Labor Mobility and Length of Working Life in Indonesia

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Abstract

This paper aims to explain two important issues still rarely studied in Indonesia. First, by estimating the working life expectancy, it is revealed that workers spent their lifetime mostly in the labor force, indicating high opportunity cost for workers to quit, e.g. to attend school. Second, to examine the flows of workers between employment, unemployment and nonparticipation in Indonesia and also investigates the relationship between the economic structural transformation and the structure of industrial employment. Studies of these flows are still rare due to limitation of comprehensive data on labor market in Indonesia. This study also finds there is a serious challenge for Indonesia to improve the level of productivity of its labor force and concludes that as the country has been taking reforms in many aspect of the nation, it could also be a good opportunity to reconstruct the development of its labor market.

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Key Words: labor mobility, length of working life, Indonesia

1. Introduction

Movement of labor in Indonesia is still rarely studied. These movements alter the supply of labor in labor market. A worker moves out from labor force as dropout (attending school or conduct domestic work), or as retired. People move in the labor force may come as new entrants or reentrants. The number of people in each status changes over time at different rate. In the labor force persons can also change status as they become employed (new hires and recalls) or unemployed (layoffs and quits). There have been many studies about the labor force situation in Indonesia. Those studies have emerged since long enough time and include numerous points of view. Nevertheless there is still scarce to find ones investigate the workers flows. This paper tries to develop a picture of flows between three pools of manpower (employment, unemployment, and out of labor force). This paper is divided in several sections: explanations about data and the labor mobility pattern, the length of working life of labor force using life table approach, and discussion on Indonesian employment condition during the last 30 years and labor mobility.

2. Data

This study uses data from the National Labor Force Survey or SAKERNAS (*Survei Angkatan Kerja Nasional*) published by the Central Bureau of Statistics. SAKERNAS is a survey conducted annually

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which collects data on individual economic activities in the sampled households. The survey' sample covers more than 30,000 households, with 34,000 households in 2001 and 68,000 households in 2002.

And each person of age 15 and above in the household are interviewed except those with special circumstances, such as living in barracks, boarding school, etc. The sample households are always changed every year. This survey is designed to represent a national population with around 200,000 individuals aged 10 or above in its observation. However, the Statistics has used age 15 as the minimum working age after 2001.

To map the labor mobility, we use the 2002 until 2006 data. The 2002-2004 survey represent annual average, but the 2005 survey was conducted in the end of the year (November), while the 2006 was in the beginning of the year (February). It is worth to note that Indonesia labor data is basically supply-determined. It has never measured the demand side of labor market. This creates a great difficulty to draw a complete picture of labor mobility in this country.

3. Characteristics of Indonesian Labor Force

During the first Indonesia's direct presidential election in 2004 one often blown issue was the high level of unemployment plagued the country. At that time a ghastly figure of 40 million unemployment cited by many social commentators as well as presidential candidates (Manning, 2004). Unemployment soon became a concern as the financial crisis hit Indonesia in 1997. However, the depiction of unemployment level was overestimated and getting, worse; it might create a distortion upon the relevant policy intervention.

The situation of Indonesian manpower during 2002-6 is shown in Table 1. The table shows some basic information on Indonesia manpower during 2002-06. Throughout 2002-6 average annual growth of manpower in Indonesia is estimated to be around 1.8 percent (noted that data released in 2005 and 2006 are not the average figures). Meanwhile, the growth of employment is about 1.1 percent during 2002-04. This paper uses the Statistic's definition on employment that is population who are working at least one hour during the survey week, which mean, it also includes those who are 'underemployed'. This is a customary definition of employment. The unemployment, also using the customary definition, includes both conventional unemployment, those who already have job but are still waiting to start, and discouraged workers.

Table 1: Indonesia Manpower Description, 2002-2006.

Year	Population aged 15 or above	Labor force	Nonpartici-pation	Employed	Unemployed
2002	148,729,934	100,779,270	47,950,664	91,647,166	9,132,104
2003	151,406,298	102,750,092	48,656,206	92,810,791	9,939,301
2004	153,923,648	103,973,387	49,950,261	93,722,036	10,251,351
2005[a]	158,491,396	105,857,653	52,633,743	93,958,387	11,899,266
2006[b]	159,257,680	106,281,795	52,975,885	95,177,102	11,104,693

a) November 2005; b) February 2006

Source: BPS, *Survei Angkatan Kerja Nasional* (National Labor Force Survey), various publication years

The ever increasing number of population aged 15 or above may indicate a tendency of Indonesia's population structure to become more stationary. As the population's health level is improving, more people survive to older ages and less infant mortality occur. Throughout 2002-04, employment among labor force in Indonesia is about 90 percent, so unemployment rate is around 9 to 10 percent each year. This unemployment figure is greatly smaller than the out cried 40 million. However, the rate was much higher than other countries in the region, except the Philippines (Suryadarma, *et al*., 2007). Within this period, unemployment in 2004 was the highest, up to 9.86 percent. It can be seen that the number of unemployment was increasing during 2002-04.

The number of unemployment throughout 2002-06 shows strong tendency to grow. A sharp increase during these years occurred in 2003, when the number of employed persons rose for more than 1 million to almost 93 million. However this increase was accompanied with a rise in the number of unemployment. Sharp increase in unemployment also occurred at the end of 2005, where the rise is more than 1.6 million. Another large increase in employment took place between the end of 2005 and

early 2006. Within a short period, it had been growing much higher than the rise occurred between 2002 and 2003.

From the gender perspective, current figure shows two-third of Indonesian labor force are male, indicating that female are still secondary in the labor force. There is a tendency where during 2002-2006 the proportion of male labor force continues to increase, while on the contrary proportion of female goes in the opposite direction. In 2002, Indonesia still preoccupied to recover from the economic crisis. As households' purchasing power weakened, most females who were previously outside of the labor force were later entering the labor market. Thus, there was increase of female workers because of pressure on the welfare of households. These additional workers were temporary because when the economy had improved in 2006, many of them were moving out from the labor market. It is predicted that if the Indonesian economy improves in the future, female labor force participation will keep declining resulted in decrease in the labor supply. This is so because the numbers of male labor force participation increases at slower rate than the decline of female labor force participation. Thus, in this sense it can be said that female participation reduced as the economy improved.

By marital status, SAKERNAS reveals a significant increase of unmarried workers from 22% in 2002 to 25% in 2006. Most of the increase was coming from the growing number of single female workers. There is a tendency, indeed, that the number of female labor force reaches its peak when these workers are in before and after the childbearing stage. Meanwhile, the proportion of married worker in the labor force keeps falling during 2002-2006 from 71% to 68% (Table 2).

Table 2: Percentage of Indonesian Workers by Sex and Marital Status, 2002-2006.

Year	Male				Female			
	Total	**Unmarried**	**Married**	**Divorce**	**Total**	**Unmarried**	**Married**	**Divorce**
2002	**63.92%**	18.51%	78.94%	2.54%	**36.08%**	16.09%	70.23%	13.68%
2003	**64.11%**	18.28%	78.85%	2.87%	**35.89%**	16.68%	69.61%	13.70%
2004	**64.64%**	18.75%	78.63%	2.62%	**35.36%**	16.65%	70.16%	13.19%
2005[a]	**65.39%**	19.57%	77.80%	2.62%	**34.61%**	17.45%	68.74%	13.81%
2006[b]	**65.00%**	20.64%	76.66%	2.69%	**35.00%**	18.27%	68.40%	13.34%

a) November 2005; b) February 2006
Source: as for Table 1

It is interesting to note that Indonesian labor market has experienced feminization during the last three decades. There is rapid growth of female workers joining labor force in agricultural, manufacturing and services sectors. The structural transformation resulted from the economic growth during 1970s and 1980s has increased absorption of working age population in the labor force, especially in industry. Along with the education expansion and family planning implementation started in the early 1970s, the employment expansion has benefited female to work outside their home.

There are some factors that influence female participation in labor force which is followed by changes in employment's structures. Female's education, household welfare, and family structures are the main factors that affect female's decision making to work. Aside from factors that are more likely determined by supply side of female's labor, there is employer preference that creates a continuously job opportunities for female. This preference is influenced by gender stereotypes that often attached to female, such as docility and nimble-handed. Regardless the growing participation in the labor force, female workers in Indonesia is still facing gender disparities in the workplace.

The change of employment structure in favor of the expansion of manufacturing sectors has made female caught to engage in unskilled jobs with low welfare. It indicates that education expansion that has been argued as the triggered factor of increasing female labor force participation is not enough to displace the gender disparities in the labor market. Higher education improves female's welfare in the sense that they have better access to jobs with better wages and benefits. However, the result of education expansion for girls will also depend on cultural settings on gender values and socio-economic condition that tend to draw back the girls from school due to financial and gender preferences reasons.

When looking in more detailed on the working status of employment in each sector, the majority of workers in agriculture, manufacture and services sectors are working as employee, self employed and unpaid family workers. Especially for female workers, in the first decade, the majority of female working as self employed (including self employed assisted by family workers) and paid-workers. The

pattern changed up to 1985 where female workers seem involved more as unpaid family workers. In 1990, the share of female working with this status is quite high (46 percent) compared with those who work as employee (23 percent) and self employed (17 percent). However, percentage of female working without payment in the family enterprises or paddy field were declining after 1990 to only 33 percent in 1995, but continue to rise again in 2000 (39 percent). The increase of female work in unpaid work in 2000 was influenced by economic crisis where female assist their husbands to make their welfare better-off.

The reverse effect of family welfare takes place for female from better-off households. They have tendency to stay outside the labor force, especially in urban area (Manning, 1998). Although female come from better income status sometimes have higher education, this is not meant that these female have higher probability to be employed. Higher educated people tend to find jobs that match with their expectation based on their education. This might become the source of frictional unemployment that resulted from the "mismatch" between supply and demand of labor (Mantra, 2000).

Third factor that determined female participation in the labor force is family structures. Female's marital status and age and the presence of young children are strongly correlated with female labor force participation (Manning, 1998; Oey-Gardiner, 1993). Particularly with the existence of children, female tend to delay their involvement in labor market for child care reason.

Another factor that determined exogenously of the female's decision making is the employer's preference of having female as their employee, especially in the manufacturing sectors such as textiles, clothing, and footwear that dominated by young and single females (Manning, 1998). Female are preferable to employ as factory workers because female are stereotyped with greater manual dexterity, greater willingness to take orders, docility, willingness to accept lower wages and low enrollment in the labor union (Anker, 1998).

Female labor is also relatively cheap and in abundant supply in Indonesia, especially those who work in multinational companies (Adioetomo *et al*., 2000). Multinational companies like Nike and Sony, have been expanding their profit with minimizing production cost due to trade globalization, by recruiting cheap labor for their factories located in developing countries. Females who are working as factory workers have low ability to bargain about their status and are not supported by the government. Low price of labor in Indonesia has increased the unskilled job opportunities that fulfilled by low-educated labor who have no ability to negotiate about payment and welfare.

One important feature of development under the New Order is that Indonesia has been able to reduce its birth rate and mortality rate. The total fertility rate has decreased from 5.6 in 1971 to 2.6 in 1999. The infant mortality rate has also going down from 145 per 1000 live births to 46 at the same time. These create changes in age structure of Indonesian population as well as economic structure, as the role of agriculture in GDP had reduced and been supplanted by the manufacture. It is interesting to relate the transformation of Indonesian economy with labor absorption by the major economic sectors (agriculture, modern, and services)—the modern sector here refers to mining, utilities, and construction as well as manufacturing. As revealed in many studies, Indonesian economy went through a significant transformation in the second half of 1980s when the contribution of industrial sectors surpassed that of agriculture. This transformation, though, seemed to be independent from labor absorption. Up to now, agriculture still has the highest output-employment elasticity. Anwar (1997) for example, showed that although the contribution of industrial sectors during 1985-95 have reached more than 40 percent of real GDP, labor absorption in these sectors were still less than 19 percent. More recent study conducted by Suryadarma *et al*. (2007) also shows the same figures.

Many studies on Indonesian manufacturing found that this sector has undergone significant transformation technologically. Timmer (1999) for example, found that rapid growth of output has been influenced by assimilation of new technologies, rather than solely determined by accumulation of inputs. This technological transformation essentially has been taking place not only in the Indonesian manufacturing, but widely to other sectors including agricultural and services/trading. Utilization of rice milling machines and hand-tractor for instance indicated mechanization in agricultural sector, while introduction of mini bus which were replacing the traditional *becak* as a mode of transportation. Such change however, has its own impact on employment.

A sluggish situation of industrial structure of employment in Indonesia indicates mismatch in the labor market that eventually leads to high level of unemployment. Labor market mismatch is one form of situation when demand does not match the supply in the labor market. When the technology utilized by the manufacturing sector improves over time, the quality of labor has not kept up with the progress. As a result the skills required by the labor demand do not match the workers' skills. The low level of output-employment elasticity reflects this mismatch. The level of this elasticity has actually reduced from 400,000 in 1997 to 180,000 in 2007.

Criticism about employment in terms of structural transformation, particularly industrialization, in Indonesian economy is actually classical. Hill (1997) for example pointed out that the employment issue in terms of industrialization process had been debated during the New Order period. This issue will be explored further in the discussion of labor mobility below.

4. Length of Working Life: Demographic influence on Labor Force

The average length of working life is an important indicator to show current social and economic condition in many industrial countries. It also shows the changes in longevity labor force participation and life style (Fullerton 1976). The length of working life is calculated using the application of the demographic tool called working life table. The standard life table examines the mortality rates, life expectancy, and the process of how death diminishes population numbers as ages increase (Rowland 2003). This standard life table can be modified to calculate the life expectancy in many demographic events, including participation in workforce. The working life table provides information on the expected average number of years of working life remaining to those of a given age and many other aspects of working life. It incorporates working indicators such as labor force participation, percent of working population, or unemployment into the standard life table.

The early versions of working life table were constructed by the Bureau of Labor Statistics in 1950s and later constructed by United Nations (1968) and developed by Shryock, et al (1976), Swee-Hock (1965), Kpedekpo (1969), Iro (1976), and Fullerton (1976) with particular reference for male and some countries. This table was developed based on the technique of double-decrement life table of the labor force participation of a synthetic cohort and measures the average number of working years after a given age by all persons or by persons in the labor force attaining that age.

The basic information needed other than measurements in the standard life table to construct working life table are age specific labor force participation rate at the population level (w_x). This information will be combined with the standard life table quantity (L_x) to get the number of person-years lived in the labor force at every age, total number of years lived in the labor force, number of persons in the labor force at particular age, and the average number of working life expected after a certain age.

There are few key assumptions to construct this conventional working life table (Shryock, et.al 1976 and Dasvarma 2002): 1) the age-specific participation rate follows a unimodal distribution or an inverted U-curve with a single age where participation is at the highest level; 2) there are only accessions to and no withdrawals from the labor force except for deaths before maximum age or age U; 3) there are no new entrants to the labor force after maximum age and withdrawals or separations are caused by only deaths and retirements; 4) ages at retirement are independent of the ages at which they enter labor force; 5)mortality at each age is the same for labor force and non-labor force. Phang (2002) states that these assumptions are too rigid to describe vigorous patterns that common to occur in the labor force, including the assumption of unimodality which can hardly describe the bimodal pattern in female labor force participation[4]. Phang (2002) also states that the assumption of unidirectional decrease was also considered unrealistic since it will only allow the participation rates to increase and then decrease after age U. This conventional working life table is also very limited when applied to the dynamics of the labor force, especially on the accession and attritions.

Multistate life tables were later developed to overcome the conventional working life table limitations (Hoem 1977; Willekens 1979). The table which also called as an increment-decrement life table allows us to estimate state-specific transition rates and life expectancy. It needs more detailed data on labor force status over the life course, such as timed records of movements between labor force (active to not active; employed to not employed, out of the labor force, etc). This table measures the dynamics flows between status and does not depend on the unimodality assumption, hence, it can be applied to both men and women. The most ideal data to construct the multistate working life table is a longitudinal data to capture the dynamics flows between statuses of the labor force.

For the Indonesia's setting, a multistate life table is still not supported with availability of data. The National Labor Force Survey, published annually by the Central Bureau of Statistics, only collects cross sectional information about labor force statuses and characteristics. It has the sampling frame which represents the population at district level. Therefore, this analysis will use the conventional working life table to explain the length of working life using the most recent and complete survey data

[4] Age-specific of female labor force participation rates have a bimodal distribution, where the rates reach maximum before and after the period of childbearing (two maximum ages).

of SAKERNAS 2004[5]. The analysis will measure the extent of working years of the cohort of the labor force in 2004. To construct the working life table, we use some indicators from the standard life table produced by the WHO World Health Report in 2006.

The construction of working life table in this study is based on Shryock, et.al (1976), Fullerton, et.al (1976) and Schoen and Woodrow (1980) for male and Iro (1976) and Kpedekpo (1969) for female labor force. The basic data is the information about number of population in the labor force and number of population of working age to calculate the labor force participation rates (w_x). The National Labor Force Survey defines labor force as those who are working for at least one hour a week prior to the survey, and those who are looking for work, preparing businesses, and have jobs but still waiting to start (CBS 2004). According to the 2004 National Labor Force Survey figures, there were 65.9 million male and 38 million female labor force in Indonesia. The crude participation rates for males and females are computed as 86 and 49 per cent, respectively. The age-specific participation rates are presented in Table 3.

Table 3: Age-Specific Labor Force Participation Rates: Indonesia, 2004.

Age group	Participation Rates	
(years)	Male	Female
15-19	45.4	35.3
20-24	84.8	52.4
25-29	96.4	48.6
30-34	98.7	49.9
35-39	98.9	54.6
40-44	98.6	58.4
45-49	98.5	58.0
50-54	96.5	55.7
55-59	90.0	53.1
60+	68.9	35.9
Total	86.0	49.2

Source: computed from 2004 National Labor Force Survey (SAKERNAS)

The pattern of participation rates for male follows a unimodal distribution, but a slightly bimodal pattern is found for female (Figure 1). The female participation is increasing to reach its peak at age 20-24 years and continue to decline. The declining phase shows most females in Indonesia enter the childbearing phase after age 20-24. The participation rate is dropped at age 25-29, and afterwards, the participation continues to increase and reach the second peak at age 45-49 years old. This is consistent with the average age at first birth of 21 years old and most female were not continuing to have children after age 30-34 (CBS and ORC Macro 2003). This means that after completing their childbearing phase, most females are re-entering the labor market.

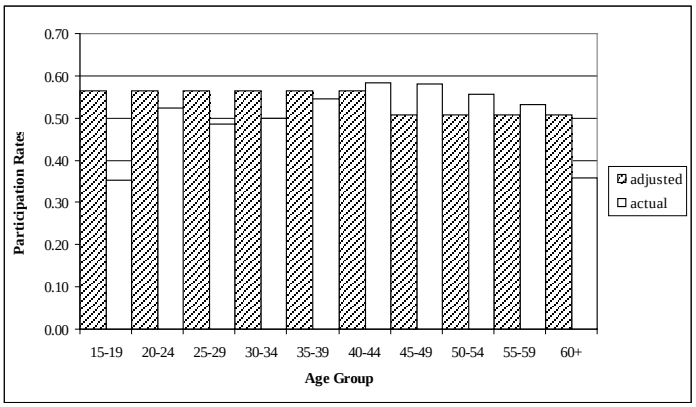
[5] CBS has already released the 2005 and 2006 data. However, both data were not showing the average condition of the labor force since the 2005 data was collected only at the beginning of the year, and the 2006 was at the end of the year (November).

Figure 1: Pattern of Age-Specific Labor Force Participation Rates of Males and Females, Indonesia 2004.

Source: computed from 2004 National Labor Force Survey (SAKERNAS)

The abridged working life tables for male and females are constructed based on these assumptions: 1) the behaviour of persons not in the labor force under age at maximum participation rates is treated similarly with the maximum age groups (35-39) by replacing their actual participation rates with the maximum participation rate at this age[6]. Different assumption is applied for female tables, where we used Iro's (1976) approach to replace them with the mean of w_x in the age range when the women would be completing their child bearing years and would devote their time to full time work. Based on the DHS 2002-03, most married females in Indonesia have not continuing to have children within age range of 35 – 44 years old. This yields a value for w_x of 57 per 100 and this figure is applied to all age groups 15-54. While the mean of values of the last age groups is 50.6 in the terminal age groups 45 and over and this is considered acceptable since the pattern of employment at and advanced age is continuous. The actual and adjusted w_x is shown in Figure 2; 2) withdrawals from the working population are uniformly distributed over the age interval.

Figure 2. Actual and Adjusted Participation Rates for Females: Indonesia 2004



Source: computed from 2004 National Labor Force Survey (SAKERNAS)

The abridged working life table for male and female are given in the Table 4 and 5 respectively. The formulas for each column for male and female tables are given in the appendix. The average remaining years in the labor force or working life expectancy at age 15 is 48.7 years for male and 42.4 years for female. It means that those who enter the labor force at age 15 are expected to be in the labor force until they reach age 64 years (for male) and 57 years (for female). Female has a shorter working life span even though the life expectancy is higher than male (68.6 years for female and 64.6 years for male – United Nations 2005). This could be related to the existing gender discrimination at work which still prevents women to attain higher position at older ages and force them to retire earlier than men.

[6] See Swee-Hock (1965) page 430 and Kpedekpo (1969) page 105

TABLE 4: Abridged Working Life Table, Males: Indonesia 2004.

Age group (in years)	% in the labor force	Number of persons living during age interval x to x+5*	Number of years lived in labor force	Hypothetical persons with wx at maximum age	number of survivors in labor force	number of survivors who hypothetically be active	Total years lived in labor force	Average years in labor force
	wx	**LX**	**Lwx**	**Lwx*1**	**lwx**	**lwx***	**Twx**	**ewx**
15-19	0.454	473943	215229	468838		94038	4583692	48.7
20-24	0.848	469281	397795	464226		93306	4112147	44.1
25-29	0.964	463689	447187	458694		92292	3644632	39.5
30-34	0.987	457623	451615	452693		91139	3182190	34.9
35-39	0.989	450288	445437	445437	89705		2733461	30.5
40-44	0.986	440541	434473	435795	87991		2314688	26.3
45-49	0.985	426810	420429	422212	85490		1971326	23.1
50-54	0.965	407041	392691	402656	81312		1535531	18.9
55-59	0.900	378745	340745	374665	73344		1113319	15.2
60+	0.689	339656	233921	335997	57467		710662	12.4

Source: Prepared from 2004 National Labor Survey (SAKERNAS) and the 2004 Indonesia's WHO Life Table.
Note: the construction of male table is based on formula in Shryock, et.al (1976)

TABLE 5: Abridged Working Life Tables, Females: Indonesia 2004.

Age group (in years)	% in the labor force	extrapolated % in LF from exact x to x+5	survivors at beginning of age interval*	Number of persons living during age interval x to x+5*	number of survivors in labor force	Number of years lived in labor force	Total years lived in labor force	Average years in labor force
	wx	**wx***	**lx**	**LX**	**lwx**	**Lwx**	**Twx**	**ewx**
15-19	0.3527	0.5652	95672	476831	54071	269493	2295025	42.4
20-24	0.5241	0.5652	95060	473368	53726	267536	2025532	37.7
25-29	0.4859	0.5652	94287	469250	53289	265209	1757996	33.0
30-34	0.4992	0.5652	93413	464322	52795	262424	1492788	28.3
35-39	0.5459	0.5652	92316	457833	52175	258756	1230364	23.6
40-44	0.5845	0.5652	90817	448859	51328	240681	971608	18.9
45-49	0.5797	0.5066	88726	436416	44945	221070	730927	16.3
50-54	0.5574	0.5066	85840	419274	43483	212388	509857	11.7
55-59	0.5305	0.5066	81870	395954	41472	200575	297469	7.2
60+	0.3586	0.5066	76512	364538	38758	96895	96895	2.5

Source: Prepared from 2004 National Labor Survey (SAKERNAS) and the 2004 Indonesia's WHO Life Table.

The pattern of working life expectancy in Indonesia overtime can be seen in Table 6. Dasvarma (2002) constructed working life tables for male based on 1980 Population Census and 1995 Intercensal Survey Data. Dasvarma uses different approach of calculation and starting age reference. He incorporates the age-specific death rates of population taken from the Coale-Demeny West Model of Life Table to measure the average expected number of years of active life (working life expectancy) and beginning age of working at 10 years old. It shows that between 1980 and 1995, the average years to spend in the labor force is increasing, where for an economically active male at age 15 could spent 45 years in 1980, and increase to 50 years in 1995. Dasvarma (2002) states this increase is contributed by reduction in mortality between 1980 and 1995 and relative mortality advantage of two cohorts born apart especially at age 30 and below. The average years spend in the labor force is dropped to 49 years based on the calculation in 2004 which contradicts the pattern where increasing life expectancy is generally followed by increasing length of working life. Theoretically speaking, lower figure in 2004 compared to 1995 will be influenced by the increasing death rates or retirement among economically active population. However, it is worth to note that lower figure in 2004 in comparison to 1995 is due to different technique and data used to construct each life table. A careful examination should be taken to adjust these differences.

TABLE 6: Comparisons of Male Labor Force Participation Rates and Average Remaining Years in the Labor Force: Indonesia, 1980, 1995, 2004.

Age Group (in years)	1980		1995		2004	
	LFPR	ewx	LFPR	ewx	LFPR	ewx
15-19	47.7	44.6	49.2	49.9	45.4	48.7
20-24	79.4	40.3	86.4	45.2	84.8	44.1
25-29	92.4	36.2	96.1	40.6	96.4	39.5
30-34	95.1	32	98.4	36	98.7	34.9
35-39	95.6	27.9	98.5	31.4	98.9	30.5
40-44	95.1	23.8	98.1	26.8	98.6	26.3
45-49	94.1	19.9	97.4	22.4	98.5	23.1
50-54	90	16.5	94.8	18.4	96.5	18.9
55-59	84.6	13.5	87.3	15	90.0	15.2
60+	65.05	10.05	67.9	11.5	68.9	12.4

Source: Dasvarma 2002 (1980 and 1995)

5. Flows in Indonesian Labor Market

Movements of people between labor force statuses (employed, unemployed, and non-participation) can be represented by outflow from or inflow to a certain pool. If these flows have more or less equal magnitudes, some economic costs may incur in the economy. For example, movement between employment and unemployment will incur labor search cost such as recruitment and selections, job applications, vacancy announcements, and so forth. Movement of persons between labor force and non-participation (out of labor force) incurs moving cost for the persons and firms alike. It is also possible that one movement dominates the opposite movement in size.

Predominant size of flow into the labor force indicates one of two extremes. On the one hand, it signals the worsening situation of the economy, because people are now forced to join the labor force in order to improve their income. On the other hand, it marks the boom in the economy, where employment is increasing as well as job creations and wages, making the opportunity cost to be unemployed to rise. As a result, the labor supply is also growing. To determine which one is actually taking place, it is important to have information about demand for labor. In one hand, If the net inflow to labor force takes place when the demand is low, then the former case is true, and it gives a signal of recession period in the economy. In the other hand, the inflow occurs when the demand is high. The same logic can be applied to the outflow movement of worker from the labor force.

Another two extremes may also be causing the movement of workers from employed to unemployed statuses. By assuming demand for labor has fallen and the economy is growing at a slower pace, the economy's capacity to absorb labor is also low. Therefore the movement from employment to unemployment indicates that economy is in recession. Another explanation of the movement is that the economy is actually booming. The fall in labor supply, in this scenario, is caused by increase in workers' income. As income rises, secondary workers quit voluntarily and will only enter the labor market if the wage reaches a certain level.

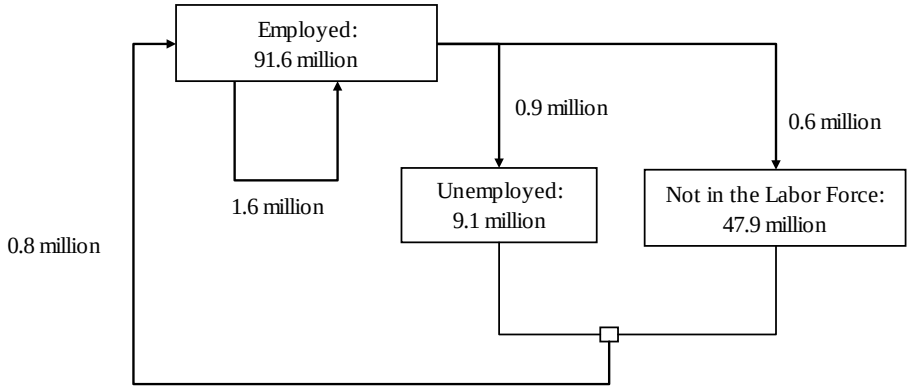
As already mentioned above, there is no measure about Indonesian labor demand. Information available about employment situation is purely supply sided. Therefore it is difficult to have a complete description about flows in labor market. Nevertheless, a simple stock-flow model of labor market can still be drawn.

A stock-flow model of labor market shows the amounts of population within each main states of labor market: employment, unemployment, and not in the labor force (Ehrenberg and Smith, 2006). Numbers assigned to each group represent the stock of population in each category during a certain period of time. Besides identification of the size of each pool, the model can also provide description about movements of people between groups. These are the flows taking place in labor market. Within this framework it is possible to identify the size of workers movement between statuses, from employment to unemployment, from employment to not in the labor force, and from unemployment to not in the labor force.

However, it is important to have information about the previous status of individuals to describe the complete model, that is whether they were employed, unemployed or not in the labor force. Because

this information is unavailable in the SAKERNAS, a simplified model instead is used. This model is depicted in Figure-3.

Figure 3: A Simple Stock-Flow Model of Indonesian Labor Market, 2002.



Source: Modified from Ehrenberg and Smith (2006), authors estimation.

As depicted in the figure, during 2002, approximately 2.4 million people engaged in employment. Due to data unavailability, consequently, it is impossible to separate further the pool sources of this flow. Thus, the size of flow of new hires from unemployment or not in the labor force cannot be identified. Nevertheless, it is possible to separate between new entrants and recalls which are consecutively composed of 0.8 million and 1.6 million workers. The flow of people out from employment, however, can be divided between to unemployment and non-participation. In 2002, the number of people move out to unemployment is about 0.9 million, while 0.6 million of the employed dropped out of the labor force.

Such graphic drawn above, of course, has limitation in describing the dynamics of labor market overtime. It is, however, still useful to shed more lights on labor survey in Indonesia. It also provides a framework to examine the labor turnover and its rate, thus reveal the labor mobility. Labor turnover is defined as the total of new contracts and disclosed contracts, while the rate is its ratio with the number of employment. New contracts/hires comprise of newly employed persons regardless of their previous status. Disclosed contracts are those who moved out of employment or changed their occupation, employer, or industry. The Indonesian labor turnover rates for 2002-2006 are shown in Table 7.

Table 7: Indonesian Labor Turnover Rate 2002-2006.

Year	New contracts (million)	Disclosed contracts (million)	Labor turnover (million)	Labor turnover rate (%)
2002	2.47	1.61	4.08	4.45
2003	1.39	1.11	2.49	2.69
2004	1.76	1.33	3.09	3.29
2005[a]	3.20	1.63	4.83	5.14
2006[b]	2.46	1.43	3.89	4.09

a) November 2005; b: February 2006
Source: as for Table 1.

During 2002-2004, the labor turnover rate showed strong tendency to fall. The numbers of disclosed contracts slightly declined, but that of new contracts drop sharply within 2002-2003. These were actually coincided with the dynamics of industrial relations between workers, employers and the state at the time. In 2001, in line with the implementation of decentralization, the power to determine minimum wages has been devolved to provinces. The policy soon resulted in substantial wages increases in several provinces. The raise reached to more than 30 percent (Deuster, 2002). Jakarta led the way and followed by the surrounding regions of Tangerang, Bekasi and Bogor, and to a lesser degree Bandung and Bali. Such policy was certainly opposed strongly by employers. For the business owners there were other reasons to concern. As the exchange rate was declining, firms were inevitably facing high prices for imported inputs along with increases in energy (fuel and electricity) prices. These

situations alone have already put heavy pressures on private sector. The wage policy, albeit its noble intention, posed risk to more fundamental issue of employment. The worsening relations between employers and workers continued as the minimum wages kept growing until 2004 but with moderated degree overtime (Marks, 2004).

A different situation occurred during 2004 until early 2006. The labor turnover rate improved to more than 4 percent in early 2006 from just around 3 in 2004. This improvement was a result of both sharp rose in the numbers of new hires and rather stable numbers of disclosures. This situation has different macroeconomic background than the previous period discussed above because the macroeconomic condition during this period was actually deteriorated, particularly because the rise in oil price. Nevertheless, the macroeconomic situation in the last quarter of 2005 actually turned to the other direction.

The flow of workers into employment can be separated as new entrants and recalls. Of these two, during 2002-2004, the number of recalled workers is predominant (see Table 7). Thus there is a clear indication that within that period employment creation was severely low. The stable level of disclosed contracts in the previous table supports this argument. The change in the determination of minimum wage as previously discussed could be the main cause of this situation. In the new political setting where regional heads (governors) would be directly elected, provincial governments have strong motives to announce popular policies. Such measure turned out to threat both regional and national economies.

Table 8: Percentage of Recalls and New Hires in Indonesia, 2002-2006.

Year	Recalls (%)	New entrants (%)
2002	65.33	34.67
2003	87.28	12.72
2004	82.56	17.44
2005[a]	44.28	55.72
2006[b]	50.63	49.37

a) November 2005; b: February 2006
Source: as for Table 1

It was fortunate that the economic condition improved in 2005 albeit some economic pressures such as the rise of international oil prices and of domestic fuel prices. At the end of 2005, new entrants were much larger than recalls, and even though the number dropped slightly in the early 2006 the proportion still significantly higher than 2004. This situation signals a reverse in employment creation as now creation of new jobs increases.

Besides movement into employment, there are some workers who become unemployed or move out of labor force (see Table 5). These outflows turned out to be much larger than inflow to employment. In the long run this situation can create growing stock of unemployment in Indonesia. Once again this situation emphasizes the urgency of employment creation in the recent time.

Table 9. Indonesian Labor Mobility, 2002-2006

Year	Move in to employment	New entrants in employment	Move out to unemployed	Move out to nonlabor force	Total move out of employment
2002	2,474,515	857,904	936,970	668,220	1,605,190
2003	1,387,817	176,593	730,833	374,477	1,105,310
2004	1,761,913	307,349	824,201	501,007	1,325,208
2005[a]	3,197,546	1,781,745	991,363	636,778	1,628,141
2006[b]	2,464,197	1,216,640	876,131	554,626	1,430,757

a) November 2005; b: February 2006
Source: as for Table 1

Over 2002-2006, the flow of workers to unemployment is always much larger than to nonparticipation. Among those who become unemployed, the largest group is those who were looking for work. In other words these are persons who were laid off. It is estimated that during that periods

around 600,000 to 800,000 were laid off every year. As for those who moved out of labor force, the largest part was those who were to conduct domestic work.

In 2002-2006 periods the flows of persons who were conducting domestic work fluctuated. The flows reached its bottom in 2003 but steadily rose until the end of 2005 and dropped slightly in the early 2006. The tendency shows that in 2003 the economic condition was felt as the worst. This is so because, assuming that this group comprises mostly women, many female workers tried to stay in the labor market to support their families to make ends meet. As the economic condition improved in the following years these transient workers moved out back to non-participation. This also supports the indication that female workers in general are considered as secondary because they play only a supporting role in the labor market.

Another interesting feature of movement to nonparticipation is the dismal number of schooling and leisure. The number of people move to these groups combined is less than 40,000 every year during 2002-2006. This is less than 0.04% of total Indonesian labor force. This figure indicates that Indonesian labor force have the least choice to become nonparticipant (out of labor force). Those who are unemployed will not easily decide to withdraw to, for example, attending school. This lack of choice is an important indication of poverty.

In terms of poverty, the estimation of working life expectancy in the previous section reveals that most of the lifetime of Indonesian workers is spent in the labor force (49 years for male workers and 42 years for female). This means that labor income is the most important source of wealth for workers in Indonesia. In other words, they do not have the capacity to accumulate wealth to invest as another source of income. This is consistent with the large number of flow of recalls.

The above discussions show that the opportunity cost of leaving labor force for Indonesian worker is quite high. Workers who lost their jobs cannot stand to be out of labor force in a long time. It is better for them to stay in this status as unemployed rather than to pursue further education. In other words, there is strong disincentive for workers to improve their human capital and, eventually, productivity. In this situation perhaps in-house trainings initiated by the firms can be an alternative solution. The issue of productivity will be further addressed below.

Discussion on employment situation in post-crisis Indonesia, however, must be carried out bearing in mind that some macroeconomic fundamentals have already altered compared to the previous era. One significant change has been the plummet of investment level.

Lack of investment has been one major concern about Indonesian economy since the country hit by the financial crisis in 1997. It was true that once, Indonesia had experienced high level of labor absorption (Silalahi, 2007). However, during that period there had been by large flows of domestic and foreign investments. In 1995, for example, foreign direct investment approvals shot up to almost USD 40 billion from only USD 8.1 billion in 1993; while domestic investment approvals also showed a rising trend from Rp 39 trillion in 1993 to Rp 70 trillion in 1995 (Parker and Hutabarat, 1996). Such favorable economic climate was highly beneficial for employment. Fujita and James (1997) using input-output model estimated that growth of Indonesian manufactured exports would create large employments gains during 1980-1990, the episode of export boom. It was estimated that during that periods manufactured exports would had surpassed primary sector exports in generating employment (Fujita and James, 1997).

The financial crisis truly put an end to investment boom era for Indonesia. Since 1998 foreign direct investment approvals has never reached more than USD 17 billion, while domestic investment approvals has remained below Rp 60 trillion—except in 2000 when the approved investment value reached Rp 95 trillion (Silalahi, 2007). These changes mean that the aggregate demand had been changed and turned out to be the source of unemployment. In other words, stimulating investment and job creation once again becomes fundamental in addressing unemployment, a similar situation as in the early periods of the New Order.

Nevertheless, as indicated in the previous section, there are two more underlying issues that may easily be overlooked: creation of ‘better’ jobs and improving labor productivity. These, although perhaps classical because such concern had already emerged in the early 1980s (see Jones (1981) for example), are not easy to work out. Nonetheless, they have never been completely resolved even during the New Order era.

Creation of better jobs involves different kind of understanding about unemployment. ‘Better’ jobs imply stable jobs, that is, low level of employment shifts across establishments within an industry. Leonard (1997) explained that substantial part of unemployment is largely caused by instability of jobs. Job turbulence (the total of the job creation and destruction) can be moderated by different economic institutions, but it derives from competition in product markets and shifts in product demand. Thus,

creation of better jobs relates to market structure as well as output expansion. The policy implication, however, will be challenging as there is still weak linkage between policies in output and input markets.

Attention on improvement of labor productivity has also begun during the New Order era. Although many studies found that Indonesian labor have undergone much productivity improvement, however this only happened in the manufacturing sector. Low level of labor productivity is mainly resulted from low quality of human capital. This in turn leads to low level of wages. It is beyond the scope of this paper to address comprehensively the issue of Indonesian labor productivity. Nevertheless, some emphasizes can be made here. First, productivity improvement must not create productivity disparity among economic sectors. Second, mechanisms of incentive should be provided to motivate workers improving their productivity. This will be easily performed in most of urban sectors, but not in rural ones, especially agriculture. For this sector, it seems that increase in productivity can be achieved mainly by investment (public and private) in human capital.

6. Concluding Remarks

The flow analysis of Indonesian labor force shows that in the post-crisis era, the macroeconomic condition plays important role in explaining the movements of workers among the pools of manpower. The analysis reveals that employment creation has become the major concern in this time. Aside from economic situation, the change in political setting is also important to consider. During 2002-2004, the number of recalled workers is predominant compared to the size of new entrants. Thus there is a clear indication that within that period employment creation was severely low.

Over 2002-2006, the flow of workers to unemployment is always much larger than to non-participation. Among those who become unemployed, the largest group is those who were looking for work. In addition there was strong indication that as the economic condition improved in 2005-2006 many female workers moved out back to non-participation. This finding supports the indication that female workers in general are considered as secondary because they play only a supporting role in the labor market.

The construction of working life table shows that in average an economically active male and female are expected to spend around 49 and 42 years respectively in the labor force. Length of working life of the Indonesia labor force follows an increasing pattern from 1980 and 2004, although it slightly declined between 1995 and 2004. This implies that with increasing life expectancy (and reduce in mortality), labor force in Indonesia will spend more of years in the labor force over their life course.

The large number of job seeker in the flow of worker into unemployment shows that the opportunity cost of leaving labor force for Indonesian worker is quite high. Workers who lost their jobs can not stand to be out of labor force in a long time. It is better for them to stay in this status as unemployed rather than to pursue further education. In other words, there is strong disincentive for workers to improve their human capital and, eventually, productivity.

Indonesian labor force faces a great challenge to improve their productivity. The insignificant number of worker who can leave labor force to attend school indicates the high opportunity cost for schooling. This may threat the effort to develop Indonesian human capital in general and, to greater extent, alleviate poverty.

The structural transformation in the Indonesian economy over the last three decades has not been accompanies by another important change in the structure of employment. Agriculture still play significant role in providing works even during the episode of export boom. This indicates that there are more fundamental issues lurk beneath the market mechanism.

Indonesia still has no clear agenda about Indonesian labor force. A crucial evidence is the non existence of data about the demand side of labor market. This becomes a major drawback as they do not allow a comprehensive investigation about the flows within the labor market. Aside from data, policies implemented in the labor market are biased with political content for the sake of the ruling cabinet's popularity.

Even though Indonesian labor market has gone through large increase of female workers, they are still considered secondary in the labor force. Female participation in labor market is largely limited as supporting role, to assist their husbands for improvement of the families' income. From demand side, their participation is influenced by gender stereotypes. The gender disparities faced by female workers are not easy to deal with as they involve cultural settings.

In line with reforms in many aspects of the country, this time could also be a good point to reconstruct the development of Indonesian labor force. This should be done in a comprehensive setting to include not only supply considerations but also the demand side of the market. Starting with, for

instance, designing a grand strategy of labor force development, the comprehensive approach can be incorporated in the greater scheme of poverty alleviation.

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APPENDIX

Following is the explanation of the Working Life Table construction.

1. Male Working Life Table

w_x refer to the worker rate or activity rate or the percentage of the population in the labor force. These rates were obtained for 5-year age groups and taken as central values for these age groups. The values were then interpolated by age group.

L_x as in the standard life table, refers to the stationary population or the number of persons who would be living at any age interval out of 100,000 born alive

Lw_x represent the stationary male labor force under the prevailing activity rates, or the number of males in the stationary population expected to be in the labor force at each age. The formula: $Lw_x = L_x \cdot w_x$

Lw_x^* shows the number of males in the stationary population who would hypothetically be active if the participation rate at each age under *U* years were the same as at age 35-39, the maximum worker rate, or $Lw_x^* = L_x \cdot w_{35-39}$ for those under age *U*. The objective is to calculate the average number of remaining active years per active survivor at ages under *U* years (35-39) in order to eliminate the effects of accessions to the active population.

lw_x is the number of male survivors at each exact age who would hypothetically be in the labor force if the activity rate at each age is the same as after 35-39 years. The formula: $lw_x = \frac{\left(Lw_{x-5} + Lw_x\right)}{10}$

lw_x^* is the number of male survivors at each exact age who would hypothetically be in the labor force if the activity rate at each age under 35-39 years were the same as at age 35-39. The formula: $lw_x^* = \frac{\left(Lw_{x-1}^* + Lw_x^*\right)}{10}$

Tw_x^* represents the remaining years in the labor force at any age including the hypothetical Lw_x^* values for ages under 35-39.

The formula for Tw_{xi}^* = $\sum_{15-19}^{35-39} Lw_x^* + \sum_{40-44}^{60+} Lw_x$

ew_x^* shows the average remaining number of years of active life for males in the labor force at the given age and is computed from the values of Tw_x^* and the numbers of active survivors, including the hypothetical numbers at ages under 35-39 (lw_x^*).

The formula for age group under 35-39, $ew_x^* = \frac{Tw_x^*}{lw_x^*}$

For age group 35-39 and above, the formula will be $ew_x^* = \frac{Tw_x^*}{Lw_x^*}$

For detail reference to constructing male life tables, see Shryock, et.al (1976), Kpedekpo (1969), Swee-Hock (1968), Fullerton, et.al (1976).

2. Female Working Life Table

wx^* is the hypothetical female labor force participation rates assuming that the distribution follows a unimodal pattern. The actual participation of those under age *U* is replaced by the average of participation rates at ages where female are considered to complete their childbearing ages (30 – 49). While for those at age *U* and above, the rates are replaced by the average of participation rates of ages 50 and above.

l_x is the number of survivors to exact age *x*. these were taken from the 2004 Indonesia life table produced by WHO in the WHO World Health Report 2007.

L_x as in the standard life table, refers to the stationary population or the number of persons who would be living at any age interval out of 100,000 born alive. These figures are also taken from the 2004 Indonesia Life Table produced by WHO in WHO World Health Report 2007.

lw_x is number of female survivors at each exact age who would hypothetically be in the labor force if the activity rate at each age is w_x^* and $lw_x = l_x \cdot w_x^*$.

Lw_x is number of females in the stationary population who would hypothetically be active if the participation rate at each age is w_x^*. It is assumed that the withdrawal from the labor force due to death and retirement are distributed evenly. The formula: $Lw_x = \frac{5}{2}\left(lw_x + lw_{x+5}\right)$.

Tw_x shows the remaining years in the labor force at any age based on hypothetical values of Lw_x. The formula is Tw_x = $\sum_{15-19}^{60+} Lw_x$

ew_x is the average remaining number of years of active life for females in the labor force at the given age and is computed from the values of Tw_x and the numbers of active survivors (lw_x)

For detail reference to construct female working life table, see Iro (1976) and Kpedekpo (1969).