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INTRODUCTION

Among Indonesia's provinces, Bali stands out as one of its most tranquil and most prosperous. International tourism has been the key to Bali's economic success. A major destination for international visitors, in 2001 over 75% of hotel guests on Bali were from overseas. Numerous hotels, restaurants, tour companies, and shops on Bali exist to serve foreign clientele. Across the island cottage industries produce handicrafts for sale to tourists and many small-scale entrepreneurs ply their wares at Bali's beaches and temples.

All of this changed in the wake of the shocking terrorist bombing in October 2002, in which over 200 people lost their lives and scores more sustained serious injuries. Tourism in Bali collapsed in the aftermath of the bombing. In September, 2002, hotel occupancy rates were around 70% and more than 150,000 tourists entered Bali from international origins. By November, 2002 occupancy rates were less than 10% and direct international arrivals had plummeted to 31,000 (World Bank 2003). Although visitors have begun to return, in the first half of 2003 tourist arrivals were about one-third of pre-bombing levels (Arnold, 2003).

The decline in hotel occupancy rates understates the impact on Bali's economy of change in tourist flows, because the composition of visitors has shifted towards domestic tourists, who spend less money than did visitors from Japan, Australia, Europe, and the United States. Moreover, the economic implications of the decline in tourism extend beyond the direct effect of fewer jobs in hotels, restaurants and other service industries. Declines in demand for food and handicrafts have affected those employed in the agricultural and manufacturing sectors. Lower incomes among workers in tourist-related activities has had a domino effect on demand for all goods and services throughout the economy.

Numerous anecdotal accounts document the economic woes of workers in the tourism industry. Systematic evidence on the economic, social and health effects of the bombing has largely been lacking. This paper fills that gap by analyzing population-based longitudinal survey data from the Economic and Social Transitions Survey (EST-B) on the economic, social and health effects of the Bali bombing.

DATA

Since the mid-1970s Indonesia's Central Bureau of Statistics (BPS) has conducted a large-scale nationally representative socio-economic survey, SUSENAS in February of each year. The survey, widely regarded as being very high quality, collects basic socio-demographic information on each household member, along with work, earnings, health and education at the individual level and a module on household consumption. In 2002, a subsample of households also provided information on income from farm and non-farm businesses. On Bali, 119 enumeration areas were randomly selected for the sub-sample that was administered the extended interview and 1,904 households with 7,518 members were interviewed by BPS. The sample is representative of each kabupaten (district) on the island and, therefore, of Bali as a whole.

In November, 2002, after the Bali bombing, we approached BPS and proposed to re-interview the same households in early 2003. BPS enthusiastically endorsed our proposal. They provided us with the names and addresses of all respondents as well as considerable logistical support. We conducted the re-survey in February-April 2003.

Recontact Rates

Statistics on our recontact rates are provided in Table 1.1. We reinterviewed 93.6% of 1,904 original households interviewed by BPS.[1] In some cases households or individuals had

[1] 0.2% of households refused to be re-interviewed, 1.8% had moved within Bali, 1% moved out of Bali and the remaining 4% were not re-located.

moved by the time we visited their 2002 location. Movers were followed if they re-located within Bali, Java or Lombok.

To retain the representativeness of the sample, we attempted to interview all members of the target households, including those who moved. We thus followed members who split off to form new households or join other households, which added 62 new households to the 2003 sample. We re-interviewed 92% of the individuals who were interviewed in 2002. Recontact rates are slightly higher for older respondents (those 56 years and above) than for younger respondents, but differ little by sex. With the addition of new entrants to households, the 2003 sample contains information on 7,995 individuals.

Attrition is the Achilles heel of longitudinal surveys. To shed light on those who attrited in EST-B, Table 1.2 presents the results from a regression of individual-level attrition on basic demographic and socioeconomic characteristics. Gender and educational level are not related to the probability that an individual was reinterviewed in 2003. Age, ethnicity, residence, household size, and expenditure levels in 2002, however, are related to attrition. Age is captured with a piece-wise linear spline. Between the ages of 25 and 55, an additional year of age reduces the likelihood of attrition. Above age 55, an additional year of age increases the probability of attrition. Respondents who are of Balinese ethnicity are significantly less likely to attrit than respondents of other ethnicities (probably because they are less likely to leave the island of Bali), while residents of urban areas are more likely to attrit than residents of rural areas. Finally, for individuals from the relatively better-off households increases in household per capita expenditure levels above the median are associated with a greater likelihood of attrition. In sum, the 8% of individuals that we failed to reinterview is composed disproportionately of the relatively young and the relatively old, the non-Balinese, residents of urban areas, and members of relatively better-off households.

Questionnaire Content

The key advantage of using the 2002 SUSENAS as the baseline for EST-B is that we have an interview conducted prior to the Bali bombing. Because it is essential that we retain comparability across waves, the 2003 survey was designed to follow exactly the same structure and procedures as the 2002 SUSENAS (the 2004 survey does the same). The main disadvantage is that the survey content for any before and after comparison is dictated by what was included in the 2002 SUSENAS. The combination of the "core" and "module" components of the 2002 SUSENAS together, however, yields an extremely rich survey.[2]

The 2002 and 2003 surveys provide extensive information about household composition including socio-demographic characteristics, marital status, religion and ethnicity, and schooling of each household member. The survey asks about whether health problems limited 'normal' activities, the incidence of 16 morbidities, whether any morbidities were treated and, if so, whether the household member visited a health facility (by type). This information is collected for all household members. Detailed questions about time use (including labor supply), type of work, hours of work and earnings are asked for every household member age 10 and above. Comprehensive questions are asked about any farm or non-farm business in which household members engage; these include who works in the business, the nature of the business, income, expenses and thus net profits. Each household is asked to report spending including the value of consumption from own production for 17 food groups (such as rice and other cereals; meat; fish) for the prior week and for 7 non-food groups (such as clothing; health) for the prior month and

[2]SUSENAS conducts a "core" survey on a large number of households and includes a "module" on a sub-sample. In 2002, the "module" questions include income from self-employment. Given the central role of income, we have restricted attention to the 1,904 households in Bali who were administered both "core" and "module".

prior year. Information about ownership of assets and value of sales and purchases are collected as well as time and money transfers to and from non coresident family and friends.

All of these modules were repeated in 2003. The 2003 survey added several topics. Specific questions about psycho-social health include items from the post-traumatic stress disorder checklist, and questions from the General Health Questionnaire (such as feelings of sadness, anxiety, loneliness and difficulty sleeping). In addition, in 2003 specific questions are asked of adults about proximity to the bombing, whether a friend or family member was injured or killed in the bombing and the exposure to media coverage.

We are currently in the field with a second follow up of the survey, which will be completed in the next several weeks. In this paper, however, we focus on the immediate impact of the bombing on a range of indicators of well-being, contrasting the situation in February 2002 with the situation one year later.

RESULTS

We set the stage by presenting data on the proximity of our respondents to the bombing, as measured by their responses to the questions about exposure to the bombing and its immediate aftermath (Table 2). Although relatively few respondents report seeing the blast at the time that it happened, over one quarter of males heard the blast, and over 20% of females did. The vast majority of respondents watched television coverage the day after the bombing. Additionally, 15% of males and 6% of females visited the blast site. Smaller fractions report working near the blast site or main treatment hospital. About 3.5% of men and 2.3% of women report knowing someone who was injured or killed in the blast. These statistics suggest that the bombing affected the lives

of many on Bali, if only temporarily, in much the same way that the attacks on the World Trade Center and the Pentagon stunned many in the United States.

Economic Outcomes of Individuals

We now turn to measures of the economic consequences of the bombing for individuals, which are computed using data from 2002 and 2003 surveys. Table 3.1 presents the cross-tabulations of individuals by year and employment status. For neither men nor women is overall employment dramatically lower in 2003 than in 2002, although the increase in the fraction unemployed does rise significantly for men. For both men and women a significant decline in the fraction working for a wage has occurred. Among men this decline translates into higher rates of unemployment. Among women the decline in the percentage working for a wage is more than accounted for by an increase in the percentage unemployed.

Turning to table 3.2, we see that the drama of the bombing is not in changes in employment rates. Instead, it is in a collapse in wages. Among those working for a wage in both years of the survey, real hourly wages fell by almost 20% for men and by 16% for women (Table 3.2, panel 4). If the results are not restricted to those working for a wage in both years, the declines are considerably larger for men (about 27%), but roughly similar for women. This result does not change dramatically across the distribution (wage rates are calculated at the 25^{th} and 75^{th} percentile, as well as for the median), although it appears that declines among those at the top end of the distribution were somewhat smaller in magnitude.

Beyond contrasting levels of various employment-related outcomes for the two years, we can also exploit the longitudinal dimension of the data and consider how individual attributes are related to changes in employment status across the two years. Table 4.1 examines transitions in working for women, within a multinomial logit framework, while Table 4.2 provides the same

results for men. We divide individuals into four categories: working in both years (which serves as the reference category), not working in either year, losing a job, and gaining a job. Covariates are measured in 2002. We consider age, educational attainment, ethnicity, urban residence, and level of household economic resources (measured as the log of per capita monthly expenditures).

The relationships of the covariates to work outcomes are quite similar for men and women, although in many cases the coefficients are larger in size for men. Age (modeled with a spline) is related to transitions in employment. For those between the ages of 25 and 55, each year of age is associated with an increase in the likelihood of working in neither year relative to working in both years. For neither men nor women is age in this range related to losing a job or taking a job. Among older respondents (those 55 and above), increases in age are positively associated both with working in neither year, and with taking a job in 2003. The positive relationship between age and taking a job appears to be somewhat stronger for men than for women. In Indonesia rates of labor force participation are high for prime age adults and remain quite high into old age, particularly for men. The oldest individuals, therefore, may be the ones whose labor supply is particularly responsive to changes in the economic environment.

With respect to educational attainment, it appears that those at the top of the distribution were the most protected from changes in employment status. For those with more than six years of education, an additional year of education is associated with an increase in the likelihood of not working in either year (this effect is about twice as strong for men as for women), and with a decrease in the likelihood of losing a job.

Among women, those of Balinese ethnicity are less likely not to work in either year than are those who are not Balinese. Ethnicity is unrelated to labor force transitions for men.

Urban residence is strongly related to labor force transitions. Relative to working in both years, those living in urban areas in 2002 are both more likely not to work in either year, and more likely to lose a job by 2003. For women, entering the labor force appears to be more common for those at the bottom of the socioeconomic distribution than for those at the top.

Economic Outcomes of Households

Levels of economic resources are unrelated to employment transitions for men. Below the median, however, increases in resources are associated with a reduction in the likelihood that women take a job by 2003.

The welfare of individuals is a function not only of their own characteristics and behaviors, but also reflects their family and household. In developing countries families are a key institution with respect to insurance against hard times. We now turn to a household-level examination of economic outcomes before and after the bombing.

Table 5 reports information about monthly household earnings and expenditure (both in terms of levels and shares) in 2002 and 2003. All values are in terms of February 2002 rupiah (using BPS inflation rates). The first row reports average monthly earnings from wage work, which fell by about 20%. In SUSENAS, income from self-employment is collected only at the household level; we repeated the questions in 2003. Self-employment income fell even more than wage income: for the average household, it declined by almost 30%. The economic toll of the Bali bombing did not fall only on wage workers but, in fact, affected the self-employed sector even more. Total household earnings fell, on average, by 25%. These are very dramatic declines.

There was also an important change in the distribution of income (results not shown). The decline in household income at the 25th percentile of the distribution was nearly 75%; at the 75th percentile, it was 25% and at the 90th percentile 15%. Thus, the entire income distribution shifted

to the left with no household being left untouched by the bombing; moreover, there was a substantial rise in the numbers of very low income households as a result of the bombing.

In times of trouble, households will likely draw on other resources, such as their savings, in order to maintain their expenditures, particularly if it is anticipated that the income declines are only temporary. Levels of household expenditure are reported in the fourth row of the table. They declined about 14% between 2002 and 2003.[3] While this is an enormous reduction in consumption, and is the same magnitude as the decline during the financial crisis of 1998, it is considerably less than the decline in income.

As research on the 1998 financial crisis has shown, drawing down wealth savings is not the only way Indonesian families have maintained consumption levels in the face of a major shock, (Frankenberg et al, 2003). Family members may adjust living arrangements to exploit economies of scale in shared housing. We would expect household size to increase as a result of the bombing. As the fifth row of the table shows, this is exactly what happened: household size increased on average by 0.1 members. Young women (<15) and older women (>55) tended to join the sample households while young adults (15-24) tended to leave. Since household size increased, the reduction in total household expenditure understates the decline in well-being of household members. Adjustments for household composition are controversial (Deaton, 1997) and in our research we plan to explore a range of approaches to making those adjustments. As a first step, *per capita* household expenditure (PCE) is reported in the sixth row of the table. It declined by 11% on average. (The rise in household size is larger among households that had larger declines in expenditure which is why mean PCE fell less than mean total expenditure.)

[3]Expenditures include purchases and consumption from own production of goods.

The allocation of household spending among goods will likely respond to income shocks. Spending on some goods (such as food) may be difficult to defer over time, while purchase of other goods, such as clothing or furniture, might be postponed with little immediate effect on welfare (Browning and Crossley, 1998). The allocation of spending is reported in rows 7a-7g of Table 5. Whereas *per capita* expenditure on food prepared at home did not change, food prepared away from home fell by over 50%: households presumably substituted out of more expensive prepared foods and put more time in food preparation in an effort to save money. Spending on housing and energy, education, and health all rose substantially. (Part of the rise in energy spending reflects higher prices.) However, there were substantial reductions in spending on clothing and personal care, and on semi-durables. Interestingly, per capita expenditures on ceremonies rose. This may well be because on Bali, which is Hindu, ceremonies are an integral component of coping with loss and were widely held after the bombing. Consistent with this interpretation, when asked what mechanisms they used to cope in the aftermath of the bombing, fully 72% responded that they had participated in group activities held in recognition of the tragedy.

Rows 8a-8g of Table 5 present the allocation of expenditures as shares of the *per capita* household budget rather than as per capita spending levels. They parallel the story that emerges from spending levels. Shares of the budget spent on food away from home, clothing and personal care, and semi-durables fell, while spending on food eaten at home, education, health care, energy, and ceremonies rose substantially.

There is a large literature in the social sciences on how households respond to unanticipated income changes. The so-called "life-cycle" or "permanent income" model posits that consumption should remain "smooth" over the life course with savings buffering any income changes.

Empirical tests of these models have typically relied on comparisons of *per capita* expenditure over time (Hubbard, Skinner and Zeldes, 1986; Townsend, 1993; see Browning and Lusardi, 1996, for an excellent review). Results in Table 5 indicate those comparisons likely understate the extent of "welfare smoothing" since income shocks apparently affect household size and the composition of spending (with semi-durable spending being postponed).

In Tables 6.1 and 6.2 we use multivariate regression to identify the household-level characteristics that are associated with changes in household earnings (from wage work, from self-employment, and in total) and with changes in total household expenditure, per capita household expenditure, savings, and household size. We consider the characteristics of the household head (education, age, and ethnicity) and whether the household was in an urban area. We use the square root of earnings in each year, to reduce the influence of outliers (as a log transform would) without losing households in which earnings were zero. Changes are calculated by subtracting the 2002 level from the 2003 level. Consequently, a positive coefficient is interpreted as increasing the level in 2003 relative to 2002 (although the level in 2003 may still be lower than the level in 2002).

We begin with a discussion of the results for changes in earnings (Table 6.1). The first rows display the results for the educational attainment of the household head. When the educational attainment of the household head is six years or less, each additional year of education makes the difference between 2003 earnings and 2002 earnings from wage work (and therefore total earnings) more negative, but the relationship is imprecisely estimated and not statistically significant. The relationship between earnings and educational attainment for household heads with more than six years of education is statistically significant. For these heads, additional education is negatively associated with the change in earnings from wage work, but positively associated with the change in earnings from self-employment. The coefficient for income from

self-employment is so large that the effect on overall earnings is positive as well. In other words, it appears that households headed by someone who was well-educated were much better able to protect themselves from downturns in household earnings, and that this occurred because success in ventures in which they were self-employed more than compensating for declines in income from wage work.

In households headed by a relatively young person (under 35 years of age), each additional year of age is associated with a more negative change in total household earnings. Age is unrelated to changes in earnings in households headed by someone 35 or older. Thus, downturns in income appear to have been more significant for households headed by young adults.

Ethnicity of the household head is related to the change in earnings from self-employment. This change is more negative in households headed by a Balinese than in households headed by someone of another ethnicity. This may reflect the fact that many of the self-employed are farmers, and farmers are disproportionately Balinese because it is the Balinese who own land.

Neither urban residence nor household size is related to household earnings.

We saw from Table 5 that on average, declines in household spending were smaller than declines in earnings, suggesting that to some degree people were able to protect themselves from the full income effects of the crisis. In Table 6.2 we examine the correlates of change in household expenditures, change in per capita expenditures, change in savings, and change in household size.

Education of the household head is not related to changes in any of these measures of household economic outcomes. Age of the household head, however, is. In households headed by someone 55 or older in 2002, each increase in age of the household head is associated with a more positive change in per capita household expenditures (suggesting these households were better able to smooth consumption) and with a more negative change in household size.

Balinese ethnicity is not related to these outcomes. Households in urban areas, however, experienced a more positive change in savings (on average, less dissaving) and a less positive change in household size.

Health Outcomes for Individuals

So far we have focused on economic outcomes of individuals and households. It is likely, however, that the Bali bombing affected health outcomes as well as economic ones. In Table 8 we turn to the health consequences of the bombing.

Physical health outcomes were notably worse in 2003 than in 2002, for both men and women. Whereas only about one-quarter of respondents reported that their health limited their activities in the month before the 2002 survey, by 2003 about one-third of respondents reported such a limitation. Increases in the percentages experiencing at least one morbidity were large as well.

Corresponding to these increases in reports of physical problems, the percentages of individuals using health care or engaging in self-treatment also rose. This finding is consistent with the fact that spending on health care increased substantially between 2002 and 2003 (Table 5).

We also investigate whether the bombing took a toll on the emotional well-being of the population. If so, part of the increase in poor physical health may be a reflection of worsening psycho-social health. In spite of the fact that exposure to ethnic and religious violence has increased in many parts of the world, very little is known about the effects on the physical and mental health of those exposed. In part this is because obtaining scientific data in a post-disaster setting is extremely difficult (North and Pfefferbaum 2002). Several studies have concluded that the World Trade Center attacks took a non-trivial toll on mental health, particularly on those closest to the sites of the destruction.

No studies to date have examined the impact of the Bali bombing on the mental health of the Balinese, although descriptions of the event and its aftermath suggest a number of similarities to the WTC disaster (Mydans, 2002).

Unfortunately the 2002 SUSENAS did not include questions on mental health, so we are unable to say anything about changes in levels of mental health problems between 2002 and 2003. We did, however, ask a question on individuals' perceptions of their emotional well-being at the time of the interview relative to before the bombing (Table 7). Almost 12% of men and 7% of women report that their emotional well-being is worse after the bombing.

We also included questions in the 2003 wave of EST-B on experience of symptoms associated with post-traumatic stress disorder. Responses to these questions suggest that emotional well-being for many adults was significantly undermined by the bombing. Around two-thirds of adult respondents reported feeling very upset when something reminded them of the Kuta bombing, and around one-third reported feeling as if their future would be cut short, while around one-quarter reported that they are "super-alert," watchful, and on guard. For each of these indicators, levels are slightly higher for men than for women. About 10% of both men and women reported having recurring memories of the bombing and trouble falling or staying asleep.

CONCLUSIONS

The October 2002 bombing on Bali cost more than 200 people their lives and resulted in a decline in tourism that seriously damaged a dynamic and prosperous economy. Without representative data from before and after the bombing, quantifying the magnitude of the changes and identifying the subgroups most affected is impossible. The EST-B data, in combination with the 2002 SUSENAS, provide the basis for such research. In this paper we have focused on

describing the consequences of the bombing for economic dimensions of individual and household well-being, and for the health of individuals in the aftermath of the tragedy.

The results paint a picture of considerable change in the course of a year. Although the overall rate of employment was relatively stable, real wages collapsed. Income from self-employment fell as well, leaving households substantially worse off in 2003 than in 2002 with respect to total income. On average, total household income fell by 25%. Declines occurred throughout the income distribution, with the result that entire the distribution shifted to the left and the number of very poor households increased. Living in a household in which the head is relatively well-educated appeared to afford some protection.

A short term decline in income may have minimal effects on well-being if those affected are able to maintain their spending levels. We find that spending decreased by an average of 14%. Additionally, households changed what they spent money on. One example of this is that households decreased spending on food eaten away from home and increased spending on food eaten at home. Spending on clothing, personal care, and semi-durables declined as well. Expenditures on health care, however, rose.

The increases in spending on health may reflect the fact that for many on Bali health worsened after the bombing. Losing days of normal activity to poor health was more common in 2003 than in 2002, as were reports of various symptoms of poor health, such as headaches and fever. Most probably because of these increases in symptoms, use of health care rose as well (and likely drove the reported increases in spending).

Deterioration in health status was not limited to physical manifestations of poor health. Emotional health deteriorated as well, at least with respect to people's perceptions of their level of

well-being at time of the 2003 interview relative to before the bombing. Moreover, substantial fractions of respondents report symptoms of post-traumatic stress disorder.

How the impact of the bombing will unfold over the intermediate term for the dimensions of well-being we have considered here remains to be seen. Emotional health may improve if memories of the bombing fade. On the other hand, options for protecting spending levels in the face of income declines may have been exhausted. We will purse these questions with the 2004 rounds of EST-B.

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Table 1.1. Recontact Rates for Households and Individuals

	Target, Number Interviewed and still alive in 2002)	Number Interviewed in 2003	% Interviewed in 2003
Household	1,908	1,781	93.6
Individual	7,412	6,809	91.9
By Gender			
Male	3,726	3,434	92.2
Female	3,686	3,375	91.6
By Age			
0-24	3,072	2,795	91.0
25-55	3,369	3,106	92.2
56+	971	908	93.5

HH not interviewed: HH refuse: 0.1%; HH moved : 4.9%; Unable to contact: 1.3%; %HHM died is 0.1

Table1. 2 Correlates of Attrition: Individuals age 25 and above

	Coefficient		Std. Err.
Age (spline) 25-55	-0.004	**	0.000
> =55	0.004	**	0.001
If male	0.010		0.008
Education (spline) 0-6	-0.002		0.002
>6	0.002		0.001
If Balinese	-0.134	**	0.013
If Urban	0.025	**	0.008
Household size	-0.008	**	0.002
If working in 2002	-0.015		0.010
Ln PCE (spline) below median	-0.023		0.018
above median	0.052	**	0.011
Intercept	0.482	**	0.099
F(all covariates)	28.49		
R2	0.07		
# observations	4320		

** significant at 1% ; * significant at 5%

Table 2. Proximity of the bombing

	Male	Female
See the blast at the time it happened	2.56	1.01
Hear the blast at the time it happened	27.85	21.21
Watch television the day after the bombing	87.08	80.65
Visit the blast sites	14.81	6.45
Place of work near blast sites or hospital where the victim of bombing taken?	3.15	1.63
Family, friends, or coworkers injured or killed on bombing	3.47	2.25

Table 3.1. Summary Statistics on Employment of Individuals Age 25 and Above

		2003									
		Males					Females				
		Self-employed	Working for a wage	In unpaid family work	Unemployed	Total	Self-employed	Working for a wage	In unpaid family work	Unemployed	Total
In Percentage											
2002	Self-employed	73.5	13.1	4.8	8.8	42.2	66.8	5.0	10.3	17.9	28.8
	Working for a wage	16.8	75.4	2.2	5.7	43.0	14.4	65.7	6.7	13.2	19.9
	In unpaid family work	46.2	7.7	35.9	10.3	3.9	33.1	5.6	46.9	14.4	18.6
	Unemployed	13.4	8.8	4.6	73.2	10.8	15.1	4.1	11.6	69.3	32.6
	Total	41.5	39.2	4.9	14.4		33.2	16.9	16.8	33.1	
% Change 2003 -2002		-0.7	-3.8**	1	3.6**		4.4**	-3**	-1.8	0.5	
Standard Error		1.59	1.58	0.66	0.98		1.23	1.25	1.23	1.47	
In Number											
2002	Self-employed	619	110	40	73	842	388	29	60	104	581
	Working for a wage	143	647	19	49	858	58	264	27	53	402
	In unpaid family work	36	6	28	8	78	124	21	176	54	375
	Unemployed	29	19	10	158	216	99	27	76	456	658
	Total	827	782	97	288		669	341	339	667	

** significant at 1% ; * significant at 5%

Table 3.2. Summary Statistics on Hourly Wage in Rp : Adults Age 25 and Above

	Male					Female				
	mean wage	25%ile	50%ile	75%ile	N	mean wage	25%ile	50%ile	75%ile	N
All workers in 2002	4995	2243	3494	5752	756	3600	1443	2371	4528	351
All workers in 2003	3750	1691	2638	4522	754	2941	1206	2154	3957	329
% change	-28**	-28**	-28**	-24**		-18**	-17**	-10	-13	
Standard error	0.04	0.05	0.04	0.06		0.07	0.07	0.07	0.10	
Work in 2002 & 2003										
Wage in 2002	5058	2221	3545	5774	722	3798	1485	2406	4834	313
Wage in 2003	3794	1718	2692	4552	737	3062	1253	2258	4192	302
% change	-27**	-26**	-27**	-24**		-18**	-17	-6	-14	
Standard error	0.04	0.05	0.04	0.06		0.07	0.10	0.08	0.09	
In wage work 2002 & 2003										
Wage in 2002	4966	2309	3712	6046	572	4181	1684	2815	5434	241
Wage in 2003	4168	1807	3015	5292	572	3402	1503	2631	4491	241
% change	-19**	-24**	-21**	-14*		-16**	-11	-7	-19*	
Standard error	0.05	0.05	0.05	.07		.08	.08	0.12	0.08	
Work in 2002 not in 2003										
Wage in 2002	3643	2406	3093	4330		1967	1237	1619	2474	
Work in 2003 not in 2002										
Wage in 2003	1817	1011	1879	2495		1580	754	1475	1884	

** significant at 1% ; * significant at 5%

Table 4.1 Correlates of Employment Transitions: Female Age 25 and Above
Multinomial Logit estimates : Relative risk ratios to working in both 2002 and 2003

	Not working in either year		Lose a job by 2003		Take a job in 2003	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Age (spline) 25-55	0.020 *	0.009	0.016	0.011	-0.006	0.011
> 55	0.176 **	0.020	0.049	0.026	0.068 **	0.027
Education(spline) 0-6 years	-0.013	0.033	-0.021	0.037	0.061	0.038
> 6 years	0.056 *	0.025	-0.111 **	0.040	-0.062	0.035
If Balinese	-1.141 **	0.191	0.329	0.388	0.616	0.410
If Urban	0.479 **	0.141	0.471 **	0.172	-0.018	0.167
Ln PCE (spline) < Median	0.053	0.306	-0.238	0.374	-0.843 **	0.346
> Median	-0.089	0.181	-0.243	0.268	-0.262	0.274
HH size	-0.010	0.149	0.137	0.184	-0.029	0.184
# males (0 -14)	0.194	0.177	-0.159	0.224	0.134	0.214
# females (0 -14)	0.197	0.176	-0.080	0.216	-0.166	0.216
# males (15-24)	0.208	0.186	-0.183	0.232	-0.140	0.235
# females (15-24)	-0.330	0.185	-0.578 **	0.236	0.021	0.215
# males (25-55)	0.198	0.189	0.072	0.242	0.381	0.248
# females (25-55)	0.142	0.178	-0.340	0.228	-0.381	0.231
# males (56+)	-0.175	0.239	-0.370	0.304	0.087	0.303
Intercept	-2.312	1.676	-1.381	2.074	2.418	1.918
chi2			360.62			
Log likelihood			-1973.65			
Pseudo R2			0.08			
N			1958			

Household composition # Females (56+) is reference. ** significant at 1% ; * significant at 5%

Table 4.2 Correlates of Employment Transitions: Male Age 25 and Above
Multinomial Logit estimates : Relative risk ratios to working in both 2002 and 2003

	Not working in either year		Lose a job by 2003		Take a job in 2003	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Age (spline) 25-55	0.058 **	0.015	0.013	0.014	-0.012	0.019
> 55	0.144 **	0.024	0.047	0.029	0.138 **	0.035
Education(spline) 0-6 years	-0.076	0.052	-0.007	0.051	0.089	0.082
> 6 years	0.119 **	0.039	-0.100 *	0.041	0.055	0.054
If Balinese	-0.001	0.395	-0.087	0.375	-0.621	0.468
If Urban	0.613 **	0.236	0.658 **	0.218	-0.528	0.318
Ln PCE (spline) < Median	0.535	0.569	0.124	0.500	0.226	0.680
> Median	-0.269	0.312	-0.219	0.323	-0.757	0.580
HH size	-0.278	0.241	0.115	0.226	0.441	0.267
# males (0 -14)	-0.016	0.307	-0.417	0.285	-0.804 *	0.354
# females (0 -14)	-0.169	0.306	-0.447	0.281	-0.767 *	0.355
# males (15-24)	0.052	0.308	-0.367	0.295	-0.484	0.377
# females (15-24)	0.329	0.289	-0.207	0.281	-0.463	0.352
# males (25-55)	1.045 **	0.312	-0.189	0.315	-0.187	0.389
# females (25-55)	0.143	0.250	-0.090	0.256	-0.053	0.304
# males (56+)	1.074 **	0.408	0.056	0.399	0.067	0.483
Intercept	-9.502 **	3.081	-3.594	2.705	-4.822	3.661
chi2			440.63			
Log likelihood			-1933.65			
Pseudo R2			0.10			
N			1958			

Household composition # Females (56+) is reference. ** significant at 1% ; * significant at 5%

Table 5: Monthly Household Earnings and Expenditure in Rp 000

	2002	2003	Change	%(Change)	(std.err.)	N
1. Earnings from wage work	599	479	-120	-20	19	1549
2. Earnings from self-employment	584	414	-171	-29	46	1549
3. Total household earnings	1183	893	-290	-25	49	1549
4. Total household expenditure	1288	1109	-179	-14	55	1549
5. Household size	4.05	4.14	0.10	2	0.04	1549
6. Per capita household expenditure	335	297	-38	-11	13	1549
7. Per capita expenditure on						1549
7a. food prepared at home	111.6	112.3	0.69	1	2.0	1549
7b. food prepared away from home	36.7	12.1	-24.6	-67	1.3	1549
7c. housing, energy	61.3	74.6	13.3	22	2.9	1549
7d. education	6.7	11.4	4.7	70	1.5	1549
7e. health	13.1	22.8	9.6	74	4.1	1549
7f. clothing, personal care	39.9	17.5	-22.4	-56	1.3	1549
7g. semi-durables	52.74	33.6	-19.1	-36	10.5	1549
7i. festivals and ceremonies	16.6	22.0	5.4	33	2.3	1549
8. % shares of expenditure on						1549
8a. food prepared at home	42.4	47.1	4.6	11	0.5	1549
8b. food prepared away from home	10.8	3.3	-7.6	-69	0.3	1549
8c. housing, energy	18.6	22.4	3.8	20	0.4	1549
8d. education	1.6	3.3	1.7	106	0.2	1549
8e. health	3.4	4.9	1.4	44	0.3	1549
8f. clothing, personal care	11.2	5.5	-5.8	-51	0.2	1549
8g. semi-durables	3.2	1.9	-1.3	-41	0.4	1549
8i. festivals and ceremonies	4.6	7.2	2.6	57	0.3	1549

Income and expenditure measured in February 2002 rupiah. US$1=Rp8,000.
Inflation rate 2003/2002 (during the field work) is 8-10%

Table 6. 1. Correlates change household earnings

		Change Sqrt (HH earning from wage work)		Change Sqrt (HH earning from self-employment)		Change Sqrt (Total HH earning)	
		Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err
Education of HH head (spline)	0-6 years	-0.275	0.203	-0.060	0.260	-0.221	0.244
	> 6 years	-0.367 **	0.121	0.709 **	0.156	0.336 *	0.146
Age HH head (spline)	< 35 years	0.026	0.133	-0.209	0.171	-0.304 *	0.160
	35-55 years	-0.111	0.072	-0.023	0.093	-0.027	0.087
	> 55 years	0.085	0.092	-0.108	0.119	-0.049	0.111
If Balinese		1.346	1.083	-3.114 *	1.392	-1.522	1.302
If Urban		0.072	0.821	0.869	1.056	1.250	0.988
HH size		-1.059	0.896	1.416	1.151	1.169	1.077
# males (0 -14)		1.242	1.050	-2.537	1.350	-1.522	1.262
# females (0 -14)		0.211	1.043	-1.783	1.341	-1.634	1.254
# males (15-24)		0.856	1.093	-2.280	1.404	-1.415	1.314
# females (15-24)		0.017	1.043	-2.303	1.340	-2.441 *	1.254
# males (25-55)		-1.236	1.142	-2.891 *	1.468	-3.572 **	1.373
# females (25-55)		1.855	1.029	-2.931 *	1.322	-1.234	1.237
# males (56+)		1.759	1.479	-1.474	1.901	-0.271	1.779
Jembrana		5.157 **	1.676	-6.869 **	2.155	-1.466	2.016
Tabanan		-2.061	1.471	-2.202	1.890	-3.384 *	1.768
Badung		3.198 *	1.440	-2.158	1.851	0.604	1.732
Klungkung		5.314 **	1.972	-7.706 **	2.534	-2.948	2.370
Bangli		5.085 **	1.776	-0.808	2.283	2.775	2.135
Karangasem		3.663 **	1.527	-6.696 **	1.962	-3.658 *	1.836
Buleleng		3.394 **	1.362	-1.894	1.751	1.117	1.638
Denpasar		4.537 **	1.393	-2.848	1.791	0.768	1.675
Intercept		-1.497	4.402	7.799	5.658	7.002	5.293
F(all covariates)		4.04		4.72		3.32	
R2		0.0565		0.0654		0.0469	
# observations		1577		1577		1577	

Regency, Giayar is reference. Household composition # Females (56+) is reference. ** significant at 1% ; * significant at 5%

Table 6. 2. Correlates change household expenditure, saving and household size

	Change Ln(HH expenditure)		Change Ln (PCE)		Change Sqrt (Saving)		Change HH Size	
	Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err	Coefficient	Std. Err
Education of HH head (spline) 0-6 yrs	0.000	0.010	0.005	0.010	-0.162	0.290	-0.011	0.013
> 6 yrs	0.010	0.006	0.008	0.006	0.228	0.174	0.008	0.008
Age HH head (spline) < 35 yrs	-0.003	0.006	0.000	0.006	-0.237	0.191	-0.003	0.009
35-55 yrs	0.004	0.003	0.003	0.003	-0.083	0.103	0.001	0.005
> 55 yrs	0.008	0.004	0.013 **	0.004	-0.119	0.132	-0.018 **	0.006
If Balinese	0.022	0.051	-0.025	0.051	-2.110	1.551	0.105	0.072
If Urban	-0.063	0.039	-0.040	0.039	2.475 *	1.176	-0.118 *	0.055
HH size	-0.027	0.042	-0.014	0.042	1.510	1.283	-0.031	0.059
# males (0 -14)	0.014	0.049	0.034	0.050	-1.926	1.504	-0.114	0.070
# females (0 -14)	-0.035	0.049	-0.009	0.049	-0.667	1.494	-0.120	0.069
# males (15-24)	0.036	0.051	0.078	0.052	-1.681	1.565	-0.173 *	0.073
# females (15-24)	-0.007	0.049	0.034	0.049	-1.729	1.493	-0.190 **	0.069
# males (25-55)	-0.016	0.054	0.031	0.054	-2.950	1.636	-0.162 **	0.076
# females (25-55)	-0.015	0.048	-0.005	0.049	-0.531	1.473	-0.029	0.068
# males (56+)	-0.096	0.069	-0.060	0.070	1.320	2.119	-0.080	0.098
Jembrana	-0.031	0.079	-0.056	0.079	-0.536	2.401	0.038	0.111
Tabanan	-0.135 *	0.069	-0.146 *	0.070	-0.225	2.107	0.049	0.098
Badung	0.050	0.068	0.004	0.068	0.146	2.063	0.168	0.096
Klungkung	0.027	0.093	0.105	0.093	-0.938	2.824	-0.181	0.131
Bangli	0.008	0.083	0.002	0.084	2.508	2.544	0.003	0.118
Karangasem	-0.001	0.072	-0.037	0.072	-3.654	2.187	0.171	0.101
Buleleng	-0.031	0.064	-0.015	0.065	2.809	1.951	-0.013	0.090
Denpasar	-0.132 *	0.065	-0.124	0.066	4.563 *	1.996	-0.039	0.093
Intercept	0.110	0.207	-0.171	0.209	2.395	6.305	0.772	0.292
F(all covariates)	2.53		1.74		3.17		6.98	
R2	0.0362		0.0251		0.0448		0.0937	
# observations	1576		1576		1577		1577	

*Regency, Tabanan is reference. Household composition # Females (56+) is reference. ** significant at 1% ; * significant at 5%

Table 7: Physical and emotional health : Adults Age 25 Year Olds and Above

	Males				Female			
	2002	2003	%Change	Std. Err.	2002	2003	%Change	Std. Err.
Physical Health								
Health limited activity	22.45	33.27	10.82	1.41	22.19	32.97	10.77	1.39
Any morbidity	27.73	41.12	13.39	1.49	28.25	44.09	15.84	1.49
Used health care	20.38	26.72	6.34	1.34	19.96	29.15	9.19	1.35
Self treatment	14.70	20.13	5.44	1.20	15.24	19.46	4.22	1.19
Emotional well-being worse at the time of the interview relative to prior to the Bali bombing		11.52				7.20		
Symptoms associated with post-traumatic stress disorder								
Feeling very upset when something reminded you of Kuta Bombing		66.37				61.35		
Feeling as if future will somehow be cut short		36.73				29.47		
Being “super-alert” or watchful or on guard		28.75				22.92		
Repeated, disturbing memories, thoughts, dream or experiences of Kuta Bombing		10.36				9.84		
Trouble falling or staying asleep		9.97				11.16		