DEVELOPMENT STUDIES PROJECT II

Collected Statistical Papers

Volume I

Labor Force and Wages 1987-88

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Volume I
Labor Force and Wages, 1987-88

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DISTINGUISHING SIGNAL FROM NOISE IN LABOR FORCE DATA FOR INDONESIA

by

Alex Korns

November 27, 1987

Statistical Paper #1

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(DSP #5)

EXECUTIVE SUMMARY

There is uncertainty regarding the rate of labor force growth in Indonesia. By comparing the 1985 Supas with the 1980 Census, some observers have concluded that labor force is growing at 4.0 percent per year -- well above the 2.91 percent growth rate for the working age population. The 1986 Sakernas, which has not yet been released by BPS, appears to show a puzzling increase over the 1985 Supas of 10.0 percent in the labor force (6.4 million persons).

This paper examines BPS labor force data for 1971-86. It concludes that the rate of labor force growth has in fact been much smaller than 4.0 percent. For 1976-86, the growth rate is estimated as 2.94 percent, only a little more than the rate of increase of the working age population. The labor force participation rate is estimated to have remained nearly flat, increasing from 57.5 percent in 1976 to 57.8 percent in 1986.

The estimated rate of labor force growth is based on a technical analysis of statistical error in the BPS data for 1971, 1976, 1977, 1978, 1980, 1982, 1985 and 1986. On the whole, the BPS data are found to be solid. However, various improvements and other changes in survey procedures have complicated the comparability of the data from year to year. The paper documents these changes, so that users can bear them in mind when analyzing the data.

The procedural changes have led to fluctuations in undercoverage of unpaid family workers. Survey respondents often do not understand that "work" includes unpaid family work, so they may neglect to mention such "work." Thus, the role of the interviewer in interpreting "work" to the respondent is critical. If the interviewer fails to clarify the question, there is a high risk that unpaid family workers will be missed. Undercoverage appears to fluctuate with interviewer training and work load.

In the 1986 Sakernas, interviewers were given more thorough training and used a shorter questionnaire than ever before. These procedural changes are believed to account for the sharp increase in the apparent share of unpaid family workers in the working age population, from 12.3 percent in 1985 to 16.3 percent in 1986. The 1986 measure of unpaid family workers is probably the most accurate one to date. Similar analysis indicates that the 1980 Census missed more unpaid family workers than did the 1985 Supas. Thus, the measure of employment from 1980 Census, 1985 Supas and 1986 Sakernas cannot easily be compared.

Although labor force and employment have been statistically unstable, "earning workers" (employment minus unpaid family workers) has showed remarkable stability, at about 40.0 percent of the working age population. This suggests that earning workers may be the most reliable indicator of employment changes in Indonesia.

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GLOSSARY

BPS	Biro Pusat Statistik (the Central Bureau of Statistics of Indonesia)
Census	The Census of Population. Was taken in 1971, 1980.
Earning workers	Employees and self-employed*
Employed	Persons who work at least one hour per week or who have a job but are temporarily not at work.
Labor force participation rate (LFPR)	Labor force as a percentage of the working age population
Sakernas	National Labor Force Survey. Was taken monthly in September-December 1976, and quarterly in 1977, 1978, 1986 and 1987.
Self-employed*	Includes 3 groups of persons in BPS reports: self-employed working alone, self-employed assisted by unpaid family members, and employers.
Share	"The share of X" is X expressed as a percentage of the working age population.
Social workers	Persons who do unpaid, volunteer labor in social activity -- such as in natural disasters.
Susenas	National Socio-economic Survey. Labor force data from Susenas were published in 1982.
Supas	Intercensal Population Survey. Was taken in 1976, 1985.
Unpaid workers	Unpaid family workers and social workers
Unpaid family workers	Persons who assist another family member in obtaining pay or profit, but who themselves receive no pay.
Working age population	Population age 10 and above.

I. Statement of problem

The Biro Pusat Statistik (BPS) of Indonesia -- that is, the Central Bureau of Statistics -- needs in the near future to answer two interconnected questions concerning its labor force data.

What do the data from the 1986 household survey (Sakernas) say about labor force growth in 1985-86, and more generally, in recent years?

How to project labor force growth until the year 2000 on the basis of data for earlier years?

This paper reviews BPS labor force data based on household surveys taken from time to time during 1971-86, and proposes an answer to the first question. A subsequent short paper will discuss the second question, based on the answer to the first.

Underlying both questions is the same difficulty: that the data are not fully comparable for many pairs of years, due to changes in procedures and (for one year, 1971) concepts.

II. The effect of fluctuating error on time series

The labor force data for Indonesia for 1971-86 constitute a time series of great interest for economic analysis.

In evaluating the statistical reliability of a time series, a useful metaphor is the "signal to noise ratio" -- a concept borrowed from radio communication. Consider a signal that is being broadcast and the background noise that is picked up by the signal during atmospheric transmission. What the listener hears is a mixed sum equal to signal and noise. Only when a signal is strong relative to the noise, can the listeners easily pick out the signal.

For time series :

the true movement of the aggregate being observed is the signal,

the fluctuating errors in the data are the noise, and

the time series is the mixed sum of signal and noise.

The application of the concept to four signals is illustrated in figure 1.

Analysts of time series are usually more interested in the rate of change shown by a series than in its absolute level. Thus, consistency in concepts, procedures and methods is often more important than accuracy. Errors that fluctuate sharply are the real problem. A limited amount of error may be acceptable if the

error is believed not to fluctuate sharply from period to period -- that is, is constant either absolutely or proportion to the signal.

The most common source of fluctuating error is change in concepts and procedures from one survey to the next. The present paper will show that small changes in procedures have created considerable noise in labor force data for Indonesia. Many of the changes occured in the process of gradually improving procedures. The changes appear at first glance so minor that one would not expect them to cause large amounts of noise. However, it turns out that the concepts of "working" and "looking for work" are not well understood by many respondents. Thus, their responses depend to some extent on unstructured guidance by the interviewer. The amount of interviewer guidance appears to have fluctuated sharply, in response to changes in a wide range of survey procedures.

Nevertheless, the BPS labor force data are in general quite solid and are useful for many kinds of analysis, To facilitate analysis by outside users, BPS needs to provide its own interpretation of the historical data and to document data inconsistencies. If BPS does not take the lead in guiding users in how to interpret the data, users can easily draw the wrong conclusions.

III. Some terminology

In order to probe the underlying patterns in the data, this paper uses some new terminology, summarized in figure 2.

Labor force is conventionally defined as the sum of two aggregates:

(1) Labor force = Employed + unemployed

For present purposes, it is convenient to break the employed into two components:

(2) Employed = Earning workers + unpaid workers

Where:

(3) Unpaid workers = Unpaid family workers + social workers

(In Sakernas reports for 1976-78, "social workers" are unpaid volunteers, who accounted for less than 0.1 percent of the employed. The term has not been used since 1978.) Earning workers is defined residually:

(4) Earning workers = Employed - unpaid workers

Earning workers includes four main groups that are distinguished in BPS reports: employees, the self-employed, the self-employed assisted by family member, and employers.[1]

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[1] For convenience, employers, the self-employed working alone, and the self-employed assisted by family members are here treated as one group, the "self-employed"*. Employers are considered

Combining (1) and (2) yields the expression:

(5) Labor force = Earning workers + unpaid workers + unemployed

Similarly, the labor force participation rate (LFPR), which is the quotient of labor force and the population age 10 and over (abbreviated as WAP for working-age population), can be split into three components:

(6) LFPR = Earning workers/WAP + unpaid workers/WAP + unemployed/WAP

Throughout this report the three ratios on the right side of the equation, when expressed as percentages, will be referred to as the share of earning workers, the share of unpaid workers, and the share of the unemployed. In general, the phrase "the share of" will be used to designate any numerator that is expressed as a percentage of the working age population. [2]

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self-employed in English, and all three groups are called "Berusaha" in Bahasa Indonesia. (Earning workers also includes a small number of persons who do not report their employment status. These persons are grouped with the self-employed* in tables 1a, 1b, and 1c.). Thus: Earning workers = employees + self-employed*

[2] Dividing all magnitudes by the working age population:

Facilitates analysis of changes in the labor force participation rate, by showing percentages that add to the labor force participation rate.

Maximizes the comparability of data from one survey to the next.

By normalizing for population changes.

By keeping noise out of the denominator. Employment is not a suitable denominator because it is itself subject to the same noise as the numerator. The working age population is a suitable denominator, because it is measured independently of the numerator.

By converting the numerator into the original form in which the data were first collected -- a percentage characteristic.

IV. Why "earning workers?"

"Earning workers" is an intermediate aggregate that groups several standard ILO aggregates. Although not a standard ILO concept, "earning workers" is a useful indicator for Indonesia, for two reasons.

It is more statistically stable (less subject to noise) than total employment. It is also more stable than its two components: the share of employees, and the the share of the self-employed*. (Breaks occured in 1980 in the measures of employees and the self-employed*. The reason for the breaks is discussed in appendix A.)

Earning workers include in many respects a predominant percentage of the employed:

It has accounted for about 75 percent of the employed.

Because unpaid family workers tend to work short hours, earning workers have tended to account for about 80-85 percent of hours worked.

Because the hourly value of unpaid family work is relatively low, earning workers have probably tended to account for more than 90 percent of labor earnings including imputed earnings.

Therefore, the time series for the share of earning workers is a more reliable indicator of labor market conditions than are the time series for the share of total employment or labor force.

V. Comparability of data for 1985-86

The immediate issue for BPS is to compare the Sakernas data for 1986 with the data from the 1985 Intercencal Population Survey (Supas). If taken literally, the 1985-86 comparison shows an amazing 10.0 percent increase in labor force, or 6.4 million persons. Moreover, the labor force participation rate increased from 53.0 to 57.3 percent, a jump of 4.3 points.

The data in the lower panel of table 1a, which shows the share of various groups in the working age population, can be used to trace the sources of changes in the labor force participation rate. Unpaid family workers accounted for 3.9 points of the 4.3-point increase in the labor force participation rate. Unemployed persons accounted for 0.4 points. "Earning workers" accounted for none of the increase.

The increase in the percentage of unpaid family workers can be traced further in tables 1b and 1c, for men and for women. Table 1b shows that most of the increase was for women.

The increase in the share of unpaid family workers looks all the more puzzling in monthly terms. Supas was taken in October 1985; Sakernas in February, May, August and November 1986. The share of

unpaid family workers jumped from 12.3 percent in October 1985 to 16.1 percent in February 1986, and then remained in the 16-17 percent range for the next 9 months. Before October 1985, however, the share of unpaid family workers never much exceeded 12.3 percent.

Two alternative hypotheses can explain the increase in the share of unpaid family workers.

1. A radical change in employment behavior may have taken place between October 1985 and February 1986. Could this reflect a deterioration in real incomes in Indonesia in recent years? The interpretation begs two questions.

   First, why was the increase so sudden? Whereas real wages for agricultural workers in much of Java have gradually deteriorated since 1982 or 1983, the labor force data show no evidence of any impact on labor force participation before or after the four months from October 1985 to February 1986. [3]

   Second, why was the increase confined to unpaid family workers? If conditions deteriorated so sharply as to force people into employment, why did the measure of earning workers not increase?

2. The increase may be a statistical illusion. Such an illusion could be due to procedural changes that led to a decline in undercoverage of unpaid family workers. The evidence for this is discussed in sections VIII and IX.

In line with its mission to provide time series data for economic analysis, BPS needs to present a clear interpretation of the 1985-86 change. Is the change real, does it reflect procedural changes, or is the evidence insufficient to decide the question? If the evidence appears insufficient, new tests can be applied. The tests will require a special retabulation of data from Supas and from the 1982 Susenas, discussed in section IX below.

VI. Indonesian labor market

A model of the Indonesian labor market is needed. The model provides a set of expectations about the data and serves as a basis for forming judgments about the behavior of signal and noise.

The model used here assumes that labor force participation in Indonesia does not change abruptly from year to year, but may change slowly in gradual trends.

It is generally agreed that most Indonesians cannot afford to be

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[3] The evidence for a decline in real wages is based on data for wages paid by farmers in East and Central Java, and on cost of living indexes for farmers in those provinces. The data for West Java do not show a clear decline. All the data are from the BPS survey for farmers' terms of trade.

unemployed that is, not to work while looking for a job. Therefore unemployment is largely confined to persons with substantial education who are entering the labor market for the first time. Fluctuations in such a small group cannot have a large impact on the labor force participation rate.

The employment decision in Indonesia mainly reflects labor supply, which changes slowly. In more industrialized countries, where most jobs are wage and salary jobs, the employment decision reflects demand, which changes rapidly, as well as supply, which changes slowly. Thus, employment would be expected to fluctuate rather little in Indonesia, in contrast to the large fluctuations in industrialized countries. More specifically:

> Industry accounts for a relatively small proportion of employees in Indonesia, so fluctuations in the demand for industrial products cannot have a large impact on employment.
>
> Whether a person works or not depends largely on their own choice, not on that of an employer. Most earning workers are self-employed. The fact that a person is employed merely means that he is trying to make some money ("cari duit"), even though he may spend most of his time waiting for business. Thus, a reduction in labor demand does not lead to less employment, although it may reduce labor income.

Gradual trends in the percentage of earning workers are to be expected, as social behavior changes. Thus, the labor force participation rate of women increased from 1976 to 1986, reflecting changing attitudes towards work by women, whereas the rate for men declined, reflecting the increase in school enrollment at ages 10-24, and reflecting a slight increase in the share of retired men age 55 and over.

VII. The underlying stability of labor force participation rate

The line at the top of figure 3 shows the behavior of the labor force participation rate during 1971-86. The measure fluctuated sharply, contrary to the prediction of the model. However, close analysis of the three components in equation 6 suggests that the fluctuations largely reflect noise, rather than signal. The analysis suggests that the data conform in important respects to the model.

Earning workers. -- This is the major component in the labor force participation rate, accounting for nearly three quarters of it. With one exception, the measure of the share of earning workers remained stable during 1976-86 in the range of 39.5-40.6 percent. This stability conforms to the prediction of the model. The exception is 1978, when the share increased from 39.5 to 43.5 percent. Nothing is known about economic conditions in 1978 that would explain such an extraordinary increase. Therefore, it must be assumed to be due to an unknown cause of statistical error.

The measure of the share of earning workers was much lower in 1971 than in 1976. This is probably due both to the use of a less comprehensive concept of employment in 1971 and to undercoverage of persons with a job but not at work (see appendix B).

Unpaid workers. -- The measure of the share of unpaid workers fluctuated sharply. Its fluctuations are inversely related to fluctuations in the share of persons outside the labor market, depicted in figure 4.

There are two main reason for suspecting that most of the movement in the share of unpaid workers reflects noise.

The share of unpaid workers (see figure 3) fluctuates much more than the share of earning workers. This is puzzling.

There are no economic reasons for believing the former share is much more volatile than the latter share. The demand for unpaid family worker is mostly agricultural and is unlikely to fluctuate sharply from year to year. Seasonal fluctuation in unpaid family work is not very large, according to the 1986 Sakernas. The supply of unpaid family labor is presumed to depend on slowly changing factors such as school enrollment, the educational attainment of women, fertility, and income levels. In the process of economic development, one would expect the share of unpaid family workers gradually to decline, as they enter the labor market and become earning workers.

The fluctuations in the share of unpaid family workers do not appear to be correlated with any events that would explain them.

The question, "did the person work last week," is much more susceptible to misinterpretation for unpaid family workers than for earning workers. Respondents can easily overlook work done by unpaid family workers, not thinking of it as "work." The fluctuation in the share of unpaid workers in figure 3 reflect fluctuations in undercoverage, which are caused by fluctuations in interviewer efforts to alert respondents to the fact that "work" includes unpaid family work. The evidence for this will be presented in the next two sections.

There is a broad pattern to the fluctuations in the share of unpaid family workers. In a core group of observations for 1976, 1977, 1978, 1982, and 1985, the share remained nearly constant in the range of 11.8 to 13.8 percent. There are two departures from this pattern:

First, the sharp increase from October 1985 to February 1986, discussed in section V.

Second, the relatively low share of unpaid family workers in the 1980 Census.

If the observations in the core group of years are to be believed, the share of unpaid workers did not change from 1976 to 1985.

Unemployed. -- The share of the working age population that was unemployed fluctuated sharply from 1971 to 1986 -- from 0.8 to 3.5 percent. However, if census years are excluded, the range of fluctuation was much smaller -- from 1.1 to 1.6 percent. The reasons for disbelieving the census measures are discussed in appendix A.

Labor force. -- In sum, the major component of the labor force participation rate - the share of earning workers -- remained quite stable during 1976-86, and the fluctuations in its minor components -- the shares of unpaid family workers and of the unemployed -- largely reflect fluctuating undercoverage. Thus, the evidence suggests that the true labor force participation rate has remained much more stable than is indicated by the top lines in figure 3.

For 1976-86, the evidence suggests that the true series -- the signal -- changed very little. Thus, the observed fluctuation in a range of 6.0 percentage points of the working age population largely reflects noise.

For 1971-76, the evidence is insufficient to draw a definite conclusion. Nevertheless, the 3.6-point increase shown by comparison of the 1971 Census and the 1976 Sakernas is not a meaningful indicator of change during this period.

VIII. Why the instability in the share of unpaid workers?

The labor force questionnaire itself does not ask whether persons do unpaid family work. It merely asks whether they work. For those who are said to be working. The question is then asked whether they do unpaid family work. But for persons who are not initially said to be working, the question is never asked whether they do unpaid family work. From the questionnaire alone, how are respondents supposed to know that the survey considers persons who do unpaid family work as working? Interviewers have a general obligation to check to be sure that the respondent understands the question. But what if unstructured efforts by interviewers to clarify the meaning of "work" fluctuate from one survey to the next?

As a general rule, the share of unpaid family workers in the working age population has varied inversely with the length of the questionnaire. It has varied directly with the training and committment of the interviewers. These patterns are summarized in table 3 and are documented more fully in appendixes B and C. The following discussion summarizes the main points of appendixes B and C as they bear on the share of unpaid family workers for 1980, 1985, and 1986.

The 1980 Census data were based on a huge sample of 1.5 million households, far more than the 60,000-100,000 households in the Sakernas and Susenas samples. Because the Census sample was so big, limited time was available for training interviewers and for editing questionnaires. Census interviewers were temporary

employees. With a heavy work load and a long questionnaire, Census interviewers had little time for interpreting questions to respondents. These factors probably explain the relatively small share of unpaid family workers in 1980, 8.8 percent.

The 1985 Supas data were based on a sample of 125,000 households. Interviewers were temporary employees who received thorough training, with special emphasis on the meaning of "work". However, the questionnaire was long, leaving limited time for interpreting questions to respondents. Probably the interviewers explained the meaning of "working" at some households and not at others. These factors probably explain the relatively typical share of unpaid family workers -- 12.3 percent.

The large increase in the share of unpaid family labor in 1986, to 16.3 percent, is believed to reflect a series of procedural changes during 1980-86 that finally had a cumulative impact in 1986.

In 1980, the employment question was revised to give respondents two chances to classify family members as working. First, respondents were asked what was the main activity of each household member during the survey week. Second, for persons whose main activity was attending school, keeping house, or otherwise not working, respondents were asked whether the person worked at least one hour. The second question provided an opportunity for interviewers -- if properly trained and motivated -- to pay special attention to unpaid family work.

In 1985, the interviewer manual was rewritten, to provide much more detail than ever before on who was to be classified as working. The first two examples in the new manual bear on the inclusion of unpaid family workers; they are quoted here. (More extensive excerpts from the instructions for 1971,1976-77, 1982, 1985, and 1986 are shown in appendix C.) Such specific guidance on the definition of "working" was never previously provided.

> "a. Those with activities cultivating cereal (paddy, corn, wheat) and/or secondary crops (cassava, sweet potato, potato) for own use are considered working.
> Those with activities for own use as sewing own clothes, painting for own collection, cooking for own family, and fishing for pleasure are not considered working.
>
> "b. Members of households helping the head of the family or other members of the household in farming, at the store/shop and so on are considered as unpaid workers."

In 1986, unlike 1980 and 1985, the survey was conducted by a local BPS official, the mantri statistik, who must be presumed to be more well trained and motivated than the temporary workers of 1980 and 1985.

In 1986, for the first time ever, the questionnaire was a very short, focussed, one that concentrated entirely on labor

force behavior. There were no questions about family income, fertility or other topics.

In 1986, the survey was conducted quarterly, at about 16,000 households each quarter. The small sample limited the work load for interviewers and supervisors.

The mantri statistik, who in 1986 had a shorter, more focussed questionnaire and more detailed instructions than ever before, and who had a limited workload, appears to have used the opportunity to probe more carefully than ever before the work behavior of family members other than the head of household. Thus the 1986 data probably provide a more comprehensive picture of unpaid family work than do previous data -- at the cost of a break in the historical time series.

IX. More about the fluctuating undercoverage of unpaid workers

Tabulations for the first quarter of 1986 show a profile of the "swing group" of unpaid family workers -- that is, persons whose classification as unpaid family workers may have changed from survey to survey, depending on how carefully the question was asked. These are unpaid family workers whose main activity was keeping house, attending school, or doing something other than work during the survey week. Only when they were asked a follow-up question -- whether they did at least one hour of work -- did they say that they had worked. Such persons accounted in the first quarter of 1986 for 37 percent of unpaid family workers, equivalent to 6.0 percent of the working age population. They worked mostly in agriculture, and worked short hours -- about 70 percent worked less than 25 hours.

Circumstantial evidence. -- The hypothesis that a "swing group" was added to the survey for the first time in 1986 helps to explain some peculiar features of changes in the distribution of hours worked by unpaid family labor. Table 2 presents a comparison of hours data for 1986 with hours data for 1977 and 1978 (the only earlier years for which the hours data were tabulated). The comparison shows that the 1986 increase was not spread broadly, but was concentrated among persons who worked less than 25 hours per week.

The share of the working age population engaged in unpaid family work for less than 25 hours per week increased from 4.4 percent in 1977-78 to 7.9 percent in 1986. This group may include the "swing group" of persons who were classified as unpaid family workers for the first time in 1986.

Meanwhile, the share of the working age population engaged in unpaid family work for more than 24 hours per week increased much less, from 7.3 percent to only 8.1 percent. If the true share of unpaid family labor increased in 1986, in response to a sharp deterioration in living standards, the increase would presumably be distributed broadly for part-timers and full-timers.

A program of further research. -- The view that the true share of unpaid family workers has been roughly constant is based on judgment. It appears to be the most promising hypothesis for explaining the available evidence. However, some observers may consider the available evidence insufficient. They may believe that it would be worthwhile to allocate additional resources to test the hypothesis. Three kinds of research could be carried out -- if funds were available -- to further test the hypothesis of no change.

1. BPS could reanalyze the 1985 Supas and the 1982 Susenas to produce two kinds of tabulations for comparison with 1986 Sakernas:

Tabulations for persons whose main activity is housekeeping or going to school, but who respond to the follow-up question by saying that they work at least one hour per week. (The follow-up question is presumably the one for which the interviewer is most likely to explain to the respondent that "work" includes unpaid family work.) The tabulations would show the number of such persons who did unpaid family work and their hours. A large increase in the share of such persons from 1982 and 1985 to 1986 would be an indication that a reduction in undercoverage may have accounted for the change in the share of unpaid workers.

Tabulations showing the hours worked by unpaid family workers, such as the ones that underlie table 2. The tabulations may show a sharp increase from 1982 and 1985 to 1986 in the share in the working age population of unpaid family workers who worked less than 25 hours per week. Such a pattern would indicate that a reduction in undercoverage may have accounted for the change in the share of unpaid workers. It may be worthwhile to try to estimate changes in the undercoverage of unpaid family workers or the basis of changes in the distribution of their hours -- for 1977-78, 1982, 1985, and 1986.

2. High-level BPS staff could interview a small sample of Sakernas interviewers to learn exactly how they currently probe whether a respondent treats unpaid family workers as persons who work. When do they volunteer interpretations? How do they pharase their statements?

3. BPS could test the effect of a variety of interview procedures on the measure of the number of unpaid family workers. Each test would be based on a comparison with reinterview data. It would be especially interesting to test the effect of adding a follow-up question to the questionnaire for each person whose major activity is going to school, keeping house, or doing something other than working. The new question would be: Did the person do at least one hour of unpaid family work? The question would help to establish whether or not the true share of unpaid family workers is even larger than was found by the 1986 Sakernas.

Recommendations. -- There are two approaches that BPS could adopt to assuring the comparability of the measure of unpaid family workers from one survey to the next.

Because the measure of unpaid family work is so sensitive to many small details of the questionnaire and of survey procedures, all relevant details could be fixed for a number of years, if possible. In practice, however, it will be difficult to fix all relevant details. For example, given the size of the Census sample, there is no practical way to motivate and train Census interviewers to the same extent as in Sakernas. Therefore, it would be unrealistic to expect the 1990 Census measure of the share of unpaid family workers to agree with the Sakernas measure.

Because many respondents lack a clear understanding as to whether "work" includes "unpaid family work," a question could be added to the questionnaire dealing explicitly with whether each family member performed unpaid family work. The question would be added to the three follow-up questions that are presently asked of persons whose main activity was not working (see appendix D). The extra question would tend to stabilize responses, by sharply reducing the need for unstructured interpretation by interviewers. Unfortunately, adding a question may create a new break in the time series for unpaid family workers. This step should not be taken unless prior study and testing indicates that is unavoidable.

X. Findings: Labor force growth

The underlying trend "signal" for employment and labor force growth during 1976-86 can be reconstructed with a fair degree of confidence. The conclusions of this section are based mainly on the analysis in section VII. The conclusions are summarized in table 4.

The estimate is that employment increased at about the same rate as the population age 10 and over, that is, at about a rate of 2.91 percent per year during 1976-86. Labor force, meanwhile, increased at annual rates that were only 0.03 percent larger than the rates for employment. That is, labor force increased at a rate of about 2.94 percent per year during 1976-86.

The estimated labor force growth rate is far less than the 4.0 percent rate for 1980-85 that has been estimated by directly comparing the 1980 Census and the 1985 Supas. The trouble with the 4.0 percent estimate is that it is inflated by the much larger share of unpaid family workers in Supas (12.3 percent) than in Census (8.8 percent). Similarly, as has been mentioned, comparison of the 1986 Sakernas and the 1985 Supas suggests that the labor force grew 10.0 percent. The trouble with this estimate is that it is inflated by the much larger share of unpaid family workers in Sakernas (16.3 percent than in Supas (12.3 percent). As has been explained and is discussed in more detail in appendix A, the changes in the share of unpaid family workers are believed reflect declines in undercoverage.

The estimates presented here are based on the rate of population growth, and on the estimated rate of change of the labor force participation rate. The population growth rate is based on

Pop age ≥ 10 $LP = \frac{Emp + Unemp}{Pop\ age\ 10>}$

I (1) 19

estimates of the population age 10 and above for 1971, 1980 and 1985, in the BPS Statistical Yearbook for 1986.[4] The estimated rate of change of the labor force participation rate is based on a consideration of the overall pattern in all years during 1976-86 -- not just two years. As shown in table 4, the labor force participation rate is the sum of the share of the employed and the share of the unemployed.

The share of the employed. -- The share of the employed in the population age 10 and above probably remained flat during 1976-86 at about 56.3 percent. This conclusion is based on evidence for earning workers and unpaid workers:

The near constancy of the share of earning workers, at 40.0 percent. The thick line in figure 3 represents the assumed path of the share of earning workers during 1976-86. Actually, the true share may have increased by as much as 1.0 percentage points during 1976-80 and then declined a smiliar amount during 1980-86. Such an inverted u-shape would broadly accord with what is known about variations in economic growth during 1976-86. However, the u-shaped pattern is not shown in figure 2 because it cannot be considered certain.

The evidence, discussed elsewhere, that the share of unpaid workers probably did not change substantially. The thick line in the middle of figure 3 represents the assumed flat trend of the share of unpaid workers during 1976-86 -- at 16.3 percent, the percentage in the 1986 Sakernas. Of course, the true share may have increased or declined somewhat. The data noise in the data for unpaid family workers is too great to support a definite conclusion that the share did not change at all.

The share of the unemployed. -- The share of the unemployed in the population age 10 and over increased from 1.25 percent in 1976-77 to 1.51 percent in 1986 -- an increase of 0.26 percentage points, or about 0.03 points per year. For lack of space, no thick line is shown at the bottom of figure 3.

The labor force participation rate. -- The labor force participation rate, which is the sum of the share of employment and the share of unemployment. By addition, the labor force participation rate is estimated to have increased gradually from 57.5 to 57.8 percent during 1976-86. This is a change of only 0.3 points, equivalent to about 0.03 points per year. Of course, we cannot be sure that the labor force participation rate is exactly as has been assumed here. However, there is no evidence that it changed very much during 1976-86.

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[4]The population measures in tables 1a, 1b, and 1c, which are the measures that were used at the time the surveys were taken, were not used to estimate the population growth rate. The SAKERNAS measures for 1976-78 appear low in relation to the trend growth of population during 1971-80.

XI. Conclusions & recommendations

In conclusion, the BPS labor force data are, on the whole, very solid. The noise in the time series for the labor force participation rate pertains almost exclusively to a relatively minor component -- the share of unpaid family workers. The share of unpaid family workers is notoriously difficult to measure in all developing countries. In the major component of the labor force participation rate -- the share of earning workers -- there is very little noise. In fact, the stability of the share of earning workers is impressive evidence for the conceptual consistency and care with which BPS has collected labor force data since 1976.

The following are the principal recommendations of this report.

1. As the agency that is most familar with the strengths and limitations of the data, BPS needs to provide its own interpretation of the historical data for labor force -- particularly for the rate of labor force growth, which is a critical variable for economic analysis.

2. To facilitate analysis by outside users, BPS needs to document the problems in comparing labor force data from one survey to the next.

3. In tables presenting labor force data, BPS should consider adding lines that show subtotals for the number and the share of earning workers and unpaid workers. A footnote could explain that fluctuations in the share of unpaid workers are believed largely to reflect fluctuations in undercoverage; thus, earning workers is believed to be a more reliable indicator of change than total employment.

4. In order to stabilize the measure of unpaid family workers, BPS should considered ways to ensure that all respondents understand that "work" includes unpaid family work.

5. If serious doubt remains whether fluctuations in undercoverage have accouted for most of the fluctuations in the share of unpaid family workers, further research should be conducted until the doubt has been resolved.

Appendix A. Factors affecting the comparability of labor force data

The difficulty of interpreting some labor force data for Indonesia suggests a need to review the comparability of all of the labor force surveys for 1971-86. In this appendix, the surveys are reviewed in terms of the concepts used, the questionnnaire design, and selected methods and procedures. Some of the differences between the surveys are summarized in table 3.

Sample size and design. -- All of the labor force data discussed in this paper are based on household surveys. The sample design for all of the surveys was clustered random sampling. However, the size of the samples varied greatly. The Census samples were very large samples, including roughly 1.4-1.5 million households, roughly 5 percent of all households in Indonesia. The samples for the Intercensal Population Survey (Supas) were relatively small; that for 1985 was 125,000. The National Labor Force Survey (Sakernas) was conducted monthly during the last four months of 1976, then quarterly during 1977, 1978, 1986, and 1987. The Sakernas samples were about 16,000 to 24,000 households per month, equal to about 65,000 to 95,000 households per year. The Sakernas samples were rotating samples, with a portion of the sample replaced each month.

The household surveys cover regular housing units only. Special living quarters, such as dormitories or camps for migratory workers, are not included. As a result, many migratory workers are probably missed by the surveys.

Concept of employment. -- Since 1976, the concept of persons who work has remained the same -- anyone who worked at least one hour during the reference week. In 1971, however, a person who worked was one who worked at least two days. Persons with a job but temporarily not at work were considered employed throughout 1971-86.

Concept of employee. -- Since 1980, "employees are persons who work for another person or an institution for pay in cash or in kind." Before 1980, however, employees were defined more broadly as "persons who worked for pay in cash or in kind."[5] In the 1976-78 Sakernas, the share of employees in the working age population was much larger than in subsequent surveys, particularly for employees in agriculture. Presumably the difference is accounted for by the broader concept, which may include some persons whom later surveys classified as self-employed.

Employment question. -- The employment question has been asked in three different ways.

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[5] The broader definition during 1976-78 is taken from the instruction manual. In reports published during these years, the introductory text showed the broader definition in Bahasa Indonesia, but showed the narrower one in English.

In all surveys beginning with the 1980 Census, and in the 1976 Supas, the question was asked in two steps. A sample of this sequence of questions is shown in appendix D, for the 1986 Sakernas. The first step was to ask the respondent what was the person's main activity during the reference week. Persons who were working (or, in the 1976 Supas, who had a job but were temporarily not working) were counted as employed. For persons whose main activity was attending school, keeping house, looking for work, or something else, two follow-up questions were asked. First whether they worked as little as one hour during the week; those who said they did were also counted as employed. Second (in all surveys beginning with the 1980 Census), whether they had a job but were temporarily not working.

In the 1976-78 Sakernas, the question was asked day-by-day. For each of the past seven days, the respondent was asked what the person was doing: working at least one hour, has a job but not at work, looking for work, at school, keeping house, or other. A sample of the questionnaire is included in appendix D.

For the 1971 Census, a single, direct question was asked: whether the person worked during the previous week.

A single question appears likely to yield a lower estimate of employment than the multiple questions used subsequently. Which of the multiple questions appears likely to produce a higher estimate is difficult to say. In part, it depends on how the interviewer interpreted the questions to respondents. It depends too in part on whether interviewers during 1976-78 actually asked questions for all the days printed on the interview form, or tended to skip over some days when pressed for time or when they thought they knew the answer.

Concept of unemployment. -- BPS interviewer manuals instruct interviewers to include among persons looking for work not only those who have actively looked during the past week, but also those who applied previously and are still waiting for an answer to their application. The question refers only to whether the person looked for work during the past week, so there is clearly a risk of missing many persons who applied for jobs before the last week and are awaiting an answer. It seems as if interviewers must explain to respondents the meaning of "looking for work." Interviewers who are overworked or inadequately trained may disregard such fine points. If so, the undercoverage of unemployed persons who are waiting for an answer to an application must vary from one survey to another.

Personnel & training. -- Interviewers for Sakernas and Susenas have always been a local BPS official at the sub-district (kecamatan) level, the mantri statistik. There are about 3,000 kecamatan in Indonesia.

For census and Supas, the interviewers have been temporary workers, typically school teachers. Temporary workers are presumably less consistent and thorough than the mantri statistik. The mantri statistik must be presumed to be more knowledgeable about the

concepts used by BPS and more alert to the need for consistent procedures.

Training and supervision were presumably much more thorough for Supas than for census, because the sample, and the number of interviewers, was much smaller. Therefore, interviews are probably conducted more consistently and thoroughly in Supas than in census.

Questionnaire length and focus. -- The length and focus of the questionnaire is believed to affect the care and thoroughness that interviewers can devote to labor force questions. When a questionnaire is short and focussed, it is believed that interviewers can collect labor force information more carefully. In particular, they can devote more time to interprete questions. When a questionnaire is long and deals with many topics, interviewers are likely to collect labor force information with less care. Table 3 shows a rough indicator of the share that labor force information accounted for in the total questionnaire.

The questionnaire for the 1986 Sakernas (shown in appendix D) was the shortest and most focussed ever used to collect labor force data. Labor force data was the only data collected.

The questionnaire for the 1976-78 Sakernas was more diffuse, although labor force data accounted for more than half of the interview. The questionnaire included questions on reasons for not attending school, on household income sources, on crops and farm income, and on income and outlay during the previous month.

The omnibus questionnaires for the 1980 Census and the 1976 and 1985 Supas were even more diffuse, with labor force data accounting for roughly a third to a half of the interview. For example, the 1985 Supas included questions on housing conditions, sources of household income, average household expenditures, births and deaths, fertility history, contraceptive use, citizenship, religion, literacy, and migration behavior. Presumably, such diverse questions limited the time that interviewers could devote to making sure that no unpaid family members were overlooked in the roster of working persons.

Instruction manual. -- Interviewer instruction manuals provide an insight into training, and the informal interpretation that interviewers give to respondents during the interview. Appendix C shows some key passages from instruction manuals bearing on the definition of "working." Table 3 shows the number of words each manual devoted to explaining the definition of "working" - including examples.

For Sakernas in 1976-78, the paragraph explaining "working" contained only one sentence, with the parenthetical explanation "(including unpaid family workers)."

For the 1982 Susenas, the paragraph explaining "working" focused mainly on examples of activities that were not working -- for example, sewing own clothes.

The manual for the 1985 Supas provided extensive guidelines for the definition of "working." The manual provided six examples. The

first example specified that persons who cultivate cereals and secondary crops -- even for their own use -- are considered working. The second example specified that "members of households helping the head of the family or another member of the household in farming, at the store/shop and so on are considered as unpaid workers." These examples were not included in any previous manual.

The manual for the 1986 Sakernas referred users to the 1985 Supas manual for the concept/definition of "working".

Seasonality. -- Some of the surveys were taken in October, whereas others were taken in February, May, August and November. Seasonal variations in employment could in principal affect the comparability of the first group of surveys with the second group. However, the quarterly Sakernas data suggest that employment and labor force do not fluctuate much throughout the year.

Population control totals. -- All the labor force surveys were used to compute population characteristics that were expanded to population control totals by sex and age. The control totals are one element in the survey methodology that is sometimes overlooked when surveys are compared with one another.

The control totals have been either census totals or postcensal estimates based on the previous census and on demographic estimates of postcensal change. Postcensal estimates are subject to becoming inconsistent with subsequent estimates. More specifically, the next census may turn out not to agree with the postcensal estimates that were carried forward from the previous census. If it does not agree, the controls will be inconsistent with the control totals for years during the next decade. Inconsistencies in population estimates will ordinarily affect the comparability of employment and labor force, but not the comparability of percentage shares -- such as the labor force participation rate.

For example, the estimates in table 1a for working age population for 1977-78 are clearly inconsistent with those for 1980. Taken literally, they imply a low rate of growth for 1971-76 and a very high rate of growth for 1978-80. The real explanation is probably that the population growth assumptions that underlay the 1977-78 population estimates turned out to be wrong when the 1980 census was taken. These inconsistencies mean that the number of persons working in 1977-78 is not comparable with the number working in subsequent years; however, shares are comparable.

A peculiar feature of the 1978 population estimates is that they show almost no growth over 1977 for the male population (table 1b), but show normal growth for the female population (table 1c). It is not clear why this was the case, or whether it affected the share estimates for 1978.

Appendix B. Comparability of the various surveys with each other

This appendix reviews what is known about the comparability of each of the labor force surveys during 1971-86 with data from other years. It recapitulates some of what was said in appendix A and adds additional information that is specific to each survey.

1971 Census, employment. -- The 1971 data shown in tables 1a-1c are from the Series D report of the 1971 Census. The data differ greatly from those shown in the Series C report, which presented advance tables for the 1971 Census. The Series D data differ sharply from data for subsequent years in respect to employment and unemployment.

With regard to employment, the 1971 Series D data show a share of employment (that is, the percentage of the employed in the working age population) that is 1.6 points smaller than the 1980 Census, and that is 4-8 points smaller than surveys in all noncensus years.

The available evidence indicates that most or all of the difference between the 1971 Series D report and subsequent surveys reflects three groups of workers missed by the 1971 Series D report.

Persons with a job but not at work. The 1971 questionnaire asks only: Did the person work during the previous week? There is no separate question for persons who had a job but did not work. Therefore, most such persons can be presumed to have been classified as not working -- even though the instruction manual for the Census told interviewers to include them as working. Persons with a job but not at work accounted for 2.0-3.5 percent of the working age population during 1976-78.

Persons who worked less than 2 days per week. In the 1971 Census, "working" refers to persons who worked at least 2 days per week. There are no data for subsequent years that show the number of persons who worked only one day per week. However, it can be presumed that a large share of persons who worked less than 10 hours per week during 1976-78 worked only 1 day. Persons who worked less than 10 hours per week accounted for about 1.3-2.5 percent of the working age population during 1976-78.

Persons who were working and also looking for work. The questionnaire for the 1971 Census indicated that only persons who were not working would be asked whether they were looking for work. In practice, however, interviewers appear to have asked the question as well of persons who were working. When the labor force data were tabulated for Series D, the assumption was made that persons who were shown to be working and looking for work were not working, but were unemployed. By contrast, the Series C report (Advance Tables) assumed that such persons were working, and were not unemployed.

The principal difference between the employment data for 1971 (Series D) and 1980 appears to be that the 1980 data clearly understated the share of unpaid family workers, whereas the 1971

data clearly understated the share of earning workers. It is not clear whether the 1971 data understated the share of unpaid family workers to the same degree as in 1976-78. The estimated share of unpaid family workers was the same in 1971 as in 1976-78; the true share may have or may not have been larger in 1971 than in 1976-78.

1971 Census, unemployment. -- With regard to unemployment, the 1971 data from Series D show a much larger share of the unemployed than was ever shown subsequently. However, the introductory text to the Series D report throws doubts on the measure of unemployment. It contains the following statement:

> Readers should be cautioned in interpreting the data on economic activity of the population, in particular the data on the population seeking work.
> Due to the reinvestigation of the editing and imputation procedures used in the processing of the Advance Tables (Series C), changes were made which resulted in a marked shift in the number of persons classified as unemployed in the final publications of Population of Indonesia (Series D) and the Population of Provinces (Series E). This change was meant to attempt to give a broader definition to the concept of unemployment, in order to include some persons who may have been underemployed.
> However, the change in the editing procedures may have been affected by errors due to misunderstandings on the part of enumerators in following the correct sequence of questions on economic activity as specified in the instrucitions.
> Because of this, the revised editing and imputation procedures (which assumed the correct sequence of questions) may have caused some persons who were not currently economically active to be classified as unemployed.
> A more detailed, technical explanation of this problem is currently being prepared.

Thus, the Series D measure of unemployment appears to be greatly inflated by the inclusion of persons who were both working and were looking for work. The advance tables in Series C, which excluded such persons from the unemployed, are said to have shown less than half the number of unemployed shown in Series D.

BPS internal documents present yet a third set of 1971 data. The third set shows the same total for labor force as in the Series D report, but the total for unemployed is 839,000 larger than in Series D, and the total for the employed is 839,000 smaller. It is not clear when or why the data were revised.

1976 Supas. -- Supas is the acronym for the Intercensal Population Survey. BPS staff regard the 1976 Supas data as unsuitable for comparison with other years. The reasons for the discrepancies with other years remain, however, an unexplained puzzle.

The 1976 Supas indicated that 60.1 percent of the working age population was employed, a much larger share than the 53.6 percent found by the 1976 Sakernas. Unpaid family workers accounted for 4.1 points of the 6.5-point difference.

1976-78 Sakernas. -- Sakernas is the acronym for the National Labor Force Survey. The concept of employment in the 1976-78 Sakernas was the same as that in subsequent years: working at least 1 hour per week. The wording of questions in 1976-78 was however different from that in subsequent years, as was discussed in appendix A.

The most puzzling feature of the 1976-78 data is the sharp increase in the share of earning workers in 1978. Research so far has not turned up any procedural change that might account for this increase. If there is such a change, it may somehow be linked with a sharp increase in 1978 in the number of persons with a job but not at work and in the number of persons working 1-9 hours per week. Similarly, it may be linked with the puzzling pattern of changes in labor force participation rates by sex and age. In 1978, labor force participation rates jumped sharply for women age 25 and over and for men age 65 and over.

Another puzzling feature of the 1978 data is the virtual lack of increase in the working-age population for men but not for women. A final puzzling feature of the 1976-78 data is the large share of employees in the working age population. As was mentioned in appendix A, this appears to be related to changes in the definition of "employee."

1980 Census. -- For unpaid family workers and for the unemployed, the comparability of Census data with data for other years is suspect. Census interviewers were less well trained than interviewers in other years. Moreover, the long questionnare and the heavy work load left Census interviewers little time for fine points of interpretation.

The share of unpaid family workers in the working age population (8.8 percent) was much smaller in 1980 than in Sakernas data for 1978 and Susenas data for 1982 (see table 1a). As was explained in section VIII of the paper, the most likely reason is that Census interviewers made less effort than Sakernas and Susenas interviewers to ensure that no unpaid family workers were omitted from the roster of workers. It is implausible that the use of unpaid family workers contracted sharply during 1978-80, then expanded sharply during 1980-82.

The share of the unemployed in the working age population for the 1980 Census (.83) is much smaller than in all non-census years. This difference may reflect two factors:

BPS interviewer manuals instruct interviewers to include among persons looking for work not only those who have actively looked during the past week, but also those who applied previously and are still waiting for an answer to their application. However, the questionnaire asks only whether the person looked for work during the past week. Thus, there is clearly a risk of missing many persons who applied for jobs before the last week and are awaiting an answer. Census interviewers may have been too overworked and insufficiently trained to pay attention to such fine points.

In the 1980 Census and in Supas 1985, the job-search question was asked for all persons age 10 and over -- not just, as in Sakernas and Susenas, for persons who did not work. Thus, the question was asked more than twice as often in Census and Supas as in Sakernas and Susenas. Interviewers who got tired of so many questions may have curtailed their efforts to offer interpretations in regard to the job-search question. They would have been discouraged by the fact that positive responses were in any event relatively rare.

1982 Susenas. -- Susenas is the acronym for the National Socio-economic Survey. The factors distinguishing the 1982 Susenas from other surveys are shown in table 3. Although the employment question for 1982 was different from that used in 1976-78, the results appear similar.

1985 Supas. -- In terms of both procedures and results, the 1985 Supas shares some features in common with Census, others in common with Sakernas and Susenas. Table 3 shows the similiarities and differences in procedures.

In regard to results, the 1985 Supas shows a share of the unemployed that is well under the share shown by Sakernas and Susenas, but is well above the share shown by Census.

The comparability of the Supas measure with measures from Susenas 1982 and Sakernas 1986 is suspect. There is no economic reason to suppose that unemployment declined during 1982-85, then increased sharply during 1985-86 (more specifically, from October 1985 to February 1986). The low share of unemployment in Supas, as compared with Susenas and Sakernas, may reflect the use of part-time interviewers who were less familiar with the previously mentioned fine points of the definition of unemployment. Inasmuch as the unemployed constitute a small proportion of persons age 10 and over, the part-time Supas interviewers would have encountered only a handful of such persons during their brief assignment.

Caution is necessary in comparing unemployment data from the 1985 Supas with those from the 1980 Census. Economic factors may account, at least in part, for the apparent increase in unemployment during 1980-85. But some of the apparent difference between the share of the unemployed in the two series may simply reflect a decline in the undercoverage of the unemployed from Census to Supas. The decline may be due to the fact that the sample size for Supas was much smaller, making it possible to select more conscientious interviewers and to train and supervise them more carefully.

The 1985 Supas shows a share of unpaid workers that is broadly consistent with Sakernas for 1976-78 and Susenas for 1982, but that is much larger than the share for the 1980 Census. This difference probably reflects procedural differences. First, as mentioned above, Supas interviewers may have been more conscientious, and were better trained and supervised. Second, interviewer work loads were smaller in Supas than in Census, because the sample size was much smaller. Third, Supas interviewers had an instruction manual that gave more explicit instructions than ever before with

regard to the inclusion of unpaid family workers in those categorized as "working."

1986 Sakernas. -- The 1986 Sakernas differed from the 1982 Susenas and the 1976-78 Sakernas chiefly in regard to the share of unpaid family workers. This issue is discussed in the body of the paper.

The 1986 Sakernas differed from the 1985 Supas chiefly in regard to the share of unpaid family workers and the share of the unemployed. However users of the two surveys should understand that the differences in regard to unpaid family workers affect the comparability of the data in others ways. For example:

The apparent increase in the percent of workers who work in agriculture, from 54.7 percent in 1985 to an average of 55.1 percent in 1986 (for women, from 53.6 to 56.0 percent), reflects the increase in the number of unpaid family workers. Unpaid family workers in agriculture accounted for more than 75 percent of the increase in unpaid family workers from 1985 to 1986.

Similarly, the apparent 11.8-percent decline in the percent of workers in manufacturing, from 9.3 percent to 8.2 percent, largely reflects two statistical factors:

First, the increase in the number of unpaid family workers in the denominator. The increase in the share of unpaid family workers (from 12.3 to 16.3 percent of the working age population) caused the total number of workers to increase by 7.7 percent. Presumably, few of the newly-found unpaid family workers work in manufacturing. If none of them are assumed to work in manufacturing, their inclusion in the denominator but not in the numerator would cause the percentage of workers in manufacturing to decline from 9.3 percent in 1985 to 8.6 percent in 1986.

Second, the classification of workers in 1986 by 5 kinds of economic activity instead of 10 as in 1985. The compressed classification meant that smaller categories such as construction and transportation were grouped as "other." However, comparison of the 1985 and 1986 tabulations shows that the "other" group in 1986 (4.2 percent of the working age population) exceeds the sum of the 6 groups in 1985 that were classified as "other" in 1986 (3.9 percent of the working age population). Interviewers must have used "other" as a convenient dumping ground for some persons in one of the four principal activities -- including manufacturing.

The increase in the percentage of part-time workers from 1985 to 1986 similarly reflects the increase in the number of part-time unpaid family workers.

The decline in the share of persons whose main activity was keeping house clearly reflects the increase in the number of unpaid family workers.

The increase in the percentage of the labor force with a primary school degree from 27.4 to 33.3 percent remains a puzzle.

Appendix C. Excerpts from BPS instruction manuals

Note: The following excerpts from BPS manuals for 1971, 1976-77, 1982, 1985 and 1986 relate to the classification of persons as working or not working. The excerpts are discussed in appendix A.

Sensus Penduduk 1971

A. Those categorized as working.
   1. Those who during the past week have work with the aim to obtain an income or profit for at least 2 days.

Sakernas 1976-77

C 3. Working.
Working means those having a job with the aim to obtain an income or profit and working for at least an hour in one day (including unpaid family workers)

Susenas 1982

- Working, are those doing a job with the aim to obtain an income or a profit or to fulfill basic needs.
  Those with activities for own use are not categorized as working, for example :
  a. Sewing own clothes
  b. Painting for own use
  c. Gardening as a hobby
  d. Cooking for own family
  e. Fishing for pleasure, etc.

Question 16 : Whether working at least an hour during the past week?

Circle one of code 1 or 2 as the answer of the respondent.

- Working at least an hour during the past week, is working an hour uninterupted in a day.

Supas 1985

- Working, is an activity with the aim to obtain an income or profit during the past week for at least an hour. Working for one hour must be done continuously with no interuption. The income and profit covers wage/salary including allowances, bonuses and business profit from hiring, and interest in form of money or goods.

Explanation :

a. Those with activities cultivating cereal (paddy, corn, wheat) and/or secondary crops (cassava, sweet potato, potato) for own use are considered working.
Those with activities for own use as sewing own clothes, painting for own collection, cooking for own family, and fishing for pleasure are not considered working.

b. Members of households helping the head of the family or other members of the household in farming, at the store/shop and so on are considered as unpaid workers.

c. Persons in the business of hiring agricultural machinery/tools, industrial machinery, party furniture and utensils, transportation etc. are categorized as working.

d. Household helpers are included in the working category, whether they are a member of their employer's household or not.

e. Convicts with activities as cultivating land, making furniture etc. are not considered working.

f. A person renting out his land in return for a portion of the agricultural product is categorized as working if he is involved with the responsibility or takes part in farming the land.

Question 2 : Whether worked for at least an hour during the past week?

if the answer is "yes" (code 1) continue the interview to Block VIII.

Sakernas 1986

Question 4 : The activities during the past week.

Circle one of code 1 to 5 as the answer of the respondent. The concept/definition can be seen in the 1985 Supas manual II, page 59 and 61. If the answer to question 4 is code 1 continue the interview to question 8.

Question 5 : Worked at least an hour during the past week?

Circle code 1 or 2.
If the answer is code 1 continue the interview to question 8.

Appendix D. Selected BPS questionnaires

(Following are relevant portions of the questionnaires for the 1977 and 1986 Sakernas).

Biro Pusat Statistik
SUSENAS
Survey Sosial Ekonomi Nasional

1 [2][1]
3 [ ]
4 [ ][ ]

RAHASIA

SURVEY ANGKATAN KERJA NASIONAL 1977

SAKERNAS 77 - PERORANGAN

DAFTAR II : KETERANGAN PERORANGAN

Daerah Kota
Daerah Pedesan
Bulan .....

HANYA UNTUK ANGGOTA RUMAH TANGGA YANG BERUMUR 10 TAHUN DAN LEBIH

A. PENGENALAN TEMPAT

A1. Propinsi			A7. Nomor Blok Sensus		
A2. Domain			A8. Nomor Urut Bangunan		
A3. Kabupaten/Kotamadya		6 [ ][ ][ ]	A9. Nomor Urut Rumah Tangga		11 [ ][ ][ ]
A4. Kecamatan		9 [ ]	A10. Nama Kepala Rumah Tangga		
A5. Desa		10 [ ]	A11. Nomor Urut Anggota Rumah Tangga		14 [ ][ ]
A6. Nomor Cluster					

B. KETERANGAN ANGGOTA RUMAH TANGGA

KOLOM KARTU (DIISI DI B.P.S)

PERINCIAN B1 s/d B3 DISALIN DARI DAFTAR I. LINGKARI KODE YANG SESUAI

B1. Nama Anggota Rumah Tangga : ABDULLAH .....

B2. Jenis Kelamin : *Laki-laki -L* *Perempuan -P* 16 [ ]

B3. Umur : ..... *Tahun* 17 [ ][ ]

B4. Status perkawinan : *Belum kawin -1, Kawin -2, Janda/Duda/Cerai -3.* 19 [ ]

B5. Pendidikan terakhir yang ditamatkan :

Tidak sekolah	-1	*S.L.P. Kejuruan*	-6
Tidak tamat S.D.	-2	*S.L.A. Kejuruan*	-7
Tamat S.D.	-3	*Akademi/Sarjana Muda*	-8
S.L.P. Umum	-4	*Universitas/Sarjana*	-9
S.L.A. Umum	-5		

20 [ ]

C. KEGIATAN SELAMA SEMINGGU YANG LALU

1. DAPATKAH DIBERITAHUKAN KEPADA KAMI, APAKAH KEGIATAN YANG DILAKUKAN SELAMA SEMINGGU YANG LALU, MULAI DARI KEMARIN....., KEMARIN DULU....., 3 HARI YANG LALU DAN SETERUSNYA.
2. KALAU BEKERJA BERAPA JAM SETIAP HARINYA.
3. BERILAH TANDA √ PADA KOTAK YANG SESUAI.

C1 Hari / C2 Kegiatan	C3 Bekerja (paling sedikit 1 jam sehari)	C4 Punya pekerjaan sedang tidak bekerja	C5 Mencari pekerjaan	C6 Sekolah	C7 Mengurus Rumah Tangga	C8 Lainnya (Pensiun, cacad jasmani dll).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kemarin, hari	✓ 8 ....jam	[ ]	[ ]	[ ]	✓	[ ]
Kemarin dulu, hari	[ ] ....jam	✓	[ ]	[ ]	✓	[ ]
3 hari yl, hari	✓ 8 ....jam	[ ]	[ ]	[ ]	✓	[ ]
4 hari yl, hari	✓ 8 ....jam	[ ]	[ ]	[ ]	✓	[ ]
5 hari yl, hari	✓ 6 ....jam	[ ]	[ ]	[ ]	✓	[ ]
6 hari yl, hari	✓ 8 ....jam	[ ]	[ ]	[ ]	✓	[ ]
7 hari yl, hari	✓ 5 ....jam	[ ]	[ ]	[ ]	✓	[ ]
Jumlah	6 4 0 jam	1	[ ]	[ ]	7	[ ]
KOLOM KARTU	21 22 23	24	25	26	27	28

D. BEKERJA / PUNYA PEKERJAAN	KOLOM KARTU (DIISI DI B.P.S.)
D1. Dimana bekerja dan sebutkan lapangan pekerjaan utama dari perusahaan/kantor/tempat bekerja :	29
D2. Jenis/jabatan dari pekerjaan tersebut :	31
D3. Status pekerjaan : *Buruh/pegawai* · 1 *Pengusaha sendiri* · 2 *Pengusaha dengan orang lain* · 3 *Pekerja tanpa upah/keluarga* · 4 *Pekerja sosial* · 5	34
D4. Berapa jam selama seminggu yang lalu mengerjakan pekerjaan tersebut ? ..... *Jam*	35
D5. Apakah pekerjaan seminggu yang lalu ini sama dengan pekerjaan pada 3 bulan yang terakhir ? *Ya* · Y *Tidak* · T	37
D6. Berapa pendapatan bersih dari pekerjaan tersebut selama sebulan terakhir ? (tidak termasuk hasil pertanian didaftar I) *Dalam bentuk uang* Rp.....	38
Dalam bentuk barang Rp.....	43
D7. Disamping pekerjaan diatas, apakah masih mempunyai pekerjaan lain ? *Ya* · Y / *Tidak* · T (Langsung ke D10)	48
JIKA "YA" PADA D7 : D8. Berapa jam selama seminggu yang lalu mengerjakan seluruh pekerjaan lain tersebut ? ..... *Jam*	49
D9. Berapa pendapatan bersih dari seluruh pekerjaan lain tersebut selama sebulan terakhir ? (tidak termasuk hasil pertanian didaftar 1). *Dalam bentuk uang* Rp.....	51
Dalam bentuk barang Rp.....	56
D10. Apakah masih mempunyai waktu dan bersedia menerima pekerjaan lagi ? *Ya* · Y *Tidak* · T	61
E. MENCARI PEKERJAAN	
E1. Sudah berapa lama mencari pekerjaan ?..... *tahun*..... *bulan*	62
E2. Apakah mencari pekerjaan penuh/full time atau bekerja sambilan/part time ? *Penuh* · 1 *Sambilan* · 2	64
E3. Dari manakah biasanya mendapat penghasilan untuk keperluan sehari-hari selama ini ? *Bekerja* · 1 *Kadang kadang bekerja* · 2 *Dari keluarga/kawan* · 3 *Lainnya* · 4	65
E4. Apakah pernah bekerja sebelumnya ? *Ya* · Y *Tidak* · T	66
F. KHUSUS SEKOLAH/MENGURUS RUMAH TANGGA/LAINNYA	
F1. Apakah pernah mencari pekerjaan selama 3 bulan yang lalu ? *YA* · Y / *TIDAK* · T	67
F2 Alasan mengapa tidak mencari pekerjaan ? *Mengurus rumah tangga* · 1 *Sekolah* · 2 *Kesehatan* · 3 *Tidak bersedia bekerja (pensiun, terlalu tua, cacad jasmani/rokhani dsb)* · 4	68
F3. Kalau ada pekerjaan yang cocok apakah bersedia menerimanya ? *Ya* · Y *Tidak* · T	69
G. Rata-rata penerimaan sebulan seperti pensiun, sewa, kiriman dan sebagainya selama setahun yang lalu Rp.....	70
H. Pemberi keterangan : *Yang bersangkutan* · 1 *Kepala rumah tangga* · 2 *Anggota rumah tangga lainnya* · 3	75
CATATAN :	

SAKERNAS 1986

IV. KETERANGAN ANGGOTA RUMAHTANGGA BERUMUR 10 TAHUN KE ATAS

Nama : ..... No. Urut ART: 26

1. Jenis kelamin 28
   1. Laki-laki 2. Perempuan

2. U m u r : ..... tahun 29

3. Pendidikan tertinggi yang ditamatkan 31
   1. Tidak/belum pernah sekolah
   2. Tidak/belum tamat SD
   3. SD
   4. SMTP Umum
   5. SMTP Kejuruan
   6. SMTA Umum
   7. SMTA Kejuruan
   8. Diploma I/II
   9. Akademi/Diploma III
   0. Universitas

4. Kegiatan apakah yang dilakukan selama seminggu yang lalu ? 32
   1. Bekerja → Ke P.8.
   2. Sekolah
   3. Mengurus rumahtangga
   4. Tidak mampu melakukan kegiatan
   5. Lainnya

5. Apakah bekerja paling sedikit satu jam selama seminggu yang lalu ? 33
   1. Ya → Ke P.8.
   2. Tidak

6. Apakah punya pekerjaan/usaha tetapi sementara tidak bekerja selama seminggu yang lalu ? 34
   1. Ya → Ke P.8.
   2. Tidak

7. Apakah pernah bekerja sebelumnya ? 35
   1. Ya → Ke P.13.
   2. Tidak

8. Jumlah jam kerja seluruh pekerjaan setiap hari selama seminggu yang lalu 36 37

Hari ke							
1	2	3	4	5	6	7	Jumlah
							..... jam

9. Jenis kegiatan/lapangan usaha tempat bekerja/perusahaan/kantor dari pekerjaan utama 39
   1. Pertanian
   2. Industri
   3. Perdagangan
   4. Jasa-jasa
   5. Lainnya

10. Status pekerjaan utama 40
    1. Berusaha sendiri
    2. Berusaha dengan dibantu pekerja keluarga/buruh tidak tetap.
    3. Berusaha dengan buruh tetap
    4. Buruh/Karyawan
    5. Pekerja keluarga

11. Jika P.10 berkode 4 : Buruh/Karyawan rata-rata upah/gaji bersih yang diterima selama seminggu dan sebulan yang lalu dari pekerjaan tersebut.
    1. Selama seminggu Rp. 41
    2. Selama sebulan Rp. 49

12. Jumlah jam kerja pada pekerjaan utama setiap hari selama seminggu yang lalu. 57 58

Hari ke							
1	2	3	4	5	6	7	Jumlah
							..... jam

13. Apakah mencari pekerjaan selama seminggu yang lalu ? 60
    1. Ya → Ke P.15
    2. Tidak

14. Apakah mau menerima pekerjaan ? 61
    1. Ya → Pertanyaan selesai
    2. Tidak

15. Upaya yang pernah dilakukan dalam mencari pekerjaan 62
    1. Mendaftar pada Bursa Kesempatan Kerja
    2. Menghubungi Perusahaan/kantor
    4. Lainnya

16. Sudah berapa lama mencari pekerjaan 63
    ..... bulan

17. Pekerjaan yang dicari : 65
    1. Pekerjaan penuh (full time)
    2. Pekerjaan sambilan (part time)

SAKERNAS 1986

IV. INFORMATION OF HOUSEHOLD MEMBERS AGED 10 YEARS AND ABOVE

Name : ..... Serial No. House-hold Members : ... 26 [ ][ ]

1. Sex
   1. Male 2. Female — 28 [ ]

2. Age : ..... years — 29 [ ][ ]

3. Highest Level of Education Completed :
   1. Not attending School
   2. Not Completed primary School
   3. Primary School
   4. General Junior High School
   5. Vocational Junior High School
   6. General Senior High School
   7. Vocational Senior High School
   8. Diploma I / II
   9. Academy / Diploma III
   0. University
   — 31 [ ]

4. Activity during the previous week :
   1. Working → to Q. 8
   2. Attending School
   3. Housekeeping
   4. Not able to work
   5. Others
   — 32 [ ]

5. Did you work at least one hour during the previous week ?
   1. Yes → to Q.8 2. No — 33 [ ]

6. Has ajob but absent during the previous week
   1. Yes → to Q.8 2. No — 34 [ ]

7. Did you ever work before ?
   1. Yes → to Q.13 2. No — 35 [ ]

8. Total working hours during the previous week

Day							
1	2	3	4	5	6	7	Total
..	...	..	..	..	...	..	... Hours

   — 36 [ ][ ] 37 [ ][ ]

9. Type of industry in which primary activity of the previous week was carried out
   1. Agriculture 3. Trade
   2. Manufacturing 4. Services
   5. Others
   — 39 [ ]

10. Employment status in primary activity
    1. Self employed
    2. Self employed assited by family member/temporary help
    3. Employer
    4. Employee
    5. Unpaid family worker
    — 40 [ ]

11. If the Q.10 coded 4 : employee, average of wages/salary during a week and a month
    1. During a week Rp .....
       41 [ ][ ][ ][ ][ ][ ][ ][ ]
    2. During a month Rp .....
       49 [ ][ ][ ][ ][ ][ ][ ][ ]

12. Total working hours in primary industry

1	2	3	4	5	6	7	Total
...	...	...	...	...	...	...	... Hours

    — 57 [ ] 58 [ ][ ]

13. Did you look for work during the previous week ?
    1. Yes → to Q.15 2. No — 60 [ ]

14. Did you want to recieve a job ?
    1. Yes → Finish ← 2. No — 61 [ ]

15. Efforts to find ajob
    1. Registered to employment agencies
    2. Direct contact to the Establisment
    4. Others
    — 62 [ ]

16. How long did you look for work ?
    ..... months — 63 [ ][ ]

17. What kind work did you want ?
    1. Full time 2. Part time — 65 [ ]

Table 1a. -- Composition of Labor Force, 1971-86

	1971	1977	1978	1980	1982	1985	1986
Employed, Agriculture	24936	29694	31545	28834	31593	34142	37660
Earning workers	16731	19463	22108	21474	20780	22131	21726
Employees	5804	7630	9470	4717	6418	5108	3535
Self-employed*	10927	11833	12638	16757	14362	17023	18191
Unpaid workers	8205	10231	9437	7360	10813	12011	15934
Employed, Nonag.	13531	18621	20235	22719	26210	28315	30712
Earning workers	12198	16904	18617	20881	23627	25512	26684
Employees	6747	9521	10344	9830	12698	13664	14053
Self-employed*	5451	7383	8273	11051	10929	11848	12631
Unpaid workers	1333	1717	1618	1838	2583	2803	4028
Employed, Total	38467	48315	51780	51553	57803	62457	68372
Earning workers	28929	36367	40725	42355	44407	47643	48410
Employees	12551	17151	19814	14547	19116	18772	17588
Self-employed*	16378	19216	20911	27808	25291	28871	30822
Unpaid workers	9538	11948	11055	9198	13396	14814	19962
Unemployed	2794	1129	1316	868	1795	1368	1855
Labor force	41261	49444	53096	52421	59598	63825	70227
Population age 10+	80507	91997	93726	104353	110441	120380	122556
Unpaid wkrs/employed							
Agriculture	0.329	0.345	0.299	0.255	0.342	0.352	0.423
Nonagriculture	0.099	0.092	0.080	0.081	0.099	0.099	0.131
Both	0.248	0.247	0.213	0.178	0.232	0.237	0.292
SHARE OF POPULATION AGE 10+ (IN PERCENT)							
Employed, Agriculture	30.97	32.28	33.66	27.63	28.61	28.36	30.73
Earning workers	20.78	21.16	23.59	20.58	18.82	18.38	17.73
Employees	7.21	8.29	10.10	4.52	5.81	4.24	2.88
Self-employed*	13.57	12.86	13.48	16.06	13.00	14.14	14.84
Unpaid workers	10.19	11.12	10.07	7.05	9.79	9.98	13.00
Employed, Nonag.	16.81	20.24	21.59	21.77	23.73	23.52	25.06
Earning workers	15.15	18.37	19.86	20.01	21.39	21.19	21.77
Employees	8.38	10.35	11.04	9.42	11.50	11.35	11.47
Self-employed*	6.77	8.03	8.83	10.59	9.90	9.84	10.31
Unpaid workers	1.66	1.87	1.73	1.76	2.34	2.33	3.29
Employed, Total	47.78	52.52	55.25	49.40	52.34	51.88	55.79
Earning workers	35.93	39.53	43.45	40.59	40.21	39.58	39.50
Employees	15.59	18.64	21.14	13.94	17.31	15.59	14.35
Self-employed*	20.34	20.89	22.31	26.65	22.90	23.98	25.15
Unpaid workers	11.85	12.99	11.80	8.81	12.13	12.31	16.29
Unemployed	3.47	1.23	1.40	0.83	1.63	1.14	1.51
Labor force	51.25	53.75	56.65	50.23	53.96	53.02	57.30
Population age 10+	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note. -- The 1986 average is a preliminary estimate.
* "Self-employed*" include self-employed working alone, self-employed helped by unpaid family workers, and employers.

Table 1b. -- Composition of Female Labor Force, 1971-86

	1971	1977	1978	1980	1982	1985	1986
Employed, Agriculture	7920	9670	10898	9107	11150	12068	15004
Earning workers	3794	4053	5736	5328	4455	4541	4494
Employees	1869	2754	4108	1575	2336	1837	1504
Self-employed*	1925	1299	1628	3753	2119	2704	2989
Unpaid workers	4126	5617	5162	3779	6695	7527	10511
Employed, Nonag.	4764	6652	7977	7828	9588	10438	11910
Earning workers	3956	5490	6926	6599	7699	8409	8998
Employees	1598	2419	2706	2364	2942	3534	3806
Self-employed*	2358	3071	4220	4235	4757	4875	5192
Unpaid workers	808	1162	1051	1229	1889	2029	2912
Employed, Total	12684	16322	18875	16935	20738	22506	26914
Earning workers	7750	9543	12662	11927	12154	12950	13491
Employees	3467	5173	6814	3939	5278	5371	5310
Self-employed*	4283	4370	5848	7988	6876	7579	8182
Unpaid workers	4934	6779	6213	5008	8584	9556	13423
Unemployed	1177	274	338	388	773	470	727
Labor force	13861	16596	19213	17323	21511	22976	27641
Population age 10+	41300	46774	48271	53050	56192	61122	62159
Unpaid wkrs/employed							
Agriculture	0.521	0.581	0.474	0.415	0.600	0.624	0.701
Nonagriculture	0.170	0.175	0.132	0.157	0.197	0.194	0.245
Both	0.389	0.415	0.329	0.296	0.414	0.425	0.499
	SHARE OF POPULATION AGE 10+ (IN PERCENT)						
Employed, Agriculture	19.18	20.67	22.58	17.17	19.84	19.74	24.14
Earning workers	9.19	8.67	11.88	10.04	7.93	7.43	7.23
Employees	4.53	5.89	8.51	2.97	4.16	3.01	2.42
Self-employed*	4.66	2.78	3.37	7.07	3.77	4.42	4.81
Unpaid workers	9.99	12.01	10.69	7.12	11.91	12.31	16.91
Employed, Nonag.	11.54	14.22	16.53	14.76	17.06	17.08	19.16
Earning workers	9.58	11.74	14.35	12.44	13.70	13.76	14.48
Employees	3.87	5.17	5.61	4.46	5.24	5.78	6.12
Self-employed*	5.71	6.57	8.74	7.98	8.47	7.98	8.35
Unpaid workers	1.96	2.48	2.18	2.32	3.36	3.32	4.69
Employed, Total	30.71	34.90	39.10	31.92	36.91	36.82	43.30
Earning workers	18.77	20.40	26.23	22.48	21.63	21.19	21.70
Employees	8.39	11.06	14.12	7.43	9.39	8.79	8.54
Self-employed*	10.37	9.34	12.11	15.06	12.24	12.40	13.16
Unpaid workers	11.95	14.49	12.87	9.44	15.28	15.63	21.59
Unemployed	2.85	0.59	0.70	0.73	1.38	0.77	1.17
Labor force	33.56	35.48	39.80	32.65	38.28	37.59	44.47
Population age 10+	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note.-- The 1986 average is a preliminary estimate.
* "Self-employed*" include self-employed working alone, self-employed helped by unpaid family workers, employers.

Table 1c. -- Composition of Male Labor Force, 1971-86

	1971	1977	1978	1980	1982	1985	198
Employed, Agriculture	17016	20024	20647	19727	20443	22074	2265
Earning workers	12937	15410	16372	16146	16325	17590	1723
Employees	3935	4876	5362	3142	4082	3271	203
Self-employed*	9002	10534	11010	13004	12243	14319	1520
Unpaid workers	4079	4614	4275	3581	4118	4484	542
Employed, Nonag.	8767	11969	12258	14891	16622	17877	1880
Earning workers	8242	11414	11691	14282	15928	17103	1768
Employees	5149	7102	7638	7466	9756	10130	1024
Self-employed*	3093	4312	4053	6816	6172	6973	743
Unpaid workers	525	555	567	609	694	774	111
Employed, Total	25783	31993	32905	34618	37065	39951	4145
Earning workers	21179	26824	28063	30428	32253	34693	3491
Employees	9084	11978	13000	10608	13838	13401	1227
Self-employed*	12095	14846	15063	19820	18415	21292	2264
Unpaid workers	4604	5169	4842	4190	4812	5258	653
Unemployed	1617	855	979	480	1022	898	112
Labor force	27400	32848	33883	35098	38087	40849	4258
Population age 10+	39207	45223	45455	51303	54249	59258	6039
Unpaid wkrs/employed							
Agriculture	0.240	0.230	0.207	0.182	0.201	0.203	0.23
Nonagriculture	0.060	0.046	0.046	0.041	0.042	0.043	0.05
Both	0.179	0.162	0.147	0.121	0.130	0.132	0.15
	SHARE OF POPULATION AGE 10+ (IN PERCENT)						
Employed, Agriculture	43.40	44.28	45.42	38.45	37.68	37.25	37.5
Earning workers	33.00	34.08	36.02	31.47	30.09	29.68	28.5
Employees	10.04	10.78	11.80	6.12	7.52	5.52	3.3
Self-employed*	22.96	23.29	24.22	25.35	22.57	24.16	25.1
Unpaid workers	10.40	10.20	9.40	6.98	7.59	7.57	8.9
Employed, Nonag.	22.36	26.47	26.97	29.03	30.64	30.17	31.1
Earning workers	21.02	25.24	25.72	27.84	29.36	28.86	29.2
Employees	13.13	15.70	16.80	14.55	17.98	17.09	16.9
Self-employed*	7.89	9.53	8.92	13.29	11.38	11.77	12.3
Unpaid workers	1.34	1.23	1.25	1.19	1.28	1.31	1.8
Employed, Total	65.76	70.74	72.39	67.48	68.32	67.42	68.64
Earning workers	54.02	59.31	61.74	59.31	59.45	58.55	57.81
Employees	23.17	26.49	28.60	20.68	25.51	22.61	20.3
Self-employed*	30.85	32.83	33.14	38.63	33.95	35.93	37.4
Unpaid workers	11.74	11.43	10.65	8.17	8.87	8.87	10.8
Unemployed	4.12	1.89	2.15	0.94	1.88	1.52	1.87
Labor force	69.89	72.64	74.54	68.41	70.21	68.93	70.51
Population age 10+	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note.-- The 1986 average is a preliminary estimate.
* "Self-employed*" include self-employed working alone, self-employe helped by unpaid family workers, and employers.

Table 2. -- Hours of Work of Unpaid Family Workers, Sakernas 1977-78 and 1986

	1977	1978	1977-78 average	1986
Not at work	740	521	631	368
1-9 hours	505	798	652	1842
10-24 hours	3405	3466	3436	7818
25-34 hours	2317	2183	2250	4083
35-59 hours	4435	3566	4001	5453
60 hours +	518	487	503	398
Total	11920	11021	11471	19961
Population 10+	91997	93726	92862	122556
(in percent of the population age 10 and above)				
Not at work	0.80	0.56	0.68	0.30
1-9 hours	0.55	0.85	0.70	1.50
10-24 hours	3.70	3.70	3.70	6.38
25-34 hours	2.52	2.33	2.42	3.33
35-59 hours	4.82	3.80	4.31	4.45
60 hours +	0.56	0.52	0.54	0.32
Total	12.96	11.76	12.35	16.29

Note : Those "not at work" are those with a job who temporarily did no work during the survey week.

The 1986 average is an preliminary estimate.

BPS does not plan to release quarterly data for 1986.

Table 3. -- Some Major Factors Affecting Comparability of Labor Force Data, 1971-86

YEAR	SURVEY	QUESTIONNAIRE			SELECTED METHODS			
		EMPLOYMENT CONCEPT	EMPLOYMENT QUESTION	LABOR FORCE SHARE IN QUESTIONNAIRE@	SAMPLE SIZE ('000)	MONTH TAKEN	INTERVIEWER	WORDS IN MANUAL RE "WORKING"
1971	Census	Worked at least 2 days during week	single	25%	1350‡	Oct	Temp.	24
1976	Supas	Worked at least 1 hour during week	2-step	33%	57.1	Mar	Temp.	17
1976	Sakernas	- idem -	daily	70%	95.4	S,O,N,D	Mantri stat.	34
1977	Sakernas	- idem -	daily	70%	95.4	F,M,A,N	Mantri stat.	34
1978	Sakernas	- idem -	daily	70%	74	F,M,A,N	Mantri stat.	34
1980	Census	- idem -	2-step	50%	1518.6	Oct	Temp.	63
1982	Susenas	- idem -	2-step	50%	60	Oct	Mantri stat.	53
1985	Supas	- idem -	2-step	33%	125.4	Oct	Temp.	210
1986	Sakernas	- idem -	2-step	100%	65.4	F,M,A,N	Mantri stat.	210#

Notes. -- For discussion of the factors shown here, see appendix A. For month taken, Oct is October; Mar is March; F,M,A,N is February, May, August, and November; and S,O,N,D is September, October, November, and December. Mantri stat. is the mantri statistik, the local BPS official. Temp. is a temporary employee hired just for one survey. For monthly Sakernas surveys, the sample size is the total for the entire year -- that is, the sum of the samples for each month.

@ The share of labor force questions in the questionnaire was estimated roughly by casual examination.

‡ The sample size for 1971 is approximate.

The 1986 Sakernas manual referred interviewers to the 1985 Supas manual.

Table 4. -- Labor Force Participation Rate, 1976 and 1986
(in percent of the population age 10 and above)

	Sakernas estimate		Assumed true (see text)	
	1976	1986	1976	1986
Share of :				
Earning workers	39.8	39.5	40.0	40.0
Unpaid workers	13.8	16.3	16.3	16.3
Unemployed	1.3	1.5	1.2	1.5
Labor force participation rate	54.9	57.3	57.5	57.8

Note : See text of section X for reasoning underlying the "assumed true" estimate.

Figure 1. -- Illustrative Example of Noise, Signal, Mixed Sum

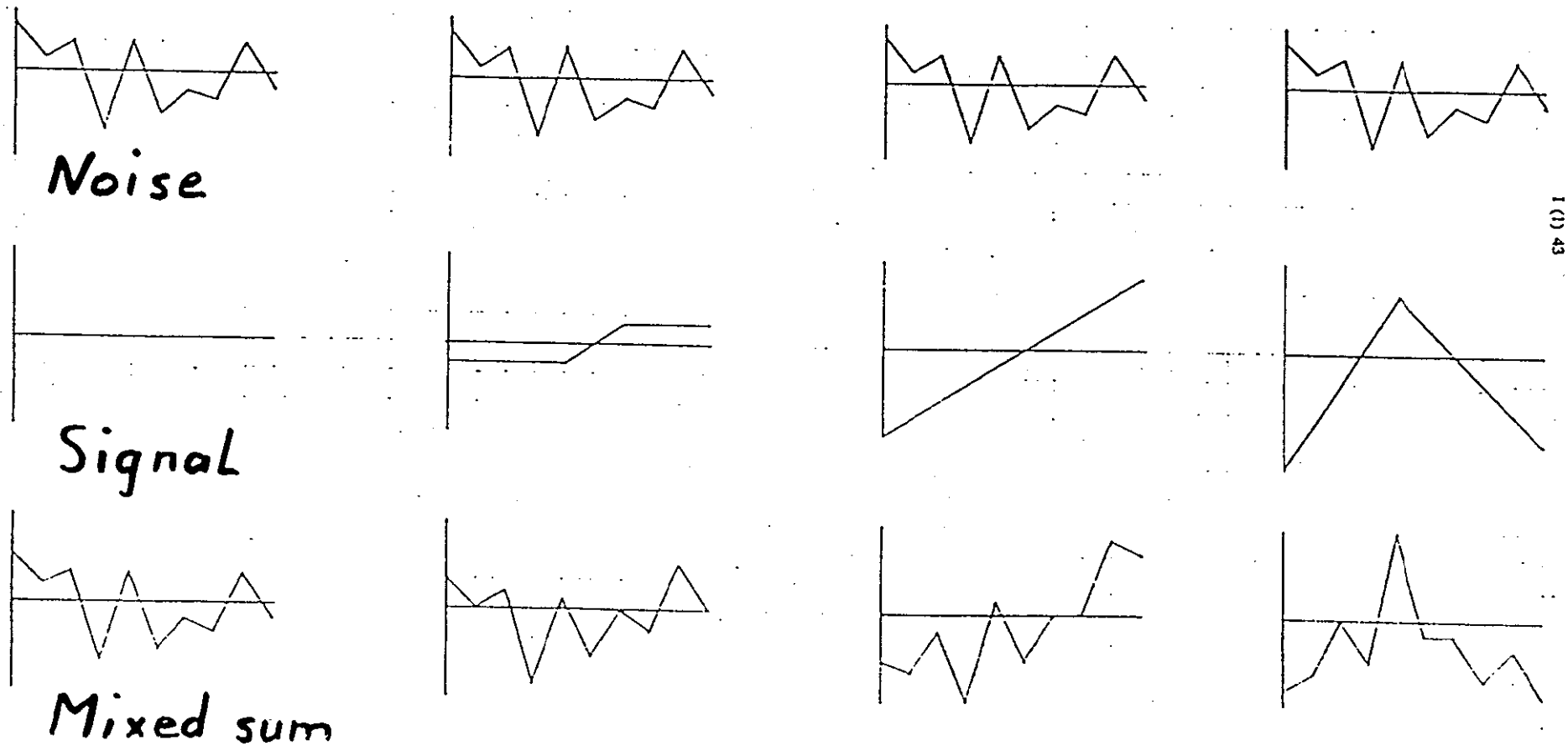
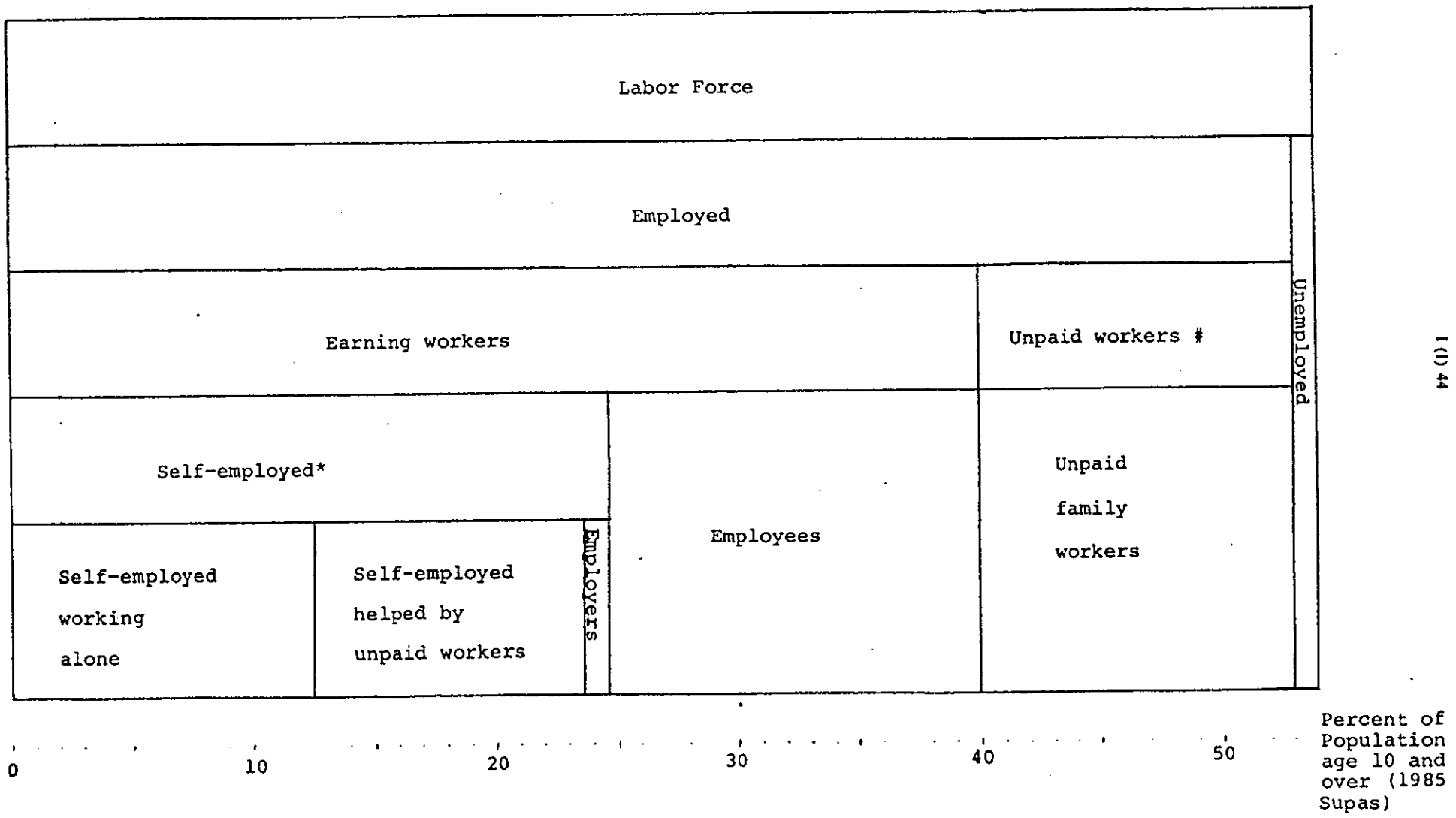


Figure 2. -- Labor Force Terminology



"Unpaid workers" includes a small number of "social workers" in 1976-78.
* Designates the concept of "self-employed" used in the research paper.

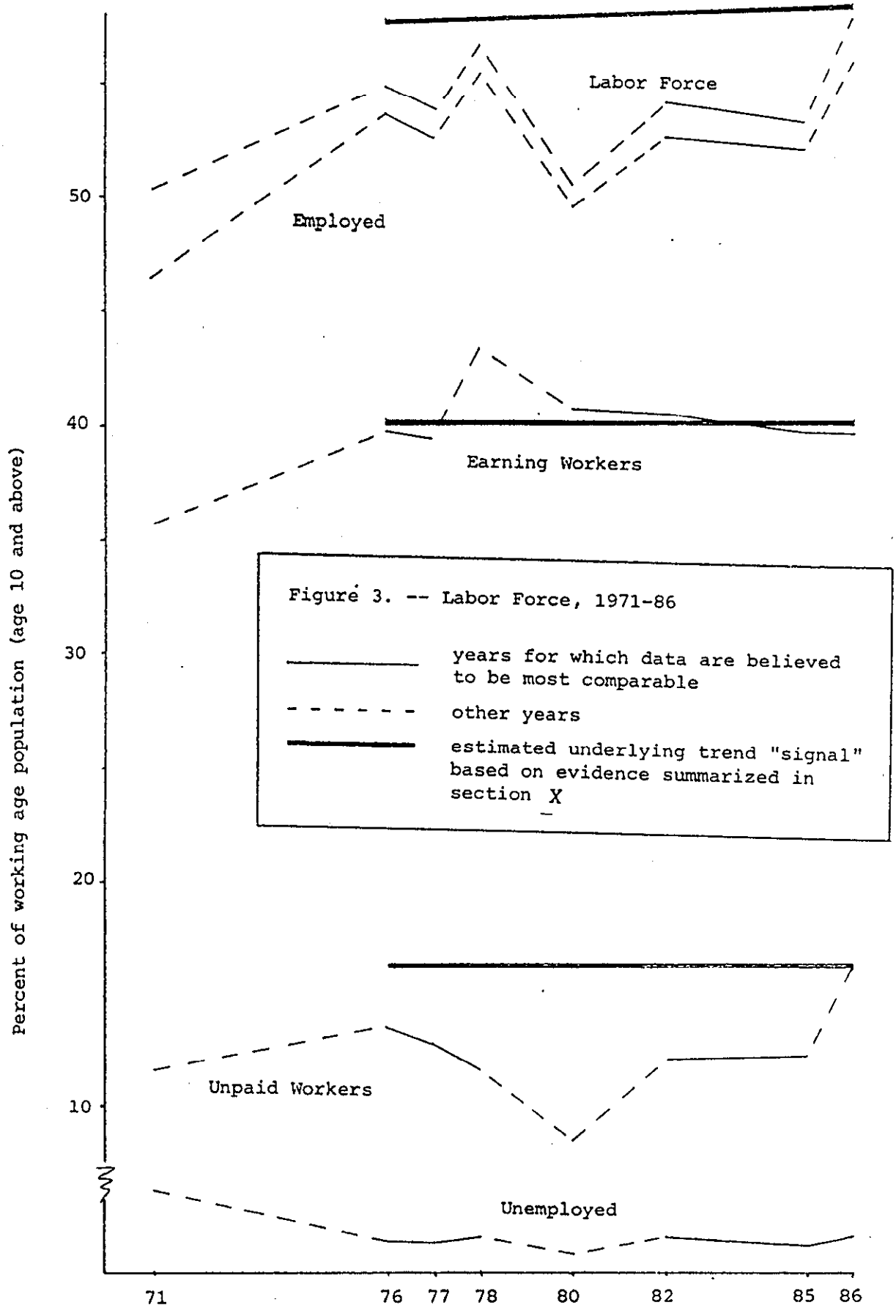


Figure 3. -- Labor Force, 1971-86

——— years for which data are believed to be most comparable

- - - - - - other years

▬▬▬ estimated underlying trend "signal" based on evidence summarized in section X

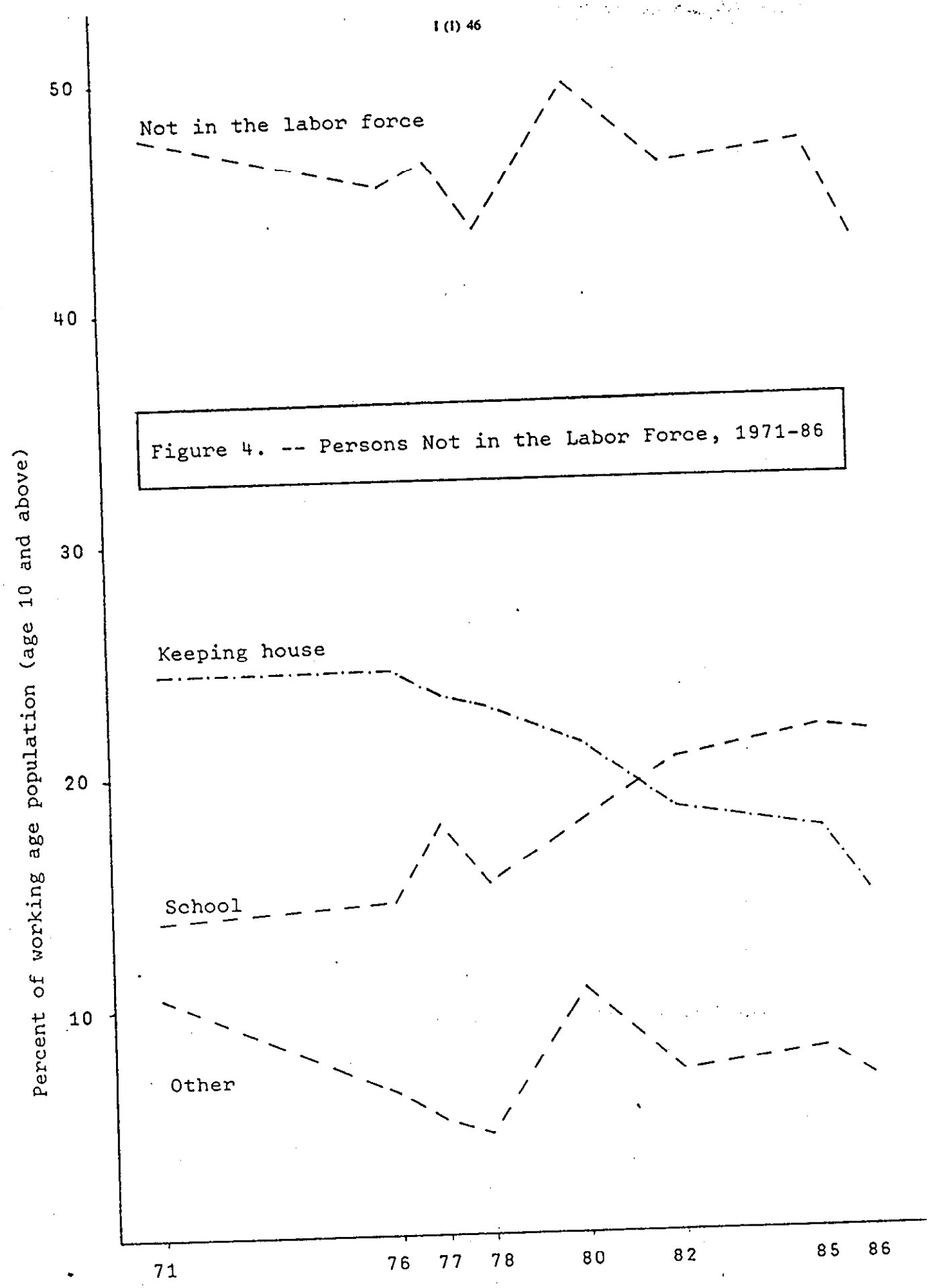


Figure 4. -- Persons Not in the Labor Force, 1971-86

Biro Pusat Statistik
SUSENAS
Survey Sosial Ekonomi Nasional

1 [ ][ ]
3 [ ]
4 [ ][ ]

RAHASIA

SURVEY ANGKATAN KERJA NASIONAL 1977

SAKERNAS 77 -
PERORANGAN

DAFTAR II : KETERANGAN PERORANGAN

Daerah Kota
Daerah Pedesan
Bulan .....

HANYA UNTUK ANGGOTA RUMAH TANGGA YANG BERUMUR 10 TAHUN DAN LEBIH

A PENGENALAN TEMPAT

A1. Propinsi			A7. Nomor Blok Sensus		
A2. Domain			A8. Nomor Urut Bangunan		
A3. Kabupaten/Kotamadya		6 [ ][ ][ ]	A9. Nomor Urut Rumah Tangga		11 [ ][ ][ ]
A4. Kecamatan		9 [ ]	A10. Nama Kepala Rumah Tangga		
A5. Desa		10 [ ]	A11. Nomor Urut Anggota Rumah Tangga		14 [ ][ ]
A6. Nomor Cluster					

B. KETERANGAN ANGGOTA RUMAH TANGGA

KOLOM KARTU (DIISI DI B.P.S)

PERINCIAN B1 s/d B3 DISALIN DARI DAFTAR I. LINGKARI KODE YANG SESUAI

B1. Nama Anggota Rumah Tangga : .....

B2. Jenis Kelamin : *Laki-laki -L* *Perempuan -P* 16 [ ]

B3. Umur : ..... *Tahun* 17 [ ][ ]

B4. Status perkawinan : *Belum kawin -1,* *Kawin -2,* *Janda/Duda/Cerai -3.* 19 [ ]

B5. Pendidikan terakhir yang ditamatkan :

Tidak sekolah	*- 1*	*S.L.P. Kejuruan*	*- 6*
Tidak tamat S.D.	*- 2*	*S.L.A. Kejuruan*	*- 7*
Tamat S.D.	*- 3*	*Akademi/Sarjana Muda*	*- 8*
S.L.P. Umum	*- 4*	*Universitas/Sarjana*	*- 9*
S.L.A. Umum	*- 5*		

20 [ ]

C. KEGIATAN SELAMA SEMINGGU YANG LALU

1. DAPATKAH DIBERITAHUKAN KEPADA KAMI, APAKAH KEGIATAN YANG DILAKUKAN SELAMA SEMINGGU YANG LALU, MULAI DARI KEMARIN....., KEMARIN DULU....., 3 HARI YANG LALU DAN SETERUSNYA.
2. KALAU BEKERJA BERAPA JAM SETIAP HARINYA.
3. BERILAH TANDA √ PADA KOTAK YANG SESUAI.

C1 Hari / C2 Kegiatan	C3 Bekerja (paling sedikit 1 jam sehari)	C4 Punya pekerjaan sedang tidak bekerja	C5 Mencari pekerjaan	C6 Sekolah	C7 Mengurus Rumah Tangga	C8 Lainnya (Pensiun, cacad jasmani dll).
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Kemarin, hari	[ ] 8 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
Kemarin dulu, hari	[ ] ....jam	[√]	[ ]	[ ]	[√]	[ ]
3 hari yl, hari	[√] 8 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
4 hari yl, hari	[√] 8 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
5 hari yl, hari	[√] 6 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
6 hari yl, hari	[√] 5 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
7 hari yl, hari	[√] 5 ....jam	[ ]	[ ]	[ ]	[√]	[ ]
Jumlah	[6][4][0] jam	[1]	[ ]	[ ]	[7]	[ ]
KOLOM KARTU	21 22 23	24	25	26	27	28

HOW FAST IS THE LABOR FORCE GROWING IN INDONESIA

SPEECH AT BPS SEMINAR

NOVEMBER 14, 1987

by

Alex Korns

NOVEMBER 27, 1987

Statistical Paper #2

The Development Studies Project (DSP II) sponsors policy-oriented economic research for the Government of the Republic of Indonesia under USAID funding. This paper is a product of DSP's principal consulting group, a joint venture between the Boston Institute for Developing Economies (BIDE) and Development Alternatives Inc (DAI). Their offices are located at: Jl Syamsu Rizal 1A, Jakarta 10310.

(DSP #5-P)

TABLE OF CONTENTS

(The following remarks were preceded by a brief statement in Bahasa Indonesia, summarizing the findings. The statement is reprinted in the appendix).

Thank you all for bearing with my beginner's Bahasa. Now I will proceed in English. You all have the text of my paper, with tables and figures. There are extensive appendixes, but we will not need to discuss them here. They are for documenting the data -- in order that future users can make better use of the BPS data. Those who have an interest in the appendixes can get a copy from I-Im.

TIME SERIES

The BPS data for Indonesian labor force constitute a time series of great interest for economic analysis.

Time series data can be compared with a radio signal that is being broadcast. As the signal travels through the air, it picks up background noise. What the listener hears is a mixed sum of signal and noise. If the signal is strong, listeners can pick it out. If it is faint or if the noise is strong, listeners will have difficulty picking out the signal.

(See transparency 1)

In the transparency you see several illustrations of signal and noise:

The true movement in a measure -- such as labor force -- is the signal, shown on the middle row;

the fluctuating error is noise, shown on the top row;

the time series produced by an agency such as BPS is the mixed sum, shown on the bottom row.

For time series, the real problem is fluctuating errors. So, consistency in concepts and procedures is often more important than accuracy at any one time. Improvements in the data are actually a bit of a problem. They may reduce error, but disrupt comparability from year to year.

For labor force data in Indonesia, small changes in procedures have created considerable noise. Many of the changes involved improvements in procedures.

TERMINOLOGY

This paper uses some new terminology for labor force.

(See transparency 2)

The major new term is the term "earning workers," which I translate as "pekerja yang di bayar." This is a broad term that includes employees plus all types of self-employed persons. In fact, it basically includes all workers except unpaid family workers. In many ways, earning workers includes a predominant share of all workers:

It includes about 75 percent of the employed.

Hours of earning workers have tended to account for about 80-85 percent of hours worked.

The earnings of earning workers have probably tended to account for more than 90 percent of earnings (including imputed earnings).

As you can see in the transparency, labor force is defined as the sum of employment and unemployment. Employment in turn is broken into earning workers and unpaid family workers. In this way, labor force can be expressed as the sum of three terms: earning workers, unpaid family workers, and the unemployed.

Now, by dividing all terms by the working age population, we get the labor force participation rate, which is equal to labor force divided by the working age population. This shows that the labor force participation rate can be expressed as the sum of three components. I call these components shares, to indicate that each is expressed as a share of the working age population. So there is the share of earning workers, the share of unpaid family workers, and the share of the unemployed. The formula turns out to be a useful device for distinguishing signal and noise in the labor force data for Indonesia.

(See transparency 3)

The next transparency shows the relationship between "earning workers" and the terms used in BPS reports. As you can see, "earning workers" includes employees, the self-employed working alone, the self-employed assisted by unpaid family workers, and employers.

1986 SAKERNAS DATA

(See transparency 4)

The time series for the three components are depicted in the next transparency. Let us first consider the data from the 1986 Sakernas, which BPS has not yet released. As is seen, the share of earning workers did not change from the 1985 Supas to the 1986 Sakernas. However, the share of unpaid family workers jumped -- from 12.3 to 16.3 percent.

There are two ways to explain such a puzzling increase:

One is to argue that it is a real change. Something very unusual took place between October 1985 and February 1986. Millions of women and children who had not previously worked suddenly began working on family farms, warungs and stores.

The other is to explain it as a statistical illusion -- as I tried to do earlier in Bahasa Indonesia, and will later review in English. But before taking this up, I would like to first discuss a model of the Indonesian labor market.

MODEL OF INDONESIAN LABOR MARKET

I believe that labor force participation does not change abruptly from year to year in Indonesia, but may change slowly.

Most Indonesians cannot afford to be unemployed, that is, not to work while looking for a job. Therefore, changes in unemployment cannot have a big impact on the labor force participation rate.

In Indonesia, wage and salary jobs account for less than a third of employment. Whether a person works or not depends largely on their own choice, not on that of an employer. The fact that a person works merely means he is trying to make some money ("cari duit"). A bajai driver who spends all day looking for customers will say that he has worked, regardless of whether he has found 20, 5, or no customers. A reduction in the demand for labor does not lead to less employment, although it may reduce labor income.

So, changes in labor supply are the only major influence on the labor force participation rate. This is different from the situation in developed countries, where changes in labor demand can have a quick impact on unemployment and labor force participation.

STABILITY OF THE LABOR FORCE PARTICIPATION RATE

Let us look at the historical record to see whether it agrees with the model. I will concentrate on the period from 1976 to 1986.

The share of earning workers accounts for nearly three-quarters of the labor force participation rate. With one exception, the share of earning workers remained nearly stable in the range of 39.5 to 40.6 percent. This is just as the model predicts. The exception is 1978, which probably reflects an unknown cause of statistical error.

The share of unpaid family workers fluctuated sharply, between 8.8 percent in 1980 and 16.3 percent in 1986. For most years, however, it was about 12 percent. The fluctuations are puzzling.

There is no economic reason why the share of unpaid family workers should fluctuate sharply.

The observed fluctuations are not correlated with any events that would explain them.

The share of the unemployed fluctuated in a fairly narrow range -- from 0.8 to 1.6 percent. As I show in the appendixes to my paper, the 1980 Census probably underestimated unemployment. If we ignore 1980, the fluctuations are only in the range from 1.1 to 1.6 percent.

In sum, the labor force participation rate is much more stable than it looks. The major cause of instability is the fluctuations in the share of unpaid family workers.

FLUCTUATING UNDERCOVERAGE FOR UNPAID FAMILY WORKERS

As I said earlier, I believe that fluctuating undercoverage is the reason for the changes in the apparent share of unpaid family workers.

(See transparency 5)

The transparency shows the key questions in the interview that we are concerned with. This part of the labor force questionnaire has remained the same since 1980. However, a fixed questionnaire does not, unfortunately, guarantee that the data are comparable from year to year. The problem is that respondents often do not realize that "bekerja" includes unpaid family work. Interviewers are supposed to check whether the respondent understands the question, particularly for question 5. But we don't know what interviewers actually do. I believe that their efforts to clarify the question depend on circumstances. Their efforts probably fluctuate directly with their training and motivation and inversely with their work load.

In the 1980 Census, interviewers were temporary workers with limited training. Their work load was heavy, and they used a long questionnaire. Their instruction manual gave scant advice on how to interpret the word "working" to the respondent. I surmise that they often rushed through the questionnaire, and had no time to interpret the meaning of "work" to respondents. So the share of unpaid family workers in 1980 was only 8.8 percent, a historic low.

In the 1985 Supas, interviewers were temporary workers with good training. Their instruction manual gave detailed advice on how to interpret the word "working" to the respondent. The work load was moderate, and there was a long questionnaire. It is likely that the interviewers sometimes rushed through the questionnaire, and sometimes stopped to interpret the meaning of "work." So, the share of unpaid family workers in 1985 was 12.3 percent, which is historically typical.

In the 1986 Sakernas, interviewers were permanent officials of BPS, the local mantri statistik. Their instruction manual gave detailed advice on how to interpret the word "working" to the respondent. Also, they had a short questionnaire tightly focussed on labor force behavior. And they had a small work load. They probably took time often to interpret the meaning of "work." So the share of unpaid family workers in 1986 rose to 16.3 percent, a historic high. The 1986 estimate is probably the most accurate one every made.

(See transparency 6)

The picture that I am painting is supported by a bit of quantitative evidence. Cross-tabulations of the hours worked by unpaid family workers are available for 1977-78 and for 1986. From 1977-78 to 1986, there was a sharp increase in the number of unpaid family workers who worked less than 25 hours per week. The table shows the number of these workers expressed as a share of the working age population. These workers are the persons whose unpaid family work respondents are most likely to overlook unless they are guided by the interviewer. At the same time, the share of unpaid family workers who worked 25 hours per week or more increased relatively little from 1977-78 to 1986. These are the persons whose unpaid family work respondents are least likely to overlook. So, the table indicates that respondents in 1986 probably overlooked many fewer unpaid family workers than in 1977-78.

FINDINGS: LABOR FORCE GROWTH, 1976-86

(See transparency 7)

My estimate of labor force growth during 1976-86 is based: first, on an estimate for the labor force participation rate; second, on the rate of growth of the working age population.

The estimate for the labor force participation rate is derived as follows:

For earning workers, I assume that the share has been constant at 40.0 percent. Although the rate may have fluctuated within a range of about 1.0 percentage points, there is no evidence that it changed substantially from 1976 to 1986.

For unpaid workers, I assume that the share has been constant at the rate found by Sakernas 1986 -- 16.3 percent. The assumed constancy agrees with the data for 1976, 1977, 1978, 1982 and 1985.

For the unemployed, I assume that the share has increased from 1.2 percent in 1976 to 1.5 percent in 1986.

Of course, we cannot be sure that the labor force participation rate was exactly as I have assumed. However, there is no evidence to suggest that it changed very much during 1976-86.

If I am right, the labor force participation rate increased from 57.5 percent in 1976 to 57.8 percent in 1986. This is a change of only 0.3 points, equivalent to 0.03 points per year.

(See transparency 8)

So, on the basis of my analysis, the annual rate of growth of labor force has been 2.94 percent. This is is equal to the annual rate of growth of the working age population -- 2.91 percent -- plus the annual rate of increase of the labor force participation rate -- which is only .03 percent.

The increase that I have estimated is much lower than the 10.0-percent growth rate that you would get from simply comparing the 1986 Sakernas and the 1985 Supas. It is also much lower than the 4.0-percent growth rate that you would get from simply comparing the 1985 Supas and the 1980 Census. The latter two estimates for the growth rate of the labor force are, I believe, misleading. More specifically, they are inflated by the reduction in the undercoverage of unpaid family workers from 1980 to 1985 and again from 1985 to 1986.

RECOMMENDATIONS

(See transparency 9)

I have 5 recommendations.

First, BPS should present its own interpretation of the historical data for labor force. This will prevent misinterpretation by persons not familiar with the data.

Second, BPS should document the suspected differences between the labor force surveys, so that users can make appropriate use of the data and avoid misinterpretation.

Third, BPS should consider adding two lines to its tables for labor force. The new lines would break the employed into "earning workers" and unpaid family workers. Earning workers appears to be a more reliable indicator of change than total employment.

Fourth, BPS should take steps to ensure that all survey respondents understand that "work" includes unpaid family work.

Fifth, if doubt remains whether fluctuations in undercoverage have occured, BPS should conduct further research until the doubt is resolved.

CLOSING

In conclusion, I would like to stress that the BLS labor force data are, on the whole, very solid. The noise that I have found in the time series for the labor force participation rate pertains almost exclusively to a relatively minor component -- the share of unpaid family workers. The share of unpaid family workers is notoriously difficult to measure in all developing countries. If we look instead at the major component of the labor force partaicipation rate -- the share of earning workers -- we find very little noise. In fact, the stability of the share of earning workers is impressive evidence for the conceptual consistency and care with which BPS has collected labor force data since 1976.

Thank you for your patience. I have already spoken for a long time, but there has not been enough time to present all of the evidence that bears on my conclusions.

I have tried to leave ample time for discussion and questions, so that we can review any points that are unclear or doubtful.

APPENDIX : BEBERAPA KATA SAMBUTAN

(Disampaikan sebelum kata sambutan dalam Bahasa Inggris pada Seminar sehari "Perencanaan Pembangunan dan Masalah Kesempatan Kerja", November 14, 1987)

Kepada bapak-bapak dan ibu-ibu dan saudara-saudari sekalian yang saya hormati.

Dalam kesempatan yang baik ini, saya ingin mungucapkan beberapa kata sambutan. Saya rasa, acara ini menarik untuk anda. Mohon ma'af, saya belum banyak menguasai Bahasa Indonesia. Barangkali saya tidak akan banyak mengerti apa yang anda sampaikan dalam Bahasa Indonesia. Tapi saya akan coba menyampaikan dulu beberapa kesimpulan saya. Kemudian, seterusnya saya akan memakai Bahasa Inggris.

BPS mulai tahun 1976 bebarapa kali menyajikan statistik angkatan kerja. Statistik yang disajikan tersebut adalah baik, tapi agak sulit untuk dibandingkan satu dengan lainnya. Misalnya, jika anda membandingkan statistik tahun 86 dengan tahun 85, maka anda bisa menyimpulkan angkatan kerja bertambah 10 persen dalam satu tahun. Contoh lain, jika anda membandingkan statistik tahun 85 dengan tahun 80, maka anda bisa menyimpulkan angkatan kerja bertambah 4,0 persen per tahun dalam lima tahun. Angka pertambahan ini sangat tinggi dibandingkan dengan angka pertambahan penduduk usia kerja, yang hanya menunjukkan 2,91 persen per tahun saja sejak tahun 71.

Bagaimanapun, saya yakin angka pertambahan tahunan angkatan kerja Indonesia seharusnya hampir sama dengan angka pertambahan tahunan penduduk usia kerja. Dengan kata lain, saya yakin tingkat partisipasi angkatan kerja sudah lama adalah konstant atau stabil.

Masalah berikut: mengapa kelihatannya tingkat prosentase ankatan kerja (TPAK) banyak naik-turun (fluktuatif) dalam statistik BPS. Ada baiknya untuk membagi orang yang bekerja (employment) dalam 2 kolompok: pekerja yang tidak dibayar dan pekerja yang dibayar. Pekerja yang tidak dibayar adalah pekerja keluarga. Jadi, "pekerja yang dibayar" termasuk semua orang bekerja kecuali pekerja keluarga. Saya menemukan, bahwa naik-turunnya TPAK disebabkan naik-turunnya prosentase pekerja keluarga dalam penduduk usia kerja. Prosentase pekerja yang di bayar dalam penduduk usia kerja biasanya hampir konstan dalam statistik angkatan kerja BPS. Tetapi, mengapa hanya pekerja keluarga naik turun?

Jawabannya, harus kita lihat dari cara berwawancara pencacah BPS di setiap rumah tangga. Ada satu hal yang sering dilupakan. Respondent tidak mengerti secara lengkap pertanyaan: apakah anak anda berumur di atas 10 tahun bekerja paling sedikit 1 jam selama seminggu yang lalu? Kalau anaknya 2 hari menanam padi di sawah keluarga untuk konsumsi sendiri, bagaimana respondent mengetahui bahwa anaknya termasuk orang "bekerja" atau tidak? Segala sesuatu tergantung pada kata "bekerja." Jika respondent tidak mengerti pertanyaan, pewawancara harus menjelaskan. Tetapi, kita tidak tahu apakah dia sebetulnya menjelaskan hal itu atau tidak. Saya pikir, jika pewawancara cukup terlatih dan punya waktu cukup, mungkin akan

sering menjelaskan. Tetapi, jika pewawancara tidak cukup terlatih atau tidak punya waktu cukup, mungkin jarang menjelaskan. Jadi, grafik yang naik-turun tersebut tadi sebahagian besar merupakan pencerminan banyak-sedikitnya usaha yang dilakukan oleh si pewawancara untuk menjelaskan maksud "bekerja" -- bukan naik-turunnya jumlah pekerja keluarga sebenarnya.

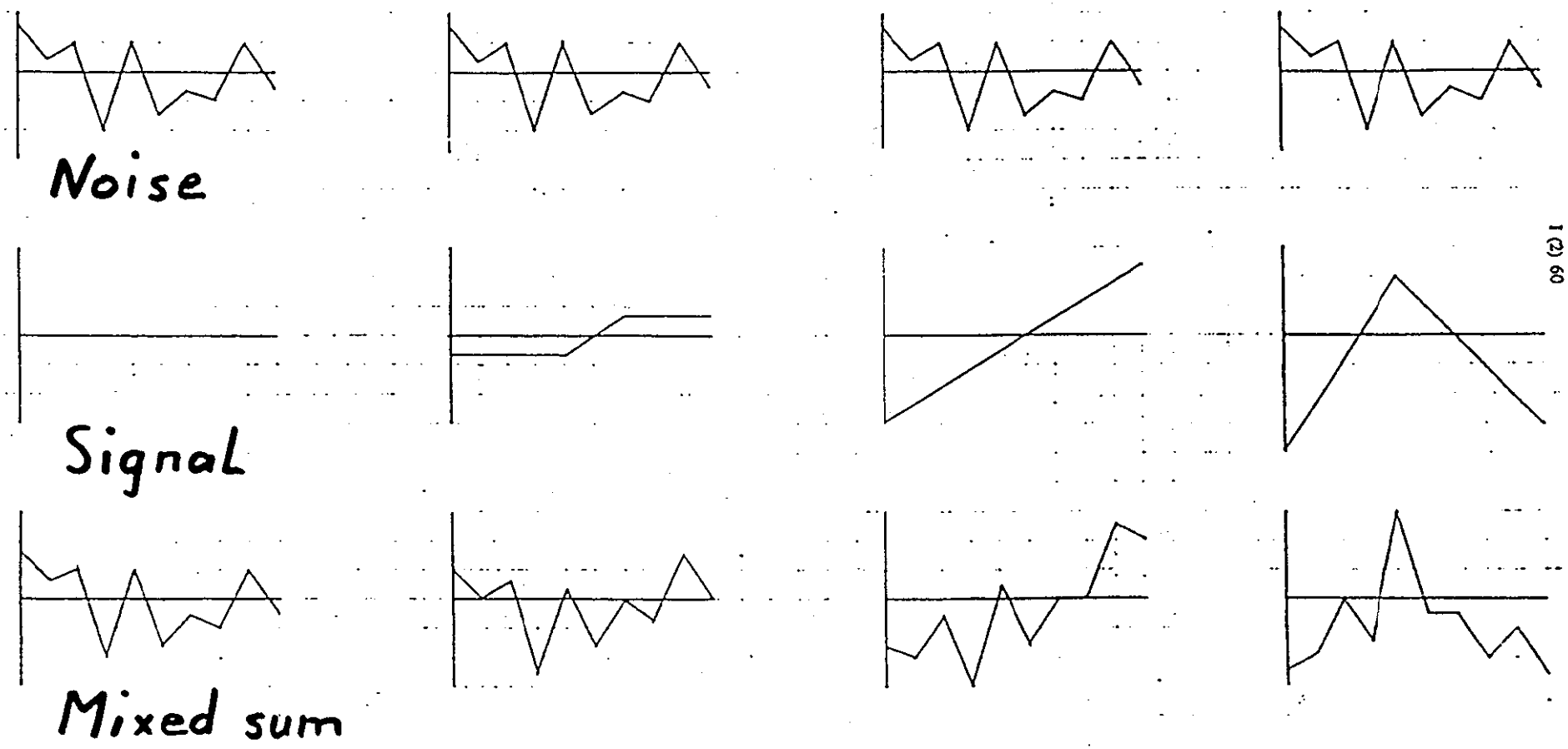
Saya mau menyampaikan kata sambutan di Bahasa Indonesia dengan 3 contoh tentang banyak-sedikitnya usaha yang dilakukan oleh si pewanwacara untuk menjelaskan maksud "bekerja."

Tahun 86, pewawancara Sakernas tidak begitu sibuk, karena kuesioner/wawancara singkat, dan jumlah sample kecil. Pewawancara pegawai BPS, mantri statistik. Pewawancara cukup terlatih. Latihannya berdasarkan pada buku pedoman instruksi yang baru, yang menjelaskan dengan lengkap dan jelas untuk memasukan pekerja keluarga sebagai orang yang bekerja. Jadi, mereka tahu, harus menjelaskan maksud "bekerja" dengan baik. Mereka barangkali sering menjelaskan maksudnya. Karena itu, prosentase pekerja keluarga dalam penduduk usia kerja pada tahun 86 sangat tinggi, 16,3 persen.

Kalau pada tahun 85, pewawancara Supas sudah sedikit lebih sibuk, karena kuesioner/wawancara panjang dan jumlah samplenya lebih banyak. Pewawancara itu kebanyakan bukan mantri statistik; mereka bekerja untuk BPS sementara saja. Mereka barangkali beberapa kali menjelaskan maksud "bekerja," tapi tidak selalu. Karena itu, prosentase pekerja keluarga dalam penduduk usia kerja agak rendah, 12,3 persen.

Akhirnya, kalau pada tahun 80, pewawancara Sensus sangat sibuk, karena wawancara panjang dan jumlah samplenya banyak sekali. Mereka bukan mantri statistik; bekerja untuk BPS sementara saja. Buku pedoman instruksi tidak membicarakan dengan lengkap untuk memasukan pekerja keluarga sebagai orang yang bekerja. Jadi, pewawancara Sensus kelihatannya hanya sedikit menjelaskan maksud "bekerja." Karena itu, prosentase pekerja keluarga dalam penduduk usia kerja sangat rendah, 8,8 persen saja.

Demikianlah kata sambutan saya ini dalam bahasa Indonesia, terima kasih atas perhatian anda dan sekali lagi mohon ma'af jika ada kata-kata saya yang tidak jelas. Dan seterusnya saya akan memakai Bahasa Inggris.



2

TERMINOLOGY

1. Labor force = Employed + unemployed

2. Employed = Earning workers + unpaid workers

3. Labor force = Earning workers + unpaid workers + unemployed

4. Labor force participation rate

= Labor force / WAP

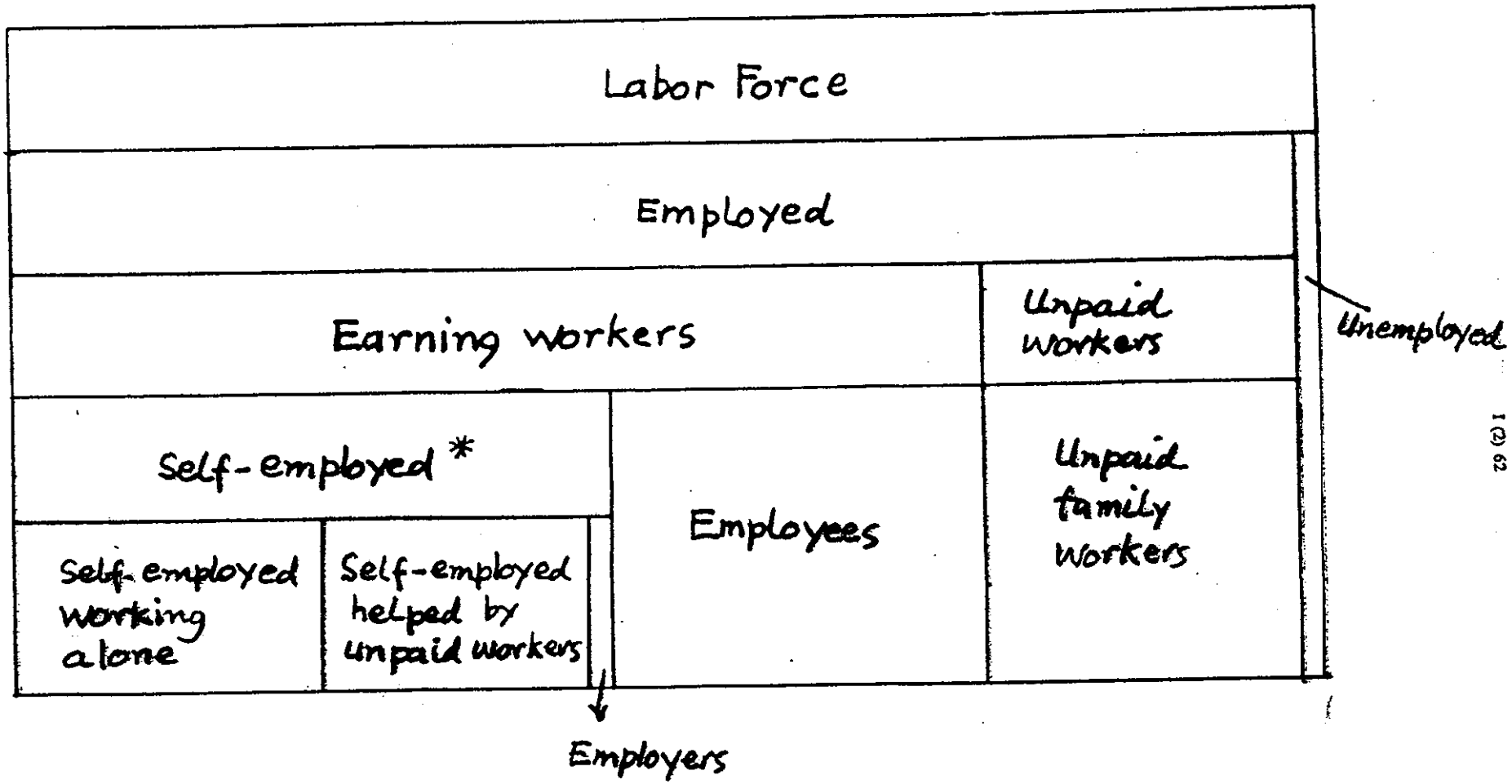
= Earning workers / WAP

+ unpaid workers / WAP

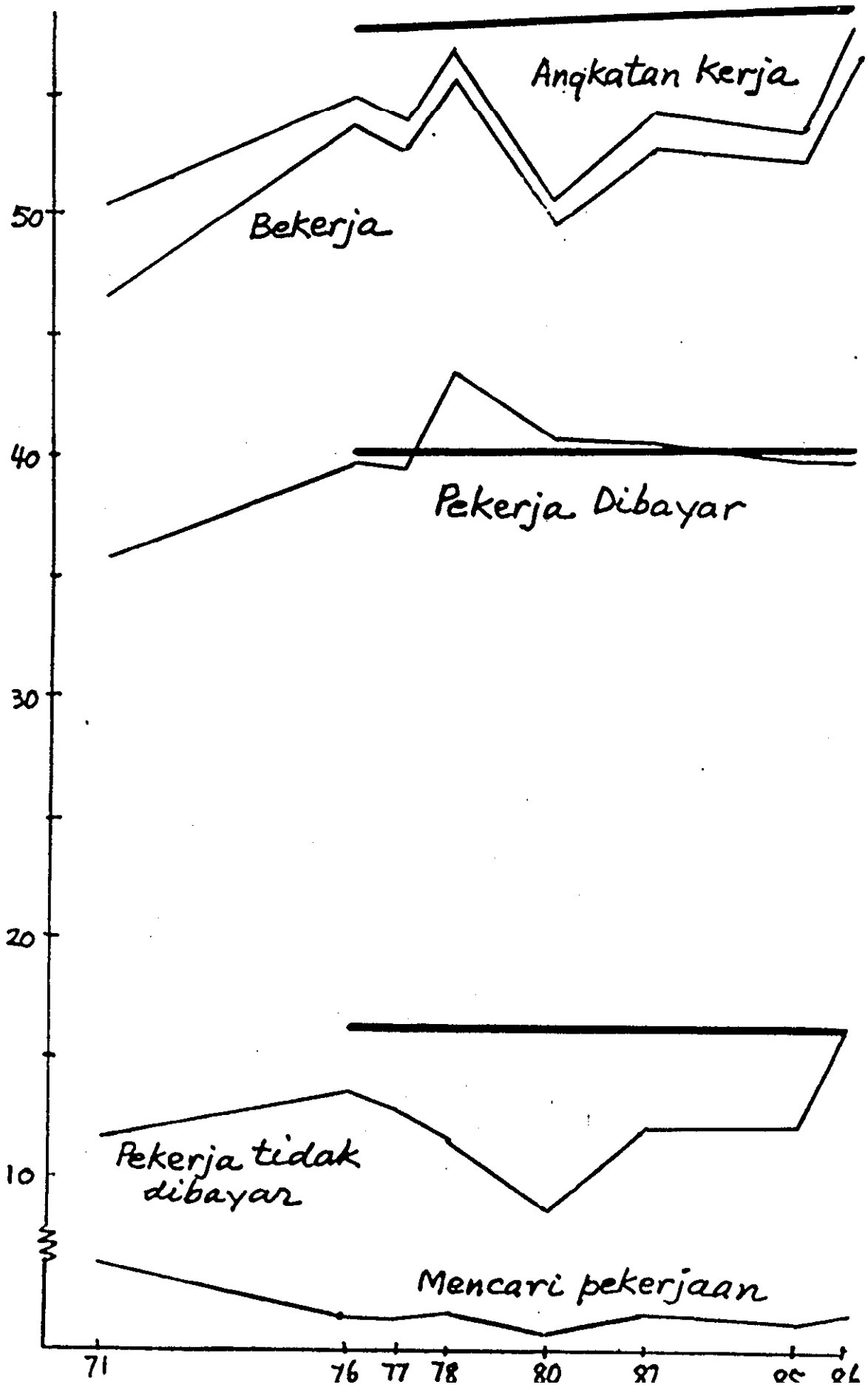
+ unemployed / WAP

(Where WAP is working age population)

LABOR FORCE TERMINOLOGY



4


Angkatan Kerja
Bekerja
Pekerja Dibayar
Pekerja tidak dibayar
Mencari pekerjaan
50
40
30
20
10
71
76
77
78
80
87

4. Kegiatan apakah yang dilakukan selama seminggu yang lalu?

1. Bekerja → ke P.8
2. Sekolah
3. Mengurus rumahtangga
4. Tidak mampu melakukan kegiatan
5. Lainnya

5. Apakah bekerja paling sedikit satu jam selama seminggu yang lalu?

1. Ya → ke P.8.
2. Tidak

6. Apakah punya pekerjaan/usaha tetapi sementara tidak bekerja selama seminggu yang lalu?

1. Ya → ke. P.8.
2. Tidak

FOR UNPAID FAMILY WORKERS

	1977-78	1986
Hours of work		
Not at work	0.68	0.30
1-9 hours	0.70	1.50
10-24 hours	3.70	6.38
25-34 hours	2.42	3.33
35-59 hours	4.31	4.45
60 hours +	0.54	0.32
TOTAL	12.35	16.29

(In percent of the population age 10 and above)

LABOR FORCE PARTICIPATION RATE, 1976-86

Share of	1976	1986
Earning workers	40.0	40.0
Unpaid family workers	16.3	16.3
Unemployed	1.2	1.5
TOTAL	57.5	57.8

AVERAGE LABOR FORCE GROWTH RATE, 1976-86

Annual rates :

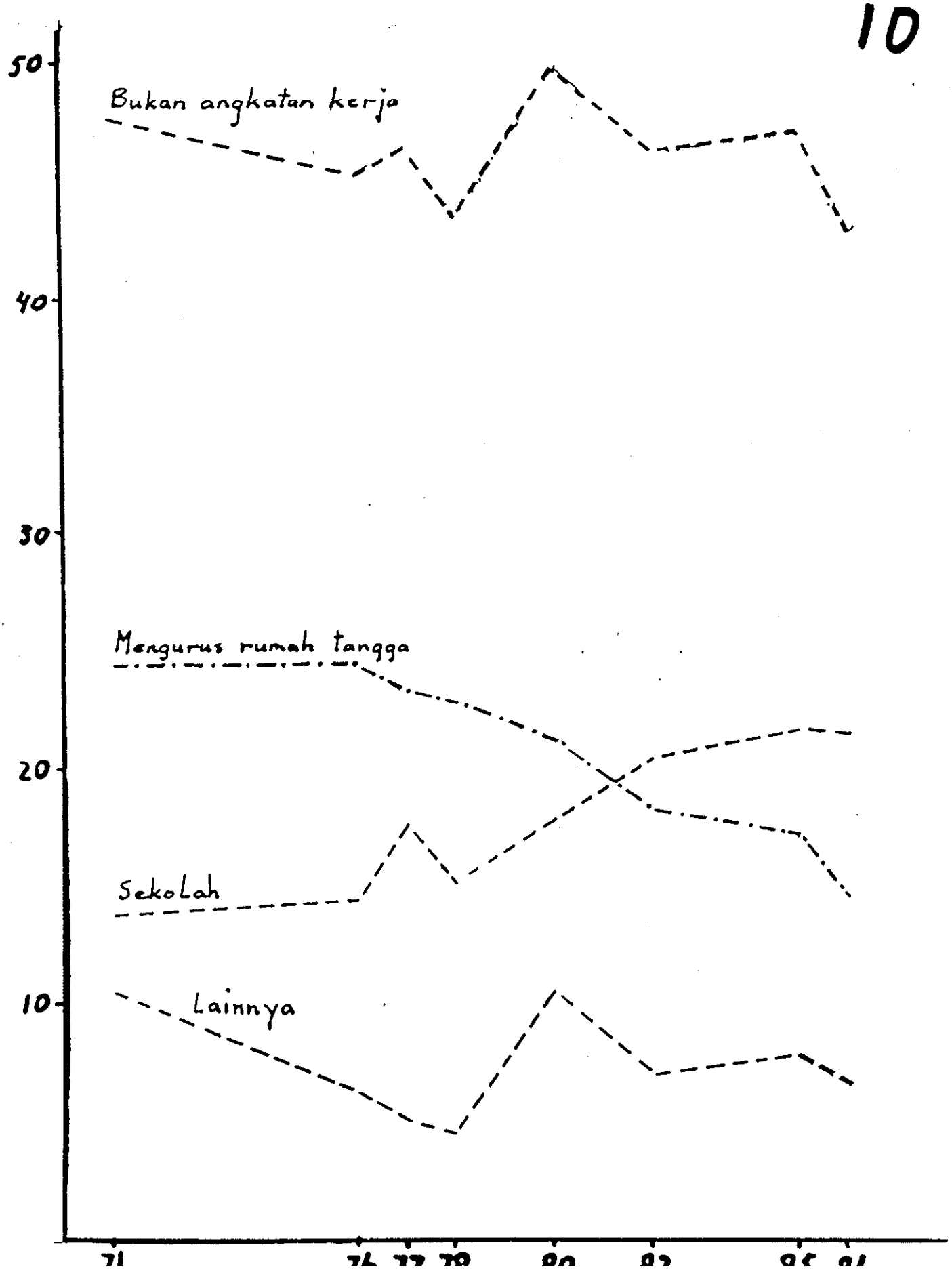
Rate of population growth	2.91 %
Rate of change in Labor force participation rate	.03 %
TOTAL	2.94%

9

RECOMMENDATIONS

1. Interprete historical data.
2. Document differences between surveys.
3. Show "earning workers" and unpaid family workers in tables for Labor force.
4. Ensure that respondents understand that work includes unpaid family work.
5. If doubt remains, continue research until issue is resolved.

10


50
40
30
20
10
Bukan angkatan kerja
Mengurus rumah tangga
Sekolah
Lainnya
71

PROJECTING LABOR FORCE PARTICIPATION RATES. 1986-2000

Statistical Paper #3

by

Alex Korns

February, 1988

(DSP #15)

The Development Studies Project (DSP II) sponsors policy-oriented economic research for the Government of the Republic of Indonesia under USAID funding. This paper is a product of DSP's principal consulting group, a joint venture between the Boston Institute for Developing Economies (BIDE) and Development Alternatives Inc (DAI). Their offices are located at: Jl Syamsu Rizal 1A, Jakarta 10310.

TABLE OF CONTENTS

1. Conceptual framework

This memorandum presents a method for projecting Indonesian labor force by age, sex, and province until the year 2000. The method is consistent with the evaluation of labor force data for 1971-86 presented in "Distinguishing Signal from Noise in Labor Force Data for Indonesia," DSP Research Paper No. 1.

Sections 1-6 of this memorandum present projections of labor force participation rates (LFPR's) by age and sex, for all Indonesia. The projections are compared with provisional BPS projections. Sections 7 and 8 discuss the problem of projecting LFPR's by age, sex and province, but do not present any projections. Section 9 summarizes the conclusions.

Labor force participation rates (LFPR's) for each age and sex are projected forward as straight lines. The equation is of the form:

(1) $LFPR(t) = a + bt$

where t is time in years, b is the projected annual rate of change, and a is the assumed LFPR is the initial year zero. Thus, the projection line is determined by two unknowns -- a and b. An illustrative example of a projection is shown in figure 1.

The LFPR projections by age and sex presented in table 1 will be called the LOTUS projections. The name reflects the fact that they were performed on the spreadsheet program LOTUS 1-2-3. They will be compared with projections that were prepared by BPS staff on the mainframe BPS computer.

The purpose of the LOTUS projections is to:

Provide an independent check on the BPS estimates.

Provide an alternative methodology for consideration by BPS.

Illustrate the use of a spreadsheet program on a personal computer for the preparation of analyses and projections. [1]

2. Basic assumptions

The major assumptions underlying the LOTUS projections presented here are as follows.

a. Data for 1971 are ignored, because the concept of employment was different at that time.

b. Data for 1978 are ignored, because there was a puzzling sharp increase in the share of earning workers.

c. During 1976-86, the true overall labor force participation rate was probably steady, as was argued in the DSP RP #1.

d. The fluctuation from survey to survey in the share of unpaid family workers as a percent of the population in each age-sex

---

[1] Worksheet calculations on a personal computer are suitable for projecting labor force participation rates, because they can take account of all of the various assumptions presented below. Also, they are relatively easy to explain and document. Regression methods cannot take account of all of the assumptions and are more difficult to explain and document.

A major drawback of reliance on a mainframe computer for smallscale analyses is the long turnaround time. Staff may have to wait a week or more for a single set of tabulations. Such long turnaround discourages creative thinking. Estimates on a personal computer can be reiterated much more often -- as often as several times per day. The faster turnaround allows an analyst to explore more issues and to tailor the analysis more specifically to the problem at hand.

group largely reflects fluctuation in undercoverage -- rather than real change. This was shown in DSP RP #1. Therefore, historical comparison of LFPR's by age and sex is mainly based on years for which the overall share of unpaid family workers was relatively similar -- 1976, 1977, 1982 and 1985.

e. LFPR's for 1986 are more reliable than those for earlier years, because there was a sharp reduction in undercoverage of unpaid family workers in the 1986 Sakernas. Therefore 1986 can serve as the initial year for the projections.

3. Historical trend by age and sex

The purpose of the analysis of historical trends is to estimate an average annual rate of change for the LFPR's for each sex-age group. These rates each define the slope of a straight line.

The basic underlying data are the LFPR's for each of the 16 age-sex groups, presented on lines 1a through 1h. The averages of rates for 1976 and 1977 are shown on line 1i. The averages of rates for 1982 and 1985 are shown on lines 1j.

The starting point for the LOTUS estimate of the rate of change for 1976-86 (line 3c) is the average rate of change between 1976-77 and 1982-85 in percentage points, shown on line 3a. It is derived as follows. The two-year average for 1976-77 is subtracted from the two-year average for 1982-85, and the difference is divided by 7.0 -- the number of years between April 1977 (the mid point of the 1976 and 1977 surveys) and April 1984 (the midpoint of the 1982 and 1985 surveys).

The LOTUS estimate of the rate of change of LFPR's for 1976-86 in percentage points (line 3c) is derived by adjusting line 3a. The

adjustment is shown on line 3b. The overall adjustment is 0.15 percentage points per year. It compensates for the difference between the overall annual rate of change on line 3a (-0.12 percentage points per year), and the overall annual rate of change estimated for 1986 in DSP RP #1 (+.03 percentage points per year). However, the overall adjustment was not assumed to apply equally to each age-sex group. Instead, the adjustment was prorated to each age-sex group in proportion to the share of unpaid family workers in each age-sex group in 1986 (line 2b), inasmuch as the difference between the two rates of change largely reflects differences in the share of unpaid family workers in the working age population. As was explained in DSP RP#1, there is no clear evidence that the true share of unpaid family workers changed substantially during 1976-86; it was therefore assumed that the true share was stable. Thus, the decline in the share of unpaid family workers from 1976-77 to 1982-85 is assumed to reflect an increase in undercoverage.

The LOTUS rates of change in line 3c can be compared with the rates of change estimated by regression analysis on the BPS mainframe computer, as shown on line 3d. The regressions were based on data for the years 1976, 1977, 1978, 1980, 1982, 1985, and 1986.

The annual rates of change for men, women, and both sexes shown in table 1 for the BPS estimate were <u>not</u> based on regressions. Instead, the rates for each age group were averaged together, with 1980 population (line 2c) providing the weights.

The overall LOTUS rate of change (line 3c), .03 percent per year, is the same as the overall BPS rate.

The LOTUS rates are similar to the BPS rates for 12 sex-age groups, but differ sharply for 4 groups: men 20-24, men 65+, women 55-64, and women 65+.

4. Projected trend by sex and age

The projected trend rate of change, in percentage points, defines the slope of the projection line.

The projected LOTUS trend rate of change by sex and age in line 4a differs from the historical trend in line 3c for only 2 sex-age groups. The groups are ones for which there were reasons to suspect that future trends would differ from historical trends.

For men age 15-19, LFPR's were assumed to decline more slowly in the future than in the past. The reason is that school enrollments were expected to increase more slowly in the future than in the past. The projected annual rate of increase, 1.20 percentage points per year, is about two-thirds as large as the historical rate, 1.78 points per year.

For women age 45-54, LFPR's were assumed to increase somewhat more slowly than the historical rates. The reason is that a projection of the historical rates of change for the next 15 years would lead to LFPR's (line 5a) that appear excessively high, in comparison with the rates for women in the adjacent age groups -- 35-44 and 55-64.

On balance, the projected overall LOTUS trend rate of change, 0.07 percentage points per year in line 4a -- differs very little from the historical overall trend rate of change -- 0.03 percentage points per year in line 3c. Both are very nearly flat. This is because the upward adjustment in the projected rates for men 15-19 is largely offset by the downward adjustment for women 45-54.

Similarly, the projected overall LOTUS trend rate of change differs very little from the BPS projected trend rate, 0.03 points per year. Thus, the slopes of the projection lines are nearly the same on average in the LOTUS projection and in the BPS one.

5. Projected LFPR by sex and age in 2000

The projected LOTUS LFPR's for the year 2000 are shown in line 5b. As is seen in figures 2a through 2d, they are estimated by drawing a straight line forward from the 1986 Sakernas. The slopes of the projection line are the projected annual rates of change in line 4a.

The BPS projections are shown on line 5d. They are estimated by drawing a straight line forward from the 1986 Sakernas. The slopes of the projection line are the projected annual rates of change in line 3d.

Both sets of projections are based on the assumption that the 1986 Sakernas covered unpaid family workers more fully than did earlier surveys. It is expected that the high labor force participation rates found by the 1986 Sakernas will continue to be found in future surveys, as long as those surveys use the same procedures used by the 1986 Sakernas.

The overall average LOTUS LFPR for the year 2000 (line 5b), is about 61.0, 0.6 points higher than the BPS projection. The principle reason for the difference is a difference of about .04 points per year in the annual rate of increase of the overall LFPR.

The projected LOTUS LFPR's in 2000 are compared with the LFPR's in the 1986 Sakernas in figure 3. For men, as can be seen there, LFPR's decline substantially below age 25, but do not change very much for age 25 and over. For women, LFPR's decline substantially for age 10-14, and increase substantially for ages above age 24.

6. Projected overall LFPR in the year 2000

Perhaps the most startling result in table 1 is the fact that the projected overall LOTUS LFPR in 2000, about 61.0 (line 5b), is well up from the overall LFPR in the 1986 Sakernas, 57.30 -- indicating an average rate of increase in the overall LFPR of about 0.26 percentage points per year. Similarly, the projected overall BPS LFPR in 2000, 60.4, is well up from the 1986 Sakernas, indicating an average rate of increase in the overall LFPR of about 0.22 percentage points per year. At first glance, these results appear inconsistent with the average projected rate of increase in the overall LFPR of only 0.07 percentage points per year for LOTUS (line 4a) and 0.03 percentage points for BPS. Inasmuch as the rates of change for each age-sex group in line 4a were used to project the LFPR's in line 5b, it is difficult at first to understand the inconsistency.

The explanation lies in the change in the age composition of the working age population between now and 2000. As can be seen in figure 4, the shape of the age pyramid will change sharply during 1985-2000, as a result of the large decline in fertility that has recently taken place. There will be a decline in the share in the working age population of persons 10-19, whose LFPR's have been well below the average for all working age persons. Also, there will be an increase in the share of persons 20-34, whose LFPR's have been well above the average for all working age persons. As a result of these shifts, the overall average LFPR will rise substantially even if LFPR's for the 16 age-sex groups do not change at all, or -- as is assumed here -- change in ways that largely offset each other.

In algebraic terms, the difference between the LOTUS measures being compared is as follows.

The overall average rate of change in line 4a, 0.07 percentage points, is an average of the rates of change for each sex-age group, weighted together by 1985 population weights.

The overall projected average rate of change, 0.26 percentage points per year, is derived by dividing the difference between measures for 1986 and 2000 by 14. The two measures are derived as follows:

The overall average LFPR in line 5b, about 61.0, is an average of the projected LFPR's in 2000, weighted together by 2000 population weights. If, instead, the projected LFPR's in line 5b were weighted together using 1985 population weights, the overall average LFPR in 2000 would be only about 58.4 (line 5c).

The overall average LFPR in line 1h, 57.3, is an average of LFPR's in the 1986 Sakernas, weighted together by 1986 population weights, which are nearly the same as 1985 weights.

Thus, the difference between the overall average LFPR in 2000 and 1986 mainly reflects the difference between 2000 and 1986 population weights, rather than differences between LFPR's for each age-sex group in 1986 and 2000.

The projected LOTUS increase of 0.26 percentage points per year in the LFPR is equivalent to an average annual increase of 0.45 percent, when divided by the LFPR in the base year, 57.3. When the increase in the LFPR is expressed as a compound rate of growth (from 57.3 to 61.0 during 1986-2000), it is equivalent to an annual rate of increase of 0.44 percent.

In conclusion, the overall LOTUS LFPR can be expected to grow at a rate of about 0.44 percent per year during 1986-2000. The working age population is projected to grow at a rate of roughly 2.32 per-

cent per year during 1986-2000. Thus, the overall rate of growth of labor force is estimated as 2.76 percent per year -- the sum of the rate of growth of working age population (2.32 percent per year) and the rate of growth of the overall LFPR (0.44 percent per year).

Most of the projected increase in the overall LFPR will take place after 1990, when the effects of the changing age composition of the population will become pronounced. During 1985-90, the overall LFPR will increase only a little. If we look back at the last 5 years instead of forward to the next 15 years, there is no comparable change in overall LFPR's that is due to changes in age composition. This can been seen from calculations using population weights for 1980 and 1985 (lnes 2c and 2d) and the LFPR's in the 1986 Sakernas.

The working age population begins with age 10. The fact that changing age composition becomes a major factor influencing the overall LFPR after 1990 presumably reflects a large fertility decline 10 years earlier, that is, after 1980.

Similarly, the overall BPS LFPR can be expected to grow at a rate of about 0.37 percent per year during 1986-2000. Thus, the overall rate of growth of labor force is estimated as 2.69 percent per year -- the sum of the rate of growth of working age populatiron (2.32 percent per year) and the rate of growth of the overall LFPR (0.37 percent per year).

7. Some general reflections on the problem of projecting LFPR by sex, age and province

Projecting labor force for the 16 age-sex groups for 27 provinces involves 432 age-sex-province cells. Unfortunately, whatever meth-

od is selected for projecting labor force by 16 age-sex groups cannot be mechanically applied to the provincial level. The reasons for this difficulty will now be discussed.

The underlying difficulty in estimating the 432 coefficients is the enormous amount of noise. The following is a single illustration. For women age 55-64 in Aceh, the LFPR in 1976 was 24.5 percent. It declined to 15.2 in 1977, jumped up to 42.4 in 1978, declined to 31.7 in 1980, jumped to 52.8 in 1982 and 72.1 in 1985, then declined to 50.7 in 1986. Hardly an promising time series for estimating trend rates of change!

Noise, which disturbs the signal for the overall LFPR for the 16 age-sex groups for all Indonesia, is much, much worse for the LFPR for the 432 age-sex-province groups.

Sampling error is much more of a problem at the provincial level. Whereas the sample size for each age-sex group for all Indonesia includes many thousands of persons, sample sizes for the various age-sex-province groups are as small as several hundred persons!

Nonsampling errors due to variations in interviewer or supervisor behavior are far more likely to bias the results (because they are far less likely to cancel each other out) for a single province where no more than 3-4 interviewers worked, than for the full national sample.

The nature of the difficulty of preparing provincial projections depends somewhat on the method that it is wished to apply.

If regression methods are used, the standard methods for excluding outliers may not be sufficient to eliminate noise. Furthermore, there is the logical difficulty that a regression model is a stochastic model, the results of which are not always addi-

tive. That is, when the chosen regression model is applied to provincial data, it will produce results that, when aggregated by age and sex to the national level, will be inconsistent with results from applying the model to national data by age and sex. If it is wished that the provincial projections be consistent with national ones, a further adjustment must be applied to force consistency.

If worksheet methods are used, the problem of additivity does not arise, because the method is deterministic rather than stochastic. So, the provincial estimates will be consistent with the national ones. However, the worksheet method in table 1 is not suitable for provincial projections, because the survey data for the four years that were used in table 1 -- 1976, 1977, 1982, and 1985 -- are based on samples that are sufficient at the national level but not at the provincial level.

For Sakernas 1976 and 1977 and for Susenas 1982, the total sample is only 60-75,000 households, and the sample size in many provinces is not much larger than 1,000 households. In 1,000 households there may not be many more than 200-300 persons in a given age-sex group.

For Supas 1985, the total sample size was 125,000, or roughly twice as large as for Sakernas and Susenas.

In projecting LFPR's at the provincial level, satellite photography provides a useful metaphor. Satellite pictures, when analyzed by computer or by an experienced analyst, can be used to distinguish objects on the ground of a certain size -- say, two meters. No matter how much the photographs are enlarged, however, smaller objects cannot be distinguished from the grains of the photographic medium. For such objects, the photograph is too "grainy" to provide useful information. BPS must take account of the risk that the provincial labor force data may simply be too "grainy" to pro-

vide a basis for distinguishing between rates of change for age-sex LFPR's by province. [2]

BPS must further take account of the fact that much exercise of judgment will be required to review the provincial projections and revise implausible ones. The more ambitious the projections -- in terms of amount of detail -- the more judgment that will be required. Such exercise of judgment should be documented and reviewed by higher management. To a large extent, therefore, the problem of projecting LFPR's at the provincial level is an issue of resources. How much time do BPS analysts and managers have to review the data, exercise judgment, prepare documentation and discuss findings? If judgment is not exercised, the projections will include many that are wildly implausible.

8. A step-by-step method for projecting labor force by age, sex, and province

Once BPS has selected projections for the national level, work can begin on projections by age, sex, and province.

The first requirement of a "step-by-step" method for projecting labor force by age, sex and province is that it be based on, and consistent with, the projections that BPS selects for the national level.

---

[2] BPS staff have already attempted to estimate coefficients of change for LFPR's for the 432 age-sex-province groups, using regression analysis. The coefficients have been reviewed by BPS staff; most coefficients appear very weak, and therefore, very unreliable. This is an indication that the data may simply be too "grainy," or, to switch metaphors, "noisy," to provide a suitable basis for projecting LFPR's.

A second requirement is that it provide managers with a tool for limiting the "ambitiousness" of the estimating process.

The method proposed here takes account of the "graininess" of the data, and does not try to read more into the data than can be read.

The first step is to project rates of change for 16 sex-age groups in 4 regions -- Jakarta, Java excluding Jakarta, Sumatra, and other islands. Thus, only 64 rates will initially be projected, instead of the 432 at the provincial level. This has the advantage that the data are much less noisy for the 4 regions than for the 27 provinces. The data that will underlie the projections will be the 1976-77 and 1982-85 averages for age-sex-region groups similar to shown in table 2.

The 64 rates can be reviewed and adjusted by simple procedures somewhat like the ones discussed above in sections 3 and 4. In part, this will involve vetting the data for patterns that appear implausible, and that, presumably, reflect noise. [3]

The 64 rates can be used as the "slopes" for projecting LFPR's for the 432 age-sex-province groups, on the assumption that the rate of change for each age-sex group is the same for all provinces within each region.

The only further requirement for projecting for all 432 age-sex-province groups is an intercept for each age-sex-province group.

---

[3] Even at such an aggregate level as is used in table 2, in which only 3 regions are distinguished, the data for some age-sex-region groups appear implausible, and must probably be rejected as "outliers." For age-sex groups for which data for a particular region are revised judgmentally, data for the other regions must be revised at the same time. This is necessary to assure that the weighted average of the rates of change for the three regions remains the same as the average that BPS used to project national rates.

The intercepts can be based on survey results for several years (such as 1982, 1985, and 1986). However, the 1986 Sakernas data cannot serve alone as the intercept for the provincial estimates, because the data appear to be subject to large errors, due to the small sample size for each sex-age-province cell. The data that are used to estimate the intercept will have to be adjusted in two ways:

They will have to be vetted for implausible "outliers."

They will have to be adjusted to make the intercept for each province consistent with the intercept for the national projections. For example, if the 1986 Sakernas data are used as the intercept for the national projections, the intercept for each province can be estimated as the product of the average LFPR for the province for 1982, 1985 and 1986 times the ratio of the average regional LFPR for 1986 to the regional LFPR for 1982, 1985 and 1986. [4]

The final step is for analysts to review the projections and exercise judgment as to whether there are particular sex-age-province groups for which the data clearly show a rate of change that differs from the one indicated by the foregoing method. It is suspected the number of such groups will be small. For such groups, special projections can be prepared, if there is time.

---

[4] Or, what is the same thing, the projection for each region can be multiplied by the ratios of the average LFPR for the province for 1982, 1985 and 1986 to the average LFPR for the region for 1982, 1985 and 1986.

9. Summary

Projection is more of an art than a science. There, are, unfortunately, no simple, clear-cut recipes for projecting into the future from historical data. There is no substitute for working directly with the data, searching for plausible patterns. A flexible approach is necessary. Trial and error is unavoidable. The exercise of judgment by the analyst is often required. Such judgment needs to be documented in reports, or in table notes. A personal computer is a valuable tool in such an exercise, because it allows the analyst to explore many possibilities before chosing the best one.

The memorandum has presented a worksheet method for projecting labor force for 16 age-sex groups. The worksheet method largely agrees with the BPS estimates. The difference in the projected overall LFPR for 2000 is only 0.6 percentage points -- a trivial difference for such a long-term projection.

Perhaps the most interesting finding of the analysis is this. The overall average LFPR will increase by more than 3 points by the year 2000 (from about 57.3 in 1986 to about 61.0 in 2000 for the worksheet projections, and to about 60.4 in the BPS projections), even though the LFPR's for each age-sex group are expected to change in ways that largely offset each other. The reason is that the age composition of the population will change in such a way that the share in the population of persons age 10-19, whose LFPR's are low, will decline and the share of persons 20-34, whose LFPR's are high, will increase. These are consequences of the fertility decline that became pronounced after 1980.

The difficulties of projecting LFPR's for 432 age-sex-province groups have been reviewed. It is concluded that the data at the

provincial level are probably too noisy to provide a sufficient basis for estimating rates of change separately for each of the 432 groups. Instead, it is suggested that rates of change could be estimated for the 16 age-sex groups for 4 large regions -- Sumatra, Jakarta, the rest of Java and the other islands. The rates of change for the 48 or 64 age-sex-region groups could then be used to project LFPR's for each of the 432 age-sex-province groups, on the assumption that the rate of change is the same for a given age-sex group, for all provinces within the region.

The projections presented here based largely on the assumption that past trends will continue. While it is almost certain that future trends will differ from past ones, the available evidence and models do not provide a firm basis for forecasting changes in trend rates of change.

abor Force Participation Rates and Changes in Those Rates for Sumatra, Java, and the Other Islands

1976-77 average				1982-85 average				Change from 1976-77 to 1982-85			
matra	Java	O.Isles	All	Sumatra	Java	O.Isles	All	Sumatra	Java	O.Isles	All
9.14	17.18	16.67	15.55	9.20	12.09	13.24	11.76	0.06	-5.09	-3.43	-3.80
52.23	60.74	54.67	57.98	40.67	46.96	45.42	45.47	-11.57	-13.78	-9.26	-12.51
86.80	87.18	84.60	86.61	80.31	82.17	80.98	81.59	-6.49	-4.99	-3.62	-5.02
97.77	97.61	97.46	97.61	96.68	96.26	96.05	96.30	-1.09	-1.36	-1.41	-1.32
99.02	98.50	98.20	98.55	98.06	98.02	97.46	97.92	-0.96	-0.48	-0.74	-0.62
96.49	95.09	94.00	95.15	96.28	95.80	94.49	95.64	-0.21	0.71	0.49	0.49
86.26	83.75	82.43	83.98	83.95	82.77	82.14	82.88	2.32	-0.98	-0.29	-1.10
64.61	58.60	55.87	59.23	56.54	57.47	56.71	57.15	-8.07	-1.12	0.84	-2.08
6.13	10.39	9.90	9.49	6.12	8.87	9.49	8.46	-0.01	-1.53	-0.41	-1.03
25.18	36.25	34.19	33.75	27.74	33.40	31.99	32.05	2.56	-2.86	-2.20	-1.70
20.44	36.93	38.91	36.83	40.99	40.97	43.69	41.48	6.55	4.04	4.77	4.66
41.69	42.41	40.06	41.83	45.68	44.85	47.36	45.48	4.00	2.44	7.29	3.65
50.72	50.04	42.85	48.82	56.47	48.36	51.76	50.55	5.75	-1.68	8.90	1.73
50.05	50.56	39.26	48.34	57.39	57.25	51.15	56.13	7.35	6.69	11.89	7.79
39.89	47.81	27.85	42.54	48.25	43.58	38.00	43.42	8.36	-4.23	10.15	0.87
23.47	22.53	19.37	22.12	21.52	22.52	19.28	21.72	-1.95	-0.01	-0.10	-0.40

The 1976-77 averages are based on data from the 1976 and 1977 Sakernas. The 1982-85 averages data from the 1982 Susenas and the 1985 Supas.

j	Two-year average	1982,1985	11.75	45.10	81.10	96.10	97.95	95.65	83.40	57.90	6
2. SUPPLEMENTARY DATA											
a	Share of unpd fam wkrs in pop., '77		10.05	29.85	26.80	10.15	2.36	1.57	2.37	2.53	1
b	Share of unpd fam wkrs in pop., '86		12.44	27.46	23.58	7.45	1.86	1.35	2.04	2.88	1
c	Population in 1980 ('000)		8854	7780	6960	10043	7720	5427	3078	2289	5
d	Population in 1985 ('000)		10232	8427	7164	11879	8598	6345	4167	2648	5
e	Projected population in 2000 ('000)		11603	10870	10999	18028	12925	9257	6204	4727	8
3. HIST. ANNUAL RATE OF CHANGE (in pct. points)											
a	Trend rate for 76,77,82,85		-0.59	-2.04	-0.84	-0.22	-0.10	0.03	-0.18	-0.33	-(
b	Adjustment to line 3a		0.11	0.25	0.22	0.07	0.02	0.01	0.02	0.03	
c	LOTUS estimate (lines 3a + 3b)		-0.47	-1.78	-0.62	-0.15	-0.08	0.04	-0.16	-0.30	-(
d	BPS estimate		-0.42	-1.66	-0.84	-0.16	-0.05	0.07	-0.23	-0.56	-(
4. PROJ. ANNUAL RATE OF CHANGE (in pct. points)											
a	LOTUS trend rate, 1985 weights		-0.47	-1.20	-0.62	-0.15	-0.08	0.04	-0.16	-0.30	-(
b	LOTUS trend rate, 2000 weights										-(
5. PROJECTED LFPR IN YEAR 2000 (in percent)											
a	LOTUS, assuming hist. trend (line 3c)		7.79	21.64	71.24	94.66	97.44	96.97	80.56	51.07	67
b	LOTUS, assuming proj. trend (line 4a)		7.79	29.30	71.24	94.66	97.44	96.97	80.56	51.07	68
c	Same, with 1985 population weights										65
e	BPS estimate		8.13	22.43	67.63	94.56	97.36	97.36	79.05	47.98	67

1i Average of lines 1b and 1c. 1j Average of lines 1f and 1g.

3a Historical trend rate of change for 1976,77,82,85 is equal to the difference between the 19
years (the difference between April 1977, the midpoint between the 1976 and 1977 Sakernas, a
The averages for men, women, and both sexes are based on LFPR's for each age group, weighted

3b The overall average adjustment (.15) adjusts for the difference between the overall trend fo
overall trend for 1976-86, as estimated in DSP research paper (.93 percentage points per yea
proportion to the shares on line 2b (that is, is equal to the product of line 2b and 0.15/16

3c The averages for men, women, and both sexes are based on LFPR's for each age group, weighted

3d Taken from BPS regressions for each sex-age group. Totals for men, women, and both sexes we

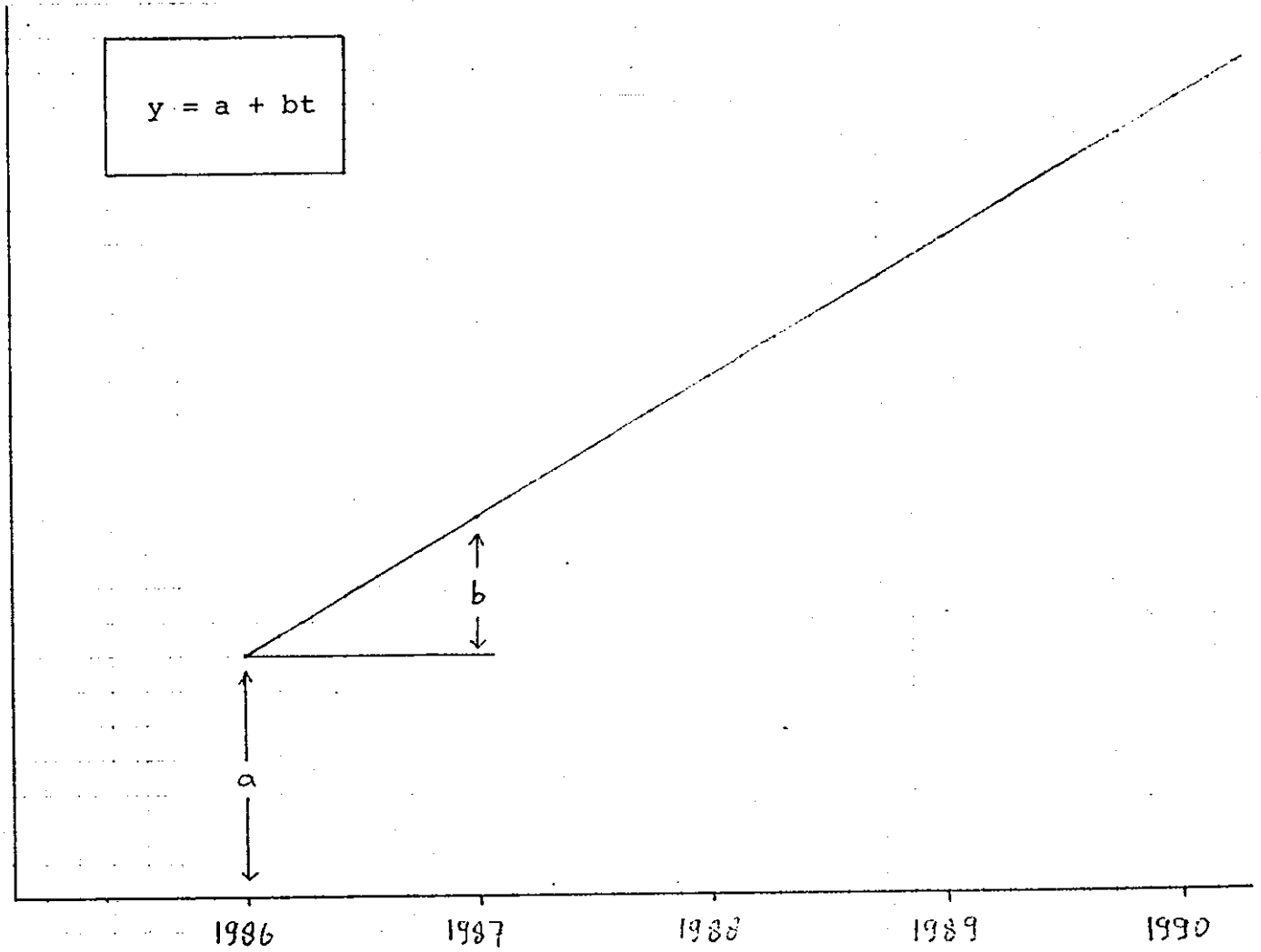
4 The projected trend differs from the historical trend (line 3c) only for 2 age-sex groups; e

5a-b LFPR in 2000 is based on 1986 Sakernas (line 1b) plus the trend (line 4a or 4c, respectively
2000 population weights (line 2e).

5c The averages for men, women, and both sexes are based on the projected LFPR's for each age g

5d Taken from BPS projections for each sex-age group. Totals for men, women, and both sexes we

Figure 1. -- Illustrative Example of Straight-line Projection



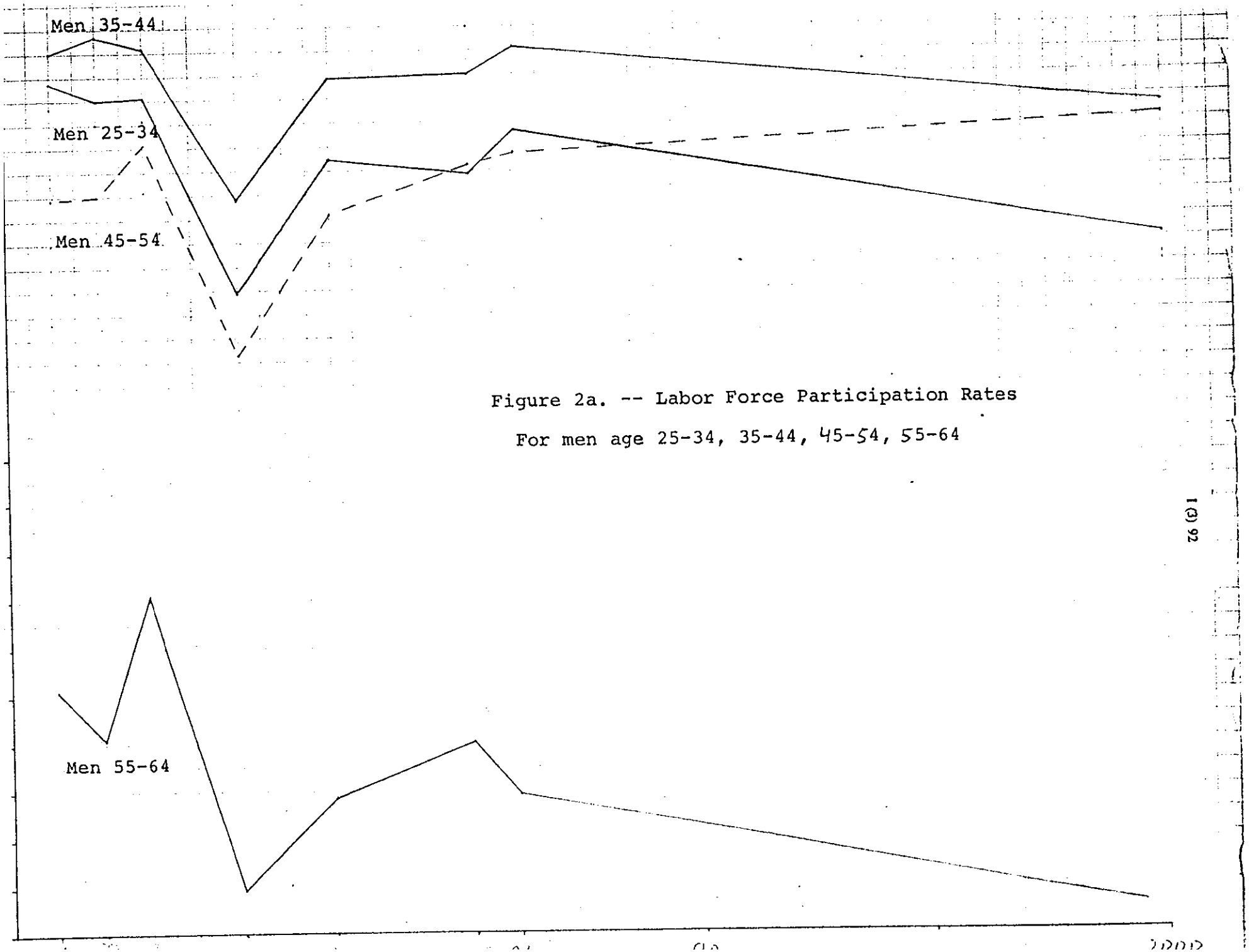


Figure 2a. -- Labor Force Participation Rates

For men age 25-34, 35-44, 45-54, 55-64

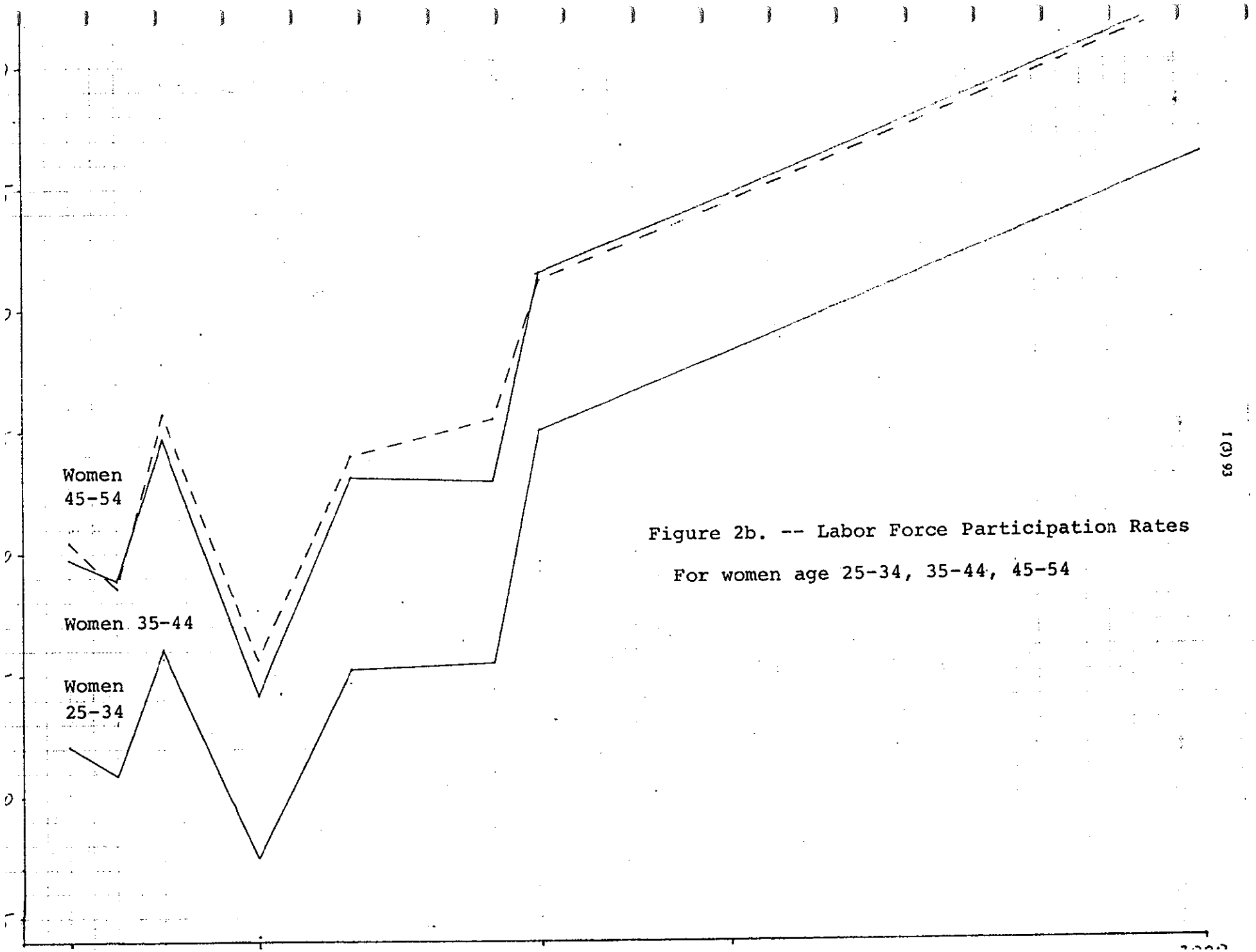


Figure 2b. -- Labor Force Participation Rates

For women age 25-34, 35-44, 45-54

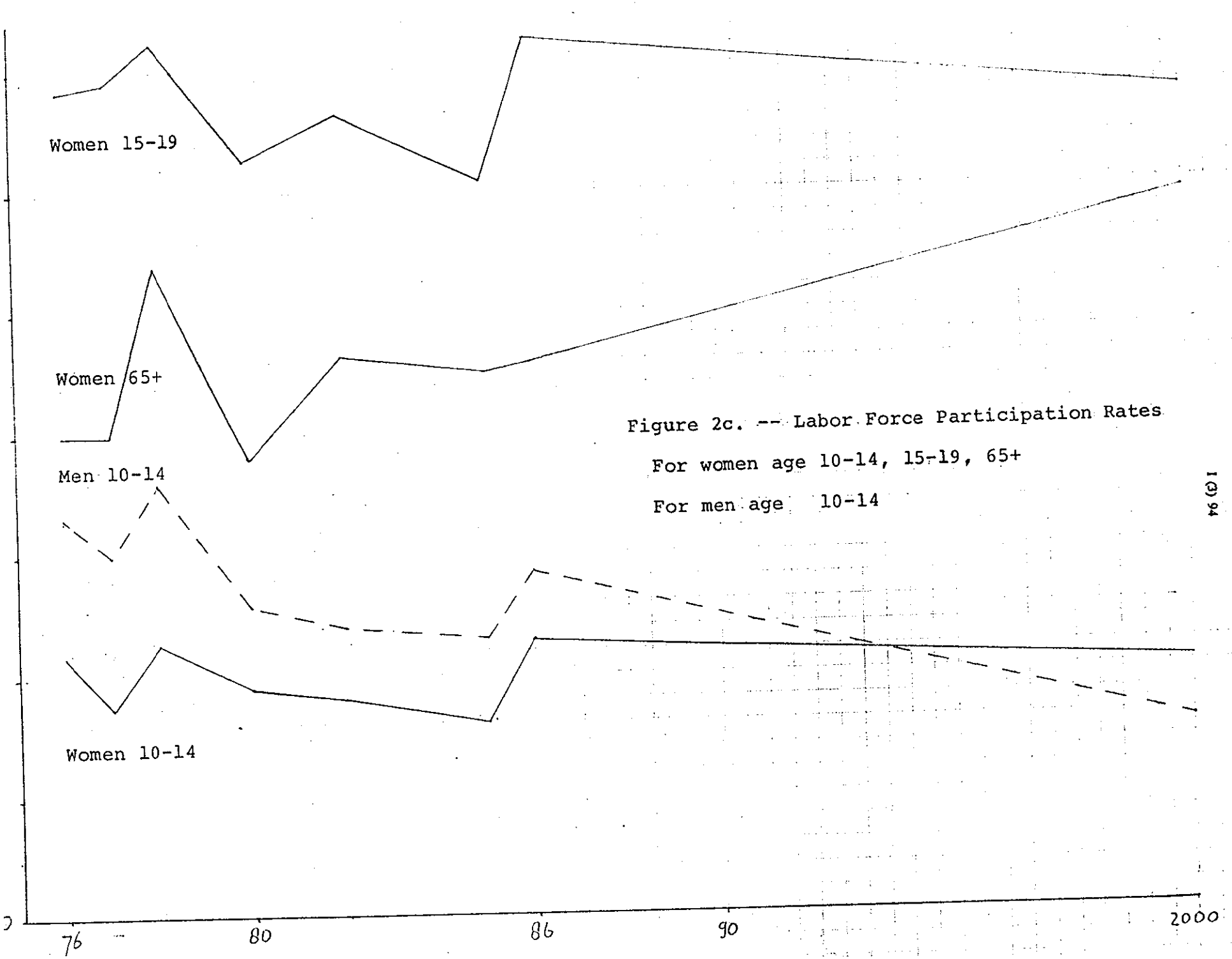


Figure 2c. -- Labor Force Participation Rates

For women age 10-14, 15-19, 65+

For men age 10-14

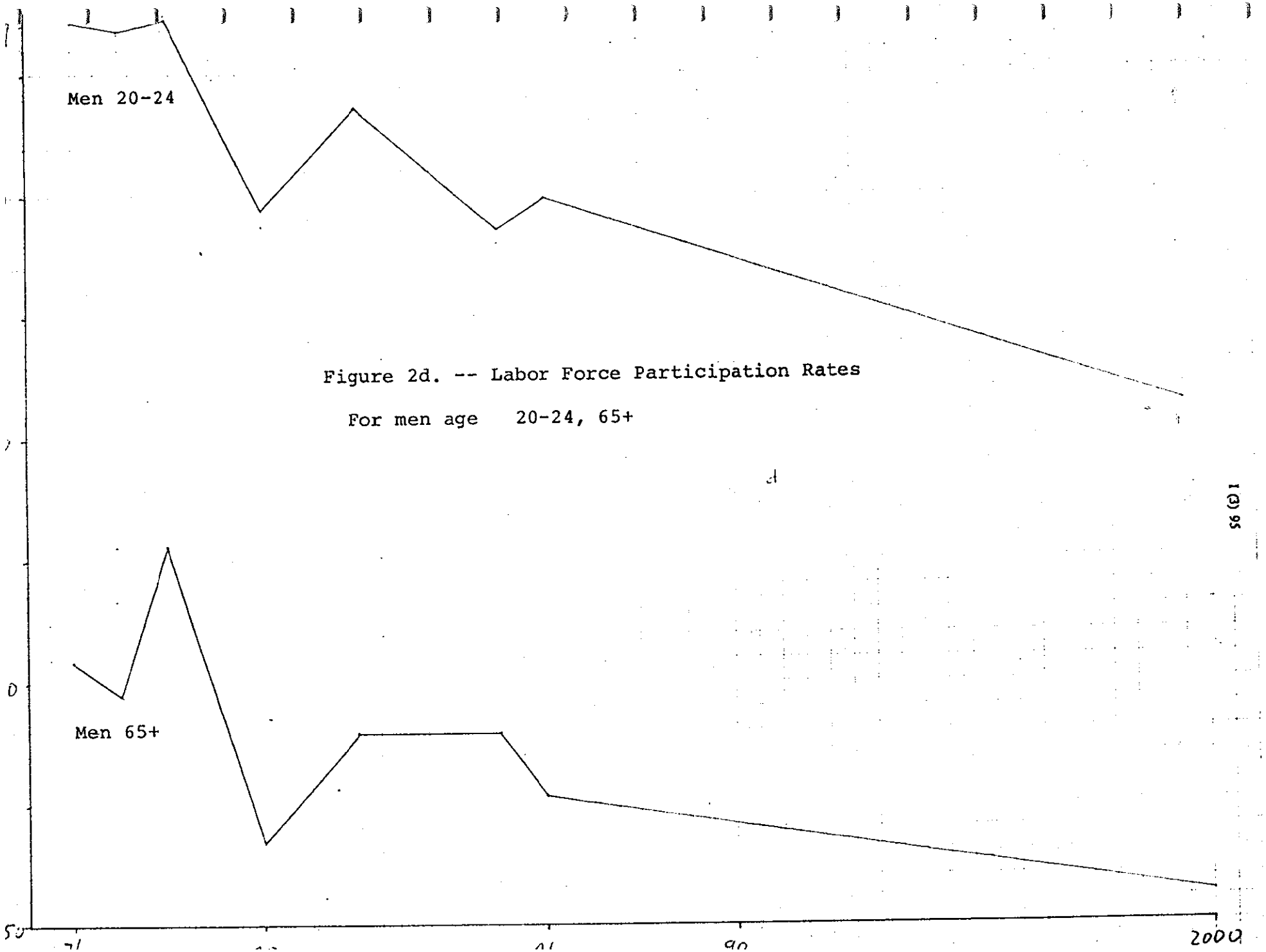


Figure 2d. -- Labor Force Participation Rates

For men age 20-24, 65+

Figure 2e. -- Labor Force Participation Rates

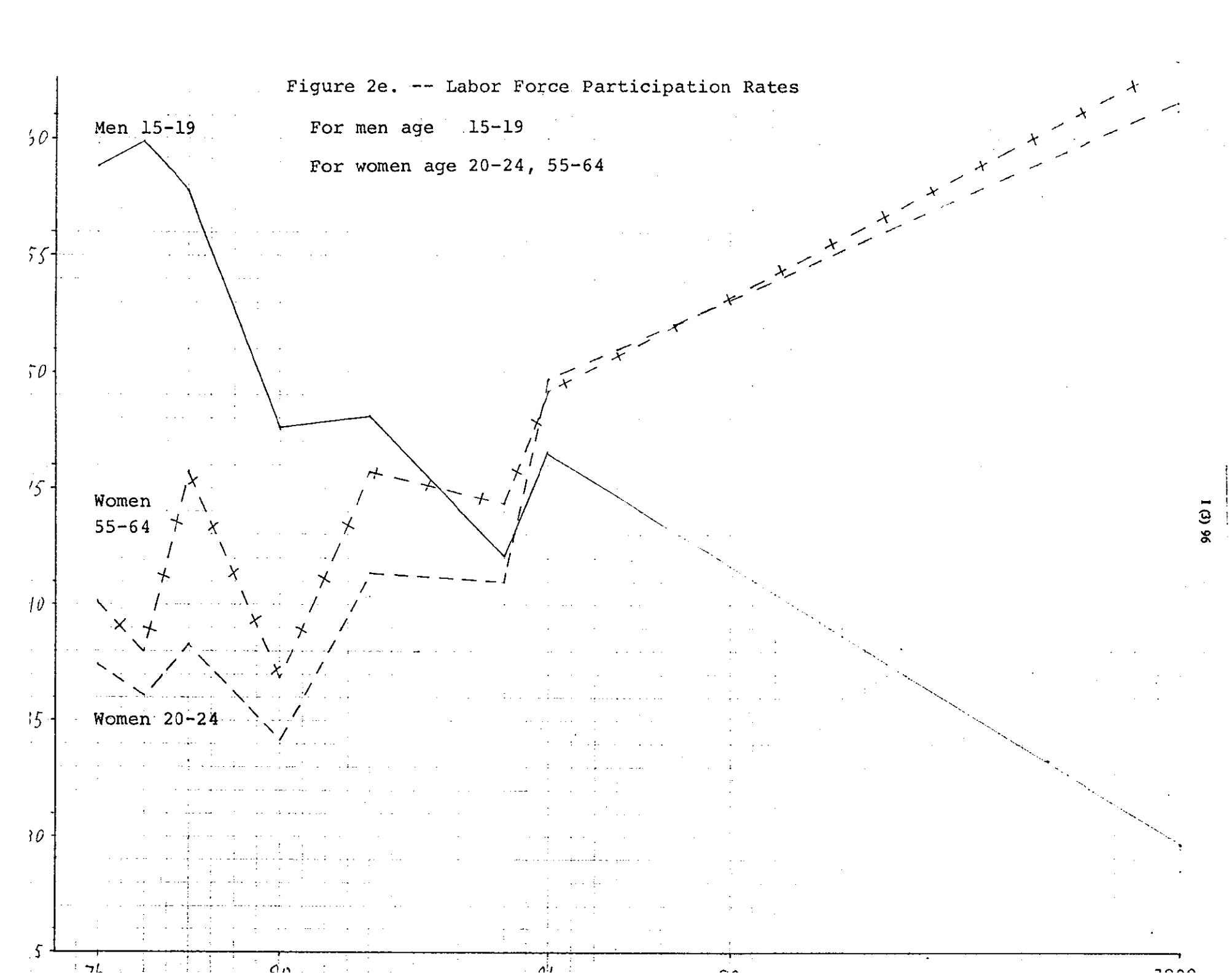


Figure 3. -- Labor Force Participation Rates by Age and Sex : 1986 Sakernas and 2000 Projections

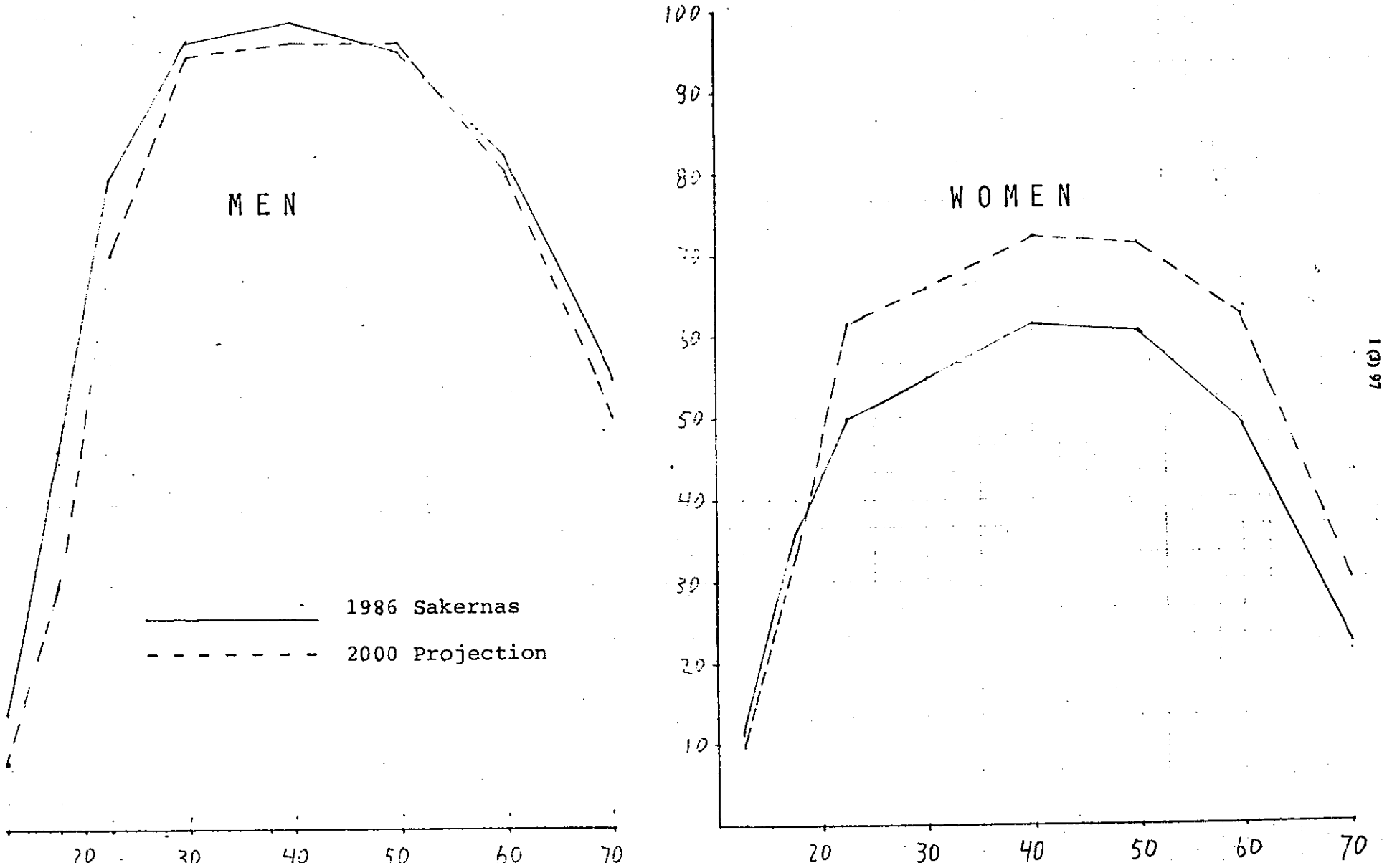
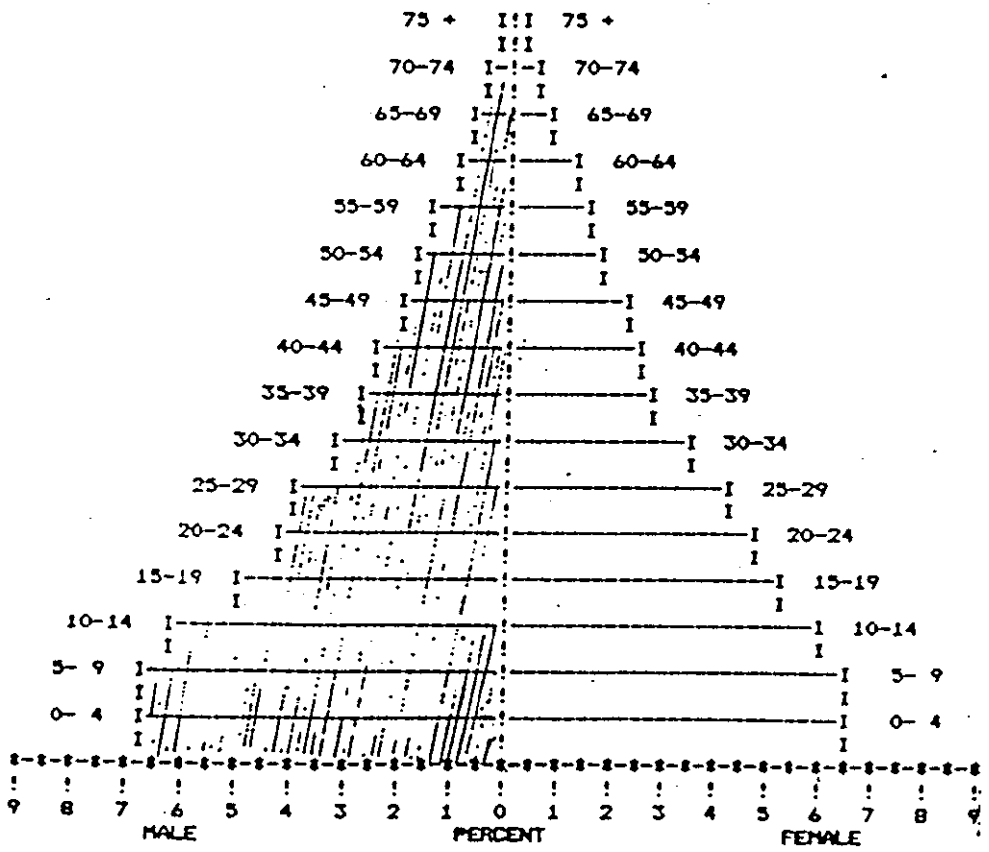
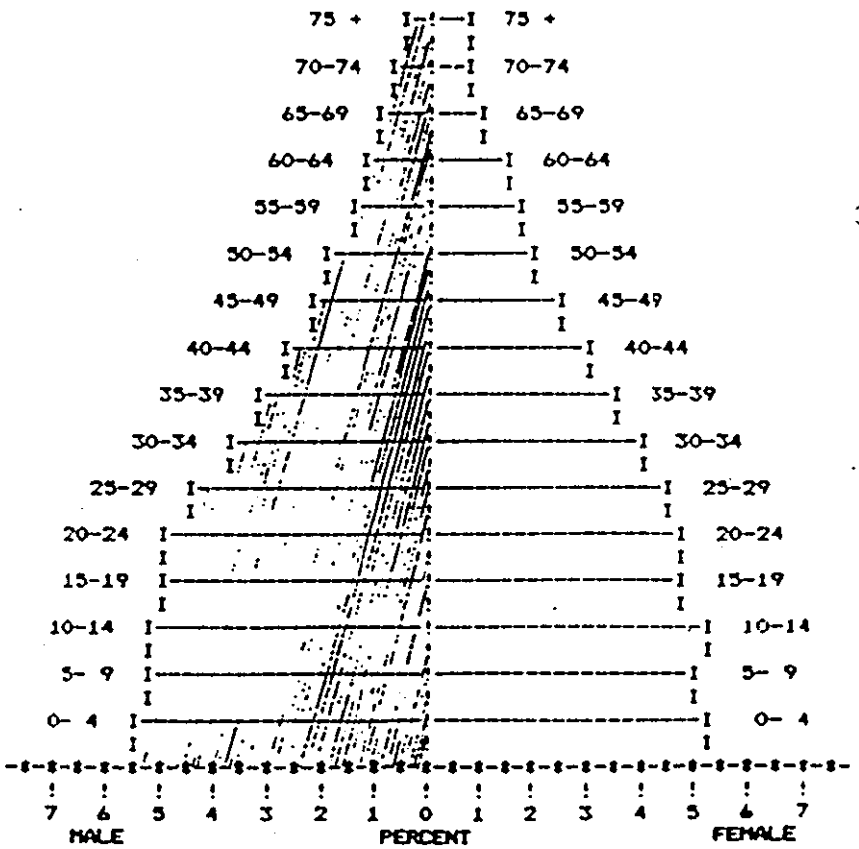


Figure 4. -- Indonesia Population Pyramid : 1985 and 2000 Projection

1985 Indonesia Population



2000 Indonesia Population Projection



WAGE DATA AT BPS

Statistical Paper #5

by

Alex Korns

April, 1988

(DSP #22)

EXECUTIVE SUMMARY

BPS presently conducts five wage surveys. This paper describes and compares the surveys and suggests ways that BPS can improve them. Because the surveys are conducted by different BPS divisions using different techniques, BPS needs to develop an integrated strategy for collecting wage data. The wage data from the existing surveys can be greatly improved at no additional cost by building on their strengths, remedying weaknesses, and eliminating unneeded features.

The household survey, which has provided wage data since 1976, is a suitable vehicle for comprehensive wage data for the 18 million employees in Indonesia. The major tasks for BPS are to freeze wording of the wage question while improving occupational detail.

The four establishment surveys are suitable vehicles for narrowly focused wage data for detailed occupational groups in a few economic sectors. Such surveys can excell in rapid reporting, and/or in consistency and accuracy of the data.

The farmer terms of trade survey rapidly reports monthly farm wages. It covers a casual labor market of broad significance. The Survei Industri is not a wage survey, but collects data on the average employment cost per worker in manufacturing. For both of these surveys, BPS needs to check on the consistency of reporting from one period to the next.

The other two establishment surveys report with lags of one to two years. Questionnaires are often returned late, and the data are tabulated manually. A major task here is to computerize tabulation, in order to speed reporting and to control errors.

The estate wage survey tallies the wages of workers at all 820 state-owned estates. It collects the data twice a year but publishes only annually. It provides the oldest continuous time series for wages in Indonesia. Computerization would make it possible to tabulate the data twice a year.

The Survei Upah Buruh (SUB) is the most complex and problematic of the BPS wage surveys. It collects data quarterly but publishes only annually. The data are for four sectors: large and mediuim manufacturing, mining, hotels, and land transportation. A new sample was drawn in 1986; for reasons that are not fully clear, the 1986 data are not comparable with those for 1985. Respondents are overburdened, and there are indications that the SUB is collecting too much data relative to user needs or BPS resources. The paper recommends that BPS either cancel the survey or redesign it. The major obstacle to redesign appears to be that wages rates in Indonesian factories depend more on seniority and skill than on occupational classification. As a result, it is difficult to design a wage question that will yield useful wage data while not overburdening respondents.

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GLOSSARY

AMWB	Average monthly wage bill (estate wages)
BPS	Biro Pusat Statistik
CPI	Consumer Price Index
KJI	Klassifikasi Jabatan Indonesia (Indonesian occupational classification)
PCE	Personal consumption expenditures (national accounts)
SAM	Social Accounting Matrix
SI	Survei Industri
SNTP	Survei Nilai Tukar Petani (farmer terms of trade survey)
SUB	Survei Upah Buruh

I. Introduction

BPS presently conducts five wage surveys. This report describes and compares these surveys and proposes some changes for discussion by BPS and by agencies that use the data. The descriptive portions of the report provide a guidebook for data users.

A. Purpose of report

Wage data are relatively undeveloped at BPS. Thus, there is still scope for consideration of the broad aims and methods of wage data collection. At the same time, the resources available to BPS for collecting wage data are quite limited. Accordingly, BPS needs to develop an integrated strategy for allocating its limited resources most efficiently among the four surveys. The fact that the wage data are collected by various methods (household vs establishment surveys) and bureaus (the Bureaus of Social and Demographic Statistics, of Distribution Statistics, and of Agriculture and Industry Statistics) has hampered the development of an integrated strategy.

Although the five BPS wage surveys are comparable in many respects, they do not appear to have ever been systematically compared before. Such a comparison may stimulate fresh thinking about each of the surveys.

The body of this paper deals with five issues. Section II compares summary indicators from all of the wage surveys with each other for 1976-87. Section III compares the strengths and weaknesses in Indonesia of two major approaches to collecting wage data -- the household approach and the establishment approach. Section IV examines some basic conceptual issues in the design of wage surveys such as the definition of occupation, and the way of estimating a wage rate. Section V compares the four establishment wage surveys in terms of how well they satisfy some procedural criteria of interest to users. Section VI presents a proposal for review of the most problematic of the surveys -- the Survei Upah Buruh (SUB).

The seven appendixes document the distinguishing features of each wage survey, and present recommmended changes. For three of the surveys (the estate survey, the SUB, and the Survei Industri (SI)), they compare time series that are more or less conceptually comparable, and analyze the reasons for observed differences.

B. Basic features of the surveys

Labor market analysts use wage data as indicators of the supply and demand for various kinds of labor at various times and places. For this purpose, BPS provides a limited set of wage data from five surveys. Some basic features of the surveys are summarized in table 1. One of the surveys is an occasional survey of households; the other four are regular establishment surveys.

The household survey has provided wage data intermittently since 1976. It covers the entire population living in households. Thus,

it covers virtually all employees -- nearly 18 million in 1986. It is conducted by the Division of Labor Force in the Bureau of Social and Demographic Statistics. The wage question is simple: how much in wages was received from the principal job during the last month? The minimum reporting lag is nearly a year. Tabulation is done by computer; it is slowed by the need to edit and keypunch 65,000 questionnaires each year.

The four establishment surveys cover much smaller groups of workers. Two of them cover most of the 3-4 million workers in agriculture.

One is the estate wages survey, which covers about 500,000 production workers in about 820 state-owned estates. It is a complete survey of every single estate. It is conducted by the Division of Labor Force in the Bureau of Social and Demographic Statistics. The wage questions are complex. The survey provides abundant wage data, but is not designed for rapid tabulation. The minimum reporting lag is nearly a year. The survey provides a time series since at least 1951, and is thus the oldest continuous wage series in Indonesia.

The other is the "farmer terms of trade survey," which covers a large proportion of workers in food agriculture and estates. It is a monthly sample survey of farmers in 14 provinces that is designed for rapid tabulation. It is not strictly a wage survey, but collects some wage data as part of a larger program of price data collection. The survey is conducted by the Division of Finance and Producer Prices Statistics in the Bureau of Distribution Statistics. The questionnaire simply asks for wage rates for several specified occupations. The survey provides monthly wage data with a lag of about 3 months. Wage data for Java are available since 1976; those for other islands, since 1980.

The other two establishment surveys cover workers in large and medium manufacturing.

The Survei Upah Buruh (SUB) has covered 2-3 million production workers in large and medium manufacturing, mining, hotels, and land transportation since 1981. [1] It is a sample survey of 3,600 establishments, conducted by the Division of Labor Force in the Bureau of Social and Demographic Statistics. The wage questions are complex. The survey provides measures of average wages for nearly 200 occupations, in over 30 industries and 26

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[1] Production workers in large and medium manufacturing account for the largest number of workers covered by the SUB. The 1985 Sensus Industri found 1.7 production and nonproduction million workers in large and medium manufacturing. However, the current SUB sampling frame for large and medium manufacturing is the 1984 Survei Industri, which covered only 1.2 production and nonproduction million workers. Of these, probably about 0.9-1.0 million were production workers.

provinces. Tabulation is largely manual, and the minimum reporting lag is nearly a year.

The Survei Industri (SI) is not specifically a wage survey. It is, rather, an annual economic survey of all large and medium manufacturing establishments. It is conducted by the Division of Manufacturing Industry in the Bureau of Agriculture and Industry Statistics. Workers in large and medium manufacturing numbered about 1.7 million in 1985. Although SI does not collect information about wages for specific occupations, it does collect the total employment cost and the number of workers for two groups of workers -- production workers and nonproduction workers. The survey tapes (which are available for each year from 1975 forward) can in principle be used to tabulate average employment costs for production workers and for nonproduction workers for 119 industry groups, although this has not yet been done. Employment cost is divided into six components -- basic wages, overtime, bonuses and incentives, extra payments, pension and welfare costs, and accident insurance.

In addition, reference will occasionally be made to the measure of personal consumption expenditures (PCE) per capita, estimated by the national accounts branch of BPS. Changes in PCE per capita may be regarded as a useful indicator of changes in personal income per capita, on the assumption that the conceptual differences between the two measures -- personal taxes and personal savings -- have not changed substantially as a percentage of PCE per capita.

C. Requirements for wage data

Labor market economists need wage data to study wage structure and to measure and analyze "real wages," that is, the purchasing power of wages. Wage structure refers to the ratios of money wages for various occupations, industries and regions to each other. Real wages are the ratio of money wages and a measure of purchasing power. This paper examines the BPS data for money wages. (It is intended that another paper will examine cost of living measures.)

The term "ratio" indicates that economists use wage data mainly by comparing them to other wage data. For this reason, consistency and comparability are important requirements -- usually more important than comprehensive coverage, to which statistical agencies traditionally attach considerable importance.

The purpose of a wage survey is to provide wage rates per month, per day, or per hour that are specific to labor of a certain well-defined occupation and skill level. Two classes of need for wage data can be broadly distinguished. Wage data for macro-analysis are data that provide an indication of changes in the demand and supply of broad classes of labor -- for example, unskilled labor. Wage data for micro-analysis are data that provide an indication of the relative wages and changes in those wages for narrowly defined types of skilled labor -- for example, lathe operators.

Average measures of wages for many occupations can be calculated in two ways, illustrated in table 2.

The first way (current-year weights) is to add up the wages received by workers in all occupations and divide by the number of workers in all occupations. This measure is unsatisfactory, because it is affected by shifts in the number of workers in low-wage or high-wage occupations. For example, in table 2 average wages remain constant in both occupations, but the number of workers in the high-wage occupation increases from the first to the second period. Therefore, the current-year weighted average for all occupations in table 2 shows an increase.

The second way (base-year weights), and generally the preferable way, is to weight the average wage in each occupation by number of workers in a base period (such as the first period for which the survey was taken). Such measure is independent of shifts in the number of workers in low- and high-wage occupations. In table 2, the base-year-weighted measure for all occupations shows no change in the second period.

Analysts sometimes have to make do with the first type of measure, because it can be more easily collected than the second type.

For example, the Survei Industri can provide a current-year weighted measure of the average wage received by all production workers in specific 5-digit industry groups, but cannot provide measures for specific occupations. Therefore, a base-year weighted measure of average wages cannot be prepared from the SI.

Similarly, the household survey can provide a measure of the average wage received by all manufacturing workers, but cannot provide measures (at least, not for 1986) for specific occupations within manufacturing. Therefore, a base-year weighted measure of averages wages cannot be prepared from the household survey.

In the course of economic development, the normal pattern is for current-year weighted measures of average wages to increase more than base-year weighted measures. The relative number of workers in high-wage occupations typically increases as capital accumulates and as worker skills improve. This normal pattern serves as a powerful tool for comparing independent wage measures.

II. An integrated view of the BPS wage data, 1976-87

The wage data from the various BPS surveys appear broadly consistent with one another, with one exception, which is discussed in appendix A: The Survei Upah Buruh (SUB) wage data for manufacturing for some years appear inconsistent with those for other years and (although this may simply reflect conceptual differences) with wage data from the Survei Industri (SI). This section describes broad trends in the various BPS wage data.

Table 3 presents summary measures from each of the BPS wage surveys. Table 4 presents the same data, expressed as indexes. The base year for the indexes, 1982, happens to be a year for which data are available for each of the surveys in the table.

A. Wage measures for all workers

Only the household survey provides measures of average wages for all wage workers. Two summary measures from the survey are shown in tables 3 and 4.

The first ("current weights") shows the observed average wage of all wage workers.

The second ("1986 weights") shows the average wage that would have been prevailed if the percentage of workers in each of the five sectors (agriculture, manufacturing, trade, services, and others) had always been the same as in 1986. The second measure increased much less than the first during 1976-86, because it was not influenced by weight shifts. [2]

The current-weighted average wage for all wage workers can be compared with personal consumption expenditure (PCE) per capita. PCE per capita is a rough indicator of personal income per capita -- on the assumption that the percentage of income saved, or paid in direct taxes, has not changed very much. A consistent time series for PCE per capita is available back to 1978. [3] Interestingly, the average wage of all wage workers increased substantially more than PCE per capita during 1978-86, indicating that wage incomes per worker have increased relative to personal income per capita.

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[2] More specifically, the second measure is not influenced by the shift of workers away from sectors with wages that were low (such as agriculture) or were growing slowly (as in trade and services) toward sectors with wages that were high and were growing fast (such as manufacturing). However, the second measure is influenced by shifts within each of the five sectors.

[3] Estimates of PCE per capita are available before 1978, but they are based on sources and methods that are not consistent with the those used for the estimates for 1978-86.

B. Wage measures by economic sector

Household survey data indicate that wages have increased relatively much more in goods production (agriculture and manufacturing) than in services production (trade, services). This differences may be speculated to reflect larger productivity gains in goods production than in services production.

As is discussed in appendix C, the relatively large increase in average wages in manufacturing may in part reflect an increase in the average seniority of the work force rather than an increase in the wage paid to labor of the same experience, skill, and occupation. There are three wage measures for manufacturing that can be compared. The household survey measure covers all manufacturing; the two establishment measures cover the half or so of manufacturing workers in large and medium establishments. One of the establishment surveys agrees broadly with the household series, but the other does not.

The SI measure of average employment cost per worker (1985 weights) for 1976-86 is a weighted average of measures for each of the 9 two-digit industry groups in table 21. [4] Note that the SI measure refers to total employment cost, which includes basic wages, overtime, bonuses and social benefits. The movement of the household survey measure of average wages is very similar to that of the own-year-weighted SI measure. If both measures are accurate, this would imply that wage movements in small and cottage manufacturing industry have parallelled those in large and medium industry.

The SUB provides measures of manufacturing wages for permanent production workers in hundreds of specific occupations and industries, for 1981-86. When the measures are combined using the weights of a base period (February 1981, for 1981-85; February 1986, for 1986), an average wage measure for production workers in large and medium manufacturing is obtained.

Movements in the SUB and the SI measures differ sharply from one another for 1983-86. Appendix A discusses possible reasons for the differences, and argues that the SI measure may be the more reliable one.

For agriculture, there are indications that the relatively large increase in wages may in part reflect a relatively large increase

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[4] The weighting procedure eliminates the influence of shifts in the share of workers in each of the nine industry groups, but does not eliminate effects of shifts in industry and occupation shares within the nine groups.

in consumer prices at rural markets. [5] Three data sources for agriculture can be compared: The household survey, which covers all agriculture, and the two establishment surveys -- the estate survey and the farmer terms of trade survey.

Wages of production workers on state-owned estates increased more than the household survey measure of agricultural wages during 1976-82, but less than the latter during 1982-86.

Agricultural wages in Java (mainly in food agriculture) increased less than the household survey measure of agricultural wages during 1976-82, but more than the household measure during 1982-86. During 1982-86 these money wage measures actually increased more than did all other wage measures in table 4.

For services, there are two wage measures -- the household survey, which covers all services, and the SUB, which covers hotel workers. Both measures show that money wage increases in services lagged those in other sectors during 1981-86.

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[5] As shown in the cost of living measures collected by the Survei Nilai Tukar Petani. Measures for West Java are shown in tables 24a and 24b below. Some implications of these price data are discussed by Gustav Papanek in "Biases in Analyses of Real Wages: Can Figures Lie?," DSP Research Memorandum #15.

III. Household versus establishment approaches

This section discusses the strengths and weaknesses of the household and establishment approaches to wage data, and presents some broad guidelines for the further development of the two approaches at BPS.

A. Strengths and weaknesses of the two approaches

Household and establishment surveys each have certain strengths and weaknesses for collecting wage data. Resource allocation between the two approaches must be a matter of judgment and must depend on national circumstances.

In theory, establishment surveys have many advantages.

They can provide more precise and finely disaggregated data than can household surveys. Respondents at establishments can refer to accounts, and can provide specific descriptions of occupations.

They can serve as an efficient way for collecting wage data frequently and publishing them rapidly. Because the data for each period refer to the same group of establishments, they provide a reliable measure of small changes from one period to the next.

Sampling rates can be adjusted by sector or industry to meet specific reporting requirements, which is hardly possible in general household surveys.

Information can sometimes be obtained more economically insofar as employees are concentrated in large establishments.

In Indonesia, however, the theortical advantages of establishment wage surveys appears to be nullified by several practical weaknesses.

No procedures have yet been worked out in Indonesia for conducting a sample survey of establishments in all economic sectors. Indonesia lacks the comprehensive system of tax and other administrative records that undergird establishment surveys in developed countries. The existing wage surveys at establishments cover only about 5 million workers -- less than a third of the 18 million wage workers covered by the household survey.

The formal sector accounts for a small proportion of wage employment in Indonesia. It is difficult to maintain comprehensive sampling frames even for this sector, so coverage tends to be incomplete. Outside the formal sector, record-keeping is poorly developed and respondents may be unable to provide precise information.

Although the manufacturing sector accounts for an important share of wage employment in the formal sector, certain features

of the wage system in manufacturing make it difficult to conduct a wage survey. The actual wage system in manufacturing varies greatly from factory to factory. Occupations do not appear to be well defined in many factories. Establishments in medium and large manufacturing are expected to fill out many survey forms every year. Respondents feel overburdened. They may react by refusing to cooperate or by delaying their responses.

To ensure completeness and accuracy, establishment survey questionnaires tend to become lengthy. Many questions are never tabulated; others appear ambiguous. It seems to be difficult to work out a pattern of cooperation between BPS and establishments whereby each trusts the other and tries to make the other's job easier.

Quality control is more difficult to assure in an establishment survey than in a household survey. This is primarily because of the great variety in type and size of the units encountered. Respondents may be more highly trained than the interviewer; respondents who are poorly motivated can easily sabotage a survey by responding negligently, supplying misleading or inaccurate data.

Household surveys in Indonesia have three great advantages over establishment surveys.

They provide comprehensive coverage. Thus, the 1986 Sakernas covered about 18 million wage workers.

They provide a basis for cross-tabulation with a variety of personal characteristics.

As a result, household survey data are the most appropriate source for estimating the distribution of labor income for the Social Accounting Matrix.

Moreover, household data serve more readily than establishment data for tracking wage changes for low-skilled, marginal groups, whose wage incomes may be first to suffer during periods of slow economic growth.

Table 5, which shows wages by educational attainment, provides an example of the kinds of cross-tabulation that are feasible with the household survey. Interestingly, the data show that wages for persons in the lowest educational group increased more rapidly than other wages.

Sampling and administrative techniques for household surveys are already well developed at BPS. The data are routinely tabulated by computer. Data tapes can be provided to analysts.

The fundamental weakness of household surveys is the difficulty of getting respondents to provide reliable occupational detail. Often, respondents themselves are poorly informed about the occupations of the other persons in the household for whom they respond. An extreme case of this limitation of household data was presented

by Godfrey. He pointed out that, according to the 1980 Census, persons with primary schooling and below accounted for 64 percent of scientists and related workers, 17 percent of architects and engineers, and 22 percent of life scientists and related technicians, medical, dental, veterinary and related semi-professional workers. [6]

B. Some broad guidelines for developing the two approaches

BPS needs an integrated strategy for wage data, in order to assure that the various kinds of data are collected by surveys that are most appropriate for that purpose.

> The following is an example of the need for an integrated strategy. Every five years the Bureau of National Accounts of BPS needs data on wages of various types of households for estimating the Social Accounting Matrix (SAM). For this purpose, household survey data provide the most suitable wage data. Unfortunately, due to the lack of an integrated strategy at BPS, no household survey data were available for the 1985 SAM or for an adjacent year. Instead, BPS had to use establishment data from the SUB. The SUB data are far less suitable than household survey data for the SAM, because the SUB data cover only a small segment of wage labor (2-3 million workers at most), and because of the many technical problems with the SUB data noted elsewhere in this report.

Broadly speaking, BPS needs to continue and strengthen its program for household wage data, while focusing its program for establishment wage data more narrowly on a set of modest, feasible objectives.

The existing BPS program for collecting household wage data can be strengthened in several respects.

> The household survey wage data are little known outside BPS probably because they are rarely published. [7] The BPS reports for each household survey show the distribution of wages by industry and by other variables, but do not show average wage measures. A recent BPS publication has presented -- for the first time -- household survey time series for average wages by industry, province, and educational attainment. [8]

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[6] Martin Godfrey, "Planning for Education, Training and Employment in Indonesia", Summary Report, ILO Project INS/84/006.

[7] The BPS reports for each household survey have tended to highlight findings concerning the number of employed persons. Summaries published in the Statistical Yearbook have also highlighted such findings.

[8] Indikator Tingkat Hidup Pekerja (Indicators of Workers' Standard of Living).

Other improvements to the household survey, discussed in Appendix G, would make it possible to cross-tabulate the data in a variety of ways -- for labor market analysis, for use in the preparation of the SAM, and for comparison with establishment survey data. Better occupational detail is particularly stressed in appendix G.

The existing BPS program for establishment wage data lacks focus and, in the case of the SUB, is too ambitious. As a result, resources are stretched too thin, and reporting lags. The program for collecting establishment data needs to focussed in these ways:

Observe more carefully the actual wage system and the actual system of occupational classification, in order to tailor the wage questions more specifically to the actual system.

Focus resources on collecting the data that are most useful and easiest to collect. For example, identify urban labor markets for raw, unskilled labor that lend themselves readily to inexpensive coverage by an establishment survey.

Tabulate and publish wage data from the two surveys -- the SI and the farmer terms of trade survey -- that collect wage data as a byproduct.

Computerize tabulations. This will enable the estate wage survey to report more rapidly and will improve quality control. It will also enable BPS to provide users with data on diskettes or tapes.

Trim cumbersome features to accelerate reporting. For example, instead of burdening BPS and respondents with a massive program of collecting quarterly SUB data that is only published after a lag of one to two years, select a small number of industries and occupations for rapid reporting.

Improve cooperation between BPS interviewers and respondents at establishments, setting a pattern whereby each tries to make the other's job easier. For this purpose, reduce response burden where possible.

IV. Some conceptual issues in wage surveys

The remainder of the text of the report deals principally with ways for focusing the BPS program for establishment wage data.

This section deals with four conceptual issues in the design of wage surveys in Indonesia: The definition of an occupation, the way in which a wage rate is measured, the treatment of temporary workers, and the coverage of supplementary income.

A. Occupational definition

Wage surveys are designed to determine wage rates for specific occupations and skill levels. Such wage rates can be compared from place to place and over time.

Broadly speaking, there are two ways to control for occupation and skill level.

> Collect data for a large sample of individual workers, and perform multivariate anlaysis. Such data can be collected either through a household survey, or by asking establishments to provide data for individual workers. The latter approach was tried with some success in China; unfortunately, it burdens respondents heavily.
>
> Collect data for highly specific occupation cells. This approach is the one most commonly used in establishment wage surveys throughout the world, and is the only one used for establishment surveys in Indonesia.

For the latter approach to succeed, occupations must be defined clearly and consistently; they should, moreover, be defined as narrowly as possible, so as to limit the range of wages paid for the same occupation within the same establishment. There is always in practice some imprecision in the definition of occupations, so that a designated occupation in one establishment does not always involve the same set of skills as the same occupation 5 years earlier. The skill level for each occupation tend to creep upwards, as education and mechanization progress. Accordingly, some observed wage increases reflect this gradual redefinition, rather than an increase in demand for labor of the same skill.

The household survey provides very limited occupational detail. Moreover, coding of occupations is notoriously difficult in a household survey, especially in a developing country, where the concept of occupation is poorly understood. Designers of the survey must strike a balance between the needs of analysts for great occupational detail, with the abilities of respondents and interviewers to distinguish a limited number of broad occupations.

> Recommendation. -- The quality of occupational detail in the household survey can be improved by devising a coding system that meets the minimal needs of analysts but does not overstrain

the abilities of respondents and interviewers. This topic is discussed more thoroughly in appendix G.

The four establishment wage surveys differ in the ways in which they specify occupations, and differ probably as well in the reliability of the specification. The SI distinguishes only between production and nonproduction workers. Although this level of occupational detail is extremely crude, it is appropriate for a survey which collects wage data only as a byproduct. Two of the surveys specify the occupations fully.

The farmer terms of trade survey pre-specifies 4 (7 for estates) covered occupations.

The estate wage survey pre-specifies three covered occupations -- harvesting, sorting and processing.

The SUB specifies occupations differently for each sector. For hotels, seven occupations are pre-specified -- supervisor, receptionist, concierge, room boy, bartender, pelayan kamar, pelayan perjamuan. Similarly, for land transportation, six occupations are pre-specified -- supervisor, chauffeur, driver's helper, conductor, cargo handler, and mechanic. A description of each occupation is provided on the survey form.

For manufacturing and mining, however, the SUB provides no specific list of occupations on the questionnaire. Instead, respondents are asked to fill out the names of the various occupations and a description of each. <u>This unstructured approach has a disasterous effect on data quality, because it allows respondents to define establishments inconsistently.</u> For example, analysis of questionnaires for all 7 weaving establishments in Jakarta showed the following variation.

An establishment with nearly 1000 workers distinguished workers in 3 <u>divisions</u> -- spinning, weaving and dyeing -- but provided no occupational detail at all. Explanatory notes supplied by the establishment made it clear that each division included several occupations. For example, weaving was shown to include 5 occupations: Tukang kanji benang, operator mesin beam warper, tukang tenun, tukang mengatur mesin tenun dan rajut, and tukang periksa/kontrol kain blacu jadi. Two other weaving establishments followed a similar pattern. [9]

One establishment with about 200 workers distinguished three occupations: administrators, mechanics, and operators. Another establishment similarly distinguished maintenance workers from

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[9] The use of <u>divisions</u> as a surrogate for <u>occupations</u> appears to be a common feature of many responses. Casual examination of 15 completed SUB questionnaires in other provinces and industry groups indicated that at least 5 explicitly listed divisions (bagian) instead of occupations, and some others may have done the same in different words.

operators, and included a few other peripheral occupations, such as packers. An establishment with over 500 workers distinguished three kinds of workers -- supervisor, maintenance, and operator -- for various divisions such as embroidery, and knitting. The data made it clear that maintenance workers were paid much higher wages than are operators.

A government-owned establishment with over 2000 workers went to the other extreme of specifying 10 occupations in each of 2 spinning divisions; 13 occupations in weaving; and 11 occupations in dyeing. This establishment did not distinguish wages for men and women in each occupation -- contrary to the instructions on the questionnaire. It is not clear whether there is a need for so much detail, inasmuch as nearly 90 percent of the workers earn wages in a fairly narrow bracket -- between 1501 and 2000 rupiah per day.

The clerks who tabulate the SUB have coded the Jakarta weaving data as follows. The 1985 SUB report distinguishes 4 occupations for weaving in Jakarta: operator mesin mesin sisir fiber/cucuk; operator mesin gulung benang; tukang tenun; and tukang pemutih celup. The first two of the occupations appear to be related to spinning, whereas the fourth appears to be related to dyeing. Only the third -- tukang tenun -- is related to weaving. Tukang tenun must be assumed therefore to include everyone who works in a "weaving division" -- even supervisors and mechanics, as well as all operators, including beamwarping, sizing, reaching, tying, inspecting, and other occupations specified in the meticulously-detailed data furnished by the above-mentioned government-owned establishment. Therefore, the latter detail is all wasted effort, inasmuch as it must all be aggregated to tukang tenun.

In tabulating variegated data, clerks are obviously forced to search for the lowest common denominator. Thus, the occupational detail for the entire survey is dictated by the reporting format of the least coperative respondent within each industry group and province. Moreover, data reduction in these confusing circumstances must provide fertile ground for clerical errors.

Another limitation of the SUB system for occupational coding is that there is no standard way to summarize data for occupations in more than one industry group - e.g., for the food industry and the spinning industry. Thus, there is no way to sort out data for unskilled, semiskilled, and highly skilled workers in a wide range of industry groups.

Improvements in the specification of occupations in manufacturing will probably require careful study by high-level BPS staff of existing practices. The specification must take account of the fact that many establishments have broad categories of workers like "process workers" or "operators." Workers in the broad categories are paid at various rates, depending on their abilities and seniority. Such broad categories probably reflect the relatively newness of industrialization in Indonesia; they may reflect, as well, a low rate of turnover, so that labor does not often move from one establishment to the next.

It is recommended that BPS pre-list occupations for specific industry groups in the SUB. The introduction of prelisting for each industry group would have to be closely supervised by BPS central office staff. Thereafter, the form sent to each establishment each quarter would include the same standard list.

A further recommendation deals with the problem of summarizing occupational data across industries. BPS central office staff could, without great difficulty, assign to each of the reported occupations a 2-digit (if not a 3-digit) code from the Klasifikasi Jabatan Indonesia (KJI). If the SUB data were then entered into a database program, they could easily be summarized by KJI code. The KJI defines occupations to the 5-digit level.

B. How wage rates are measured

The two broad types of payment systems are time rates and piece rates. Time rates appear to predominate in agriculture and manufacturing; however, piece-rates are widely used in some manufacturing sectors, such as garments. It is extremely difficult to design a survey of piece rates, because the rates are specific to each operation and product -- for example, such and such an operation on such and such a knit shirt. For this reason, it is recommended that BPS avoid surveying piece rates.

In principle, there are two ways to ascertain time rates. The respondent can be asked for the wage rate, or he can be asked for the information needed to calculate an average rate -- i.e., total wage payments, the number of workers, and the number of days worked. The former method has the advantage of simplicity, and may be adequate when wages are being surveyed for a single worker or for a group of workers who are all paid at the same rate. The latter method may give more reliable measures for groups of workers who are not all paid at the same rate, but it is burdensome to respondents. Moreover, because the method is complex, there is more risk of misunderstanding by interviewers and respondents.

The foregoing argument suggests that labor markets in which broad groups of workers are paid at the same time rate lend themselves to simple, low-cost wage surveys. Casual labor markets are the ones in which uniform rates are most likely to prevail, because employers do not have time to differentiate between the performance of various workers. By the same token, lifetime employment schemes with a single establishment may not lend themselves to simple, low-cost surveys, because wages at such establishments depend on a complex set of circumstances including age, seniority and performance. Accordingly, it would appear casual labor markets lend themselves more readily to simple, low-cost wage surveys than do lifetime labor markets.

The wage question is a simple one for the household survey and for the farmer terms of trade survey. The household survey asks for a single total monthly figure. The farmer terms of trade survey asks for a single daily rate for each occupation.

The wage question is relatively simple for the SI, which asks for total wage payments for only two groups of workers -- production and nonproduction. Analysts can divided these payments by the total number of production and nonproduction workers to show an average monthly wage per worker. Payments to production and nonproduction workers are ones that can presumably be easily obtained from payroll books. By contrast, wage payments to specific groups of workers, such as mechanics, may not be readily available -- because the payroll books may be grouped by division rather than by occupation.

The wage question is more complex for the estate survey and the SUB, both of which collect the information needed to calculate an average daily rate for specific occupations.

> For each occupation, the estate survey asks for the number of workers, the number of person-days, and the total amount of wages paid. Respondents are told to include only persons who actually show up for work.
>
> For each occupation, the SUB asks for the number of workers, the normal number of days worked, the total number of person-days that workers did not show up for work, and the wage bill. As is discussed in appendix A, respondents appear to have occasionally misunderstood the question for the total number of person-days that workers did not show up for work.

The complex methods used by the estate survey and SUB are much more error-prone than the simple wage rate and monthly average wage concepts used by the farmer terms of trade survey, the household survey and the SI. This is particularly true for the SUB, errors for which are discussed in appendixes A and B. It is not clear whether the simpler wage-rate methods could be applied to the estate survey and SUB. If they could, however, the latter surveys might benefit. The subject is discussed further in Section VI below.

C. Temporary workers

Many establishments in Indonesia use a two-tier system of hiring. Permanent workers are relied on to perform the bulk of the work, but temporary workers are hired when needed. The temporary workers are used to respond to short-run fluctuations in demand. The temporary workers have the advantage that they can easily be laid off when they are no longer needed. Layoffs of permanent workers are limited by law and custom.

The estate wage questionnaire collects wage rate data for permanent workers only, but collects wage bill data for both permanent and temporary workers.

The SUB questionnaire similarly collects wage bill data for both permanent and temporary workers. Before 1986, the wage rate questions in the SUB related to permanent workers only. Beginning in 1986, there are two wage rate sections of the questionnaire -- one for permanent and one for temporary workers.

The collection of wage rate data for both permanent and temporary worker greatly complicates tabulation. It is not clear whether SUB wage rate data should be presented separately for the two types of workers; the subject deserves further study in the context of any redesign of the SUB. [10]

D. Coverage of supplementary income

In general, the establishment wage surveys cover supplementary forms of wage income such as welfare allowances by employers and irregular bonuses only to a limited extent. [11] By contrast, the household survey appears to to cover nearly all forms of cash and in-kind income from the primary job, except perhaps for contingent benefits such as health care.

There is a wide range of supplementary income. For example, the estates questionnaire lists the following types: Normal wage, incentive payments, production bonuses, allowances, overtime payments, absence payments, discharge payments, wage increases paid retroactively, lebaran bonuses, and gratification bonuses. In in-

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[10] Casual observation of a limited number of SUB questionnaires suggests there are two patterns to the hiring of temporary workers.

Many establishments hire a relatively small and fluctuating number of temporary workers many of whom are unskilled laborers who can all be lumped into a single occupation. For such establishments, there is no apparent need to distinguish temporary from permanent workers.

For a few establishments, temporary workers account for half or more of the work force. Such workers have diversified occupations -- just like permanent workers. For such establishments, it may not be necessary to distinguish temporary from permanent workers.

[11] BPS adheres to guidelines by the International Labor Organization (ILO) in regard to bonus income. An ILO manual (An Integrated System of Wages Statistics: A Manual on Methods, 1979) makes the following recommendation:

"For the purposes of monthly/quarterly surveys of establishments which collect data on earnings for a short reference period of one month or less the definition of earnings given in chapter 4 needs a slight modification. As the main objective of earnings data in a current survey is to measure the short-term trend of average earnings, the figures should include only those elements of earnings which, as a rule, are received regularly. Irregular bonuses such as year-end and other one-time bonuses which accrue over a longer period but are paid during the reference period should not be included."

dustry, employers provide workers with a wide range of welfare benefits: For births, deaths, marriages, education, Haj, etc.

The measures of average wages in the estate wage survey include the basic wage plus incentive and production bonuses. However the following payments are excluded: overtime payments, absence payments, discharge payments, lebaran and gratification bonuses, and wage increases paid retroactively.

Instructions on the SUB questionnaire do not make it clear whether the measure of wages includes overtime payments. However, absence payments, discharge payments, and lebaran and gratification bonuses appear to be excluded.

Some observers assert that supplementary income is unusually large relative to ordinary wages in Indonesia. Accordingly, they argue that the ILO recommendation may not be suitable for Indonesia, because supplementary income may fluctuate more than base wages. However, the available evidence does not support these assertions.

Casual observation based on visits to about 10 factories in Jakarta and West Java indicates that the basic wage normally accounts for a large share of total wages at privately-owned establishments; such establishments typically use the "single packet" system of paying wages that consist largely or entirely of basic wages. At government-owned manufacturing establishments, however, basic wages sometimes account for only a small proportion of total wages, whereas "allowances" account for the major share. Even at government establishments, however, irregular bonuses do not account for an important share of wage income.

SI data for 1985 indicate that irregular bonuses did not account for very large share of the total earnings of workers in large and mediuim manufacturing. As seen in table 9, the 1985 Census of Industry that 73 percent of the cost of employing workers went for their base salary, while 8 percent went for overtime and about 10 percent went for pensions and social welfare benefits, with only about 9 percent for all bonuses and incentive payments including the lebaran bonus.

Recommendation. -- There are two recommendations for coverage of supplementary income.

Use information already being collected by the annual Survei Industri (SI) to monitor changes in the importance of supplementary income. The annual SI tapes for 1975-84 can hopefully be tabulated in the near future, after they have been reformatted and edited by DSP. For future years, a table similar to table 9 can be published by BPS in the SI report. As is explained in appendix C, however, the quality of the SI data needs to be improved by closer editing.

The SUB questionnaire should clarify which types of wage payments are included in the measure of average wages.

V. Procedural criteria for establishment wage data

This section compares the four establishment wage surveys in terms of four procedural criteria that are believed to interest users and to merit BPS attention in the future. The criteria are: Reporting schedule, publications schedule, publications format, and respondent burden. Other procedural features, such as sample and questionnaire, are discussed more thoroughly in the appendixes.

A. Reporting lags

In designing a wage survey, it is important to take account of analysts' need for short reporting lags. Meeting this need may involve sacrificing some degree of completeness in data collection.

Economists who analyze labor markets are interested in "real wages" -- that is, actual money wages deflated by a measure of the cost of living. If, for example, the consumer price index (CPI) is used as the deflator, the measure of real wages shows wages in 1977-78 rupiah (as in table 17). [12] Analysts are particularly interested in whether the measure of "real wages" is showing an upward or a downward trend.

BPS currently publishes its consumer price index with a lag of only one month; it publishes measures of the cost of living in rural Java with a lag of only 3 months. However, the four establishment wage surveys differ greatly in their reporting lags. The terms of trade survey publishes with a lag of only 3 months. It can be considered an early warning system for real wage trends. The other three surveys publish with a lag of 11-24 months. They cannot be considered early warning systems. For 1981-86, the date of publication of the major reports of the estate survey and the Survei Upah Buruh (SUB) is shown in table 6.

The farmer terms of trade survey (Survei Nilai Tukar Petani) provides the basis for a set of price indexes that BPS publishes each month. To meet the requirement for rapid reporting, the wage component of the survey was kept small and simple. In contrast to the terms of trade survey, the estate survey and SUB have not been designed to facilitate rapid reporting. Given the limited resources for collecting wage data, the SUB and estate surveys probably can only reduce reporting lags by trimming cumbersome features.

Inasmuch as wage data are only a byproduct of the Survei Industri (SI), time lags in that survey are not discussed here.

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[12] Because the measure of real wages is a ratio between the price of services sold by wage earners and the price of goods and services bought by them, it is conceptually similar to a measure of the terms of trade -- such as BPS currently publishes for farmers.

B. Publication schedule

The terms of trade survey collects and publishes every month. The estate survey and SUB publish only once a year -- even though the SUB collects quarterly data, and the estate survey collects twice a year. The SI collects and publishes once a year.

No doubt the estate and SUB wage data are published less often than they are collected because it would be costly to publish them more often. However, the discrepancy between the collection and publication schedules raises the question: Are the benefits of collecting the data so often commensurate with the cost?

It is sometimes argued that the quarterly data for past years are useful because they show a "seasonal pattern." For wage data, however, the reason is not appropriate. Seasonal patterns -- that is, quarterly patterns of change that repeat themselves year after year -- are normally not very pronounced for nonagricultural wage data.

What is really interesting about quarterly wage data is not the seasonal pattern, but trend movements in "real wages." The most recent movement in real wages serves mainly as an indicator -- an "early warning" indicator, in fact -- of changes in trends. It follows that quarterly or monthly movements in the measure are mainly of interest when they are fresh. Quarterly variations in real wages two years ago are not very interesting; annual averages are nearly as useful as quarterly ones.

The foregoing suggests that the benefits of quarterly data are not much greater than those of annual wage data unless the quarterly data can be published as soon as they are collected. There is no significant gain in accuracy from surveying the same establishment four times in one year instead of just once. However, quarterly wage data are much more costly to collect than annual data, because the same establishment must be visited four times as often. Thus, while the benefits of collecting quarterly data may be commensurate with the costs if the data are rapidly published, the are probably not commensurate if the data are published with a long lag.

> Recommendation. -- The wage data should be collected no more often than they can be published. If available funds can only support annual publication for the SUB and estate surveys, collection should be annual.

C. Publication format

The surveys differ in terms of whether they publish average wages, wage indexes, a wage bill, or a wage distribution.

> A wage index is useful for observing changes in real wages and comparing these with changes in consumer prices. The wage indexes in table 4 provide examples. Any time series can be converted to an index by simply dividing all the observations by the observation in a base year and multiplying the quotient by 100. Usually, however, a wage index is based on average wage

measures that have been combined using the weights of a single base year.

An average wage provides more information than a wage index, because it shows the absolute level of wages as well as the rate of change. In practice, however, average wages sometimes suffer from a limitation not shared by wage indexes.

When new establishments are brought into the sample, the new establishments may have average wages that differ from those of establishments already in the sample. Under the circumstances, an average wage will show an increase, even though wages remain level at all other establishments in the sample. By contrast, the entry of the new establishment can be spliced into a wage index, so that the index will show no change if wages remain level at all other establishments. An example of splicing is shown in table 7 -- in the "index of overlapping average wage."

A wage bill is in many ways the least useful form of wage data. The wage bill is the total amount of wages paid to all employees (or, say, to all production workers) in an establishment. It can be divided by the number of workers to yield an average wage. But the average wage is an average for a heterogeneous group of occupations, so it is difficult to know whether changes in the average reflect weight shifts or wage changes for each occupation.

A wage distribution is a tabulation of the number of workers in each wage bracket. An example of a wage distribution is shown in table 8. If it provides sufficient detail, the distribution may be useful for monitoring changes in the equality of income distribution for wage earners or for monitoring compliance with minimum wage laws.

Another aspect of publication format is the availability and quality of summary measures. In the ideal case, a wage survey provides a single summary measure, which is broken into several subordinate measures that are in turn broken into the ultimate detail that is published. Such summaries enable analysts to use only as much detail as they need.

The four surveys differ greatly in publication format. Their main features are described here. Recommendations for improvement are presented in the respective appendixes.

The farmer terms of trade survey has recently (January 1988) begun publishing wage indexes for four provinces in Java, and makes printouts of average wage available for each province and occupation. The indexes are a suitable mode of presentation for this survey; a measure of average wages would not be suitable, for reasons discussed in appendix F.

The estate survey publishes indexes, average wages, and the total wage bill. Good summaries are provided. The body of the report presents wages for each occupation in each crop and

region; these are then summarized for each crop, for each region, for all crops and regions, and for all crops, regions, and occupations. The estate wage indexes are conceptually identical to the average wage; there appears to be no need for both reports.

The SUB publishes average wages and the distribution of wages.

A limited set of summaries is published in the preface to the average wage report. The data in the body of the report are grouped by province; for example, all wage data for West Java are shown in one table that takes up several pages. The format makes it difficult to detect regional variations in wages for the same industry and occupation.

The SI publishes only one wage measure -- total employment cost (a kind of wage bill) for each industry group. The published measure can be used to derive average employment cost per worker, but cannot be used to derive separate averages for production and nonproduction workers.

D. Respondent burden

To the extent that respondents feel overly burdened by a survey, they may withhold cooperation in various ways. The lack of cooperation delays tabulation, increases nonresponse, compromises data reliability, and increases BPS costs.

The burden on each respondent varies directly with questionnaire length and reporting frequency. The estate survey and SUB both burden respondents heavily. The questionnaires are long. Considerable information is collected that is never tabulated. Data are collected quarterly for the SUB and semi-annually for the estate survey. No advantage appears to be gained by such frequency, inasmuch as tabulation and publication are delayed until reports are in for the entire year. SUB respondent cooperation appears to have declined in 1986.

Recommendation. -- For the SUB, reduce respondent burden sharply by trimming the questionnaire and by reducing the frequency of data collection. Consider using a shuttle form, discussed in appendix B. It would ease respondent burden and make it easier for respondents to check the consistency of their own responses. Publicize any substantial reductions in respondent burden by announcing them in the newspapers -- even by estimating the number of man-days saved by respondents. At a minimum, such publicity should raise interviewer morale.

VI. Redesign of the SUB?

Of the five wage surveys conducted by BPS, the SUB appears to be most in need of major review. The following section presents some guidelines for further research, and, in some respects, for redesign. The focus is on the manufacturing sector; although there is some consideration of the other sectors covered by the survey -- mining, land transportation, and hotels.

A. The fundamental choice

The major problem with SUB is that the job of collecting and tabulating the data is probably too ambitious -- relative to user needs, to available BPS resources, and to the patience of respondents.

Another problem with the SUB is that its purpose is not clear. This reflects the fact that the data do not appear to be used by hardly anyone known to BPS -- either by other governmental agencies, by private companies, or by research institutes. One major reason for the lack of interest is that the data are out of date when they are published.

The result of this lack of interest is that BPS receives virtually no feedback from SUB users. In the absence of feedback, the SUB collects too much data, overburdening respondents, interviewers, tabulation clerks, and survey managers.

A third problem is the noncooperative attitude of respondents, which appears to reflect an excessive reporting burden. During field visits to about 10 factories in March and April, the DSP team gained the impression that some respondents -- probably a minority -- feel so bothered by the survey that they deliberately provide data of doubtful accuracy.

The fundamental choice that BPS faces is whether to redesign or drop the SUB. Redesign will require the sustained attention of top management at BPS during a redesign phase. Furthermore, redisign is predicated on the assumption that close examination of the wage system in manufacturing by BPS managers and DSP staff will identify patterns that can usefully be measured by a BPS survey. If management time is not available, or if measurable patterns do not clearly emerge, BPS may wish to consider dropping the survey.

B. The market for manufacturing labor

The first step in review of the SUB is to take a close look at the wage system and occupational structure in large and medium manufacturing establishments in Indonesia. The following remarks are based on a series of visits by a DSP team to about 10 establishments in Jakarta and Cirebon in March and April. The types of factories visited included: Spinning and weaving, garments, fabricated metals, cigarettes, sugar, a print shop, and a saw mill. Two of the establishments visited were owned in part or whole by the government.

Most factories in Indonesia appear to obtain their more skilled workers mainly by training and promoting workers from within the establishment. On the whole, skilled workers do not appear to move from one establishment to the other, although such movement was noted to some extent in garments and printing. This situation has two consequences for wage surveys.

Because establishments have an interest in encouraging workers to stay for their entire careers, they give regular, substantial pay increases for seniority. The increases are typically modified for performance; an outstanding worker is given increases in excess of normal seniority increases, whereas a substandard worker may get no increase at all. At one establishment with declining demand for its product, wages have risen substantially during the last 5 years because the workers have enjoyed seniority increases while no new workers have been hired.

Most establishments have little need to define occupations narrowly, because workers can be used for a variety of tasks, and because workers rarely transfer from one establishment to another. Wages may depend less on a worker's "occupation" than on his seniority. Many factories use broad occupational classifications like "operator." A term like "mechanic" or "foreman" may have different shades of meaning in different factories. A few factories may use more finely gradated terms -- such as welder first class, or assistant foreman.

The wage systems differ substantially in several respects.

Some factories, typically larger ones, have formal pay scales that define a grade and a set of steps within the grade -- just like a civil service system. Wages within a particular grade can vary by a factor of two, depending on seniority. Others, typically smaller ones, have no formal scales, although they take account of the same factors in determining wages.

Some factories, typically government-owned ones, compute wages as the sum of basic wages and a variety of "allowances." Basic wages often represent money that is paid regardless of whether a worker shows up for work, whereas some "allowances" may be contingent on attendence. Other factories, typically privately-owned ones, do not distinguish between basic wages and allowances. Rules vary for payment for days missed.

Some factories calculate pay in terms of a daily rate, whereas others do some in terms of a monthly rate. The monthly rate is constant for months of varying length.

Factories that sometimes hire skilled workers with previous experience elsewhere may adjust wages for experience elsewhere. Factories that rarely hire skilled workers with previous experience elsewhere may take account only of seniority.

C. Data requirements

Another key step in review of the SUB is to consider the requirements for wage date for manufacturing in Indonesia. There appear to be two kinds of requirements.

> Macroanalysis requires measures of the wages of a few broad groups such as unskilled, semiskilled, and skilled labor. There is particular interest in movements in the wages of raw, unskilled labor, because such a measure would serve as an indicator of welfare for a broad segment of the population.
>
> Microanalysis requires measures of the wages of many narrowly defined groups such as textile machine mechanics.

The two kinds of requirements differ considerably, so it is important to consider the benefits and costs of each. On the benefit side, it is suspected that the need for macro data is more pressing than that for micro data.

> There is some interest among analysts and in the Indonesian government in an "early warning system" for the labor market. A broad measure of the wages of unskilled labor could serve the purpose -- if it could be published in a timely fashion.
>
> There does not appear to be great interest in monitoring the wages of many narrowly defined occupational groups. The SUB data that BPS has published for 5 years do not appear to have been widely used. [13] This may be in part because occupations are not well defined in Indonesia and because of skilled workers do not move from one establishment to another.

On the cost side, macro data is probably less costly to collect that micro data; however, timeliness is more critical for macro data than for micro data. Macroanalysis requires only a small number of time series, as long as they are timely. The macro series could be for unskilled labor in a particular city or province, or for unskilled labor in a particular industry. Microanalysis requires wage data for a large number of narrowly defined skill groups.

D. The fundamental difficulty

The fundamental difficulty of conducting a wage survey for the manufacturing sector in Indonesia appears to be the collision between two requirements.

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[13] The statement is based on the testimony of BPS officials, who are aware of hardly any inquiries about the SUB data. The BPS bookstore could be asked to keep records of who buys the SUB reports for a period of several months, with telephone numbers. Store records indicate that about 10 reports were sold each month in recent months.

Analysts require that the data reflect changes in wages for labor of constant "quality" or skill, rather than reflecting changes in the mix of labor of various skills.

BPS staff and respondents require that the questions be easily understood and easily answered.

The former requirement pushes in the direction of increasing respondent burden above and beyond the present burden of the SUB. At the extreme, the former requirement would lead to collecting wage data for every individual worker in a sample of establishments, together with the seniority, sex, and age of the workers. [14] At a more modest level, the former requirement leads to collecting wage data for a few, selected, narrowly defined "weathervane" groups -- for example, for starting textile machine operators or those with one year's experience. It is difficult to design such a survey operationally.

The number of workers involved would be too small to warrant the cost. A given factory may have only a few starting or one-year operators -- or none at all. Thus, a survey of 200 establishments might cover only 500 workers -- a tiny number in proportion to the expense of conducting the survey.

Starting workers often get the minimum wage. They may, in fact, even get less than the minimum wage, but the factory will in any case report the minimum wage. A survey of starting wages might therefore simply reflect the minimum wage.

At some factories, the question "what is the wage rate for a one-year operator of average skill and performance?" would have a clear meaning; at others, however, it would not. Factories with a formal wage rate structure could simply refer to a rate sheet; they could report a wage whether or not they actually had any one-year operators. However, factories with an informal wage rate structure could not refer to a rate sheet. Thus, they would be forced to average the actual wages of all persons who had worked more than x days and fewer than y days. This would be a tendious process and would in any event be statistically unreliable, because the number of such workers would often be very small (as small as 2 or 3) and the average wage of this group in a given factory would fluctuate sharply from year to year with the actual performance of the workers in the group.

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[14] This has been done in one city in China, with some success. See Martin Godfrey and Shahid N. Zahid, "Preliminary Report on the Pilot Manpower Survey in Shashi City, Hubei Province, the People's Republic of China," Asian Regional Team for Employment Promotion, International Labour Organization, June 1987. See also Godfrey, "Report on the Results of the Pilot Manpower Survey in Shashi City, Hubei Province, People's Republic of China, May-September 1987," 1988.

The latter requirement pushes in the direction of reducing respondent burden well below the present level in the SUB. It necessitates that the questions be uniform for all establishments and require minimal extra work for clerical staff at establishments. [15] It suggests that the most suitable form of the wage question is a time rate -- rather than a complex calculation involving total wages paid to a class of workers, divided by the number of workers or man-days. If averages are obtained, they should involve aggregates that are used by the establishment itself as part of its payroll accounting procedures (such as "weaving division") -- not aggregates that require that the establishment undertake a small-scale research project (such as "one-year operators").

E. A survey of wage trends

The following proposal for redesign is presented to stimulate discussion at BPS and among user agencies. The proposal is tentative. Many details of the proposal are discussed in appendix B. However, fundamental difficulties discussed above remained unresolved. Until and unless they can be resolved, it remains unclear whether the following proposal is feasible.

The core of the proposal is to convert the present broad quarterly survey of all types of large and medium manufacturing establishments into a small quarterly survey of selected industry groups and occupations. A broad survey similar to the present one could be taken at most once every 2-3 years, or could be abandoned altogether.

The number of industry groups to be covered should be sharply limited for two reasons. First, limiting them will make it possible to keep the overall sample small while keeping the sample for each occupation rather large. Second, the limit will give managers an opportunity to personally familiarize themselves with the occupational structure of each of the designated industries.

The industries to be covered should be ones with large employment at large establishments. Both traditional and modern, nondurable and durable industries should probably be covered. Examples of industries that might be suitable for the survey include: sugar, kretek cigarettes, spinning, weaving, wearing apparel, and plywood. In 1985, these 6 5-digit industries together accounted for about 500,000 workers, or about 30 percent of all workers in large and medium manufacturing.

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[15] For purposes of collecting data on the overall trend of manufacturing wages, it is theoretically possible to design a manufacturing wage survey by sending high-level managers or consultants individually to each establishment in the sample and having them tailor a wage question for each establishment. The question need not be the same for all establishments, as long as it is precisely defined for each establishment. However, the cost of designing such a survey would be prohibitive.

Within these industry groups, key occupations of interest would be identified. The occupations could be selected at BPS on the basis both of a review of previous questionnaires from the specified industries and of a review together with the managers of the establishment of categories actually used by the establishment. Once the occupations were selected, they could be entered on the questionnaire by BPS. The questionnaire would be designed to be short -- perhaps 2 pages. A shuttle questionnaire may be appropriate; this is discussed in appendix B.

The number of provinces in the survey should be limited sharply, to simplify training and administration. The survey could be limited to 4 or 5 provinces that together account for 75-80 percent of employment in large and medium manufacturing.

In this way, sample size could be kept to 200-500 establishments. The design of the survey would be kept simple to facilitate rapid reporting. Results could probably be reported within 3 months of the reference period -- the same reporting lag as for the farmer terms of trade survey. Such measures would be suitable for inclusion in Buletin Ringkas and Indikator Ekonomi.

F. A survey of wage structure

If quarterly collection of broad-spectrum SUB data is suspended at present, a survey of wage trends would in effect replace the SUB for the next 2 years. At some time 2 or 3 years from now, however, it may be appropriate to again survey wage structure in all branches of manufacturing. The survey could then be repeated every 2 or 3 years.

The design of such a survey will of course have to take account of experience that is gained with the survey of wage trends. The major obstacle in designing a new survey of wage structure will be the difficulty of prelisting the occupations to be surveyed. The first time that the new survey is taken, prelisting will demand a great deal of the time and attention of BPS managers. Prelisting may take a year or more of managers' time before the survey is conducted. The number of industry groups to be surveyed should be limited to the number for which BPS managers have time properly to prelist occupations.

G. Industry Coverage

For the SUB, or for the proposed survey of wage structure, the rationale for the present pattern of coverage is not obvious. The rationale bears reexamination in order to determine whether there are ways in which coverage could be redefined to make the survey more useful or easier to conduct.

If there is interest in this approach, the following two steps could be taken.

Estimate the savings that could be gained by dropping medium manufacturing establishments and medium or small mining and land transportation establishments from the sample.

Study the feasibility of extending the survey of wage structure to large establishments in other sectors -- such as construction, banking and finance, oil and gas mining, and government enterprises. Compiling lists of establishments in these sectors should be fairly easy. Available administrative lists may be suitable, even though they may be incomplete. [16] For a wage survey, the completeness of the frame may be less important than its consistency over time. This is because analysts are often more interested in the pattern of wage change in a fixed group of establishments from one period to the next, than they are in the absolute average level of wages in a given sector at any point in time.

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[16] For example, the sample for construction could perhaps be drawn from class A contractors listed by Pusinblat Jasa Konstruksi Departemen Pekerjaan Umum. Although the list may miss some large establishments, it probably includes most of the large ones. Actually, the problem of a sampling frame may not be the major problem in extending the survey to construction. A more perplexing problem is how to collect data for gangs of workers who are not permanent employees of the establishment, but who account for a large share of its labor force.

VII. Conclusions and major recommendations

In conclusion, the five BPS wage surveys provide a variety of wage data, but BPS needs an integrated strategy for collecting and publishing wage data. Given the limitation on resources for data collection, BPS cannot spend more for collecting wage data. But the BPS wage data can be greatly improved at no additional recurring cost to BPS by building on the strengths of each of the existing surveys, by remedying weaknesses and by eliminating features that serve no useful purpose.

The household survey is the most suitable vehicle for collecting comprehensive wage data for the 18 million employees in Indonesia. It has provided wage data intermittently since 1976. The data are tabulated by computer. The survey can be strengthened by publishing its results in a more accessible format, by freezing the wording of the wage question, by periodically collecting data on the occupation of workers, and by taking steps to assure that the occupational data are as detailed and accurate as is feasible in the context of a household survey. At least once in 5 years, extra questions should be added to meet the requirements of the Social Accounting Matrix, which is a major user of the household wage data.

The four establishment surveys are the most suitable vehicles for collecting wage data for detailed occupational groups in a few economic sectors. In order to make a contribution, establishment surveys should excell in rapid reporting, and/or in consistency and accuracy of the data. The most pressing need is for data that reflect wage movements for broad segments of the labor market -- such as for unskilled labor in urban and rural areas -- rather than for data for the wages of narrowly defined occupations like lathe operators.

The farmer terms of trade survey has provided rapid monthly reporting of farm wages by province since 1976. The survey covers a casual labor market in which individual employers pay a uniform wage rate for all workers of the same occupation and sex. The survey reports with a lag of only 3 months and thus serves as an "early warning system" for agriculture. Because the survey is basically a price survey which must report monthly, wage data data collection has been streamlined to facilitate rapid reporting. The data are tabulated by computer.

The survey has recently been strengthened by the simple step of publishing wage indexes for 4 provinces in Java in the Buletin Ringkas and Indikator Ekonomi, instead of burying the wage data in an index of factor costs. (The indexes are based on 1976 weights.) In addition, BPS intends to publish in the near future monthly time series back to 1980 for average wages by occupation for 14 provinces. It is to be hoped that BPS can reach agreement in the near future on whether to begin monthly publication in the Buletin Ringkas and Indikator Ekonomi of wage indexes for provinces outside Java. The indexes would be based on 1980 weights. Publication has

been held up by the need to analyze the validity of the farmer terms of trade estimates based on 1980 weights.

Although the wage data from the farmer terms of trade appear reasonable, there is ground for concern that inconsistent procedures may be used by local officials for substituting farmers in the survey from one month to the next. Similarly, there is concern that inconsistent procedures may be used for substituting male labor for female labor, or vice versa. BPS needs to check on these issues, and to review the consistency of the data at the kecamatan level.

For many years, the Survei Industri (SI) has collected employment cost data for production and nonproduction workers at medium and large manufacturing establishments. The data are available with a lag of more than a year. They provide scant occupational detail, but remain useful because they provide long time series and great industrial detail (119 industry groups). The data are tabulated by computer, and are available to users on tapes. The data for individual factories are subject to considerable noise, although broader averages appear reasonable on the whole. The survey could be greatly strengthened by improved editing and by the simple step of tabulating and publishing data for each element of employment cost, separately for production and nonproduction workers -- together with the number of such workers.

The other two establishment surveys both report one to two years after the reference period. This reflects lagging cooperation by respondents, who feel burdened by the long questionnaires. It also reflects the lack of computerized tabulation. Computerization would not only speed tabulation, but would also give management a powerful tool for controlling errors.

The estate wage survey annually provides comprehensive data on the wages of 500,000 workers at all 820 state-owned estates. The survey has been taken at least since 1951, and thus provides the longest historical time series for wages in Indonesia. The sector is particularly suitable for collecting establishment wage data, because estates employ masses of laborers in a few occupational categories. Although estates report twice a year, the data are tabulated only once a year. Computerized tabulation would make it possible to tabulate the wage data twice a year, with a reporting lag of only about 6 to 8 months. One of the three annual reports currently published is redundant and should be dropped.

The Survey Upah Buruh (SUB) is the most complex and the most problematic of the BPS wage surveys. It is also the newest of the surveys, having been established in 1981. On the basis of a sample of about 3,600 establishments, SUB provides detailed data on the wages of about 200 occupation-industry groups in 26 provinces. The establishments are in four economic sectors: Large and medium manufacturing, mining, hotels, and land transportation. Data for 1986 are not comparable with data for 1985. There are some grounds for concern that SUB may have exaggerated wage increases during 1983-85, for reasons that are not clear. The concern can be either confirmed or dispelled by means of additional SI tabulations for 1982-85.

The SUB imposes a heavy burden on respondents, by asking them to fill out a long questionnaire four times a year -- even though the data are tabulated and published only once a year. Occupations are loosely defined in many instances. The survey does not code occupations; therefore, it does not provide wage measures for occupations in more than once industry, or for groups of occupations such as unskilled or semi-skilled labor. One of the two SUB reports currently published is of little interest and should probably be dropped.

On balance, the weaknesses of SUB can best be summarized by saying that the survey is too ambitious. In other words, it tries to collect far more data than is either needed by users, or fits within the scope of BPS resources, or correspondends to respondents' patience with survey forms. The proposed remedy for this situation is either to eliminate SUB altogether, or to cut SUB data collection activities while redesigning to better meet the most essential data requirements. User should be asked to clarify what data they need from SUB that cannot be provided by other, existing sources. BPS can use the resources saved from SUB cutbacks to pay for improvements in its other wage surveys.

BPS faces a fundamental choice whether to redesign the SUB or to drop it.

A prerequisite for redesign is for managers and DSP consultants to identify an area of congruence between data that are analytically useful and collection methods that are administratively feasible. Such an area of congruience has not yet been found by a DSP team that has been making field visits to factories in Jakarta and Cirebon. So far, the data that are analytically useful do not appear administratively feasible to collect, whereas the data that are feasible to collect do not appear analytically very useful.

Redesign will require sustained attention by top management. For example, it may be necessary for managers to visit several factories in each of the industry (ISIC) groups chosen for the survey of wage trends, in order to identify the occupations of that must be prespecified on the questionnaire for those industry groups.

If SUB redesign appears feasible, it is proposed to convert the existing SUB into two surveys.

A <u>survey of wage trends</u>. The survey would take place quarterly, as now, but would cover a much smaller range of industries, occupations, and provinces. It would cover major occupations in a few selected industry groups -- such as hotels, sugar, kretek cigarettes, spinning, weaving, wearing apparel, and plywood. The sample would be relatively small -- say, from 200 to 500 establishments in 4 or 5 provinces. The survey would be designed in a streamlined way to facilitate rapid collection and tabulation. The goal would be to publish a limited number of wage in-

dexes in the Buletin Ringkas and Indikator Ekonomi -- as is presently done for the farmer terms of trade survey.

Because they would be published rapidly, data from the new survey of wage trends could serve as early warning indicators of wage trends in manufacturing as a whole. The data would not cover or be representative of persons with casual jobs (such as temporary construction workers) or persons in the informal sector (such as becak drivers).

A survey of wage structure. The survey would have broad coverage similar to that of SUB, but would be conducted once every 2-3 years instead of once a quarter, as now. Procedures and questionnaires should be redesigned to minimize the errors and misunderstandings that have occurred in the past.

If, however, redesign of the manufacturing portion of the SUB does not appear feasible, it is proposed to strengthen the BPS program for wage data in other, compensating, ways. For example:

Retain and strengthen the hotels and land transportation components of the SUB. These components have the advantage that occupations are more well defined than in industry.

Strengthen the SI data for employment cost per work by improved editing and tabulation.

Design a low-cost, rapid-reporting wage survey for urban casual labor markets. Such markets lend themselves readily to a wage survey, because workers in the same occupation are generally paid at the same time rate. E.g., casual labor in construction.

Strengthen the household data for monthly wages by improved coding for occupation and other characteristics of interest.

Appendix A. Comparison of wage data for manufacturing, 1981-86

This appendix analyzes discrepancies in the manufacturing wage data for 1981-86. It shows that the SUB data for 1986 cannot be directly compared with those for 1985. Also, there are some grounds for concern (which subsequent tabulations can either confirm or dispell) that the SUB may have substantially overstated wage increases for 1982-85.

1. The problem: SUB data for 1981-86

This section describes some puzzling features of the SUB data. The top panel of table 11 shows quarterly SUB measures of wages in 9 manufacturing industry groups for 1981-86. The bottom panel shows "real wage" measures in 1977-78 rupiah -- the quotient of money wages and the Consumer Price Index (divided by 100). In principle, table 11 should be the showpiece of the SUB, inasmuch as it summarizes wage data for manufacturing, which is the major component of the SUB. Unfortunately, several features of table 11 raise doubts about the reliability of the data.

During 1981-85, money wages of production workers appear to have advanced very fast.

Money wages increased 131 percent from February 1981 to November 1985.

During the same period, the CPI increased only 47 percent. Thus, if the data are to be believed, real wages of production workers increased an impressive 57 percent or more than 10 percent per year -- during a period when other indicators of the well being of the average Indonesian showed much less increase. For example, real PCE per capita increased only about 10 percent during 1981-85.

From year to year, the rate of increase in real wages fluctuated in puzzling ways. From a rapid 18 percent growth during 1981 (that is, from February 1981 to February 1982), it declined to 11 percent during 1982 and to only 2 percent during 1983. During 1984, a year of slow economic growth, it then rebounded to 11 percent. From February to November 1985, it increased at an annual rate of about 5 percent.

In February 1986, money wages of production workers suddenly dropped an astonishing 8 percent. This abrupt drop is totally inconsistent with the average rate of increase from February to November 1985 and from February to November 1986.

In sum, there appears to be a break in the series for February 1986. Furthermore, there are grounds for wondering whether the 1983-85 data exaggerate the true increase in money wages; the 1984 increase looks particular questionable.

2. Comparison of SUB and SI data for 1983-86

In evaluating data from a survey with a complex methodology, it is difficult to form a judgement merely by examining survey methods and procedures. There are simply too many things that could go wrong. Comparison with another source can show whether some of the things that could go wrong actually did go wrong. For the SUB, the Survei Industri (SI) provides a basis for comparison.

Unfortunately, the following analysis must be based at this time on the SI measure of the average employment cost per worker, which is the only SI wage measure available in published BPS reports. The measure of employment cost per worker can serve as a temporary indicator for wages per production worker, on the assumption that the ratio of the latter to the former did not change very much during 1981-86. A tabulation from the 1985 Sensus Industri (table 9) indicates that wages excluding overtime pay accounted for 73 percent of total employment cost in manufacturing in 1985, and that wages of production workers accounted for about 65 percent of wages of production and nonproduction workers. As soon as suitable tabulations are available from the SI tapes for 1975-84, the measure of average wages per production worker -- which is the more appropriate measure for the following analysis -- will be used to check the preliminary speculations presented here.

Table 10 shows the SI measure of employment cost per paid worker for 1975-86, for 9 industry groups within manufacturing. The two lines at the bottom of the table show two SI measures of the average monthly employment cost per worker for all workers in medium and large establishments.

> The own-weights measure is simply the quotient of the total employment cost per year divided by 12 divided by the number of paid workers.
>
> The 1985-weights measure is the weighted average of the average monthly cost per worker for each of the 9 industry groups (each the quotient of total employment cost per year divided by 12 divided by the number of paid workers). The weights are the number of workers in each industry group in 1985. For 1981-86, the 1985-weights measure shows a little less increase than the own-weights measure, reflecting the fact that the share of employment in high-wage industry groups -- such as paper, chemicals, basic industry, and metal fabrication -- increased somewhat during 1981-86.

As was mentioned in subsection II-A, the 1985-weighted SI measure of employment cost per worker in tables 3-4 is in many respects a current-year-weighted measure. [17] Under ordinary circumstances, one would expect a current-year weighted measure to show more in-

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[17] The use of 1985 weights corrects for weight shifts between the 9 industry groups; it does not correct for weights shifts among occupations and industries within each of the 9 groups.

crease from year to year than a base-year weighted measure. The reason is that, in the course of development, the percentage of workers in high-wage occupations (such as electrician or mechanic) tends to increase. Accordingly, one might expect the 1985-weighted SI measure of employment cost per worker (which reflects weight shifts within industry groups) to increase faster than the SUB measure of average daily wages for production workers (which is weighted by February 1981 weights at the level of each establishment and occupation and is thus free of the influence of any weight shifts). The expectation is based, of course, on the assumption that the ratio of wages per production worker in the SI to employment cost per worker in the SI did not change during 1981-86.

Actually, however, comparison of the SUB and SI measures reveals the following patterns.

During 1983-85 the SUB measure increased much faster than the SI measure. More specifically, the SUB measure increased 33.2 percent from 1983 to 1985, while the SI measure (which corrects for employment shifts) increased only 19.4 percent. It is possible but unlikely that such a large difference can be explained by changes either in the ratio of wages to employment cost or in the ratio of wages of production workers to the wages of all workers. It is unlikely because the ratios would have had to change by large amounts in only two years in order to explain the difference; such ratios normally change slowly.

During 1985-86, the SUB measure increased at its normal rate of about 10 percent, while the SI measure abruptly declined. This suggests that the 1986 SUB decline is spurious.

During 1981-86, the SUB measure increased a little slower than the SI measure. More specifically, the SUB measure increased 95 percent, while the SI measure increased 97 percent. The excess of the latter is what one would expect. This suggests that the 1981 SUB data may somehow be more comparable with the 1986 SUB data than with the 1985 data.

Comparison with the SI thus confirms that the abrupt decline in the SUB measure in February 1986 is spurious. It provides some grounds for concern that the SUB may exaggerate the 1983-85 wage increase. The 1981 SUB data may be more comparable with those for 1986 than with those for 1985, for reasons that are not clear.

3. Comparison of SUB data: 1985 and 1986

Although the SUB data set is not available on computer tape, the available manual tabulations provide an in-depth look at the February 1986 break. Analysis at three successive levels of detail shows a puzzling variability in the impact of the February 1986 break on average wage measures. The three levels are:

The summary level of 9 industry groups for Indonesia.

The hundreds of occupation-industry-province cells that make up the body of the SUB report.

The most disaggregate level -- average wages for specific occupations at specific establishments. These are the data that are averaged together to estimate averages for the occupation-industry-province cells.

Table 11 shows data for the 9 industry groups. [18] Analysis of the changes in money wages of production workers from November 1985 to February 1986 suggests several observations.

Wages dropped sharply in three industry groups -- food, textiles, and wood -- which in many respects are the most traditional groups. Wages increased in the other industry groups, which are on the whole more modern.

The drop in food industry wages was the sharpest -- 22 percent.

Interestingly, this drop appears to offset two implausible jumps in food wages -- in February 1983 (15 percent in 3 months, at a time when wages in other industry groups increased only about 3 percent) and May-August 1985 (11 percent in 6 months, at a time when wages in other industry groups increased only about 4 percent).

For some industry groups, the February 1986 break appears to have improved comparability with the February 1981 data. Table 12 presents comparisons for all of the five industry groups for which 1986 SUB data can be compared with 1981 SUB data.

For food and textiles, which together accounted for about 900,000 workers in 1985, the break seems to have improved comparability with the February 1981 data. That is, the ratio of the 1986 SI average to the 1981 SI average is more like the ratio of the February 1986 SUB average to the February 1981 one than it is like the ratio of the November 1985 SUB average to the February 1981 one.

For paper and paper products, chemicals, and stone and clay products, which together accounted for about 380,000 workers, the break appears to have worsened comparability -- especially for stone and clay products.

Table 13 provides examples of occupational averages for specific industries in one province -- Jakarta. It is based on data collated from the annual SUB reports for 6 years. The data show that the effect of the break varies considerably from occupation to occupation.

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[18] It is based on the summary tables that were published in text notes to the annual SUB reports for each of the five years. (Unfortunately, none of the summary tables showed data for more than one year at a time, although the publication of longer time series would probably increase user interest in the data.)

Table 14 presents data for a few weaving establishments in West Java that could be matched for both 1985 and 1986. [19] The data were compiled by BPS staff, as part of their study of the February 1986 break. The data show puzzling breaks for February 1986 for individual establishments. This came as a great surprise to both DSP staff and the author of this report.

Thus, the reasons for the February 1986 break appears complex. As a result, it may never be possible to specify in a clear way the comparability of the 1986 data with earlier data.

4. Why are the SUB data not comparable over time?

This section first discusses the reasons for the possible upward bias in the SUB measure of wage increases during 1983-85, then takes up the reasons for the 1986 break.

Most of the materials that could be used to document reasons for possible bias in the SUB during 1983-85 have unfortunately been destroyed or sent to archives from which they cannot be retrieved at any reasonable cost. The following analysis must remain largely speculative. It is speculated that the composition of the sample may have gradually drifted in some ways towards overrepresentation of high-wage establishments. This could have happened because low-wage establishments may have been more likely to refuse to cooperate with the survey; BPS field staff may have substituted more cooperative establishments, which may have tended to be high-wage ones. Instructions to field staff were that they must substitute an establishment in the same industry group. However, the bias -- if indeed there is one -- may be due to other causes. The lack of documentation at BPS of procedural changes affecting comparability from one year to the next makes it difficult to probe the cause.

In February 1986 three major changes took place in the SUB, all of which may help to explain the break.

A new sample was drawn. The design for the old and new samples is discussed in appendix B.

The weights for each occupation in each establishment were updated -- from the February 1981 wage bill to the February 1986 one.

A redesigned questionnaire was used.

The first two factors may to some degree help account for breaks in the average measures in tables 11 and 13.

Changes in the sample may have contributed in two ways.

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[19] Because the SUB sample was reselected in 1986, many establishments cannot be matched for the two years.

The drawing of a new sample for medium establishments may have led to a reversal of the drift toward high-wage establishments that is speculated to have taken place during 1982-85. This would have been the case if the tendency to gradually substitute more cooperative establishments with less cooperative ones had operated during 1982-85.

The addition of some new establishments that were new to the Survei Industri list in 1984 (particularly large ones with foreign participation, which may be speculated to have paid above-average wages) may have tended to raise the level of average wages in sectors such as chemicals and fabricated metals.

Weight changes may have somehow affected the average. This would have been the case if employment had increased more in low-wage establishments, or in low-wage regions, than in high-wage ones.

Only questionnaire redesign can explain the breaks at the level of individual establishments. [20] Although the redesign did not affect the content of the questions, it may have caused respondents to somehow reinterpret the questions. [21] A full explanation of the effects of questionnaire redesign must await a more complete study of the 1985 and 1986 responses. Meanwhile, here are some preliminary impressions based on examination of a few matched questionnaires.

At one establishment where wages appeared to fall sharply, the absence rate dropped sharply in February 1986. During 1985, workers appeared to miss one-third of their work days. In February 1986, workers appeared to miss only about one-twelth of their work days. Misinterpretation of the question during 1985 is the most likely explanation; an absence rate of one-third is highly implausible. Inasmuch as the average wage is estimated

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[20] If the first two factors alone fully accounted for the breaks in the averages in tables 11 and 13 it might be possible to establish comparability between the data for 1986 and 1985 by a set of special "bridge" calculations. The calculations would measure wages changes from November 1985 to February 1986 for a matched sample of establishments, using the weights of a common base period.

For major summary measures, indexes could be prepared that "splice together" the new series and the old one. The change in the index from November 1985 to February 1986 could be based on the matched sample. However, the change from February 1986 to May 1986 would be based on the new sample.

[21] For example, the switch from reporting for the most recent pay period in 1985 to reporting for the full month in 1986 may have somehow affected responses.

as the quotient of wages paid by the number of person-days worked, a spurious decline in absences leads to a spurious increase in the number of person-days worked -- therefore to a spurious decline in the average wage.

In some other establishments where wages appeared to fall sharply, respondents may have revised their treatment of overtime. Although the SUB questionnaire has never made it explicitly clear that overtime is to be excluded from the measure of wages for each occupation, exclusion is indirectly hinted by the 1986 questionnaire but not by the 1985 questionnaire. [22] Therefore, some respondents may be speculated to have included overtime pay in the measure of wages in 1985, but not in 1986.

5. Remedies for the 1986 break

The reasons for the 1986 break are complex, and may not be amenable to full explanation. Nevertheless, it is worth the effort of attempting to explain them more fully, in order to salvage as much value as possible from the data that have already been collected.

To clarify the comparability of SUB data, there is need for a review of documents for 1985-86, the period for which documents are still readily available. Such a study would have two components.

Retrieving and reviewing questionnaires for a matched sample of perhaps 100 establishments. The purpose of the review would be to identify when breaks occurred in time series for specific establishments, and to reconstruct reasons for the breaks.

Retrieving and reviewing lists of all the establishments in the sample each year. The purpose of the review would be to document the extent of substitution of establishments from year to year.

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[22] The hint is contained in the preceding block of the 1986 questionnaire. By using the same phrase ("total wages to be paid" or "jumlah gaji/upah dibayarkan") in both blocks, the 1986 questionnaire provides a clear key to the meaning of the phrase (which is defined in the former block but not in the latter block as the sum of "basic wages" ("upah/gaji dasar") and "other wages" ("lain-lain")). "Other wages" are the various allowances such as the transportation allowance, food allowance, cost-of-living allowance, etc. The 1985 questionnaire did not provide such clear guidance.

Appendix B. Survei Upah Buruh

1. Overview

This survey has been providing detailed quarterly wage data for industry, mining, land transportation, and hotels since 1981. The data currently cover 26 provinces; for each province, the data show wages for as many as 200 occupations distributed in about many as 35 industries. The data cover four months of each year -- February, May, August, and October.

Preliminary version. -- BPS began the survey in response to interest expressed by Depnaker and Bappenas. A preliminary version of the survey was conducted in 1979 and 1980 in collaboration with Depnaker.

The sample at that time included 1,590 establishments in 10 provinces and 4 sectors -- manufacturing, construction, transportation and forestry.

A standard set of 13 occupations were covered -- manager, technical expert, supervisor, clerical, accountant, other administrative workers, sales, foreman, production workers, maintenance workers, driver, security, other service workers.

Results for December 1979 were published in July 1980, but were later considered inaccurate, at least in part.

Depnaker paid for the conduct of the survey. BPS carried out the planning and implementation.

Present version. -- In February 1981, the survey was established on its present basis. The redesign appears to have been intended to correct some deficiencies of the earlier effort.

The sample was expanded to 3590 establishments in 26 provinces. The sectors covered were industry, mining, hotels and land transportation. Construction and forestry were dropped, probably because too many difficulties were encountered.

Wage data was collected for a wide range of specific occupations as defined by the establishments themselves.

Results for February 1981 were published in November 1981 (a lag of only 9 months), and results for May, August and November were also published in separate volumes. However, beginning with 1982, quarterly publication ceased; the data were published once each year.

The 1981 reports were issued by BPS, but the name of Depnaker also appeared on the cover. By 1982, the name of Depnaker disappeared from the cover. In the absence of language to the contrary, BPS can be assumed to have paid for the survey.

2. Data collection

Sample. -- When first selected in 1981, the sample was chosen by stratified cut-off sampling. The sample was kept the same through 1985, although some substitution of establishments may have taken place on a case-by-case basis. In 1986 the sample was reselected; the overall size remained about the same.

All large manufacturing establishments were selected in 1981, from the Survei Industri list of establishments with 100 or more employees for 1979 or 1980; the number of such establishments in the 1981 sample was 1,457. In 1986, all large manufacturing establishments were selected from the 1984 Survei Industri list of establishments with 100 or more employees. The number of large establishments was presumably a little larger than in 1981, but the exact number is not known.

For medium manufacturing establishments, a sample of 1,096 establishments was selected in 1981. The overall sampling fraction was about 1 in 5, but differed from province to province. In 1986, a new sample of medium establishments was selected. It is not known how many medium establishments were selected. (The total number of medium and large manufacturing establishments in the SUB sample increased from 2,553 in 1981 to 2,617 in 1986.)

Large hotels were selected in 1981 with certainty, while smaller ones were selected at various sampling fractions. The indicator of size was the number of rooms. In 1986, the sample size for hotels was raised from 518 in 12 provinces to 578 in 26 provinces.

For land transportation, establishments were ranked in order of number of vehicles; sampling fractions varied with size. The sampling frame was a directory of interprovincial companies, compiled by the Ministry of Transportation. In 1986, the sample size was reduced from 498 in 14 provinces to 360 in 14 provinces.

For mining, establishments in oil and gas and quarrying were excluded from coverage. For the other sectors, the sample included only 35 establishments in 1986; only 24 before then.

If an establishment closed or refused to cooperate, provincial BPS offices were told to substitute one with the same characteristics (in terms of industry group and number of workers). No summary documentation exists for the extent of such substitution.

Response rates. -- Response rates have tended to exceed 80 percent. In October 1987, when receipt of 1986 data was closed, the response rates were: 89 percent for the first quarter, 87 percent for the second, 85 percent for the third, and 83 percent for the fourth.

The following data illustrate the lag structure of responses. For November 1986 data, the response rates were as follows: 13 percent by January 1987, up to 44 percent by March and 61 percent by April,

then to 80 percent by July, and 83 percent by October. The data thus suggest that more than half of respondents are able to report within 4 months. Most respondents could probably be persuaded to respond within 4 months if response burden were sharply reduced.

CBS staff believes that respondents delay completion of the forms because they feel overburdened. Quite often; interviewers must call back at the same establishment 5 or 6 times besides being expensive, such callbacks have a bad effect on interviewer morale.

Training. -- Interviewers are the local BPS official in each kecamatan, the mantri statistik. Because funds are lacking, BPS has not been able to train them for SUB interviewing.

3. The questionnaire

This section discusses the SUB questionnaire, proposes use of a shuttle form for the survey of wage trends, and takes up the problems of defining occupations and of specifying the average wage measure.

Questionnaire length. -- The questionnaire, translated in table 16, is quite long. It takes up 7 pages and explanatory notes take up another 7 pages. The length doubled in 1986, when questions were added about supplementary income such as bonuses, and about wages separately for women and men and for permanent and temporary workers. Some of the data are not presently tabulated: For example -- block II, which shows supplementary income.

Recommendation. -- For a survey of wage structure, such as BPS may wish to undertake every few years, a long questionnaire may be appropriate. One advantage of a long questionnaire is that it can by used by BPS managers to probe for inconsistencies and errors, if managers take the time and trouble to do this at least for a sample of questionnaires.

However, a long questionnaire, unless very carefully designed, increases the risk that overburdened respondents will misinterpret questions. This is particularly the case if the questions often do not correspond closely to the bookkeeping methods and concepts used within the establishment.

A systematic review of 1985-86 time series for a sample of individual establishments (see section 5 of appendix A) will probably provide the basis for identifying many of the most common misinterpretations.

Once a list of misinterpretations has been compiled, the questionnaire can be edited and annotated in such a way as to minimize the risk of mininterpretation.

For a survey of wage trends, the questionnaire should be shortened.

Eliminate block II or redesign it to include only those data for supplemental income that BPS plans to tabulate.

Possibly curtail or eliminate data collection for temporary workers.

Instead of asking each establishment to list every single occupation, the establishment could be instructed only to provide data for a small number of major occupations selected in the initial interview.

Eliminate block IV for the wage distribution. The distribution data appear unimportant compared with average wages by occupation.

Shuttle form. -- For the survey of wage trends, BPS may want to consider replacing the existing questionnaire with a shuttle form. The use of such a form requires that the amount of information collected each quarter be strictly limited. A shuttle form is a single piece of paper (preferably heavy paper, to withstand repeated handling) that can be used over and over for one or two years. Its use can be described as follows.

Rows of the form may specify items of information to be collected for each occupation each quarter; the columns specify the month to which the data refer. There is space on the form for the collection of wage date for four or eight quarters. A rough notion of what such a form might look like is provided in table 17, which is a monitoring card used by BPS for each SUB establishment. A shuttle form would of course have to provide more respondent guidance than is provided in the monitoring card, which is for BPS staff use.

For the first quarter, a set of instructions is sent to the respondent. The respondent fills out the form and the BPS interviewer checks it thoroughly to make sure the respondent has properly understood the questions. Interviewers may require special training to spot problems and probe inconsistencies.

The interviewer takes the completed form and transcribes from it the data needed by BPS.

The form is returned to the establishment. Next quarter, the respondent fill wage data in the next column. By comparing the new answers with those for the previous quarter, the respondent himself can see whether he is using concepts consistently from one quarter to the next. Small changes are normal. Large jumps probably indicate inconsistencies. No change at all probably indicates that the respondent is not bothering to consult his records.

Possible advantages of a shuttle form are as follows.

The card trains the respondent to provide consistent information from quarter to quarter. Thus, the card helps to put the job of quality control where it belongs -- in the hands of the respondent. On the average, respondents are probably more sensitive to the consistency of their responses than are interviewers.

The card eases the burden on the respondent by making it easier for him to fill out the form. Moreover, it is an indication that BPS trusts the respondent. Such an gestire may be appreciated by many respondents, and may appeal to their professional pride more often than it will lead to abuse.

Occupational definitions. -- The SUB covers a large number of occupations; a full list for West Java is shown in table 18. The list contains more than 200 separate industry-occupation combinations. Of the 200, about 30 represent duplication of the same occupation in more than one industry. For the 1986 tabulations, which have not yet been published, the list of occupations was shortened.

Occupations are pre-specified for hotels and land transportation, but not for manufacturing and mining. As a result, many manufacturing and mining establishments do not report wages by occupation; they report by division. This practice undermines the entire notion of a wage survey. If wage data are to be collected by division, they might as well be collected for production workers as a whole. Inasmuch as this is already done by SI, there would be no need for a separate SUB. Recommendations for improving the clarity and consistency of occupational detail were presented in section IV-A.

How wages are measured. -- The wage concept is not shown directly on the questionnaire. The questionnaire merely asks for the raw data. BPS calculates average wage as a quotient of two terms.

The numerator is total wages (excluding overtime pay) for workers in the specified occupation.

The denominator is the number of person-days worked. It is calculated as the difference between two terms:

The product of the number of workers and the average number of days normally worked.

The number of person-days that workers were absent -- whether sick or on leave.

The concept used is questionable for two reasons:

The concept is based on the assumption that workers are not paid for days they do not work. However, workers are in fact sometimes paid for days they do not work -- for example, for holidays, or for sick days if they can produce a doctor's certificate.

Respondents may not properly understand the questions that elicit the raw data.

The questionnaire does not say explicitly that overtime pay is not to be included in the measure of total wages. Some respondents may include overtime pay.

There is evidence, discussed in appendix A, of extremely erratic swings in the number of days per month that workers were reported not to have worked. The movements may reflect misunderstanding of the question.

There are two recommendations.

BPS should reexamine the average wage concept that is now used, considering whether it is really appropriate to subtract the number of person-days that workers were absent. Perhaps it would more appropriate to substract the number of person-days of unpaid absences. Perhaps it would be more appropriate in some cases to simply ask for the daily wage rate.

BPS needs to reexamine design of the questions that elicit the raw data to ensure that they minimize the risk of misinterpretation by respondents.

4. Tabulation and publication

Tabulaton. -- Although the SUB data are collected four times a year, tabulation takes place once a year, in four stages.

First, the reports are edited.

Second, the data are transcribed to cards for each establishment. The cards show data for all four quarters. Unlike the questionnaire, the cards leave space for the computation of an average wage for each establishment.

In the course of transcription, clerks are expected to exercise some judgment. For example, if an average wage measure declines, they are told to generally ignore the decline and to instead assume no change in the wage.

Third, a weighted average wage is computed at the lowest level -- for workers in the same occupation, industry, and province. [2.3] Examples of average wages at this level of detail are shown in table 13 for selected occupations in Jakarta. [24] This average is the one published in the Upah Buruh Menurut Jenis Pekerjaan. The weights for the average are effectively the product of the number of workers in the base period for each occupation and establishment times the ratio of the wage in the base period to the wage in the

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[23] For mining, however, only all-Indonesia averages are shown.

[24] However, BPS reports present data for only one year at a time. No BPS report for the SUB presents multi-year time series like the ones in table 13.

current period. [25] For 1981-85, the base period was February 1981. For 1986, it was February 1986.

Fourth, weighted average wages are computed at higher levels -- for all workers in the same industry, and for all workers in the same province. Observations for each occupation-industry-province cell are weighted together by the number of workers in the base period. These weighted averages are published in two small summary tables in the introductory text for the report. A summary of these summaries for manufacturing in 1981-86 is shown in the upper panel of table 11.

Computerization. -- BPS has recently begun to use personal computers to tabulate and summarize some of the SUB data, using Lotus 1-2-3. Tabulation remains largely manual. The lack of comprehensive computerized tabulation severely limits the management ability to spot and correct errors.

> Recommendation. -- Tabulate SUB comprehensively. Compare the advantages of using Lotus with those of using a database program, such as Dbase 3. Fully computerized tabulation should be possible using available personal computers. Some advantages to computerized tabulation are as follows.
>
> > It would permit the rapid calculation of two kinds of measures of average wages: current-year-weighted and base-year-weighted. While the base-year-weighted measure is the more useful one, the current-year-weighted measure is useful for comparison with data from other surveys -- such as SI or the household survey.
> >
> > It would permit the recalculation of past averages on the basis of updated weighting schemes. In the absence of such a capability, a change in the weights creates a break in the entire set of SUB time series.

Publications schedule and lags. -- Although publication of the 1986 data is not anticipated before some time in the first half of 1988, data for the previous years were published in July or October of the following year. The date of publication for each year is shown in table 6.

The 1986 delays have been worse for four reasons. First, both BPS staff and staff at responding establishments were busy with the

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[25] More specifically, the ratio of wages in the current quarter to wages in the previous quarter for each occupation-establishment observation are multiplied by the wage bill in the base period for that occupation-establishment. Then the sum of these products is divided by the combined wage bill for that occupation in the base period for all establishments for which current-quarter data were received. This procedure adjusts for nonresponse by establishments in the same occupation-province cell.

1986 Economic Census. Second, the SUB sample was revised. Third, the length of the survey questionnaire was doubled. Fourth, after tabulations were complete in early January 1988, publication was further delayed by the need to analyze comparability with 1985.

Layout of report. -- The present format of the SUB report is illustrated in table 19. Data for each province are presented in separate sections of the report; table 19 illustrates the data for West Java. Within each province, the data are grouped by industry; within each industry, by occupation. The report shows data for the most recent year only. A user who wants to compare data for earlier years with data for the most recent year must piece together his own worksheet.

Recommendations. -- The following three changes would greatly enhance the usefulness of the report.

Instead of being grouped by provinces as in table 19, the data should be grouped by occupation as in table 20. This would facilitate comparison of wage levels in the various provinces. The present format makes it difficult to compare wage levels in the various provinces, and does not facilitate any other kinds of meaningful comparison.

Show all-Indonesia summaries for each occupation at the top or bottom of the table that presents wages for each province, as in table 20. The summaries would facilitate the comparison of the all-Indonesia wage with wages in each province. They would also make it easier for editors and users to see at a glance whether the summaries appear consistent with the provincial detail. [26]

Show data for several past years, as in table 20, not for the most recent year only, as in table 19. This would make the trend apparent to users, and would also make it easy for editors and users to spot breaks in the time series.

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[26] In the present report, all-Indonesia summaries are shown separately in a text table at the front of the report, instead of being shown together with the provincial and occupational detail. This obscures the relationship between the summaries and the detailed tables.

Appendix C. Survei Industri

1. Overview

The Survei Industri (SI), a survey of large and medium manufacturing industry, has been taken annually since 1970. The SI is an industry survey that happens to collect some employment cost data for two groups of workers -- production workers and nonproduction workers. The employment cost data can be used to estimate average employment cost per worker. The survey collects the average annual number of production and nonproduction workers; they are calculated on the survey form as the average of 12 monthly estimates.

The SI is a complete canvass of all medium and large establishments; there is no sampling. The response rate is close to 100 percent; there is no adjustment for nonresponse. The definition of "large" and "medium" industry was revised in 1974 and has remained fixed since then. Large establishments are those that had 100 workers or more in the base year; medium establishments are those that had 20-99 workers in the base year. For 1974-84, the base year was 1974; for years beginning with 1985, it was 1985.

Although the SI data cannot provide occupational detail, they have certain advantages. First, they are available back to 1970, with comparable data being available from industrial censuses before 1970. Second, they appear to be consistent for years from 1975 forward, and may be more statistically reliable than the Survei Upah Buruh data.

2. Data collection

The six types of annual employment cost in table 9 are covered by SI: Basic wage, overtime, bonuses and incentives, extra payments, pension and welfare payments, and accident insurance. All of the payments are shown in cash and in-kind; however, the in-kind payments turn out to have been worth only about 2 percent of the cash payments for 1985.

In principle, the SI employment cost data should be fairly accurate, because the SI question is a simple, direct one. Managers of most establishments presumably know their employment cost and the number of workers. Moreover, establishments have little reason to hide their employment cost.

In practice, however, there appears to be considerable noise in the data for individual establishments. This is revealed by examination of time series for employment cost per worker for individual establishments. The series were prepared by DSP staff for about

800 establishments in 9 industry groups.[27] As a result of inflation, one would expect that average employment cost per worker would show a gradual upward trend in most establishments. However, analysis shows that there are anomalous movements in perhaps a quarter to a third of the time series. A few examples:

> At a tea processing establishment, annual employment cost per worker increased from 49,000 rupiah in 1983 to 151,000 in 1984 and 517,000 in 1985.
>
> At a kretek cigarette factory, annual employment cost per worker dropped from 226,000 in 1980 to 40-48,000 in 1981-82, then jumped back up to 156,000 in 1983.
>
> At a weaving factory, annual employment cost per worker increased steadily from 65,000 in 1975 to 361,000 in 1983, then jumped to 2,171,000 in 1984 and dropped to 1,023,000 in 1985. At another weaving factory, annual employment cost per worker increased from 109,000 in 1975 to 267,000 in 1979, plumeted to 40-45,000 in 1980-81, jumped back to 361,000 in 1982, and thereafter increased steadily to 721,000 in 1985. Finally, at a third weaving factory, average employment cost per worker increased steadily from 178,000 in 1975 to 706,000 in 1982, then leaped to 2,738,000 in 1983 and to 6,511,000 in 1985.

The reasons for the anomalous observations are not yet clear. In some cases, however, the following factors may be speculated to account for errors.

> For some establishments, employment cost per worker remained constant for several years then jumped sharply. The constancy suggests that establishments were simply repeating the previous year's answer instead of providing new information.
>
> Errors in the SI measure of employment cost per worker may be surmised to arise more often from the measure of employment cost than from the measure of the number of workers. The reason is that the measure of the number of workers is easier for respondents to recall, and is more subject to common-sense verification, than is the measure of total employment cost. Further analysis of the data may confirm or disprove this surmise.
>
> For some very large establishments, the number of places available on the tape for employment cost appears to have been insufficient for recording some components of employment cost -- for example, the cost of wages in cash for production workers.

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[27] The establishments were selected from among the approximately 3100 establishments that could be matched from SI tapes for 9 years from 1975 to 1985 (all years except 1977-78). The selected establishments were in industry groups 31220 (tea processing), 31420 (kretek cigarettes), 32112 (weaving), 32114 (batik), 32130 (knitting), 32210 (wearing apparel), 33111 (saw mills), 32113 (plywood), and 35600 (plastic wares).

In such cases, keypunchers appear to have transferred the excess amounts to other elements of employment cost -- for example, the cost of wages in cash for nonproduction workers. Whether these manipulations have affected the accuracy of total employment cost is unclear.

Recommendations. -- Inasmuch as the SI employment cost data are potentially valuable for wage analysis, BPS may wish to take some simple steps to improve the data quality.

For a sample of anomalous cases -- perhaps 100 -- review survey forms for the entire period 1975-85 in an effort to pinpoint where possible the reasons for the anomalies.

Experiment with edit procedures in the field and the BPS computer to catch and correct most anomalies in the future.

3. Publications

The only published wage tabulations for the SI are those for total employment cost by 119 5-digit ISIC groups. No breakdowns are published by production and nonproduction workers, or by type of employment cost.

A summary of the data for 1975-86 are shown in table 10; movements in the data appear reasonable in most respects. As was mentioned in section II of the paper, manufacturing wage rates appear to have risen substantially more than the consumer price index. However, the increase does not necessarily reflect an increase in the wages of labor of a given skill. Instead, it may reflect one or both of the following developments.

New manufacturing establishments may tend to be relatively more capital intensive than old ones. If so, management will tend to pay higher wages than at older establishments, because managers of capital-intensive factories need to hire and keep labor that is more skilled and more motivated than is required for the older, more labor intensive factories.

Many Indonesian factories have, in effect, a system of lifetime employment in which seniority is a major element in compensation. A lifetime employment system is particularly appropriate for highly capital intensive factories; the system may be speculated to be more common in newer factories than in older ones. If so, the gradual aging of the work force at the newer factories will, by itself, raise wages.

The SI employment cost data are all punched on computer tape for years from 1975 forward. It thus appears possible to tabulate the data for production and nonproduction workers and by type of employment cost for 1975-86. It may first be necessary to edit the data to comb out many of the errors noted in the previous subsection.

Appendix D. Estate wage survey

1. Overview

The history of this survey goes back 1951 at least; and may go back to the colonial period. Professor Gus Papanek has used the survey to compile a continuous time series back to 1954. The survey is conducted by mail and costs little to conduct.

All state-owned estates -- about 820 at present -- are included in the sample. A total of about 500,000 workers are covered. The survey does not cover private estates, which tend to be smaller than state-owned ones; nor does it cover smallholders, who produce estate crops using unpaid family labor.

2. Data collection

The questionnaire is quite long, taking up 5 pages. Table 21 provides a translation of its main headings.

The measure of average wages is based on block D. The measure of the wage bill is based on blocks A, B, and E. Some of the information requested appears not to be tabulated by BPS; for example, in block E, data for the number of permanent and temporary workers are collected for 6 months each semester but are tabulated for only 2 months.

For estimating the measure of average wages, respondents are asked to report in block D the number of workers, the total number of person-days worked, and the total "income" of workers. A footnote specifies what the measure of "income" includes and excludes. A sample worksheet is presented to guide respondents in calculating the number of mandays worked in a month.

Response rates have tended to be over 70 percent of the number of estates and over 90 percent of covered workers. In the most recent year for which data have been published, 1986, response rates were similar to those in preceeding years, but response lagged somewhat, because budget cuts limited the ability of BPS to follow up on non-respondents. There is no adjustment for nonresponse.

Although the data are collected twice a year, they are tabulated only once a year -- typically beginning in August, but delayed until October for 1986. As a result, responses tend to lag more for the first semester of the year than for the second semester.

> For the first semester of 1986, 64 percent response was reached by January 1987 -- 7 months after the close of the semester. By the time that reporting was closed in October, the response rate had risen to 73 percent.
>
> For the second semester of 1986, 66 percent response was reached by May 1987 -- only 5 months after the close of the semester. By the time that reporting was closed in October, the response rate had risen to 69 percent.

If tabulation were computerized, the questionnaires could be edited and keypunched as soon as they are received, insteading of waiting until reporting is closed to tabulate them all together.

Recommendation. -- Tabulating the data twice a year instead of only once. Try to accelerate responses so that tabulation can begin only 6-8 months after the close of the semester.

Tabulation is manual. None of the data are available on tape or diskette.

Recommendation. -- Explore the feasibility of accelerating reporting by means of computerized tabulation, using a database program. Questionnaires could be edited and keypunched as they arrive in Jakarta; there would be no need to wait until the closing data for receipt of questionnaires, as is presently done. Tabulation could proceed rapidly once all data had been keyed in.

3. Publications

The three publications based on the survey are shown in table 6. All of the publications are organized by crop (10 crops) and by province. Summaries by crop and province are an integral part of the tables. The publication lags have fluctuated somewhat, as can be seen in table 6.

The wage bill report (Statistik Upah Karyawan Perkebunan) is based on total payroll; it thus includes lebaran and irregular bonuses, and in-kind payments. This measure is available at least since 1954, and may be available for some earlier years as well. The measure is taken from blocks A, B and C of the current questionnaire.

The average wage and trend index reports (Rata-rata Upah Pekerja Perkebunan and Perkembangan Upah Pekerja Perkebunan) are based on a narrower concept of wages: it includes straight-time wages and performance-related bonuses, but excludes overtime, lebaran and irregular bonuses, and absence payments. Data in each year's report are shown for the preceeding two years.

The measure of average (rata-rata) wage is available since 1970. For the period since 1975, it is based on 1975 weights (it is not recorded what weights were used for the period 1970-74). The index of wage trends (perkembengan) is available since 1979. Summary measures in both reports are computed on the basis of average wages for each province, crop, occupation, and sex. The two reports are compared with each other in the next appendix.

Recommendation. -- Discontinue publication of one of the two series, on the ground that they are conceptually the same, except for a scale factor. Evidence for this is presented in the next appendix.

Although estate wage data are collected twice a year, they are published only once a year, in order to save publication costs.

Recommendation. -- If tabulation can be computerized and done twice a year, publish summary results for the first semester in a separate short preliminary report of a few pages, or in the Buletin Ringkas. Full detail for both semesters could continue to be published in the annual report. This would save publication costs while making the most essential data quickly available for analysis.

Appendix E. Comparison of estate wage measures

1. The measures that are compared

This appendix compares three measures of estate wages. Two of the measures are published by BPS. The third is a synthetic measure based on BPS data; it is described below. All three measures relate to permanent production workers only.

One measure is an index of daily wage rates based on 1975 weights for crop, region, type of labor, and sex (Perkembangan Upah Perkerja Perkebunan, or Wage Trend of Estate Workers); it is shown in the top block of table 22.

The second measure is an average wage that is similarly based on 1975 weights (Average Wage of Estate Workers, or Average Wage of Estate Workers); it is shown in the middle block of table 22.

The third measure is the quotient of the total estate wage bill for six months, and six times average employment in the third and sixth month of the semester. The derivation of the measure is discussed later in this appendix.

2. Differences between average wage and wage index.

Both the average wage and the wage index are based on the comparison of a wage bill and a number of workers for a single month. Both measures include cash wages and wages in kind. Both measures are for permanent workers in three occupational groups: harvesting, sorting, and processing. Both are based on fixed weights for the same year, 1975. Accordingly, one would expect both measures to show the same percentage change from semester to semester. A convenient way to test whether this is so is to examine the ratio of one of the measures to the other, to see whether it is constant.

The bottom block in table 22 shows the ratio of the average wage to the wage index. From 1979:I to 1980:I, several of the ratios show some change. Beginning with 1980:I, however, the ratios are nearly constant with only one small exception -- the ratios for male sorting workers and for sorting workers of both sexes shows some puzzling movement in 1981. These findings indicate that the differences between movements of the two series reflect clerical errors, rather than any conceptual difference. As economic indicators, therefore, the two measures appear identical.

Recommendation. -- Publication of one of the two series is redundant and should be dropped. BPS may prefer to drop the trend index, on the ground that the average wage measure has been published since 1970 (versus 1979 for the index) and provides a measure of wage levels as well as trends. If it is decided in the future to rebase the weights on a more recent year, the entire historical series for average wages back to 1970 could easily be recomputed on the new basis.

3. The average monthly wage bill

The average monthly wage bill (AWMB) is calculated from data taken from the publication series Statistik Upah Karyawan Perkebunan, or Wages Paid on Estates. The measure is shown in table 23. The top line shows the estimated average monthly wage bill per permanent worker in thousand rupiahs. The next three lines show the data underlying the estimate.

The second line shows the total wage bill for permanent production workers for the semester, in millions of rupiahs.

The third and fourth lines show the number of permanent production workers in March and June (respectively, September and December) of the designated year.

The AWMB is of interest because it is a measure that can be reconstructed back to 1954 or earlier, whereas the average wage does not go back before 1970. Unfortunately, the AWMB is subject to influence from three factors that are not present in the other measures.

First, the AWMB includes overtime pay, absence payments, discharge payments, and wage increases paid retroactively in the numerator (although the number of hours worked does not vary in the denominator).

Second, the AWMB is based on a comparison of the wage bill for a full six months with the employment in the third and sixth month only; thus, the average is subject to influence by month-to-month variations in employment within the semester.

Third, the AWMB reflects shifts in the share of low-paid and high-paid workers -- by industry and occupation. The estate survey distinguishes 10 industries and 3 occupations -- harvesting, sorting, and processing. For example, oil palm and sugar workers receive average salaries that are much larger than those received by workers in tobacco and cocoa. Similarly, wages received by sorting workers increased much more in 1975-84 than wages received by harvesting and processing workers. Finally, wages of men have been about 30 percent above those of women. Thus, changes in the shares of high-wage and low-wage groups have a significant impact on AWMB, but would not influence the average wage measure in table 22.

The bottom line in table 23 shows that the ratio of the AWMB for all crops to the overall index for all crops. The ratio fluctuates freely within a range of about 30 percent. This fluctuation must largely reflect the above-mentioned factors that influence the behavior of average payroll. [28]

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[28] Three "outlier" semesters are 1980:II, 1982:II, and 1984:II. The 1980:II case may be somehow related to fluctuations in the total number of permanent production workers in estates --

Appendix F. The farmer terms of trade survey

1. Overview

This survey accomplishes its objective of collecting and tabulating wage data quickly. The pace of data collection and processing is dictated by the requirement to estimate a "terms of trade" for farmers every month, with a lag of no more than 3 months. The overall architecture of the survey is simple and clear. There is a single number that sums up the entire survey, a single "bottom line" -- the index of the "terms of trade."

The survey began in 1976 for the four provinces of Java outside Jakarta. In 1980, collection of wage data was extended to 20 provinces outside Java. However, the wage data are tabulated for only 10 of these: Aceh, North, West, and South Sumatra, Lampung, Bali, West Nusa Tenggera, North and South Sulawesi, and South Kalimantan. For the other 10 provinces the data are collected but have never been tabulated, for lack of weights. [29]

2. Data collection

Sample selection. -- There are two groups of respondents to the wage survey. The major group is farmers who grow and sell rice or other, secondary, food crops. These farmers tend perhaps to be better off than the average farmer, because by definition they have a surplus of food crops to sell. The minor group is a sample of estates. Both groups are based on a sample of kecamatan; the number of kecamatan for the sample in each province are shown in table 25. There is one observation for each kecamatan. The kecamatan are selected by a cutoff procedure. First, all kecamatan in each province are ranked in terms of their production of food crops, or, respectively, estate crops; then, the largest kecamatan in terms of production are selected.

As is seen in the table, the sample includes about 1,050 kecamatan. About 58 percent of these are in Java. Farmers who grow food crops account for over 90 percent of the number of kecamatan selected in Java, but for only 50-90 percent outside Java.

The wage data are collected by the local BPS official, the mantri statistik, on form HP-2.1. The mantri submits a single form each month for his kecamatan, if it is in the sample. The form presents a composite of price and wage data from numerous farmers. In one kecamatan in the Cirebon area visited by DSP staff, the data on form HP-2.1 had been collected from 14 farmers. However, each wage and price cited in the report was based on the response of a single

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which increased about 10 percent from 1980:I to 1980:II, then declined more than 25 percent in 1981:I. For reasons that are not clear, the number of estates that were expected to report declined about 13 percent in 1981:I.

farmer. The mantri statistik is told to check with at least three farmers for each item and to report the wage or price that is most common. However, it is not clear whether the mantri actually checks with at least three farmers each month. [30]

Data from each kecamatan receive the same weight. Expenditure weights (shown in table 26) are used for combining the wage data for three occupations -- hoeing, planting and weeding -- in an index of factor costs. The weights are taken from the 1976 BPS survey of the cost structure of padi & palawija.

Response rates are high, typically 98-100 percent of Kecamatan. There is no adjustment for nonresponse.

It is not clear why BPS continues to collect wage data for the 10 provinces for which the data are not tabulated (that is, for provinces other than the 14 for which data are currently tabulated). Apparently, the data collection program in those untabulated provinces serves only to monitor the prices of the "9 essential commodities". Under the circumstances, it is recommended that BPS consider dropping collection of wage data in the untabulated provinces.

Substitution. -- Inasmuch as the data are used for measuring changes in wage rates, it is essential that they be comparable from month to month. The DSP field visit to Cirebon turned up evidence that the substitution procedures used by the mantri may affect comparability in some cases.

The mantri faces the following problem: a single farmer typically does not use each type of labor in every month. Thus, a farmer may use planting labor in January, but not in February. For February, the mantri must look for a different farmer who employs planting labor. The February farmer may happen to be one who always pays less than the January farmer. If he is, the survey will give the appearance of a wage decline when no such decline has occurred. There do not appear to be any rules governing this substitution process.

In the kecamatan near Cirebon, DSP staff were told that wages vary little as a rule within the same village, but can vary considerably from village to village within the kecamatan. In Cirebon, the mantri had reported the cost of weeding labor as 1250 rupiah per day -- for a farmer who was said to be located about 20 kilometers away. However the farmer actually visited by DSP staff was said to pay wages of about 800 rupiah per day for weeding. It thus appeared that weeding wages could vary by as much as 50 percent from one village to another within the same kecamatan.

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[29] The preparation of a set of wage and price indexes for the farmer terms of trade survey requires a set of weights, which must in turn be based on data on income and expenditure of farmers.

Under the circumstances, there appears to be a risk that the mantri will occasionally substitute farmers from villages that pay much lower or higher wages. It is recommended that BPS check on this problem in several ways.

Ask mantris, formally or informally, what procedures they have followed for substition in the past.

Prepare computer printouts of time series for wages for each type of labor (hoeing, planting, weeding) for each kecamatan, to check whether there are breaks in series for some kecamatan that may reflect substitution.

Consider devising a set of substitution rules. For example:

Instruct the mantri to substitute within the same village where possible, and -- if not -- to attempt to return to the same farmer and the same village 12 months later. In this way, each mantri might develop a 12-month substitution cycle for each type of labor that would at least assure comparability from year to year, if not from month to month.

Instruct the mantri, when substituting outside of a village, to check in several other villages and to substitute from the one that has wages that are closest to the one that is being substituted for.

Questionnaire. -- The questionnaire is filled out by the mantri statistik, who collects the data from various farmers. The questionnaire is long but very simple. It asks for only one type of information -- prices (including wages, the price of labor). The wage portion of the questionnaire is very brief. For food crops, there are only 4 items: the wage per five-hour day for hoeing, planting, weeding, and harvesting. For estates, there are 7 items: the previous 4, plus the wage per five-hour day for fertilizing, drying, and other cultivation. Most of both questionnaires is taken up with crop prices.

There is ambiguity regarding the treatment of food provided to workers by employers. On its visit to Ciribon, the DSP team was told that the mantri was expected to record a wage rate that included the value of food. Thus, if the employer did not provide food, the mantri was expected to record the wage alone; if, however, the employer did provide food, the mantri was expected to add the value of the food to the cash wage. However. the BPS instruction manual appears to instruct the interviewers to do the opposite. That is, it instructs them to record the value of the cash wage only, not including food. [31]

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[30] Because of the rule that the mantri should check with at least three farmers for each item, it may appear as if there are three observations for each kecamatan. In fact, however, there is only one.

How wages are measured. -- Respondents are asked to report the wage rate for each occupation. This obiously simplifies data collection. If all workers are paid the same rate, there is no problem. If workers are paid varying wages, it is not clear how respondents are expected to average these amounts.

In practice, employers appear to pay the same daily wage for the same job, except that the rates are different for men and women. The uniformity for each sex is what would be expected for a casual labor market, and is obviously convenient for data collection.

Wages by sex. -- During the Cirebon trip, the DSP team was told that hoeing was done exclusively by men; whereas weeding and planting were done predominantly by women. For the latter occupations, the mantri followed the practice of reporting wages for women. The procedures appear appropriate, but there would seem to be a need to make sure that mantris in other kecamatan follows the same procedures. It is especially important to be sure that mantris do not occasionally switch from collecting rates for men to rates for women or vice versa. Because wage rates for the same job may differ substantially between men and women, and because the proportion of men and women in an occupation may change over time, changes in average wage rates could in principle reflect changes in the share of men and women in the occupation, rather than changes in wage rates for either men or women.

It is recommended that BPS take the following steps.

Check formally and informally with mantris to find out their current practice. Review time series for kecamatan (as was recommended above) to spot breaks that could reflect a switch in the sex of the workers for whom wage data is recorded.

Consider taking steps to formalize and standardize the procedures followed by mantris. For example, if mantris in almost all kecamatan currently report weeding wages for women and not for men, consider revising the questionnaire to specify that the wages are for women.

3. Publication

BPS does not publish measures of average wages for each occupation. Instead, the wage data for three occupations (hoeing, planting, and weeding) are combined into indexes and published for four provinces -- West Java, Central Java, East Java, and Yogyakarta.

Until very recently the wage data were combined with other "factor costs" in an "index of factor costs" for each province, which was published 3 months after the reference period in the Buletin Ringkas and Indikator Ekonomi. The index covered wages, which accounted for more than 90 percent of the index, and other factor costs, which consisted of taxes and accounted for less than 10 percent. The format is shown in table 24a.

Beginning in January 1988, however, separate indexes are published for wages and for other factor costs. The current table format is shown in table 24b.

It is recommended that the wage data from the survey should be published more widely.

Monthly publication of the wage index for the four provinces of Java should continue.

Publication of wage indexes should be extended to the 10 provinces outside Java for which the wage data are tabulated. Publication is presently held up by the lack of agreement on a set of weights for a new base year, such as 1980.

The measures of average wages themselves should be published, at least occasionally. BPS should proceed with its plan to publish in the near future a report showing average monthly wage measures for each of the 3 occupations in 14 provinces for 1980-86. This will make the data available to a wider audience than is presently the case.

Data for each kecamatan are entered each month into the mainframe computer, in a separate file for each month. A printout of summary data is sent to the Producer Prices Division, which keys provincial averages into personal computer files for each time series. BPS makes printouts of the time series for each occupation and province available to users on request.

The wage data are not published by the BPS, although they are made available to persons who request them.

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[31] "Nilai makannya yang diberikan tidak di hitung sebagai upah." Pedoman Pelaksanaan Pengisian dan Pengolahan: Statistik Keuangan dan Harga Produsen, August 1985, p. 98.

Appendix G. Household survey

1. Overview

Wage data have been collected by the household survey since 1976 as part of Sakernas and occasionally as part of Susenas. Sakernas was conducted in the 4-month period September to December 1976, then quarterly in 1977 and 1978. Quarterly Sakernas resumed in the first quarter of 1986, and has continued until the present. Wage data were collected as part of the Susenas labor force survey in 1980 and 1982, and perhaps in other years as well. The household survey data are available on tape for each year.

2. Data collection

Sample selection. -- Since 1986, the sample has included 16,400 households each quarter, selected by two-stage random sampling. A portion of households is rotated each quarter. For 1986, BPS decided not to publish separate quarterly data; instead, all data for the four quarters of 1986 were combined into a single set of tabulations.

The wage question. -- This and the next sub-section discuss the wage question itself and the other questions that serve for cross-tabulating wage data.

The household wage data are ascertained by means of a single question for employees only (the question is not asked for self-employed persons); the wording of the question has changed slightly from survey to survey.

> Since 1986, the question has been "average net wages" received during the last week/month from the main job. ("Rata-rata upah/gaji bersih yang diterima selama seminggu dan sebulan yang lalu dari pekerjaan tersebut?")
>
> In 1982, the question was what was "average net income/wages" received during the last month from the main job -- in cash and in kind, respectively. ("Rata-rata pendapatan/gaji bersih selama sebulan yang lalu dari pekerjaan tersebut: Dalam bentuk uang ... Dalam bentuk barang ...")
>
> In 1976-78, the question was what was "net income" received during the last month from the main job -- in cash and in kind, respectively. ("Berapa pendapatan bersih dari pekerjaan tersebut selama sebulan terakhir? Dalam bentuk uang ... Dalam bentuk barang ...")

On balance, it is unclear whether the various changes in the question have had any substantial effect on the comparability of wage data. Moreover, it is unclear whether the changes have had the effect of making the wage measure more or less comprehensive. Two of the changes may have the effect of making it slightly less comprehensive; while one may have made it slightly more comprehensive.

The shift to "net wages" from "net income" may have affected the comparability of data from the two periods. Logically, there is not much difference between the two concepts, inasmuch as the question specifies "from the main job." Perhaps, however, the "net income" question is somewhat more likely to cover some of the supplementary forms of wage income, such as the lebaran bonus. Tabulation of the 1986 Sakernas wage data by quarter would presumably provide an indication of whether the lebaran bonus was included in the wage data for the second quarter.

The elimination in 1986 of the distinction between cash and in-kind income may have had the effect of increasing undercoverage of in-kind income. The effect was presumably small, inasmuch as such income accounts for only a small share of wage income.

The introduction in 1986 of an alternative formulation -- weekly, or monthly -- may have made the wage measure slightly more comprehensive relative to previous years. In 1986, persons who were paid every day, or for short periods of several days, were asked to report their weekly wages. During tabulation, these amounts were presumably multiplied by the ratio of the number of days in the month to 7. Among persons classified as employed in Sakernas, those who worked intermittently are more likely to have worked during the past week than during each of the preceeding weeks of the past month -- inasmuch as persons were not considered employed unless they worked during the past week. Therefore, the wages they earned during the last month would be smaller, on the average, than the product of the wages they received during the last week by the ratio of the number of days in the month to 7. Accordingly, for such persons, the 1986 method of ascertaining the wages of such persons may yield a larger monthly total than the method used in 1976-78 and 1982 -- which was to ask total income from the primary job during the last month. It is not known what percentage of employees worked intermittently.

Timing of the survey is another factor that may affect the comparability of data for various years. Whereas the Sakernas surveys were taken quarterly, the Susenas surveys were taken only once (for 1982, in October). As a result, Sakernas is more likely to pick up lebaran bonuses than is Susenas.

Recommendation. -- The wording of the wage question should be frozen for as long as possible, in order to assure comparability from year to year.

Questions for cross-tabulation. -- The other difference between questionnaires has to do with questions for cross-tabulation.

The 1982 questionnaire collected the most elaborate detail for cross-tabulation. The data collected included the following: Educational attainment, amount and kind of vocational training, employment status (if employee -- civil servant, armed forces, other governmental, or other), industry (10 sectors), occupation (in considerable detail -- perhaps at the 2-digit level), hours worked at principle job, number of persons who worked at the es-

tablishment, and several characteristics relating to whether the establishment was in the formal or informal sector.

The 1976-78 questionnaires collected more limited detail. The data included: Educational attainment, employment status, industry (10 sectors), 1-digit occupation, and hours worked at principle job.

The 1986-88 questionnaire collected the most limited detail. The data include: Educational attainment, industry (5 sectors), employment status, and hours worked at principal job.

The presence or absence of these characteristics has a major effect on the usefulness of the household wage data. For 1986, the usefulness of the wage data is limited by the absence of occupational data; their absence made the survey useless for the 1985 Social Accounting Matrix (SAM). [32]

Recommendation. -- Inasmuch as the household survey is the only comprehensive source of wage data for Indonesia, a modest effort should be made to increase the amount of data for cross-tabulation. This effort would reverse the post-1982 decline in detail for cross-tabulation.

The occupational question should be restored to Sakernas -- at least once in 5 years, for use by SAM. The experience of coding detailed occupation in 1982 should be reviewed. There is a need to balance the abilities of respondents and interviewers to furnish detailed occupational information with the needs of users (including BPS staff who prepare SAM estimates) for detailed tabulations. Respondents may often be poorly informed about the precise occupation of other family members. For any given level of detail required, interviewers must be trained to elicit the appropriate information for subsequent coding by supervisors. Interviewers can more easily elicit information for one-digit coding than for two-digit coding. If two-digit coding overstrains the abilities of household survey respondents and interviewers, some thought could be given to the use of a simplified "one-and-a-half-digit" system for collecting occupational data for a limited number of codes that satisfy the major requirements for SAM and for labor market analysis -- say, about 15-20 codes.

It is preferable to collect industry data for 10 separate codes rather than only 5 codes. The shift in 1986 to 5 codes involved

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[32] Instead, the National Accounts Bureau was forced to rely on the Survey Upah Buruh (SUB) for estimating the distribution of labor incomes throughout the economy. SUB, which covers only a small portion of the 18 million wage workers in Indonesia, is clearly an inferior source for this purpose. By contrast, SAM's for 1975 and 1980 were based on the household survey. The 1985 change in data sources for the SAM may have adversely affected the comparability of SAM's for 1975, 1980, and 1985.

collapsing 6 sectors -- mining, construction, electric utilities, transportation, finance, and other -- into one sector, "other."

The reason for the shift was that BPS had found that data for many of the smaller sectors, such as mining and electric utilities, fluctuated erratically. The reason is sufficient for publishing data for only 5 large sectors, but is not sufficient for collecting data for only 5 sectors. Although the cross-over between the 5 and 10 sectors is conceptually clear, BPS cannot be sure that interviewers use the large "other" sector in exactly the way that BPS intends. A large "other" sector such as has been used since 1986 tempts interviewers to code anything the least bit puzzling as "other." Collecting data for 10 sectors assures consistency with pre-1986 tabulations, and probably assures that interviewers do a more careful job of coding industry.

Other information required by SAM for estimating the distribution of labor incomes should be asked at least once every 5 years.

The question for the number of workers at the establishment could be used to distinguish workers at large and medium manufacturing establishments from those at small and cottage establishments. The tabulations for the large and medium establishments could be compared with tabulations from both the SI and the SUB. Similarly, the occupational question could be based to distinguish production and non production workers in manufacturing; tabulations of their wages could be compared with the SI. Overlapping coverage by several surveys is very useful for checking on the reliability of each survey.

3. Publication

For each year that they have been collected, household survey wage data have been tabulated and published as part of a comprehensive report on the labor force. [33] The table format is illustrated in table 27.

Recommendations -- There are two problems with this format.

Frequency distributions by wage brackets are shown, but average wages are not shown. Average wages are actually a much more convenient result for analysis than are frequency dis-

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[33] For 1982, they were published in a small volume titled Keadaan Buruh/Pekerja di Indonesia 1982 (Labours/Employees Situation in Indonesia 1982).

For 1976-78, they were published in comprehensive volumes titled Keadaan Angkatan Kerja di Indonesia (The Labour Force Situation in Indonesia).

tributions. Users can estimate average wages by multiplying the bracket mid-point by the number of workers in each bracket, but this is very tedious. Instead, BPS should add a column showing average wages.

For 1976-78 and for 1982, the table titles are misleading. For example, table 27 is said to show "employees by main industry and income per month." On the face of it, the term "income" appears to include all personal income received by the worker -- even wages from a second job or buiness, rental income and pension payments. Actually, what is meant by the question is merely income from the principal job, which appears to be the same thing (or nearly the same thing) as wage income from the principal job.

Table 1. -- Some Features of the Five BPS Wage Surveys

	Household Survey	Farmer Terms of Trade	Estates Survey	Survei Upah Buruh	Survei Industri
		SNTP (Survei Nilai Tukar Petani)		SUB	SI
ctors	All households	Well-to-do farmers, estates	State-owned estates	Large and medium manufacturing, mining, land transportation, hotels	Large and medium manufacturing
rs covered	All buruh	Hoeing, planting weeding workers	Production workers	Production workers	All buruh
kers	18 million	about 2-3 million	500,000	about 2 million	1.7 million
	64,000 households	875 farmers, 177 estates	820 estates	3600 establishments	13000 establishments
nique	2-stage probability sample	Judgmental, with clustering	Complete census	Stratified sampling	Complete census
ions identified	27 provinces	14 provinces	10 regions grouping all provinces	26 provinces	26 provinces
ustry groups identified	5 or 10	1	9	About 35	119
upations identified	Varies	3	3	About 200	2 - production & nonproduction
s	Average wage	Average wage Wage index	Wage bill Average wage Wage index	Average wage Wage distribution	Wage bill
collection	Irregular	Every month	Every 6 months	Every 3 months	Every year
publication	Irregular	Every month	Every 12 months	Every 12 months	Every year
g	15-24 months	3 months	11-17 months	11-24 months	15-18 months

ne reporting lag is the time that elapses from the reference period for which the data are collected to the time that they are published.

	I	II
DATA		
Occupation 1		
Average wage	5000	5000
Number of workers	100	200
Occupation 2		
Average wage	1000	1000
Number of workers	100	100
AVERAGE WAGE, ALL OCCUPATIONS		
Current-year weights		
Average wage	3000	3667
Index of average wage	100.0	122.2
Base-year weights		
Average wage	3000	3000
Index of average wage	100.0	100.0

Table 3. -- BPS Measures of Money Wages, 1976-87

	Wages in rupiah unless otherwise indicated												Covered workers, 1986 (thousands)		
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Total	Urban	Rural
age)															
	6433		7567				18695				29632		3531	319	3212
	10969		15504				36722				59063		3105	1470	1635
	16766		18268				43819				64923		789	546	243
	18307		24420				55304				75023		7283	3562	3721
	20659		24172				52791				79260		2832	1377	1455
	12363		15046				38792				63285		17540	7274	10266
	14928		19132				43722				63290				
t	17467	22063	24863	30671	38588	47218	58750	68473	75141	85229	93706		1679		
	19215	24268	25973	31652	39855	47571	59288	71392	76413	85229	93639				
						1205	1511	1791	2084	2386	2356		800		
						1555	1844	2037	2195	2336	2591				
	336	386	428	534	812	998	1164	1318	1461	1624	1748		500		
)															
	160	176	190	219	284	367	447	582	691	761	812	889			
	240	263	280	313	368	423	474	582	657	736	823	933			
	136	156	172	197	237	299	344	408	472	538	592	670			
month)			8992	11329	14544	17987	20678	23860	26857	29086	30898				
)			15127	19516	25595	32294	37924	44739	51399	56858	61682				
			140.2	143.6	146.7	149.6	152.8	156.1	159.5	162.9	166.4				
)]			50.67	60.07	71.02	81.35	89.93	100	109.6	118.35	124.26				

Agriculture	34.4		40.5			100.0				136.3			4.
Manufacturing	29.9		42.2			100.0				160.8			5.
Trade	38.3		41.7			100.0				148.2			3.
Services	33.1		44.2			100.0				135.7			4.
Others (1986 basis)	39.1		45.8			100.0				150.1			3
Total													
Current weights	31.9		38.8			100.0				163.1			5
1986 weights	34.1		43.8			100.0				144.8			4
ESTABLISHMENT DATA (wage)													
Manufacturing													
SI monthly employ cost	29.7	37.6	42.3	52.2	65.7	80.4	100.0	116.5	127.9	145.1	159.5		5
Same, 1985 weights	32.4	40.9	43.8	53.4	67.2	80.2	100.0	120.4	128.9	143.8	157.9		4
SUB daily						79.8	100.0	118.5	137.9	157.9	155.9		
Hotels daily (SUB)						84.3	100.0	110.4	119.0	126.7	140.5		
Estates daily	28.9	33.2	36.8	45.8	69.7	85.7	100.0	113.2	125.5	139.5	150.1		
Agriculture daily (SNTP)													
East Java	35.8	39.3	42.5	49.1	63.6	82.3	100.0	130.3	154.8	170.4	181.9	199.1	5
West Java	50.7	55.4	59.0	66.0	77.6	89.2	100.0	122.8	138.6	155.1	173.5	196.7	3
Central Java	39.6	45.3	50.2	57.4	69.1	86.9	100.0	118.8	137.2	156.6	172.4	195.0	4
ADDENDUM													
PCE per capita per month			43.5	54.8	70.3	87.0	100.0	115.5	129.9	140.7	149.4		
PCE deflator			56.3	66.8	79.0	90.5	100.0	111.2	121.9	131.6	138.2		
CPI	48.0	53.4	57.7	68.9	81.4	91.4	100.0	111.8	123.5	129.3	136.9		2

Notes. -- SI is Survei Industri; SUB is Survei Upah Buruh; SNTP is Survei Nilai Tukar Petani; PCE is personal consumption expenditures; CPI is Consumer Price Index. For explanation of household data, see appendix G; for manufacturing establishments, see appendix A; for SUB, see appendix B; for SI, see appendix C; for estate wages, see appendix D and E; for SNTP, see appendix F.

Table 5. -- Average Monthly Wages by Educational Attainment, Household Surveys, 1976-86

PENDIDIKAN TERTINGGI YANG DITAMATKAN	1976	1978	1982	1986
(1)	(2)	(3)	(4)	(5)
Tidak/Belum Pernah) Sekolah) Belum Tamat S.D.)	7 531	8 732	23 362	35 407
Sekolah Dasar	12 711	16 909	35 951	51 317
SMTP Umum	22 448	29 282	58 667	77 731
SMTP Kejuruan	21 354	30 026	57 113	76 426
SMTA Umum	31 323	44 090	78 399	98 991
SMTA Kejuruan	24 925	34 211	67 572	93 592
Diploma I/II	-	-	-	105 717
Akademi/Diploma III) Universitas)	57 589	78 545	117 887	152 404
SELURUHNYA *)	12 363	15 046	38 792	63 285

*) Tidak termasuk tak terjawab

Source: Indikator Tingkat Hidup Pekerja

Table 6. -- Conspectus of Wage Reports for the SUB and Estate Survey

Survey	Indonesian Title	English Title	Wage Concept	Month of Publication					
				1981	1982	1983	1984	1985	1986
Survei Upah Buruh	Upah Buruh Menurut Jenis Pekerjaan	Workers' Wages By Occupation	Average wage	11/82	7/83	7/84	10/85	10/86	‡‡
	Distribusi Buruh Menurut Upah	Distribution of Workers by Wages	Wage distrib.	‡	‡	4/84	10/85	10/86	
Estates survey	Statistik Upah Karyawan Perkebunan	Wages Paid on Estates	Wage bill	3/83	11/84	5/85	1/86	8/86	10/87
	Rata-Rata Upah Pekerja Perkebunan	Average Wage Of Estate Workers	Average wage	7/83	11/84	10/85	6/86	12/86	10/87
	Perkembangan Upah Pekerja Perkebunan	Wage Trend Of Estate Workers	Wage index	11/84	4/85	1/86	6/86	12/86	10/87

‡ Data for 1981 and 1982 were included in the 1983 report.

‡‡ Tabulations for 1986 were completed in January 1988, but publication has been delayed by the need to analyze comparability with 1985 data.

Table 7. -- Illustrative Example of Splicing Wage Data

	Period			
	I	II	III	IV
DATA				
Establishment A				
Average wage	1000	1100	1200	130(
Percent change in wage		10.0	9.1	8.3
Number of workers	100	100	100	10(
Payroll	100000	110000	120000	13000(
Establishment B				
Average wage	2000	2200	2400	
Percent change in wage		10.0	9.1	
Number of workers	100	100	100	
Payroll	200000	220000	240000	
Establishment C				
Average wage			3500	400(
Percent change in wage				14.
Number of workers			200	20
Payroll			700000	80000
WAYS OF SUMMARZING DATA				
All-reports average wage	1500	1650	2650	310
Overlapping average wages				
Old basis	1500	1650	1800	
New basis			2733	310
Index of overlapping average wage	100	110	120	13
Percent change in overlapping avg. wage		10	9	1

Notes. -- The all-reports average is the average for all establishments tha report in the current period. The overlapping average (old basis is the average for all establishments that reported in period I; the overlapping average (new basis) is the average for all establishments that reported in period IV.

The index of overlapping average wage is based on the overlapping average (old basis) for periods I-III; for period IV it is based the overlapping average (new basis).

Table 8. -- Example of a Wage Distribution

DKI Jakart

Kegiatan Usaha	Tahap	Penggolongan Upah per Hari (Rp)				Jumlah
		..-750	751-1500	1500-5000	5001-keatas	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Perusahaan Industri Bahan Makanan	I	0,00	50,11	29,00	20,89	100,00
	II	0,00	48,77	34,64	16,59	100,00
	III	0,00	43,58	32,86	23,56	100,00
	IV	0,00	42,46	34,21	23,33	100,00
2. Perusahaan Industri Makanan	I	8,54	30,54	50,09	10,83	100,00
	II	0,08	38,93	50,69	10,30	100,00
	III	0,11	52,34	41,25	6,30	100,00
	IV	0,00	46,46	47,36	6,18	100,00
3. Perusahaan Industri Minuman	I	0,00	31,10	47,01	21,89	100,00
	II	0,00	49,32	39,10	11,58	100,00
	III	0,00	33,83	51,65	14,52	100,00
	IV	0,00	24,43	58,08	17,49	100,00
4. Perusahaan Industri Pemintalan	I	0,00	74,08	20,64	5,28	100,00
	II	0,00	73,68	20,98	5,34	100,00
	III	0,00	74,09	21,23	4,68	100,00
	IV	0,00	68,87	26,45	4,68	100,00
5. Perusahaan Industri Pertenunan	I	0,00	32,01	59,48	8,51	100,00
	II	0,00	32,86	49,12	18,02	100,00
	III	0,00	30,51	50,13	19,36	100,00
	IV	0,00	25,64	57,20	17,16	100,00
6. Perusahaan Industri Pencelupan	I	0,00	53,80	41,25	4,95	100,00
	II	0,00	53,47	41,58	4,95	100,00
	III	0,00	36,30	58,75	4,95	100,00
	IV	0,00	37,62	57,43	4,95	100,00
7. Perusahaan Industri Batik	I	0,00	20,30	67,09	12,61	100,00
	II	0,00	19,33	73,25	7,42	100,00
	III	0,00	16,59	72,60	10,81	100,00
	IV	0,00	17,25	61,79	20,96	100,00

Source: Distribusi Buruh Menurut Upah, 1985

Table 9. -- Total Employment Cost by Type of Cost, Sensus Industri 1985
(in billions of rupiah, except where otherwise stated)

	For production workers		For non production workers		All workers	
	Cash	In-kind	Cash	In-kind	Total	Percent
Basic wage	800.0	16.8	432.7	5.2	1254.7	73.4
Overtime	96.5	0.2	37.2	0.0	133.9	7.8
Bonuses and incentives	85.3	6.1	52.6	1.4	145.4	8.5
Extra payments	57.3	6.3	41.3	2.7	107.6	6.3
Pension and welfare	39.0	0.6	20.8	0.3	60.7	3.5
Accident insurance	6.0	0.0	2.0	0.0	8.0	0.5
T O T A L	1084.1	30.0	586.6	9.6	1710.3	100.0

Source: 1985 Sensus Industri.

Table 10. -- Average Employment Cost Per Worker: Survei Industri and Sensus Industri, 1975-86

INDUSTRY	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
EMPLOYMENT COST (billion rupiah)												
31 Food & beverages	38.8	46.9	57.8	62.9	82.3	113.3	135.4	174.7	214.5	250.0	393.0	429.(
32 Textiles	33.9	36.8	40.7	49.4	61.6	86.6	113.6	129.9	151.7	181.1	271.7	301.(
33 Wood & wood prod.	7.3	10.1	12.3	14.8	19.5	33.6	40.7	75.0	97.5	121.6	180.5	211.3
34 Paper & paper prod.	6.0	5.5	9.1	10.6	13.4	19.6	25.1	31.5	35.2	42.4	78.4	99.4
35 Chemicals	18.3	25.1	35.2	41.5	57.9	77.8	99.4	135.8	168.9	200.3	384.0	383.5
36 Stone & clay prod.	7.1	9.2	11.3	14.3	20.1	25.5	36.8	48.1	57.6	65.3	93.7	95.2
37 Basic industry	0.4	1.5	5.5	1.7	2.9	8.9	9.2	11.3	20.5	27.0	28.8	48.9
38 Metal fabrication	17.6	31.9	35.2	46.5	56.2	81.6	106.4	137.4	164.2	179.4	271.4	307.(
39 Other manufacturing	0.5	0.6	0.7	1.1	1.6	2.0	2.6	3.5	40.6	6.2	8.7	11.8
TOTAL	129.8	167.6	207.8	242.9	315.4	448.8	569.3	747.2	914.0	1073.4	1710.2	1888.1
PAID WORKERS												
31 Food & beverages	282173	313170	304308	289519	304087	321393	320843	321183	336303	339481	515279	51563
32 Textiles	240778	224845	209930	221152	225134	258446	265321	264099	262927	283944	378150	38561
33 Wood & wood prod.	38190	41285	44825	47403	49506	65003	71206	96257	118182	171289	180879	18050
34 Paper & paper prod.	25858	27346	26384	25948	28281	31880	34449	37039	36737	35420	56325	6212
35 Chemicals	62862	68302	69223	91996	101332	109736	121160	132024	140343	146389	247720	24451
36 Stone & clay prod.	32913	33844	35022	37721	42128	46675	50302	52525	55462	55082	87676	7976
37 Basic industry	2883	4694	5007	3978	4559	8822	9483	10066	12857	13965	15640	1688
38 Metal fabrication	61251	82240	85963	91706	102547	121479	132445	139197	141761	136372	178686	18088
39 Other manufacturing	4452	4020	4272	4777	5943	5753	6575	7446	7782	8485	11807	1316
	751360	799746	784934	814200	863517	969187	1004729	1059836	1112354	1190427	1672162	167910
AVERAGE MONTHLY COST PER WORKER (rupiah)												
31 Food & beverages	11459	12489	15833	18117	22556	29365	35168	45320	53156	61368	63558	6933
32 Textiles	11733	13638	16143	18631	22804	27910	35680	40985	48067	53150	59875	6504
33 Wood & wood prod.	15820	20365	22941	26034	32870	43062	47632	64950	68729	59159	83159	9755(
34 Paper & paper prod.	19465	16776	28780	33917	39346	51273	60718	70936	79840	99755	115993	13332
35 Chemicals	24273	30634	42416	37599	47575	59064	68367	85714	100283	114023	129178	13069
36 Stone & clay prod.	17951	22589	26805	31669	39797	45597	60965	76303	86517	98792	89059	9977
37 Basic industry	10406	26310	91372	36136	52698	84372	80846	93384	132554	161117	153453	24135
38 Metal fabrication	23904	32330	34123	42265	45645	55949	66946	82244	96501	109627	126572	14170
39 Other manufacturing	8798	12956	13733	18840	22435	28420	32953	39484	435235	60892	61404	7469
Current weights	14396	17466	22065	24863	30440	38588	47218	58751	68473	75141	85229	9370
1985 weights	15802	19215	24268	25973	31652	39855	47571	59288	71392	76413	85229	9363

Table 11. -- Average Daily Wage of Production Workers by Industry Group, SUB, 1981-86

1981			1982				1983				1984				1985				1986			
Y	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV
54	1138	1181	1267	1366	1442	1484	1715	1725	1858	1964	2034	2091	2219	2369	2427	2594	2702	2738	2152	2274	2353	2393
18	1106	1164	1223	1309	1385	1431	1465	1507	1542	1576	1633	1728	1781	1824	1884	1921	1962	2003	1693	1744	1794	1845
											2347	2387	2443	2490	2581	2631	2673	2703	2492	2535	2578	2621
											1343	1416	1513	1521	1616	1664	1666	1693	2845	2863	2972	3069
44	1525	1579	1722	1834	1887	1932	2021	2066	2134	2158	2295	2337	2396	2440	2532	2582	2622	2652	2519	2561	2608	2654
00	1425	1487	1550	1620	1670	1717	1735	1766	1804	1837	1910	1978	2068	2119	2175	2224	2281	2303	2711	2805	2858	2918
45	1338	1374	1502	1566	1601	1656	1701	1773	1844	1878	2017	2101	2163	2245	2333	2393	2441	2484	2684	2778	2845	2921
88	943	979	1148	1230	1252	1328	1385	1430	1483	1507	1572	1623	1675	1717	1800	1837	1880	1889	2703	2775	2798	2824
											2178	2242	2331	2458	2608	2738	2765	2832	3180	3264	3318	3387
											2371	2459	2516	2571	2656	2706	2757	2805	3055	3122	3167	3204
11	1732	1787	1896	1947	1994	2026	2084	2177	2207	2247	2358	2444	2503	2563	2653	2708	2758	2807	3064	3132	3177	3216
77	1263	1313	1405	1489	1552	1597	1707	1749	1824	1882	1966	2040	2121	2207	2278	2365	2431	2469	2261	2333	2389	2439
.2	7.3	4.0	7.0	6.0	4.2	2.9	6.9	2.5	4.3	3.2	4.5	3.8	4.0	4.1	3.2	3.8	2.8	1.6	-8.4	3.2	2.4	2.1
606	640	660	669	719	752	755	828	811	853	892	873	879	928	991	1005	1042	1077	1090	837	876	905	872
585	622	651	646	689	722	728	707	708	708	716	701	726	745	763	780	771	782	797	658	672	690	672
											1008	1003	1021	1041	1069	1057	1066	1076	969	977	991	955
											577	595	633	636	669	668	664	674	1106	1103	1143	1118
830	858	883	910	966	984	982	975	971	980	980	985	982	1002	1021	1048	1037	1045	1056	980	987	1003	967
747	802	831	819	853	871	873	837	830	828	834	820	831	865	886	901	893	909	917	1054	1081	1099	1063
716	753	768	793	825	835	842	821	833	847	853	866	883	904	939	966	961	973	989	1044	1070	1094	1065
510	531	547	606	648	653	675	668	672	681	684	675	682	700	718	745	738	750	752	1051	1069	1076	1029
											935	942	974	1028	1080	1100	1102	1127	1236	1257	1276	1234
											1018	1033	1052	1075	1100	1087	1099	1117	1188	1203	1218	1168
											1012	1027	1047	1072	1098	1088	1099	1117	1191	1206	1222	1172

	to Feb. 1981	to Feb. 19
31 Food and beverages	2.87	2.26
32 Textiles	2.21	1.87
34 Paper & paper products	1.95	2.30
35 Chemicals	2.19	2.37
36 Stone and clay	2.36	3.37
TOTAL	2.31	2.09

Note. -- SUB data are from table 11. SI data

Table 13. -- Average Daily Wage for Selected Occupation and Industries in Jakarta, SUB, 1981-86

1981			1982				1983				1984				1985				1986			
MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV
1021	1035	1091	1113	1120	1132	1203	1211	1211	1222	1225	1300	1356	1456	1456	1496	1497	1510	1626	2638	2638	2638	2769
862	1298	1345	1447	1504	1507	1523	1533	1546	1546	1546	1701	1770	1832	1832	1853	1855	1878	1902	2279	2279	2286	2319
1604	2183	2229	2294	2386	2402	2442	2449	2463	2477	2477	2507	2672	2833	2848	2895	2910	2940	2948	3032	3090	3090	3124
940	940	940	1014	1151	1210	1220	1227	1232	1239	1241	1262	1478	1491	1502	2169	2291	2329	2479	3014	3014	3077	3101
703	729	763	777	836	856	860	889	889	890	890	1008	1020	1113	1113	1269	1275	1305	1432				
690	690	690	808	808	808	808					1050	1050	1050	1050	1079	1079	1079	1079	2110	2113	2126	2134
764	805	910	1016	1028	1031	1035	1040	1040	1043	1045	1088	1132	1149	1149	1149	1212	1218	1305	2110	2113	2126	2134
1005	1020	1021	1111	1111	1169	1280	1309	1495	1495	1504	1520	1520	1520	1522	1581	1581	1581	1581				
1701	1703	1703	1753	1951	1995	2040	2045	2046	2078	2100	2117	2493	2504	2603	2655	2655	2670	1849	2159	2170	2441	2503
1825	1840	1840	1844	1918	1948	1985	2003	2013	2041	2132	2345	2368	2379	2394	2399	2401	2404	2406	2504	2218	2218	2225
1552	1879	2125	2146	2223	2294	2315	2334	2346	2365	2374	2508	2636	2658	2706	2752	2757	2762	2789	2719	2719	2719	2719
985	1000	1001	1157	1168	1198	1263	1296	1304	1304	1315	1367	1453	1453	1550	1567	1638	1662	1625	2473	2492	2567	2567
1108	1109	1111	1275	1276	1296	1370	1375	1375	1387	1387	1457	1475	1486	1490	1490	1490	1494	1496				
1159	1171	1194	1229	1272	1273	1318	1359	1359	1437	1458	1552	1694	1704	1704	1747	1747	1754	1762	3096	3396	3617	3689
1092	1098	1100	1100	1561	1580	1724	1790	1806	1849	1897	2055	2118	2174	2219	2232	2241	2252	2259				
2334	2668	2794	2874	3048	3071	3078	3078	3110	3127	3180	3345	3426	3624	3652	3732	3738	3748	3752	3944	3946	3971	3989
1513	1685	1768	1773	1806	1851	1873	1902	1919	1928	1945	2060	2131	2168	2207	2339	2391	2581	2586	3800	3815	3840	3877
1731	1840	1872	1983	2008	2100	2111	2112	2117	2128	2172	2326	2348	2385	2398	2435	2444	2519	2537	3300	3577	3589	3633
2437	2517	2604	2604	2707	2799	2800	2892	2903	2906	2961	3085	3117	3301	3495	3739	3798	3843	3843				
1374	1621	1796	1796	1850	1922	1934	1946	1949	1954	1962	2205	2290	2394	2466	2506	2522	2550	2552	2963	2967	3048	3102
1363	1422	1471	1483	1532	1546	1595	1590	1604	1635	1680	1821	1895	1970	1970	2001	2026	2074	2096				
852	929	993	1011	1121	1125	1203	1204	1240	1254	1276	1279	1279	1279	1279	1282	1310	1310	1310				
1078	1138	1181	1186	1191	1302	1365	1374	1381	1400	1415	1679	1751	1829	1832	1881	1929	1929	2020	2124	2157	2247	2274

Number	Feb	May	Aug	N
Weaving machine operator				
3273 2112 03	1914	1699	1696	1
3273 2112 28/02	1900	2470	2305	2
3206 2112 05/01	1728	1707	1820	2
3206 2112 06	1708	1672	1662	1
3273 2112 06/10	1848	1848	1848	2
3206 2212 11/08	1700	1785	1776	1
3206 2112 53/56	1466	1411	2011	1
3206 2212 16/75	951	1350	1124	1
Fiber machine operator				
3273 2112 03	1529	1452	1439	1
3273 2112 11/9	1556	1523	1618	1
3206 2112 16/75	1733	1733	1876	2
3206 2112 53/56	1215	1072	1127	1
Spinning machine operator				
3273 2112 03	1436	1487	1469	1
3216 2112 05/01	2082	2048	2036	2

Table 15. -- Distribution of SUB Sample, by Sector and Province, February 1981

Tabel 1.1 : Banyaknya Perusahaan yang terpilih menurut Propinsi dan Jenis Kegiatan Usaha

PROPINSI	Industri		Jasa/ Hotel	Ang-kutan	Pertam-bangan	Jumlah
	Besar	Sedang				
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Daerah Istimewa Aceh	1	20	–	11	–	32
2. Sumatera Utara	75	38	48	16	–	177
3. Sumatera Barat	10	26	16	13	1	66
4. Riau	13	18	–	9	4	44
5. Jambi	14	18	–	8	–	40
6. Sumatera Selatan	25	28	25	11	7	96
7. Bengkulu	1	–	14	4	–	19
8. Lampung	9	30	–	3	–	42
9. DKI Jakarta	302	130	39	80	1	552
10. Jawa Barat	299	144	103	93	1	640
11. Jawa Tengah	233	157	82	122	1	595
12. Daerah Istimewa Yogyakarta	26	34	20	29	–	109
13. Jawa Timur	363	160	94	90	–	707
14. Bali	11	34	47	9	–	101
15. Nusa Tenggara Barat	6	31	–	–	–	37
16. Nusa Tenggara Timur	2	19	–	–	–	21
17. Kalimatan Barat	22	22	–	–	2	46
18. Kalimantan Tengah	8	27	–	–	–	35
19. Kalimantan Selatan	17	30	–	–	1	48
20. Kalimantan Timur	4	19	–	–	1	24
21. Sulawesi Utara	3	23	–	–	1	27
22. Sulawesi Tengah	–	11	–	–	–	11
23. Sulawesi Selatan	9	19	23	–	2	53
24. Sulawesi Tenggara	1	33	–	–	2	36
25. Maluku	1	12	7	–	–	20
26. Irian Jaya	2	13	–	–	–	15
Jumlah	1457	1096	518	498	24	3593

Source: Upah Buruh Menurut Jenis Pekerjaan, 1983

Table 16. -- SUB Questionnaire, 1986

(Note: The following is a translation of the names of each of the blocks in the questionnaire, and of the major tabs (usually the column tabs) for each block. Minor tabs (usually the row tabs) are identified in parentheses after the name of the block).

Block I. ESTABLISHMENT IDENTIFICATION (this block has only rows, which are as follows).

1. Complete name of establishment
2. a. Address of establishment/factory
   b. Address of office
3. Main production
4. Year of first production
5. a. Number of normal working days of this month, for
      Production workers
      Non production workers
   b. Number of overtime days of this month, for
      Production workers
      Non production workers
6. Average active working hours every day, for
      Production workers
      Non production workers

Block II. MONTHLY AMOUNT OF WAGE/SALARY, OVERTIME AND OTHER EXPENDITURE PAID TO WORKERS DURING THE PAST THREE MONTHS.

(Aside from totals and subtotals, there are 16 rows in this block -- 14 for Indonesian citizens, and 2 for foreigners (male and female). Those for Indonesian citizens are for managers (M and F), permanent and temporary administrative workers (M and F), permanent and temporary production workers (M and F), and permanent and temporary other workers (M and F)).

Worker group (col. 1)

Ordinary expenditures for the month : Year :
- Expenditure for normal activities
  - Number of workers (col. 2)
  - Number of absentees (col. 3)
  - Amount of wage/salary paid
    - Basic wage (col. 4)
    - Other payments (col. 5)
- Expenditure for overtime
  - Number of workers (col. 6)
  - Man-hours of overtime (col. 7)
  - Overtime pay (col. 8)

Other expenditures for the past three months: From to
(the following columns include intermittent expenditures not comprised in the ordinary expenditures shown above).

Bonus
Number of workers (col. 9)
Amount paid (col. 10)
Social insurance and welfare
Number of workers (col. 11)
Amount paid (col. 12)
Others
Number of workers (col. 13)
Amount paid (col. 14)

Block III.A. AMOUNT OF WAGE/SALARY PAID TO PERMANENT PRODUCTION WORKERS, INCLUDING SUPERVISORS (INDONESIAN CITIZEN) IN ONE MONTH, FOR THE MONTH: YEAR:

(The rows in this table are the various occupations at the establishment. The names of the occupations are left blank, for the respondent to fill in. Col. 5 identifies separate lines for men and women).

Occupation code (filled in by BPS) (col. 1)
Type of occupation (col. 2)
A summary description of the job in column (2) (col. 3)
Sex (col. 4)
Number of workers (col. 5)
Normal number of work days each month (col. 6)
Average active working house per day (col. 7)
Number of person days of absent workers (col. 8)
Number of person days of workers at work (col. 9)
Amount of wage/salary paid of one month report period (col. 10)

Block III.B. AMOUNT OF WAGE/SALARY PAID TO DAILY/TEMPORARY WORKERS, INCLUDING SUPERVISORS (INDONESIAN CITIZEN) IN ONE MONTH
(The columns in this block are the same as in block III.A.)

Block IV. DETAILS ON THE NUMBER OF WORKERS BY AVERAGE WAGE/SALARY PER DAY DURING ONE MONTH (4 columns).

Bracket number
Bracket in terms of average wage/salary per day (the rows in this columns are as follows).
Up to Rp. 250
Rp. 251 to Rp. 500
Rp. 500 to Rp. 750
Rp. 751 to Rp. 1000
Rp. 1001 to Rp. 1250

Rp. 1251 to Rp. 1500
Rp. 1501 to Rp. 2000
Rp. 2001 to Rp. 5000
Rp. 5001 to Rp. 10000
Rp. 10001 to Rp. 15000
Rp. 15001 to Rp. 20000
Rp. 20001 +
Number of workers
Percentage (filled in by BPS)

Block V. ADDITIONAL INFORMATION AND NOTES OF THE ESTABLISHMENT (this block has only rows).

A. If there is a difference in the amount or in the average wage/salary, overtime and other expenditures in Block I as compared with the period before, write down the reasons by making a circle on the below answers :
1. An increase in wage/salary
2. An increase/decrease of workers
3. An increase/decrease of working hours
4. An increase/decrease of working days
5. Seasonal activities
6. A strike
7. Others

B. If there is a difference in the amount or in the average wage/salary in Block II as compared with the period before, write down the reasons by making a circle on the below answers :
1. An increase in wage/salary
2. An increase/decrease of workers
3. An increase/decrease of working hours
4. An increase/decrease of working days
5. Seasonal activities
6. A strike
7. Others

K 02

Table 17. -- BPS Monitoring Card for SUB Wage Data

NAMA PERUSAHAAN : _____ BLOK III A : KARYAWAN PRODUKSI TETAP KODE PERUSAHAAN : _____

Pekerjaan/ Kode	Tahap		BRH	HK	JK	HTM	HKB*)	Upah/Gaji (Rp)
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
a.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
b.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
c.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
d.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						

Pekerjaan/ Kode	Tahap		BRH	HK	JK	HTM	HKB*)	Upah/Gaji (Rp)
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
e.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
f.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
g.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						
h.	I	L						
		P						
	II	L						
		P						
	III	L						
		P						
	IV	L						
Kode:		P						

*) (3)x(4) (6) hari perusahaan yang tidak bisa mengisi banyaknya hari orang.

Table 18. -- List of Industries and Occupations for West Java, 1985

1. Perusahaan perhotelan	1. Hotel establishment
- concierge	- concierge
- room boy	- room boy
- pelayan kamar hotel	- room service
- resepsionis	- receptionist
- bartender	- bartender
- pelayan perjamuan	- waiter
- juru masak/cooker	- chef/cook
2. Perusahaan losmen	2. Inn establishment
- concierge	- concierge
- room boy	- room boy
- pelayan kamar hotel	- room service
- reseptionis	- receptionist
- bartender	- bartender
- pelayan perjamuan	- waiter
- juru masak	- chef/cook
3. Perusahaan angkutan penumpang	3. Passenger transportation
- sopir	- driver
- kenek	- driver's helper
- kondektur	- conductor
- montir	- mechanic
4. Perusahaan industri bahan makanan	4. Food material industry
- penggilingan gula	- sugar mill
- pembuat gula kristal	- castor sugar-mill
- operator mesin penyulingan gula	- machine operator at sugar refinery
- pengolahan & penyulingan lainnya	- other food processing and refinery
- pembuat es krim	- ice cream maker
- pembuat roti kering	- dry bread maker
- pembuat coklat	- chocolate maker
- pembuat permen	- candy maker
- pengolah roti, biskuit lainnya	- other bread & biscuit maker
- operator minyak goreng	- oil frying operator
- pembuat mie, sohun	- noddles & vermicelli maker
- operator press pembungkus	- pressed packaging machine operator
- tukang pak	- packer

5. Perusahaan industri makanan
- pengolah daun tea
- pengolah kecap
- pengolah tepung terigu tapioka
- pengolah lainnya
- pemeriksa mutu barang
- tukang pemasangan label
- operator press pembungkus

- tukang pak

5. Food industry
- processor of tea leaves
- processor of soy sauce
- processor of tapioca
- other food processing
- quality controler
- label fixer
- pressed packaging operator
- packer

6. Perusahaan industri minuman
- juru masak air
- suci hama minuman
- pengawas kamar peragian
- pembuat minuman ringan
- pembuat minuman keras
- pengolah hasil susu

- tukang pak

6. Beverage industry
- water boiler
- water sterilizer
- yeast room supervisor
- soft drink maker
- liquor maker
- processor of dairy product
- packer

7. Perusahaan industry rokok
- pembuat rokok filter
- tenaga pembuat rokok lainnya

7. Cigarette industry
- cigarette filter maker
- other laborers in cigarette factory

8. Perusahaan industri pemintalan
- operator mesin beam warper
- operator mesin & tukang mempersiapkan fiber
- tukang pintal dan gulung benang
- pembuat contoh desain jacquard
- operater tarik benang

- tukang rajut
- tukang pemutih, celup dan yang berhubungan dengan itu
- tenaga pemintalan lainnya
- tukang bordir
- tukang pak

8. Spinning industry
- beam warper operator
- machine operator & fiber preparer
- yarn spinner and spooler
- jacquard designer
- yarn puller machine operator
- knitter/crochetter
- bleacher, dyer and other related jobs
- other spinning jobs
- embroiderer
- packer

9. Perusahaan industri pertenunan
- operator mesin tarik benang

- tukang tenun
- tukang uji bahan kain
- operator mesin gulung benang
- tukang pintal dan gulung lainnya
- operator mesin sisir fiber/cucuk

- tukang mempersiapkan fiber lainnya

9. Textile mill
- yarn puller machine operator
- weaver
- fabric controller
- yarn spinner and spooler
- other spinner and spooler
- operator of fiber comb machine
- preparer of other fiber

- tukang pewarna benang	- yarn dyer
- tukang pencuci dan pembersih tekstil	- textile washer and cleaner
- tukang proses tekstil tahan air	- waterproof textile processor
- operator mesin kalender tekstil	- textile calender machine operator
- tenaga pemutih, celup dan yang berhubungan dengan itu	- bleacher, dyer and other related jobs
- operator mesin beam warper	- beam warper operator
- pembuat bahan textile dan yang berhubungan dengan itu	- maker of textile materials and other related jobs
- tukang rajut	- knitter/crochetter
- penjahit	- tailor
- tukang pak	- packer
10. Perusahaan industri pengelantangan	10. Bleaching company
- tukang pewarna bahan textile	- dyer of textile
- tukang pencuci textile	- textile washer
- operator mesin calender textile	- calender textile operator
- operator mesin pintal	- spinner operator
- penjahit	- tailor
- tukang pak	- packer
- tukang cetak kain	- textile printer
11. Perusahaan industri karung	11. Sack industry
- operator mesin pintal untingan fiber	- machine operator of yarn twiner
- operator mesin pintal benang lainnya	- other spinning operator
- operator mesin gulung benang	- yarn spoolling operator
- tukang rajut	- knitter/crochetter
- pemutih, celup & yang berhubungan dengan itu	- bleacher, dyer and other related jobs
- operator mesin fiber	- fiber machine operator
12. Perusahaan industri tekstil jadi	12. Ready-made textile industry
- operator mesin gulung benang	- yarn spoolling operator
- tukang tenun	- weaver
- tukang pewarna/celup kelir	- dyer
- tukang bordir dengan mesin	- operator of embroidery machine
13. Perusahaan industri perajutan	13. Knitting/crocheting industry
- operator mesin gulung benang	- yarn spoolling machine operator
- operator mesin & tukang rajut	- machine operator & knitter/crochetter

- tukang pewarna benang/celup kelir - tukang proses tekstil tahan air	- yarn dyer - waterproof textile processor
- tukang pemutih, celup dan yang berhubungan dengan itu - penjahit - tukang pak	- bleacher, dyer and other related jobs - tailor - packer
14. Perusahaan industri pakaian dari tekstil - pembuat pola pakaian - pemotongan pakaian jadi - penjahit - tukang sortir barang - tukang pak	14. clothes of textile industry - pattern maker - cutter of cloths - tailor - sorter of products - packer
15. Perusahaan industri alat-alat rumahtangga dari kayu - tukang mebel - operator mesin bubut kayu - tukang buat model mebel dari kayu - tukang plitur	15. Wooden household equipments industry - furniture maker - lathe worker - wood furniture designer - wood varnisher
16. Perusahaan industri kertas - operator mesin pengaduk bahan kertas - pengolah bahan kertas lainnya - tukang pembuatan kertas - tukang buat barang dari kertas - tukang sortir barang - tukang pak	16. Paper industry - paper material mixer machine operator - processor of other paper material - paper processor - maker of papaer products - sorter of products - packer
17. Perusahaan industry percetakan - tukang cetak - operator mesin pengatur huruf - pengatur halaman pada huruf - operator mesin cetak pelat - operator mesin cetak rotary - operator mesin cetak offset - tukang repro bahan cetakan - tukang membuat grafir klise film - tukang potong stensil - tukang jilid buku lainnya +	17. Printing industry - printer - operator of letter arranging machine - letter arranger - plate printing machine operator - rotary printing machine operator - offset printing machine operator - reproductor of printing materials - grapher of negative films - stencil cutter - other bookbinders

18. Perusahaan industry bahan bahan kimia	18. Chemical product
- tukang penggilingan kimia	- chemical miller
- tukang pencampur kimia	- chemical mixer
- tukang masak/pemanas kimia	- chemical heater
- pengolah kimia lainnya	- other chemical processor
- operator penyulingan	- refinery operator
- tukang pasang label	- label fixer
- operator press pembungkus	- pressed packaging machine operator
- tukang pak	- packer
19. Perusahaan industri hasil dari karet	19. Rubber products
- tukang membuat lubang sepatu	- shoe hole maker
- tukang potong pola sepatu	- cutter of shoe pattern
- tukang jahit bagian sepatu muka	- front side shoe sewer
- operator mesin pengaduk karet	- rubber mixer operator
- operator mesin giling karet	- rubber miller operator
- operator mesin ekstruda karet	- rubber extrusion machine operator
- operator mesin press pembentuk karet	- operator of presser machine to shape rubber
- tukang rakit barang dari karet	- deviser of other rubber-made products
- tukang buat dan vulkanisir ban	- tyre vulcanizer
- tukang sortir barang	- sorter of products
20. Perusahaan industri barang barang dari plastic	20. Plastic products
- operator mesin pembentuk plastic timbul	- machine operator of plastic moulder
- operator mesin ekstruda plastik	- plastic extrusion machine operator
- tukang rakit hasil produksi plastik	- inventor of plastic products
- tukang lapis plastik	- plastic layerer
- tukang membuat barang dari plastik	- plastic product producer
- tukang plastik lainnya	- other plastic makers
- tukang pak	- packer
21. Perusahaan industri gelas	21. Glass industry
- tukang pembuat gelas	- glass maker
- tukang tanur gelas	- glass furnace
- tukang lukis gelas	- plastic layerer
- tukang pak	- packer

22. Perusahaan industri semen kapur dan barang dari semen
- tukang buat ubin
- tukang angkut gamping
- tukang bakar gamping

22. Cement made products

- tile producers
- limestone carrier
- limestone burner

23. Perusahaan industri barang barang dari tanah liat
- tukang buat batu bata
- operator press tanah liat
- tukang pembuat bentuk dengan roda penggosok
- juru timbang barang
- tukang bakar batu bata dan tanah liat
- tukang lainnya

23. Clay made products

- brick maker
- clayer presser
- shape maker with abrasive wheel
- weigher

- brick and clay burner
- other workers

24. Perusahaan industri barang galian bukan logam
- tukang buat barang mineral
- tukang angkut batu
- tukang pak

24. Non metal quarried products
- mineral made producer
- stone carrier
- packer

25. Perusahaan industri dasar besi dan baja
- tukang tanur logam
- tukang giling logam
- tukang pemanas ulang logam
- tukang cetak logam
- tukang cor logam
- tukang sortir
- operator forklift

25. Iron and steel products

- metal furnace operator
- metal presser
- metal reheater
- metal shaper
- metal caster
- sorter of product
- forklift operator

26. Perusahaan industri barang barang dari logam
- tukang tanur logam
- tukang cor logam
- tukang cetak logam
- tukang pemanas logam
- tukang buat kawat pipa
- tukang pelapis logam
- tukang warna logam
- pande besi & perkakas
- tukang buat perkakas logam
- tukang pasang mesin perkakas
- operator mesin perkakas logam

- tukang rakit dan setel perkakas logam lainnya

26. Metal products

- metal furnace operator
- metal caster
- metal shaper
- metal heater
- pipe wire maker
- metal layerer
- metal dyer
- iron worker
- iron ware maker
- installer of equipments
- operator of metal equipments
- assembler and installer of other metal equipments

- tukang las logam
- tukang buat lembaran logam
- tukang sortir barang
- tukang cat semprot logam

- metal welder
- metal sheet maker
- sorter of products
- metal paint sprayer

27. Perusahaan industri mesin
- tukang buat perkakas logam
- operator mesin perkakas
- tukang stel dan rakit mesin

- tukang las logam
- tukang cat logam

27. Machinery industry
- metal equipment maker
- machinery equipment
- installer and assembler of machinery
- metal welder
- metal painter

28. Perusahaan industri mesin listrik, perlengkapannya & bagian-bagiannya
- tukang cor logam
- tukang pelapis logam
- pembuat plat accu

- tukang las logam
- tukang potong plat accu

- tukang pengisi strum accu
- tukang cetak plat accu

- tukang rakit peralatan listrik & elektronik
- montir radio & TV

- tukang uji alat-alat elektronik

- operator mesin pembuat kerangka pesawat telepon
- tukang cat semprot
- tukang pak

28. Electric products, their equipments and components
- metal caster
- metal layerer
- storage battery plate maker
- metal welder
- storage battery plate cutter
- storage battery charger
- storage battery plate shaper
- assembler of electronic equipment
- radio & television mechanic
- electric appliance examiner
- operator of telephone frame making machine
- paint sprayer
- packer

29. Perusahaan industri alat-alat pengangkutan
- operator mesin bubut
- tukang pasang & rakit mesin
- tukang buat/pasang perlengkapan mobil
- tukang buat komponen mesin

- operator mesin potong logam
- tukang cat mobil
- tukang las

29. Transportation device

- lathe machine operator
- assembler of machinery
- maker of car equipment

- machinery component producer
- metal cutter
- car painter
- welder

30. Perusahaan industri lain-lain	30. Other industries
- pembuat tepung tulang/fospat	- phosphate powder maker
- pembuat alat musik	- maker of musical instrument
- tukang pita risliting	- zipper ribbon maker
- tukang celup pita risliting	- zipper ribbon dyer
- tukang buat risliting	- zipper maker

Source: Upah Buruh Menurut Jenis Pekerjaan 1985

Table 1 9. -- Average Wages in West Java, SUB 1985:

Existing Format

JAWA BARAT

JENIS KEGIATAN/PEKERJAAN	FEBRUARI	MEI	AGUSTUS	NOPEMBER
(1)	(2)	(3)	(4)	(5)
1. PERUSAHAAN PERHOTELAN				
a. Concierge	1 652	1 708	1 736	1 768
b. Room boy	1 582	1 600	1 619	1 635
c. Pelayan kamar hotel	1 716	1 765	1 800	1 842
d. Resepsionis	1 949	1 968	1 979	1 988
e. Bartender	2 291	2 317	2 339	2 367
f. Pelayan pérjamuan	1 617	1 639	1 654	1 681
g. Juru masak/cooker	-	-	-	-
2. PERUSAHAAN LOSMEN				
a. Concierge	1 860	1 899	1 932	1 966
b. Room boy	1 790	1 823	1 849	1 877
c. Pelayan kamar hotel	1 716	1 732	1 747	1 762
d. Resepsionis	2 059	2 090	2 105	2 121
e. Bartender	1 958	1 997	2 019	2 035
f. Pelayan perjamuan	1 830	1 852	1 861	1 875
g. Juru masak	-	-	-	-
3. PERUSAHAAN ANGKUTAN PENUMPANG				
a. Sopir	3 957	3 999	4 032	4 050
b. Kenek	2 466	2 554	2 575	2 600
c. Kondektur	2 866	2 951	2 987	3 100
d. Montir	2 884	2 925	2 959	3 200
4. PERUSAHAAN INDUSTRI BAHAN MAKANAN				
a. Penggilingan gula	3 743	3 965	4 135	4 166
b. Pembuat gula kristal	4 360	4 419	4 592	4 618
c. Operator mesin penyulingan gula	3 676	3 856	4 062	4 083
d. Pengolahan & penyulingan lainnya	3 405	3 418	3 467	3 495
e. Pembuat es krim	-	-	-	-
f. Pembuat roti kering	2 473	2 536	2 633	2 656
g. Pembuat coklat	2 255	2 280	2 339	2 350
h. Pembuat permen	1 392	1 556	1 713	1 899
i. Pengolah roti, biskuit lainnya	1 478	1 501	1 522	1 525
j. Operator minyak goreng	1 803	1 864	1 869	1 894
k. Pembuat mie, sohun	1 489	1 550	1 558	1 621

(-) Data tak tersedia

Source: Upah Buruh Menurut Jenis Pekerjaan, 1985

Table 20. -- Average Wage of Hotel Bartender, SUB 1981-86 : Proposed Format

PROPINSI	1981	1982	1983	1984	1985	1986 FEB.	1986 MEI	1986 AGST.	1986 NOV.
DISTA ACEH									
SUMATERA UTARA						2,514	2,522	2,538	2,538
SUMATERA BARAT	1,290	1,469	1,549	1,638	1,815	2,456	2,460	2,466	2,494
R I A U						3,000	3,037	3,037	3,037
J A M B I									
SUMATERA SELATAN						3,249	3,513	3,594	4,034
BENGKULU						3,788	3,788	3,788	3,788
LAMPUNG									
DKI JAKARTA						3,507	3,539	3,540	3,543
JAWA BARAT	1,455	1,771	1,968	2,196	2,329	2,094	2,179	2,262	2,364
JAWA TENGAH	1,300	1,932	2,155	2,295	2,366	1,833	1,896	2,013	2,013
DI YOGYAKARTA	1,089	1,763	2,041	2,305	2,478	1,911	1,938	1,976	1,976
JAWA TIMUR						1,921	1,946	2,020	2,031
B A L I	1,507	1,906	2,130	2,297	2,396	3,006	3,072	3,107	3,114
NUSA TENGGARA BARAT						2,126	2,126	2,270	2,270
NUSA TENGGARA TIMUR									
KALIMANTAN BARAT									
KALIMANTAN TENGAH									
KALIMANTAN SELATAN									
KALIMANTAN TIMUR						2,775	2,775	2,775	2,775
SULAWESI UTARA						2,170	2,193	2,193	2,193
SULAWESI TENGAH									
SULAWESI SELATAN	778	1,408	1,714	1,887	2,030	1,801	1,821	1,860	1,860
SULAWESI TENGGARA						2,857	2,857	2,857	2,857
M A L U K U						1,667	1,667	1,667	1,676
IRIAN JAYA									
I N D O N E S I A						2,565	2,604	2,640	2,659

Note: This is a sample of the proposed format for presenting wage data from the Survei Upah Buruh. Data for 1986 are not consistent with data for 1985, for reasons discussed in appendix A. All Indonesia averages were not published for years before 1986, but could be calculated; if need be.

Table 21. -- Estate Wages Questionnaire, 1986

(Note: The following is a translation of the names of each of the blocks in the questionnaire, and of the major tabs (usually the column tabs) for each block. Minor tabs (usually the row tabs) are identified in parentheses after the name of the block).

Wage/salary and other income of laborers and supervisors, during the month of January up to June (in rupiah).

Block A. Concerning all work in relation to plant cultivation (including seedbed), as opening new land for new plants, replantation, plant cultivation and harvest workers (tappers, pickers, woodcutters). The rows identify crops (9 columns).

Name of crop (col. 1)
For laborers in the payroll; daily laborers, monthly laborers, and laborers paid according to result of work.
Wage/salary in cash, according to the payroll (col. 2)
Paid in goods
Price paid by the estate (col. 3)
Owed back by the laborer (col. 4)
Additional wage for good work, if not included in col. 2 (col. 5)
Amount of laborer income (2+3+5-4) (col. 6)
Special bonus (for major holidays) (col. 7)
Yearly bonus (col. 8)
For laborers not in the payroll and working in groups, usually under leaders. (col. 9)

Block B. Concerning all work in relation to raw material processing up to finished product (ready to sell), as peeling, drying, sorting, fermentation, smoking, cooling and other processing jobs.

(The columns are the same as in block A).

Block C. Wage/salary and other income of all workers in the estate (factory) during January up to June (9 columns).

Worker group. (col. 1) - Four groups are specified on four rows:
a. Total of block A and B.
b. Low paid workers and supervisors which are not listed in block A and B. See note 1.
c. High paid workers paid by the estate (factory). See note 2.
d. High paid workers paid by the head office. See note 3.

For laborers on the payroll; daily laborers, monthly laborers, and laborers paid according to result of work.
Wage/salary in cash by payroll (col. 2)
Paid in goods
Price paid by the estate (col. 3)
Owed back by the laborer (col. 4)
Additional wage for good work, if not included in col. 2 (col. 5)
Amount of laborer income (2+3+5-4) (col. 6)
Special bonus (for major holidays) (col. 7)
Yearly bonus (col. 8)
For laborers not in the payroll and working in groups, usually under leaders (col. 9).

Total of each column

Notes: 1. Operators of machinery and other technical equipments; workers for the restoration/maintenance of buildings, roads, bridges, irrigation; in transportation, packing, laboratary, administration, security, health care; also nurses, teachers, shopkeepers/bazaar workers, household helpers employed and paid by the estate/factory.
2. Supervisors, overseers, foremen and head of administrators were paid through estate/factory accounts.
3. Employees whose position are higher then number 2 are paid by the head office.

D. Wage including other income and work days of low paid laborers in the payroll (daily laborers, monthly laborers, and laborers paid according to result of work) under a supervisor during the last month of January-June period (10 columns).
For men.
Type of crop and job (col. 1) (9 rows are provided for 3 crops; for each crop, the following job types are specified)
-- 3 each.
Harvest
Sorting (see note 3)
Processing (see note 4)
Average work hours per day (col. 2)
Male laborers
Average number of work hours per day (col. 3)
Amount of work day in a month (col .4) (see note 2)
Amount of income (in rupiah) (col. 5) (see note 1)

For women (columns 6-10 show the same headings as in columns 1-5).

Notes: 1. Wages including bonuses and allowances.
2. The methode for calculating work days is shown on page 4 of the questionnaire.
3. For tobacco, the first sorting or quality sorting.
4. For tobacco, the procession in the drying room.

E. Number of workers working on the last work day of every month from January to June (25 columns).

The rows for this table are as follows.

I. For workers doing the work in block A. (different for each kind of crop).
Total of columns 1 to 25 of the work in block A.

II. For workers doing the work in block B. (different for each product).
Total of columns 1 to 25 of the work in block B.

III. In relation with worker groups in block C.
a. Total of block A and B.
b. Low paid workers and supervisors which are not listed in block A and B.
c. High paid workers paid by the estate (factory).
d. High paid workers paid by the head office.

Total of all workers.

The columns of this table are as follows.
Crop/product/work group (col. 1)
Workers on the payroll (daily laborers, monthly laborers, and laborers paid according to result of work.
January
Male (col. 2)
Female (col. 3)
February
Male (col. 4)
Female (col. 5)
March
Male (col. 6)
Female (col. 7)
April
Male (col. 8)
Female (col. 9)
May
Male (col. 10)
Female (col. 11)
June
Male (col. 12)
Female (col. 13)
Workers not on the payroll, working in groups and usually under a leader (see note 1).
January
Male (col. 14)
Female (col. 15)
February
Male (col. 16)
Female (col. 17)
March
Male (col. 18)
Female (col. 19)

April
Male (col. 20)
Female (col. 21)
May
Male (col. 22)
Female (col. 23)
June
Male (col. 24)
Female (col. 25)

Notes: 1. If listed laborers are also working in working groups in their spare time, then the number of laborers must be written down in the note block in page 7 of the questionnaire.
2. Not reported in block A and B.

F. Extent of land cultivated and production by type of crop.
Type of crop (the rows for this table are types of crops).
Extent of land cultivated (in 0,000 ha) last situation.
Young plant
Productive plant
Old/damaged plant
Total
Production (during January to June to be filled in 100 kilograms (Kwt) or in kilograms (Kg)).

G. Other expenditures (other than wages/salary) of the estate/factory intended for workers' welfare during January to

Table 22. -- Estate Wages: Wage Index, Average Wage, and Ratio of 2 Measures, 1979-86

	79:I	79:II	80:I	80:II	81:I	81:II	82:I	82:II	83:I	83:II	84:I	84:
WAGE INDEX (1975=100)												
Harvesting	181.5	218.9	284.5	319.8	351.1	375.3	419.0	432.5	463.3	495.0	520.7	53
Men	175.3	210.9	272.2	317.7	346.6	370.9	417.4	437.3	472.7	505.6	531.0	54
Women	205.6	250.5	322.8	348.1	388.3	413.9	452.9	449.9	470.1	500.7	529.0	55
Sorting	211.2	252.5	328.4	361.5	412.5	444.4	494.2	502.6	539.7	569.9	629.7	64
Men	213.4	247.4	338.1	377.8	412.6	469.9	521.1	532.3	575.3	614.9	686.6	70
Women	195.3	244.0	297.1	343.2	374.2	407.9	455.1	463.6	490.7	526.1	557.7	57
Processing	150.3	188.4	233.4	308.0	342.5	380.8	399.2	427.5	457.7	505.5	527.6	54
Men	147.8	185.3	229.1	300.1	332.7	374.4	389.9	419.4	450.2	498.8	520.8	53
Women	152.2	212.6	267.1	353.7	385.1	410.1	451.6	468.3	491.5	529.5	552.3	57
All jobs	175.8	211.5	275.1	318.2	350.4	378.3	417.2	433.1	463.9	498.7	524.8	54
Men	169.7	196.1	263.5	314.7	344.5	373.6	413.3	434.9	469.4	505.9	532.0	54
Women	200.6	229.5	321.9	349.9	389.3	419.4	456.1	455.9	477.2	509.1	537.4	56
AVERAGE DAILY WAGE (Rp)												
Harvesting	496.9	599.1	778.6	880.1	968.6	1033.9	1153.1	1190.6	1274.9	1362.9	1434.0	147
Men	514.5	618.3	797.9	936.2	1021.3	1093.0	1230.0	1288.5	1392.7	1489.6	1564.4	160
Women	449.2	564.9	726.2	768.8	864.2	916.9	1001.0	996.6	1041.6	1112.1	1175.7	122
Sorting	471.3	564.8	697.7	758.4	820.3	938.3	1030.4	1047.4	1122.4	1202.9	1308.8	135
Men	567.0	664.4	826.1	907.2	965.3	1140.5	1236.5	1253.9	1354.3	1457.3	1612.9	166

Table 23. -- Estate Wages: Comparison of Average Monthly Wage Bill and Wage Index, 1979-85

	80:I	80:II	81:I	81:II	82:I	82:II	83:I	83:II	84:I	84:II	85:I	85:II
AVERAGE MONTHLY WAGE BILL	22151	23991	29696	31229	36806	41882	39350	44285	47140	54684	53277	59565
Six-month wage bill (Mil. Rp.)	65439	78258	71863	79960	92083	107215	95884	112997	117697	141778	145858	169585
Number of workers												
Third month	468321	555641	385309	435193	402961	439164	389476	413089	405825	436391	441058	461933
Sixth month	516439	531698	421339	418287	430987	414150	422761	437433	426432	427836	471519	487093
RATIO OF AMWB TO WAGE INDEX	84.08	76.23	86.20	83.58	89.06	96.30	83.82	87.53	88.62	99.96	91.62	97.34

Table 25. -- Number of Kecamatan
in the Farmers' Terms of Trade Sample

Province	Number of Kecamatan	
	Food Agriculture	Estates
D.I. Aceh	19	6
Sumatera Utara	35	9
Sumatera Barat	27	6
Riau	12	7
Jambi	11	8
Sumatera Selatan	20	11
Bengkulu	6	4
Lampung	22	14
Jawa Barat	149	15
Jawa Tengah	153	14
D.I. Yogyakarta	30	6
Jawa Timur	217	16
Bali	20	2
N.T.B.	16	3
N.T.T.	16	3
Kalimantan Barat	17	6
Kalimantan Tengah	6	3
Kalimantan Selatan	14	5
Kalimantan Timur	6	3
Sulawesi Utara	10	10
Sulawesi Tengah	8	6
Sulawesi Selatan	40	12
Sulawesi Tenggara	8	3
Maluku	13	6
T O T A L	875	178

Table 26. -- Weights for Each Occupation, Farmer Terms of Trade Survey (in percent)

	W. Java	C. Java	Yogya	E. Java
Hoeing	51.74	43.01	36.31	35.34
Planting	21.20	25.83	37.36	31.25
Weeding	27.06	31.16	26.33	33.41
TOTAL	100.00	100.00	100.00	100.00

Note. -- Weights are based on 1976 BPS survey of the cost structure of padi and paleweja crops.

Table 27. -- Example of Current Reporting Format for Household Survey

TABEL / TABLE : XX.7. JUMLAH BURUH / PEGAWAI MENURUT LAPANGAN PEKERJAAN UTAMA DAN BESARNYA PENDAPTAN SEBULAN
NUMBER OF LABOURS / EMPLOYEES BY MAIN INDUSTRY AND INCOME PER MONTH

INDONESIA LAKI-LAKI/*MALE*

LAPANGAN PEKERJAAN UTAMA *MAIN INDUSTRY*	BESARNYA PENDAPATAN SEBULAN / *INCOME PER MONTH* (RR)							
	<3.000	3.000 - 4.999	5.000-6.999	7.000-9.999	10.000-14.999	15.000-19.999	20.000-29.999	30.000-39.999
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
PERTANIAN, KEHUTANAN, PERBURUAN DAN PERIKANAN / *AGRICULTURE, FORESTRY, HUNTING AND FISHING*	819,113	1,072,522	1,024,192	1,072,147	583,428	372,094	260,155	95,538
PERTAMBANGAN DAN PENGGALIAN / *MINING AND QUARRYING*	9,716	9,324	8,907	3,738	6,923	10,395	10,727	10,513
INDUSTRI PENGOLAHAN / *MANUFACTURING*	46,441	68,610	99,983	183,886	259,266	185,546	201,919	103,740
LISTRIK, GAS DAN AIR / *ELECTRICITY, GAS AND WATER*	0	3,108	1,505	0	0	706	2,136	2,327
BANGUNAN / *CONSTRUCTION*	37,376	29,579	20,885	63,734	189,015	133,205	145,039	60,770
PERDAGANGAN BESAR DAN ECERAN SERTA RUMAH MAKAN DAN HOTEL / *TRADE, RESTAURANTS AND HOTELS*	55,605	61,050	80,594	94,076	104,307	109,378	101,059	57,198
ANGKUTAN, PERGUDANGAN DAN KOMUNIKASI / *TRANSPORTS, STORAGE AND COMMUNICATION*	19,385	45,401	40,947	100,167	134,483	152,480	153,684	128,706
KEUANGAN, ASURANSI, USAHA PERSEWAAN BANGUNAN DAN TANAH DAN JASA PERUSAHAAN / *FINANCING, INSURANCE, REAL ESTATE AND BUSINESS SERVICE*	0	0	0	1,762	7,590	2,349	8,307	3,432
JASA KEMASYARAKATAN, SOSIAL DAN PERORANGAN / *COMMUNITY, SOCIAL AND PERSONAL SERVICES*	136,884	208,511	252,980	304,048	435,781	504,280	669,223	524,436
KEGIATAN YANG BELUM JELAS BATASNYA / *ACTIVITIES NOT ADEQUATELY DEFINED*	0	0	0	0	0	0	163	0
JUMLAH / *TOTAL*	1,124,520	1,498,105	1,529,993	1,827,558	1,720,793	1,470,433	1,552,412	986,660

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Source: Keadaan Angkatan Kerja di Indonesia, 1978

LANJUTAN/*CONTINUED* : XX.7

LAPANGAN PEKERJAAN UTAMA *MAIN INDUSTRY*	BESARNYA PENDAPATAN SEBULAN / *INCOME PER MONTH (RP.)*								
	40.000 - 49.000	50.000 - 74.999	75.000 - 99.999	100.000 - 149.999	150.000 - 249.999	250.000 - 299.999	300.000 +	TAK TERJAWAB *NOT STATED*	JUMLAH *TOTAL*
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
PERTANIAN, KEHUTANAN, PERBURUAN DAN PERIKANAN / *AGRICULTURAL, FORESTRY, HUNTING AND FISHING.*	37,897	15,053	2,472	2,458	423	0	4,010	0	5,361,502
PERTAMBANGAN DAN PENGGALIAN / *MINING AND QUARRYING.*	10,750	9,325	5,430	1,822	0	0	0	0	97,570
INDUSTRI PENGOLAHAN / *MANUFACTURING.*	38,722	30,827	13,253	10,304	2,568	2,529	423	0	1,248,017
LISTRIK, GAS DAN AIR / *ELECTRICITY, GAS AND WATER.*	0	1,334	0	0	0	0	0	0	11,116
BANGUNAN / *CONSTRUCTION.*	30,377	17,552	2,215	1,997	242	0	279	0	732,265
PERDAGANGAN BESAR DAN ECERAN SERTA RUMAH MAKAN DAN HOTEL / *T R A D E, RESTAURANTS AND HOTELS.*	40,710	28,885	9,593	7,746	2,995	1,700	1,269	0	756,165
ANGKUTAN, PERGUDANGAN DAN KOMUNIKASI / *TRANSPORTS, STORAGE AND COMMUNICATION.*	61,766	45,244	8,809	5,597	3,416	0	0	0	900,085
KEUANGAN, ASURANSI, USAHA PERSEWAAN BANGUNAN DAN TANAH DAN JASA PERUSAHAAN / *FINANCING, INSURANCE, REAL ESTATE AND BUSINESS SERVICE.*	712	4,778	1,352	3,920	1,541	0	0	0	35,743
JASA KEMASYARAKATAN, SOSIAL DAN PERORANGAN / *COMMUNITY, SOCIAL AND PERSONAL SERVICES.*	331,066	329,170	88,561	46,170	14,816	2,557	4,585	0	3,857,068
KEGIATAN YANG BELUM JELAS BATASNYA / *ACTIVITIES NOT ADEQUATELY DEFINED.*	423	0	0	0	0	0	0	0	586
J U M L A H / *T O T A L*	552,423	482,168	131,685	80,014	26,001	6,786	10,566	0	13,000,117

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RECOMMENDATIONS FOR BPS WAGE SURVEYS

Statistical Paper #6

by

Alex Korns

April, 1988

(DSP #23)

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I. Introduction

BPS presently conducts five wage surveys. A DSP research paper, "Wage Data at BPS," describes the five surveys and proposes some changes for discussion by BPS and by agencies that use the data. This policy memorandum summarizes the findings of the paper.

Labor market economists need wage data to study wage structure and to measure and analyze changes in real wages, that is, the purchasing power of wages. Wage structure refers to the ratios of money wages for various occupations, industries, and regions to each other. Real wages are the ratio of money wages and a measure of purchasing power.

The terms "ratio" and "changes" indicates that economists use wage data mainly by comparing them to other wage data. For this reason, consistency and comparability are important requirements -- usually more important than comprehensive coverage, to which statistical agencies traditionally attach considerable importance.

The purpose of a wage survey is to provide wage rates per month, per day, or per hour that are specific to labor of a certain well-defined occupation and skill level. Two classes of need for wage data can be broadly distinguished. Wage data for macro-analysis are data that provide an indication of changes in the demand and supply of broad classes of labor -- for example, unskilled labor. Wage data for micro-analysis are data that provide an indication of the relative wages and changes in those wages for narrowly defined types of skilled labor -- for example, lathe operators.

Wage data are relatively undeveloped at BPS. Thus, there is still scope for consideration of the broad aims and methods of wage data collection. At the same time, the resources available to BPS for collecting wage data are quite limited. Accordingly, BPS needs to develop an integrated strategy for allocating its limited resources efficiently among the five surveys. The fact that the wage data

are collected by various methods (household vs establishment surveys) and bureaus (the Bureau of Social and Demographic Statistics, the Bureau of Distribution Statistics, and the Bureau of Agriculture and Industry Statistics) has hampered the development of an integrated strategy.

BPS cannot afford to spend more than it now spends for collecting wage data. But the BPS wage data can be greatly improved at no additional recurring cost to BPS by building on the strengths of each of the existing surveys, by remedying weaknesses and by eliminating features that serve no useful purpose.

II. The five surveys

Table 1 summarizes some basic features of the five surveys. The remainder of this memorandum describes the surveys and presents recommendations for improvement.

The **household survey** is the most suitable vehicle for collecting comprehensive wage data for virtually all of the rougly 18 million employees in Indonesia. It has provided wage data intermittently since 1976. The wage question is simple: how much in wages was received from the principal job during the last month? The minimum reporting lag is nearly a year. Tabulation is done by computer; it is slowed by the need to edit and keypunch more than 64,000 questionnaires each year.

The survey can be strengthened by publishing its wage results in a more accessible format, by freezing the wording of the wage question in order to assure comparability of data from year to year, and by taking steps to assure that the occupational data are as detailed and accurate as is feasible in the context of a household survey. At least once in 5 years, extra questions should be added to meet the requirements of the Social Accounting Matrix, which is a major user of the household wage data.

The four establishment surveys are the most suitable vehicles for collecting wage data for detailed occupational groups in a few economic sectors. In order to make a contribution to the overall BPS program for wage data, establishment surveys should excell in rapid reporting, and/or in consistency and accuracy of the data. The most pressing need is for data that reflect wage movements for broad segments of the labor market -- such as for unskilled labor in urban and rural areas -- rather than for data for the wages of narrowly defined occupations like lathe operators.

The **farmer terms of trade survey** has provided rapid monthly reporting of farm wages by province since 1976. It is a monthly sample survey of farmers in 14 provinces that is designed for rapid tabulation. The survey covers a casual labor market in which individual employers pay a uniform wage rate for all workers of the same occupation and sex. The questionnaire simply asks for wage rates for several specified occupations. The survey provides monthly wage with a lag of about 3 months. Wage data for Java are available since 1976; those for other islands, since 1980.

The survey serves as an "early warning" indicator for agricultural wages. Because the survey is basically a price survey which must report monthly, wage data collection has been streamlined to facilitate rapid reporting. The data are tabulated by computer. Beginning with January 1988, the survey has been strengthened by the simple step of publishing wage indexes for four provinces of Java in the monthly reports Buletin Ringkas and Indikator Ekonomi, instead of burying the wage data in an index of "factor costs." Indexes for the 10 provinces outside Java are not yet published, but can be published at some time in the future when agreement is reached on a weighting scheme for survey data from those provinces. Publication has been held up by the need to analyze the validity of the farmer terms of trade estimates based on 1980 weights.

Although the farmer terms of trade wage data appear reasonable, there is ground for concern that local BPS officials may use inconsistent procedures for substituting farmers in the survey from

one month to the next. Similarly, there is concern that inconsistent procedures may be used for substituting male labor for female labor, or vice versa. BPS needs to check on these issues, and to review the consistency of the data at the kecamatan level.

For many years, the Survei Industri (SI) has collected employment cost data for production and nonproduction workers at medium and large manufacturing establishments. The SI is conducted by the Division of Industry Statistics in the Bureau of Agriculture and Industry Statistics. The data are available with a lag of more than a year. They provide scant occupational detail, but remain useful because they provide long time series and great industrial detail (119 industry groups). The data are tabulated by computer and are available to users on tape. The data for individual factories are subject to considerable noise, although broader averages appear reasonable on the whole. The survey could be greatly strengthened by improved editing and by the simple step of tabulating and publishing data for each element of employment cost separately for production and nonproduction workers -- together with the number of such workers.

The other two establishment surveys do not serve as "early warning" indicators, because they report one to two years after the reference period. The delay reflects lagging cooperation by respondents, who feel burdened by the long questionnaires. It also reflects the lack of computerized tabulation. Computerization of both surveys would not only speed tabulation, but would also give management a powerful tool for controlling errors.

The **estate wage survey** annually provides comprehensive data on the wages of 500,000 workers at all 820 state-owned estates. The survey has been taken at least since 1951, and thus provides the longest historical time series for wages in Indonesia. The estate sector is particularly suitable for collecting establishment wage data, because estates employ masses of laborers in a few occupational categories. The wage questions are complex. The survey

provides abundant wage data, but is not designed for rapid tabulation.

Estates report twice a year, but the data are tabulated only once a year. Computerization would make it easy to tabulate the wage data twice a year. Questionnaires could be edited and keypunched as soon as they are received at BPS; the data could thereby be reported in 6-8 months, instead of 11-17 months at present. One of the three estate wage reports currently published each year is redundant and should be dropped.

The **Survei Upah Buruh** (SUB) is the most complex and the most problematic of the BPS wage surveys. It is also the newest, having been established in 1981. On the basis of a sample of 3,600 establishments, SUB provides detailed data on the wages of about 2-3 million workers in 200 occupation-industry groups in 26 provinces. The establishments are in 4 economic sectors: Large and medium manufacturing, mining, hotels, and land transportation. The survey is conducted by the Division of Labor Force in the Bureau of Social and Demographic Statistics.

So far, the most recent published SUB data are those for 1985. Publication of 1986 data is being held up by the fact that data for 1986 are not comparable with those for 1985, due to changes in the questionnaire and in the sample. Further study of the 1986 break will probably require a selective examination of SUB records for 1985-86. The SUB wage questions are complex. Preliminary indications are that misinterpretation of questions by respondents was a major factor in the 1986 break. There are some grounds for concern that SUB may have exaggerated wage increases during 1983-85, for reasons that are not clear. The latter concern can be either confirmed or dispelled by means of additional tabulations from the Survei Industri. The tabulations should be made by BPS as soon as possible, and should form a permanent feature of Survei Industri tabulations in future years.

The SUB imposes a heavy burden on respondents, by asking them to fill out a long questionnaire four times a year -- even though the data are tabulated and published only once a year. Occupations are loosely defined in many instances. The survey does not code occupations; therefore, it does not provide wage measures for occupations in more than one industry, or for broad groups of occupations such as unskilled or semi-skilled labor. One of the two SUB reports currently published is of little interest and should probably be dropped.

On balance, the weaknesses of SUB can best be summarized by saying that the survey is too ambitious. In other words, it tries to collect and publish far more data than is either needed by users, or fits within the scope of BPS resources, or corresponds to respondents' patience with survey forms. The proposed remedy is either to eliminate SUB altogether or to cut SUB data collection activities while redesigning to better meet the most essential data needs. Users should be asked to clarify what data they need from SUB that cannot be provided by other, existing sources. BPS can use the resources saved from SUB cutbacks to pay for small improvements in the other wage surveys.

BPS faces a fundamental choice whether to redesign or drop the SUB.

A prerequisite for redesign is for managers and DSP consultants to identify an area of congruence between data that are analytically useful and collection methods that are feasible. Such an area of congruence has not yet been found by a DSP team that has been making field visits to factories in Jakarta and Cirebon: So far, the data that are analytically useful do not appear administratively feasible to collect, whereas the data that are feasible to collect do not appear very useful.

Redesign will require sustained attention by top management. For example, managers may need to visit several factories in each of the industry (ISIC) groups chosen for the survey of wage

trends, in order to identify the occupations of that must be prespecified on the questionnaire for those industry groups.

If SUB redesign appears feasible, it is proposed to convert the existing SUB into two surveys.

A survey of wage trends. The survey would take place quarterly, as now, but would cover a much smaller range of industries, occupations, and provinces. It would cover major occupations in a few selected industry groups -- such as hotels, sugar, kretek cigarettes, spinning, weaving, wearing apparel, and plywood. The sample would be relatively small -- say, from 200 to 500 establishments in 4 or 5 provinces. The survey would be designed in a streamlined way to facilitate rapid collection and tabulation. The goal would be to publish a limited number of wage indexes in the Buletin Ringkas and Indikator Ekonomi -- as is presently done for the farmer terms of trade survey.

Because they would be published rapidly, data from the new survey of wage trends could serve as early warning indicators of wage trends in manufacturing as a whole. The data would not cover or be representative of persons with casual jobs (such as temporary construction workers) or persons in the informal sector (such as becak drivers).

A survey of wage structure. The survey would have broad coverage similar to that of SUB, but would be conducted once every 2-3 years instead of once a quarter, as now. Procedures and questionnaires should be redesigned to minimize the errors and misunderstandings that have occurred in the past.

If, however, redesign of the manufacturing portion of the SUB does not appear feasible, it is proposed to strengthen the BPS program for wage data in other, compensating, ways. For example:

Retain and strengthen the hotels and land transportation components of the SUB. These components have the advantage that occupations are more well defined than in industry.

Strengthen the SI data for employment cost per work by improved editing and tabulation.

If possible, design a low-cost, rapid-reporting establishment wage survey for urban casual labor markets such as those in construction. Such markets may lend themselves readily to a wage survey, because workers in the same occupation are generally paid at the same time rate.

Strengthen the household data for monthly wages by improved coding for occupation and other characteristics of interest.

Table 1. -- Some Features of the Five BPS Wage Surveys

	Household Survey	Farmer Terms of Trade	Estates Survey	Survei Upa
Abbreviation		SNTP (Survei Nilai-Tukar Petani)		SUB
Coverage of economic sectors	All households	Well-to-do farmers, estates	State-owned estates	Large and manufactur land trans hotels
Type of workers covered	All buruh	Hoeing, planting weeding workers	Production workers	Production
Number of workers covered	13 million	about 2-3 million	500,000	about 2 m
Respondents	64,000 households	875 farmers, 177 estates	820 estates	3600 estal
Sampling technique	2-stage probability sample	Judgmental, with clustering	Complete census	Stratifie
Number of regions separately identified	27 provinces	14 provinces	10 regions grouping all provinces	26 provin

Table 1. -- Labor Force Participation Rates by Age and Sex, 1971-86 and Illustrative Projections to Year 2000

			MEN									WOMEN									BOTH SEXES
			10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	All	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65+	All	
1. BASIC LFPR DATA (in percent)																					
a	Sensus	1971	18.3	52.8	79.2	92.8	94.5	91.6	82.2	62.2	69.9	13.7	30.8	33.4	37.0	42.8	44.0	37.2	24.0	33.6	51.25
b	Sakernas	1976	16.7	58.8	87.1	97.8	98.5	95.4	85.2	60.9	73.8	10.9	34.2	37.5	42.1	49.8	50.5	40.2	20.0	36.8	54.90
c	Sakernas	1977	15.0	59.9	86.8	97.5	98.8	95.5	84.1	59.5	72.6	8.7	34.6	36.1	40.9	48.9	48.6	38.0	20.0	35.5	53.75
d	Sakernas	1978	18.0	57.8	87.3	97.6	98.6	96.6	87.2	65.7	74.5	11.4	36.2	38.3	46.1	54.7	55.8	45.8	27.0	39.8	56.65
e	Sensus	1980	12.9	47.7	79.4	93.4	95.4	92.2	80.9	53.4	68.4	9.5	31.3	34.2	37.5	44.2	45.7	36.9	19.0	32.7	50.23
f	Susenas	1982	12.0	48.1	83.6	96.3	97.9	95.1	82.8	57.9	70.2	9.0	33.2	41.4	45.2	53.1	54.0	45.7	23.2	38.3	55.96
g	Supas	1985	11.5	42.1	78.6	95.9	98.0	96.2	84.0	57.9	68.9	8.0	30.4	41.0	45.5	52.9	55.5	44.4	22.6	37.6	53.02
h	Sakernas	1986	14.3	46.6	79.9	96.8	98.6	96.4	82.8	55.3	70.5	11.5	36.3	49.7	55.0	61.5	61.2	49.2	22.9	44.5	57.36
i	Two-year average	1976,1977	15.85	59.35	86.95	97.65	98.65	95.45	84.65	60.20	73.20	9.80	34.40	36.80	41.50	49.35	49.55	39.10	20.00	36.15	54.32
j	Two-year average	1982,1985	11.75	45.10	81.10	96.10	97.95	95.65	83.40	57.90	69.55	8.50	31.80	41.20	45.35	53.00	54.75	45.05	22.90	37.95	53.43
2. SUPPLEMENTARY DATA																					
a	Share of unpd fam wkrs in pop., '77		10.05	29.65	26.80	10.15	2.36	1.57	2.37	2.53	11.46	5.35	16.29	16.55	17.93	18.89	16.21	10.12	5.61	14.49	12.99
b	Share of unpd fam wkrs in pop., '86		12.44	27.46	23.58	7.45	1.86	1.35	2.04	2.88	10.83	9.59	21.18	23.34	26.91	29.33	26.39	17.26	7.34	21.16	16.28
c	Population in 1980 ('000)		8854	7780	6960	10043	7720	5427	3078	2289	52151	8698	7734	7011	10287	8112	5863	3416	3627	53748	105899
d	Population in 1985 ('000)		10232	8427	7164	11879	8598	6345	4167	2648	59460	9872	8711	7873	12503	8466	6521	4425	2969	61340	120800
e	Projected population in 2000 ('000)		11603	10870	10999	18028	12925	9257	6204	4727	84613	11238	10414	10469	18077	14200	9424	6538	5702	86062	170675
3. HIST. ANNUAL RATE OF CHANGE (in pct. points)																					
a	Trend rate for 76,77,82,85		-0.59	-2.04	-0.84	-0.22	-0.10	0.03	-0.18	-0.33	-0.52	-0.19	-0.37	0.63	0.55	0.52	0.74	0.85	0.41	0.26	-0.12
b	Adjustment to line 3a		0.11	0.25	0.22	0.07	0.02	0.01	0.02	0.03		0.09	0.19	0.21	0.25	0.27	0.24	0.16	0.07		0.15
c	LOTUS estimate (lines 3a + 3b)		-0.47	-1.78	-0.62	-0.15	-0.08	0.04	-0.16	-0.30	-0.49	-0.10	-0.18	0.84	0.80	0.79	0.99	1.01	0.48	0.54	0.03
d	BPS estimate		-0.42	-1.66	-0.84	-0.16	-0.05	0.07	-0.23	-0.56	-0.50	-0.06	-0.15	0.98	0.91	0.79	0.85	0.75	0.12	0.54	0.03
4. PROJ. ANNUAL RATE OF CHANGE (in pct. points)																					
a	LOTUS trend rate, 1985 weights		-0.47	-1.29	-0.62	-0.15	-0.08	0.04	-0.16	-0.30	-0.39	-0.10	-0.18	0.84	0.80	0.79	0.80	1.01	0.48	0.52	0.07
b	LOTUS trend rate, 2000 weights										-0.37									0.56	0.10
5. PROJECTED LFPR IN YEAR 2000 (in percent)																					
a	LOTUS, assuming hist. trend (line 3c)		7.70	21.64	71.24	94.66	97.44	96.37	80.58	51.07	67.52	10.14	33.83	61.51	66.17	72.58	75.00	63.32	29.65	53.76	59.59
b	LOTUS, assuming proj. trend (line 4a)		7.70	29.30	71.24	94.66	97.44	96.37	80.58	51.07	68.57	10.14	33.83	61.51	66.17	72.58	72.40	63.32	29.65	53.48	60.96
c	Same, with 1985 population weights										65.40									51.53	58.36
e	BPS estimate		8.13	22.43	67.63	94.56	97.36	97.36	79.05	47.98	67.03	10.62	34.15	63.91	68.19	72.95	73.60	60.07	24.68	53.89	60.41

1i Average of lines 1b and 1c. 1j Average of lines 1f and 1g.

3a Historical trend rate of change for 1976,77,82,85 is equal to the difference between the 1982-85 average (line 1j) and the 1976-77 average (line 1i), divided by 7 years (the difference between April 1977, the midpoint between the 1976 and 1977 Sakernas, and April 1984, the midpoint between the 1982 Susenas and the 1985 Supas). The averages for men, women, and both sexes are based on LFPR's for each age group, weighted by 1980 population (line 2c).

3b The overall average adjustment (.15) adjusts for the difference between the overall trend for the four selected years (-0.12 percentage points per year) and the overall trend for 1976-86, as estimated in DSP research paper (.03 percentage points per year). The distribution of the adjustment by sex and age is in proportion to the shares on line 2b (that is, is equal to the product of line 2b and 0.15/16.29).

3c The averages for men, women, and both sexes are based on LFPR's for each age group, weighted by 1980 population (line 2c).

3d Taken from BPS regressions for each sex-age group. Totals for men, women, and both sexes were estimated using 1980 population weights (line 2c).

4 The projected trend differs from the historical trend (line 3c) only for 2 age-sex groups; estimates were based on judgment, discussed in memo.

5a-b LFPR in 2000 is based on 1986 Sakernas (line 1h) plus the trend (line 4a or 4c, respectively) times 14 years. Totals for men, women, and both sexes are based on 2000 population weights (line 2e).

5c The averages for men, women, and both sexes are based on the projected LFPR's for each age group, weighted by 1985 population (line 2d).

5d Taken from BPS projections for each sex-age group. Totals for men, women, and both sexes were estimated using 2000 population weights (line 2e).

Table 2. -- Labor Force Participation Rates and Changes in Those Rates for Sumatra, Java, and the Other Islands

	1976-77 average				1982-85 average				Change from 1976-77 to 1982-85			
	Sumatra	Java	O.Isles	All	Sumatra	Java	O.Isles	All	Sumatra	Java	O.Isles	All
Men												
10-14	9.14	17.18	16.67	15.55	9.20	12.09	13.24	11.76	0.06	-5.09	-3.43	-3.80
15-19	52.23	69.74	54.67	57.98	40.67	46.96	45.42	45.47	-11.57	-13.78	-9.26	-12.51
20-24	86.80	87.18	84.60	86.61	80.31	82.17	80.98	81.59	-6.49	-4.99	-3.62	-5.02
25-34	97.77	97.61	97.46	97.61	96.68	96.26	96.05	96.30	-1.09	-1.36	-1.41	-1.32
35-44	99.02	98.50	98.20	98.55	98.06	98.02	97.46	97.92	-0.96	-0.48	-0.74	-0.62
45-54	96.49	95.09	94.00	95.15	96.28	95.80	94.49	95.64	-0.21	0.71	0.49	0.49
55-64	86.26	83.75	82.43	83.98	83.95	82.77	82.14	82.88	2.32	-0.98	-0.29	-1.10
65+	64.61	58.60	55.87	59.23	56.54	57.47	56.71	57.15	-8.07	-1.12	0.84	-2.08
Women												
10-14	6.13	10.39	9.90	9.49	6.12	8.87	9.49	8.46	-0.01	-1.53	-0.41	-1.03
15-19	25.18	36.25	34.19	33.75	27.74	33.40	31.99	32.05	2.56	-2.86	-2.20	-1.70
20-24	20.44	36.93	38.91	36.83	40.99	40.97	43.69	41.48	6.55	4.04	4.77	4.66
25-34	41.69	42.41	40.06	41.83	45.68	44.85	47.36	45.48	4.00	2.44	7.29	3.65
35-44	50.72	50.04	42.85	48.82	56.47	48.36	51.76	50.55	5.75	-1.68	8.90	1.73
45-54	50.05	50.56	39.26	48.34	57.39	57.25	51.15	56.13	7.35	6.69	11.89	7.79
55-64	39.89	47.81	27.85	42.54	48.25	43.58	38.00	43.42	8.36	-4.23	10.15	0.87
65+	23.47	22.53	19.37	22.12	21.52	22.52	19.28	21.72	-1.95	-0.01	-0.10	-0.40

Notes. -- The 1976-77 averages are based on data from the 1976 and 1977 Sakernas. The 1982-85 averages are based on data from the 1982 Susenas and the 1985 Supas.

Table 1. -- Some Features of the Five BPS Wage Surveys

	Household Survey	Farmer Terms of Trade	Estates Survey	Survei Upah Buruh	Survei Industri
Abbreviation		SNTP (Survei Nilai Tukar Petani)		SUB	SI
Coverage of economic sectors	All households	Well-to-do farmers, estates	State-owned estates	Large and medium manufacturing, mining, land transportation, hotels	Large and medium manufacturing
Type of workers covered	All buruh	Hoeing, planting weeding workers	Production workers	Production workers	All buruh
Number of workers covered	18 million	about 2-3 million	500,000	about 2 million	1.7 million
Respondents	64,000 households	875 farmers, 177 estates	820 estates	3600 establishments	13000 establishments
Sampling technique	2-stage probability sample	Judgmental, with clustering	Complete census	Stratified sampling	Complete census
Number of regions separately identified	27 provinces	14 provinces	10 regions grouping all provinces	26 provinces	26 provinces
Number of inoustry groups separately identified	5 or 10	1	9	About 35	119
Number of occupations separately identified	Varies	3	3	About 200	2 - production & nonproduction
Wage concepts	Average wage	Average wage Wage index	Wage bill Average wage Wage index	Average wage Wage distribution	Wage bill
Frequency of collection	Irregular	Every month	Every 6 months	Every 3 months	Every year
Frequency of publication	Irregular	Every month	Every 12 months	Every 12 months	Every year
Reporting lag	15-24 months	3 months	11-17 months	11-24 months	15-18 months

Note. -- The reporting lag is the time that elapses from the reference period for which the data are collected to the time that they are published. Buruh means wage workers.

Table 2. -- Illustrative Example of Average Wage Measures Using Current-year and Base-year Weights

	Period	
	I	II
DATA		
Occupation 1		
Average wage	5000	5000
Number of workers	100	200
Occupation 2		
Average wage	1000	1000
Number of workers	100	100
AVERAGE WAGE, ALL OCCUPATIONS		
Current-year weights		
Average wage	3000	3667
Index of average wage	100.0	122.2
Base-year weights		
Average wage	3000	3000
Index of average wage	100.0	100.0

Table 3. -- BPS Measures of Money Wages, 1976-87

	Wages in rupiah unless otherwise indicated												Covered workers, 1986 (thousands)		
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	Total	Urban	Rural
HOUSEHOLD DATA (monthly wage)															
Agriculture	6433		7567				18695				29632		3531	319	3212
Manufacturing	10969		15504				36722				59063		3105	1470	1635
Trade	16766		18268				43819				64923		789	546	243
Services	18307		24420				55304				75023		7283	3562	3721
Others (1986 basis)	20659		24172				52791				79260		2832	1377	1455
Total															
Current weights	12363		15046				38792				63285		17540	7274	10266
1986 weights	14928		19132				43722				63290				
ESTABLISHMENT DATA (wage)															
Manufacturing															
SI monthly employ cost	17467	22063	24863	30671	38588	47218	58750	68473	75141	85229	93706		1679		
Same, 1985 weights	19215	24268	25973	31652	39855	47571	59288	71392	76413	85229	93639				
SUB daily wage						1205	1511	1791	2084	2386	2356		800		
Hotels daily (SUB)						1555	1844	2037	2195	2336	2591				
Estates daily	336	386	428	534	812	998	1164	1318	1461	1624	1748		500		
Agriculture daily (SNTP)															
East Java	160	176	190	219	284	367	447	582	691	761	812	889			
West Java	240	263	280	313	368	423	474	582	657	736	823	933			
Central Java	136	156	172	197	237	299	344	408	472	538	592	670			
ADDENDUM															
PCE per capita (Rp. per month)			8992	11329	14544	17987	20678	23880	26857	29086	30898				
Annual PCE (tril. rp.)			15127	19516	25595	32294	37924	44739	51399	56858	61682				
Population (mil.)			140.2	143.6	146.7	149.6	152.8	156.1	159.5	162.9	166.4				
PCE deflator (1983=100.0)			50.67	60.07	71.02	81.35	89.93	100	109.6	118.35	124.26				
CPI (1977-78=100.0)	92.3	102.5	110.8	132.4	156.3	175.5	192.1	214.7	237.2	248.4	262.9				

Notes. -- SI is Survei Industri; SUB is Survei Upah Buruh; SNTP is Survei Nilai Tukar Petani; PCE is personal consumption expenditures; CPI is Consumer Price Index. For explanation of household data, see appendix G; for manufacturing establishments, see appendix A; for SUB, see appendix B; for SI, see appendix D and E; for estate wages, see appendix D and E; for SNTP, see appendix F.

Table 4. -- Indexes of BPS Measures of Money Wages, 1976-87

	Index (1982 = 100.00)												Ratio: 1986 to 1976
	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
HOUSEHOLD DATA (monthly wage)													
Agriculture	34.4		40.5				100.0				158.5		4.61
Manufacturing	29.9		42.2				100.0				160.8		5.38
Trade	38.3		41.7				100.0				148.2		3.87
Services	33.1		44.2				100.0				135.7		4.10
Others (1986 basis)	39.1		45.8				100.0				150.1		3.84
Total													
Current weights	31.9		38.8				100.0				163.1		5.12
1986 weights	34.1		43.8				100.0				144.8		4.24
ESTABLISHMENT DATA (wage)													
Manufacturing													
SI monthly employ cost	29.7	37.6	42.3	52.2	65.7	80.4	100.0	116.5	127.9	145.1	159.5		5.36
Same, 1985 weights	32.4	40.9	43.8	53.4	67.2	80.2	100.0	120.4	128.9	143.8	157.9		4.87
SUB daily						79.8	100.0	118.5	137.9	157.9	155.9		
Hotels daily (SUB)						84.3	100.0	110.4	119.0	126.7	140.5		
Estates daily	28.9	33.2	36.8	45.8	69.7	85.7	100.0	113.2	125.5	139.5	150.1		
Agriculture daily (SNTP)													
East Java	35.8	39.3	42.5	49.1	63.6	82.3	100.0	130.3	154.8	170.4	181.9	199.1	5.08
West Java	50.7	55.4	59.0	66.0	77.6	89.2	100.0	122.8	138.6	155.1	173.5	196.7	3.42
Central Java	39.6	45.3	50.2	57.4	69.1	86.9	100.0	118.8	137.2	156.6	172.4	195.0	4.35
ADDENDUM													
PCE per capita per month			43.5	54.8	70.3	87.0	100.0	115.5	129.9	140.7	149.4		
PCE deflator			56.3	66.8	79.0	90.5	100.0	111.2	121.9	131.6	138.2		
CPI	48.0	53.4	57.7	68.9	81.4	91.4	100.0	111.8	123.5	129.3	136.9		2.85

Notes. -- SI is Survei Industri; SUB is Survei Upah Buruh; SNTP is Survei Nilai Tukar Petani; PCE is personal consumption expenditures; CPI is Consumer Price index. For explanation of household data, see appendix G; for manufacturing establishments, see appendix A; for SUB, see appendix B; for SI, see appendix C; for estate wages, see appendix D and E; for SNTP, see appendix F.

Table 11. -- Average Daily Wage of Production Workers by Industry Group, SUB, 1981-86

INDUSTRY	1981				1982				1983				1984				1985				1986			
	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV
DAILY WAGE IN RUPIAH																								
31. Food & beverages	954	1054	1138	1181	1267	1366	1442	1484	1715	1725	1858	1964	2034	2091	2219	2369	2427	2594	2702	2738	2152	2274	2353	2393
32. Textiles	906	1018	1106	1164	1223	1309	1385	1431	1465	1507	1542	1576	1633	1728	1781	1824	1884	1921	1962	2003	1693	1744	1794	1845
33. Wood & wood prod.													2347	2387	2443	2490	2581	2631	2673	2703	2492	2535	2578	2621
39. Other industry													1343	1416	1513	1521	1616	1664	1666	1693	2845	2863	2972	3069
33 and 39	1349	1444	1525	1579	1722	1834	1887	1932	2021	2066	2134	2158	2295	2337	2396	2440	2532	2582	2622	2652	2519	2561	2608	2654
34. Paper & paper prod.	1181	1300	1425	1487	1550	1620	1670	1717	1735	1766	1804	1837	1910	1978	2068	2119	2175	2224	2281	2303	2711	2805	2858	2918
35. Chemicals	1132	1245	1338	1374	1502	1566	1601	1656	1701	1773	1844	1878	2017	2101	2163	2245	2333	2393	2441	2484	2684	2778	2845	2921
36. Stone & clay products	802	888	943	979	1148	1230	1252	1328	1385	1430	1483	1507	1572	1623	1675	1717	1800	1837	1880	1889	2703	2775	2798	2824
37. Basic industry													2178	2242	2331	2458	2608	2738	2765	2832	3180	3264	3318	3387
38. Metal fabrication													2371	2459	2516	2571	2656	2706	2757	2805	3055	3122	3167	3204
37 and 38	1500	1611	1732	1787	1896	1947	1994	2026	2084	2177	2207	2247	2358	2444	2503	2563	2653	2708	2758	2807	3064	3132	3177	3216
All industry	1068	1177	1263	1313	1405	1489	1552	1597	1707	1749	1824	1882	1966	2040	2121	2207	2278	2365	2431	2469	2261	2333	2389	2439
Percent change from prev. qtr.		10.2	7.3	4.0	7.0	6.0	4.2	2.9	6.9	2.5	4.3	3.2	4.5	3.8	4.0	4.1	3.2	3.8	2.8	1.6	-8.4	3.2	2.4	2.1
DAILY WAGE IN 1977-78 RUPIAH																								
31. Food & beverages	558	606	640	660	669	719	752	755	828	811	853	892	873	879	928	991	1005	1042	1077	1090	837	876	905	872
32. Textiles	530	585	622	651	646	689	722	728	707	708	708	716	701	726	745	763	780	771	782	797	658	672	690	672
33. Wood & wood prod.													1008	1003	1021	1041	1069	1057	1066	1076	969	977	991	955
39. Other industry													577	595	633	636	669	668	664	674	1106	1103	1143	1118
33 and 39	789	830	858	883	910	966	984	982	975	971	980	980	985	982	1002	1021	1048	1037	1045	1056	980	987	1003	967
34. Paper & paper prod.	691	747	802	831	819	853	871	873	837	830	828	834	820	831	865	886	901	893	909	917	1054	1081	1099	1063
35. Chemicals	662	716	753	768	793	825	835	842	821	833	847	853	866	883	904	939	966	961	973	989	1044	1070	1094	1065
36. Stone & clay products	469	510	531	547	606	648	653	675	668	672	681	684	675	682	700	718	745	738	750	752	1051	1069	1076	1029
37. Basic industry													935	942	974	1028	1080	1100	1102	1127	1236	1257	1276	1234
38. Metal fabrication													1018	1033	1052	1075	1100	1087	1099	1117	1188	1203	1218	1168
37 and 38	878	926	974	999	1002	1025	1040	1030	1006	1023	1013	1020	1012	1027	1047	1072	1098	1088	1099	1117	1191	1206	1222	1172
All industry	625	676	711	734	742	784	810	812	824	822	837	855	844	857	887	923	943	950	969	983	879	899	918	889
Percent change from prev. qtr.		8.3	5.0	3.3	1.1	5.7	3.2	0.3	1.4	-0.2	1.9	2.1	-1.2	1.5	3.4	4.1	2.2	0.7	2.1	1.4	-10.6	2.2	2.2	-3.2
CPI (1977-78 = 100)	170.9	174.0	177.7	178.9	189.3	189.9	191.7	196.7	207.2	212.8	217.8	220.2	232.9	238.0	239.2	239.1	241.5	249.0	250.8	251.2	257.2	259.6	260.1	274.4

Table 12. -- SUB and SI: Ratios of Wages for 1985 and 1986 to Wages for 1981, by Industry Group

	SUB ratios		SI ratio	Employment
	Nov. 1985 to Feb. 1981	Feb. 1986 to Feb. 1981	1986 to 1981	1985
31 Food and beverages	2.87	2.26	1.97	515633
32 Textiles	2.21	1.87	1.82	385619
34 Paper & paper products	1.95	2.30	2.19	62129
35 Chemicals	2.19	2.37	1.91	244518
36 Stone and clay	2.36	3.37	1.64	79761
TOTAL	2.31	2.09	1.97	1672162

Note. -- SUB data are from table 11. SI data are from table 10.

Table 13. -- Average Daily Wage for Selected Occupation and Industries in Jakarta, SUB, 1981-86

INDUSTRY AND OCCUPATION	1981				1982				1983				1984				1985				1986			
	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV	FEB	MAY	AUG	NOV
FOOD MATERIAL INDUSTRY																								
a. Bread & biscuit maker	920	1021	1035	1091	1113	1120	1132	1203	1211	1211	1222	1225	1300	1356	1456	1456	1496	1497	1510	1626	2638	2638	2638	2769
b. Candy processor	803	862	1298	1345	1447	1504	1507	1523	1533	1546	1546	1546	1701	1770	1832	1832	1853	1855	1878	1902	2279	2279	2286	2319
c. Oil frying operator	1522	1604	2183	2229	2294	2386	2402	2442	2449	2463	2477	2477	2507	2672	2833	2848	2895	2910	2940	2948	3032	3090	3090	3124
d. Noddles maker	844	940	940	940	1014	1151	1210	1220	1227	1232	1239	1241	1262	1478	1491	1502	2169	2291	2329	2479	3014	3014	3077	3101
e. Pressed packaging machine operator	639	703	729	763	777	836	856	860	889	889	890	890	1008	1020	1113	1113	1269	1275	1305	1432				
f. Label fixer ‡	683	690	690	690	808	808	808	808					1050	1050	1050	1050	1079	1079	1079	1079	2110	2113	2126	2134
g. Packer ‡	750	764	805	910	1016	1028	1031	1035	1040	1040	1043	1045	1088	1132	1149	1149	1149	1212	1218	1305	2110	2113	2126	2134
TEXTILE MILL																								
a. Operator of fiber comb machine	851	1005	1020	1021	1111	1111	1169	1280	1309	1495	1495	1504	1520	1520	1520	1522	1581	1581	1581	1581				
b. Operator of yarn spinner machine	1601	1701	1703	1703	1753	1951	1995	2040	2045	2046	2078	2100	2117	2493	2504	2603	2655	2655	2670	1849	2159	2170	2441	2503
c. Weaver	1690	1825	1840	1840	1844	1918	1948	1985	2003	2013	2041	2132	2345	2368	2379	2394	2399	2401	2404	2406	2504	2218	2218	2225
d. Bleacher and dyer	1465	1552	1879	2125	2146	2223	2294	2315	2334	2346	2365	2374	2508	2636	2658	2706	2752	2757	2762	2789	2719	2719	2719	2719
READY-MADE GARMENT INDUSTRY																								
a. Tailor	926	985	1000	1001	1157	1168	1198	1263	1296	1304	1304	1315	1367	1453	1453	1550	1567	1638	1662	1625	2473	2492	2567	2567
b. Pattern maker	1011	1108	1109	1111	1275	1276	1296	1370	1375	1375	1387	1387	1457	1475	1486	1490	1490	1490	1494	1496				
c. Cutter of cloths	1025	1159	1171	1194	1229	1272	1273	1318	1359	1359	1437	1458	1552	1694	1704	1704	1747	1747	1754	1762	3096	3396	3617	3689
d. Packer	1014	1092	1098	1100	1100	1561	1580	1724	1790	1806	1849	1897	2055	2118	2174	2219	2232	2241	2252	2259				
PRINTING INDUSTRY																								
a. Photo printer	1487	2334	2668	2794	2874	3048	3071	3078	3078	3110	3127	3180	3345	3426	3624	3652	3732	3738	3748	3752	3944	3946	3971	3989
b. Letter arranger	1404	1513	1685	1768	1773	1806	1851	1873	1902	1919	1928	1945	2060	2131	2168	2207	2339	2391	2581	2586	3800	3815	3840	3877
c. Printing machine operator	1533	1731	1840	1872	1983	2008	2100	2111	2112	2117	2128	2172	2326	2348	2385	2398	2435	2444	2519	2537	3300	3577	3589	3633
d. Grapher of negative films	1791	2437	2517	2604	2604	2707	2799	2800	2892	2903	2906	2961	3085	3117	3301	3495	3739	3798	3843	3843				
e. Bookbinders	1300	1374	1621	1796	1796	1850	1922	1934	1946	1949	1954	1962	2205	2290	2394	2466	2506	2522	2550	2552	2963	2967	3048	3102
f. Other printing workers	1363	1363	1422	1471	1483	1532	1546	1595	1590	1604	1635	1680	1821	1895	1970	1970	2001	2026	2074	2096				
g. Pressed packaging machine operator	732	852	929	993	1011	1121	1125	1203	1204	1240	1254	1276	1279	1279	1279	1279	1282	1310	1310	1310				
h. Packer	895	1078	1138	1181	1186	1191	1302	1365	1374	1381	1400	1415	1679	1751	1829	1832	1881	1929	1929	2020	2124	2157	2247	2274
METAL PRODUCTS																								
a. Metal shaper	1336	1631	1673	1691	1726	1775	1844	1846	1850	1858	1892	1922	2053	2119	2134	2176	2186	2234	2268	2352	3245	3288	3329	3425
b. Wire puller	1846	1886	1901	1902	2103	2266	2296	2298	2307	2337	2337	2337	2425	2545	2645	2645	2652	2652	2653	2653	2979	2980	2980	2980
c. Metal cutter operator	1888	1970	2336	2404	2497	2508	2545	2559	2561	2587	2596	2608	2964	3231	3300	3300	3498	3568	3589	3637	3469	3532	3667	3729
d. Electric metal welder operator	1839	1927	2293	2297	3113	3117	3119	3121	3126	3131	3136	3179	3179	3179	3179	3179	3249	3296	3319	3383	3958	3960	3976	3976
ELECTRIC MACHINERY PRODUCTS																								
a. Painter	2037	2725	3151	3578	3624	3626	3626	3626	3631	3635	3635	3635	3636	3769	3874	3912	4068	4068	4112	4112				
b. Electronic assembler	2041	2083	2093	2094	2178	2237	2262	2269	2379	2379	2379	2382	2404	2404	2404	2404	2622	2849	2974	2974	3201	3201	3205	3205
c. Metal molder	1795	1989	2100	2188	2253	2291	2291	2291	2291	2295	2295	2295	2610	2859	3124	3124	3361	3582	3770	3770				
d. Drilling machine operator	1722	1792	1794	1798	1799	1886	1907	1938	1999	2037	2100	2100	2804	2804	2820	2837	2925	3030	3030	3030				

‡ 1986 data were combined into one occupation, "packer and label fixer".

Table 14. -- Average Daily Wage for Selected Establishments and Occupations in the Weaving Industry in West Java, SUB, 1985-86 (in rupiah per day)

Establishment identification number	Average wage 1985				Average wage 1986			
	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Weaving machine operator								
3273 2112 03	1914	1699	1696	1631	1407	1407	1407	1407
3273 2112 28/02	1900	2470	2305	2225	1392	2085	1982	2247
3206 2112 05/01	1728	1707	1820	2488	1577	1530	1393	1823
3206 2112 06	1708	1672	1662	1656	1501	1513	1513	1466
3273 2112 06/10	1848	1848	1848	2552	1969	1879	1791	2261
3206 2212 11/08	1700	1785	1776	1776	1685	1675	1695	1645
3206 2112 53/56	1466	1411	2011	1561	1291	2736	2154	1997
3206 2212 16/75	951	1350	1124	1793	1526	1625	1619	1628
Fiber machine operator								
3273 2112 03	1529	1452	1439	1428	1194	1194	1194	1194
3273 2112 11/9	1556	1523	1618	1592	1251	1380	1331	1279
3206 2112 16/75	1733	1733	1876	2373	1545	1886	1484	1249
3206 2112 53/56	1215	1072	1127	1218	1014	1298	1250	1371
Spinning machine operator								
3273 2112 03	1436	1487	1469	1470	1207	1207	1207	1207
3216 2112 05/01	2082	2048	2036	2143	1638	1742	1554	1960

Table 22. -- Estate Wages: Wage Index, Average Wage, and Ratio of 2 Measures, 1979-86

	79:I	79:II	80:I	80:II	81:I	81:II	82:I	82:II	83:I	83:II	84:I	84:II	85:I	85:II	86:I	86:II
WAGE INDEX (1975=100)																
Harvesting	181.5	218.9	284.5	319.8	351.1	375.3	419.0	432.5	463.3	495.0	520.7	537.2	572.2	598.1	615.4	637.5
Men	175.3	210.9	272.2	317.7	346.6	370.9	417.4	437.3	472.7	505.6	531.0	545.0	579.1	606.5	622.3	643.9
Women	205.6	250.5	322.8	348.1	388.3	413.9	452.9	449.9	470.1	500.7	529.0	553.6	593.3	617.2	639.6	664.9
Sorting	211.2	252.5	328.4	361.5	412.5	444.4	494.2	502.6	539.7	569.9	629.7	648.6	695.8	719.9	743.4	765.0
Men	213.4	247.4	338.1	377.8	412.6	469.9	521.1	532.3	575.3	614.9	686.6	704.4	762.1	786.4	804.9	821.7
Women	195.3	244.0	297.1	343.2	374.2	407.9	455.1	463.6	490.7	526.1	557.7	577.1	612.8	636.2	663.9	689.6
Processing	150.3	188.4	233.4	308.0	342.5	380.8	399.2	427.5	457.7	505.5	527.6	546.8	581.5	622.1	653.9	676.6
Men	147.8	185.3	229.1	300.1	332.7	374.4	389.9	419.4	450.2	498.8	520.8	539.5	571.7	614.1	645.8	669.3
Women	152.2	212.6	267.1	353.7	385.1	410.1	451.6	468.3	491.5	529.5	552.3	573.8	627.2	649.5	680.6	696.1
All jobs	175.8	211.5	275.1	318.2	350.4	378.3	417.2	433.1	463.9	498.7	524.8	541.9	577.2	605.6	625.8	647.9
Men	169.7	196.1	263.5	314.7	344.5	373.6	413.3	434.9	469.4	505.9	532.0	547.1	581.5	611.9	631.3	653.1
Women	200.6	229.5	321.9	349.9	389.3	419.4	456.1	455.9	477.2	509.1	537.4	561.5	602.1	626.0	649.8	674.5
AVERAGE DAILY WAGE (Rp)																
Harvesting	496.9	599.1	778.6	880.1	968.6	1033.9	1153.1	1190.6	1274.9	1362.9	1434.0	1478.9	1577.8	1649.8	1697.2	1758.5
Men	514.5	618.3	797.9	936.2	1021.3	1093.0	1230.0	1288.5	1392.7	1489.6	1564.4	1605.7	1706.6	1787.0	1833.8	1897.2
Women	449.2	564.9	726.2	768.8	864.2	916.9	1001.0	996.6	1041.6	1112.1	1175.7	1227.9	1322.9	1378.1	1426.8	1483.9
Sorting	471.3	564.8	697.7	758.4	820.3	938.3	1030.4	1047.4	1122.4	1202.9	1308.8	1351.5	1461.3	1512.9	1563.4	1606.7
Men	567.0	664.4	826.1	907.2	965.3	1140.5	1236.5	1253.9	1354.3	1457.3	1612.9	1662.2	1809.8	1871.0	1920.2	1960.4
Women	354.4	442.7	537.3	608.5	673.6	733.8	822.1	838.6	886.5	945.7	1001.5	1037.5	1109.1	1151.0	1202.8	1249.3
Processing	431.1	540.3	669.3	883.0	976.7	1092.8	1144.9	1226.0	1312.4	1449.0	1512.4	1567.3	1666.9	1783.4	1874.5	1939.6
Men	453.1	568.0	702.2	919.9	1019.8	1148.8	1195.5	1285.9	1380.2	1529.2	1596.4	1653.8	1752.3	1882.9	1980.0	2051.9
Women	334.4	417.7	524.2	694.1	756.4	806.2	886.6	919.6	965.9	1038.8	1082.7	1125.4	1230.4	1275.0	1335.0	1365.9
All jobs	482.2	585.2	751.7	871.5	958.9	1036.8	1142.5	1185.9	1269.8	1365.7	1438.1	1484.6	1584.4	1662.5	1717.7	1778.3
Men	503.6	609.5	778.4	931.2	1017.9	1107.4	1223.1	1286.0	1387.9	1496.1	1573.9	1618.9	1721.9	1811.8	1869.3	1933.3
Women	422.8	517.6	677.3	743.4	832.3	885.7	969.9	971.3	1016.8	1086.1	1147.1	1197.6	1289.7	1342.4	1392.5	1446.0
RATIO OF AVG. WAGE TO WAGE INDEX																
Harvesting	2.74	2.74	2.74	2.75	2.76	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.76	2.76	2.76	2.76
Men	2.93	2.93	2.93	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95	2.95
Women	2.18	2.25	2.25	2.21	2.23	2.21	2.21	2.22	2.22	2.22	2.22	2.22	2.23	2.23	2.23	2.23
Sorting	2.23	2.24	2.12	2.10	1.99	2.11	2.08	2.08	2.08	2.11	2.08	2.08	2.10	2.10	2.10	2.10
Men	2.66	2.69	2.44	2.40	2.34	2.43	2.37	2.36	2.35	2.37	2.35	2.36	2.37	2.38	2.39	2.39
Women	1.81	1.81	1.81	1.77	1.80	1.80	1.81	1.81	1.81	1.80	1.80	1.80	1.81	1.81	1.81	1.81
Processing	2.87	2.87	2.87	2.87	2.85	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87	2.87
Men	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
Women	2.20	1.96	1.96	1.96	1.96	1.97	1.96	1.96	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.96
All jobs	2.74	2.77	2.73	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.75	2.74	2.74
Men	2.97	3.11	2.95	2.96	2.95	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
Women	2.11	2.26	2.10	2.12	2.14	2.11	2.13	2.13	2.13	2.13	2.13	2.13	2.14	2.14	2.14	2.14

April
Male (col. 20)
Female (col. 21)
May
Male (col. 22)
Female (col. 23)
June
Male (col. 24)
Female (col. 25)

Notes: 1. If listed laborers are also working in working groups in their spare time, then the number of laborers must be written down in the note block in page 7 of the questionnaire.
2. Not reported in block A and B.

. Extent of land cultivated and production by type of crop.
Type of crop (the rows for this table are types of crops).
Extent of land cultivated (in 0,000 ha) last situation.
Young plant
Productive plant
Old/damaged plant
Total
Production (during January to June to be filled in 100 kilograms (Kwt) or in kilograms (Kg)).

. Other expenditures (other than wages/salary) of the estate/factory intended for workers' welfare during January to June (2 columns).
Type of expenditure (the rows for this column are the following).
1. Allowance for health (hospital, doctor, medicine), new born child, etc.
2. Allowance for accidents/death.
3. Allowance for celebrations.
4. Allowance for recreation, sport, etc.
5. Allowance for education/training of employees (also children of employees).
6. .....
7. .....
8. .....
(Rows 6, 7, 8 can be used for other expenditures not mentioned in rows 1, 2, 3, 4, 5).
Amount (in rupiah).

Table 1. -- Some Features of the Five BPS Wage Surveys

	Household Survey	Farmer Terms of Trade	Estates Survey	Survei Upah Buruh	Survei Industri
Abbreviation		SNTP (Survei Nilai Tukar Petani)		SUB	SI
Coverage of economic sectors	All households	Well-to-do farmers, estates	State-owned estates	Large and medium manufacturing, mining, land transportation, hotels	Large and medium manufacturing
Type of workers covered	All buruh	Hoeing, planting weeding workers	Production workers	Production workers	All buruh
Number of workers covered	18 million	about 2-3 million	500,000	about 2 million	1.7 million
Respondents	64,000 households	875 farmers, 177 estates	820 estates	3600 establishments	13000 establishments
Sampling technique	2-stage probability sample	Judgmental, with clustering	Complete census	Stratified sampling	Complete census
Number of regions separately identified	27 provinces	14 provinces	10 regions grouping all provinces	26 provinces	26 provinces
Number of industry groups separately identified	5 or 10	1	9	About 35	119
Number of occupations separately identified	Varies	3	3	About 200	2 - production & nonproduction
Wage concepts	Average wage	Average wage Wage index	Wage bill Average wage Wage index	Average wage Wage distribution	wage bill
Frequency of collection	Irregular	Every month	Every 6 months	Every 3 months	Every year
Frequency of publication	Irregular	Every month	Every 12 months	Every 12 months	Every year
Reporting lag	15-24 months	3 months	11-17 months	11-24 months	15-18 months

Note. -- The reporting lag is the time that elapses from the reference period for which the data are collected to the time that they are published. Buruh means wage workers.