Update on the Impact of the Indonesian Crisis on Consumption Expenditures and Poverty Incidence: *Results from the December 1998 Round of 100 Village Survey*

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This note is an update on the social impacts of the Indonesian crisis. In this note we focus exclusively on changes in real household consumption expenditures, as these reflect both actual changes in people's current living standards, and can also serve as a measurable proxy for income changes due to the crisis. Also, using consumption expenditures we can examine the evolution of poverty by tracking changes in the 'head count' measure of poverty: the number and proportion of individuals whose current consumption is below a defined poverty line. The data we use is from the consumption expenditures module of the '100 Village Survey' ("Survei Seratus Desa" or SSD), a survey of 12,000 households (HHs) concentrated in 10 districts ("kabupaten") carried out by the Indonesian Central Agency of Statistics ("Badan Pusat Statistik" or BPS) in May 1997, August 1998, and December 1998.

Section 1 provides a brief description of the survey. Section 2 discusses critically important issue of choosing the appropriate deflator to move from nominal to 'real' consumption expenditures, both for the analysis of the evolution of welfare and for poverty analysis. Section 3 analyzes the evolution of real consumption at the district level. Section 4 aggregates the figures from Section 3. Section 5 tests sensitivity of the changes in poverty incidence figures on the benchmark. Section 6 offers concluding remarks.

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I. The Survey

The analysis is based on three of the rounds of the SSD.[1] The survey, sponsored by UNICEF and carried out by BPS, collected data from 12,000 HHs in December 1998, many of whom were previously surveyed in August 1998 and May 1997. The survey covers 100 'villages' located in 10 districts spread across 8 provinces. The SSD surveyed 120 HHs in each of the 100 villages in each round of the survey. The choice of households is somewhat complex. In the May 1997 round, 120 HHs were chosen randomly from two enumeration areas (EAs) within the villages. The general method in the August 1998 round was that a new EA was added and 40 new HHs were chosen randomly from this new EA. In the two EAs used in the prior survey, 80 households were chosen to be re-interviewed by returning to the same dwelling. When those HHs were not identified at that dwelling, other HHs from the original 120 interviewed in 1997 were selected and added to keep the sample size at 120.[2] This was the planned methodology, but it does appear there were some deviations from this sampling procedure in the field, as in some villages more than 80 and in some villages many less than 80 households are matched. In December 1998, meanwhile, all 120 HHs from the August 1998 round were meant to be re-interviewed. Some unidentified HHs were replaced by new randomly selected HHs.

The SSD sample, while quite large, was not designed to be statistically representative of the country. The '100 villages' are geographically quite concentrated, located in only 10 of the country's over 300 districts. Until this data can be matched with national data, it is impossible to say how 'representative' of the impact of the crisis these areas might be. On the one hand, the survey areas were chosen in 1994, before the crisis, based on a purposive sampling approach to capture various types of villages that were 'representative' of various parts of the rural economy. Since the areas were chosen before the crisis, there is no reason to suspect the sampling was influenced by the crisis. On the other hand, this survey was meant to focus on rural and relatively poor areas, so we know in advance it is not

[1] The first round of SSD was conducted in May 1994. This note, however, does not include this round in the analysis.

[2] When one of the household chosen for reinterviewing was not available (because they had moved or the household has broken up), a new household was chosen randomly from the 40 previously not selected from the previous year's household and added to the "reinterviewed" group. This means that the sample in 1998 suffers from attrition bias as the 80 reinterviewed households are not a random sample, but are a sample of those who could be re-interviewed.

representative of the entire country in *levels*.[3] How representative it is of the *changes* due to the recent shock is impossible to know. For this reason we focus first on the district by district analysis and all aggregate conclusions are only for this sample.

One very important caveat is that, while the sample has some 'urban' areas, the major urban areas on Java, such as Jabotabek area or Surabaya, or even the major cities off Java, such as Medan or Ujungpandang, are not included in the survey. Since the crisis has hit mainly through the modern sector, the indications from the samples here say nothing about these major urban areas where, with ongoing financial and corporate restructuring, things may yet get worse before they get better.

The survey instrument has much more than just the expenditure items we focus on in this note.[4] It contains a modified version of Susenas core (including questions on demographic, education, and health characteristics of the HHs) and a limited Podes questionnaire, which collects information on village and community infrastructure and access to services. The December 1998 round contains a module on knowledge of, and participation in, social safety net programs.[5]

The SSD is part of a much larger exercise supported by UNICEF for capacity building and that aims to integrate quantitative and qualitative indicators tracked over time into policy making in the social sectors and to provide a more dynamic and integrated family based picture of poverty. We are examining only a very limited portion of the data available.

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[3] The HHs sampled are not even representative in *levels* of the districts. The National Family Planning Coordinating Agency (BKKBN) divides Indonesian HHs into several socio-economic categories with 'pre-prosperous' being the lowest category. In this sample there are 49 percent 'pre-prosperous' HHs, while the same districts have only 26 percent 'pre-prosperous' HHs.

[4] The December 1998 round questionnaire breakdowns household consumption based on its sources: market, own production, and gift. In the previous two rounds, however, only the total consumption was asked. This might cause underreporting in the earlier rounds, particularly for rice, because respondents might only report the market sourced consumption. To test this, the proportion of rice consumption from total food consumption for land owners, where own production is important, are examined. The results show that the proportion of rice consumption in August 1998 was 37 percent, while in December 1998 was 41 percent, where 25 percent was from the market, 14 percent from own production, and 2 percent from gift. These results suggest that total consumption in the August round is commensurate with total consumption in the December round, implying that underreporting does not constitute a significant problem.

[5] Data collected from this module are analyzed in Suryahadi, Asep, Yusuf Suharso, Sudarno Sumarto, and Lant Pritchett (1999), 'Coverage and Targeting in the Indonesian Social Safety Net Programs: Evidence from 100 Village Survey', forthcoming.

II. The Deflator Issue

Once a survey has measured households actual expenditures (including imputations for home production or marketed goods (e.g. food, housing)) in current prices, to use these nominal expenditures to compare changes in standards of living one needs to purge these of changes in money expenditures due to inflation. This involves constructing a 'basket' of goods which can be priced in each period to form a price index. This price index then 'deflates' nominal expenditures so that the same money income in these deflated or 'real' current units has the same purchasing power and a increase in real income means households can buy more than they could previously (and vice versa).

If *relative* prices do not change or if all consumers consume exactly the same basket of goods, then this problem of deflation is straightforward, if not trivial. However, in measuring changes over this period in Indonesia neither of these is true, by a wide margin. First, the share of total expenditures which go to food is very high for the poor and much lower for the rich. This means that the food share of the "average" consumer which would be used in a consumer price index will be much lower than the share of food in the expenditures of someone near the poverty line. Second, for a variety of reasons, food prices have risen much faster than non-food prices. Over the May 1997 to December 1998 period, food prices have increased 136 percent while non-food prices rose only 72 percent.

These two facts mean that any claim about changes in 'real' consumption or especially about poverty incidence will be extraordinarily sensitive to the choice of deflator used to move from nominal to real.[6] Table 1 shows the sensitivity of the percentage change in 'real' consumption between May 1997 and December 1998 to various deflators.[7] With near equal accuracy one could say that in this sample of households, *'real'* median consumption expenditures per capita have either have *increased* by 3 percent or *decreased* by 10 percent.

[6] While this general theoretical point about the implications of deflation is in some sense obvious, we should thank Peter Rosner of HIID for pointing out the huge empirical magnitude of this problem for poverty estimates over this period in Indonesia.

[7] All the inflation rates in this note are calculated on a mid-month to mid-month basis.

Table 1. Sensitivity of Real Consumption Changes to Deflator Used					
	Source used to derive index weights				
	CPI	Consumption basket of 1997 SSD sample	Consumption basket of bottom 30%	Food share at the poverty line of Ikhsan (1999)	
				Urban	Rural
Food share (%)	40	68	70	55	62
Inflation rate from May '97 to Dec '98 (%)	89	116	117	107	112
Percentage change in median 'real' consumption	3	-10	-10	-6	-8
This table is illustrative and is built from a food price inflation rate of 136 percent and non-food price inflation rate of 72 percent from May '97 to December '98.					

There are five deflators used in the table and an explanation of each will elucidate the problem, both in measuring real income of this sample and for measuring changes in poverty. All of the deflators are based on exactly the same set of prices: the desegregated price series from the CPI. The only difference is which 'weights' that are used for aggregating these prices into an index. The five are:

- The CPI or *Consumer Price Index* ("Indeks Harga Konsumen" or IHK) for which weights are based on average expenditures of the population in 1996. The food share was around 40 percent.[8] Keep in mind that since this is an 'expenditure weighted' basket, the consumption of the rich counts not per household but per Rupiah so that the mean food share is even higher than the food share of the median household.
- The *SSD index* is a price index based on the actual 1997 consumption shares of the households in the SSD, for which the food share was 68 percent (this includes alcohol and tobacco). This suggests that the HHs in SSD were substantially less well off before the crisis than the Indonesian population at large.

[8] This actual food share in the revised CPI is only 38.5 percent. This is much lower than the average food share in consumption expenditure in the Susenas (National Socio-Economic Survey) in 1996, which is 55 percent.

- The *Bottom 30 percent* index, in which the consumption shares used are based on the actual expenditures shares of bottom 30 percent HHs (when ranked by nominal expenditures per person) of the 1996 Susenas (National Socio-Economic Survey).
- The *Ikhsan's Poverty Line* index (urban and rural). This deflator is based on choosing just an aggregate of food and non-food price indices and choosing the food share based on the food share of the person whose expenditures are just sufficient to purchase a nutritionally adequate food bundle (at the average expenditure per calorie of a poor household). This follows the poverty line methodology recommended in Ravallion and Bidani (1994)[9] as implemented for urban and rural areas in 1998 by Ikhsan (1999).[10]

Table 1 shows two things. First, that how much 'inflation' there has been and hence how much change in 'real' expenditure for any given change in nominal expenditures boils down to the food share: the higher the food share in a deflator, the higher the inflation rate implied by the deflator and hence the bigger the fall in 'real' expenditures. For example, if one deflates the increase in nominal expenditures in the aggregate SSD sample by the nationwide CPI then median 'real' expenditures actually increased by 3 percent from their pre-crisis levels to December 1998. However, if one uses the price index based on the consumption shares of the SSD sample, which have a food share of 68 percent and hence the cost of their basket increased much faster, then their median 'real' expenditures fell by 10 percent.[11]

The second point that emerges from Table 1 is that in order to get an appropriate price deflator for the change in poverty line one needs a food share of around 70 percent. This emerges from either using the consumption shares of the bottom 30 percent of the HHs or using Ikhsan's poverty line calculations (which are actually a little lower). This suggests that the SSD 1997 consumption basket deflator is a reasonably appropriate deflator for use in the analysis of poverty. Hence, all the analysis on this note, both the 'real' expenditures and the 'poverty' analysis, are based

[9] M. Ravallion and B. Bidani (1994), 'How Robust is a Poverty Profile', World Bank Economic Review, Vol. 8, no. 1, pp. 75-102.

[10] M. Ikhsan and U. Wikarya (1999), *Special Study on Poverty*, Asian Development Bank, Manila.

[11] The food share in the poverty line is not the food share of those at the poverty line. This is a major difference between using a deflator to update a poverty line and using a method to recalculate a poverty line in two periods.

on the *'SSD index'*. We use the same deflator for all regions, we do not use regional specific deflators based exclusively on urban price series of BPS.

III. The Regional Evolution of Consumption Expenditures

Rather than begin with the aggregate analysis, Table 2 shows the evolution of median real consumption expenditures (using the SSD index) during the crisis in each of the districts included in SSD.[12] This table reveals the enormous regional heterogeneity due to the crisis. In one district, median expenditures have risen by 6.6 percent and while in another it has fallen 23 percent, which is a 30 percentage point difference.

Table 2: Median household real consumption expenditures per person in 10 Kabupaten from rounds of SSD

	Levels (Median real per capita consumption, May '97 Rupiahs)			Percentage changes		
	May 1997	Aug 1998	Dec 1998	May '97 - Aug '98	Aug '98 - Dec '98	May '97 - Dec '98
Recovered:						
Indragiri Ilir, Riau	55,391	61,560	59,020	11.1	-4.1	6.6
Kendari, Southeast Sulawesi	34,044	32,070	35,267	-5.8	10.0	3.6
Rebound:						
Karangasem, Bali	52,958	40,863	47,343	-22.8	15.9	-10.6
Pandeglang, West Java	45,816	37,809	43,510	-17.5	15.1	-5.0
Rembang, Central Java	47,085	42,635	46,878	-9.5	10.0	-0.4
Lampung Selatan, Lampung	37,957	32,024	34,790	-15.6	8.6	-8.3
Kupang, East Nusa Tenggara	34,441	25,358	26,520	-26.4	4.6	-23.0
Continuous fall:						
Sumedang, West Java	56,781	47,610	45,995	-16.2	-3.4	-19.0
Kutai, East Kalimantan	66,501	58,186	56,168	-12.5	-3.5	-15.5
Banjarnegara, Central Java	34,971	33,620	30,297	-3.9	-9.9	-13.4
Notes: The deflator used is the SSD index, deflating to the mid-points of the months of the survey.						

[12] The median is the point of a distribution of which half are above and half are below. Since distributions of expenditures are typically skewed to the right (some people are very rich while there is a lower limit to how poor one can be), the *mean* or average expenditures are higher than median expenditures. Since some data suggest there have been substantial changes in the distribution of income, which changes the relationship between the mean and median, we are using the median as the indicator of the 'central tendency' of the distribution.

Based on the patterns of the changes in consumption during the period, we divide the districts into three classes. First, are the 'recovered', those whose expenditures are higher in December 1998 than in May 1997, of which there are only two. Second, are the 'rebound' districts, in which there was a substantial fall in real consumption expenditures during the crisis period from May 1997 to August 1998 but which have had an increase in consumption in the latter period from August to December 1998. There are five districts which fall into this 'rebound' category. Third, districts which continued to experience falling consumption during the whole period. There are three districts which fall into this 'continuous fall' category, and two of these three districts are located on Java.

Recovered. There are two districts in which median real income has risen, but each of which has its own pattern. First, in Indragiri Ilir (Riau) expenditures did not fall at all from May 1997 to August 1998, in fact they rose substantially (11 percent), while from August to December 1998 this rise was moderated and the total 'pre-crisis to most recent' change was 6.6 percent. In contrast, median expenditures in Kendari have also risen, by 3.6 percent (although *mean* expenditures have fallen by 2 percent). In this case however, there was an initial 5.8 percent fall from May 1997 to August 1998 followed by a 10 percent recovery from August to December 1998.

Rebound. In five of the districts there was a dramatic fall in measured expenditures from the pre-crisis (May 1997) to the August 1998 data, with all five districts recording falls of 10 to 26 percent. However, in many of these areas the data also record a substantial rebound in real consumption expenditures, with expenditures rising by amounts ranging from 15 percentage points in Pandeglang and Karangasem to only 5 percentage points in Kupang. These are substantial rebounds as these changes took place only over a four month period.

However, in all of these areas real expenditures remain lower in December 1998 than 18 months earlier. In some areas the fall is modest (just 0.4 percent in Rembang or 5 percent in Pandeglang). However, in other areas, even though there has been some 'bottoming out' and expenditures are no longer falling, they are down substantially over pre-crisis levels. In Kupang, NTT the modest rebound of 4.6 percent still leaves median expenditures down by 23 percent.

Continuous fall. In three of the districts, real expenditures fell from May 1997 to August 1998 and fell again from August to December 1998. In these

locations the crisis appears not to have abated. Real expenditures are now down substantially over their pre-crisis levels, by 13 to 19 percent. Two of the three 'continuous fall' locations are on Java (although there are other locations on Java in the 'rebound' category).

Since seven out of ten districts, are either in the 'recovered' or 'rebound' category, and these are located in seven different provinces, this probably indicates that a large parts of the country, especially in the rural areas which are represented in the sample, have already passed the worst phase of the crisis. This micro evidence of some recovery since August is consistent with the macroeconomics evidence of a stabilized price of rice, stabilization and strengthening of the Rupiah, and reductions in the rate of inflation since August 1998.

However, since there are a significant number of districts which still continued experiencing falling consumption or areas which are only impacted by the crisis in the latter period, enormous caution is warranted. At least in some areas, things could deteriorate further still.

IV. Aggregate Consumption Evolution

Although SSD is not designed to be nationally representative, it is still useful to see the consumption evolution for the aggregate of the whole sample (without weighting of the sample areas to represent population shares). Table 3 simply aggregates the findings for all 12,000 HHs in the sample for nominal and real consumption. The numbers clearly show that, during the crisis, nominal consumption has continued to increase, and that nominal consumption has increased by almost 100 percent since the pre-crisis period. This increase in nominal consumption is a consequence of inflation and might almost be not worth mention, were it not for the fact that some calculations in other studies have been based on an assumption of unchanged nominal consumption.

Table 3: Changes in median consumption expenditures (nominal and real) for the entire 12,000 HHs sample.						
	Levels (Median real per capita consumption, May '97 Rupiahs)			Percentage changes		
	May 1997	Aug 1998	Dec 1998	May '97 - Aug '98	Aug '98 - Dec '98	May '97 - Dec '98
Nominal consumption expenditures	46,685	78,559	91,200	68.3	16.1	95.4
"Real" Consumption Expenditures (using SSD deflator)	46,685	40,287	42,222	-13.7	4.8	-9.6
"Real" consumption expenditures (using CPI)	46,685	44,636	48,254	-4.4	8.1	3.4

But the increase in nominal consumption in the earlier period lagged behind the aggregate price increase. Therefore, the real consumption in August 1998 was significantly lower than its May 1997 level. In the subsequent period, the increase in nominal consumption has somewhat caught up with the price increase. As a result, the regional pattern of bouncing back in real consumption after August 1998 is also shown in aggregate, although much weaker. However, the real consumption in December 1998 is still significantly lower than that in May 1997 when measured using the SSD weights price index. Nevertheless, it still suggests that the impacts of the crisis on household welfare has been easing in second half of 1998.

With these aggregate figures it is worth revisiting the question of whether 'real' expenditures increased or decreased. If one did the typical calculation of deflating by the CPI to convert from nominal to real Rupiahs then one would conclude that real expenditures were higher in December 1998 than before the crisis began. However, if one uses a deflator specific to the sample then one comes to a different conclusion. That because they spend a greater fraction of their budget on food. Therefore, the HH's loss in purchasing power is greater by the SSD index than when gauged by the CPI and real expenditures *for this sample* have *fallen* significantly.

V. The Changes in Incidence of Poverty

This section presents the change in absolute poverty during May 1997 to December 1998.[13] We do not do a full blown calculation of a poverty basket to establish the appropriate poverty line for the benchmark in 1997. Rather, since we are principally interested in the *changes* in poverty, we choose a conventional figure for the poverty line for the initial year to match with other sources of data and we then update the poverty line by an appropriate deflator to measure changes. In this calculation the poverty line is updated using the SSD price index, that is the cost of the basket that constitutes the 'poverty line' is assumed to increase by the same percent as the increase in prices weighted by the SSD index. As shown in Table 1 this results would be approximately the same if one were to use any of the other deflators based on food shares in a poverty basket (e.g. the bottom 30 percent or the Ikhsan's poverty line indices).

We do this in two ways. First, we choose as the poverty line the 11th percentile of the 1997 consumption expenditures.[14] Using this poverty line, the proportions of households whose real consumption in August and December 1998 are below the poverty line are calculated for the aggregate. The resulting percentage point changes and percentage changes are presented in the first row of Table 4. As could be expected from the analysis of the evolution of median expenditures, poverty first rose substantially, by 7 percentage points, from May 1997 to August 1998, which is a 63.6 percent increase in poverty incidence. From August to December 1998 poverty incidence declined by 2.8 percentage point or 15.6 percent. The overall change in poverty incidence between May 1997 and December 1998 is an increase by 4.2 percentage points or a 38.2 percent increase in poverty.[15] So, if we assume poverty in this sample was 11 percent in May 1997 then poverty rose to 18 percent by August 1998 but has fallen back 15.2 percent by December 1998.

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[13] In this present work we only examine the head count poverty ratio. Analysis of other data has suggested an expansion in the poverty gap and an increase in inequality among those below poverty line (although inequality of nominal expenditures appears to have fallen). We take up these issues in the 100 villages data in a separate note on inequality (see Skoufias, Emmanuel *et al* (1999), 'Inequality and Poverty Gap: Evidence from 100 Village Survey' (temporary title), forthcoming).

[14] The BPS data indicate that the proportion of population living below the poverty line in 1996 is 11.34 percent. Using an 11 percent poverty incidence in 1997 for the benchmark is a conservative estimate considering the economic growth of 7.8 percent in 1996 and 4.9 percent in 1997.

[15] The simultaneous occurrences of increasing 'real' expenditures when deflated using CPI and rising poverty suggest a shift in relative price against the poor.

Table 4: Poverty Incidence in the SSD sample, with three benchmarks.						
Benchmark of Poverty Incidence	Percentage Point Change			Percentage Change		
	May '97 - Aug '98	Aug '98 - Dec '98	May '97 - Dec '98	May '97 - Aug '98	Aug '98 - Dec '98	May '97 - Dec '98
Original (chosen to match national poverty rate in 1997)	7.0	-2.8	4.2	63.6	-15.6	38.2
Adjusted (chosen to match poverty in SSD sample)	12.2	-4.3	7.9	35.9	-9.3	23.2
Backward (start from poverty rate in December 1998)	9.2	-3.7	5.5	49.2	-13.3	29.4
Note: The benchmark of poverty incidence is 11 percent in May 1997 for the 'original' analysis, 34 percent in May 1997 for the 'adjusted', and 24.2 percent in December 1998 for the 'backward'.						

While this analysis assumes that poverty was 11 percent in 1997 as a convenient benchmark (as it makes comparisons with other poverty rate changes easier) the samples in SSD are relatively poorer than the general population. An indication of this can be found in the proportion of households which are classified as 'pre-prosperous' by the BKKBN ("Badan Koordinasi Keluarga Berencana Nasional" or National Family Planning Coordinating Agency). The December 1998 round SSD data indicate that there are 49 percent households in the samples which are classified as 'pre-prosperous'. The BKKBN's September 1998 data, meanwhile, indicate that nationally there are only around 16 percents of 'pre-prosperous' households. Therefore, it is probably appropriate to rescale the benchmark of poverty incidence from the 11 percent national level to (49/16)*11 percent or 34 percent to match the characteristics of SSD sample.

Using this 'adjusted' benchmark of poverty rate in 1997, the poverty incidences in August and December 1998 are then recalculated for the aggregate level. The resulting percentage point changes and percentage changes of the poverty incidence are presented in the second row of Table 4. Although the level of poverty incidences during the whole period using the adjusted benchmark are much higher than using the original benchmark, Table 4 shows that the changes in the poverty incidences are slightly greater in terms of percentage point changes but smaller in terms of percentage changes. Using the original benchmark, there was a 4.2

percentage point or 38.2 percent increase in poverty incidence between May 1997 and December 1998. Using the adjusted benchmark, the increase during the period is a 7.9 percentage point or 23.2 percent. This indicates that the changes in poverty incidences as suggested by Table 4 are reasonably robust to the choice of poverty incidence benchmark, i.e. the bounds of absolute and percentage changes show a quite robust pattern of changes no matter what the starting point is. Intuitively, if one begins from a higher base in this case (34 versus 11) the *percentage point* increase in poverty is greater (7.9 versus 4.2) but the *percentage* change is smaller (23 percent versus 38 percent).

Of course we could always reverse this and compare the changes going back in time from any conventional figure for the latest data. An example of this is presented in the third row of Table 4. Suppose for instance that the poverty rate in December 1998 were assumed to be 24.2 percent. Then by our method the poverty rate in August 1998 would have been 27.9 percent and in May 1997 would have been 18.7 percent. This implies a pre-crisis to December 1998 change in poverty rate of 5.5 percentage points or an increase of 29.4 percent. Again, the level is less important than the changes.

VI. Concluding Remarks

This note provides an update on the social welfare impacts of the Indonesian crisis as measured by consumption level and poverty incidence. Using a deflator based on the higher food share in consumption of this sample to deflate the nominal consumption expenditures, the evidence suggests that some easing off of the crisis impacts have taken place after August 1998. Real consumption expenditures have increased and poverty incidence has decreased between August and December 1998. Since this follows on a massive deterioration during the crisis period from May 1997 to August 1998, nearly all areas are still worse off than before the crisis. In addition, caution is warranted considering that some regions are still experiencing continuous deterioration, even after August 1998.