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Economics Series

No. 22, May 2001

International Economic Integration and Labor Markets: The Case of Indonesia

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This is a revised version of a paper presented at the workshop on International Economic Integration and Labor Markets in Developing Countries in Honolulu, Hawaii, January 15- 16, 2001.

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**International Economic Integration and Labor Markets in Developing Countries:
The Case of Indonesia***

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Abstract

Indonesia changed its development strategy from an inward-looking import substitution to an outward-looking export orientation in the mid 1980s. Deregulation measures introduced during this period have made the Indonesian economy become more integrated with the world economy. This study examines the impact of a more globally integrated Indonesian economy on its labor market. The findings indicate that increasing economic openness is associated with growing outputs, which has resulted in an expansion of employment and growing real wages of both skilled and unskilled workers. Employment of skilled workers, however, has grown faster than that of unskilled workers. On the other hand, unskilled wages have grown faster than skilled wages, resulting in declining wage inequality. This is consistent with the theoretical prediction from the Heckscher-Ohlin-Samuelson model. However, this pattern of change in relative employment and wages is also consistent with the prevailing long-term trend of a growing relative supply of skilled workers.

* Paper presented at the Conference on International Economic Integration and Labor Markets, East-West Center, Honolulu, January 15-16, 2001.

[#] The author would like to thank Rana Hasan, Chris Manning, Martin Rama, Arvind Panagariya, Steven Matusz, Devashish Mitra, and Nagaraj Rayaprolu for comments and suggestions on an earlier version of the paper, Wenefrida Widyanti for excellent research assistance, and BPS for providing access to the data. Funding support from East-West Center is gratefully acknowledged.

I. Introduction

Increasing international economic integration has been accused as being the cause of the plight of unskilled labor in both developed and developing countries.¹ It is argued that, as a result of trade liberalization, cheaply produced unskilled labor-intensive goods from developing countries flood the developed country markets. This directly suppresses the production of similar but more expensive goods produced in developed countries, which then causes a reduction in the demand for the services of unskilled workers in these countries. As a result, unskilled labor in developed countries suffer from decreasing real wages and increasing unemployment. Furthermore, to exploit their comparative advantage, developed countries have to turn to specializing in the production of skilled labor-intensive goods. This increases the demand for skilled labor, which is translated into higher wages for them, in turn widening the wage inequality between skilled and unskilled workers.²

Meanwhile, in developing countries, it is argued that the need for foreign exchange earnings from exports has led to increasing exploitation of workers in the forms of low wages and poor working conditions in order to produce cheap goods for exports. Hence, increasing international economic integration has been accused of exacerbating inequality and worsening the lot of the poor by eroding their incomes, increasing their vulnerability, and adding to their disempowerment.³ Multinational corporations, which have come to invest in the export sectors in developing countries, have been accused of exacerbating the situation by profiting handsomely from the exploitation of cheap workers in these countries.

These are controversial arguments for which counter arguments have been put forward. For the case of developed countries, one alternative factor which has been prominently singled out as a more probable reason for falling relative demand for unskilled labor is technological change. In particular, the advent of computer technology has shifted the demand for skilled labor up while simultaneously reducing the demand for unskilled labor in all sectors. Because of these shifts in demand, both relative employment and relative wages of skilled labor increase, while those of unskilled labor decrease.⁴

Meanwhile, for the case of developing countries, it is often argued that low wages and poor working conditions are not caused by but have existed in spite of international economic integration. Many developing countries are plagued by the problems of having a large supply of poor and unskilled workers on the one hand and lack of employment opportunities in the modern sector on the other. Hence, growth in the export sector caused by the opening up of the economy and investment by multinational corporations will lead to improvements in economic efficiency as workers are reallocated from the lower productivity traditional sector to the higher productivity export sector.⁵

While this issue is a well-researched subject in the developed countries context, research on this area in the context of developing countries is still rare (Diwan and Walton,

¹ International economic integration is one facet of globalization. Simply defined, globalization is the growing integration of economies and societies in the world, facilitated by the flow of information, ideas, activities, technologies, goods, services, capital, and people. Dollar and Kraay (2000) compiles arguments pro and against globalization.

² See, for example, Leamer (1994), Sachs and Shatz (1994), and Wood (1994, 1995).

³ World Bank (2000a) argues that although such a view may not be universal, it does play a role in the public perception that cannot be ignored.

⁴ Arguments of this line have been put forward, for example, by Berman *et al.* (1994), Krugman and Lawrence (1994), and Lawrence and Slaughter (1993).

⁵ See, for example, Pissarides (1997). For the case of Indonesia, see Manning (1995).

1997; Harrison and Hanson, 1999). Early empirical works on this subject show mixed results on the labor market outcomes of opening up the economies of developing countries.⁶ Wood (1997), for example, finds that although trade liberalization in the East Asian countries during the 1960s and 1970s caused reduced wage equality between skilled and unskilled labor, the experience of the Latin American countries in the 1980s and early 1990s offers contradictory evidence. He argues that the latter is attributed to the entry of large low-income countries such as China and India into world markets for manufacture starting in the late 1970s, which in effect substantially increased the world's supply of unskilled labor.

For the case of Indonesia, Suryahadi *et al.* (1999) analyzed the impact of economic deregulation since the mid 1980s in the manufacturing sector using data from an establishment survey. The results indicate that, immediately after the deregulation, unskilled labor relative employment tended to increase but their relative wages tended to decrease. The opening up of the economy has an expanding effect in the manufacturing sector, increasing the demand for both unskilled and skilled labor. However, since the supply of unskilled labor is much more elastic than that of skilled labor, the gain for unskilled labor has been more significant in terms of employment than wages.

Meanwhile, Suryahadi (1999), using labor survey data, finds that the long-term trend in wage inequality between skilled and unskilled labor in the manufacturing sector has been decreasing. He confirms the finding of Suryahadi *et al.* (1999) that the short-term effect of opening up the economy in the mid 1980s has temporarily reversed this trend in this sector. He finds that the long-term declining trend in wage inequality was driven by a continuing increase in the relative supply of skilled labor, which was a result of expansion in the education sector.

Building up on the works of Suryahadi (1999) and Suryahadi *et al.* (1999), this study analyzes the impact of international economic integration on the Indonesian labor market. Different from the two earlier studies, the analysis in this study is not limited to the manufacturing sector only. In an economy with mobile labor, this issue is clearly general equilibrium in nature. Hence, it is important to assess what happened in the whole labor market, not only in the sector that is being subjected to more openness or in the tradeable sector.

Assessing the impact of international economic integration on the Indonesian economy is made more problematic by the occurrence of an economic crisis starting in mid 1997. It is a valid argument to say that the economic crisis itself had much to do with international economic integration. On the other hand, one can also argue that the economic crisis was neither a necessary nor unavoidable impact of international economic integration. In particular, one can argue that it is financial integration, which makes developing economies more vulnerable to economic crises.⁷ It is, of course, almost impossible to establish the counterfactual of what would have happened if Indonesia had had only an open current account and a closed capital account.

This is a controversial argument and is not the focus of this study. Hence, it will not be discussed further here. This study focuses on the labor market effects of economic liberalization in Indonesia starting in the mid 1980s. The remaining of the paper is organized as follows. Section two discusses the data used in this study. Section three

⁶ These include, but not limited to, González and McKinley (1997), Pissarides (1997), Robbins (1996a and 1996b), Tan and Batra (1997), Wood (1997).

⁷ There is a convergence of arguments that the cause of Indonesian — as well as other East Asian countries — economic crisis was a cocktail of open capital account, weak financial institutions, and bad governance.

discusses trade and investment liberalization that have taken place in Indonesia since the mid 1980s. Section four elaborates on labor market institutions in Indonesia. Section five describes the structure of Indonesian labor market. Section six analyzes the changes that have taken place in the Indonesian labor market since the trade and investment liberalization. Finally, section seven provides the conclusions and policy implications.

II. Data

The data analyzed in this study are from the National Labor Force Surveys (Sakernas) collected by Statistics Indonesia (BPS). In particular, the analysis here is based on the 1986, 1989, 1992, 1994, and 1996-99 surveys. Sakernas is a nationally representative repeated cross-section survey that covers approximately 65,000 households or 250,000 individuals each year from all provinces of Indonesia. Each year, the survey is conducted in the month of August.

The survey collects information on individual earnings and hours of work on the primary job, as well as data on individual characteristics such as gender, age, and education level. Hourly wage is constructed by first transforming the information on monthly earnings collected in the survey into weekly earnings (by dividing by 30/7) and then by dividing the results by the number of hours worked per week. To make nominal wages comparable across years, nominal wages are deflated by the national Consumer Price Index (CPI) for the month of August in each year.⁸

III. Trade and Investment Reform

From the mid 1970s to the mid 1980s, Indonesia adopted an inward-looking import-substitution development strategy. During that period, awash with revenue from oil exports, the government was eager to build capital-intensive industries to replace imports. In addition, the government spent a large sum of money in building infrastructure, in particular to support agricultural development. Not surprisingly, the role of the public sector in the economy and its growth was dominant during this period. Aswicahyono *et al.* (1996) argue that this policy was resulted from tremendous internal pressure on the government to embark on a more interventionist path, especially in the area of industrial policy.

However, starting in the mid 1980s the Indonesian economy was made more open. This was an indirect result of the large drop in oil prices that began in the early 1980s (Hill, 1996). Because the oil revenue shrank quickly, the government faced a sudden external imbalance. The import substitution strategy had left the Indonesian industries inefficient and unable to compete in the world market at the maintained exchange rate. A combination of this factor and a general decline in primary commodity prices raised the premium on foreign exchange. Hence, starting in 1986, the import substitution strategy was discarded and replaced with export orientation, followed by a devaluation of the exchange rate and combined with deregulation measures in the domestic economy.

The economic deregulation began in 1986 with a liberalization of export-import procedures.⁹ Since then, various deregulation measures were introduced in order to make the economy more efficient. Despite some backward steps, all in all, the government was considered successful in its efforts to increase the efficiency of its industries and improve their international competitiveness (Fane, 1996). As a result, by the late 1980s, Indonesia

⁸ It is important to note that the CPI is based on urban prices only.

⁹ Earlier, in 1983, the government had started deregulating the banking sector by allowing banks to set their own interest rates. In the same year, the government also devalued the exchange rate.

appeared at last to be following the East Asian pattern of rapid growth in labor-intensive manufactured exports (Hill, 1991). Table 1 shows changes in real effective rate of protection and coverage of non-tariff barriers in 1987 and 1995 calculated by Fane and Condon (1996).

Table 1. Real Effective Rate of Protection and Non-Tariff Barriers Coverage in Indonesia, 1987 and 1995

Sector	Real Effective Rate of Protection (%)		Non-Tariff Barriers Coverage of Value Added (%)	
	1987	1995	1987	1995
Agriculture	10	4	64	46
- Food crops	11	6	77	57
- Estate & other crops	0	-6	73	33
- Livestock	17	7	25	3
- Forestry	-30	-56	-	72
- Fishing & hunting	1	18	17	0
Mining & quarrying	-13	-6	2	0
- Oil & gas extraction	-13	-7	0	0
- Other mining	-12	-4	28	0
Manufacturing	27	-5	53	14
- Food, beverages, & tobacco	106	21	85	25
- Textile, clothing, & footwear	78	-9	79	0
- Wood products	10	27	74	58
- Paper products	15	2	72	37
- Chemicals	44	-7	77	0
- Oil and gas refining	-13	-4	0	0
- Non-metal products	38	15	59	0
- Basic metals	-1	-4	59	0
- Engineering	121	86	87	0
- Other manufacturing	95	12	34	0
All tradeable sectors	4	0	44	23

Source: Fane and Condon (1996)

Table 1 shows that the manufacturing sector experienced the largest drop in protection, both in terms of real effective rate of protection, as well as, non-tariff barriers coverage. For the whole manufacturing sector, the real effective rate of protection fell from 27 percent in 1987 to a negative protection of 5 percent in 1995, while non-tariff barriers coverage of value added fell from 53 to 14 percent during the same period. The agriculture sector as a whole also experienced a decrease in protection, where during the same period real effective rate of protection fell from 10 to 4 percent and non-tariff barriers coverage of value added fell from 64 to 46 percent. Meanwhile, although the mining and quarrying sector experienced an increase in real effective rate of protection, the level of protection for this sector remained negative and the few non-tariff barriers that existed were removed during the period.

The trade liberalization measures and investment reforms were aimed primarily at shifting the economy towards a more export oriented structure based on non-oil exports.

By all accounts these reforms were quite effective. The growth rate in real annual GDP, without the benefit of oil revenues, averaged 6.5 percent between 1987 and 1993, approaching that of the rapid growth during the oil boom period of 1971-81. Non-oil exports increased substantially during the period, accounting for 74 percent of total exports. The manufacturing sector (including oil and gas manufacturing) led the economy by accounting for almost 30 percent of the GDP growth. Its GDP share grew steadily and reached 21 percent in 1991 and thus for the first time surpassing the GDP share of agriculture.

Simultaneously with trade liberalization, Indonesia also liberalized its foreign investment policy. The pattern of foreign investment in Indonesia after the liberalization in the mid 1980s is reviewed by Thee (1991). He finds that there was a surge in foreign investment after the mid 1980s, which mostly came from the four Newly Industrializing Countries (NICs): Hong Kong, Taiwan, South Korea, and Singapore. The majority of this new foreign investment was export oriented and it occurred mainly in sectors in which Indonesia has strong comparative advantage, such as labor and resource intensive activities. This contrasts starkly with foreign investment in the previous period, which had strong domestic orientation and took place mainly in capital and technology intensive sectors. Thee (1991) also points out that the average size of the new foreign investments after the mid 1980s is much smaller than investments in the previous period.

IV. Labor Market Institutions

The development of Indonesia's labor market, however, is quite different from that of its goods and financial markets. Until the early 1990s, the Indonesian labor market was relatively free from distortions. The government did not intervene in wage determination, nor did it enforce regulations on laying off workers. Along with that, the government tightly controlled the union movement by allowing only one government sanctioned labor union. Therefore, as noted by Manning (1994), there has been little effective direct government or union involvement in wage setting. In fact, this free labor market is considered one of the contributing factors to Indonesia's high economic growth during the pre-crisis period.¹⁰

The early 1990s, however, witnessed significant changes in the Indonesian labor market. Among them, three are most important. First, the government revoked the regulation, which banned strikes. Second, the government started to enforce the implementation of regional minimum wage regulations, which were updated annually. Third, some independent labor unions were established despite the government's efforts to disband and declare them illegal. These changes were in response to both internal and external pressures. The internal pressures came from the rising number of people who were concerned with the fate of laborers in the increasingly industrialized Indonesian economy. This includes growing concern among senior policy makers that somehow labor has not shared in the high growth that has taken place in the economy (Agrawal, 1996; Edwards, 1996; Manning, 1994).

The external pressures, meanwhile, were originated from increasing exports from Indonesia to North America and the European Union (EU), where concern had risen about labor market conditions in exporting developing countries. The focus was on workers in export sectors, who, it was claimed, had poor working conditions, low wages, and the denial of their fundamental right to form labor union. This belief has led to calls for a 'social clause' in developed-developing countries' trade arrangements, stipulating that

¹⁰ For review on Indonesia's labor market regulations, see Agrawal (1995) and Edwards (1996).

avored access to developed country markets would not be granted to countries where labor standards are unsatisfactory (Addison and Demery, 1988).

Minimum wages were an important plank of government policy in the labor market in the early 1990s. In a period of just five years, the government almost doubled the minimum wages in real terms. However, employees in many small and medium enterprises remained largely unprotected. This is in addition to a large number of excluded casual employment workers, which predominated in agriculture and construction sectors. Hence, the implementation of regulations on minimum wages did not reach the majority of workers (Manning, 2000; Rama, 2000).

The economic crisis in Indonesia, which started in mid 1997, has unleashed unprecedented changes in the labor market. In May 1998 the crisis led to the fall of an authoritarian government, which had been in power for more than three decades. The successive transitional government — which was led by a protégé of the previous president and in power only for 17 months until October 1999 — was under constant pressure to reverse the authoritarian policy of its predecessor, facilitate the democratization process by opening up the decision making process, and improve Indonesia’s bad records on human rights, including labor rights.

Eager to show that the transitional government is not just a continuation of the previous government, in less than one month after gaining power the then new government ratified the ILO convention no. 87 on “Freedom of Association and the Protection of the Right to Organize” in June 1998. A year later, in May 1999, the government ratified three more conventions at once, i.e. convention no. 105 on “Abolition of Forced convention no. 111 on “Discrimination in Employment and Occupation”, and convention no. 138 on “Minimum Age”. With this, as shown in Table 2, Indonesia has ratified all the core ILO conventions (Islam, 2000).

Table 2. Ratification of Core ILO Conventions in ASEAN-5 by 1999

ILO Convention	Indonesia	Malaysia	Philippine	Thailand	Singapore
No. 29 on Forced Labor	Ratified	Ratified	Ratified	Ratified	Ratified
No. 87 on Freedom of Association and the Protection of the Right to Organize	Ratified	Not ratified	Ratified	Not ratified	Not ratified
No. 98 on Right to Organize and Collective Bargaining	Ratified	Ratified	Ratified	Not ratified	Ratified
No. 100 on Equal Remuneration	Ratified	Ratified	Ratified	Not ratified	Not ratified
No. 105 on Abolition of Forced Labor	Ratified	Ratified	Ratified	Ratified	Ratified
No. 111 on Discrimination in Employment and Occupation	Ratified	Not ratified	Ratified	Ratified	Not ratified
No. 138 on Minimum Age	Ratified	Not ratified	Not ratified	Not ratified	Not ratified

Source: Islam (2000)

Prior to the crisis, Indonesia hardly had formal social protection programs to assist individuals, households, and communities in dealing with negative shocks, including labor market shocks.¹¹ Similar to most other developing economies, Indonesians had relied mostly on informal arrangements for their social protection. Exceptions to this are social security schemes mandated for employees in medium and large enterprises (*Jamsostek*), public servants (*Taspen*), the military (*Asabri*), and health insurance for employees (*Askes*).¹²

Jamsostek is meant to provide social security benefits to workers in the forms of lump sum payments upon retirement or death, work-related injury and illnesses compensation, and some health insurance for workers plus spouses and up to three children.¹³ The cost of this social security arrangement is funded from deducting 2 percent of workers' wages plus a contribution from employers in the amount of equal to 3.7 percent of wages.¹⁴

As events evolved during the crisis, these social security schemes were proved ineffective to function as social protection for the majority of the population, simply because they excluded most of the population, particularly the poor. Therefore, the response of the government to the impending social impacts of the crisis was to launch the so-called social safety net programs in late 1998. These are a set of new, as well as, expanded programs widely known as the "JPS" programs, an acronym of the Indonesian terms for social safety net, which is *Jaring Pengaman Sosial*.

One of the JPS programs is *padat karya*, which means, as an adjective, 'labor intensive'. This is actually not a single program but a large set of activities under the category of employment creation. These programs were created as a response to the threat of burgeoning unemployment because of economic contraction, which had forced many firms to either lay off workers or shutdown completely. In accordance with the urban nature of the crisis, the initial geographical targets for the first round of 'crash' programs in fiscal year 1997/98 were directed to urban areas plus some rural areas, which experienced harvest failures.

Following on these 'crash' programs, in fiscal year 1998/99 there was a proliferation of *padat karya* programs and there were more than a dozen different programs, which fell into the 'employment creation' category. These can be classified into four types. First, some programs were a redesigning of on-going investment and infrastructure projects into more labor-intensive type projects and modes of contracts. Second, other programs gave block grants to local communities such as the *Kecamatan* Development Project, Village Infrastructure Project, and PDM-DKE Program. These funds were directed to poorer areas, and had 'menus' for the utilization of the funds that included the possibility of public works with a labor creating effect. A third set were special labor-intensive works carried out by sectoral ministries such as the retraining of laid off workers carried out by the manpower ministry. A fourth type of program was a 'food for work' programs, typically launched by international donors and NGOs in the drought stricken areas.

¹¹ Social protection programs include all actions that are aimed to (i) assist individuals, households, and communities to better manage risk, and (ii) provide support to the chronically poor (World Bank, 2000b).

¹² This is a result of the Worker Social Security Law, which was first issued in mid 1970s and then amended in 1992. See Agrawal (1995), McLeod (1993), Purwoko (1999).

¹³ By law, every worker is entitled to receive *Jamsostek* coverage. Firms, however, are allowed to waive participating in the health insurance scheme of *Jamsostek* as long as they have an equally comprehensive or more superior scheme of their own.

¹⁴ This amount does not include health insurance premium.

The collection of *padat karya* programs were quite diverse and although specific programs were targeted to areas (such as the drought stricken areas), the lack of coordination meant there was little or no systematic geographic targeting of the set of programs overall. Within programs there were a variety of disagreements about desired characteristics of intended participants but typically the beneficiaries were not chosen according to any fixed administrative criteria. Hence, to the extent there was targeting, it was primarily through self-selection. Only those who were willing to work should have been able to receive the benefit. This self-selection mechanism has the advantage over administrative criteria, allowing individuals to choose to participate or not and creates the possibility of being more flexible to unobserved household shocks than administrative criteria.¹⁵

An evaluation study by Sumarto *et al.* (2001) indicates that 5.6 percent of Indonesian households had at least one household member who participated in a *padat karya* program during the crisis. Program coverage among the poorest 20 percent households is 8.3 percent, compared to 4.9 percent among non-poor households. On average, each participating household claimed to have spent an average of 4.5 man-days per month in *padat karya* programs.

V. The Structure of Labor Market

The structure of Indonesian labor market now is quite different from the one that existed in the mid 1980s when Indonesia started deregulating its economy. Table 3 shows some summary statistics on the Indonesian labor force from 1986 to 1999. In the course of 13 years, the Indonesian labor force grew by 40 percent from 67.5 million in 1986 to 94.8 million in 1999.¹⁶ This implies an average annual labor force growth of 2.6 percent. During the whole period, however, the labor force participation rate was relatively steady between 66 and 68 percent. This implies that the increase in the labor force size was mostly driven by natural growth, i.e. driven by the past population growth.

Table 3. Descriptive Statistics of Indonesian Labor Force

	1986	1989	1992	1994	1996	1997	1998	1999
Labor force (million)	67.5	72.8	76.2	83.7	88.2	89.6	92.7	94.8
Participation rate (%)	66.5	66.1	67.8	66.8	66.9	66.3	66.9	67.2
Female (%)	39.2	39.9	39.0	38.9	38.5	38.3	38.8	38.4
Urban (%)	21.6	23.9	28.7	31.3	33.9	35.6	36.0	38.1
Formal sector (%)	26.7	27.6	30.7	36.1	37.9	39.1	35.4	36.9
Unemployment rate (%)	2.7	2.8	2.8	4.4	4.9	4.7	5.5	6.4

Source: Sakernas

Gender composition of the labor force was also relatively stable, where the proportion of the female labor force was relatively steady between 38 and 40 percent. On the other hand, there was a notable trend of urbanization in the labor force. The proportion of urban labor force almost doubled in the 13-year period from 21.6 percent in 1986 to

¹⁵ See Sumarto *et al.* (2000).

¹⁶ In this paper, labor force is defined as population 15 year old and older who are working or looking for work. Before 1998, the official labor force statistics used population 10 year old as the threshold age. The change in threshold age was made in accordance with the adoption of the core ILO convention no. 138 on minimum age, which stipulates that the minimum age for employment is beyond basic education. Indonesia adopts a nine-year basic education policy.

38.1 percent in 1999. Similarly, there was a clear trend of formalization of the Indonesian economy, at least between 1986 and 1997 period where the proportion of the formal work force increased from 26.7 percent to 39.1 percent.¹⁷ There is an indication that the crisis has reversed this trend, where in 1998 the proportion of the formal work force fell back to 35.4 percent. In 1999, however, the proportion of the formal work force has increased again to 36.9 percent.

Interestingly, the unemployment rate has tended to increase, both during the pre-crisis, as well as during the crisis periods. In the earlier period, the unemployment rate increased from 4.4 percent in 1994 to 4.9 percent in 1996, while in the latter period it increased from 4.7 percent in 1997 to 6.4 percent in 1999.¹⁸ There is a strong possibility that the increase in the unemployment rate in the latter period was an impact of the crisis, as between 1996 and 1997 the increase in unemployment rate has actually leveled off. However, the earlier increase was more likely to be caused by the increasing level of the reservation wage. Economic growth and improvement in living standard has caused more people to be able to afford to refuse accepting the prevailing market wage rate and choose to be unemployed.

In addition to the quantity, the (formal) qualification of the Indonesian labor force has also changed quite considerably. Table 4 shows the structure of the labor force by education level. In this table, those with upper secondary and higher education levels are classified as the skilled labor force, while those with lower secondary and less education levels are classified as the unskilled labor force.¹⁹ Using this definition, the proportion of the skilled labor force has continuously increased from 10.6 percent in 1986 to 23.7 percent in 1999. This is due to increase in the proportions of both upper secondary and tertiary educated labor force. Consequently, the proportion of the unskilled labor force has decreased, which was driven mainly by decreasing proportions of the labor force with no schooling and unfinished primary, while the proportions of the labor force with primary and lower secondary education actually still increased.²⁰

¹⁷ The definition of formal work force here includes those who are: (i) self-employed and helped by non-permanent employees, except for those in the agriculture sector, (ii) self-employed and helped by permanent employees, and (iii) wage employees, except for those in the agriculture sector.

¹⁸ The unemployment rates for the period before 1994 are not strictly comparable with the rates afterward. In 1994, the length of job search period asked in the survey was changed from the previous one week to the previous one month.

¹⁹ In reality, skills of workers are a continuum from the least skilled to the most skilled. Furthermore, the formal education level is not the only determinant of skill. Other factors such as experience, on the job training, and innate ability play roles in skill formation. The level of formal education, however, is probably the most important factor and provides a good proxy for the level of skill. In addition, it has been widely used in other studies. In developed countries context, skilled labor is usually defined as those with tertiary education (see e.g. Baldwin, 1994). For the case of Indonesia, however, upper secondary education is perhaps a more appropriate cutting point, as in 1999 tertiary educated labor force still made up only less than 5 percent.

²⁰ The increase in school graduates in Indonesia starting in the mid 1970s was due to the government's school construction program. In the primary school level, for example, between 1973 and 1978 the government constructed over 61,000 schools throughout the country (Duflo, 2000).

Table 4. The Structure of Labor Force by Education Level (%)

Education Level	1986	1989	1992	1994	1996	1997	1998	1999
Unskilled labor force	89.5	87.0	84.4	82.0	78.8	77.9	77.4	76.3
- No schooling	19.1	16.3	12.2	11.2	9.7	9.4	8.6	8.0
- Unfinished primary	28.7	26.4	23.7	22.5	18.9	20.4	18.2	17.0
- Primary	33.2	35.0	37.0	36.4	37.2	34.4	36.4	36.0
- Lower secondary	8.5	9.3	11.5	11.9	13.0	13.7	14.2	15.3
Skilled labor force	10.6	13.0	15.6	18.1	21.2	22.2	22.6	23.7
- Upper secondary	9.2	11.1	13.2	15.1	17.4	18.1	18.4	19.1
- Tertiary	1.4	1.9	2.4	3.0	3.8	4.1	4.2	4.6

Source: Sakernas

Economic development has brought structural transformation in the Indonesian economy. Table 5 shows the distribution of employment by economic sectors.²¹ There was a redistribution of sectoral share of employment away from agriculture toward industry and, in particular, services sector, at least during the growth period. Between 1986 and 1997 the share of agriculture in employment fell from 58.9 to 40.7 percent, while those of industry and services increased from 8.9 to 13.9 percent and from 32.2 to 45.4 percent respectively. The fall in employment share of agriculture was driven primarily by the fall in employment share of the food crops sub-sector.

²¹ The sectoral disaggregation in Table 5 is dictated by the ones that are used in Sakernas. In the 1986 survey, there were only four sectors identified: agriculture, industry, trade, and services. Between 1989 and 1994, finer disaggregation of sectors increased the number of sectors to 17. These two different disaggregations are used to determine the sectors and sub-sectors in Table 5. Between 1996 and 1999, Sakernas used even finer two-digit sectoral codes.

Table 5. Sectoral Distribution of Work Force (%)

Sector	1986	1989	1992	1994	1996	1997	1998	1999
Agriculture	58.9	55.4	52.5	45.6	43.5	40.7	45.0	43.2
- Food crops	-	41.6	37.7	28.2	26.4	25.4	29.9	28.0
- Estate & other crops	-	7.0	9.0	10.1	9.0	9.1	9.3	9.5
- Livestock	-	3.3	4.5	6.2	3.4	3.1	3.2	3.1
- Forestry, fishing & hunting	-	3.4	1.3	1.2	4.7	3.2	2.5	2.7
Industry	8.9	10.7	11.3	14.1	13.5	13.9	12.1	13.8
- Mining and quarrying	-	0.6	0.7	0.9	0.9	1.0	0.8	0.8
- Manufacturing	-	10.0	10.6	13.2	12.6	12.9	11.3	13.0
• Food, beverages, & tobacco	-	2.5	2.7	3.2	3.4	3.4	2.8	3.3
• Textile, clothing, & footwear	-	2.3	2.5	2.9	3.0	3.1	2.8	2.9
• Wood products	-	2.0	2.0	2.8	3.1	2.7	2.8	3.0
• Other manufacturing	-	3.3	3.4	4.3	3.1	3.7	2.9	3.9
Services	32.2	33.9	36.1	40.1	43.0	45.4	43.0	43.0
- Trade	15.7	15.1	15.2	17.2	18.9	19.9	19.2	19.7
- Non-Trade Services	16.5	18.8	20.9	22.9	24.1	25.5	23.8	23.3
• Utilities	-	0.2	0.2	0.2	0.2	0.3	0.2	0.2
• Construction	-	2.6	3.4	4.4	4.5	4.9	4.0	3.9
• Transport & communication	-	3.1	3.4	4.2	4.7	4.8	4.7	4.7
• Finance, insurance, leasing	-	0.6	0.8	0.8	0.8	0.8	0.7	0.7
• Public service	-	5.4	5.0	4.9	4.1	3.9	4.7	4.8
• Social	-	2.9	4.2	4.0	4.3	4.4	3.5	3.1
• Other non-trade services	-	4.2	3.9	4.4	5.6	6.4	5.9	5.9

Source: Sakernas

There was a temporary reversal of this trend during the crisis, where in 1998 the employment share of agriculture re-increased to 45 percent, while the share of industry and services fell back to 12.1 and 43 percent respectively. In the following year, the long-term trend of sectoral employment share, which is decreasing in agriculture and increasing in industry and services has already returned. The employment share of agriculture, industry, and services sectors in 1999 is 43.2, 13.8, and 43 percent respectively.

VI. Impact of International Economic Integration on Labor Market

This section analyzes the relationship between Indonesia's integration with the world economy and changes in its labor market. The first sub-section reviews the stylized facts of output and labor market changes in Indonesia since the mid 1980s and their possible relationship with changes in trade orientation. The second sub-section examines the relationship between changes in skill premium and return to education with trade policy more formally using an econometric approach. The fourth sub-section discusses the role played by technology in labor market changes.

VI.1. Output and Labor Market Responses

This sub-section analyzes empirically changes in the Indonesian labor market from 1986 to 1999. This period can be broadly divided into three sub-periods. First, from 1986 to 1989 as the structural adjustment period following the changes in Indonesia's development strategy from import substitution to export orientation in the mid 1980s.

Second, from 1989 to 1997 as the high growth period as a result of successful structural adjustment in the previous period. Third, from 1997 to 1999 as the crisis period which revealed vulnerability of a seemingly fundamentally sound Indonesian economy.

Figures 1 to 4 show the changes in output, employment, and wages from 1986 to 1999 in the agriculture, industrial, trade, and services sectors consecutively.²² Both changes in employment and wages are disaggregated by skilled and unskilled workers. The figures indicate that during the structural adjustment and high growth periods, the industrial, trade, and services sectors have grown at about the same pace, where their output indexes grew from 100 in 1986 to around 230 in 1997. This implies an average growth of 7.9 percent annually. The output index of agriculture sector, meanwhile, only grew from 100 to 136 during the same period, which implies an average growth of 2.8 percent annually.

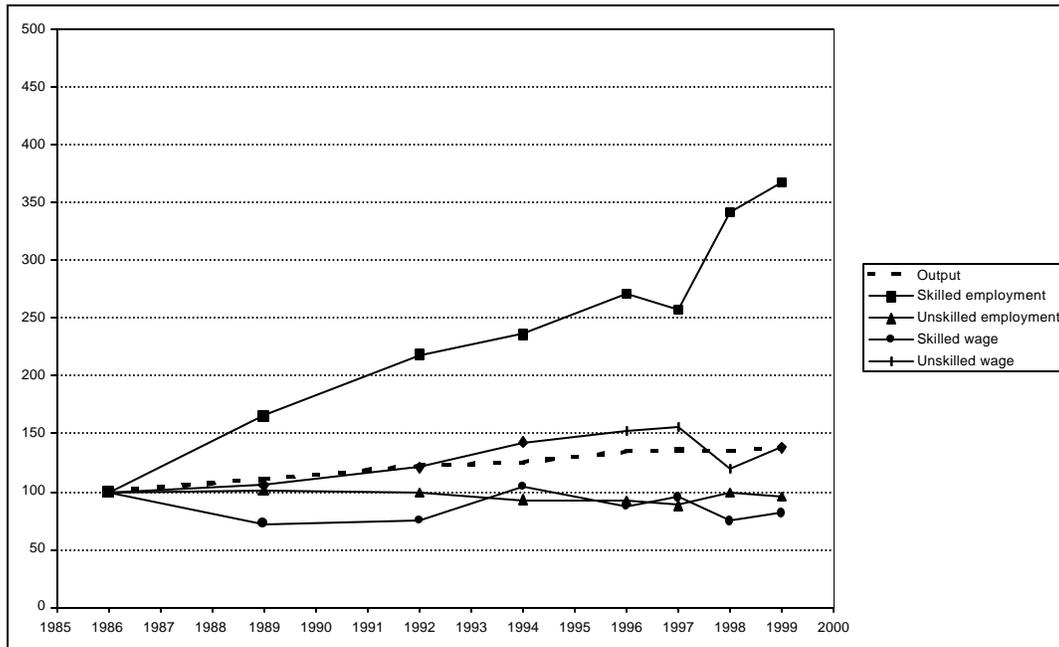


Figure 1. Output, Employment, and Wage Responses in Agriculture Sector

²² Different from Table 5, now the services sector is disaggregated into trade and (non-trade) services sectors. The trade sector includes 'wholesale' and 'retail' trade, and also 'hotels and restaurants' sub-sector. Meanwhile, the source of the output data is the annual "Statistical Year Book of Indonesia" published by BPS.

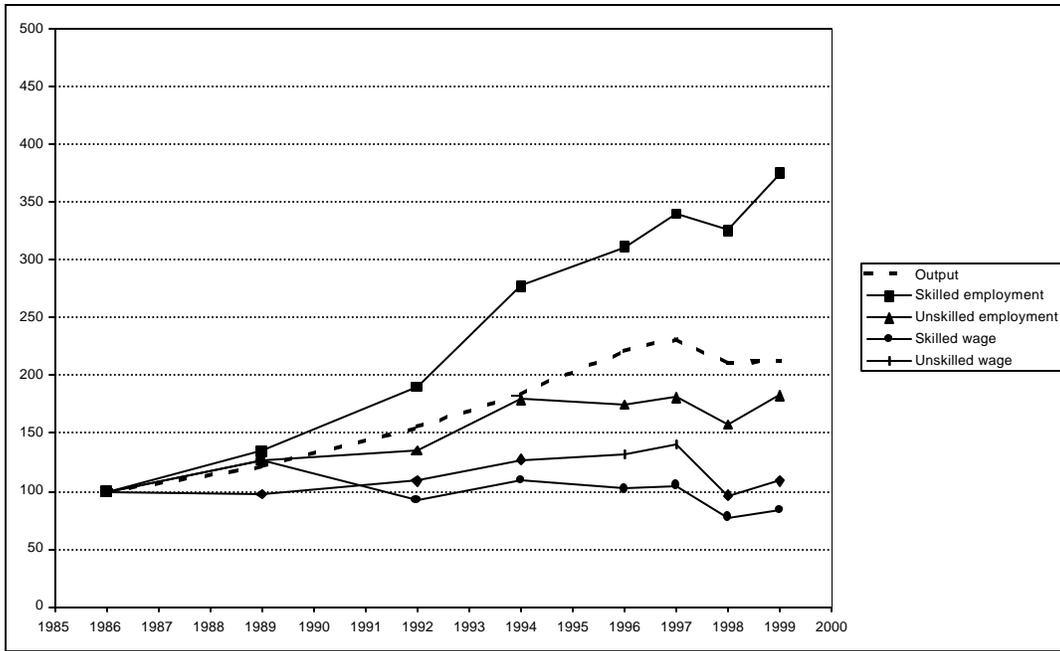


Figure 2. Output, Employment, and Wage Responses in Industrial Sector

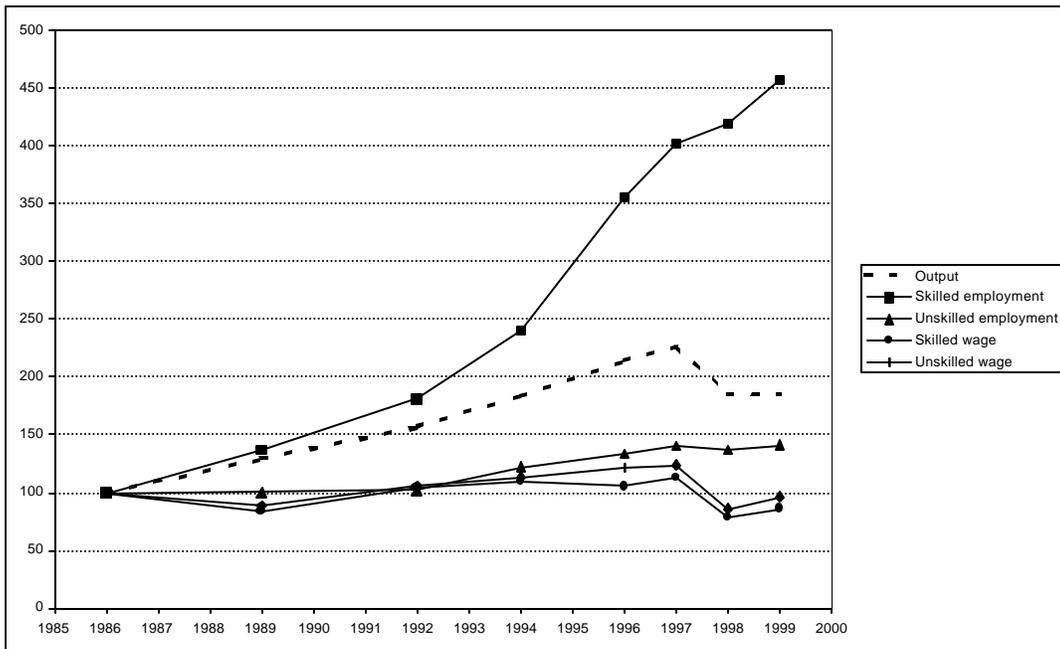


Figure 3. Output, Employment, and Wage Responses in Trade Sector

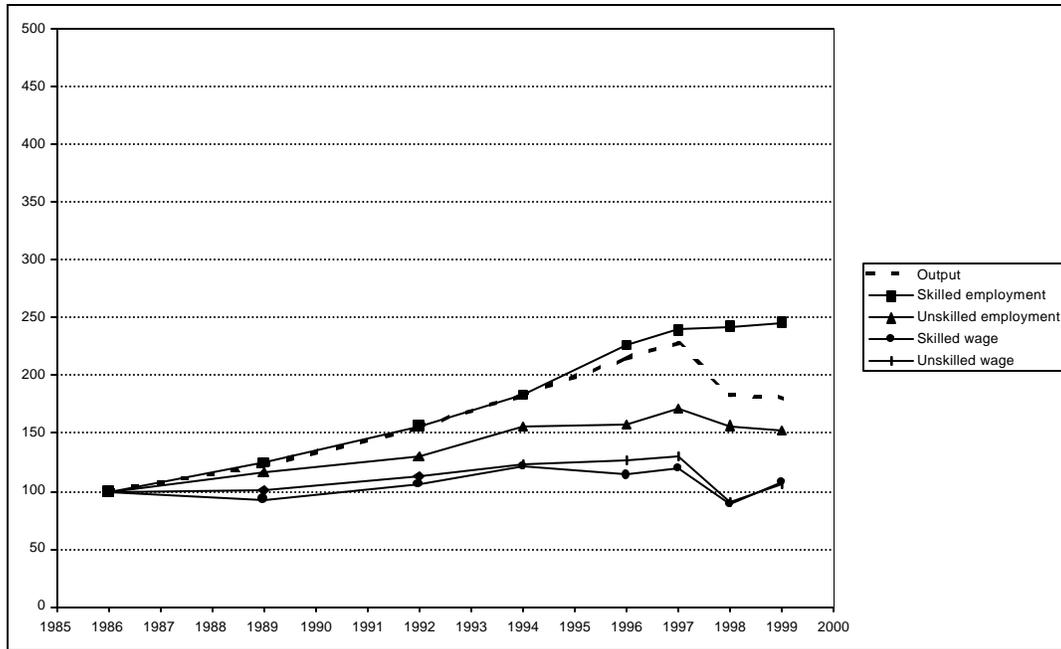


Figure 4. Output, Employment, and Wage Responses in Services Sector

During the crisis period, however, the agriculture sector fared much better than the other sectors. In 1998, when output shrank from the level in the previous year by unprecedented magnitudes of 9.2 percent in the industrial sector, 18 percent in the trade sector, and 19.6 percent in the services sector respectively, the output of the agriculture sector only slightly fell by 0.7 percent. In the following year, the agriculture sector led the recovery by growing positively at 2.1 percent, helped by the industrial sector, which grew by 1.4 percent. Meanwhile, the trade and services sectors in 1999 were still in negative growth territory of 0.4 and 1.5 percent respectively.

During the whole period, employment growth of skilled workers in all sectors has been much faster than that of unskilled workers. Nevertheless, during the structural adjustment and high growth periods both skilled and unskilled workers have gained from positive employment growth in all sectors, except in agriculture where unskilled employment has continuously declined. This means that during these periods demand for both types of workers in the economy had grown, absorbing at least a part of the growing supply of labor as indicated by the labor force growth in Table 3.

The higher growth of skilled workers employment compared to unskilled workers was in line with the increasing relative supply of skilled workers as indicated by Table 4. Figure 5 shows the indexes of the skilled and unskilled labor supply in Indonesia. The figure indicates that the supply of skilled workers has grown much faster than that of unskilled workers.²³ The number of skilled workers in 1999 is about 3.2 times the number in 1986. Meanwhile, the number of unskilled workers only increased by 1.2 times during

²³ Investment in education might be endogenous to trade liberalization. For example, an increase in demand for skill due to trade liberalization can induce more investment in education. In Indonesia, however, the government has played a crucial role in the expansion of the education sector through school construction program. The program was started in early 1970s, long before trade liberalization, and it was financed mainly by revenues from oil export. See Duflo (2000).

the same period. Furthermore, the number of unskilled workers toward the end of the period has been relatively constant, indicating a leveling off in the growth of unskilled labor.

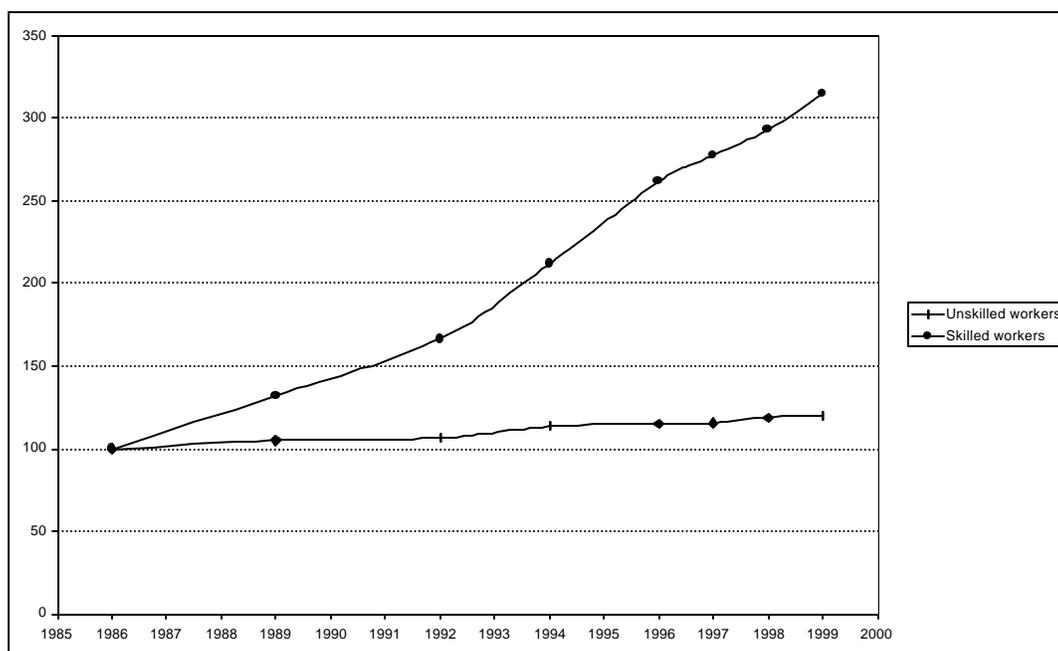


Figure 5. Supply of Skilled and Unskilled Workers

During the crisis, there was a reallocation of unskilled workers from industrial, trade, and services sectors to agriculture, reversing the trends in the previous period. Skilled workers, meanwhile, faced employment opportunity shrinkage only in the industrial sector. Perhaps unexpectedly, the trade, services, and agriculture sectors continued to expand their employment of skilled workers.

In contrast to the employment trends, there was a tendency for real wages of unskilled workers to grow faster than those of skilled workers, but this was most apparent in the agriculture sector. In this sector, the real wages of unskilled workers in 1997 were 56 percent higher than those prevailed in 1986. On the other hand, the real wages of skilled workers in 1997 were in fact 5 percent lower than in 1986. The implication of this is a declining trend in wage inequality between skilled and unskilled labor in this sector.

Similar wage trends were also observed in the other sectors, albeit less strong than those that occurred in the agriculture sector. In the industrial sector, the real wages of unskilled workers in 1997 were 41 percent higher than in 1986, while the real wages of skilled workers were only 5 percent higher, implying also decreasing wage inequality in this sector.²⁴ During the structural adjustment period, however, skilled wages actually grew faster than unskilled wages, but this was only for a short period and soon afterward the

²⁴ The significant increase in unskilled wages might have been partially enhanced by the end of dual “Lewis” labor market in Indonesia (Manning, 1995). In a dual labor market, unskilled labor in the modern sector has a perfectly elastic supply due to a very large pool of unskilled labor in the traditional sector ready to enter the modern sector (Lewis, 1954). Hence, in a dual labor market an increase in demand for unskilled labor, for instance due to trade liberalization, will result in an increase in employment but no change in the wages of unskilled labor.

trends reversed. This confirms Suryahadi *et al.* (1999) that there was an increase in wage inequality between skilled and unskilled labor in the manufacturing sector during the second half of the 1980s. The reason for this is that, due to economic deregulation in the mid 1980s, the relative demand for skilled workers in the manufacturing sector during this period has sharply accelerated, albeit only temporarily and the supply effect caught up quickly.²⁵

In the trade and services sectors, the growth of unskilled wages was consistently slightly higher than skilled wages growth, but the wages growth itself was not as high as those achieved in the agriculture and industrial sectors. During the crisis, both skilled and unskilled workers suffered from declining real wages in all sectors.²⁶ By 1999, however, their real wages was already on the path to recovery.

VI.2. Changes in Skill Premium and Return to Education

The previous sub-section indicates the tendency for unskilled wages to have grown faster than skilled wages, implying a declining trend in skill premium. These results, however, are drawn from comparing uncontrolled means of wages. In this subsection, the changes in skill premium are verified using wage regressions of the following model:

$$\ln w_i = \mathbf{a} + \mathbf{b}S_i + \mathbf{g}X_i + \mathbf{I}Z_i + \mathbf{e} \quad (1)$$

Where w denotes wage per hour, S is a dummy variable of skilled worker, X is a vector of worker characteristics (gender, experience, and experience squared), and Z is a vector of control variables (province, urban-rural areas, and sector of occupation). Education level is not included in the worker characteristic variables as it is already captured by the skilled worker variable.

The regressions are run on data of workers in all sectors as well as in each sector for each year. The primary interest of these regressions is on the \mathbf{b} parameter, which is the skill premium. The results are summarized in Figure 6.

²⁵ See Suryahadi (1999).

²⁶ It is argued that this large decline in real wages reflects the relatively flexible nature of the Indonesian labor market and has prevented the unemployment rate from increasing much more significantly. See Feridhanusetyawan (1999), Manning (2000), Skoufias and Suryahadi (1999).

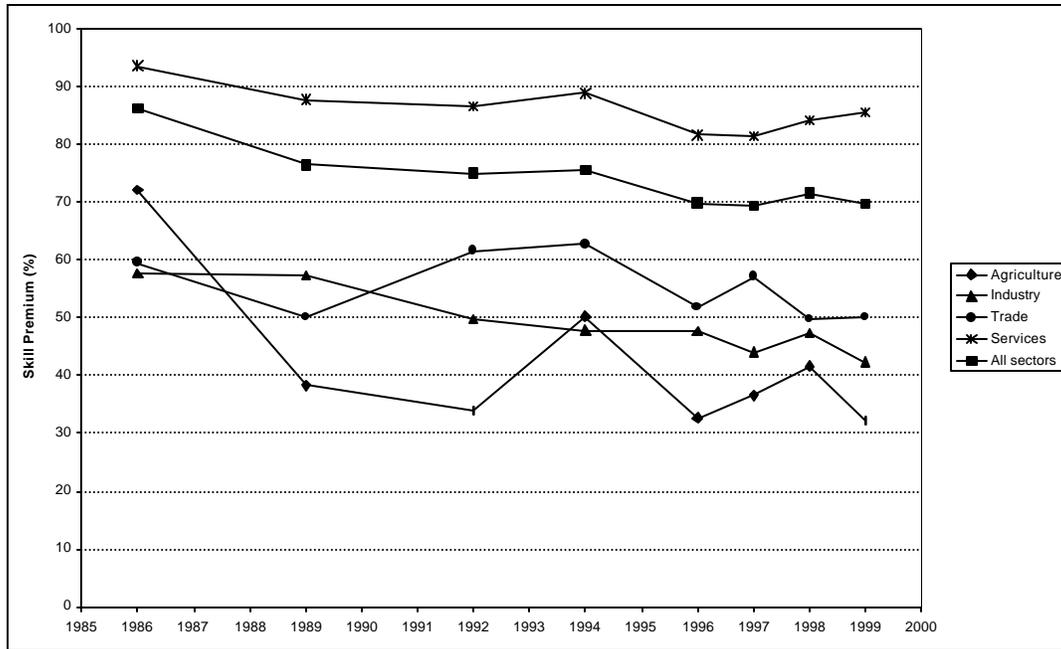


Figure 6. Skill Premium Trends

The results for all sectors indicate that skill premium has indeed continuously declined before the crisis. It fell from 86 percent in 1986 to around 75 percent in the late 1980s and early 1990s and to around 70 percent by the mid 1990s. During the crisis, the skill premium slightly increased, but has returned to the pre-crisis level by 1999.

In general, similar trend in skill premium, with some variations, can also be observed in each sector. In the agriculture sector, the skill premium dropped sharply during the adjustment period from 72 percent in 1986 to 38 percent in 1989. During the high growth period, however, there was a temporary sharp increase to 50 percent in 1994. In the industrial sector, the skill premium did not fall during the structural adjustment period. It did fall, however, during the high growth period from 57 percent in 1989 to 44 percent in 1997.

The trade sector shows a different trend in skill premium. During the high growth period, it increased markedly from 50 percent in 1989 to 63 percent in 1994. On the other hand, the skill premium in this sector did not increase during the crisis. The services sector has the highest skill premium compared to other sectors. The skill premium in this sector was 94 percent in 1986, which then fell to 81 percent by 1997, but since then has increased again during the crisis to reach 86 percent in 1999.

In the model represented by equation (1), the skill premium can also be interpreted as the rate of return to education at a very aggregated level, i.e. the percentage increase in wages of those with upper secondary education or higher compared to those with less than upper secondary education. To examine the changes in return to education at a more disaggregated level, the variable S in equation (1) now represents a vector of education dummy variables. The model is then run for the whole sector and the results are summarized in Figure 7.

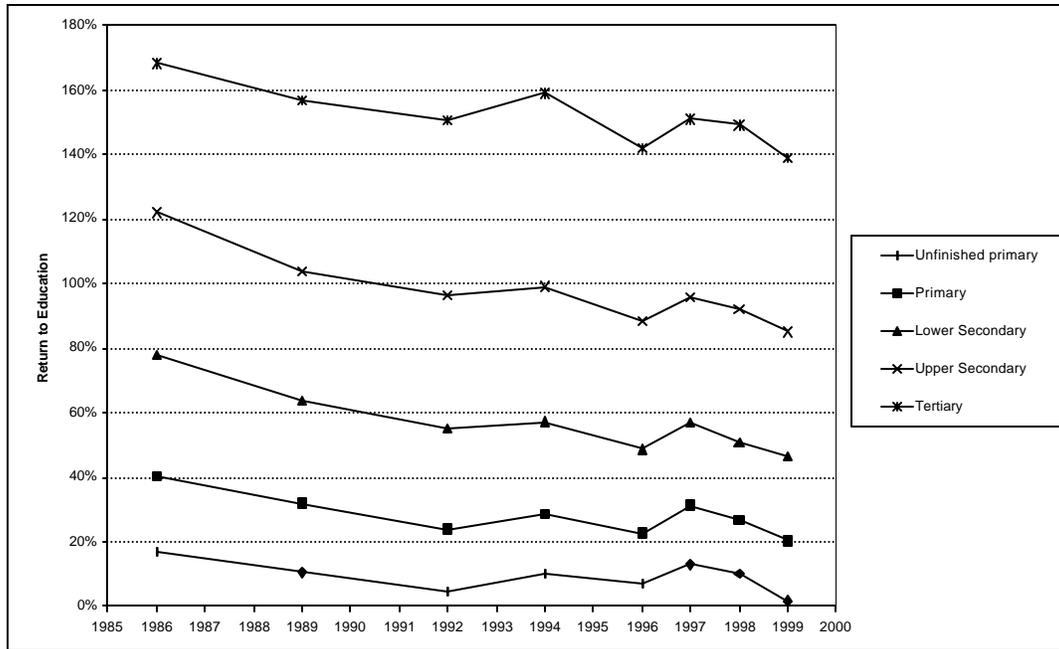


Figure 7. Rate of Return to Education Trends

Each line in Figure 7 represents the percentage increase in wages of those with the respective education level compared to those with no schooling. The figure indicates that from the mid 1980s to early 1990s, the rates of return to all levels of education continuously declined. In the subsequent period, the rates of return to unfinished and finished primary education were relatively constant, while the rates of return to secondary and tertiary education continued to decline. This means that these findings from disaggregated return to education are consistent with the finding of declining trend in skill premium in Figure 6.

Furthermore, Figure 7 gives some indication on the role of minimum wage policy in the declining wage inequality. After the introduction of the minimum wage policy in the 1990s, the curves for those with unfinished primary and completed primary education are relatively flat, while the curves for those with tertiary and upper secondary education are continuously declining. This indicates that declining skill premium has been more important than minimum wages on reducing wage inequality in Indonesia.

VI.3. The Role of Technology

The role of technology in affecting changes in Indonesian labor market was investigated by Suryahadi *et al.* (1999). To measure technological change, they adopt two indirect indicators of technological change. The first is the proportion of an industry's capital stock that is "new" (defined as less than 5 years old) and the second is the extent of foreign participation, as measured by the proportion of firms in manufacturing that are foreign owned and by their proportion of manufacturing output. These are based on two assumptions. First, most new technologies are foreign sourced and embodied in imported capital.²⁷ Second, foreign investment, which is primarily trade in entrepreneurship and

²⁷ The role of new investments in the diffusion and adaptation of new technologies is emphasized, for example, by Metcalfe (1990).

ideas, tends to be associated with technical advances whether or not it brings with it imported physical capital.²⁸

They find that the proportion of new capital was relatively stable at around three percent of the total capital stock during the late 1970s. During the 1980s, however, there was a substantial acceleration in new capital from around two percent of the total capital stock in 1987 to 10 percent in 1991. Meanwhile, the trend in foreign participation up to the mid 1980s was decreasing. Since then it has been increasing, reflecting the more liberal policy on foreign ownership in this period. The results of their analysis show that the faster the rate of accumulation, and hence the larger is the proportion of new capital stock, the greater is the relative demand for skilled labor. For foreign investment, meanwhile, they find that most of it took place in lower technology industries with a significant effect on increasing the relative demand for unskilled labor. They argue that, after the mid 1980s, most foreign investors came to Indonesia seeking to exploit the country's comparative advantage in unskilled labor-intensive goods.

VII. Conclusion and Implication

The role of international economic integration on labor market changes in developing countries is a controversial yet not well-researched subject. Part of the reason is probably because it is very difficult to establish the counterfactual, i.e. what would have happened had a particular country avoided international economic integration. Theoretical prediction based on the simple two-country two-good two-factor Heckscher-Ohlin-Samuelson model is that international economic integration will benefit unskilled labor in developing countries.

For the case of Indonesia, the HOS prediction is still observed despite continuously growing labor supply, which is a violation to one of the HOS assumptions. International economic integration has been associated with strong growth of outputs in the industrial, trade, and services sector. As a result, these sectors have expanded their employment of both skilled and unskilled workers. The agriculture sector, meanwhile, has had lower output growth compared to other sectors. Employment of unskilled workers in this sector has tended to slightly decrease over time. Its employment of skilled workers, however, has grown fast.

This implies that what has happened was not strictly a reallocation of unskilled labor from agriculture to industrial sector and *vice versa* skilled labor from industrial to agriculture sector. Rather, the economy has had to cope with growing supply of both skilled and unskilled labor. Growing output associated with international economic integration has made it possible for the economy to expand employment opportunities for both skilled and unskilled labor. The faster growth of skilled labor supply has dictated a growing relative employment of skilled labor in all sectors.

Real wages have also in general increased. In particular, the growth of unskilled wages has been significantly faster than skilled wages growth. The growth of skilled wages has been more fluctuative, including negative growth during some periods in some sectors. As a result of this wage growth differential, relative wage of unskilled labor has tended to increase, implying a decrease in wage inequality between skilled and unskilled labor. This is confirmed by the long term declining trend in skill premium.

Declining wage inequality is consistent with the HOS prediction on the effect of increasing international economic integration. However, it is also consistent with

²⁸ Ruffin (1993), for example, finds that countries, which are recipients of foreign direct investment, tend to have higher rates of technological change.

increasing relative supply of skilled labor. Hence, it is possible that the effects of both factors on reducing wage inequality between skilled and unskilled labor have reinforced each other. Nevertheless, it is also still possible that increasing international economic integration has put pressure on increasing wage inequality but this tendency has been overwhelmed by the increase in relative supply of skilled workers.²⁹

The economic crisis has disrupted some of the long-term trends in the labor market. However, if the latest data provides an accurate indication, the disruption is only for a short period of time. The long-term trends of increasing relative employment and decreasing relative wage of skilled labor are likely to continue soon.

The most important implication from this study is that economic growth is a necessary condition for improvement in labor market conditions. The recent experience of Indonesia is very illuminating. During the high growth period, employment and real wages of both skilled and unskilled labor increased.³⁰ On the other hand, during the crisis period, employment and real wages fell.

However, relying on economic growth alone to improve the fate of workers is clearly insufficient. As the crisis experience has shown, there is a need to create mechanisms that provide protection for workers from labor market risks, such as unemployment and work injury. In addition, increasing urbanization and formalization of the economy, declining birth rate, and increasing life expectancy, all has the effect of weakening the informal social protection system.

Creating more formal mechanisms, however, is not easy, as they need to be balanced so as not to impinge on labor market flexibility. Simply importing labor protection mechanisms from developed countries is implausible due to objective conditions of the Indonesian labor market. Economically, 'unemployment insurance' is impossible when the informal sector dominates the labor market and 'social security' is impossible when a record of earnings for most workers cannot be made. The excluded majority will be simply too large to make such mechanisms an effective protection for most workers.

In addition, a traditional social security system — a 'pay as you go' system that depends on current tax obligations to fund pension liabilities for currently retiring workers in the formal sector — is usually a bad idea as a poverty instrument in developing countries, even though it may be a good idea as a poverty instrument in developed countries. In most developed countries, historically, social security schemes were introduced first for formal sector workers, as only they can be effectively taxed and have earnings recorded. Then later developments reveal that these schemes are under funded, forcing payments to be supplemented from general revenues, not only from accumulated savings. Hence, the schemes became a transfer from the poor, who pay indirect taxes, to the rich.

Indonesia can only gradually move to a formal social security system. Like the historical trend in developed countries, it can start from formal sector workers. However, it is important to avoid mistakes made in other countries. There should be a clear provision that prohibits the system from becoming a transfer mechanism from the poor to the rich.

²⁹ Even if trade liberalization does increase wage inequality between skilled and unskilled labor, the resulting economic growth still makes trade liberalization an effective instrument to reduce poverty. In the case of Indonesia, the official headcount poverty rate during the trade liberalization period decreased from 21.6 percent in 1984 to 11.3 percent in 1996, a decrease of over 10 percentage points in a 12 year period.

³⁰ It is important to point out that much of the period after trade liberalization coincided with a period of macroeconomic stability in Indonesia. This might have helped in shaping a favorable impact of trade liberalization on the labor market.

Given the current structure of the economy, it will still take a long time before it will be economically feasible for a formal social security system to act as a universal social safety net in Indonesia. In the meantime, rougher measures need to be put in place in order to provide protection for the excluded majority of workers. This will require the maintenance of some crisis social safety net programs currently in place, particularly the employment creation and open menu social fund programs, but at a much smaller scale. The purpose is to be able expand such protection programs when the need for doing so arises.

One important research question that needs to be resolved is separating the effects of international economic integration and increasing relative supply of skilled labor on the observed increasing relative employment of skilled labor and decreasing wage inequality between skilled and unskilled labor. Knowing the effect's direction and magnitude of each factor will be useful, as it will give a more precise estimate on how international economic integration affects the labor market in Indonesia. In order to do this, the relative demand for skilled workers has to be estimated and then relate changes in this to trade and trade policy.

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