may have

² This figure is found by including those who completed junior high school and above as reported in Table 3, since completion of junior high school is a prerequisite for advancement. Thus, 17.8% of 15-19 year-olds had completed general junior high school, 2.6% had completed vocational junior high school, 2.1% had completed general senior high school, and 1.1% had completed vocational senior high school, for a total of 23.6%. A similar calculation was made for the completion rates for the other levels of schooling reported in the paragraph.

low returns. Employment in this sector arises from the seasonal nature of agriculture and also the low returns of the agricultural sector itself. However, the surveys classify employment according to an individual's primary occupation and thus misses the importance of dual employment. It is possible that even though the percentage of the work force involved in the agricultural sector was relatively stable between 1976 and 1989, transition out of agriculture may have already been underway. In other words, by 1989 the proportion of time spent in agricultural jobs may have grown smaller in the face of an increasing proportion of time spent in traditional, low-returns non-agricultural jobs. Available data only allow us to speculate on the possible growing significance of dual employment at this point in time.

It may appear from the 1976 and 1989 surveys that Indonesia had not yet reached a point in its economic development when the size of the work force primarily employed in agriculture begins to decline, both in proportion and absolute number. According to Lewis (1954), during the process of economic development the proportion of the labor force employed in agriculture would gradually decline, although the absolute number still increases. In subsequent stages, the absolute size, and thus the proportion, of the work force in this sector would begin to decline. However, when viewed in a longer time perspective it is evident that this structural transition is already underway. Between 1960 and the mid 1970s, the share of the labor force in the agricultural sector fell from 75% (World Bank, 1982) to 51%. The economy experienced an increase in the share of the manufacturing and modern service sectors while the labor force share in the agricultural sector declined. Between 1971 and 1985, the agricultural sector had grown at 1-2% while the nonagricultural sectors had grown at 4-5% annually (Jones and Manning, 1992). But, despite the decline in the percentage of the labor force in agriculture, there was still an increase in its absolute size. Furthermore, agriculture has continued to absorb a large share of new entrants into the labor force. This may explain the remarkably stable

percentage between 1976 and 1989. Indeed, even in 1993, the labor force share of the agricultural sector was still 51% (Biro Pusat Statistik, 1994). The continued dominance of agriculture in the labor force share is partly due to the egalitarian educational policy which emphasized universal primary education. The large percentage share of the labor force in self employment for both men and women in 1976 and 1989 may have also partly been the result of an increase in the absolute number of the labor force engaged in agriculture.

Booth and Sundrum (1985) cautioned that the economic development process that has been underway in many developing countries in the past decades is altogether different than the one that was experienced by developed countries earlier this century. Many developing countries today have very high population and labor force growth rates, unlike the experience of developed countries in their earlier stages of economic development. France, for example, experienced a population growth rate of less than 1% during the earlier part of its economic development process. In an economy where population growth rate is high and the size of the agricultural sector is quite large such as in the Indonesian case, it has been observed that during the structural transformation process the agricultural sector's share declines very slowly despite rapid growth of the manufacturing and modern service sectors. The large size of the agricultural sector and the high labor force growth rate simply do not allow fast transition for its workers into the manufacturing and modern service sectors. Also, the relatively rapid increases in agricultural labor productivity due to land-augmenting technological change, a factor that was not experienced by developed countries during the earlier stages of their economic development, tend to retain workers in the agricultural sector (Hayami and Ruttan, 1985). At a certain stage, the labor force share in the agricultural sector may remain roughly constant at a relatively high percentage despite rapid expansion of other sectors. In fact, studies have shown that the labor force share of the agricultural sector declines only slowly at later stages of the economic

development process. This may be what has been going on in the Indonesian economy. Thus, the relevant policy seems to be one that allows an increase in per worker productivity in all sectors. Since agriculture will likely remain as a sector with the largest labor force share, steps geared toward increasing productivity of per unit of agricultural land seems inevitable (Booth and Sundrum, 1985).

Nevertheless, a closer look at the occupational profile of the Indonesian labor force reveals that education had a very significant influence on the sector of employment. Educational achievement of the labor force seemed to be associated with its structural transformation. Table 6 and Table 7 show, for men and women respectively, the distribution of occupations for each major educational category. The achievement of higher levels of education sharply reduced employment in agriculture: 64.4% of women and 71.6% of men with less than completed elementary education were employed in agriculture. These proportions steadily declined with each higher level of education, such that only about one-third of men and women with junior high school education were employed in agriculture. Of senior and post high school graduates, only 9.2% of women and 15% of men were employed in agriculture. Men and women with senior and post high school education were employed mostly in the modern service sector.

The reason that the rapid decline in agricultural employment by individuals with junior high school education or higher had not yet revealed itself in the aggregate statistics is because the proportion of the labor force with these levels of education was still small and young (Table 4). As the population ages and an increasing share of the work force has a junior high school education or higher, one may expect to see a gradual decline in the coming decades in the agricultural share of the total labor force (Jones, 1994).

The occupational shift that correlates with increased educational achievement is to a significant degree motivated by higher earnings potential in other sectors. While education increases the

productivity of workers in an occupation, perhaps the principal returns to education come from the skills it provides that are necessary to find jobs in higher paying occupations. A more educated farmer may have higher productivity in farming compared with a less educated farmer. But, his or her education also enables him or her to find jobs in other occupations that pay higher than farming. Table 8 shows that the service sector paid the highest average wage, followed by industry and lastly by agriculture. Within the principal occupational category of the service sector, government administration paid the highest average wage for men. Other than that, the only occupation that paid higher wages for men was mining, which includes the lucrative oil and natural gas industry. For women, the services of finance, insurance, and real estate paid the highest average wage. Crop and livestock agriculture, on the other hand, paid the lowest hourly wage rates in the economy to both men and women.

The wages reported in Table 8 show that hourly wages for men were substantially higher in absolute value compared with those for women for most occupations. In 1989 men earned 66% more per hour than women in agriculture, 62% more in industry, 33% more in services, 31% more in mining, and 45% more overall. In every sector, except transportation, communication, and storage, men earned significantly more than women. Even sectors that are traditionally thought to be dominated by women, such as textile and garments, still generated lower wages for women.

Aside from lower educational achievement on the part of women, some scholars have suggested that discrimination against women in the work place may also play a role in causing women's wages to be lower than men's. In their study of labor markets in urban Brazil, Birdsall and Behrman (1991) contended that discrimination against women in the work place was a significant reason why women generally earned less than men. This may have included intentional occupational separation between men and women where women were placed in occupations that paid lower.

Differences in hours worked did not seem to have a significant impact on wage differences between men and women. Moreover, their study showed that women's educational achievement more than offset the fact that they had less labor market experience relative to men.

Labor Supply

The effect of education on labor supply can be seen in Table 9 and Table 10 for men and in Table 11 and Table 12 for women for the 1976 and 1989 SAKERNAS surveys. For both men and women there is generally a positive correlation between the level of education and labor supply in 1989. Men with no schooling or incomplete primary education had an average labor supply of 38 to 39 hours/week, compared with more than 40 hours/week for men with completed primary education and above. The lower labor supply for men with little schooling in 1989 may have been due to the predominance of agricultural employment amongst this group of men and the seasonal nature of agricultural work. In 1989, men with junior and senior high school education had the highest weekly labor supply (42.9 hours/week) compared with men with any other level of education. This is in contrast with the 1976 data which show that men with senior high school education had lower hours worked per week compared with those with completed primary and junior high school education. The decline in labor supply of men with post high school education relative to labor supply of men with lower levels of education in the 1989 sample (40.5 hours/week) may have been due either to the income effect on the demand for leisure, or it could also have been due to measurement error. Men with university education, especially those in government employment with institutionally determined wages, may have underreported their hours worked since many may have had extra jobs to supplement their incomes. Relative to men with other levels of schooling, men with post high school education also worked less hours in the 1976 sample. A general comparison between the 1976 and 1989 samples reveals that men worked longer hours in 1976 than in 1989. This may have reflected the dominance of

income effect. That is, as men became wealthier in 1989, they worked less. However, differences in the survey instruments between the 1976 and 1989 samples may have also accounted for the apparent differences in hours worked. In the 1976 survey, data on weekly hours worked for primary and secondary occupations were collected, while the 1989 survey only focused on weekly hours worked for primary occupations. As a result, there may have been an underestimation of the actual labor supply of individuals in 1989. This means that the apparent positive correlation between level of education and hours worked per week in the 1989 sample may have simply been the result of this underestimation. The general trends of women's labor supply by level of education in 1989 are similar to those for men in the same sample (Table 12), except that the highest levels of labor supply are observed for women with senior high school (38.9 hours/week) and post high school education (37.9 hours/week). Also, in 1976 women in general worked longer hours than in 1989.

A note should be given to women with post high school education who were 55 years and older who were working and for whom wages were observed. In 1989 there were only two individuals in this category so that summary statistics for this group are not reported. In general, the 1989 labor force was more educated than the 1976 labor force. In 1976, there were only a few women with post high school education who were 40 years and older. In 1989 their number was larger, although it was still somewhat small.

Another aspect of labor supply is the prevalence of part-time employment. A limitation of the definitions of unemployment (described in the next section) is that an individual is considered to be employed if he or she worked at least one hour during the previous week. This does not take into account of the possibility that the individual may have been working fewer hours than desired. The overall low percentages of unemployment are often interpreted as a reflection of the prevalence of underemployment in developing countries such as Indonesia. The low open unemployment rates that

seem to prevail in these countries may be the result of cultural traditions that dictate the sharing of low-productivity jobs, mainly in agriculture (Geertz, 1966; Hart, 1986). On the other hand, White (1976) found that in rural Java underemployment was relatively insignificant. Rather than being idle, people worked very long hours every day with very low productivity and earnings. Even for individuals whose primary occupation may have been seasonal employment in agriculture, White (1976) showed that during slack agricultural periods they engaged in secondary activities such as handicrafts (see also Jones and Manning, 1992).

Table 13 reports the percentage of men and women who worked full and part-time among those who worked for at least one hour during the week previous to the 1989 survey. Full-time employment is defined as employment with at least 30 hours of work per week. The prevalence of full-time employment was high for men (78.6%) but relatively low for women (54.0%). For both men and women, the likelihood of full-time employment increased with higher levels of education. For those with post high school degrees, 92.8% of employed men and 85.9% of employed women worked full-time. Part-time employment is divided in Table 13 into two categories: 20-30 hours of work per week and less than 20 hours of work per week. For women who were employed, 24.3% worked 20-30 hours/week and 21.7% worked less than 20 hours/week. Only 8.5% of employed men worked less than 20 hours/week. From these data, it cannot be determined to what extent involuntary unemployment was prevalent in the labor force. It is likely that the increased incidence of part-time employment on the part of women was due to the demands of their household responsibilities. This conclusion is supported by the relatively low incidence of part-time employment among men.

Labor Force Participation

On the whole, the Indonesian labor force tends to be young (see also Jones and Manning, 1992). Finding new employment for the rapidly growing labor force has been one of the major

concerns of government policy. It was estimated that the labor force grew at 2.4 million workers annually such that its total increased from 73.5 million in 1989 to 86.0 million in 1993. This was due not only to population growth, but also to an increase in women's labor force participation rate. The working age population was estimated to grow at 2.7% annually, while the annual growth rates of male and female labor force were estimated at 2.4% and 3.9%, respectively (Marshall, 1993).

From the SAKERNAS surveys, activities of men and women could be divided into (1) wage employment, (2) self employment, (3) unemployment, and (4) not in the labor force. Self employment included owning one's own business and unpaid family labor engaged in a business, but not unpaid household work such as cooking, caring for children, or housecleaning, which is classified as not in the labor force. Unemployment can be defined in more than one way. A "narrow" definition of unemployment includes all individuals who did not work at all during the previous week, were willing to work, and who actively searched for work during the week prior to the survey as unemployed. This is the standard definition of unemployment. A broader definition of unemployment includes all those who did not work during the previous week, reported that they were willing to work, but did not actively search for work as unemployed. This group would include individuals who were discouraged about job prospects and therefore did not search for work, but who would be willing to accept offers of employment. However, it would also include those whose reservation wages were above the going market wage. The survey did not ask about what kind of job offer they would be willing to accept. Taken together, wage-employed, self-employed, and unemployed³ individuals (by one or the other definition) constitute the labor force. Those not in the labor force include students, housewives, and retired or disabled persons.

³ The figures reported in the text for unemployment and labor force participation are based on the narrow definition of unemployment unless otherwise noted.

The 1976 and 1989 SAKERNAS survey data show that men between 25 and 55 years of age had labor force participation rates of over 90% (Table 14 and Table 15). Low labor force participation rates for young men, especially teenagers, were for the most part due to school attendance. The decline in labor force participation rate between 1976 and 1989 for men under 25 could be explained by the growth in school enrollment for this age group as described in the previous section. Interestingly, labor force participation rates for men in the 65-69 age group were still high at over 65% in both survey years. This may indicate that first of all, the lack of pension system and inadequate family incomes may have forced men to continue working well into old ages. Second, this may also have been due to the fact that the majority of men were engaged in self employment. Those who retired from wage employment could also begin devoting more time to self employment. Nevertheless, the overall decline in the labor force participation rate by men between 1976 and 1989 from 70.4% to 66.3% was due mainly to the increased school attendance by young men.

Rapid growth of the manufacturing industries which has been occurring in Indonesia may suggest a tendency for wage employment to replace self employment. Self employment is predominant in traditional occupations such as agriculture and traditional service sector. Wage employment is more important in the modern industrial sectors, although it is also present in agriculture such as in plantations. In the service sector, both wage employment and self employment are represented. Nevertheless, despite rapid growth of the Indonesian economy during the 1970s and 1980s, between 1976 and 1989 self employment of men increased relative to wage employment. Self employment remained the dominant economic activity of men in 1989, occupying 43.5% of the male sample compared with 20.7% in wage employment. Self employment was larger than wage employment for all male age groups, although the differences were smaller among younger age cohorts. Older individuals tend to stay in traditional sectors such as agriculture, while younger individuals tend to

move disproportionately into modern growth sectors of the economy. One reason is that older individuals may not have the human capital or skills needed in the modern sectors. Another reason is that mobility costs may be high. Migration may occur geographically or from one sector of the economy to another. Movement across sectors of the economy involves acquiring new skills and perhaps even moving to another geographical area, and may involve large initial costs and forgone earnings. Movement to a new economic sector is thus a form of human capital investment. Younger individuals are usually more willing to make this investment because of the longer pay-off period.

For men younger than 19 years old, the low percentage in wage labor reflects their engagement in education. The relatively flexible nature of self employment, however, may have also allowed them to work, even if only part time. This may have been the reason why there was a relatively large difference between the percentages of wage employment and self employment for men under 20 years of age.

The relatively high percentage of self employment in the labor force indicates a pre-industrial economy where the dominant occupations in the economy are still traditional as opposed to modern industrial sectors. The dominance of self employment can be traced to the characteristics of Indonesia's developing economy. Even as the modern industrial sector has been growing rapidly, it can only absorb a relatively low percentage of the labor force. In both 1976 and 1989 it absorbed only around 9% of the total labor force. The agricultural sector absorbed the majority of the labor force at around 51%. The service sector, which for a part is traditional in nature in developing countries, absorbed 40% and 39% of the labor force in 1976 and 1989, respectively.

The labor force participation rate for women was lower than that for men in 1976 and 1989, but showed a significant increase between those years (Table 16 and Table 17). The highest female labor force participation rates were for women between the ages of 35 and 54. In 1976, labor force

participation rates for these age groups were higher than 45%, rising to more than 57% in 1989. For women between the ages of 15 and 34, the labor force participation rates in 1976 were between 32.2% and 42.6%, depending on the cohort, rising steadily with age. In 1989, the labor force participation rates for 15-19 and 20-34 year-old women were 30.8% and higher than 50%, respectively. For women older than 54 the labor force participation rates steadily declined with age, although it was still higher than 40% for the 60-64 year-old cohort in 1989.

The improvement in women's education during the past several decades is one of the principal factors accounting for the growth in female labor force participation. A woman will choose to engage in a labor market activity when wage from wage labor or returns to self employment are higher than returns to home production. Returns to labor market activities increase when there is an increase in a woman's human capital stock. Women's educational achievement between 1976 and 1989 was substantial (Table 2). Investment in education has been cited as one of the most important variables that affect women's decision to join the labor market (see also Gill, 1992; Khandker, 1992; Ng, 1992; Psacharopoulos and Tzannatos, 1992b; Velez and Winter, 1992; Yang, 1992).

Household earnings are also cited as one of the factors that determine women's labor force participation decision (see also Psacharopoulos and Tzannatos, 1992b; Stelcner et al., 1992; Tiefenthaler, 1992; Winter and Gindling, 1992). Data from the 1976 and 1989 SAKERNAS surveys show that men's as well as women's labor force participation rates remained very high until old age. Women's labor force participation rates were indeed high for a developing country, especially in 1989. This may have indicated inadequate family incomes and the lack of pension system that forced men as well as women to work throughout much of their adult lives.

Fertility rate in Indonesia also declined substantially between 1976 and 1989, although it was still relatively high. The crude birth rate decreased from 48 births per 1,000 in 1968 to 29 per 1,000 in

1990. This did not meet the target of 22 births per 1,000 set by the Indonesian government, but was nevertheless quite notable (Marshall, 1993). The decline in fertility rate greatly reduced women's responsibility in their households as well as the returns to home production. These factors lent support to the increase in women's labor force participation rate in 1989. Psacharopoulos and Tzannatos (1992b) noted that their Latin America studies have consistently shown that women's labor force participation rate usually decreases during child bearing age even if only gradually (see also Arends, 1992; Gill, 1992; Jakubson and Psacharopoulos, 1992; Ng, 1992; Yang, 1992). However, the data used in this study do not show this result. Women's labor force participation rates remained high during child bearing age, which to a degree may have been the result of the flexibility of hours worked in self employment. However, as is shown in the section on labor supply, women's average hours worked slightly declined during child-bearing age.

The fact that women's labor force participation rate remained high between 1976 and 1989 may have been due to the added flexibility in hours worked offered by self employment. The data (comparing Table 14 and Table 15 for men with Table 16 and Table 17 for women) show that, relative to men, women were more likely to be self-employed than wage-employed. In 1989, only 8.7% of women over 10 years of age were wage-employed, while 32.2% were self-employed. For men, the rates were 20.7% and 43.5% for wage and self employment, respectively. Much of the self employment was in the form of unpaid family labor for household enterprises such as farming. Women contributed significantly to family farm labor. The relatively large percentage of self employment was probably partly due to the fact that agriculture still accounted for more than 50% of the economy's total labor force in 1976 and 1989 (see also White, 1976; Hayami and Kikuchi, 1981).

Goldin (1995) asserted that during the process of economic development, women's labor force participation rate follows a U-shape profile with respect to the level of economic development. Labor

force participation of women is high when the economy is poor and the agricultural sector is dominant. Aside from women's participation as paid labor, their role as unpaid family workers is usually significant. Many women may find it necessary to work in the labor market because of social pressures and poverty (see also Jackman and Rutkowski, 1994). As the economy grows and income increases, women's participation in the labor market falls. This is partly due to the income effect, the decline in the role of agriculture in the economy, and also the stigma which is often attached to women working in manual jobs. It is argued that women's engagement in manual jobs is often interpreted as their husbands' inability or lack of a sense of responsibility to provide for the households. This stigma prevents women from engaging in the labor market when the stage of the economy is relatively less advanced and women's educational achievement is only sufficient to open up opportunities to work in blue-collar jobs. But, as the economy reaches a much more advanced stage and women gain more human capital investment, their labor force participation rate increases. The opportunity cost of women's time increases considerably and at this segment of the U-shaped profile the substitution effect dominates. The rising part of this profile is correlated with women's relatively high educational achievement, which opens up more job opportunities and allows women to work in manual or blue-collar as well as white-collar jobs (Goldin, 1995). High labor force participation rate for women at this stage of economic development is associated with greater equality for women in education and also in their labor market prospects, which in turn enhances women's financial independence and social standing (Jackman and Rutkowski, 1994).

Overall, one observes that, for men and women, the percentage of wage employment declined gradually as the cohorts became older. However, the percentages of women working in wage labor market and self employment in general were significantly lower than those for men. The percentages of women in the labor force were also substantially lower for all age groups. Both data sets show that

the percentages of self employment were substantially higher than those of wage employment and increased in 1989 for both men and women. Aside from being the result of the continuing dominance of agriculture and the sizable traditional service sector, it may have also been the result of a relatively large rural sample.

Unemployment

The unemployment rates for men reported in Table 14 and Table 15 are based on the “narrow” definition of unemployment. Using this definition of unemployment, the data indicate that unemployment rate fell from 7.6% of the male labor force in 1976 to only 3.1% in 1989. Male unemployment rates were the highest for the 15-24 age cohorts in both survey years. This may have reflected the lag faced by new entrants in finding jobs in the labor market. While the Indonesian government has never issued an official unemployment rate, other sources have indicated very low unemployment rates. The Asian Development Bank’s calculation resulted in a relatively constant and very low unemployment rate of about 2.5% for the period between the 1970s and 1980s (Asian Development Bank, 1996). Others have calculated a figure of unemployment of 3% for the year of 1989 (Marshall, 1993).

Table 18 and Table 19 compare unemployment rates by age cohorts and educational levels for men in the 1989 survey. The use of the “broad” definition of unemployment raised the unemployment rate from 3.1% to 8.5%. However, almost all of the increase in unemployment occurred amongst those under 30 years of age. Using both measures, unemployment rates were under 3% for men over 30. For men between 20 and 24, unemployment rates for those with senior high school and post high school degrees were around 30% using the “narrow” definition and around 40% using the “broad” definition. Unemployment rates were lower for young men with lower levels of education. The high rates of unemployment amongst secondary school and post secondary school graduates may have been

due in large measure to the job search process faced by recent graduates. Young men in these age groups had just finished their education and were new entrants in the labor market. The job market may not have functioned well in placing workers in jobs. There was asymmetric information between employers and employees on the kinds of labor available in the market. This was combined with these young men's labor market inexperience. The process of finding a job became long and costly (see also Jones and Manning, 1992). However, the data indicate that once a job was found, employment was generally stable. This is apparent from the fact that under both the "narrow" and "broad" definitions, unemployment rates for age groups older than 30 with senior and post high school education were negligible. Nevertheless, failure to account for unemployment spells resulting from job search may bias the estimates of the rate of return to education that are based only on wages of working individuals.

Unemployment rates for women in both 1976 and 1989 were higher than those for men but showed the same tendency to decline with time. Using the "narrow" definition of unemployment, the estimated unemployment rates for women were 8.3% compared with 7.6% for men in 1976, and 3.6% compared with 3.1% for men in 1989 (see Table 14 and Table 18 for men, and Table 16 and Table 20 for women). The 1989 data show that almost all of women's unemployment was among young women below the age of 30. For women 30 years and older, unemployment rate was under 1% for each age cohort. The higher rates of unemployment for women under 30 probably reflected new entrants into the labor market who were searching for their first jobs, similar to the case of men.

The estimate of women's unemployment rate is very sensitive to the definition of unemployment. The use of the "broad" definition of unemployment for the 1989 data increased the measured rate of women's unemployment by a factor of 5 compared with the unemployment rate based on the "narrow" definition, to 18.2% (Table 20 and Table 21). The unemployment rate was at least 4% for all female age cohorts, and more than 34% for the youngest cohorts. The increase in

women's unemployment rate under the "broad" definition may indicate that many more women may have wanted to participate in the labor market, but had quit actively searching for work. However, it is impossible to determine from the data whether they would have been willing to take jobs at prevailing wage rates, i.e., whether current market wages exceeded their reservation wages. As was the case with men, the relatively low unemployment rates may have been due to the "narrow" definition of unemployment used on the data. By the "narrow" definition, an individual is considered to be unemployed if he or she is not currently working, is looking for a job, and is willing to take a job offer. But, of those who were not working very few may have been actively looking for jobs. Traditionally, it may not be common for people to be actively looking for jobs even though they are willing to work. For example, during the slack seasons in agriculture people do not usually look for work. But, they would actually like to have a job such that when work becomes available, they will be willing to accept it.

Table 20 and Table 21 also show the unemployment rates by level of education. Senior high school graduates had the highest level of unemployment: 30.1% using the "narrow" definition of unemployment and 52.2% using the "broad" definition. These rates of unemployment were substantially higher than all of the other educational categories. Unemployment rates based on the "narrow" definition for all other educational categories were under 4%. Most of the unemployment of senior high school graduates was concentrated among women under the age of 29 using the "narrow" definition and under the age of 44 using the "broad" definition. It appeared that female senior high school graduates experienced a greater difficulty in entering the job market than women with other educational levels. This may have been the result of higher expectations on the part of senior high school graduates regarding their employment prospects and the type of employment sought. Also, subjects taught in schools may not have prepared students for participation in the labor market

(Haddad, 1994). Jones and Manning (1992) noted that particularly among women and young people in urban areas in Indonesia, there seemed to be a decline in employment situation in the mid 1980s compared with 10 years earlier. Female labor force seemed to be especially affected as their overall unemployment rate increased.

Unemployment rates are likely to fluctuate with business and seasonal cycles. The 1976 survey was conducted only in the fourth quarter such that for comparability purposes only the fourth quarter of the 1989 sample was used. Ideally, calculation of unemployment rates should be based on time-series data covering a long period of time to capture parts of unemployment that are structural, cyclical, as well as seasonal. Seasonal unemployment is a part of unemployment that is caused by seasonal effects such as the harvesting versus the slack season in agriculture. This is particularly important since more than 50% of the Indonesian labor force was in the agricultural sector. Since the surveys were done in the fourth quarter of the year or the rainy season when agricultural employment is usually high, one would not expect much seasonal unemployment. Also, since Indonesia has been able to sustain rapid economic growth at between 5.8% and 7.2% in the past decades, one should not expect much cyclical unemployment either (World Bank, 1995). Based on these, it seems likely that the unemployment rates resulted in this study would be very close to the typical or average unemployment rate even though it was not generated from time-series data covering a long period of time.

Conclusion

Over the past decades, there has been a significant increase in the educational achievement of the Indonesian labor force. The percentage of the labor force without schooling or with incomplete primary education dropped substantially while the percentage with completed primary and higher levels of education increased. Between 1976 and 1989, the percentage of the labor force with post-secondary education doubled, although was still relatively small. For all levels of schooling, women's

educational achievement grew more rapidly than men's, even though on the whole women still lagged behind. This was due to the significantly lower starting point for women.

Despite rapid economic growth and educational achievements, the labor force share of the agricultural sector has remained stable in the past two decades at around 51%. However, between 1960 and the mid 1970s there was a substantial decline in this percentage, from around 75% to 51%. It appears that in a longer time perspective, the Indonesian labor force has begun to undergo a structural transition. That is, a declining share in agriculture and an increasing share in the manufacturing and modern service sectors. This corresponds to Lewis' theory (1954) in that in the process of economic development, a structural transition will occur when an economy will first experience a decline in the proportion of its labor force engaged in agriculture. This occurs while the absolute number of the labor force in this sector is still increasing. At a later stage of the economic development process, the absolute number, and thus the proportion, of the labor force in the agricultural sector will decline. What seems to have occurred in the Indonesian economy over the past two decades is a continued ability of the agricultural sector to absorb a large number of new labor force entrants.

Booth and Sundrum (1985) cautioned that the experience of today's developing countries is altogether different than that of developed countries during the earlier part of the century. Today's developed countries did not experience the massive pressure of population size, the high rate of population growth, and the enormous size of the agricultural sector during their economic transitional process. The labor force and GNP shares of the dominant agriculture in these countries continued to decline and have now been overshadowed by modern industrial sectors. However, studies have shown that agriculture may in fact remain dominant in today's developing economies. The rapid growth of

the manufacturing and modern service sectors may not be able to offset the much slower decline in the large agricultural sector.

For 1976 and 1989, education appeared to increase the likelihood of full time work. Even though women tended to have lower hours worked, the general trends are similar for men and women.

For both survey years, labor force participation was lower for women than for men. While it can be associated with the lag in women's educational achievement relative to men's, it also stems from many other socioeconomic variables, such as women's larger household responsibility. However, for both 1976 and 1989, female labor force participation rates in Indonesia were relatively high compared with other developing countries.

Between 1976 and 1989 self employment, as opposed to wage employment, remained dominant for men and women in all age groups. This may have been the result of the continuing dominance of agriculture and the sizable traditional service sector in the economy. Labor force participation also remained relatively high until old age for sizable percentages of men and women. This may suggest that the lack of pension system and inadequate family incomes may have forced individuals to continue participating in the labor market throughout much of their adult lives.

Aside from education's role in easing the process of structural transformation in developing economies, its expansion may also create challenges such as unemployment. The data show that male and female unemployment rates were particularly high for those under 30 years of age in both years, while jobs seemed to be relatively stable for those older than 30. Also, in general female unemployment rate was higher than male unemployment rate in both years. For males, unemployment rates were the highest for those in the 15-24 age group in 1976 and 1989. Female senior high school graduates were especially affected as their unemployment rate was the highest among all levels of schooling for women in 1989. There seemed to be a general decline in employment situation among

the young in the mid to late 1980s, especially in urban areas. For both males and females, the high unemployment rates for those in their teens up to early 20s reflects a lag in finding jobs faced by new entrants into the labor market.

Mismatch between the supply of and the demand for labor may create high unemployment rate in the process of economic development. This is an example that inefficiency in government policy in educational provision may outweigh the social benefit of education. The long search period and the consequently high search costs may also be associated with relatively high expectations regarding employment prospects and types of employment sought on the part of recent high school graduates. Also, asymmetry of information between employers and employees may have caused the job market to function less than efficiently in placing workers in jobs. Inexperience on the part of recent graduates would only magnify the already dire situation faced by new entrants into the labor market.

There have also been concerns that educational curricula in Indonesia were not designed to adequately prepare graduates to work in the labor market. Schools in this country may tend to be relatively slow in their curricula in responding to changes in technology.

In light of this study's findings, some policy implications can be drawn. First, the sheer size of the population, the high population growth rate and the massive size of the agricultural sector will likely help retain agriculture as the dominant sector in the economy, despite rapid growth of the manufacturing and modern service sectors. The reasonable step to take would then be an effort to increase per worker productivity in all sectors of the economy. Since agriculture will likely remain the dominant absorber of the labor force, agricultural productivity will need to be increased substantially. Highly committed efforts will need to be made to boost the agricultural sector's ability to create employment for the majority of the labor force.

Second, the government may need to make adjustments necessary for the supply of educated labor to be able to respond to market demands. This may necessitate a change in the curricula both in general and vocational schools. Since a labor market in structural transition experiences changes in a more rapid manner due to technological advancement, the government may need to revisit their educational policy in a diligent manner.

Third, there may also be a need to assist recent graduates and new entrants into the labor market such that the job search process is not lengthy and costly. The government may need to establish institutions whose task is to equip recent graduates with skills needed to find jobs. Such skills include additional expertise that may be needed in the work place as well as skills to sell oneself in the job market. Further study is needed on the question of job search and unemployment duration.

Table 1: Enrollment Ratios in Asian Countries, 1965 and 1986 (%)

Country	Primary School		Secondary		Higher			
	Male	Female	1965	1986	1965	1986		
<u>Asian NIEs</u>								
Hong Kong	106	105	99	106	29	69	5	13
South Korea	103	94	99	94	35	95	6	33
Singapore	110	118	100	113	45	71	10	12
Taiwan	--	100	--	99	--	90	--	23
<u>Southeast Asia</u>								
Indonesia	79	121	65	116	12	41	1	7
Malaysia	96	100	84	99	28	54	2	6
Philippines	115	107	111	106	41	68	19	38
Thailand	82	101	74	97	14	29	2	20
<u>South Asia</u>								
Bangladesh	67	69	31	50	13	18	1	5
India	89	107	57	76	27	35	5	--
Nepal	36	114	4	104	5	25	1	5
Pakistan	59	55	20	32	12	18	2	5
Sri Lanka	98	104	86	102	35	66	2	4
<u>Asian Socialist Economies</u>								
Burma	76	--	65	--	15	--	1	--
China	--	137	--	120	--	42	--	2
<u>Bench-mark Countries</u>								
USA	118	102	--	--	86	100	40	59

The figures show enrollment as a percentage of the standard age group. The enrollment ratio may exceed 100 when students from other age groups are included. Sources: World Bank (1989), Asian Development Bank (1989).

Table 2: Educational Status of Indonesian Working-Age Population

Level	1976			1989		
	Male	Female	Total	Male	Female	Total
No schooling	16.0%	31.8%	24.1%	8.2%	16.4%	12.3%
Primary incomplete	37.6%	35.7%	36.6%	28.2%	29.5%	28.9%
Primary	28.4%	22.1%	25.2%	32.7%	31.1%	31.9%
Junior HS general	8.1%	5.3%	6.6%	13.6%	11.1%	12.3%
Junior HS vocational	1.9%	1.2%	1.5%	1.7%	1.3%	1.5%
Senior HS general	3.9%	1.8%	2.8%	8.8%	6.0%	7.4%
Senior HS vocational	2.7%	1.8%	2.2%	4.6%	3.7%	4.1%
Diploma I/II (1-2 years)	n.a.	n.a.	n.a.	0.3%	0.2%	0.3%
Dipl. III/Academy (3 years)	0.9%	0.2%	0.5%	0.8%	0.4%	0.6%
University (4-5 years)	0.4%	0.1%	0.3%	1.0%	0.4%	0.7%

Percentage of all individuals in sampled households older than 10 years of age.

Table 3: Educational Status by Age Group, 1976

Age Group	No school	Primary incompl.	Primary	Jun. HS general	Jun. HS voc.	Sen. HS general	Sen. HS voc.	Post HS	All
10-14	6.4%	73.5%	19.2%	0.8%	0.1%	0.0%	0.0%	0.0%	100%
15-19	7.5%	28.5%	40.4%	17.8%	2.6%	2.1%	1.1%	0.0%	100%
20-24	9.6%	28.1%	33.2%	11.0%	2.5%	8.5%	6.4%	0.8%	100%
25-29	14.4%	30.4%	32.1%	8.0%	2.2%	6.4%	4.7%	1.6%	100%
30-34	20.7%	30.6%	28.7%	7.4%	2.1%	4.5%	4.0%	2.1%	100%
35-39	29.5%	30.9%	24.4%	5.6%	1.9%	2.9%	3.2%	1.6%	100%
40-44	38.5%	31.0%	19.5%	3.7%	1.6%	2.2%	2.1%	1.3%	100%
45-49	42.7%	29.3%	19.7%	3.6%	1.3%	1.4%	1.1%	0.8%	100%
50-54	49.8%	26.8%	17.4%	2.6%	1.0%	1.1%	0.8%	0.5%	100%
55-59	53.2%	25.4%	15.8%	2.9%	0.9%	0.7%	0.7%	0.4%	100%
60-64	62.7%	21.5%	11.9%	1.7%	0.9%	0.6%	0.5%	0.1%	100%

Table 4: Educational Status by Age Group, 1989

Age Group	No school	Primary incompl.	Primary	Jun. HS general	Jun. HS voc.	Sen. HS general	Sen. HS voc.	Post HS	All
10-14	1.0%	69.7%	28.6%	0.6%	0.0%	0.0%	0.0%	0.0%	100%
15-19	1.8%	8.8%	41.1%	40.3%	2.4%	4.3%	1.3%	0.0%	100%
20-24	3.8%	12.3%	26.8%	15.3%	1.6%	29.0%	9.9%	1.3%	100%
25-29	7.5%	19.9%	34.7%	10.9%	1.6%	13.3%	8.1%	4.0%	100%
30-34	8.6%	23.6%	37.9%	10.2%	2.0%	7.2%	7.2%	3.4%	100%
35-39	11.5%	24.7%	37.4%	9.1%	2.0%	6.4%	6.6%	2.3%	100%
40-44	17.0%	25.5%	32.3%	8.7%	1.5%	7.0%	5.1%	3.0%	100%
45-49	21.0%	27.5%	30.2%	7.3%	2.1%	4.8%	4.2%	2.8%	100%
50-54	28.5%	29.4%	25.7%	5.4%	1.6%	3.5%	3.6%	2.1%	100%
55-59	34.4%	30.4%	25.6%	3.5%	1.2%	2.1%	1.6%	1.1%	100%
60-64	41.3%	27.2%	22.9%	4.2%	1.0%	1.6%	1.3%	0.6%	100%

Table 5: Occupations of the Indonesian Labor Force

	1976			1989		
	Men	Women	All	Men	Women	All
Agriculture	50.8%	50.8%	50.8%	50.2%	52.5%	51.1%
Industry	7.7%	11.7%	9.0%	8.4%	10.5%	9.2%
Services	41.2%	37.5%	40.0%	40.4%	36.6%	38.9%
Other	0.3%	0.1%	0.2%	1.0%	0.4%	0.8%

Table 6: Men's Education and Occupations, 1989

Occupation	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS
Agriculture	71.6%	54.7%	33.7%	12.6%	2.4%
Industry	5.5%	8.8%	12.0%	11.7%	5.2%
Services	22.0%	35.9%	53.2%	74.4%	91.8%
Other	0.9%	0.7%	1.1%	1.2%	0.6%
All	100.0%	100.0%	100.0%	100.0%	100.0%

Table 7: Women's Education and Occupations, 1989

Occupation	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS
Agriculture	64.4%	55.6%	31.3%	8.0%	1.2%
Industry	9.0%	12.8%	13.7%	9.3%	2.8%
Services	26.3%	31.3%	54.4%	82.3%	96.0%
Other	0.2%	0.2%	0.5%	0.4%	0.0%
All	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8: Average Wage Rates According to Occupations, 1989

Occupation	Men (Rp/hr)	Women (Rp/hr)
Agriculture: food crop	277	194
Agriculture: other crop	334	194
Agriculture: cattle, fish	533	193
Agriculture: forestry, hunting	336	235
Mining and excavating	833	637
Manufacturing: food, beverage	424	211
Manufacturing: textile, garment, leather	391	254
Manufacturing: lumber, lumber products	408	381
Manufacturing: other	486	308
Services: electricity, gas, water	630	558
Services: construction	463	372
Services: wholesale, retail, restaurant, hotel	500	397
Services: transport, communication, storage	500	532
Services: finance, insurance, real estate	768	677
Services: government administration	803	666
Services: social services (private)	595	414
Services: other	440	213
Agriculture	339	204
Industry	438	271
Services	634	477
Overall	564	388

Table 9: Labor Supply by Level of Education for Men, 1976

Age Group	No Schooling	Primary incomplete	Primary	Junior HS	Senior HS	Post HS	All
10-14	38.3	31.9	34.5	29.7			33.6
15-19	43.0	43.1	41.7	41.0	41.7		42.3
20-24	43.6	46.5	45.7	47.4	45.2	42.9	46.0
25-29	44.2	46.9	47.0	48.8	46.1	41.6	46.7
30-34	43.9	46.8	47.0	48.8	45.4	43.1	46.5
35-39	43.4	47.1	47.3	47.8	45.6	42.7	46.4
40-44	44.0	46.2	47.6	47.5	45.0	41.3	45.9
45-49	43.3	46.3	47.5	46.5	44.0	39.7	45.6
50-54	42.1	45.4	47.5	47.3	41.1	42.9	44.7
55-59	42.7	44.0	46.6	46.9	45.3	39.1	44.2
60-64	40.1	43.5	46.1	49.2	48.0	29.6	42.3
All	42.3	44.8	45.9	47.4	45.2	42.1	44.9

(hours per week)

Table 10: Labor Supply by Level of Education for Men, 1989

Age Group	No schooling	Primary incomplete	Primary	Junior HS	Senior HS	Post HS	All
10-14	35.8	18.9	23.5	24.9			21.3
15-19	35.7	36.6	33.9	29.3	35.0		33.3
20-24	41.4	40.2	43.0	40.5	40.4	39.6	41.3
25-29	42.0	42.7	44.8	45.7	43.2	41.8	43.9
30-34	40.2	43.4	45.6	47.6	43.5	39.9	44.5
35-39	42.1	42.4	44.3	48.4	44.8	40.9	44.2
40-44	40.6	42.5	43.5	45.4	45.0	40.6	43.3
45-49	40.2	40.6	44.2	46.2	43.4	41.3	42.8
50-54	37.6	41.3	43.9	44.5	42.5	39.9	41.8
55-59	38.7	41.3	43.4	42.5	43.2	36.3	41.4
60-64	35.5	36.8	40.0	44.8	39.5	34.0	37.7
All	38.7	38.4	41.9	42.9	42.9	40.5	41.0

(hours per week)

Table 11: Labor Supply by Level of Education for Women, 1976

Age Group	No Schooling	Primary incomplete	Primary	Junior HS	Senior HS	Post HS	All
10-14	33.2	34.4	39.2	21.7			35.0
15-19	43.1	41.8	41.8	40.9	34.8		41.9
20-24	35.9	40.2	39.6	43.5	39.5	38.6	39.4
25-29	36.1	37.0	41.0	43.6	38.6	39.3	38.3
30-34	36.1	37.6	40.4	43.5	37.9	36.5	37.9
35-39	37.1	38.8	41.4	42.6	36.5	37.3	38.4
40-44	38.1	41.0	40.4	45.0	37.9	40.3	39.2
45-49	39.0	41.6	41.8	45.1	40.5	30.0	40.0
50-54	38.6	41.9	43.9	48.9	38.9	39.5	39.7
55-59	36.9	43.3	45.2	43.5	43.0	23.5	38.4
60-64	36.3	39.3	42.6	46.5	54.0		36.9
All	37.5	39.4	40.9	42.8	38.4	37.6	38.9

(hours per week)

Table 12: Labor Supply by Level of Education for Women, 1989

Age Group	No schooling	Primary incomplete	Primary	Junior HS	Senior HS	Post HS	All
10-14	33.8	18.5	23.2	21.0			21.3
15-19	32.7	37.0	32.7	27.8	33.5		32.4
20-24	34.3	33.3	35.8	35.3	38.3	40.8	35.9
25-29	29.6	32.0	33.1	33.9	39.4	38.6	33.8
30-34	33.3	33.0	32.3	36.7	38.7	37.9	33.8
35-39	31.1	32.6	34.3	39.8	39.4	36.7	34.0
40-44	33.0	33.5	34.2	41.2	41.7	36.0	34.6
45-49	32.0	33.1	35.7	39.4	41.1	37.3	34.2
50-54	31.6	33.2	36.6	41.4	38.8	33.6	33.6
55-59	31.1	33.9	35.3	44.5	43.5	42.5	33.0
60-64	29.5	32.1	30.0	44.6	22.8	n.a.	30.4
All	31.5	32.2	33.9	34.5	38.9	37.9	33.4

(hours per week)

Table 13: Full and Part Time Employment, 1989

Education	Men			Women		
	>30hr/wk	20-30 hr/wk	<20hr/wk	>30hr/wk	20-30 hr/wk	<20hr/wk
Primary incomplete or no schooling	72.4%	16.6%	11.0%	49.0%	26.7%	24.3%
Primary	79.1%	12.9%	8.0%	51.7%	25.7%	22.5%
Junior HS	79.3%	11.0%	9.7%	55.7%	21.5%	22.8%
Senior HS	88.7%	7.2%	4.0%	79.2%	12.4%	8.4%
Post HS	92.8%	3.5%	3.8%	85.9%	8.5%	5.6%
All	78.6%	12.8%	8.5%	54.0%	24.3%	21.7%

Percentage of employed persons at specified level of education.

Table 14: Labor Force Participation by Men, 1976

Age Group	Unemployed (narrow def.)	Wage employed	Self employed	Not in labor force	Unemployment rate	Labor force participation rate
10-14	1.0%	2.5%	9.8%	86.6%	7.6%	13.4%
15-19	7.9%	16.3%	27.1%	48.8%	15.4%	51.2%
20-24	11.6%	35.7%	35.4%	17.3%	14.0%	82.7%
25-29	6.5%	45.0%	44.5%	4.1%	6.7%	95.9%
30-34	4.4%	45.9%	48.2%	1.5%	4.5%	98.5%
35-39	4.3%	42.9%	51.7%	1.1%	4.4%	98.9%
40-44	4.8%	39.2%	54.0%	2.1%	4.9%	97.9%
45-49	4.8%	37.7%	52.7%	4.8%	5.1%	95.2%
50-54	4.4%	30.5%	56.6%	8.6%	4.8%	91.4%
55-59	4.6%	23.2%	55.9%	16.3%	5.5%	83.7%
60-64	5.2%	15.7%	55.3%	23.7%	6.8%	76.3%
65-69	4.4%	12.7%	48.4%	34.4%	6.7%	65.6%
All	5.3%	27.2%	37.9%	29.6%	7.6%	70.4%

Table 15: Labor Force Participation by Men, 1989

Age Group	Unemployed (narrow def.)	Wage employed	Self employed	Not in labor force	Unemployment rate	Labor force participation rate
10-14	0.1%	0.9%	11.0%	88.0%	1.1%	12.0%
15-19	2.7%	8.1%	28.9%	60.3%	6.8%	39.7%
20-24	9.5%	25.0%	37.3%	28.2%	13.2%	71.8%
25-29	4.8%	38.7%	47.4%	9.0%	5.3%	91.0%
30-34	1.3%	40.0%	55.9%	2.8%	1.3%	97.2%
35-39	0.3%	34.3%	64.2%	1.1%	0.3%	98.9%
40-44	0.4%	33.9%	64.3%	1.5%	0.4%	98.5%
45-49	0.4%	32.7%	64.4%	2.5%	0.4%	97.5%
50-54	0.3%	29.5%	64.8%	5.3%	0.3%	94.7%
55-59	0.4%	16.4%	69.8%	13.3%	0.5%	86.7%
60-64	0.2%	10.0%	62.2%	27.6%	0.2%	72.4%
65-69	0.1%	7.2%	61.0%	31.6%	0.2%	68.4%
All	2.1%	20.7%	43.5%	33.7%	3.1%	66.3%

Table 16: Labor Force Participation by Women, 1976

Age Group	Unemployed (narrow def.)	Wage employed	Self employed	Not in labor force	Unemployment rate	Labor force participation rate
10-14	0.6%	3.0%	6.4%	90.0%	6.5%	10.0%
15-19	3.6%	11.7%	16.9%	67.8%	11.1%	32.2%
20-24	4.4%	12.4%	18.9%	64.2%	12.3%	35.8%
25-29	3.6%	11.5%	23.1%	61.8%	9.5%	38.2%
30-34	3.1%	11.9%	27.6%	57.4%	7.3%	42.6%
35-39	3.2%	12.0%	31.8%	53.0%	6.8%	47.0%
40-44	3.4%	11.7%	35.3%	49.7%	6.7%	50.3%
45-49	2.8%	10.7%	35.8%	50.7%	5.8%	49.3%
50-54	3.2%	9.9%	32.7%	54.2%	7.0%	45.8%
55-59	2.4%	8.9%	28.8%	59.8%	6.0%	40.2%
60-64	1.9%	6.9%	26.0%	65.2%	5.5%	34.8%
All	2.9%	9.7%	22.2%	65.3%	8.3%	34.7%

Table 17: Labor Force Participation by Women, 1989

Age Group	Unemployed (narrow def.)	Wage employed	Self employed	Not in labor force	Unemployment rate	Labor force participation rate
10-14	0.2%	1.1%	7.9%	90.9%	1.9%	9.1%
15-19	2.7%	7.9%	20.2%	69.2%	8.8%	30.8%
20-24	7.0%	16.1%	27.4%	49.6%	13.8%	50.4%
25-29	2.0%	15.0%	37.4%	45.7%	3.6%	54.3%
30-34	0.5%	12.0%	42.9%	44.6%	0.9%	55.4%
35-39	0.4%	9.5%	47.2%	42.9%	0.7%	57.1%
40-44	0.3%	9.7%	49.1%	40.8%	0.5%	59.2%
45-49	0.1%	9.9%	51.5%	38.5%	0.1%	61.5%
50-54	0.0%	7.4%	50.4%	42.2%	0.0%	57.8%
55-59	0.1%	6.0%	47.7%	46.3%	0.1%	53.7%
60-64	0.0%	2.9%	37.2%	59.8%	0.0%	40.2%
All	1.5%	8.7%	32.2%	40.9%	3.6%	42.4%

Table 18: Unemployment for Men Using Narrow Definition, 1989

Age Group	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS	All
15-19	1.9%	4.1%	8.5%	43.0%	n.a.	6.8%
20-24	1.7%	2.5%	10.5%	28.3%	31.4%	13.2%
25-29	0.6%	1.6%	5.0%	10.2%	27.3%	5.3%
30-34	0.2%	0.6%	0.7%	3.4%	6.2%	1.3%
35-39	0.2%	0.4%	0.0%	0.7%	0.0%	0.3%
40-44	0.2%	0.6%	0.7%	0.0%	0.0%	0.4%
45-49	0.5%	0.4%	0.8%	0.0%	0.0%	0.4%
50-54	0.2%	0.4%	1.2%	0.0%	0.0%	0.3%
55+	0.2%	0.3%	0.0%	3.1%	0.0%	0.5%
All	0.5%	1.3%	4.3%	11.1%	7.6%	3.1%

Table 19: Unemployment for Men Using Broad Definition, 1989

Age Group	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS	All
15-19	10.4%	16.9%	36.9%	61.0%	n.a.	24.5%
20-24	5.7%	6.9%	23.4%	43.7%	40.0%	24.4%
25-29	2.8%	3.5%	8.9%	18.8%	33.3%	9.7%
30-34	1.0%	1.3%	2.8%	5.5%	7.4%	2.5%
35-39	0.5%	1.0%	0.5%	1.1%	0.0%	0.8%
40-44	0.5%	1.2%	1.5%	0.5%	0.0%	0.8%
45-49	0.9%	1.4%	2.4%	0.4%	0.0%	1.2%
50-54	0.9%	1.4%	3.0%	1.0%	0.0%	1.2%
55+	1.3%	2.8%	11.3%	8.7%	0.0%	1.9%
All	2.9%	3.6%	15.3%	19.9%	9.8%	8.5%

Table 20: Unemployment for Women Using Narrow Definition, 1989

Age Group	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS	All
15-19	16.2%	11.9%	2.9%	57.5%	n.a.	8.8%
20-24	5.0%	5.1%	2.3%	45.0%	5.5%	13.9%
25-29	1.9%	1.3%	0.6%	20.5%	8.1%	3.7%
30-34	1.9%	0.5%	0.5%	3.7%	1.2%	0.9%
35-39	0.6%	1.4%	0.0%	3.8%	0.0%	0.7%
40-44	0.7%	0.7%	0.0%	1.6%	0.0%	0.5%
45-49	0.4%	0.0%	0.0%	0.0%	0.0%	0.1%
50-54	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
55+	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%
All	1.1%	2.0%	1.0%	30.1%	3.7%	3.6%

Table 21: Unemployment for Women Using Broad Definition, 1989

Age Group	Primary incomplete or no schooling	Primary	Junior HS	Senior HS	Post HS	All
15-19	59.3%	53.2%	19.7%	75.5%	n.a.	34.9%
20-24	40.6%	32.8%	14.8%	64.5%	9.3%	34.2%
25-29	34.8%	23.6%	6.6%	43.4%	14.9%	20.4%
30-34	31.1%	17.9%	5.0%	34.8%	4.2%	15.2%
35-39	21.6%	12.2%	2.9%	21.1%	1.1%	10.6%
40-44	15.8%	8.3%	3.8%	20.0%	0.0%	9.2%
45-49	10.0%	3.8%	3.0%	4.1%	0.0%	5.7%
50-54	8.1%	3.4%	0.9%	7.7%	0.0%	5.0%
55+	4.3%	3.3%	0.9%	0.0%	0.0%	4.6%
All	19.6%	14.5%	9.0%	52.2%	7.2%	18.2%

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