

THE LABOR SHIFTING IN INDONESIAN LABOR MARKET

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Abstract

This paper analyzes the labor shifting phenomenon in Indonesian labor market. Labor shifting phenomenon in developing countries, including Indonesia, is considered to be the reason of stable movement from the supply perspective. By using Sakernas data year 1998-2008, this paper analyzes the labor shifting phenomenon, both the direction of labor movement and the characteristics of the shifting labor.

The main conclusions obtained in this research are, first, there is no structural break in Indonesian labor market. Second, although most of labors tend to remain in the same sector or intra-sector, the analysis shows there is tendency for the labor to move from non formal sectors especially to Agricultural and Trade sectors. Third, the model estimation result with a series of controlled category shows the biggest three probability of not shifting and remaining in the same sectors are in Electricity sector (70,15%), Financial sector (55,8%) and Mining sector (53,13%). On the other side, the biggest labor mobility opportunity to conduct shifting is on Industry sector (80.14%), Construction sector (64.3%), and Transportation sector (62.4%).

JEL classification: J23, J62, J64

Keywords: Demand for Labor, Job Mobility, Labor shifting, Unemployment.

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I. INTRODUCTION

The demand changes towards sectoral output will lead to changes on sectoral labor demand, which may trigger the shifting from and or to other sectors. Higher output growth in a sector will trigger a labor demand increase, which can be fulfilled either by the new labors or labor shifting.

Global financial crisis in 2008 causes global economic delay followed by the quite high decreasing demand. This triggers significant output decrease and leads to labor rationalization. Labors losing the jobs may search alternative job on other firms in the same sector, shift to other sectors, or shift to non-formal sectors.

Recently, the global crisis is estimated to have impact on 30.000 labors dismissal, either reported or not, by the end of 2008. The dismissal threat upon 200.000 labors throughout Indonesia is estimated to occur within 2009, and 70.000-80.000 of industrial labors will be dismissed by the end of 2009 (Kadin). According to different source, the amount of dismissed victims up to the end of 2008 has reached 100.000 people from various sectors, especially labor-intensive industry. Furthermore, it is estimated that at least 500.000 – 1.000.000 labors have been dismissed within 2009 (APINDO). The government itself estimates the amount of dismissed labors by the end of January 2009 has reached 31.660.

Besides the global financial crisis recently, during 1998-2008, Indonesia has also gone through the crisis in 1997 which also has a great impact on labor dynamics and structure in Indonesia. Crisis in 1997 has caused a quite big shifting, especially from formal sector to informal sector². The informal sector's share increased from 62.8% in 1997 to 65.4% in 1998.

Though there is huge dismissal during 1997-1998 crises, the labor absorption in 1998 increases positively of 2.7% (Table II.1). The increase of labor absorption is due to labor shifting to informal sector which has labor absorption increase of 8,7%, meanwhile the formal sector has labor absorption decrease (-6,6%). This results great discharges. The decrease of formal labor absorption occurs in most of the sectors, except Agriculture sector. Meanwhile in 1998, the increase occurs in informal labor, namely in Agriculture (13.1%), Building (27.2%), Trade (1.2%), Transportation (6.8%) and Services sectors (0.3%).

According to the sector, the highest unemployment numbers is originated from Industry sector whose average is 3.33%, Trade 2.13%, and Services 2.14%. The high percentage of

2 According to BPS (Central Bureau of Statistics), the informal activity is conducting effort or working alone based on his own risk, conducting effort using his own risk helped by contract labor, independent worker in agriculture and non agriculture, and workers who are not paid, for instance, those who help someone to obtain an income or benefit, but do not obtain wage/salary, either in the form of money or goods.

Table II.1
Growth of Labor Absorption 1997-1998 (%)

Sectors	Growth of Labor Absorption								
	Formal			Informal			Total		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Agriculture	6.3	27.5	75.4	-4.8	13.1	-4.0	-4.7	13.3	-2.6
Mining	8.3	-13.2	-0.8	32.6	-39.3	27.8	16.2	-22.9	7.6
Industry	5.5	-10.7	14.9	0.4	-7.0	18.9	4.1	-9.8	15.9
Electricity	44.5	-37.8	34.4	19.9	-23.2	-36.6	42.1	-36.6	27.4
Construction	13.1	-20.0	0.5	-8.9	27.2	-25.7	10.7	-15.8	-3.0
Trade	-0.5	-3.6	6.7	13.0	1.2	2.6	7.0	-0.8	4.3
Transportation	-0.2	-5.4	-5.7	10.4	6.8	7.4	4.8	0.7	1.3
Finance	-5.5	-5.3	0.7	30.0	-22.6	61.0	-4.6	-5.9	2.6
Service	6.2	-1.8	-2.3	17.3	0.3	3.6	7.9	-1.4	-1.4
Total	4.9	-6.6	5.7	-0.1	8.7	-1.1	1.8	2.7	1.3

■ Negative Growth ■ Positive Growth

unemployment in Industry sector is quite worrying regarding the labor absorption share in this sector is relatively limited. From the amount side, the highest unemployment percentage is originated from Industry sector. Ironically, the labor share in industry sector is quite low. This reflects that the labor shifting failure originated from Industry sector is higher than that of other sectors, especially during crisis.

In 1998, the unemployment percentage originated from people who are previously working is relatively high. In 1998 and 1999, the highest percentage of unemployment is originated from Industry sector, by 6.35% and 4.05% consecutively.

Table II.2
Unemployment by Sectors, 1998-2008 (%)

Sector	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Agriculture	0.93	0.86	1.22	1.17	1.14	0.66	0.85	0.94	1.23	1.24	1.59	1.08
Mining	0.32	0.23	0.15	0.09	0.09	0.09	0.15	0.07	0.15	0.24	0.14	0.16
Industry	6.35	4.05	3.28	3.68	3.66	2.46	2.36	2.66	2.68	2.18	3.29	3.33
Electricity	0.12	0.14	0.00	0.00	0.04	0.04	0.03	0.02	0.05	0.02	0.04	0.05
Construction	2.87	1.93	1.58	0.89	1.39	1.08	1.28	1.17	1.00	1.38	1.89	1.50
Trade	3.58	2.37	2.09	2.27	1.55	1.38	1.39	1.81	1.63	2.27	3.10	2.13
Transportation	1.16	1.19	0.56	0.90	0.59	0.45	0.60	0.43	0.64	0.78	0.83	0.74
Finance	0.41	0.46	0.34	0.43	0.27	0.32	0.36	0.22	0.33	0.31	0.42	0.35
Services	3.71	2.57	1.32	2.09	1.53	1.15	1.22	1.15	0.86	1.51	1.98	1.74
Unemployment and Non Labor Force	78.14	82.83	86.05	85.25	86.07	89.41	88.57	88.61	88.67	88.13	84.87	86.06
Bukan Usia Kerja	2.41	3.36	3.43	3.24	3.68	2.95	3.20	2.93	2.75	1.92	1.85	2.88

Aggregately, the data in 1997-1999 shows that there is no decrease in labor amount during crisis, in contrast, there is increase of labor absorption though the level is relatively low (Figure II.1). However, from the perspective of labor productivity growth and GDP growth, there was an extreme decrease in 1998 and relatively stagnant in 1999.

This shows that the shifting provides positive impact on labor absorption which is reflected by steady, and even increasing labor absorption. Nevertheless, the output level produced tends to decrease due to a lot of labors working in a sector with low productivity. The shifting into the relatively lower productivity sector is not able to encourage an output increase, reflected by the very low and even negative output growth. Thus, within 1997-1998 (crisis era), the high labor absorption and relatively stable unemployment level are not positively correlated with economic growth.



Figure II.1
Growth of GDP, Labor and Labor Productivity

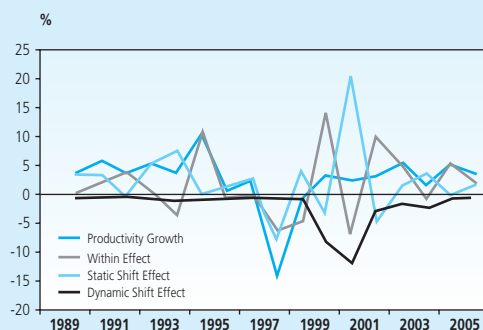


Figure II.2
Decomposition of Sectoral Labor Productivity

How the real phenomenon of labor shifting in Indonesia is the subject analyzed in this paper. This issue has previously researched by Permata (2008). Nevertheless, that research has not reached the measured figure in the form of labor transition matrix across sectors and has not explained the characteristics and the determinants of the labor shifting. This paper specifically discusses the research question of how is the behavior of labor shifting within the same sector or to other sectors in Indonesia during 1998-2008?

The next section of this paper describes the supply and the demand of labor in Indonesia within years, the third section discusses the theoretical framework of the labor shifting and the related previous researches, and Section four discusses the methodology, the data, and the

construction of labor transition matrix. Section five discusses the economic growth impact towards labor absorption, labor shifting among sectors, labor shifting from formal to informal, and labor shifting determinants, while conclusion and suggestion will be the closing section.

II. THEORY

Empirically, the relationship between vacancy amount and unemployment level is proportionally reversed as illustrated by Beveridge curve. Aggregately, the economic contraction is reflected by the curve movement to the bottom right, meaning the increase of unemployment and the decrease of vacancy.

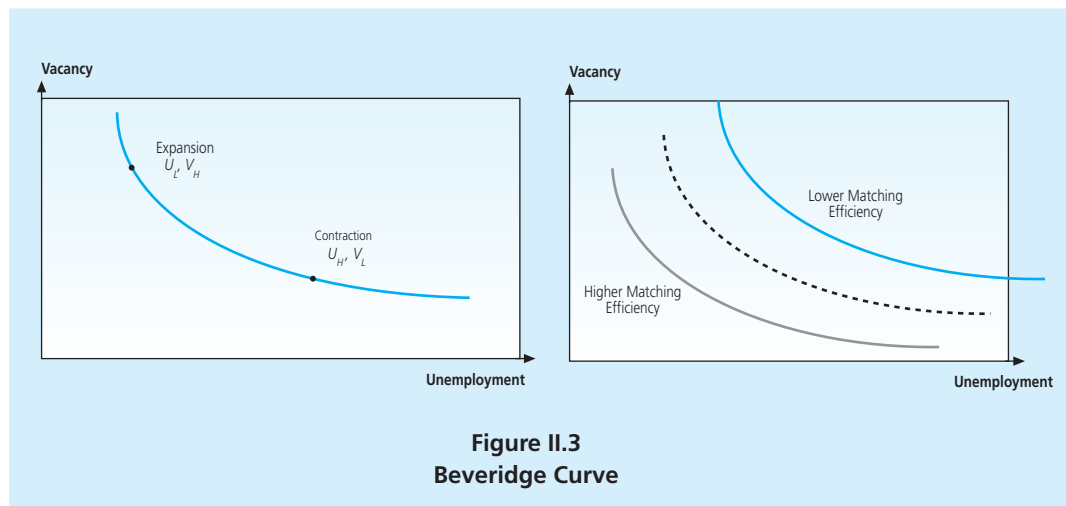


Figure II.3
Beveridge Curve

Beveridge curve is very simple but it can provide initial picture of how the effect of labor industry changes towards labor market including labor mobility occurs among sectors and industries. Actually, the curve contour describes the labor characteristics in an economy. The changes on characteristics will lead to curve changes, both rotation and shifting as well as contour changes.

The labor shifting issue is labor transition among sectors and regions discussed in this paper. One of them is closely related to the level of matching possibility between vacancy opportunity and job seekers (matching process). Graphically, when the matching opportunity is shrunk or, in the other words, the job seeker's opportunity is getting smaller to get a job, the Beveridge curve will shift to the right, vice versa.

The factors influencing the labor utility level and their mobility are very various. The variable topology may be divided into three big categories³, (i) from micro firm perspective, (ii) industry and (iii) macro perspective. Though the firm, industry and macro perspective are consecutive aggregation levels, there are special variables in each perspective which only appear in the related aggregation level. In the topology, each category consists of variables influencing the labor supply and demand and exogenous factors towards the labor market.

In terms of micro firm, there are three sub categories of determinant variable, namely (i) firm scale, (ii) firm's ability to combine labor, capital, intermediate input, and other required inputs, and (iii) the usage efficiency of each input. The firm's ability to innovate reflected by technological coefficient or commonly referred as technological progress belongs to the third sub category. In this perspective, firm culture, firm individual characteristics and internal management quality may have big effect on the intensity of labor utility in the firm.

The second perspective is industry. As previously mentioned, even though industry is an aggregation of each firm, in this context, the determinant variable of sectoral labor absorption is the general characteristics of the industry which is not firm dependent. The sectoral linkage (downstream and upstream), market scale, and industry specific regulation fall into this category. The wage level, the labor absorption elasticity and supply elasticity also belong to this category, which are the weighted average of all firms in the same industry.

The third perspective is macro perspective which is non- industry-dependent and non firm-dependent, but potentially have direct or indirect effect on labor absorption. Almost all of macro variables such as GDP, inflation, rate exchange and other variables belong to this category. The minimum wage level differential, for instance, may affect the working place selection, including different regulations across regions such as severance fund. Macro fluctuations, both domestic and global, are also determinant variables on labor condition, both from the labor supply and demand. The global agreement and integration, for instance, may affect labor transition among countries, which finally affect the domestic labor market.

Depending on labor condition in firm and industry level, empirically, the changing impact of labor macro system is varied. A policy may affect the intensity of labor utility without influencing the labor shifting among regions and industries. Niederle and Roth (2003) analyze the effect of allocation system (clearing house) of gastroenterologists towards the intensity and the mobility of the doctors. Niederle and Roth have found that the decentralized and the centralized clearing house system do not have impact to the doctors' practical location. Thus, this shows that the

³ Parewangi, AMA, 2008, Labor Dynamics: A Micro Firm, Industry and Macro Economic. Perspective, mimeo.

centralized clearinghouse implementation has impact merely on the patient's service coordination and the increase of service coverage.

Without losing its generality, we assume there are only two inputs used by a firm f in industry i , namely capital K_{fi} and labor L_{fi} . Furthermore the firm production level may be specified by using Cobb Douglas function as follows:

$$Q_{fi} = A_{fi} \cdot K_{fi}^{\alpha_{fi}} L_{fi}^{\beta_{fi}} \tag{II.1}$$

The labor demand of the firms will be optimal when the marginal productivity of labor is equal to the real wage paid. The optimization conducted by the firm will produce the following labor demand:

$$L_{fi} = f(A_{fi}, w_{fi}, r_{fi}, S_{fi}, \alpha_{fi}, \beta_{fi}) \tag{II.2}$$

Where S_{fi} reflects the firm's scale, A_{fi} is *technological progress*, w_{fi} and r_{fi} are the input prices. In such specification, the relative intensity of labor and capital utility are possibly varied among industries and even among firms reflected by α_{fi} and β_{fi} .

The capital and labor K_i and L_i itself may be divided into several types. For labor, for instance, it may be further categorized based on certain classification such as educational level that L_{fi} shows *composite labor* which may be specified as certain *nesting* of a series of labor type⁴. Technically:

$$\text{for } L_{fi} = f(L_{fi1}, L_{fi2}, L_{fi3}, \dots, L_{fio}) \text{ for } o \in o \tag{II.3}$$

The wage level is automatically composite wage of each wage in the existing labor type;

$$w_{fi} = f(w_{fi1}, w_{fi2}, w_{fi3}, \dots, w_{fio}) \tag{II.4}$$

The model specification enables the adjustment between the burden of various labor cost and the waging system also labor cost component variation paid by firm such as health support cost, bonus, transportation support, housing and other components. This waging variation is firm dependent aspects.

The difference of this waging system is one of the factors which are directly influencing the labor mobility either among firms in the same industry or among different industries. Empirically, the research conducted by Alan Auerbach and Laurence Kotlikoff (1998)⁵ shows that the firm paying the workers completes with support, bonus and other facilities will prefer dismissing the workers instead of reducing their working hours when the firm is in slope decreasing production level.

4 The nesting form selection refers to empiric theory and adjustment, (Parewangi AMA., 2008).

5 Alan Auerbach and Laurence Kotlikoff, 1998. Macroeconomics. MIT Press.

On the other side, the labor supply by household is specified based on real wage - w_{io}/P , and *leisure* - H . The real wage consists of principal wage, support, bonus and other components which may be counted in money rate. In more complicated specification, this labor supply may be effected by educational level, culture, age, sex, and a series of other variables summed up in vector;

$$L_{io}^s = f(w_{io}, P, H, Z) \quad (II.5)$$

The explicit specification of the equation is empiric question. In terms of macro, the population amount followed by the high participation number of labor force directly affects the labor supply amount. This labor supply may also be affected by labor policy such as *reservation wage*, minimum wage which positively correlates with labor supply, and *unemployment insurance*, which tends to comparatively reverse with labor supply. The *unemployment insurance* recipients have less anxiety to obtain new job and tend to refuse inappropriate job type.

In industry level, *labor market clearing* in industry i may occur when:

$$\sum_{O \in O} \sum_{f \in F} L_{fi} = \sum_{O \in O} L_{io}^s \quad (II.6)$$

The *market clearing* process runs *stochastically*. In addition, the labor opportunity to find appropriate job in line with their desire and at the same time available and needed by the firm is effected by a series of factors.⁶ One of the influencing factors is labor quality which is the function of educational level, skill, working experience covered in vector Z in Equation II.5. Labors with better skill or better managerial ability tend to shift compared with labors who only have technical ability. How high the effect of the variable is one of the aspects measured and analyzed in this paper.

During the process, the labor productivity may change and it is reflected by technology coefficient changes A_{fi} (See Equation II.2). Empirically, this labor productivity dynamics may be decomposed by following Fagerberg (2000) or Peneder (2003),

$$\text{Growth } (LP)_T = \frac{LP_{T,t} - LP_{T,t-1}}{LP_{T,t-1}} = \frac{\sum_{i=1}^n (LP_{i,t} - LP_{i,t-1}) S_{i,t-1} + \sum_{i=1}^n LP_{i,t-1} (S_{i,t} - S_{i,t-1}) + \sum_{i=1}^n (LP_{i,t} - LP_{i,t-1}) (S_{i,t} - S_{i,t-1})}{LP_{T,t-1}} \quad (II.7)$$

Where LP_{T_t} is total of labor productivity in certain period, LP_{it} shows labor productivity of a sector in certain period, and S_{it} shows labor market of a sector in period - t .

6 See Parewangi, AMA (2008) for more detail model specification.

The decomposition method may explain the aggregate growth source of labor productivity: (1) whether due to productivity changes in each sector (within shift effect), (ii) labor market changes of a sector (static shift effect), or (iii) due to changes either from labor productivity or labor composition among sectors (dynamic shift effect).

The labor productivity average may be measured by dividing total output with labor amount. Thus, the labor productivity average will increase if output increase is higher than labor increase. Assumed that *within shift effect* and labor amount are unchanged, the labor shifting to a better⁷ sector will increase the labor productivity average. In contrast, the labor shifting to less superior sector, aggregately, will decrease labor productivity average and aggregately decrease output growth level.

Holzer (1989) states that types of labor shifting have different implication on labor absorption and unemployment level. For instance, cost from labor shifting among regions will tend to be bigger than work transition cost among the same regions. In addition, labor shifting among different industries needs higher adjustment level, especially for industry which needs a very specific skill level, compared with labor shifting among the same industry or work type. The cost to obtain job in new region or new industrial type tends to be higher dealing with transportation, accommodation, and needed specific skill level.

In line with the model specification above, the demand shift on certain industry may cause relative cost changes in producing products. This phenomenon can be seen in literature as sectoral shift. In discharge case, labors having discharged will try to search job, either in the same region and industry, or to other sector or region (shifting). The worst condition occurs when the workers cannot obtain the job everywhere that increase the unemployment level.

Nevertheless, based on sectoral shift model theory, the reallocation process will take time. As the consequence, it will increase the unemployment level and decrease temporarily output. The lag occurs because the time needed before the discharged workers obtain job in other firm or in other sector.

Following things which may be conducted by the policy makers are helping the labor relocation process, helping the discharged labor to search job in other sectors. The policy makers should be responsive on the sectors that are predicted to have massive discharge before the discharges take place and help by providing skills to the labors that they are more flexible in obtaining job in other sectors.

7 'Better' or superior sector may be identified by observing the sector growth rate, output multiplier, income multiplier, its forward and backward linka ge.

Some previously empiric studies have conducted decomposition towards labor migration. Pack, Howard and Christina Paxson (1999) have found that labors shifting to sector that is relatively close from its initial sector will work more productive. The connected sectors may be identified by observing *backward linkage*, *forward linkage*, or correlation among sectors.

Labor shifting characteristics in normal economy condition may vary from labor shifting characteristics in crisis condition. In normal condition, labor shifting may be caused by the changes of sectoral productivity, meanwhile in crisis condition; labor shifting tends to move to "safety net" sector in economy, such as informal sector.

In Indonesia, there are some empirical studies about labor shifting. Analysis of labor shifting conducted by Permata (2008) shows that in normal condition, the labors tend to conduct shifting in a more promising sector which has higher productivity level reflected by positive static shift effect value. Thus, labor shifting is expected to bring positive impact towards aggregate increase of labor productivity, which eventually will provide positive support for economic growth increase. Meanwhile, in 1998 (crisis era), there is negative growth in static shift effect and within effect sectoral. The negative within effect value shows that generally most of the sectors experience the decrease in labor productivity. Meanwhile, the negative static shift effect value indicates the labor shifting phenomenon to the sector having lower labor productivity level.

The shifting behavior in 1998 (crisis) is different from the shifting behavior in other years. In 1998, shifting taken is to avoid unemployment and tends to shift to the lower productivity sector that the support on output formation tends to be low. In addition, the labors in low productivity level tend to obtain relatively low income so that from the purchasing side will decrease. The decrease of purchasing power will likely affect the society consumption level.

III. METHODOLOGY

One of the main contributions of this paper is the labor transition matrix construction among sectors and among formal-informal regarding the data have important role in data processing and, of course, the estimation result is obtained; therefore the procedures conducted are explained as follows.

First is extracting data in Sakernas within period 1998-2008. The raw data of Sakernas consists of individual information of each respondent based on each respondent's answer for each question in Sakernas questionnaire. The data cannot be directly used for analysis need; furthermore, the first thing to do is filtering the data by referring the International Labor Organization (ILO) definition:

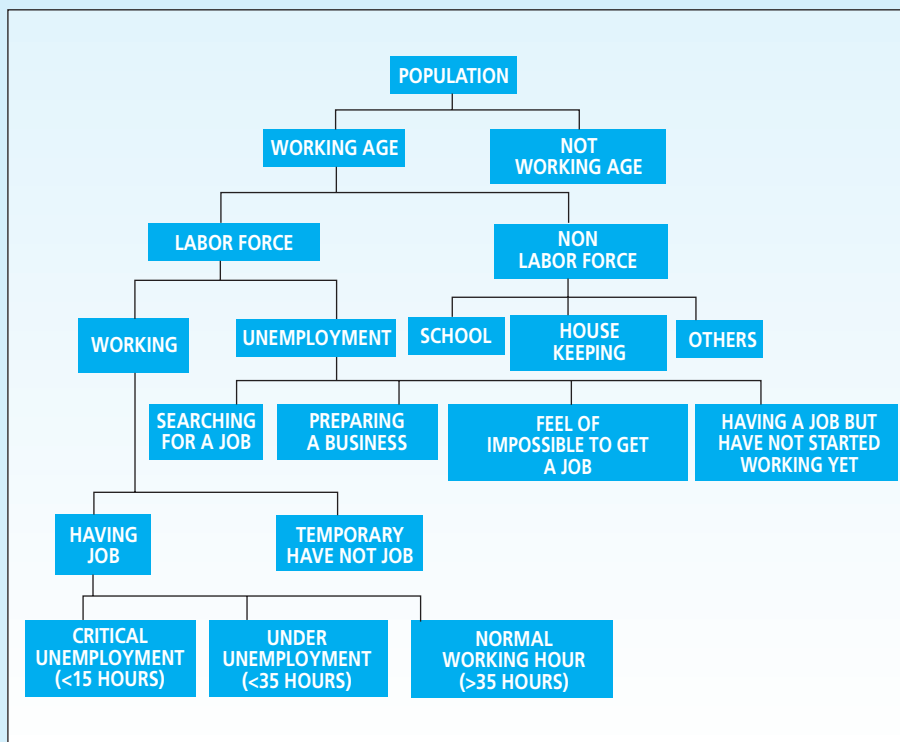
1. Working Age Society = 15-64 years of age
2. Labor force = people at working age who are working and unemployment.
3. Non labor force = people at working age who are not included in labor force and conduct activity, such as student, household or others.

Considering the effect of crisis impact in 1998, there are different definitions for the period before and after the global financial crisis. For the data year 1998-1999, the concept and definition used are as follow:

1. Working is the respondent who fulfils the criteria:
 1. at working age and working a week ago, or:
 2. Having temporary job though not working within a week ago.
2. Unemployment is defined as the respondents who fulfill the four criteria:
 1. at working age,
 2. Not working within a week ago
 3. Not temporary unemployed and
 4. Searching for a job

Meanwhile for data in 2000-2008, the concept and definition used are as follows:

1. Working is respondents who fulfill the criteria:
 1. at working age and working a week ago, or:
 2. Having temporary job though not working within a week ago.
2. Unemployment is defined as follows:
 1. Respondents who fulfill the four criteria: (a) is at working age, (b) not working within a week ago, (c) not having a job during unemployment, and (d) searching for a job, or;
 2. Preparing a business.
 3. Impossible to get a job or already having a job but have not started working yet.



Source: Sakernas Central Bureau of Statistics

Figure II.4
Screening Process of Sakernas Data According to ILO Definition

From all of the respondent data in accordance with the filter above, then the coding is conducted to be able to detect labor shifting. This coding follows the logic as shown in Figure II.5.

Start to Working					
Before August 31			After August 31		
Ever Worked Before					
Yes		No		Yes	
		Last Sector-Fixed			Unemployment / BAK
		STOP			STOP
Is It Stop to Working/Shifting After August 31, 2006					
Yes		No		Yes	
Shift Sector	Last Sector-Fixed		Shift Sector	Unemployment / BAK	
	STOP		Shift Sector	STOP	

Figure II.5
Recoding Labor shifting Among Sectors

After the data is ready, the next procedure is conducting cross tabulation towards the raw data of Sakernas to produce labor transition matrix among sectors in a certain period at the same time digging information about the amount of new labor absorption and unemployment level from 1998-2008. The form of tabulation result is shown in Table II.3.

Cell m_{ij} shows labor shifting from condition i to condition j . For $i, j = U$ means labors are unemployment, thus, cell m_{UU} shows condition of labor status from unemployment to unchanged, meanwhile m_{i0} shows the labor previously work in sector becoming unemployment. For $i, j = 1, \dots, 9$ so m_{ij} shows labor shifting volume from sector - i to sector - j , meanwhile m_{ii} , for instance, shows labors who are still working in the same sector, namely sector - i .

Table II.3 Matrix of Labor Migration											
		Condition after Period - t									
Initial Condition on Period - t	U	U	1	2	3	4	5	6	7	8	9
	1	m_{UU}	m_{U1}	m_{U2}	m_{U3}	m_{U4}	m_{U5}	m_{U6}	m_{U7}	m_{U8}	m_{U9}
	2	m_{1U}	m_{11}	m_{12}	m_{13}	m_{14}	m_{15}	m_{16}	m_{17}	m_{18}	m_{19}
	3	m_{2U}	m_{21}	m_{22}	m_{23}	m_{24}	m_{25}	m_{26}	m_{27}	m_{28}	m_{29}
	4	m_{3U}	m_{31}	m_{32}	m_{33}	m_{34}	m_{35}	m_{36}	m_{37}	m_{38}	m_{39}
	5	m_{4U}	m_{41}	m_{42}	m_{43}	m_{44}	m_{45}	m_{46}	m_{47}	m_{48}	m_{49}
	6	m_{5U}	m_{51}	m_{52}	m_{53}	m_{54}	m_{55}	m_{56}	m_{57}	m_{58}	m_{59}
	7	m_{6U}	m_{61}	m_{62}	m_{63}	m_{64}	m_{65}	m_{66}	m_{67}	m_{68}	m_{69}
	8	m_{7U}	m_{71}	m_{72}	m_{73}	m_{74}	m_{75}	m_{76}	m_{77}	m_{78}	m_{79}
	9	m_{8U}	m_{81}	m_{82}	m_{83}	m_{84}	m_{85}	m_{86}	m_{87}	m_{88}	m_{89}
	m_{9U}	m_{91}	m_{92}	m_{93}	m_{94}	m_{95}	m_{96}	m_{97}	m_{98}	m_{99}	

The test on factors causing labor shifting is conducted by using regression estimation technique multinomial logistic with empiric model specification as follows:

$$P(Y = I | X_j) = \beta_0 + \beta_j X_j + \epsilon_j \tag{II.8}$$

Where Y shows labor shifting status. This dependent variable is a binary variable $Y = 1$ where for shows respondents who conduct shifting, meanwhile for $Y = 0$ shows respondents who do not. The last category becomes the benchmark. Vector X_j shows a series of labor characteristics, namely (i) sex with coding $SEX = 1$ for male with female category $SEX = 0$, as the benchmark, (ii) labor age (AGE) which is continuous variable, (iii) educational level⁸ with coding $EDUC_CAT = 1$ for labor with high educational level and category $EDUC_CAT = 0$ as the benchmark, (iv) working experience status with coding $FORMAL_CAT = 1$ for labors who previously have working experience in formal sector, and category $FORMAL_CAT = 0$ as the benchmark, (v) wage with coding $WAGE_CAT = 1$ for high wage with low wage category ($WAGE_CAT = 0$) as the benchmark,

8 Low educational level ($EDUC_CAT = 0$) is respondents with junior high school enrolment or lower.

and (v) position level with coding $WHITE_COLLAR=1$ for manager level or higher, while category $WHITE_COLLAR=0$ represents the blue collar and as the benchmark.

The estimation is conducted for one period of time, namely in 2004, which is considered as normal condition. The regression is not conducted in panel, but in one certain period of time to see how the opportunity of labor shifting is based on the characteristics (sex, age, education, originate from the formal sector, wage, and white collar)⁹.

Paired Sample Test method is also applied to identify whether the structural break in labor structure in Indonesia occurs or not. In terms of definition, structural break is defined as a big changes both in absorption level and labor mobility, between one certain period of time and another period of time.

IV. RESULT AND ANALYSIS

IV.1. *Structural Break in Labor Market in Indonesia*

Labor structure identification by using Paired Sample Test shows that there is no structure change observed in Indonesian labor market within 1998-2008 (see Table II.4). There are some reasons assumed to be the background of the result, first is the labor law which protects the labors so that the cost paid by the company to conduct labor reduction becomes high. Second, turnover the old labors with the new ones reaches approximately 20-30 years in which the structure changes may occur within the period. Third, there is limited skill of labor in Indonesia that makes the labors hard to shift. This last point will be tested in factors influencing labor shifting.

Within 1997-2008, there are several periods having potential to contribute big changes in Indonesian labor market, first is 1997-1998 period, which is signed by Asian financial crisis, but there is still increase in labor amount; second is 2000-2004 period which is relatively stable and may be categorized as normal condition; third is 2005 and 2008 period when there is mini crisis, followed by decrease of labor amount; and fourth is 2006-2007 period, which is signed by the increase of labor amount.

Though statistically the result of paired sample test above shows that there is no structural break, the effect of domestic and external fluctuation still contributes the dynamic of labor

9 Stronger model specification alternative is *panel logistic*:

$$\ln(N_{ijt}) = \delta_i + \theta_j + \mu_t + \beta_0 Z_{ijt} + \beta_1 X_{ijt} + \varepsilon_{ijt}$$

where N_{ijt} = amount of labor shifting from industry i to industry j in period t , θ_i = set of dummy variable for origin industry, θ_j = set of dummy variable for destination industry, μ_t = dummy variable for time, Z_{ijt} = industry proximity, X_{ijt} = Labor characteristics (age, educational level, formal/informal, white/blue collar) who is shifting from industry i to industry j in period t .

Table II.4
Analysis Result of Paired Sample Test

		Paired Differences				t	df	Sig. (2-tailed)	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower				Upper
Pair 1	Y1998 - Y1999	-.00030	.008222	.001012	-.00232	.00172	-.299	65	.766
Pair 2	Y1999 - Y2000	-.01281	.065595	.008688	-.03021	.00460	-1.474	56	.146
Pair 3	Y2000 - Y2001	-.0011	.00920	.00122	-.0035	.0014	-.864	56	.391
Pair 4	Y2001 - Y2002	.0005	.01061	.00133	-.0022	.0031	.354	63	.725
Pair 5	Y2002 - Y2003	.0007	.01176	.00143	-.0021	.0036	.516	67	.608
Pair 6	Y2003 - Y2004	-.0005	.00567	.00070	-.0018	.0009	-.652	65	.517
Pair 7	Y2004 - Y2005	.0006	.00551	.00068	-.0007	.0020	.893	65	.375
Pair 8	Y2005 - Y2006	.0005	.00445	.00055	-.0006	.0015	.830	65	.410
Pair 9	Y2006 - Y2007	.0005	.00874	.00102	-.0015	.0026	.532	73	.596
Pair 10	Y2007 - Y2008	.0008	.00612	.00068	-.0006	.0021	1.097	79	.276

absorption and mobility among sectors in Indonesian labor market. As previously described, there is massive discharge during crisis in 1997-1998, but in fact in 1998, the labor absorption have positive increase of 2,7% (Table II.1). This means, aggregately, the labor absorption level during crisis remains the same and the labor shifting occurs, especially to the informal sector. This is in line with the paired sample test above.

During the crisis in 1997-1998, labor shifting to informal sector is 8.7% occurring in most of the sectors, except Agriculture sector. As previously illustrated in Introduction chapter, the increase of informal labor in Agriculture sector is 13.1%, Building 27.2%, Trade 1.2%, Transportation 6.8% and Services is 0.3%.

The second crisis experienced by Indonesia is in 2008 with smaller scale. By using primary data through survey conducted by Bank of Indonesia¹⁰, the survey result of DSM shows the decrease of labor growth from 2007-Quarter I-2009, even it has negative growth of minus 2,48% in Quarter I-2009 (Figure II.6).

From the Figure II.7, it is seen that most labors used by the firms are permanent labors¹¹ (59.06%). However, the contract labor composition, if compared with period 2006-2008, increases every year. That shows that the firms try to reduce the high cost of labor appeared when the firms conduct labor discharge.

¹⁰ Real Sector Special Survey (SKSR) is conducted by Directorate Statistics of Economy and Monetary (DSM), Bank of Indonesia, towards 256 firms in Agriculture, Mining, Industry Manufacturing, Construction, and Trade sectors.

¹¹ Definition used: PERMANENT LABOR is labor having fixed working hour every day and obtaining pension fund, CONTRACT LABOR is labor hired based on certain contract/project and not obtaining pension fund, and NON-PERMANENT LABOR is labor with certain working hours and without pension fund or firm's facility.

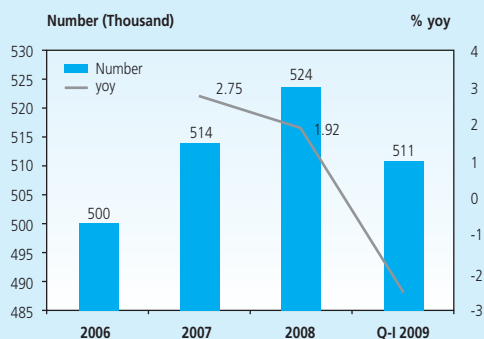


Figure II.6
Labor Growth from 2007 to Quarter I-2009

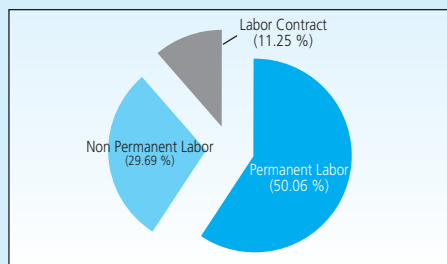


Figure II.7
Labor Status Employed by Firms

Meanwhile, due to the global crisis in 2008, there are 9,77% firms reducing the working hours in Quarter-4 and 8,59% firms reducing in Quarter-1 2009 (Figure II.8). Most firms reduce the working hours whose average is one shift consecutively in 2008 and 2009.

The highest labor reduction conducted by the firms is 15.62% in Quarter 4-2008 and 21.48% in Quarter 1-2009 (Figure II.8). The reduction of labors is mostly for contract labors, with permanent reduction (fired) both in 2008 and 2009. This is in line with the theory that firms tend to substitute their permanent labors with contract labors to reduce the wage cost component other than the principal salary.

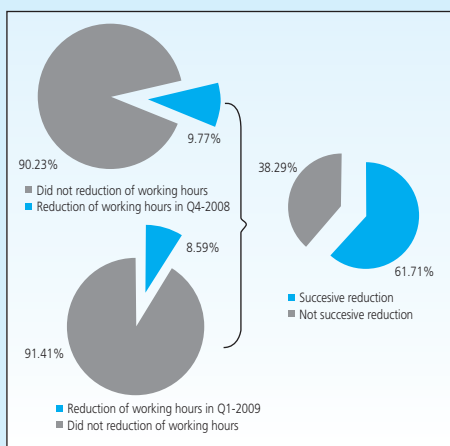


Figure II.8
Working Hours Reduction (Shift)

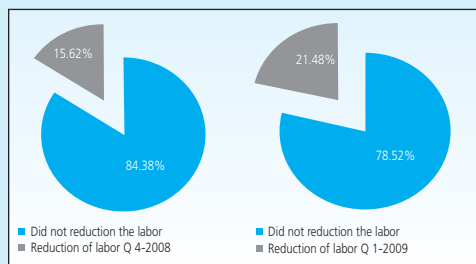
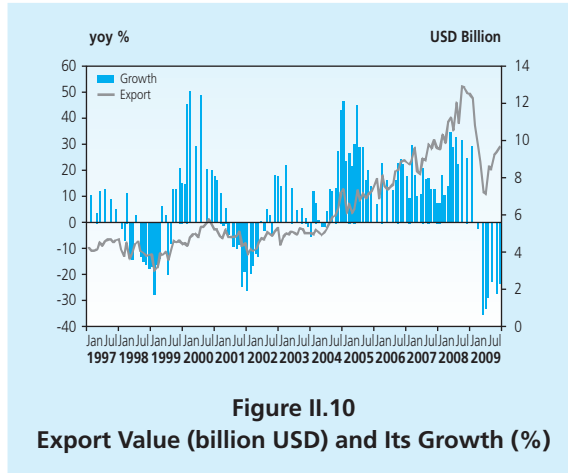
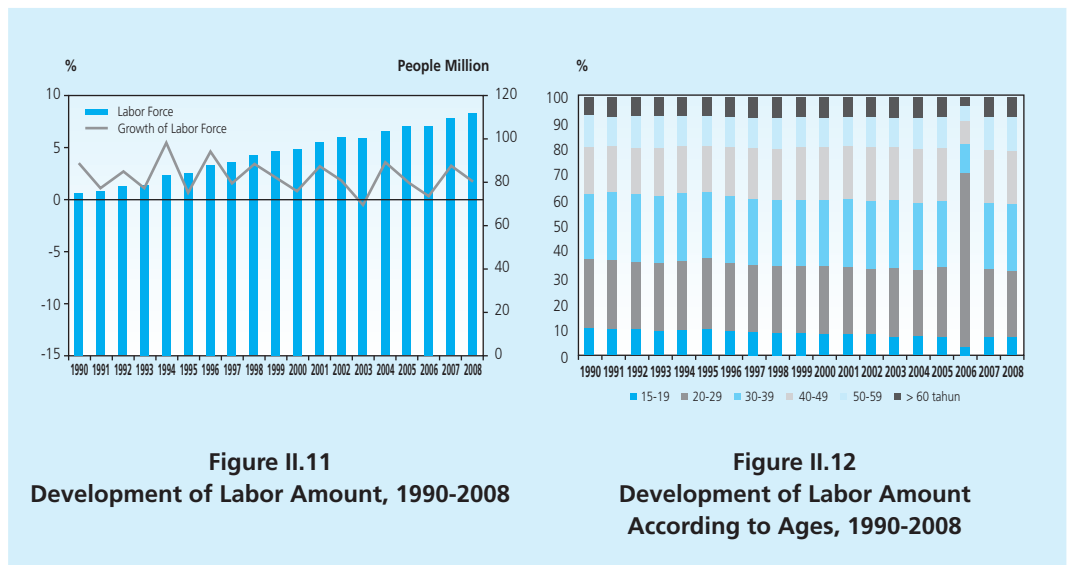


Figure II.9
Labor Reduction

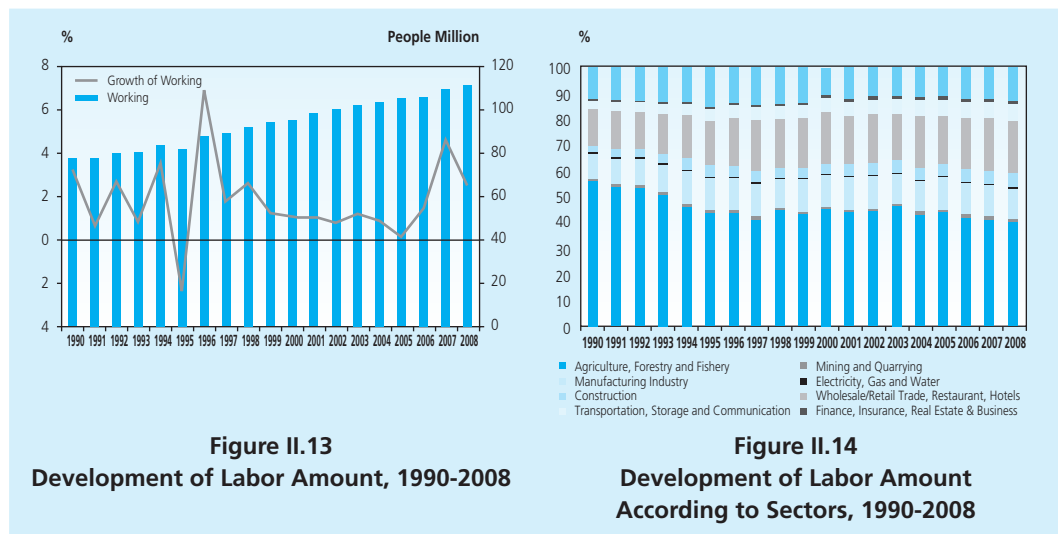
Based on survey result, the main reason of a firm reducing the working hours is cost efficiency (37.61%), global demand contraction (34.19%) and decrease of domestic demand (19.66%). Most firms which reduced their labor are export sales-oriented. During the crisis, the export has negative growth since November 2008 to July 2009 (See Figure II.10).



From the labor supply side, within 1990-2009, Indonesian labor force increases approximately 2.30% per year (Figure II.11). The labor force growth once decreases into -0.46% in 2003. Averagely, most labor force ranges between 20-29 years of age (31%), 30-39 years of age (24%), and 39-40 years of age (18%) as seen in Figure II.12. The big composition in both age ranges shows that Indonesia has productive people to work.

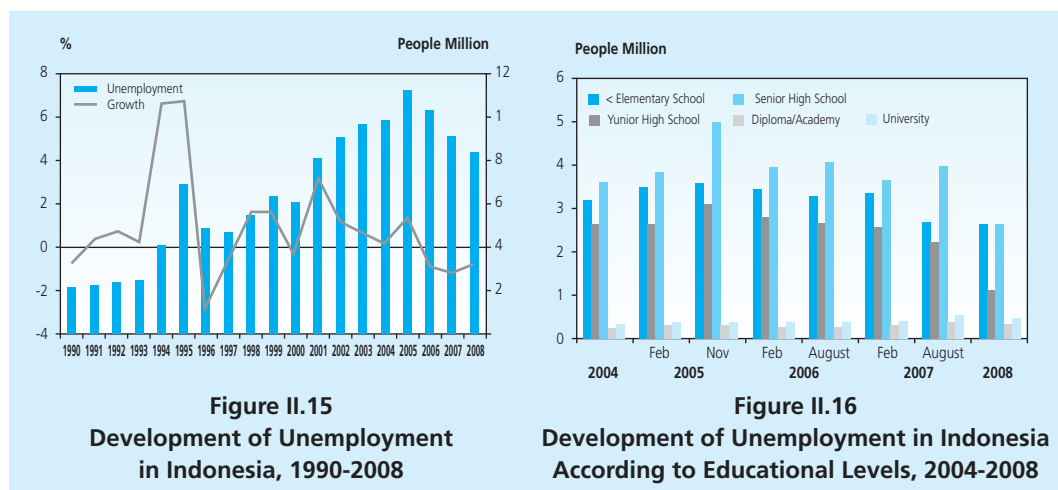


The average growth of labor amount (yoy) within 1997-2009 is 1.90% (Figure II.10). Meanwhile, the biggest labor absorption occurs in Agriculture sector (45.39%), and then followed by trade sector (18.62%), and Services sector (12.51%) as seen in Figure II.13.



The average growth of unemployment amount in Indonesia within 1990-2008 is 10.50% (Figure II.15). During crisis, there is an increase in unemployment in 1998 and 2005. Most unemployment comes from low educational level, namely primary school to high school (Figure II.16).

The description from the labor supply side shows that, during the crisis, people in productive age tend to be unemployed due to the lack of new vacancies. Meanwhile, the old labors tend



to shift among sectors, especially to informal sector. This phenomenon is in line with paired sample test, which shows that there is no structural break in Indonesian labor market.

IV.2. Labor Shifting Determinant

The calculation result of labor matrix shows that most labors do not shift across sectors. The main reason is the limitation of skill to work in other sectors. The sector with high percentage of non-shifting labor is Agriculture, with average percentage of 97.8%.

Seemingly, in 1999 crisis, the percentage of non shifting labor is lower, indicating either higher labor migration to other sectors or higher unemployment (Table II.5 and Figure II.17). Based on the transition matrix 1998-2008 (see Appendix), the transition matrix tends to be non-symmetric, which indicate the imbalances in labor migration across sectors.

Table II.5 Percentage of Non-Shifting Sectoral Labor from Its Sector (%)												
Sectors	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Agriculture	97	97	97	99	99	99	99	97	97	97	96	98
Mining	90	91	94	94	95	96	95	96	95	92	92	94
Industry	90	91	94	94	94	95	95	94	94	92	91	93
Electricity	86	84	94	96	92	95	97	96	94	94	93	93
Construction	86	87	91	93	92	94	93	93	93	91	90	91
Trade	96	96	96	96	97	98	98	97	97	95	94	96
Transportation	95	95	96	96	96	98	97	97	96	94	94	96
Finance	90	86	93	93	93	94	93	95	94	91	89	92
Services	94	95	96	95	96	97	96	96	96	95	94	95

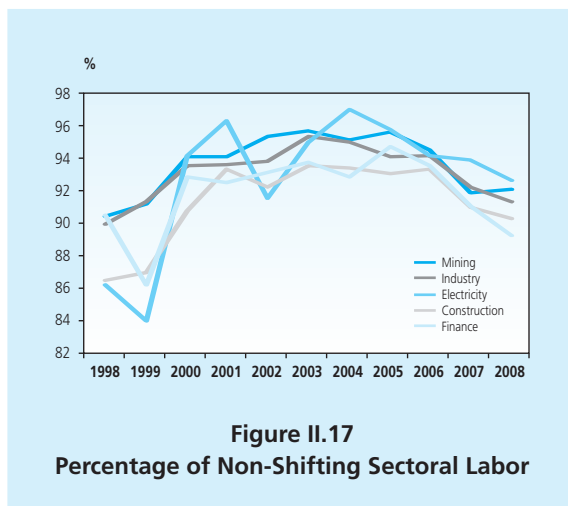


Figure II.17
Percentage of Non-Shifting Sectoral Labor

The inferential test of the labor shifting phenomenon is conducted using binomial logistic and is presented in Table II.6, while further calculation to obtain the marginal effect of regressor are given in Table II.7. The estimation is conducted partially for each sector as shown by column on the table. This is intentionally carried out to see the direct effect of the labor characteristic on their shifting probability for each sector.

Generally, the estimation result shows that different educational factor (EDUC_CAT) affects the labor shifting probability, except in Electricity and Transportation sectors. The higher the educational level, the bigger the probability for labor to shift from Trade and Financial sectors. In contrast, in Agriculture, Mining, Industry and Electricity sectors, labors with low education have less probability to quit and shift from these sectors.

The sex variable only affects labor shifting in Agriculture, Mining, Industry, Construction and Electricity sectors. In these sectors, male labors have bigger shifting probability than the

Table II.6
Model Estimation Result of Labor Shifting Opportunity

Regressor	1. Agriculture	2. Mining	3. Industry	4. Electricity	5. Construction	6. Trade	7. Transportation	8. Finance	9. Services
Constant	-3.24164*	-4.12619*	-3.74457*	-4.22396*	-3.80427*	-3.49798*	-4.0437*	-4.07752*	-3.53118*
UMUR	-0.00108	0.001959	-0.00067	-0.00513	-0.00495*	0.002101	-0.00034	-0.00485	0.002225
EDUC_CAT	-0.33363*	-0.2539**	-0.1336**	0.080468	-0.20646*	0.119588**	0.047819	0.570363*	-0.08274
WAGE_CAT	0.346283*	0.160391	0.669032*	0.020468	0.274938*	0.183175*	0.188146*	-0.04253	0.281982*
JOB_CAT	-0.18475*	0.049521	-0.4289*	0.099896	0.091564	-0.03583	-0.1528**	-0.5498*	-0.21861*
FORMAL_CAT	1.489618*	1.705862*	2.657704*	1.396568*	1.64088*	1.623373*	1.605011*	2.06662*	1.998386*
SEX	0.325428*	0.270156**	0.209467*	NA	0.746603*	0.089385	0.863927*	-0.02985	0.029078

Note: Estimation is conducted by using logistic regression technique. Dependent variable: Y=1 (*shifting*) and Y=0 (*non-shifting*).

*) Significant on $\pm = 1\%$, **) Significant on $\pm = 10\%$, ***) For Electricity sector, variable SEX is removed because the variable response is perfectly associated with the dependent variable. Column $i=1, \dots, 9$ shows the estimation result for the related sector.

Table II.7
Marginal effect

Regressor	1. Agriculture	2. Mining	3. Industry	4. Electricity	5. Construction	6. Trade	7. Transportation	8. Finance	9. Services
Constant	-0.81041*	-1.03155*	-0.93614*	-1.05599*	-0.95107*	-0.8745*	-1.01093*	-1.01938*	-0.88279*
UMUR	-0.00027	0.00049	-0.00017	-0.00128	-0.00124*	0.000525	-8.60E-05	-0.00121	0.000556
EDUC_CAT	-0.08341*	-0.06348**	-0.0334**	0.020117	-0.05162*	0.029897**	0.011955	0.142591*	-0.02069
JOB_CAT	0.086571*	0.040098	0.167258*	0.005117	0.068734*	0.045794*	0.047037*	-0.01063	0.070496*
WAGE_CAT	-0.04619*	0.01238	-0.10723*	0.024974	0.022891	-0.00896	-0.0382**	-0.13745*	-0.05465*
FORMAL_CAT	0.372404*	0.426466*	0.664426*	0.349142*	0.41022*	0.405843*	0.401253*	0.516655*	0.499596*
SEX	0.081357*	0.067539**	0.052367*	NA	0.186651*	0.022346	0.215982*	-0.00746	0.00727

Note: Marginal effect is calculated based on standard procedure by using logistic distribution. With coding Y = 0 for *Non-Shifting* category, this *marginal effect* shows the marginal probability of certain regressor category relative to its benchmark category. *Marginal effect* value = 1 shows a certainty of 100% for the labor to shift. Script of the program is available on the writer upon request.

female labor. And the biggest marginal effect is in Transportation sector where the shifting probability of male is higher 21.9% than the female labor.

Meanwhile, the labor's age (AGE) does not have significant effect on the labor shifting probability. Though the age effect is statistically significant in Industry sector, its marginal effect is very low, 0.12%.

The difference of wage level (WAGE_CAT) has significant effect in Agriculture, Industry, Transportation, Finance and Services sectors. In these sectors, the high wage laborers have lower probability to shift than the low wage labor. In Finance and Industry sectors, the marginal effect consecutively are -0,137 and -0,197, which means the probability for the high wage labor to shift is lower 13.7% in Finance and 19.7% in Industry.

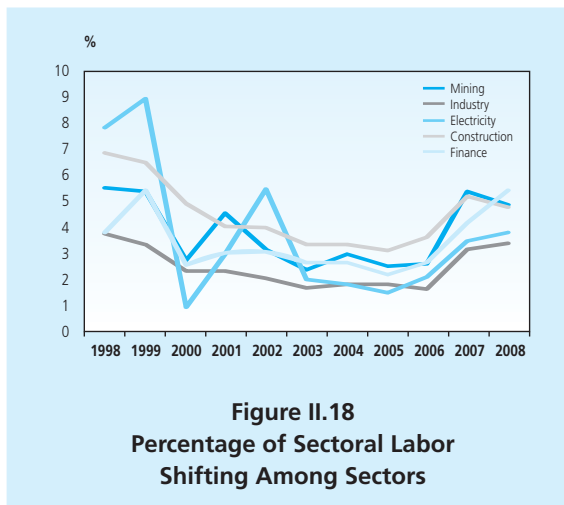
The previous formal working experience (FORMAT_CAT) has a significant and high marginal effect on the labor shifting probability for all sectors. It is interesting that the laborers with previous formal working experience averagely have 45% higher probability compared to laborers without formal working experience. In Industry sector, the probability is even higher by 66.4%, which is the highest marginal effect among the observed sectors.

Further analysis on this inferential test result is conducted by confronting it to the sectoral condition and respondents' perception upon various labor conditions they have experienced.

Construction sector (b_5) has the highest percentage of shifting laborers during the observed period, whose average is 4,6% and followed by Mining sector 3,9% and Electricity sector of 3,7% (Table II.8 and Figure II.18). It seems that the labor migration is relatively high in 1998, 1999, 2007 and 2008, when Indonesian faced economic instability.

Table II.8
Percentage of Labor Shifting Among Sectors (%)

Sectors	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Agriculture	0.6	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.6	0.9	1.1	0.55
Mining	5.6	5.4	2.8	4.6	3.2	2.4	3.0	2.5	2.6	5.4	4.9	3.86
Industry	3.8	3.4	2.3	2.4	2.1	1.7	1.9	1.8	1.7	3.2	3.4	2.50
Electricity	7.9	9.0	1.0	3.0	5.5	2.0	1.8	1.5	2.1	3.5	3.8	3.75
Construction	6.9	6.6	5.0	4.1	4.0	3.3	3.3	3.1	3.6	5.2	4.8	4.55
Trade	1.1	1.3	1.1	1.4	0.9	0.7	0.7	0.7	0.9	1.6	2.0	1.13
Transportation	2.9	2.4	1.9	2.3	2.6	1.1	1.4	1.7	2.1	3.8	3.4	2.33
Finance	3.8	5.4	2.6	3.1	3.1	2.7	2.7	2.2	2.7	4.2	5.4	3.46
Services	2.2	2.0	1.6	1.9	1.6	1.1	1.3	1.1	1.1	1.8	2.3	1.65



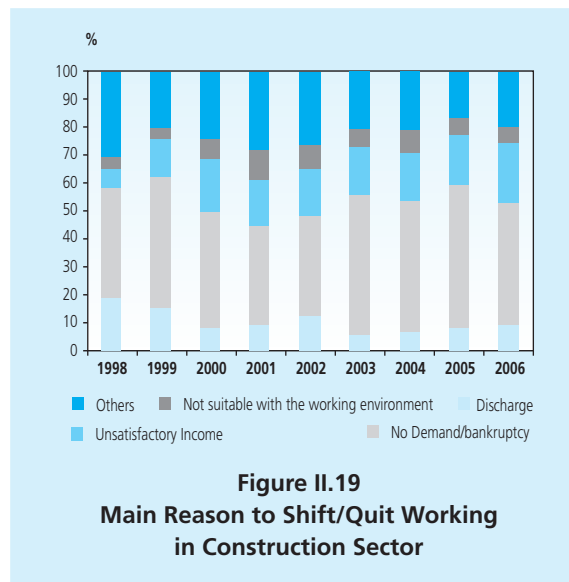
The estimation result shows that except the wage level (WAGE_CAT), all variables effect labor shifting probability on Construction sector¹². In this sector, male labors tend to have 18.7% bigger probability to shift to other sectors. For managers or higher level positions, the shifting bigger probability is 6.87% higher than blue collar labors. The estimation result also shows that educated labors have lower shifting probability of 5.1% to shift than uneducated labors. The biggest marginal effect among the labor characteristics on labor shifting probability is the previous working experience; for labors who once previously work in formal sector, the probability to shift from Construction sector is 41.02% higher.

Based on Sakernas data, the first targeted sector of labor migration from Construction sector is Agriculture with average 2.35% during 1998-2008 and is followed by Trade sector (0.77%). In 1998 and 1999, the labor percentage conducting migration from Construction sector to Agriculture sector is 4.1% and 3.1%. Meanwhile, in general the labor migration from Construction sector to Electricity and Finance sectors is very low.

The survey result shows the main reason of labors to shift from Construction sector is due to the lack of demand/bankruptcy with average 41,6% during 1998-2007 (Figure 19). Another reason the labors shift/quit from this sector is unsatisfactory wage, but the reason is not valid in 1998, while the dismissal reason is quite high in 1998 and 1999.

In 1998 and 1999, the Agriculture sector is the biggest destination to migrate from other sectors. In contrast, the labors amount migrating from Agriculture sector to other sectors tends

¹² It is necessarily noted that the estimation result is for period 2005. The dynamic potency of time varying effect is not calculated in this paper.



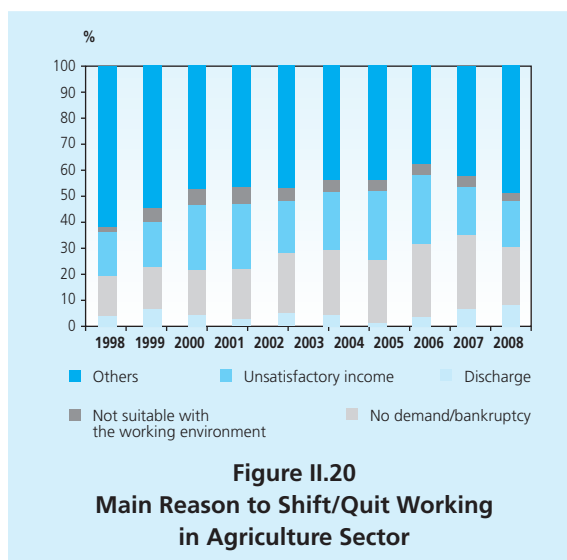
to be lower. The main destination sector of labor migration from Agriculture sector with is Industry, Trade and Construction sectors whose average percentages consecutively are 0.15%, 0.13% and 0.12% in 1998. The labor migration from Agriculture sector to Electricity and Finance sectors is very low.

Based on estimation result, the big marginal effect on labor shifting in Agriculture sector is the previous formal working experience. For labors who previously work in formal sector, the tendency to leave Agriculture sector is higher 37.2% than labors who previously work in non-formal sector. High-educated labors in Agriculture sector have probability to shift 8.3% lower than the low-educated labors. High wage level labors also have lower shifting probability of 4.6% than low wage labors.

In general, the male labors aged 35 years old¹³, high-educated, and previously worked in formal sector, have probability of 40.92% to remain working in Agriculture sector. The older the labors, the bigger tendency to remain in Agriculture sector. Based on Sakernas survey result, the average proportion of respondents within 1998-2008, which shifted due to unsatisfactory income is 21.5%. The shifting due to lack of demand of business bankruptcy is 21.98%, while other factor is 47.4% (See Figure II.20).

Agriculture sector is the main destination of labor migration from Mining sector, while the labor migration to Electricity and Finance sectors is very low. The estimation result shows

¹³ The number of 35 years of age is based on the average of respondents' age in two independent variable categories. Though other number may be selected to see its probability to shift.



that only sex, education and working experience have significant effects on labor shifting probability in Mining sector, while the age, labor position and wage do not have significant affect.

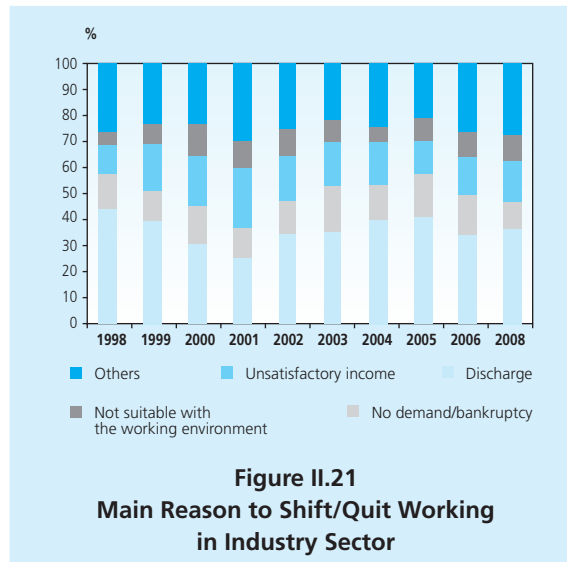
In Mining sector, the labors with previous formal working experience have 42.6% higher shifting probability. The educational level itself has negative effect where the probability of high educated labor is 6.3% lower to shift from Mining sector compared to the uneducated one.

In general, male labors in Mining sector who are 35 years old with high educational level, with previous formal working experience, with high wage and in managerial position, have 53,14% higher probability to remain working in this sector. The main reasons of labors from Mining sector to shift to other sectors are no demand or bankruptcy of 23.8% and other factors of 26.57%.

For Industry sector, an out-migration labor is higher than in-migration.. The main destination sector of labor migration from Industry sector is Agriculture and Trade sectors, especially in 1998, 1999, and 2008. Further investigation may provide explanation about the estimation result.

All variables except age, have significant effect on labor shifting probability in Industry sector. The estimation result shows that high-wage labors have shifting probability of 10.7% lower than low-wage labors. This is in line with the survey, where the reason of unsatisfactory income contributes only slightly above 16.6%.

On the other side, the white collar workers have higher shifting probability of 4.0% than the blue collar labors. The Manufacturer workers with high-education have lower probability of 3.34% than the uneducated ones. In general, the 35 years old male workers in Industry sector with high educated, in managerial position, with high wage and previously work in formal sectors, will have higher probability of 19,86% to remain in this Industry sector. This means the workers having those characteristics have probability of 80.14% to leave Industry sector. This shifting opportunity is the biggest one among 9 observed sectors. In the Industry sector, the main reason of shifting is due to dismissal by 41.3% in 2005.



Along with Agriculture sector, Trade sector is the main destination sector of labor migration from other sectors. In 1998, 1999 and 2008, the labor percentage conducting migration from Finance sector to this sector is relatively high, which are 2.3%, 1.9% and 1.9% consecutively. Besides other factors, the main reason of labors migration from this sector is due to unsatisfactory income (the average within 1998-2008 is 29.32%).

The estimation result shows that among all of explanatory variable internalized into the model, only educational level (EDUC_CAT), position level (JOB_CAT) and previous working experience in formal sector (FORMAL_CAT) have significant effect on labor shifting probability from Trade sector to other sectors.

In this Trade sector, labors with previous formal working experience have higher shifting probability of 40.58%. White collar labors have higher shifting probability of 4.58%, while high educational labors also have higher shifting probability of 2.99% than the uneducated

ones. In general, a 35 years old male labors working in Trade sector with high education, high wage, in managerial position and with previous formal working experience , will have higher probability of 36,12% to remain in Trade sector. This means that labors with those characteristic have the probability of 63.88% to shift from Trade sector. At glance, the estimation result is quite interesting regarding the shifting from Trade sector is relatively low since the labor force tends to focus on Trade sector.

Transportation sector has similar characteristics with Trade sector. Labors working in this sector will relatively remain in this sector. Based on the estimation result, only age (AGE) and educational level that do not effect on labor shifting opportunity from Transportation sector.

After formal working experience variable (FORMAL_CAT), the second highest marginal effect is sex (SEX) where the male labors in Transportation sector have higher probability of 21.59% than the female labors. The workers in manager level only have probability of 4.7% higher to shift compared to blue collar one.

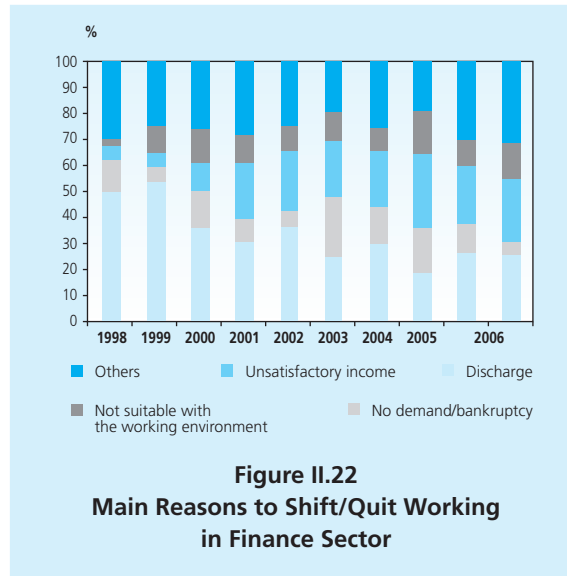
In Transportation sector, the main shifting reason is unsatisfactory income factor with average proportion of 35.98% during 1998-2008. Statistically, the inferential test shows that low-wage labors have higher shifting probability of 3.82% than the high-wage labor. The marginal effect of wage in Transportation sector is the biggest five after Finance, Industry, Services and Agriculture sectors.

For Services sector, the main destination of labor migration from this sector is Agriculture and Trade sectors. Based on estimation result, the most influencing variable on labor shifting in Services sector is previous working experience in formal sector (FORMAL_CAT) with marginal effect of 49.9%. In this sector, sex does not affect labor shifting probability as in Finance and Trade that tend to be non sex-dependent as in Mining, Construction, Industry, and Agriculture sectors.

Age and educational level do not affect labor shifting probability in Services sector. High wage labors tend to have lower probability of 5.46% than low wage ones. This is a bit contradictive with Sakernas survey data that the main reason labors shift/quit from Services sector is due to other factors and unsatisfactory wage whose average proportion is 22.34% within 1998-2008. On the other side, workers in manager level or above tend to have higher probability of 7.05% to leave the Services sector than the blue collar.

Finance sector is the most dynamic sector among the nine existing sectors. The main destination sector of labor migration from this sector is Trade (1.22%), Services (0.56%), Industry (0.49%) and Agriculture (0.49%). Even in 1998, 1999 and 2008, the percentage of labor migrated from Finance sector to Trade is consecutively 2.3%, 1.9% and 1.9%.

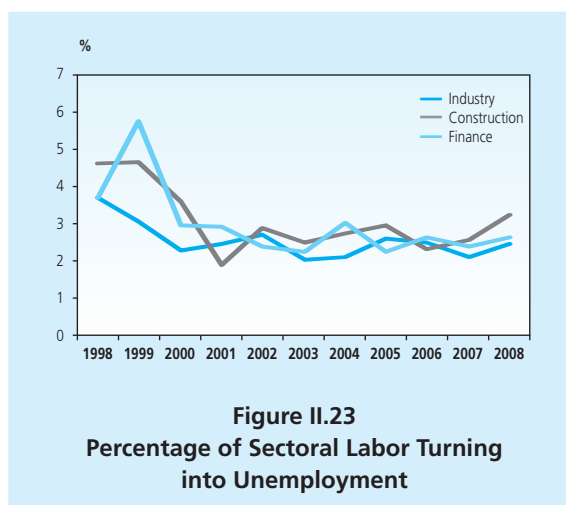
The main reason of labors shift/quit from this sector is due to dismissal, especially in 1998 and 1999, which reach 49.5% and 53.3% consecutively (Figure II.22). The unsatisfactory income is also one of the migration reasons, except for the year of crisis.



For 35 years old and high educated male labors in Finance sector, in managerial position, with high wage and with previous formal working experience, will have higher probability of 55,8% to stay and work in Finance sector. In the opposite, male labors of 35 years old, low educated and having no previous working experience in formal sector will have definite probability of 100% to remain in this sector. Besides Finance sector, the last characteristic is only owned by Electricity sector.

The explanatory variables which are very influencing on labor shifting probability in Finance sector are previous formal working experience (FORMAL_CAT), education (EDUC_CAT), and wage level (WAGE_CAT), with consecutive marginal effect 51.67%, 14.26% and 13.75%. The effect of education and wage levels on labor shifting probability in Finance sector is the biggest among all sectors observed. Furthermore, the marginal effect of formal working experience in Finance sector is the second largest effect after Industry sector. These characteristics emphasize the high dynamics of labor movement in Finance sector, along with its high exposure which make this sector easily to be affected by external shock. Relatively, Finance sector has the second largest unemployment level of 3.00% after Construction (3.08%) and higher than Industry (2.54%). See Table II.9 and Figure II.23.

Table II.9 Percentage of Sectoral Labor Turning into Unemployment												
Sectors	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Average
Agriculture	0.15	0.21	0.26	0.26	0.23	0.16	0.23	0.28	0.36	0.23	0.39	0.25
Mining	3.02	2.90	2.88	0.78	1.17	1.26	1.44	0.96	1.89	1.41	1.28	1.72
Industry	3.71	3.05	2.27	2.44	2.70	2.02	2.07	2.59	2.48	2.09	2.47	2.54
Electricity	4.29	5.37	0.00	0.00	2.12	2.46	1.11	1.16	2.32	1.17	1.68	1.97
Construction	4.62	4.67	3.58	1.87	2.87	2.48	2.73	2.95	2.31	2.55	3.22	3.08
Trade	1.34	1.24	0.94	1.11	0.89	0.79	0.76	1.22	0.96	1.13	1.42	1.07
Transportation	1.67	2.47	1.00	1.62	1.37	0.88	1.08	0.89	1.24	1.25	1.27	1.34
Finance	3.71	5.78	2.97	2.93	2.41	2.27	3.02	2.25	2.65	2.40	2.64	3.00
Services	1.75	1.82	1.11	1.49	1.28	1.11	1.14	1.32	0.84	1.06	1.42	1.30



V. CONCLUSION AND SUGGESTION

This paper discusses the labor shifting phenomenon in Indonesia and measures the factors influencing the tendency or labor shifting probability. The first conclusion obtained from this paper is there is no structural change in Indonesian labor market, even though the domestic and external fluctuation contributes to the dynamics of Indonesian labor absorption and their sectoral mobility.

The second conclusion, most of labors do not conduct sector shifting. Of nine observed sectors, the Agriculture sector has the lowest shifting level. This is allegedly due to the lack of labor's skill in that sector supported by the negative marginal effect of the educational level on the labor shifting probability in Agriculture sector. In Agriculture, high educated workers tend

to have lower shifting probability of 8.34% than the low education workers. For high wage labors, the shifting probability also 4.6% lower than the low wage ones.

In addition, the estimation result also shows relatively lower marginal effect of previous formal working experience in Agriculture compared to other sectors. For labors who have formal working experience, the tendency to leave Agriculture sector is 37,2% higher, while the average for all sectors is 45% higher than those without formal working experience. Even in Industry, the probability to shift is 66.4% higher.

The third conclusion, the Industry is a sector with constant labor reduction and is not followed with in-migration to that sector. In addition, most unemployment is also originated from this sector. The labor shifting is mostly caused by unsatisfactory income, dismissal, and bankruptcy. This conclusion is supported by estimation result showing that for male labors who are 35 years old, high educated, in manager position with high wage and have previous formal working experience, then the three largest probability of not shifting and remaining in the same sector is in Electricity with probability 70,15%, Finance (55,8%) and Mining (53,13%). Contrary to these sectors, the largest probability for the labor to shift is in Industry (80.14%), Construction (64.3%) and Transportation (62.4%).

The fourth conclusion, labor shifting tends to shift towards Agriculture and Trade sectors. These sectors may become the safety net during the massive labor reduction. Furthermore, Agriculture is also able to absorb unemployment but not labor force.

The fifth conclusion, the educational factor does not affect the labor shifting probability in Electricity and Transportation sectors. For Trade sector, the higher the educational level, the higher probability to shift from that sector by 2.98%. This also applies for the high educated labor in Finance sector with probability of 14.26% higher than the uneducated ones, and this is the largest marginal effect among observed sectors.

The sixth conclusion, the sex variable (SEX) is only significant in Agriculture, Mining, Industry, Construction and Electricity which are sex-dependent sectors. In these sectors, the male labors have higher shifting probability than female labor, and the largest tendency occurs in Transportation sector with probability of 21.9% higher.

The seventh conclusion, the labor's age does not have significant effect on labor shifting probability. Statistically, the variable age affect the labor shifting opportunity only in Industry sector but with a very low marginal effect value of 0.12%.

The eighth conclusion, the wage level only has significant effect in Agriculture, Industry, Transportation, Finance and Services sectors. In these sectors, high wage labors have lower

tendency to shift, especially in Finance and Industry sectors whose marginal effects are -0,137 and -0,197. This means high wage labors have shifting probability of 13.7% and 19.7% lower than the low wage ones.

The ninth conclusion, the Finance sector is the most dynamic sector of nine existing sectors which the highest migration target is to Trade sector (1,22%), Services (0,56%), Industry (0,49%) and Agriculture (0,49%). The most influencing explanatory variables towards labor shifting tendency from Finance sector are previous formal working experience (FORMAL_CAT), education (EDUC_CAT), and wage level (WAGE_CAT) with consecutive marginal effect of 51.67%, 14.26% and 13.75%. The effect of education and wage levels on labor shifting probability in Finance are the largest among all sectors observed. In addition, the effect of formal working experience on shifting probability in Finance sector is the second highest after the Industry sector.

This paper opens opportunity for further researches, namely modeling development into logistic panel by calculating both cross sectional variation and time varying effect of the explanatory variables. In addition, the modeling may be developed to enable the internalization of the structural factors such as sectoral growth, the exposure level of each sector, and other variable with strong theoretical base and or strong empirical connection with the labor shifting phenomenon.

REFERENCES

- Auerbach, Alan and Laurence Kotlikoff. 1998. "Macroeconomics". MIT Press.
- Blanchard, Olivier. 2005. "Macroeconomics". Prentice Hall.
- Holzer, Harry J. 1989. "Employment, Unemployment and Demand Shifts in Local Labor Market". "NBER Working Paper Series 2858.
- Jovanovic, B. 1978. "Job-Matching and the Theory of Turnover." "Ph.D. Thesis. University of Chicago.
- Lilien, David M. 1982. "Sectoral Shift and Cyclical Unemployment". *Journal of Political Economy* No. 4.
- Lee, Donghoon and Kenneth I. Wolpin. 2006. "Inter-sectoral Labor Mobility and The Growth of The Service Sector". *Econometrica* Vol. 74 No. 1.
- Mincer, Jacob and Boyan Jovanoic. 1982. "Labor Mobility and Wages". *NBER Working Paper No. W0357*.
- Niederle, M. and Roth Alvin E., 2003, Unraveling Reduces Mobility in a Labor Market: Gastroenterology with and without a Centralized Match, *Journal of Political Economy*, Vol. 111 No.6.
- Permata, Meily Ika. 2008. "Labor Productivity Growth : *Labor shifting* or Sectoral Productivity Growth". The Report of Research Result. Bank of Indonesia.
- Pack, Howard and Christina Paxson. 1999. "Inter-industry labor mobility in Taiwan, China. Policy" "Research Working Paper Series 2154. World Bank.
- Parewangi, AMA, 2008, *Labor Dynamics: A Micro Firm, Industry and Macro Economic Perspectives*, mimeo.
- Shrek, James. 2008. "Job to Job Transitions: More Mobility and Security in the Workforce" "Center for Data Analysis 08-06. The Heritage Foundation.

Appendix: Matrix of Labor Transition among Sectors

Year 1998

Transition Matrix				Working Age											Non Working Age				
				Labor Force									Non Labor Force						
				Working									Unemployment	Student		Household	Others		
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9	Non Labor Force			Non Working Age				
			1	33,971,710	14,983	58,939	0	32,323	44,313	23,984	0		21,466	53,771		1,896	121,192	63,640	436,299
			2	17,217	558,143	1,684	318	2,334	7,879	2,599	0		2,301	18,650		0	2,704	2,280	1,227
			3	159,337	4,648	8,875,428	617	32,754	103,877	30,810	2,661		38,017	366,277		1,953	148,142	62,117	42,198
			4	5,458	1,503	0	142,913	3,186	2,311	0	0		609	7,111		0	1,224	1,456	0
			5	145,537	7,753	20,007	0	3,096,868	31,441	25,525	925		16,958	165,651		1,993	14,813	37,457	16,888
			6	80,849	1,833	20,068	0	18,581	14,749,254	19,693	295		25,006	206,354		3,827	138,997	37,807	111,823
			7	39,833	7,933	9,458	0	9,578	38,990	3,807,345	1,181		12,968	66,947		0	3,102	12,462	8,074
			8	3,899	0	2,389	0	280	14,329	547	570,377		2,750	23,374		704	7,534	2,539	1,547
	9	113,002	2,273	30,629	0	23,108	71,751	26,745	874	11,503,044	214,157	4,883	95,642	81,431	43,413				
		Unemployment	561,788	11,712	119,100	0	19,154	112,186	12,653	0	76,560	139,010	2,843,969	179,653	390,381	29,331,158			
		Non Labor Force	8,372,886	22,728,593	4,840,348	434,317	536,869	2,409	234,469	995,230	159,233	28,551	469,746	4,509,898	1,808,779	51,859			
Non Working Age			8,372,886	22,728,593	4,840,348	434,317	536,869	2,409	234,469	995,230	159,233	28,551	469,746	4,509,898	1,808,779	51,859			

Year 1999

Transition Matrix				Working Age											Non Working Age				
				Labor Force									Non Labor Force						
				Working									Unemployment	Student		Household	Others		
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9	Non Labor Force			Non Working Age				
			1	33,156,354	16,029	24,070	0	12,462	37,249	13,428	0		19,568	72,927		3,852	133,688	50,197	469,663
			2	19,086	623,192	2,840	0	924	7,874	1,770	826		3,798	19,804		0	1,665	1,470	0
			3	135,228	4,244	10,245,619	0	24,421	118,657	39,289	2,485		54,571	342,567		2,573	151,931	41,872	51,979
			4	8,283	0	1,041	183,912	2,713	4,770	711	0		2,188	11,762		0	1,037	2,545	0
			5	121,699	2,896	31,017	0	3,040,719	35,598	21,575	0		16,995	163,150		774	17,438	29,001	16,256
			6	75,710	0	45,098	0	22,077	15,454,187	22,847	881		41,339	200,615		4,995	119,958	36,773	125,793
			7	34,883	2,635	18,888	0	1,959	26,693	3,861,291	1,269		13,694	100,841		1,269	3,389	10,339	8,134
			8	4,684	0	8,010	0	1,269	13,063	5,498	584,719		4,427	39,190		0	11,574	4,152	1,805
	9	96,334	613	33,709	539	23,314	54,536	24,171	2,711	11,289,871	217,113	1,899	84,572	54,193	49,361				
		Unemployment	58,213	539,902	8,896	152,268	0	15,249	113,362	9,759	0	55,421	283,714	2,752,644	160,267	258,884			
Non Working Age			28,566,966	8,142,446	22,315,681	4,328,816	485,939	618,232	3,129	229,884	1,042,186	161,699	29,104	461,574	7,004,468	1,769,466			

Year 2000

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
1	2	3	4	5	6	7	8	9									
Working Age	Labor Force	Working	1	36,259,963	6,417	50,164	0	27,627	33,846	14,519	0	17,744	95,190	1,159	120,118	26,153	539,599
			2	6,979	385,991	2,740	0	0	711	962	0	0	11,804	0	1,022	0	0
			3	95,483	962	10,566,920	0	19,666	89,351	31,921	2,674	22,803	256,037	2,576	113,875	35,569	55,765
			4	0	0	0	68,689	704	0	0	0	0	0	0	3,516	0	0
			5	74,905	0	25,611	0	3,128,963	32,180	26,826	1,323	10,029	123,411	0	1,296	8,982	14,423
			6	68,936	2,833	34,857	1,337	16,126	16,819,056	33,191	3,034	29,656	163,294	1,968	111,717	27,263	144,092
			7	20,794	0	5,266	0	5,801	38,161	4,214,866	1,337	12,559	43,700	0	3,474	32,090	9,308
			8	3,195	2,137	0	0	962	6,742	4,178	820,456	5,592	26,273	0	3,312	7,994	2,505
			9	44,366	0	25,705	0	14,496	43,795	12,268	6,112	8,893,861	103,398	0	74,914	52,443	36,958
		Unemployment		408,802	2,098	102,906	0	14,084	65,158	17,919	1,323	56,214	267,766	2,765,521	91,591	278,377	27,875,284
	Non Labor Force																
Non Working Age			4,308,188	498,864	576,602	0	220,686	682,756	158,681	37,461	360,663	6,726,636	7,982,191	22,397,998	972,733	45,367	

Year 2001

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
1	2	3	4	5	6	7	8	9									
Working Age	Labor Force	Working	1	33,870,491	14,121	39,894	0	20,202	38,161	19,458	531	21,763	89,735	0	107,783	42,676	39,893
			2	21,794	821,923	3,524	0	0	0	0	0	14,763	6,791	475	3,976	0	0
			3	106,922	1,437	10,823,328	0	20,777	80,792	24,968	1,817	35,024	282,054	185	131,073	27,994	25,869
			4	0	588	0	134,147	1,136	291	2,184	0	0	0	0	0	854	0
			5	65,454	2,656	16,385	0	3,386,364	30,578	16,522	947	15,524	67,990	841	7,052	5,807	11,753
			6	68,509	4,416	44,384	1,746	24,916	15,123,545	28,784	5,446	44,892	173,804	3,907	114,217	26,818	22,040
			7	32,919	4,792	13,566	0	6,751	33,751	4,097,100	0	5,117	69,398	0	5,562	13,022	2,120
			8	3,642	0	13,159	0	1,758	5,519	4,188	1,044,167	6,393	33,037	2,143	9,172	4,032	766
			9	70,050	5,736	33,929	0	23,257	52,496	17,784	4,719	10,169,157	160,239	706	98,165	49,956	50,166
		Unemployment		404,655	11,269	113,450	0	13,303	84,162	11,384	185	51,885	248,289	2,819,413	119,984	256,072	28,322,509
	Non Labor Force																
Non Working Age			417,317	6,538,941	8,071,566	24,228,413	2,756,026	57,008	4,216,049	987,149	723,624	4,643	276,496	1,451,484	189,586	56,518	

Year 2002

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
1	2	3	4	5	6	7	8	9									
Working Age	Labor Force	Working	1	46,551	13	92	0	32	44	18	1	19	110	1	131	62	29
			2	16	895	4	1	2	3	3	0	1	11			1	1
			3	99	3	12,844	1	29	80	28	7	37	369		135	41	10
			4	2	0	4	216	0	4	1	0	2	5		1	1	0
			5	104	3	27	1	4,687	34	21	2	12	146		6	31	7
			6	56	1	44	1	16	20,478	25	11	44	187	6	109	29	18
			7	42	3	25	0	17	33	5,423	5	24	78	1	8	15	3
			8	6	1	3	0	4	23	6	1,508	7	39	12	10	0	63
			9	4	35	1	20	64	29	9	13,734	184	2	87	63	44	518
		Unemployment		10	103	0	19	100		8	0	58	388	3,704	154	260	92,745
Non Labor Force																	
Non Working Age				5,068	1,503	653	6	325	1,465	247	51	443	10,225	11,860	33,463	2,215	62

Year 2003

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
1	2	3	4	5	6	7	8	9									
Working Age	Labor Force	Working	1	39,348,575	13,622	46,452	0	42,971	30,350	12,803	1,766	12,295	62,292	0	52,914	14,985	13,930
			2	9,037	680,725	2,484	0	1,064	1,512	2,989	0	0	8,945	0	1,546	2,420	283
			3	53,476	2,591	11,009,325	3,132	24,286	62,448	22,604	3,705	25,774	232,982	452	68,627	23,596	8,284
			4	2,575	0	0	145,093	0	0	0	146	386	3,757	0	194	444	0
			5	77,764	0	14,033	0	3,868,493	17,421	15,992	3,104	10,037	102,469	430	7,173	12,644	6,423
			6	42,147	1,254	22,125	589	10,908	16,240,012	12,827	2,463	15,326	130,869	1,797	44,609	13,797	8,787
			7	17,598	1,372	5,082	0	9,216	13,187	4,746,875	1,760	5,639	42,577	0	799	7,780	171
			8	6,589	0	2,984	0	3,148	15,390	3,709	1,262,165	4,430	30,555	146	7,156	5,623	3,917
			9	36,339	848	17,529	2,612	8,274	25,363	16,226	3,189	9,522,612	108,791	88	39,389	22,839	21,204
		Unemployment		237,038	3,939	56,074	0	3,599	50,436	8,805	2,661	27,862	278,669	2,717,598	132,432	174,334	27,464,983
Non Labor Force																	
Non Working Age				3,890,057	1,173,004	90,747	405	34,626	261,425	57,526	13,040	68,079	8,454,963	8,761,266	27,563,295	549,121	16,192

Year 2004

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9						
			1	36,405,915	20,163	32,167	0	49,981	34,890	23,954	2,286	15,463	82,892	922	84,236	40,671	35,790
			2	18,305	966,492	315	0	3,843	2,569	2,716	0	2,716	14,590	0	2,671	1,464	0
			3	60,522	827	10,561,890	1,580	22,474	65,027	25,093	2,317	28,150	230,635	0	70,861	31,851	13,921
			4	375	0	1,112	221,378	0	0	2,680	0	0	2,522	0	0	0	0
			5	81,773	7,262	11,931	0	4,274,037	30,876	9,825	245	11,001	125,014	0	4,367	13,084	6,846
			6	43,905	670	22,604	0	6,759	17,712,480	17,726	3,457	27,338	136,354	388	50,631	14,065	3,129
			7	28,658	3,114	12,283	0	7,346	19,256	5,282,695	1,104	6,707	58,781	157	2,236	16,032	5,385
			8	3,848	315	8,994	85	1,596	7,547	4,548	1,082,694	4,619	35,211	252	8,450	4,767	2,530
	9	54,293	1,497	19,960	1,626	4,625	40,279	10,302	4,689	10,028,201	119,074	135	72,973	41,668	29,424		
Unemployment		271,261	3,536	64,857	0	8,545	66,477	9,181	0	42,675	313,056	2,834,987	128,366	189,586	29,694,780		
Non Labor Force																	
Non Working Age				127,779	8,661,744	8,746,091	28,461,281	818,753	13,882	3,724,198	1,072,867	136,946	1,890	110,517	512,408	46,222	18,203

Year 2005

Transition Matrix				Working Age												Non Working Age	
				Labor Force									Non Labor Force				
				Working									Unemployment	Student	Household		Others
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9						
			1	37,433,969	16,064	32,634	0	30,833	32,745	23,514	1,768	17,451	108,969	1,274	111,899	34,334	577,836
			2	9,857	822,578	1,798	572	2,027	3,663	1,577	0	2,255	8,215	0	0	2,881	4,541
			3	60,293	549	11,180,158	0	31,739	69,845	31,741	1,839	21,038	307,433	1,479	96,613	32,191	38,578
			4	520	0	1,228	182,790	667	0	489	0	0	2,221	0	0	2,415	412
			5	90,609	2,021	8,695	530	4,250,763	20,099	15,625	0	5,227	134,786	466	5,782	18,218	16,777
			6	47,324	6,279	26,311	0	13,449	16,607,708	8,574	8,254	18,462	208,734	1,315	100,199	16,898	115,424
			7	34,597	1,862	11,454	0	11,551	27,524	5,342,400	759	6,703	49,255	1,285	4,610	13,205	12,943
			8	6,189	1,193	3,979	0	0	8,285	1,045	1,055,392	4,221	25,100	1,820	3,547	0	2,702
	9	42,339	0	11,005	0	8,584	37,541	10,171	3,641	9,715,928	133,273	0	76,185	32,644	34,392		
Unemployment		295,055	2,662	56,727	0	16,175	47,927	6,736	717	33,194	338,638	3,653,017	135,099	218,451	30,340,813		
Non Labor Force																	
Non Working Age				422,140	35,337	495,525	51,278	164,518	512,212	162,241	10,338	4,060,784	761,667	293,830	10,246,105	9,921,287	28,061,906

Year 2006

Transition Matrix				Working Age											Non Working Age			
				Labor Force									Non Labor Force					
				Working									Unemployment	Student		Household	Others	
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9	Unemployment	Student	Household	Others	Non Working Age		
			1	36,373,563	26,798	53,643	1,354	35,693	42,394	28,381	1,790	18,865	132,920	3,410	179,227		52,926	459,224
			2	11,804	819,780	674	0	1,312	3,962	1,605	0	3,348	16,364	641	2,407		2,162	2,671
			3	60,486	2,260	11,012,175	513	21,868	65,524	21,515	1,261	20,508	289,478	1,110	118,087		27,189	50,779
			4	1,269	0	504	216,246	0	1,144	0	0	1,993	5,319	0	2,694		383	0
			5	86,352	5,289	18,433	1,182	4,369,185	31,115	14,390	3,716	10,376	108,003	0	8,011		17,491	7,845
			6	51,823	2,243	30,516	0	22,273	17,796,258	32,086	6,707	23,905	175,504	5,474	80,046		24,394	108,367
			7	33,122	6,614	21,489	0	13,882	24,189	5,357,609	2,602	12,675	69,452	616	7,481		17,190	12,737
			8	5,564	855	3,653	0	1,937	7,874	4,977	1,251,650	11,365	35,457	0	9,588		2,456	2,160
	9	40,580	1,050	23,934	819	11,972	36,012	9,097	1,498	10,621,217	92,585	1,737	91,773	35,979	45,978			
Unemployment		262,927	8,673	60,373	0	5,608	67,654	10,481	1,484	40,754	296,413	3,524,476	105,014	204,780	9,385,829			
Non Labor Force																		
Non Working Age				335,029	9,559,990	9,992,696	29,202,196	438,884	39,864	4,214,510	622,441	369,611	5,822	170,344	546,081	122,616	45,316	

Year 2007

Transition Matrix				Working Age											Non Working Age			
				Labor Force									Non Labor Force					
				Working									Unemployment	Student		Household	Others	
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9	Unemployment	Student	Household	Others	Non Working Age		
			1	36,624,593	22,503	92,314	496	96,458	94,404	38,836	2,945	31,053	120,302	5,849	280,252		66,336	547,719
			2	23,765	886,959	4,205	0	5,827	7,822	4,070	344	2,024	11,899	860	3,790		5,641	3,992
			3	120,017	3,758	11,186,265	1,583	36,578	98,336	32,798	7,748	35,793	304,833	10,724	215,771		39,605	50,183
			4	1,513	277	288	163,733	804	906	1,037	567	414	3,616	0	255		1,323	401
			5	142,816	8,810	28,700	2,154	4,746,556	49,665	21,619	1,522	15,607	161,882	2,968	13,299		41,171	19,914
			6	116,593	4,335	64,255	306	35,352	18,589,627	42,420	16,565	48,416	257,735	15,551	226,979		41,538	161,196
			7	61,584	5,420	26,803	85	30,071	48,086	5,521,695	5,153	22,363	73,127	6,099	14,167		20,758	20,469
			8	5,996	559	6,903	642	4,506	20,836	8,078	1,266,421	6,362	38,993	3,043	15,711		5,893	5,197
	9	92,726	3,926	34,893	620	14,492	70,803	24,299	8,951	11,211,887	171,370	19,914	184,066	54,235	42,090			
Unemployment		384,966	7,347	88,744	64	19,388	93,465	13,184	2,123	38,202	201,579	3,297,997	184,678	252,683	30,480,872			
Non Labor Force																		
Non Working Age				8,603,517	10,414,328	27,925,073	4,141,489	680,218	424,076	36,770	564,926	4,455	212,717	65,277	371,068	738,306	173,849	

Year 2008

Transition Matrix				Working Age											Non Working Age			
				Labor Force									Non Labor Force					
				Working									Unemployment	Student		Household	Others	
Working Age	Labor Force	Working	1	2	3	4	5	6	7	8	9	Unemployment	Student	Household	Others	Non Working Age		
			1	36,977,787	35,341	99,083	318	115,085	100,594	44,541	5,147	35,807	149,471	5,383	330,696		95,762	529,015
			2	25,241	949,020	5,089	73	6,299	6,710	4,496	309	2,319	13,177	494	7,669		6,545	2,768
			3	113,639	4,899	11,413,852	402	52,906	150,633	45,427	10,902	44,349	308,206	5,894	233,092		56,268	55,007
			4	2,028	869	742	190,953	128	2,691	325	0	1,105	3,459	321	321		2,273	772
			5	112,662	7,537	36,436	610	4,960,259	54,341	26,944	4,418	21,669	176,916	3,443	26,195		47,929	13,659
			6	126,530	6,056	84,450	775	47,940	19,283,645	48,030	17,306	81,641	290,365	15,629	221,990		59,999	150,025
			7	53,405	3,826	23,610	817	28,479	66,348	5,759,310	5,653	23,946	77,632	2,931	21,134		21,320	15,180
			8	11,853	422	6,092	0	7,645	28,827	10,494	1,328,691	15,768	39,277	3,723	23,485		6,805	5,362
	9	93,186	4,999	53,587	904	15,784	95,955	29,272	7,382	12,255,901	185,799	8,392	225,959	49,749	45,507			
Non Labor Force		Unemployment	337,722	8,866	82,872	67	16,259	110,748	15,740	2,064	47,962	173,570	3,602,852	210,219	285,652	31,305,998		
Non Working Age				327,968	7,954,034	9,577,004	28,129,408	4,264,221	636,941	304,286	30,998	396,682	4,584	137,182	579,729	118,195	43,968	

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