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**INDONESIA'S CRISIS AND
THE AGRICULTURAL SECTOR**

Peter Warr

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**Linkages Between Indonesia's Agricultural Production, Trade and the Environment
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between

CASER (Bogor) • CIES (Adelaide) • CSIS (Jakarta) • RSPAS (ANU, Canberra)

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**CASER/CSIS/CIES/ANU
joint research project on**



Policy analysis of linkages between Indonesia's agricultural production, trade and environment

Rapid economic growth in Indonesia has been accompanied by significant structural changes, including for its agricultural sector and its unique natural environment. Recently questions have been raised about the impact of Indonesia's agricultural, industrial, trade and environmental policies on sustainable rural development. The nature of interactions between the economic activities of different sectors and the environment are such that an intersectoral, system-wide perspective is essential for assessing them. An international perspective also is needed to assess the impact on Indonesia of major shocks abroad, such as the implementation of the Uruguay Round agreements, APEC initiatives, or reforms in former centrally planned economies. There is increasing pressure on supporters of liberal trade to demonstrate that trade reforms at home or abroad affecting countries such as Indonesia will not add to global environmental problems (e.g., deforestation, reduced biodiversity). Again, this requires system-wide quantitative models of the economy and ecology, because typically there are both positive and negative effects at work, so the sign of the net effects ultimately has to be determined empirically.

To begin to address these issues, the Australian Centre for International Agricultural Research (ACIAR) has generously provided funds for a collaborative 3-year project (to mid-1999) involving the University of Adelaide's Centre for International Economic Studies (CIES) as the lead institution, Bogor's Centre for Agro-Socioeconomic Research (CASER) which is affiliated with the Ministry of Agriculture, Jakarta's independent Centre for Strategic and International Studies (CSIS), and the Economics Division of the Research School of Pacific and Asian Studies (RSPAS) at the Australian National University in Canberra. Being based on Indonesia with its rich diversity of environmental resources (and on which there are relatively good data) and its rapid economic growth, the project could also serve as a prototype for similar studies of other developing countries in Southeast Asia and elsewhere.

The key objective of the project is to assess the production, consumption, trade, income distributional, regional, environmental, and welfare effects of structural and policy changes at home and abroad particularly as they will or could affect Indonesia's agricultural sector over the next 5-10 years. Among other things, the analysis will focus both on the effects of economic changes on the environment, and on the impacts on Indonesia's agricultural production and trade of resource and environmental policy changes. The implications of regional and multilateral trade liberalization initiatives and Indonesia's ongoing unilateral trade reforms will be analysed, along with other potential domestic policy changes and significant external shocks such as the entry of China and Taiwan into the World Trade Organization. The analysis will draw on and adapt computable general equilibrium (CGE) models such as the national INDOGEM Model (built as part of an earlier ACIAR project) and the global GTAP Model.

The project is being undertaken in close collaboration with the Indonesian Ministry of Agriculture and ministries involved in trade, planning, and the environment. A Research Advisory Committee has been established to encourage close collaboration of representatives from those and other ministries.

ACIAR INDONESIA RESEARCH PROJECT

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THE AGRICULTURAL SECTOR**

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SUMMARY

Indonesia's currency crisis of 1997 was triggered by the expectation of a large devaluation. This expectation resulted from a loss of confidence in the capacity of the central bank, the Bank of Indonesia, to maintain its fixed exchange rate regime. Thailand's earlier currency crisis, forcing its exchange rate float of 2 July 1997 had contributed to that loss of confidence, but Indonesia's own macroeconomic circumstances in the period prior to the Thai crisis also played a significant role. Heavy capital inflows from abroad had fueled the economic boom which preceded the crisis. But these same inflows also caused Indonesia to become more vulnerable to a financial crisis. The reasons included the build-up of volatile short-term capital, the depreciation of the real exchange rate and the increased exposure of the domestic banking system due to overseas borrowing by their major customers.

In 1996 Indonesia's GDP growth rate was 8 %, but this rate declined in 1997 to 4.6%. The effect of the crisis was most severe in 1998 when GDP declined by 15 %. Roughly zero growth (-0.6%) is projected for 1999. Over the last several months of 1998 inflation was running at an annualised rate of 70%, but the annualised rate for January 1999 was just under 50%. Food prices were rising more rapidly than non-food prices, giving rise to concerns about food security. Nominal wages were not rising at nearly the same rate as consumer prices and real wages were thus falling drastically. The exchange rate had declined from Rp 2,500 per US\$ prior to the crisis to Rp. 8,500 per US\$ in January 1999.

The crisis had economic consequences which are still unfolding. Large numbers of rich and poor people were adversely affected. The effects on the poor operated through a contraction in the demand for labour and reduced transfers from wealthier family members, on the one hand, and through increases in commodity prices, especially for internationally traded goods, on the other. These problems have apparently been more severe in Indonesia than anywhere else. Not all poor people in Indonesia were adversely affected. Some smallholder agricultural producers whose products are exported benefited substantially from the depreciation of the national currency, the rupiah.

Indonesia's Crisis and the Agricultural Sector*

I. Introduction

Indonesia's currency crisis of 1997 was triggered by the expectation of a large devaluation. This expectation resulted from a loss of confidence in the capacity of the central bank, the Bank of Indonesia, to maintain its fixed exchange rate regime. Thailand's earlier currency crisis, forcing its exchange rate float of 2 July 1997 had contributed to that loss of confidence, but Indonesia's own macroeconomic circumstances in the period prior to the Thai crisis also played a significant role. Heavy capital inflows from abroad had fueled the economic boom which preceded the crisis. But these same inflows also caused Indonesia to become more vulnerable to a financial crisis. The reasons included the build-up of volatile short-term capital, the depreciation of the real exchange rate and the increased exposure of the domestic banking system due to overseas borrowing by their major customers.¹

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The crisis had economic consequences which are still unfolding. Large numbers of rich and poor people were adversely affected. The effects on the poor operated through a contraction in the demand for labour and reduced transfers from wealthier family members, on the one hand, and through increases in commodity prices, especially for internationally traded goods, on the other. These problems have

* This paper is preliminary and is intended for discussion purposes only. Please do not quote. The research was funded by the Visiting Scholar program under the Quality of Undergraduate Education (QUE) project at the Department of Economics and Development Studies, Faculty of Economics, University of Indonesia, January to February, 1999. The able research assistance of Muliadi Wijaya is gratefully acknowledged. All defects are the responsibility of the author.

¹A significant difference between Indonesia's banking crisis and Thailand's was that while Thai banks borrowed large sums abroad following the establishment of the Bangkok International Banking Facility in 1993, Indonesian banks were restricted by government regulations from borrowing large sums abroad. The effect was that their Indonesian corporate customers borrowed abroad instead and in some cases deposited the funds with Indonesian banks which re-lent them. As a result, the banks did not suffer from a direct foreign exchange rate risk, as in Thailand, but from a credit risk which derived from the exchange rate risk borne by their corporate customers.

apparently been more severe in Indonesia than anywhere else. Not all poor people in Indonesia were adversely affected. Some smallholder agricultural producers whose products are exported benefited substantially from the depreciation of the national currency, the rupiah.

II. Social Effects of the Crisis

The principal existing tools of social monitoring in Indonesia include the national expenditure survey (SUSENAS) and the village potential survey (PODES). Processing and publishing these data usually take extended periods. Many policy decisions could benefit from up to date information about the matters dealt with in these surveys, but these decisions often cannot wait for the data to become available. Consequently, these decisions must be made in the absence of results from these standard tools of social monitoring. The economic crisis presents a dramatic example of this type of problem. Immediate action is needed and the decisions required cannot wait for SUSENAS and related large-scale survey results to become available. Alternative sources of information must be found, but data on the social impact of the crisis are not easy to obtain. It is necessary to make use of preliminary and incomplete data in order to project the overall social impact of the crisis.

One response to the crisis has been particularly useful in this regard. This has been the establishment of the Social Monitoring and Early Response Unit (SMERU), supported and directed by the World Bank, with assistance from a number of donor agencies, including AusAID, ASEM and USAID. In mid-February 1998 two newsletters had been produced (November 1998 and December 1998) and a number of special reports on particular topics of relevance for the impact of the crisis. SMERU serves primarily as a clearing house for information on the crisis impact in Indonesia, especially field-based information. Its activities include establishing cooperative relationships with the various government agencies, international organisations and NGOs already involved in monitoring the impact of the crisis.

A recent report on the social impact of the crisis (Sumarto, *et al.*), conducted for the Ford Foundation and the World Bank, draws upon a qualitative survey of each of the 4025 sub-districts (*kecamatan*) of Indonesia.² In each sub-district, three expert respondents were interviewed so as to obtain a quick but comprehensive indication of crisis impacts. The purpose was to give a first quick

²Sudarno Sumarto, Anna Wetterberg and Lant Pritchett, 'The Social Impact of the Crisis in Indonesia: Results from a Nationwide *Kecamatan* Survey', World Bank, Jakarta, 1998.

indication of overall severity of impacts and to identify the parts of Indonesia where the most severe impacts were to be found, so as to target crisis responses most effectively. The study did not have a method for distinguishing between crisis and *el niño* effects.

Three other social surveys also shed light on the impact of the crisis. These are the Indonesia Family Life Surveys (IFLS), the "100 villages" survey conducted by UNICEF and a recent survey of schools conducted by the World Bank and the Ministry of Education. Unlike the Sumarto, *et al.* *kecamatan* survey, none of these three studies have national coverage but they do shed valuable additional light on the crisis impact. The following account draws on all four of these studies.

The *kecamatan* survey results reported by Sumarto, *et al.* imply four major sets of conclusions about the social impact of Indonesia's crisis.

First, urban areas have, in general, been affected more severely than rural areas. This reflects the fact that the crisis was initially an urban event. Effects on rural areas have been a secondary consequence of these urban effects. On the other hand, the *el niño* effects have been more severe in rural areas and urban effects have been their secondary consequence. It appears from this that crisis effects have been more severe.

Second, the effects have varied widely across the country. Both urban and rural areas in Java have been badly affected. This result presumably reflects the high degree of integration between rural and urban areas in Java, as reflected in high rates of labour mobility. On other islands, the effects vary widely. Minimal impacts were reported in large areas of Sumatra, Sulawesi and Maluku. Other areas experienced more severe effects, including East Timor, Nusa Tenggara Timur (NTT) and Nusa Tenggara Barat (NTB), but these areas were also badly affected by drought and, as noted above, the study was not able to distinguish these two effects. Another area, East Kalimantan, was also negatively affected, but in this case the effect of the crisis was combined with the effect of fires, and again it was not possible to separate the effect of the fires from that of the crisis. Urban East Kalimantan was identified as the most severely affected part of the country.

The third implication of the study is that areas which were badly affected by the crisis/drought/fires were uncorrelated with initial levels of poverty. Areas badly affected include both areas initially better-off and poorer areas, while areas not badly affected included initially poorer and better off areas. This fact has the important consequence that targetting crisis impact and targetting poverty are not the same. The two do not necessarily coincide. Relief agencies wishing to target their assistance need to

distinguish between these two objectives if their aid is to be well directed.

Fourth, although urban areas were in general more severely affected, those urban areas that were most severely affected tended to be those where rural areas were also more severely affected, and vice versa. Again this presumably reflects the greater degree of integration between urban and rural areas within a province than among urban areas of different provinces or among rural areas of different provinces.

The IFLS survey results show a dramatic differential effect on real incomes between rural and urban areas. According to its results, mean per capita household expenditures in rural areas increased over the year ending in late 1998, whereas those in urban areas fell by 40 %. The UNICEF "100 villages" survey reported that ownership of durables in rural areas increased over the same year, ending in late 1998, reinforcing the overall conclusion that urban areas have, in general, been more severely hit.

The IFLS survey results also show that primary school enrollment increased in both urban and rural areas, and for both males and females. Dropout rates have apparently remained the same or even declined slightly. This result is confirmed by the recent World Bank / Ministry of Education survey of schools, which suggested that overall enrollments at primary levels had not deviated significantly from their past trends. In some locations the results are different from this, however. In urban Central Java, urban Maluku and Jakarta, significant declines in enrollment occurred at the junior secondary level, whereas in rural South Sulawesi junior secondary enrollments increased by 8%.

Effects on household expenditures

The IFLS survey results include useful data on household expenditures, covering seven provinces. These data indicate that real (1997 prices) per capita household expenditure declined significantly (Table 1). The mean decline was 24%. Compared with this national average, the decline in real expenditure was larger in urban areas and smaller in rural areas. In urban areas the mean decline was 34 per cent while the median decline was 5%. In rural areas the mean expenditures fell by 13% and the median fell by only 1.6%.

Two features of these results require discussion. First, the fact that the mean decline was so much larger than the median, in both urban and rural areas, reveals that the decline in expenditure was proportionately much larger among high income households than among low income households. Second, the declines in median expenditures are apparently much lower among low income households (below the median income), than declines in real wages, as will be clear from the discussion of wages

below. Median expenditures declined by only 5% in urban areas and less than 2% in rural areas. Wages clearly fell by more than this.

Three kinds of coping mechanisms were responsible for this outcome. First, low income households increased their labour participation rates, especially among women and young people, in an effort to maintain incomes. (This is discussed further below under 'employment effects'). Nevertheless, in spite of this real incomes still fell much more than real expenditures. This means that a combination of asset sales and dissaving was occurring. The second coping mechanism was that families ran down their ownership of assets. Asset sales were captured by the *kecamatan* survey. These data focus on a coping mechanism in dealing with the crisis impact and provide a useful indication of the impact of the crisis on different social groups. The data confirm that overall urban impacts were worse, and that Java and areas of Eastern Indonesia were the most severely affected.

Third, households ran down their savings. Given the decline in average incomes, there was limited scope for asset sales to be successful in maintaining expenditures for large numbers of people. The income to purchase them was not present in the system and attempts by large numbers of people to maintain expenditures in this way merely depress asset prices. Dissaving must therefore have been significant. This household strategy can be successful in maintaining expenditures, but only in the short run.

Effects on poverty incidence

In Indonesia, as in most Asian countries, poverty is especially concentrated in rural areas. The effects of the crisis have been more severe in urban than in rural areas. Nevertheless, a high proportion of poor people, including many agricultural producers, seem to have been harmed, especially those who are net purchasers of food. Food prices have thus been a special concern in the policy response to the crisis. The disruption to weather patterns known as *el niño* produced a reduction in rainfall in 1997 and 1998 with effects which were concentrated in rural areas. This was especially a problem in rural areas of Eastern Indonesia, where poverty is particularly severe.

The effects that the economic crisis and *el niño* weather pattern have had on poverty incidence in Indonesia have been highly controversial. Early estimates have suggested extremely large increases in the numbers of Indonesians with incomes falling below the poverty line. Some government officials suggested that the number in poverty had increased by 80 million. These reports were repeated on several occasions, most recently on 13 December 1998 when Social Services Minister Yustika

Baharsyah stated that the number of Indonesians in poverty had risen from 20 million to 100 million. These statements meant that poverty incidence had risen from 10% to 50% of the population.³ If these calculations were correct, they would imply that the crisis had pushed Indonesia back to the level of poverty incidence that existed in the mid to late 1970s (See Table 2).

Closer inspection of the basis for these estimates shows that they rest on a highly questionable calculation. First, the cost of living in current rupiah terms is assumed to have increased in the same proportion as the amount of the currency depreciation. Second, incomes in current rupiah terms are assumed to have been unaffected by the currency depreciation. This calculation implies that real incomes have fallen drastically and it is hardly surprising that it suggests that 80 million people, roughly 40% of the Indonesian population, would be thrown into poverty. But neither of these underlying assumptions is valid.

The cost of living includes the costs of internationally traded goods whose domestic rupiah prices will indeed rise, roughly with the amount of the currency depreciation, but it also includes domestically produced goods and services whose domestic prices have not risen proportionately with the depreciation. Thus the calculation overstates the increase in the cost of living. Similarly, it cannot be assumed that incomes have been unaffected by the crisis; some incomes have indeed remained static in rupiah terms, and some will even have fallen, when unemployment is taken into account, but many Indonesians have benefited from increased incomes as a result of the currency depreciation, including many with incomes which were previously close to or just below the poverty line.

Past reductions of poverty incidence in Indonesia have been large and these reductions have been highly correlated with the rate of economic growth. The data on poverty incidence is shown in Table 2 and Figure 1. Past data on poverty incidence has been based on the SUSENAS survey, but post-crisis SUSENAS results are not yet available. If the past statistical relationship between economic growth and changes in poverty incidence is projected to the post crisis period, using the growth rates of real GDP for 1997 (4.6%) and 1998 (-15%), the results are an estimated increase in poverty incidence of 3.6% of the population, corresponding to around 7 million Indonesian people. The results are shown in Table 3, along with alternative possible hypothetical outcomes for 1999. These results could be no more than a crude approximation at best, but if they are approximately correct, they imply serious increases in poverty incidence in Indonesia, but much lower increases than earlier fears suggested. Even

³Official data indicate poverty incidence to have been 13.5% in 1996, which implies that the number in poverty prior to the crisis was slightly higher than the 10 million reported above.

if approximately valid at an aggregate level, these estimates still take no account of changes in poverty incidence at a regional level, among different social groups, and so forth.

A problem in using the limited survey evidence available to project changes in poverty incidence post-crisis is that the impact of the crisis has been uncorrelated with initial levels of poverty incidence. The *kecamatan* survey found that the correlation between the crisis impact indices extracted from the survey and poverty incidence at the same *kecamatan* levels, as indicated in earlier SUSENAS surveys and averaged from 1993 to 1996, revealed that the correlation was statistically insignificant despite the 3,900 observations.

The summary table below, extracted from Sumarto *et al.*, summarises the relationship between crisis impact and initial level of poverty. Some areas that were not initially poor have been hit so hard by the crisis that they may now be poorer than other areas previously identified as poor. Areas of West Java may be examples of this phenomenon. Nevertheless, the greater Jakarta area (Kabotabek), which was well off before the crisis and has been badly affected by the crisis has almost certainly not reached the level of absolute poverty incidence of traditionally poor areas.

Examples of differential impact of the crisis:

	Relatively well-off pre-crisis	Relatively poor pre-crisis
Hard-hit	Jabotabek, West Java	NTT, East Kalimantan
Not hard-hit	Central Sulawesi, Bali	Maluku, Jambi

Source : *Kecamatan Rapid Poverty Assessment*, Table 3.

Effects on employment

Early reports on the impact of the crisis suggested large increases in unemployment. For example, in early October 1998 the Manpower Minister stated that 20% of the Indonesian workforce were unemployed and that this would rise to 22% of the work force (20 million people) by the end of the year.⁴ Subsequent data on actual unemployment do not support these statements and reveal that they did not reflect the true labour market impact of the crisis.⁵

⁴*Indonesian Observer*, October 9, 1998.

⁵The Manpower Ministry's employment projections, cited above, were based on a simple employment elasticity model which projects changes in employment from changes in output. But this model really indicates changes in the demand for labour. What happens to employment and wages as a result of this contraction in demand depends on the supply of labour. The Manpower Ministry was implicitly assuming that the supply of labour is infinitely elastic at a given real

Actual unemployment appears to have risen by only small amounts. On the other hand, *employment* has actually risen. The reason is that labour force participation has increased. The increase in the labour force has come largely from women and children. However, the most significant labour market impact of the crisis has not been on levels of unemployment or on labour force participation, but on *real wages*, which have fallen very significantly. These facts reflect the flexibility of Indonesia's labour markets. A collapse in the demand for labour has been expressed primarily in a decline in its price, rather than a decline in the level of employment. Behind these aggregate data, there has been a large sectoral reallocation of employment away from sectors of the economy which have contracted, including construction and services, and towards sectors which have expanded, notably agriculture.

A later report from the ILO subsequently estimated that unemployment had increased from around 5% pre-crisis to around 7% in mid-1998.⁶ It further suggested that the problem of open unemployment would be confined largely to educated people in urban areas. These results have been broadly supported by subsequent data. Preliminary data from the SUSENAS survey conducted in early 1998 indicated that total *employment* actually increased by 4.5 million compared with one year before. The rate of employment of the population aged 10 and above (labour force participation) increased from 56.3% in February 1997 to 57.4% in February 1998. This increase in labour force participation was most pronounced in urban areas (Table 4). Almost all the new jobs were in agriculture. The SUSENAS data also indicated that open unemployment increased from 5.1% in February 1997 to 6.4% one year later.

The 100 villages survey indicated that labour force participation for men had fallen slightly and that for women had risen. The more significant finding was a large increase in hours worked for those employed (Table 5). Average hours worked increased for both males and females but both the absolute increase in hours worked and the proportionate increase was significantly larger for females.

Finally, the IFLS survey provides an age dimension to these changes. It shows that participation increased considerably for younger ages (14 - 24). But for males aged 35 and above and for females aged 55 and above participation actually declined. What these data suggest is that young people (15 to 24) are forgoing further education to earn incomes lost through lay-offs of older family members. That is, the aggregate employment data mask a significant reallocation of employment from older to younger

wage, implying that changes in the demand for labour will be reflected solely in changes in employment and not in changes in real wages. The subsequent data show that this implicit assumption was incorrect.

⁶International Labour Office, 'Employment Challenges of the Indonesian Economic Crisis', Jakarta, 1998, p. 28.

people.

The SUSENAS data also provide information on employment by sector, which again reveal large changes in the composition of employment. Employment has shifted from urban to rural areas and from formal to informal sector jobs. Table 6 indicates that aggregate employment increased by 5.5%, but most of this was in agriculture, where it expanded by 6.8%, while employment in finance, industry, construction and transport all declined. Finally, Table 7 shows that employment in the 'employee' category fell while the 'self-employed' category expanded in both rural and urban areas while 'family' workers expanded in rural areas. These data confirm a significant movement of people from the formal to the informal sector.

Effects on wages

Data on real wages for Indonesia suggest substantial declines. The Central Bureau of Statistics (BPS) collects data on agricultural wages which indicate increases of nominal wages between December 1997 and August 1998 which are generally between 20 and 40 per cent. During this same period the national consumer price index increased by 81 per cent. There is scope for rural consumer prices to have increased less than national consumer prices, but unless the wage data are wildly inaccurate there is no doubt that real wages have fallen considerably. Table 8 summarises these data at a provincial level and Figures 2 and 3 show the wage data over a longer period, from 1996 to 1998, with Java shown in Figure 2 and selected outer provinces in Figure 3.

Combined with the data on household expenditures summarised above, these data indicate that rural families are responding to the crisis as follows. First, the crisis has reduced the demand for their labour and the response to falling wages has been both to increase participation in the workforce, especially among the young and to increase hours of work for those already working. Second, reduced incomes have occurred in spite of the above and families have maintained expenditures on essentials by selling assets and running down savings. This can work in the short run. If the crisis is not short-lived, this adjustment mechanism must break down and greater hardship will result.

Effects on children

Effects of the crisis on school enrollments has been a particular focus of concern. The *kecamatan* survey results indicate that dropout rates have in general been low, but that urban areas have in general been affected more severely than rural areas. Substantial increases in dropout rates did occur in some

rural areas, however. The interpretation of these results is probably that rural areas, which have much higher proportions of people close to the margin of poverty than urban areas, are more vulnerable to declines in income than urban areas. Thus a given proportional decline in incomes will cause a larger decline in enrollments in rural areas than urban areas. The form this reduction of enrollment takes is not reduction of primary school enrollments, however, but at secondary school level. Children at this age have greater economic value in the labour force and so the opportunity cost of their remaining in school is higher.

The IFLS survey results also show that primary school enrollment has increased in both urban and rural areas, and for both males and females (Tables 9 to 11). Dropout rates have apparently remained the same or even declined slightly. This result is confirmed by the recent World Bank / Ministry of Education survey of schools, which suggested that overall enrollments at primary levels had not deviated significantly from their past trends. In some locations the results are different from this, however. In urban Central Java, urban Maluku and Jakarta, significant declines in enrollment occurred at the junior secondary level, whereas in rural South Sulawesi junior secondary enrollments increased by 8%.

III. Impact on Agriculture

Agriculture cannot be described as a neglected sector of the Indonesian economy. Aggregate government spending as a proportion of the total budget and as a proportion of GDP are the highest in Southeast Asia (Table 12) and the rate of growth of yields has also been among the highest in Southeast Asia (Table 13).

The growth of crop , forestry, fisheries and livestock production over the period of the crisis are summarised in Figure 4. For comparison, the Figure also shows the growth of manufacturing production. During the boom period, crops production grew steadily, but more slowly than forestry, fisheries and especially manufacturing. The crisis and *el niño* weather phenomenon reduced growth rates of all these industries, but the growth rate of agricultural industries declined less than manufacturing. By 1998 output of crops was still increasing despite the crisis, whereas manufacturing was contracting severely. This draws attention to a function of the agricultural sector of Indonesia which requires emphasis. It provides a form of economic ballast during hard times. People can return to agriculture when other industries contract, and it is apparent from the discussion of employment,

above, that has occurred.

Figure 5 shows the composition of the change in crop production. Declines in rice production have been important, but contraction of cassava and sugar cane production are proportionately larger. Maize production, a staple in Eastern Indonesia, was not affected as much as other crops in 1998. The crisis and *el niño* effects are very difficult to separate from the data because they occurred at roughly the same time. In any case, attempting to separate them may not be an especially useful exercise. The social and economic effects of the two combined are what are present and this combined effect is what must now be understood for the purpose of formulating appropriate responses.

Effects on rice production

Discussion of the agricultural impact of both the economic crisis and the *el niño* weather disturbance have been dominated by their effects on rice production. Indonesia is a net importer of rice, but the government aspires to self-sufficiency in staple foods. Rice production declined in 1997.⁷ The crop for 1998 is officially estimated at 46.44 million tons.⁸ The government's original production target had been 52 million tons but World Bank estimates place actual production at between 49 and 50 million tons. This estimate is based on the assumption that the government's area harvested estimates were approximately correct, based on data that confirmed the government's expected rate of harvesting, but that yields would be approximately 0.5 tons per hectare lower, in the case of the main crop, than had been expected in the 52 million ton estimate.⁹ The government's yield projection was considered optimistic because of shortages of fertiliser supplies and the high cost of pesticides and unavailability in some important rice growing areas. The latter led to some greater than normal crop losses. In Figure 6, the two estimates of 46.44 and 49.5 million tons are labelled '1st estimate' and '2nd estimate', respectively.

Production of 49 to 50 million tons seems the most likely and this would roughly match production in 1995 and 1997 but fall below the 51.1 million tons produced in 1996. This volume of rice output will not fully meet domestic requirements, but the volume of imports needed in calendar 1999 should be less than 3 million tons, compared with 6 million tons in calendar 1998. The remaining problem of rice

⁷ References are to calendar years rather than crop years or financial years, 1 April to 31 March, as used in some BULOG data. Thus calendar year 1997 thus includes the first (main) crop harvest for calendar 1997, which, in Java, takes place from February to March, and the second crop harvest for calendar 1997, occurring between May and August.

⁸This forecast, and the other data shown, are taken from Remelan III, from the Central Bureau of Statistics (BPS).

⁹The Ministry of Agriculture had projected an average yield of 4.44 ton/ha., compared with 4.43 and 4.2 in 1996 and 1997, respectively.

production is availability of inputs of adequate quality. The problems of input marketing relate to both the cost of imports, given the rupiah devaluation and the financing of domestic production. Uncertainty about input pricing policy has also been a problem.

Prospects are excellent for the calendar year 1999 crop. Rains have been good and the Bureau of Meteorology (BMG) predicts adequate falls throughout the rainy season. The area planted exceeded the previous two years but input supplies have again been a problem and this will affect yields. The period leading up to the abandonment of the fertiliser subsidy in early December 1998 was one of great uncertainty among traders and the resulting lack of supplies disrupted fertiliser application at a critical stage of the growing season.

The combined impact of the economic crisis and *el niño* can be estimated in an approximate manner by projecting past trends. The meaning of this exercise is that we wish to estimate what rice production *would have been* in 1997 and 1998 if past trends had continued. We shall then compare this trend extrapolation with actual rice production in 1997 and 1998 to estimate the difference caused by the extraordinary events which occurred in 1997 and 1998 and which caused a departure from the trend. The data shown in Figure 7 are used as the basis for this exercise. Data for annual rice production from 1980 to 1996 were used to estimate a trend for aggregate production of unhusked rice using ordinary least squares regression.¹⁰ This trend was then extrapolated to 1997 and 1998.

The extrapolated values for 1997 and 1998 were 53.41 and 54.81 million tons, respectively. Actual production in 1997 was 49.38 million tons. The estimated shortfall was thus 4 million tons. As discussed above, production for 1998 remains uncertain but production of 46.5 million tons (shown as 1998a in Figure 7) would imply a reduction of output of 8.3 million tons. The more probable output of 49.5 million tons (shown as 1998b in Figure 7) implies a reduced output of 5.3 million tons, equivalent to about 10 % of what rice output would have been in the absence of the combined crisis / *el niño* effects.¹¹

Table 14 shows rice production in seven regions of Indonesia, 1996 to 1998. These data reveal a significant point. Declines in rice production were really significant only on Java. Some regions,

¹⁰ The estimated regression equation was $Y = 29.5258 (-13.66) + 1.4624t (20.42)$, where numbers in parentheses are t-statistics for the coefficient estimates which precede them. The R^2 coefficient for this regression was 0.9653. This equation provided a better fit to the data than a semi-logarithmic equation of the form $\ln Y = a + bt$, which implies a constant growth rate of output. The latter equation produces higher trend projections of output for 1997 and 1998, of 55.31 and 57.32 million tons, respectively.

¹¹ On February 12 1999 a revised official output estimate was released, at 48 million tons. This implies a shortfall of 6.8 million tons, equivalent to 12 % of projected output.

including North Sumatra and West Nusa Tenggara (NTB) actually experienced large increased in rice production in 1997 and 1998 compared with 1996. In East Nusa Tenggara (NT_) there was a small decline in 1998. These data reveal the difficulty of making statements about the national effects of the crisis on agriculture. Indonesian agriculture is highly diverse and the regional effects of the crisis have been highly diverse as well.

Fertiliser use

Until December 1998 fertiliser use in food crop production was heavily subsidised. Subsidised fertiliser was being diverted to non-food crops, which were not legally eligible for the subsidy, and some subsidised fertiliser was reportedly being exported to more lucrative destinations, again illegally. The result was that subsidised fertiliser became increasingly scarce as the crop season progressed and rice farmers experienced difficulty obtaining supplies. Through October and November there were increasing numbers of complaints from farmers that supplies were unavailable to them. It was by then apparent that the existing policy was unsustainable.

On December 2 the subsidy was abolished and official fertiliser prices roughly doubled. The government attempted to ensure that supplies were available by opening up imports to private traders. Traders were slow to respond, however, due to problems of financing and arranging domestic marketing channels. The government subsequently agreed to guarantee private letters of credit for fertiliser imports and also directed the state fertiliser company, PT Pusri to purchase imported fertiliser at the port itself and then to market it directly. These measures seem likely to address the problem of fertiliser supplies, but not in time for the forthcoming main crop harvest in February to March 1999.

Credit

To reduce the impact on farmers of the abolition of fertiliser subsidies, the government expanded the existing program of subsidising credit. The interest rate charged declined from 14% to 10.5% and beginning December 1998 the per hectare ceiling on loans was raised to Rp 2 million and the annual aggregate maximum value of subsidised loans was set at Rp 6.9 trillion. As of late December, Rp 0.9 trillion had been disbursed since the beginning of the planting season. This was well in excess of monthly disbursements for December occurring in previous years, but below the target volume. Applications for an additional Rp 1.1 trillion of loans were still pending. Because the main rice crop was already largely planted by late December and inputs requiring cash outlays had already occurred,

this expansion of further credit available was too late to affect the early 1999 main crop, with the possible exception of pesticides, which may be required late in the growing season.

Effects on farm prices

Figure 8 shows the movement, since 1996 of the price of rice in rural markets. The point revealed by the Figure is that rice prices on Java have increased proportionately more than prices elsewhere in Indonesia. On the other hand, it is possible that farm costs on Java have risen proportionately more than elsewhere. To obtain a better picture of the profitability of agricultural production it is necessary to look at both prices received by and prices paid by farmers. This is done in Figure 9 for Central Java.

The data indicate that the index of the ratio of prices received to prices paid by farmers declined during 1998 but recovered partially in the second half of the year. Nevertheless, these data suggest an overall small decline in agricultural profitability due to the crisis. When this analysis is repeated for four other provinces (South Kalimantan, North Sulawesi, West Nusa Tenggara (NTB), and North Sumatra), it reveals considerable variation. The South Kalimantan results are similar to Central Java. In North Sulawesi and North Sumatra there were small declines in the ratio of prices received to prices paid. In West Nusa Tenggara (NTB), profitability increased slightly, due to increased maize prices, but farm costs also increased significantly there, as elsewhere. Some observers have suggested that agriculture would boom as a result of increased profitability arising from the exchange rate depreciation. These data suggest otherwise. A large increase in agricultural profitability has not occurred.

Impact on Eastern Indonesia

The data summarised above indicate, first, that effects on rural development are in general considerably less than urban impacts. Second, these rural impacts are highly heterogeneous. Third, these rural impacts are not correlated, one way or the other, with pre-crisis levels of poverty incidence. Eastern Indonesia is an exception to this story. This region was affected by the *el niño* drought more than most of Indonesia. The crisis impact was additional to that. Since Eastern Indonesia was already the poorest region of the country, large effects of the crisis/*el niño* drought on Eastern Indonesia worsens an already serious problem of long term rural poverty.

IV. Impact on Food Policy

The staple food of Indonesia, rice, has been a special focus of government intervention for decades. The National Logistics Planning Agency, Bulog, has been charged with regulating food markets, especially rice, and has enjoyed a monopoly in rice imports. One objective of Bulog's interventions in the rice market has been to stabilise domestic rice prices relative to international prices and it has done this effectively (Timmer 1996). Another objective has been to ensure adequate supplies to consumers and this has been reflected in suppression of the average level of domestic prices below the average levels of international prices.¹² In the absence of Bulog's interventions, domestic rice prices would have been more variable and their average level would apparently have been somewhat higher.

Food policy

In the wake of the crisis, the large depreciation of the rupiah raised food prices to a degree that outstripped increases in money wages for those Indonesians fortunate enough to retain their jobs. The affordability of food for the poorest people thus became a special focus of policy concern and this was reflected in special measures intended to target additional food subsidies, especially for rice, to the poorest households. In these special market operations, rice is sold at prices equivalent to around 50 to 60 per cent of market prices, themselves significantly below international prices. As the depreciation of the rupiah continued, following the crisis, these subsidies grew in importance. The gap between international prices and domestic rice prices increased and the level of rice imports also increased substantially.

In addition to rice subsidies, the government has also provided large subsidises for fertilisers. Political forces have played a large role in determining the levels and composition of these subsidies, but in part, the fertiliser subsidies may be seen as an attempt to counteract the lower level of rice production which results from the production tax implicit in the suppression of average domestic rice prices below average levels of international prices. Beyond this, the government adheres to an objective of rice self-sufficiency and fertiliser subsidies have thus been considered to be justified well beyond the rates that would raise rice production to the level it might have taken under an non-interventionist policy. As with rice subsidies, the budgetary cost of fertiliser subsidies became much larger in real terms in the wake of the economic crisis.

¹²This description is controversial in that some observers have disputed that average rice prices have been significantly below international relates. Nevertheless, to the extent that it is true, it applies to prices averaged over many years. It does not apply in each individual year. There have been years in which rice prices have been above international prices and years of the opposite. See Timmer (1996) for a fuller discussion.

Under the special market operations (OPK) Bulog sells rice to low income families at Rp. 1,000 per kg., although there have been frequent claims that individual families are sometimes charged much more than this by local governments under the guise of transport or other costs. The rice concerned is usually third grade (25% broken). To calculate the approximate rate of subsidy implicit in that price, we may take the Bangkok price of US \$250 per ton for 25% broken rice, add US \$14 for transport cost and multiply by 1.2 for retail markups. At the current exchange rate of Rp. 8050 / US \$ this comes to approximately Rp. 2,550 per kg. According to this calculation the rate of subsidy is currently around 60 per cent. Hard data on the distribution of subsidised sales by expenditure levels of recipient households is not currently available.

Under the special market operations, Bulog sold around 350,000 tons of rice at these subsidised prices between July, when the program started, and the end of December. This is a small proportion, around 2%, of total rice consumption over this six month period. The monthly amounts of subsidised sales increased steadily over this period to just over 100,000 tons in December. At *cif* prices these sales were worth around US\$ 110 million and the subsidy was worth around US\$ 66 million. The quantity of rice a household could purchase at the subsidised price was initially limited to 10 kg. per month, subsequently increased to 20 kg.

A package of deregulation agreed with the World Bank and announced on 1 December 1998, includes the following features:

- (i) Liberalisation of the rice market in which prices are determined by market mechanisms and in which general importers are permitted to import rice.
- (ii) Special market operations for rice at subsidised prices are to be targeted to food insecure people, defined as those with incomes below the official poverty line.
- (iii) The rates of rice subsidies are to be reduced. Some reports have suggested that the new rates of subsidy will be no more than 20 per cent.
- (iv) All food subsidies for commodities other than rice are to be eliminated.
- (v) Fertiliser subsidies are to be eliminated and their prices are to be determined by market mechanisms.¹³

These provisions are due to be implemented at the commencement of the new financial year, beginning 1 April, 1999. Clearly, they are very substantial policy changes. Measures (i) and (iv)

¹³This provision applies to urea, SP-36 and Potassium Chloride.

apparently do not rule out the use of border interventions such as tariffs or import subsidies, but they do greatly reduce the scope of Bulog's role. According to the scheme, the rice subsidies are to remain, but at reduced rates.

Food security and rice stocks

Indonesia's rice stocks seem adequate, due to large imports during 1998. BULOG's stocks of rice at the beginning of 1998 stood at 1.4 million tons of husked rice (*beras*). By September BULOG had imported 4.42 million tons and during the same period 3.8 million tons had been released, implying an increase in BULOG's stocks to 2.1 million tons. This amount was 0.64 million tons less than the same period of 1997 but 1997 stocks were the highest of the 1990s. During 1997 BULOG considered it necessary to build up its stocks in light of the reduced production expected to result from the *el niño* weather pattern. The build-up of stocks in 1997 and 1998 has relied almost entirely on imports and in this respect differs markedly from the previous pattern of procurement over the preceding two decades, in which BULOG had acquired most of its rice by procurement from the domestic market.

The stock of 2.2 million tons in October 1998 plus the quantity released during the year (3.8 million tons), a total of 6 million tons, consisted of 1.4 million tons carry over from the previous year (24% of the total), 0.15 million tons purchased from the local market (2.5% of the total) and imports of 4.58 million tons of imports (77% of the total) In late 1998 BULOG announced its intention of importing a further 2.54 million tons before the end of 1998. Rice stocks seem more than adequate in view of the above, and their regional distribution also seems adequate. BULOG has the capacity, in any case, to move large quantities of rice within the country relatively quickly. The prospect of food shortages arising from lack of supplies accordingly seems remote. The possibility of shortages arising from lack of purchasing power on the part of particular social groups is far more likely and is a danger which is receiving careful monitoring.

The policy of relying on imports to increase stocks reduced the political pressure on the government that might have resulted if rice supplies were lacking. The imported rice was then sold at subsidised prices, implying a substantial revenue cost. This policy of procurement abroad and sale at a loss domestically clearly depressed domestic prices below what would otherwise have occurred, and that was their intended effect. This benefitted domestic consumers at the expense of domestic rice farmers, and acted to discourage expanded rice production.

Subsequent policy announcements appear to suggest a reversal of this policy stance. According to

announcements in December 1998, rice imports are to be subject to a tariff of 30%, BULOG's monopoly on rice imports is to be abolished and its access to foreign exchange at subsidised rates is to be removed. The change is significant, but the overall effect may not be as large as it appears. An important question is whether BULOG is to be subject to the tariff or not. If so, and BULOG is to be required to cover its costs, then so long as rice remains a net import the domestic price will move with the international price, but exceeding it by the 30% tariff margin. The stabilisation of domestic prices relative to international prices which has characterised BULOG's activities in the past, will then no longer be possible. The domestic price would move in tandem with the international price, adjusted by the exchange rate. Moreover, the overall effect of the policy would be to raise domestic prices above international prices, favouring domestic producers relative to consumers.

On the other hand, if BULOG is to be exempt from the tariff, the new policy will create a 30% margin within which BULOG can manipulate the domestic price. This is the margin between the *cif* price (at which BULOG could import and be exempt from the tariff) and the tariff inclusive price (at which private importers would enter the market). If exports are to remain prohibited, then suppression of the domestic price below the *cif* price would still remain possible. Exemption of BULOG from the tariff seems likely. Given the past policy of favouring the interests of domestic consumers over producers, and the drastic diminution of BULOG's role that would be implied if it had to compete on an equal footing with private traders, this seems the most probable policy outcome.

Assuming that the large crop expected for 1999 eventuates, BULOG could be faced with the opposite of a food security problem - a glut. Since BULOG stocks are already large a heavy crop in 1999 could leave BULOG unable to purchase and store sufficient rice from the domestic market to prevent declines in the price of domestically produced rice. If the price falls significantly below international prices, as seems possible, smuggling to neighbouring countries such as Malaysia may become significant.

V. Conclusions

Despite the large contraction of Indonesia's GDP in 1998, crop output did not decline. Output of crops was still increasing, whereas manufacturing were contracting severely. This draws attention to a function of the agricultural sector of Indonesia which requires emphasis. It provides a form of economic ballast during hard times. People can return to agriculture when other industries contract.

The fact that Indonesia still has a large and productive agricultural sector has thus mitigated the human suffering caused by the crisis. This is a contribution of agriculture to the development process that has not been properly recognised in the economic literature.

The evidence reviewed in this report has shown that Indonesia's crisis has been extremely serious, but that it has not been the catastrophe that many observers were earlier predicting. Absolute poverty has not increased by anything like the magnitudes that were being predicted only recently. Neither has unemployment. The crisis has changed the structure of poverty in Indonesia, but in many respects the poorest segments of the population after the crisis are the ones that were poorest before the crisis. Eastern Indonesia is still the poorest region. Even though urban areas were affected more severely by the crisis than rural areas, it remains true that poverty in Indonesia is overwhelmingly a rural phenomenon. Similarly, even though Java was more severely affected by the crisis than elsewhere, it remains better off than Eastern Indonesia in spite of the crisis.

The crisis can be expected to be temporary. The problem of long-term poverty will still be present when the crisis is over. Responding to the social emergency created by the crisis has rightly received great attention, but the long term goal of reducing poverty must not be forgotten. It should remain a principal focus of government policy and of international assistance to Indonesia. Crisis-response thinking should not be allowed to divert attention from the long term strategic priority of poverty reduction.

Agricultural production occupies the vast majority of Indonesia's poor people. They are poor because their productivity is low. For large numbers of these people to be lifted out of poverty, their productivity must be raised. Reducing rural poverty is central to reducing poverty at the national level and raising the productivity of agricultural labour is the key to reducing rural poverty.

**Table 1 Indonesia Household Per Capita Expenditures:
1997, 1998 and changes**

Real (1997) rupiah per month ('000)

	Mean 1997	Change in 1998		Percent Change	
		Mean	Median	Mean	Median
Urban	319	-108	-7	-33.9%	-5.0%
Rural	194	-26	-2	-13.4%	-1.6%
All respondents	246	-60	-2	-24.4%	-1.50%

Source : IFLS, Table 2.1.

**Table 2 Indonesia: Poverty incidence, 1970 to 1996
(per cent)**

	Aggregate poverty (P)	Rural poverty (P^R)	Urban poverty (P^U)
1970	57.2	58.5	50.7
1976	50.18	54.5	31.5
1978	48.5	54	25.7
1980	39.2	44.6	19.7
1984	33	39.4	12.8
1987	21.6	26.8	7.3
1990	19.3	23.3	10.6
1993	17.3	21.3	9
1996	13.49	18.98	6.47

Source: Based on SUSENAS data, various years, Central Bureau of Statistics (BPS), Jakarta.

Note: Aggregate poverty is the percentage of the total population whose incomes fall below a poverty line held constant over time in real terms; rural poverty is the percentage of the rural population whose incomes fall below a poverty line held constant over time in real terms, and so forth.

Table 3 Indonesia: Actual and Projected Poverty Incidence, 1995 to 1999

	1996	1997	1998	1999(1)	1999(2)	1999(3)
Growth rate of real GDP	8	4.7	-15	0	-5	-10
Aggregate poverty	13.49	<i>13.13</i>	<i>16.79</i>	<i>17.56</i>	<i>18.87</i>	<i>20.17</i>
Rural poverty	19	<i>18.80</i>	<i>22.08</i>	<i>22.81</i>	<i>23.85</i>	<i>24.89</i>
Urban poverty	6.5	<i>6.49</i>	<i>6.51</i>	<i>6.50</i>	<i>6.51</i>	<i>6.52</i>
Rural population share	55.9	<i>53.9</i>	<i>66.0</i>	<i>67.8</i>	<i>71.2</i>	<i>74.3</i>

Source: Based on Peter G. Warr, 'Growth, Crisis and Poverty Incidence in Southeast Asia', Paper presented to the American Committee on East Asian Economic Studies - Chulalongkorn University Conference, Bangkok, 16 - 18 December 1998.

Note: Actual data shown in regular type; projections in italics.

Units: Growth measures, per cent annual growth rate of real GDP.

Poverty measures, headcount measure of poverty incidence as per cent of population.

Rural population share: rural population as share of total population.

Table 4 Indonesia: Employment rates of population aged 10 and above

	1994	1997	1998
Total	57.6	56.3	57.4
Urban	50.4	50.5	52.2
Rural	61.5	59.4	60.2

Source : SUSENAS.

Table 5: Indonesia: Employment and unemployment by gender

	1997	1998	Change
Open unemployment			
Total	1.5	1.6	0.1
Employed			
Total	57.5	56.9	-0.7
Males	74.2	72.4	-1.8
Females	40.5	40.8	0.3
Work more than 35 hours			
Total	49.4	56.9	7.5
Males	58.8	64.5	5.8
Females	31.9	42.9	11.0

Source: 100 villages survey, various tables.

Table 6 Indonesia: Sectoral composition of the labor force, Feb. 1997 and Feb. 1998

Sector	1997		1998		Percentage Change	Change as percent of 1997 labour force
	Number (' 000)	Percent	Number (' 000)	Percent		
Agriculture	36711.7	44.5%	42279.1	48.6%	15.2%	6.8%
Mining	737.8	0.9%	805.1	0.9%	9.1%	0.1%
Industry	9418.4	11.4%	8191.2	9.4%	-13.0%	-1.5%
Electricity	348.6	0.4%	254.1	0.3%	-27.1%	-0.1%
Construction	3963.4	4.8%	3606.5	4.1%	-9.0%	-0.4%
Trade	14613.5	17.7%	15032.0	17.3%	2.9%	0.5%
Transport	3835.1	4.6%	3734.6	4.3%	-2.6%	-0.1%
Finance	696.0	0.8%	645.2	0.7%	-7.3%	-0.1%
Services	12153.7	14.7%	12449.9	14.3%	2.4%	0.4%
Total	82478.2	100.0%	86997.7	100.0%	5.5%	5.5%

Source : SUSENAS, Table 2.a.

Table 7: Distribution of the labor force by type of employment

	Urban		Growth as % of labor force	Rural		Growth as % of labor force
	Share of 1997 labor force	Percentage growth		Share of 1997 labor force	Percentage growth	
Self-employed	6.6%	25.5%	1.7%	13.3%	25.4%	3.4%
Self-employed with workers	5.3%	-13.1%	-0.7%	20.0%	4.6%	0.9%
Employer/Employee (18.8%	-4.9%	-0.9%	16.6%	-6.0%	-1.0%
Unpaid family workers	2.7%	-2.3%	-0.1%	16.7%	13.1%	2.2%
Total	33.4%	0.0%	0.0%	8.2%	8.2%	5.5%

Source: SUSENAS.

**Table 8 Indonesia: : Daily nominal wages in agricultural tasks
Dec. 1997 and Aug.1998**

	% change	Average of 3 agricultural tasks	
		Dec-97	Aug-98
West Sumatra	21.08%	3091	3742
West Java	21.25%	3517	4264
Central Java	21.36%	2370	2876
South Kalimantan	24.31%	4044	5028
Lampung	24.59%	2256	2811
South Sumatra	26.16%	2404	3033
DI Yogya	26.91%	1333	1691
North Sumatra	29.89%	3349	4350
South Sulawesi	29.93%	2597	3374
East Java	32.80%	3428	4553
NTB	35.23%	3004	4062
Bali	38.71%	3940	5465
DI Aceh	54.47%	3021	4666
North Sulawesi	61.11%	4703	7577

Source: BPS, various publications.

Table 9 Indonesia: Enrollment rates, primary (7-12) and secondary (13-15) school ages

Age group	Gender	1994	1997	1998	Changes (percentage points)	
					1997 to 1998	1994 to 1998
Aged 7-12	Males	88.8	88.8	92.1	3.2	3.3
	Females	90.4	90.8	93.3	2.5	2.9
Aged 13-15	Males	59.4	67.5	65.2	-2.3	5.8
	Females	58.4	70.6	65.2	-5.4	6.8

Source: 100 villages survey, Table 06.A and Table 06.B.

Table 10 Indonesia: Changes in enrollment rates by age group and gender

Age group	Gender	1997	1998	Changes (percentage points)
Aged 7-12	Males	94.9	93.8	-1.1
	Females	96.6	93.8	-2.8
Aged 13-19	Males	61.6	56.8	-4.8
	Females	59.4	55.7	-3.7

Source: IFLS, Table 5.1 and Table 5.2.

Table 11 Indonesia: Enrollment of children 13-19 years, rural and urban

	1997	1998	Change
Urban	66.9	61.9	-5.0
Rural	53.9	52.9	-1.1

Source: IFLS, Table 5.2.

Table 12 Southeast Asia: Government Expenditure on the Agricultural Sectors (Per cent of total expenditures and GDP)

	% Total Government Expenditure		% GDP	
	1985	1995	1985	1995
Indonesia	11.8	12.5	2.6	1.8
Malaysia	8.3	4.8	3.2	1.0
Philippines	6.4	6.9	0.7	1.1
Thailand	11.7	10.5	2.5	1.7

Sources: Government Finance Statistics Yearbook (Washington: International Monetary Fund), 1986, 1997; GDP data from International Financial Statistics, May 1998 (Washington: International Monetary Fund).

Table 13 Southeast Asia: Annual Growth of Per Capita Agricultural Output, 1974-84 and 1985-96

Country	Average annual grth rate of agricultural output		Paddy yields
	1974-84	1985-96	per Tons / ha. (average 1994-96)
Indonesia	2.2	1.6	4.4
Laos	4.2	-0.5	2.6
Malaysia	1.0	1.3	3.1
Myanmar	2.8	0.7	3.2
Philippines	0.7	0.6	2.8
Thailand	1.8	0.7	2.4
Vietnam	2.8	2.4	3.6

Source: FAO Production Yearbooks, 1985 (Vol. 39), 1996 (Vol. 50), Table 10.

Table 14 Indonesia: Provincial and National Rice Production (millions of tons)

	1996	1997	1998
North Sumatra	3.137	3.212	3.200
Central Java	8.360	8.329	8.225
West Nusa Tenggara	1.291	1.294	1.324
East Nusa Tenggara	0.465	0.463	0.347
East Timor	0.050	0.037	0.040
South Kalimantan	1.241	1.203	0.966
South Sulawesi	4.052	3.769	3.103
Indonesia	51.102	49.377	46.056

Source: Bulog, Jakarta.

Figure 1 Indonesia: Actual Poverty Incidence and Projections of Crisis Impact (per cent of total population)

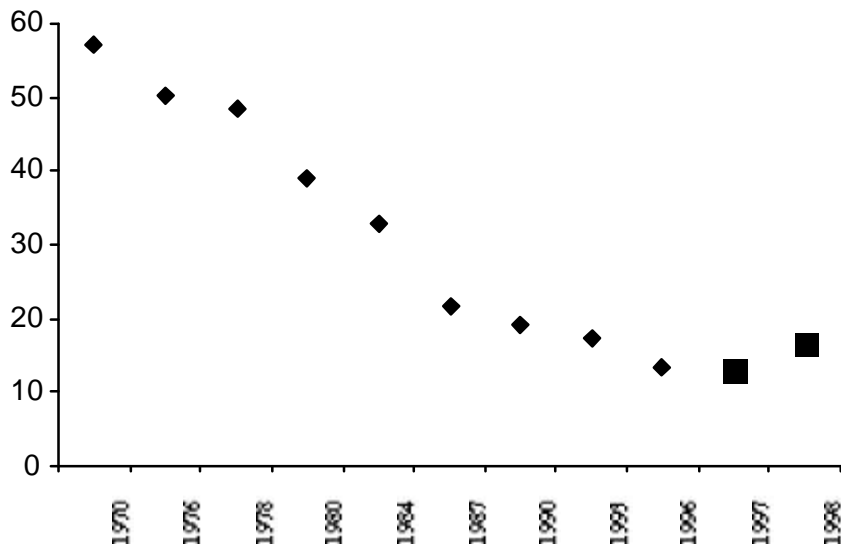
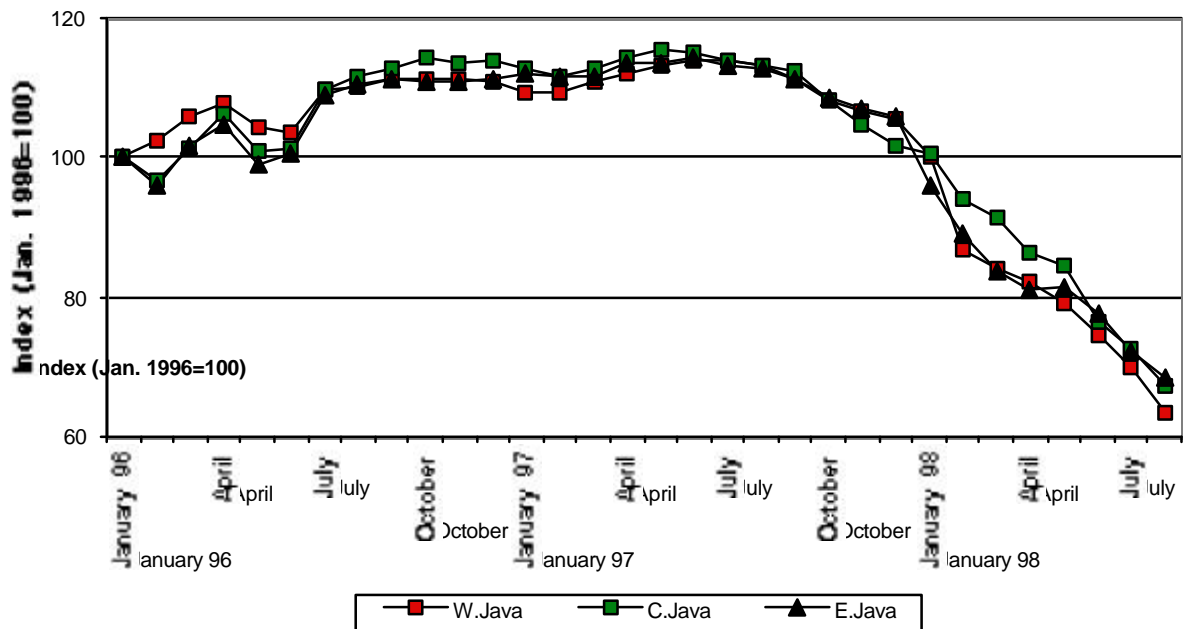
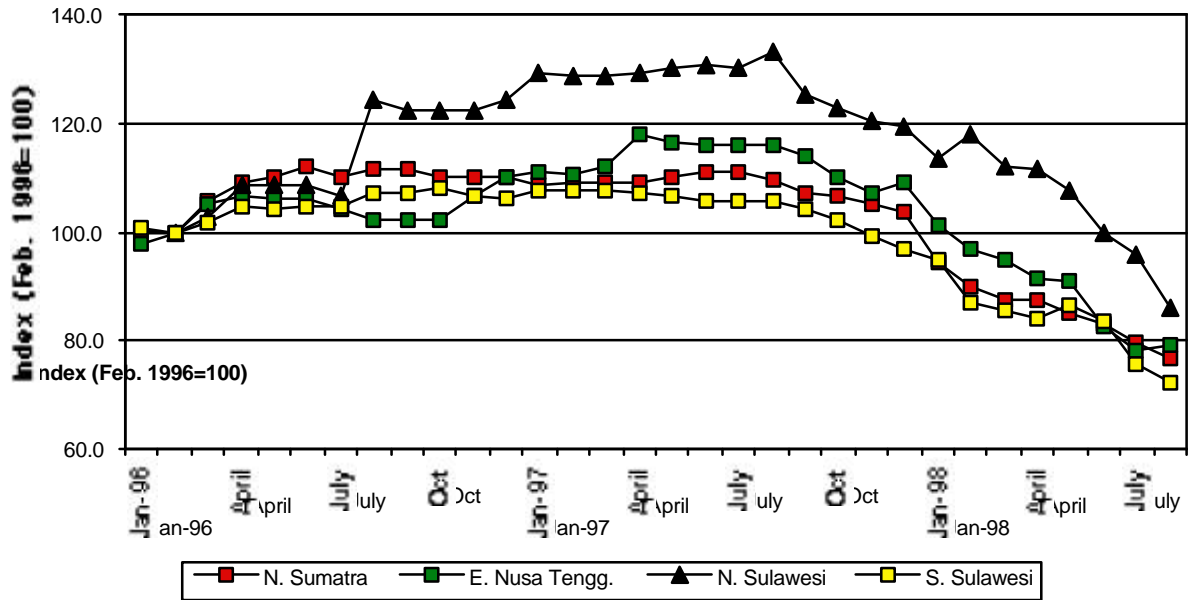


Figure 2 Indonesia: Real Agricultural Wages in Java Jan. 1996 to August 1998



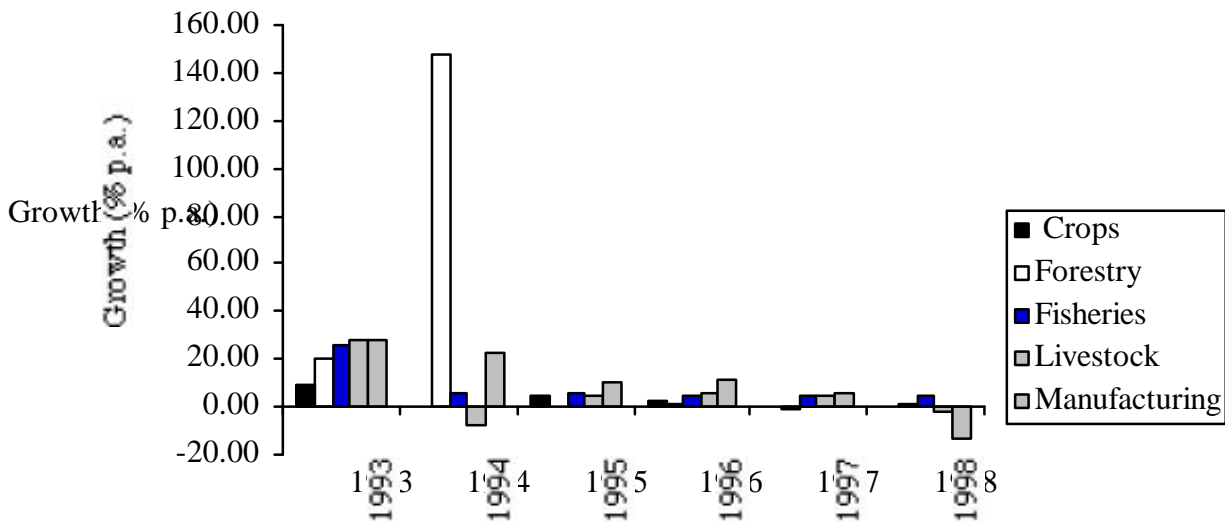
Source: Central Bureau of Statistics (BPS), Jakarta.

**Figure 3 Indonesia: Real Agricultural Wages in Outer Island Provinces
Jan. 1996 to August 1998**



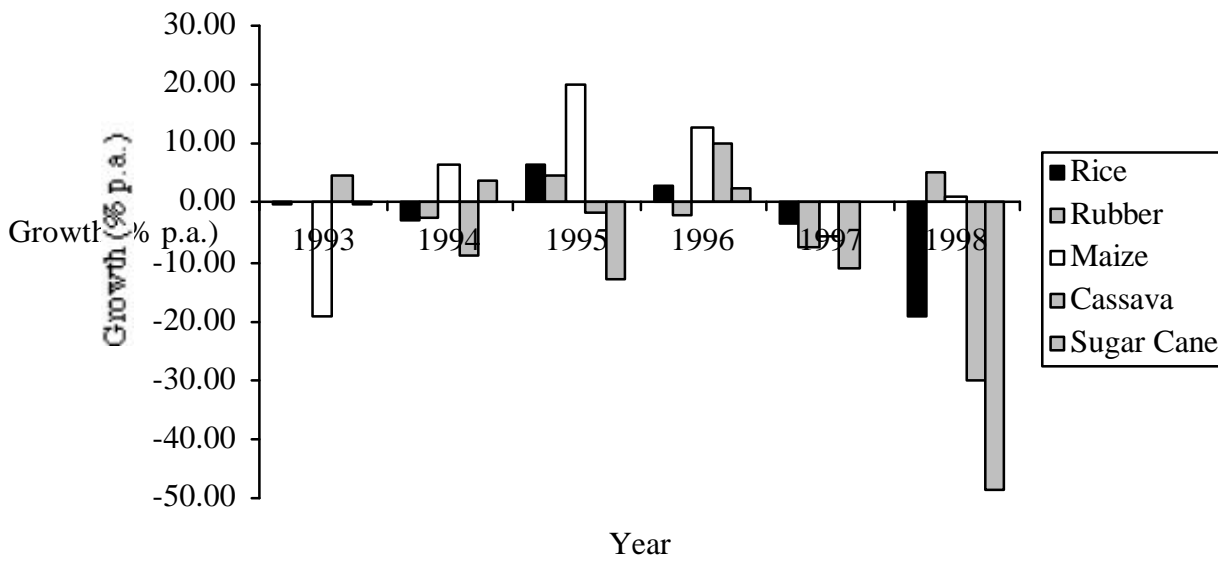
Source: Central Bureau of Statistics (BPS), Jakarta.

Figure 4 Indonesia: Growth of Agricultural and Manufacturing Production, 1993-1998



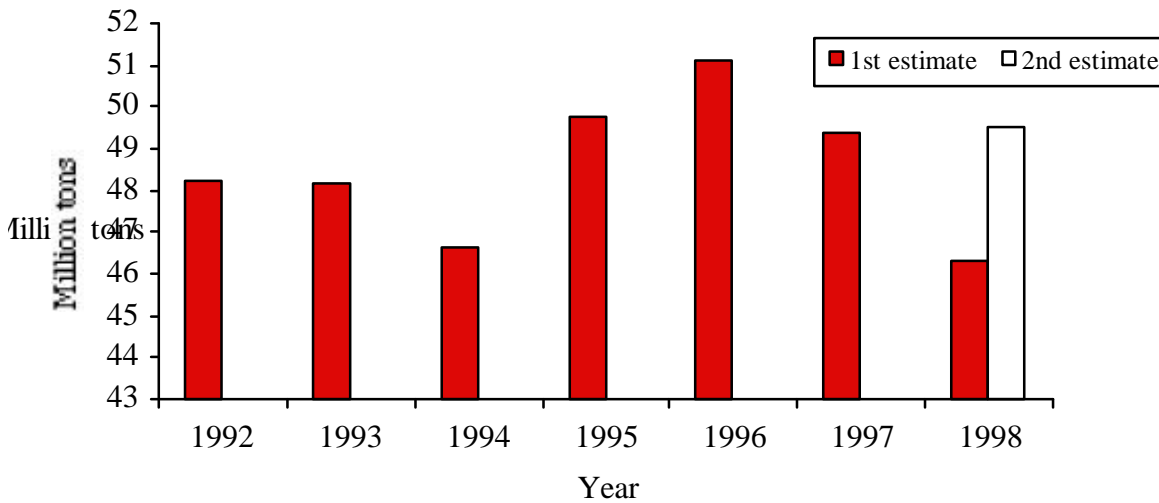
Source: Central Bureau of Statistics, *Indikator Ekonomi*, various issues.

Figure 5 Indonesia: Growth of Crop Production, 1993-1998



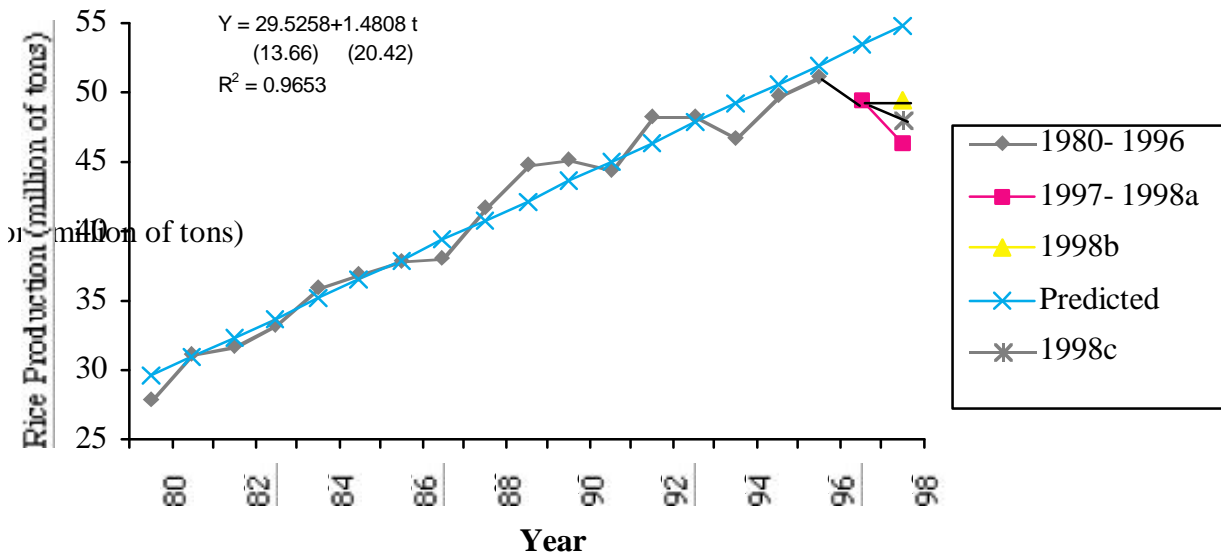
Source: Central Bureau of Statistics, *Indikator Ekonomi*, various issues.

Figure 6 Indonesia: Production of Rice, 1992-1998



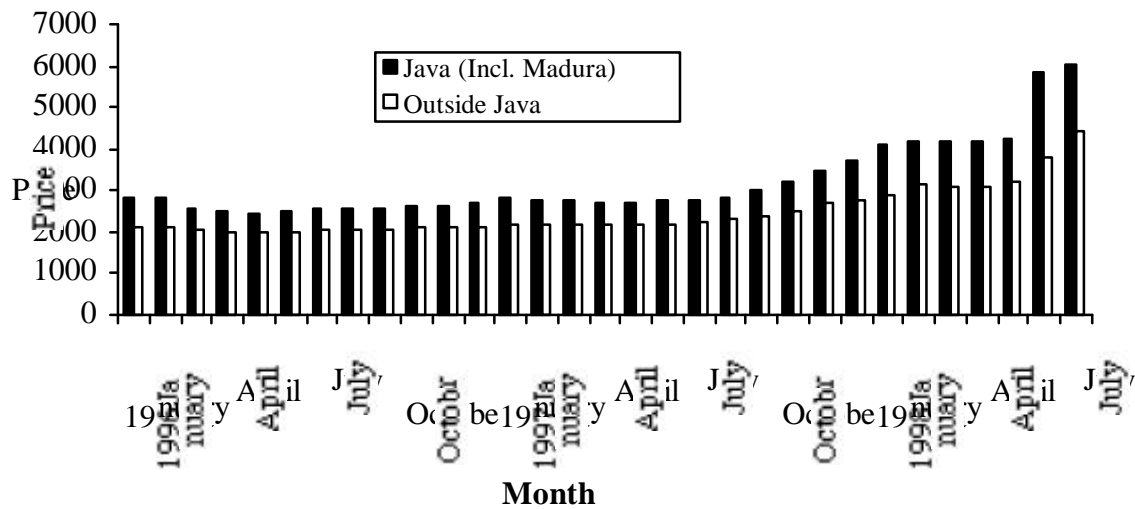
Source: Central Bureau of Statistics, *Indikator Ekonomi*, various issues. Estimates, as discussed in text.
Units: Million tons of unhusked rice (CKG).

Figure 7 Indonesia: Growth of Rice Production, 1980-1996 and Projection to 1998



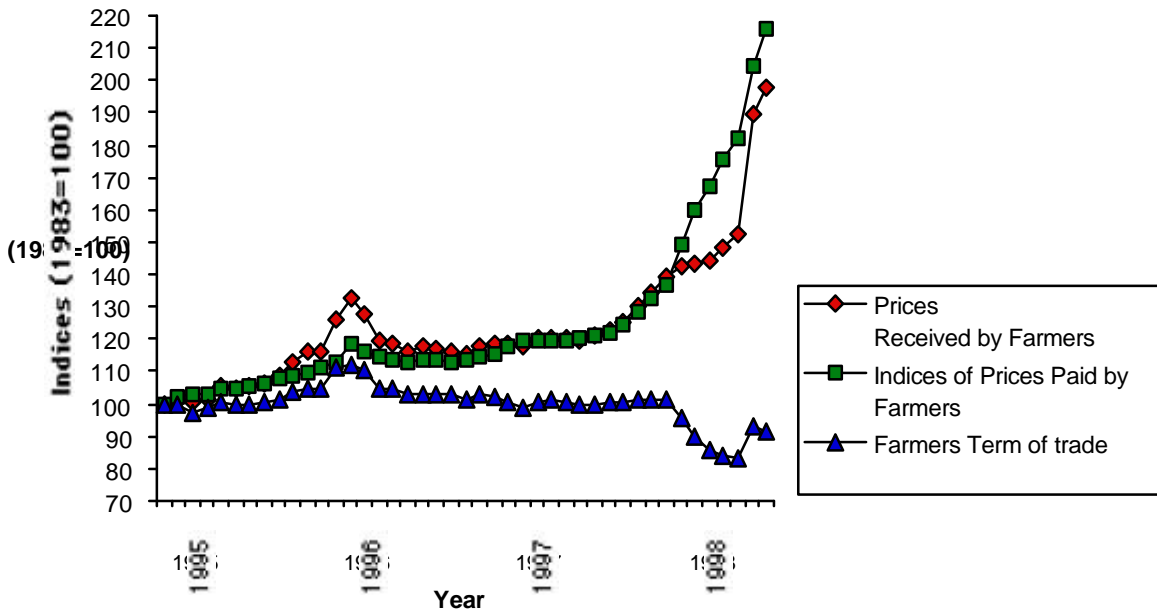
Source: Production data from Central Bureau of Statistics, *Indikator Ekonomi*, various issues.

Figure 8 Indonesia: Price Indices of Rice in Rural Markets, 1996-1998



Source: Central Bureau of Statistics, *Indikator Ekonomi*, various issues.

Figure 9 Central Java: Prices Received and Paid by Farmers, 1995-1998



Source: Central Bureau of Statistics, *Indikator Ekonomi*, various issues.