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THE IMPORTANCE OF PRECAUTIONARY SAVING MOTIVE AMONG INDONESIAN HOUSEHOLDS

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ABSTRACT

In the developing world, the population is frequently faced with numerous natural, economic, institutional and market risks. Because of these uncertainties, many individuals and households experience difficult periods of unexpected reduction in income. Using panel data from the Indonesian Family Life Survey (IFLS), this paper tests the existence of precautionary saving associated with income risk in Indonesia. The results of the estimation show that the uncertainty variable is not significantly related to the growth of consumption which signifies that Indonesian households do not constitute precautionary saving to smooth their consumption. The finding may be explained by the fact that Indonesian households have in their possession other type of support mechanisms based particularly on inter-generational and -communal solidarity.

Keywords: *uncertainty, income risks, precautionary savings, consumption smoothing.*

INTRODUCTION

In the developing world, the population is frequently faced with numerous natural, economic, institutional and market risks. Because of these uncertainties, many individuals and households experience difficult periods of unexpected reduction in income. In certain cases, the occurrence of unexpected shocks has led some households to fall under the poverty line. In the developed world, the impact of such shocks is usually absorbed by the existence of a well functioning and effective social security net such as the 1 income support scheme. The theoretical background for a public social security system is the fact that individual households are limited in the ability to help themselves and that individuals are unable to save for their own uncertain future (Bauer & Paish, 1952). However in the developing countries, due to limited resources, such system is almost non-existent. And if such system does exist, it is usually limited to its strict minimum covering only the most basic risk such as death or old-age.

So how do households in developing countries cope with these risks? In recent years, a number of research initiatives have examined patterns of income and consumption smoothing in the risky environments of developing countries. Such studies show that most households in most situations have smoother consumption than income, and smoother income than what a risk-neutral agent would achieve. These studies show that households in developing countries used variety of ways in order to insulate their consumption from production and income fluctuations. These initiatives range from an informal community sharing of risks to participating in insurance and credit markets whenever such opportunities exist. In the case where insurance and credit markets are incomplete or do not exist, households may

use savings and dissavings arrangements. The saving made during period of certainty and used during period of uncertainty is called precautionary saving, a term which was first introduced by Leland (1968). According to the author, in the permanent income model allowing for precautionary saving, current consumption will decrease and saving will increase if uncertainty over future income increases. In other words, consumers will have to sacrifice their current consumption in order to hold their future consumption at the desired level. This study focuses on the situation of Indonesian households. We're particularly interested in examining whether Indonesian households have precautionary saving motives.

This paper is organised as follows. The next session provides a brief review of related empirical literature on precautionary saving. Section 3 analyzes the theoretical framework for the empirical analysis and discusses the data. Section 4 presents the empirical results. Finally conclusions with policy implications are discussed in Section 5.

LITERATURE REVIEW

The precautionary savings literature argues that risk averse agents suffer a greater utility decline from a decline in consumption than they obtain a utility increase from a similarly sised increase in consumption. When this is the case, agents have a preference to hold assets (or borrow less) and have consumption increase over time (as uncertainty is resolved) rather than have a consumption path that is level over time.

The theoretical condition under which an increase in uninsurable risk leads to more precautionary saving was first derived by Leland (1968) who showed in a two-period model that earnings uncertainty reduces first period consumption when individuals exhibit decreasing risk aversion. This result was then generalised by Miller (1974) and Sibley (1975) in a multiperiod setting. Later on, the concept of "prudence" was defined by Kimball (1990) who showed that a prudent individual will engage in precautionary saving. The theory of precautionary saving was further sharpened by numerous recent studies (Caballero, 1991; Deaton, 1992; Skinner, 1987; Zeldes, 1989). In the literature, researchers have adopted either theoretical or empirical approach in order to determine the proportion of either aggregate or household wealth attributable to precautionary saving. The earliest example of the theoretical approach is Skinner (1987) who derived a closed-form approximation for life cycle consumption subject to uncertain interest rates and earning by taking a second order Taylor-Series approximation of the Euler equation. Using empirical measures of earning uncertainty, Skinner (1987) find that precautionary saving comprises up to 56 percent of aggregate life cycle savings.

Despite the strong predictions of simulation models, econometric investigations to empirically assess the role of precautionary savings have reached mixed conclusions. Browning & Lusardi (1996) survey over a dozen empirical studies that use cross sectional and panel data from the U.S. and Italy, and report results ranging anywhere from no evidence of precautionary motive to attributing 40% of wealth accumulation to it. Using data on food consumption from PSDI, Carroll & Samwick (1995) claim precautionary motives explain 40% of wealth accumulation, while Kuehlwein (1991) estimates that increases in variability of consumption growth actually reduces current savings by 11.8 to 44.5%. Dynan (1993) finds that the quarterly variance of households' consumption expenditures in the Consumer Expenditure Survey (CES) is not a significant predictor of the quarterly growth rate of consumption when this variance is instrumented by education, occupation or industry. On the other hand, Dardoni (1991) in his studies that used data on British households, found average con-

sumption across occupation and industry group to be significantly lower when income was greater. Carroll & Samwick (1995) estimate a wealth model that separates the predictable and unpredictable components of income uncertainty, and they instrument the latter using the education and occupation of the household head. They find that unpredictable income uncertainty is a potentially important predictor of household wealth-income ratios.

The more recent literature has been overall supportive of the existence of precautionary motive for at least certain types of households. Merrigan & Normadin (1996) find strong evidence of precautionary behavior in a large sample of UK households especially among households who are less likely to face liquidity constraint (wealthier group) or to share risk (one-earner households). Similarly, Carroll, Dynan, & Krane (1999) find that increases in unemployment risk do not cause households with relatively low permanent income to significantly boost their net worth, but precautionary effect emerges for households at moderate and higher levels of income. This precautionary motive is only significant in broad measures of wealth that includes home equity but not in financial assets. Lusardi (1998, 2000) finds evidence of precautionary behavior in a sample of pre-retirement age households; the contribution of precautionary saving to wealth accumulation is however small, and ranges from 2.7 to 3.9. The mixed results of these studies may be at least partially attributable to the difficult of calculating an exogenous measure of income uncertainty. Determinants of income uncertainty such as education, occupation, and industry are all, to some extent, choice variables that reflect the same underlying tastes that drive wealth accumulation. Moreover, the most obvious correlations of these observable characteristics with unobservable preferences (time preference and prudence) would tend to bias down empirical estimates of the magnitude of a precautionary saving effect. Similarly, actual income uncertainty or subjective assessments of risk are likely to be correlated with underlying tastes for savings.

MODEL SPECIFICATION

1. Theoretical framework

Consider the following standard problem of a consumer who lives for many periods and chooses optimal current consumption and contingency plans for future consumption to maximize the expected value of a lifetime time-separable utility function.

$$\underset{\{Ct+k\}_{k=0}^{T-t}}{Max}\ Et[\sum_{k=0}^{T-t}(1+\delta)^{-k}u(C_{t+k},D_{t+k})] \qquad (1)$$

subject to

$$A_{t+1+k}=(1+r_{t+k})(A_{t+k}+Y_{t+k}-C_{t+k}),k=0,.....,T-t$$
$$A_{T+1}\geq 0$$

…. (2)

where U (o) is the within period utility (or "felicity function") and, for each period s, Cs is the household consumption and Ys its total income, rs denotes the real interest rate, As the non-human wealth at the beginning of period s and the subjective discount rate; moreover, Ds is a vector of "modifiers for utility" or "taste shifters" such as family composition, labour supply or health status, usually referred to as "demographics". The optimal allocation of consumption verifies the first order condition (the standard Euler equation)

$$E_t u'(c_{t+k})=\frac{1+r_{t+k}}{1+\delta}.E_t u'(c_{t+k+1}) \qquad (3)$$

where u'(o) denotes the first derivative of the utility function with respect to its first argument. The Euler equation signifies that individual is indifferent between present and future consumption. We will further assume that the felicity function is of the constant relative risk aversion (CRRA) form, namely,

$$U(C_t, D_t) = \frac{1}{1-\rho}\exp(\varphi' \Delta D_t) C_t^{1-\rho} \qquad (4)$$

Where ρ is the relative risk aversion coefficient (therefore in the case of CRRA felicity function, $\rho > 0$). The main reason why we choose to use this functional form is that it allows us to go beyond the traditional certainty-equivalence model (where the utility function is quadratic) and, hence, to analyze the precautionary motive for saving[1]. Then, the Euler equation can be written as

$$\frac{1+r_{t+k}}{1+\delta}\exp(\varphi' \Delta D_t)\frac{C_{t+1}}{C_t} = 1 + \xi_{t+1} \qquad (5)$$

where $E(\xi_{t+1}) = 0$.

2. Econometric approach

As pointed out by Skinner (1987), by approximating the equation (5) above using the second order Taylor approximation, it is possible to approximate the optimal closed form solution of consumption and its growth rate that takes the following functional form:

$$\ln \Delta C_{i,t} = \alpha + \beta UC_{i,t} + \varphi D_{i,t} + u_{i,t} \qquad (6)$$

where $\Delta C_{i,t}$ denotes the growth rate of consumption, $UC_{i,t} = \text{var}(\xi_{i,t})$ the uncertainty variable and $D_{i,t}$ a vector of "taste shifters". $u_{i,t}$ is the error term which is the difference between the realised and expected consumption growth. It includes taste shifters and unanticipated shocks to marginal utility. Its conditional expectation must be zero - $E_t u_{i,t} = 0$. Concerning $UC_{i,t}$, the variable that will be used in order to approximate it is the log of the variance of the income purged from the trends effect - log(Var(Yit)).

The precautionary saving motive will be captured by the terms representing uncertainty; an increase in uncertainty will lead to a higher expected consumption growth since current consumption is lowered in order to increase precautionary saving. Thus if the precautionary saving motive do exist, the coefficient β should be significantly positive.

However it should be noted that the response to an income shock depends on the amount of wealth held by the individual household. According to Albaran (2000) even if future income becomes risky, some household would not need to save if they hold enough liquid assets or if their future income is expected to be much higher than current income. We're thus expecting the "poor" to be more responsive to an income shock than the "rich" in term of reduction in their current consumption. This differentiation between the rich and the poor could also be thought of as accounting for the impact of the wealth-income ratio target that drives buffer-stock saving behaviour in Carroll (1994)[4].

In order to differentiate between the "poor" and the "rich", we will introduce a scaling factor and the equation can be written as follows:

$$\ln \Delta C_{i,t} = \alpha + \beta \pi_{i,t}^2 UC_{i,t} + \varphi D_{i,t} + u_{i,t} \qquad (7)$$

Following the approximate solutions derived by Blundell and Stoker (1999), the scaling factor can be written as $\pi_{i,t}^2 = \frac{Y_{i,t}}{E_t(A_{i,t+1})}$.

Nevertheless, financial wealth ($A_{i,t+1}$) is not available in our data sets. We will thus replace it by $C_{i,t}$, following Banks, Blundell and Brugiavinni (1999) and Albaran (2000).

3. Measuring uncertainty

Much of the empirical difficulties facing previous studies are related to identifying and measuring exogenous indicators of income uncertainty facing a household. Testing the precautionary saving model requires constructing a measure that both captures income uncertainty and is uncorrelated with other characteristics that may influence saving. These requirements have proved difficult to

meet for most previous empirical approaches. Perhaps as a result, the previous findings of the literature are distinctly mixed. There have been two general approaches to measuring uncertainty for the purposes of testing the precautionary motive. The first is to use direct measures of the uncertainty of an individual's income. Guiso, Jappelli, & Terlizzese (1992), using data on Italian households, find that consumption is only slightly lower, and asset accumulation only slightly higher, for consumers reporting a greater subjective variance for their next year's income; but Lusardi (1998), using a similar approach, finds somewhat larger effects on assets. Kazarosian (1997) finds that the variance of a household's income over the next 15 years is a positive predictor of wealth holdings for a sample of households headed by older (45-59) year old men in the National Longitudinal Survey, and Merrigan & Normadin (1996) estimates that households with more variable incomes save more.

The second approach is to use a proxy for individual uncertainty, based on job characteristics or education. This was the approach followed by early attempts to find supporting evidence for the precautionary motive in Fisher (1956) and Friedman (1957), as well as Skinner (1987), who tabulated saving rates by occupation. While Fisher and Friedman find some evidence that individuals save more when in occupations assumed to have riskier income – consistent with the precautionary saving hypothesis - Skinner found that the highest risk occupations, the self-employed and sales workers, had lower rates of savings. In our case, in order to represent the uncertainty term, a subjective measure calculated using available information in the data sets will be used. More precisely we will use the log of the variance of the income. Since we are trying to measure uncertainty, we are not interested in that part of the variability of labour income, which is due to predictable life-cycle changes in income as well as aggregate trends. We will therefore detrend our earnings variable using the following procedure (see Guariglia, 1998). We will first calculate the average earnings in each year. Second, we will divide each individual's earnings by this average. Third, for each year, we will regress the above obtained ratio on age, age squared, educational dummies, occupational dummies, and interactions of the last two groups of dummies with age and age squared. Finally, will we divide each respondent's earnings by the fitted values obtained from the above regression.

4. Data description

All the data used in this study is obtained from the Indonesian Family Life Survey (IFLS). The Survey is a continuing longitudinal socioeconomic and health survey. It is based on a sample of households representing about 83% of the Indonesian population living in 13 of the nation's 26 provinces in 1993. The survey collects data on individual respondents, their families, their households, the communities in which they live, and the health and education facilities they use. The first wave (IFLS1) was administered in 1993 to individuals living in 7,224 households. IFLS2 sought to re-interview the same respondents four years later. A follow-up survey (IFLS2+) was conducted in 1998 with 25% of the sample to measure the immediate impact of the economic and political crisis in Indonesia. The next wave, IFLS3, was fielded on the full sample in 2000[2]. A broad-purpose survey, the IFLS contains a wealth of information about each household including consumption, assets, income and family businesses. Taking into account the attrition as well as missing data problem, we will retain for the purpose of this study only 3883 households for the three periods (1993, 1997 & 2000).

In measuring consumption, we combined various types of expenses namely weekly expenses on 37 food items/group of items

(rice, cassava, tapioca, dried cassava, tofu, tempe, oil and so on), monthly and yearly expenses on 19 nonfood items (electricity, water, fuel. recurrent transport expenses, domestic services, clothing, medial costs, education and so on). We excluded durable expenditures because they affect utility for more than one period thus violating the assumption that utility is time separable (Albaran, 2000; Carroll, 2001; Dynan, 1992).

All data are converted in its annual equivalence. And in order to make them comparable through time, all values are converted to 1993 prices using a consumer price deflator. Finally, the data are adjusted for household size by dividing consumption by the number of adult equivalents in each household[3]. As for other variables that are supposed to influence the growth rate of consumption, we've retained the following variables : age, age squared (**age2**), household size (**householdsize**), family composition expressed as shares of children under the age of 6 (**chidlrshare**), children between the age of 7 and 17 (**schoolshare**) and people past the working age to the number of adults (**oldageshare**), share of working age adults to the size of household (**workingadultshare**) and the log of the lagged household assets (lnassetval_1)[4].

Table 1 summarizes some of the main characteristics of the household in our sample in 2000. In Table 2, we summarize income per head as well as consumption per head according to provinces, employment of household head and level of education of household head.

RESULTS AND ANALYSIS

1. Base model

Before we proceed with our estimations, we need to determine which method is best suited for our data. We used the Hausmann test in order to specify the type of model to be used. The test concluded that the null hypothesis can be rejected and that the fixed effects are to be preferred to the random effects. Consequently, only variables which vary in time are included in the model.

Table 1. The Main Characteristics of the Sample Households

Characteristics (mean)	Person(s)
Size	6,24
Member by age	
>6	0,48
6-11	0,69
12-17	0,774
18-55	3,41
56-64	0,362
>64	0,5
No. of Female members	3,2
No. of Male members	3,05
Number of children	1,95
Number of old people	0,5
Number of working adults	3,79

Source: Author's Own Calculation

The results of our estimation are reported in table 3. In model A, we regress the growth rate of consumption to our detrended uncertainty variable as well as some variables which are supposed to influence consumption growth rate, using the fixed-effects method. The result of the regression as presented in column A shows that the uncertainty variable is positively correlated with the growth rate of consumption. However the coefficient is not significant thus rejecting the hypothesis of precautionary motive among Indonesian household. As for other variables, most of the coefficients are strongly significant.

In model B, we took into account the fact that the "poor" may react differently than the "rich" to an increase in uncertainty by introducing a scaling factor into the equation. The "rich" who are not financially constrained are expected to be less sensitive to uncertainty. For a given level of uncertainty, the effects of

Table 2. Income per capita and Consumption per capita According to Province, Employment and Level of Education

		Income per capita		Con. Per capita	
Province	N	mean	Std-dev.	mean	Std-dev.
Sumatera Utara	265	599536.6	1377069	846901.1	1688601
Sumatera Barat	186	528143.3	673201.6	794211.8	814900.7
Riau	2	256614.3	72990.79	929744.6	271157.3
Sumatera Selatan	185	1748809	18900000	633392.3	656652.1
Lampung	205	360164.8	398450.7	520606.6	700907
DKI Jakarta	228	1444700	6084271	1377154	1558547
Jawa Barat	580	2034264	31800000	699025.5	788563.4
Jawa Tengah	503	2357324	35600000	668063.5	860184.7
Jogjakarta	277	1418435	14800000	822319	1002640
Jawa Timur	532	681313.1	2360520	693614.4	725504.5
Bali	208	592537.9	611946.8	730460	604312.8
Nusa Tenggara Barat	265	347072.9	437821.8	511414.1	723846.1
Kalimantan Selatan	214	498131.1	607266.7	625141	483129.6
Sulawesi Selatan	233	445084.9	829721.9	559586	550190.3
Profession (head)	N	mean	Std-dev.	mean	Std-dev.
Unemployed	671	442275.9	950322.2	643204	654587.8
Public sector employee	617	694196.5	3664267	666555.7	670934.3
Private sector employee	227	1446391	4518495	1116268	1064818
Farmers, Artisans, Petty Traders	2270	1400858	23800000	721829.2	1035797
Level of educ (head)	N	mean	Std-dev.	mean	Std-dev.
Without education	660	1512528	29700000	533928.5	820017.1
Elementary	2167	1050759	18100000	625294.6	835343.8
Primary	461	709532.5	1798760	863449.4	1053215
Secondary	432	849060	1042896	1007746	902292.1
Tertiary	163	3446184	20700000	1601118	1442040
Total	3883	1166850	18700000	721551.6	931263.4

Source: Processed Data

uncertainty on the growth rate of consumption will decrease with an increase in the level of wealth of the household.

The results in column B shows that uncertainty is significantly correlated with the growth rate of consumption. Nevertheless the sign is in contrary to what is expected. The coefficient for uncertainty is found to be negatively correlated with the growth rate of consumption per capita which result signifies that in the face of uncertainty, Indonesian households will increase their current consumption to the detriment of their future consumption. In other words, they do not constitute any precautionary savings to face an increase in uncertainty. As for the variable that captures the effect of wealth, we can see that even though it is significant the sign is in contrary to what is expected. The wealthier is the households, the less they will reduce their present consumption to the detriment of their future consumption. To put it differently, it is

the "rich" who tends to save more when faced with uncertainty.

Table 3. Dependant Variable: The Growth Rate of Consumption per Head ($\ln \Delta C$)

	A	B
UC	0.0003485	-0.0129288
	(0.23)	*(-5.27)***
Age	-.0338138	-0.0386651
	(-4.85) ***	*(-5.54)****
age2	0.0003175	0.00036
	*(4.92)****	*(5.58)****
householdsize	-0.0207828	-0.0200898
	*(-2.07)***	*(-2.01)***
lnassetval~1	-0.0165456	-0.0086427
	*(-5.38)****	*(-2.65)****
chidlrshare	-0.0457196	-0.0436283
	(-1.63)	*(-1.56)*
schoolshare	0.0303424	0.0293294
	(1.50)	*(1.45)*
oldageshare	-0.0944665	-0.08947
	*(-3.07)****	*(-2.92)****
workingadultshare	-0.2589862	-0.2384716
	*(-3.61)****	*-(3.34)****
ln(var Y)*scalefactor		0.0008545
		*(6.88)****
Constant	1.391386	1.389268
	*(7.50)****	*(7.52)****
R^2 within	0.0253	0.0214
Wald chi2	19.37	16.29

Notes: t-test in parentheses; significant at 10% level*, significant at 5% level**, significant at 1% level***.

Source: Processed Data

Based on the results obtained from the estimation of these 2 models, we may conclude that Indonesian households do not have precautionary saving motives. Nevertheless several explanations could be brought forward as to why the growth of consumption and uncertainty is found either to be non-correlated (column A) or negatively correlated (column B). Firstly, the variable used in order to represent uncertainty may not be the most appropriate one. In fact, in the literature, several other methods have been used in order to come up with the best measure of uncertainty. However, in our case, the choice of method that can be used is somehow constrained by the nature of our data. Secondly, Indonesian households may react to an increase in uncertainty by decreasing only certain type of consumption. Certain expenses are considered as incompressible. For example, consumers may not be willing to decrease the amount of their children education expenses of their rents even though they anticipate that their future income will become more risky. If we regress the uncertainty variable to the growth of the total consumption, we may not get a significant correlation between these two variables since, at the same time, there will be some expenses which will be held constant and some others which will be reduced. Thirdly, there may be other types of support mechanism available to the Indonesian households which are not observable by the researchers. The existence of such mechanisms is quite frequent in the developing countries given the social structure of the society. By relying on these measures, households won't have to reduce their consumption in order to increase their precautionary saving to face uncertainty.

2. Endogeneity problem

It is important to note that the use of the variance of income as a measure of uncertainty may lead to the problem of endogeneity[5]. Indeed, it is impossible to perfectly measure income notably due to the existence of what is termed as "measuring error" in the constitution of the variable. Furthermore, individuals whose income we are measuring know better than us (Kenickell & Lusardi, 2001). What is measured as the variation of income (using the variance of income) may already be anticipated by these individuals and thus no longer constitutes an innovation. Nevertheless, the endogeneity problem can be solved using the instrumental variable method. Following Carroll (1994), we will use one

period lagged of socio-demographic variables as instruments for our uncertainty variable.

The results of our estimation using the instrumental variables method are reported in table 4. Again we estimated two equations: one without controlling for the effects of wealth and another which control for the effect.

Table 4. Dependant Variable : The Growth Rate of Consumption per Head ($\ln \Delta C$)

	A	B
UC	-0,1117777	-0,1207169
	*(-2,90)***	*(-2,52)***
Age	-0,0536655	-0,0696056
	*(-3,88)***	*(-3,88)***
age2	0,000288	0,0005509
	*(2,81)***	*(4,12)***
householdsize	-0,0405852	-0,022574
	*(-2,38)***	*(-1,82)**
lnassetval~1	-0,0188423	0,0299266
	*(-3,83)***	*(1,71)**
chidlrshare	0,0067812	-0,0101338
	(0,14)	*(-0,26)*
schoolshare	0,0164588	0,0280115
	(0,51)	*(1,11)*
oldageshare	-0,0956726	-0,0629768
	*(-1,96)***	*(-1,53)*
workingadultshare	-0,2582856	-0,135796
	*(-2,28)***	*(-1,31)*
ln(var Y)*scalefactor		0,0051133
		*(2,69)***
Constant	5,315404	2,815402
	*(3,79)***	*(4,02)***
R^2 within	0,0019	0,0065
Wald chi2	75,52	126,73

Notes: t-test in parentheses; significant at 10% level*, significant at 5% level**, significant at 1% level***.

Source: Processed Data

Our regressions show that when the effect of wealth is not controlled for, uncertainty is negatively significantly correlated with the growth rate of consumption per capita (column A). The negative sign of the uncertainty coefficient suggests that Indonesian households do not constitute any precautionary saving. In column B, we reported the results of our estimation after controlling for the wealth effect. Again, our results point to the conclusion that Indonesian households do not constitute any precautionary saving in order to face uncertainty. The uncertainty variable is found to be negatively and significantly correlated with the growth rate of consumption per capita. As for the interaction variable that is used to differentiate the effects of uncertainty on the « rich » and the « poor », even though the coefficient is found to be significant, it is not of the expected sign.

CONCLUSION

The main objective of this study is to analyze the behavior of Indonesian household within a risky environment. We're interested in knowing whether uncertainty has a negative impact on the consumption of Indonesian households. This is important particularly in terms of policy implications. If households accumulate more wealth due to uncertainty, policies for reducing uncertainty would reduce precautionary saving and stimulate consumption, all factors being equal. Besides, due to precautionary saving, individual households will have to sacrifice a portion of their normal consumption. This will then have an adverse effect on their future well being particularly if the expenses sacrificed concerned the education of their children or their investment in productive materials.

Using a fixed effect model, we regress the growth of consumption with an uncertainty variable as well as some time-varying socio-demographic variables which are supposed to have an influence on the dependant variable. The results of the estimation show no significant correlation between consumption and uncertainty which implies that Indonesian households do not have precautionary saving motives. Based on these results and given the lack of formal social security net in Indonesia,

we may also conclude that Indonesian households rely mostly on informal mechanisms in order to face uncertainty. However it is important to emphasize the fact that Indonesia is a country which is developing rapidly. And as the country develops, the structure of its society too may change and it is only a matter of time before it resembles the one that prevails in the developed countries. In such circumstances, social security mechanisms which are based mainly on generational and communal solidarity may progressively disappear. And if nothing is done in improving the existing social security system, in case of a shock a large majority of the population will be left without anything to fall back on.

ENDNOTES

1. There are a number of functional forms that can be used in order to capture the impact of uncertainty on consumption. Caroll (1992) showed that a consumption function is concave (which is one of the two conditions required in order to capture the precautionary saving motive) if the utility function used is derived from the family of Hyperbolic Absolute Risk Aversion (HARA) function. Such functions satisfy the following condition

$$\frac{\partial u^3(w)}{\partial w^3} \cdot \frac{\partial u(w)}{\partial w} \Bigg/ \left(\frac{\partial u^2(w)}{\partial w^2} \right)^2 \equiv k > 0$$

   In the literature, the two most used utility functions are the Constant Absolute Risk Aversion (CARA) function (where k = 1) and the Constant Relative Risk Aversion (CRRA) function (where k ¿1).

2. The fourth wave of the Indonesia Family Life Survey (IFLS4) was designed between February and September 2007. However, the data will be ready for public viewing by early spring 2009

3. We used 0.5 for children under the age of 7 and 0.8 for older children and senior citizens.

4. Assuming particular processes for income, Carroll (1994) shows that consumers with certain prudence and impatience patterns have a desired wealth income ratio. Bellow this target, prudence dominates and consumers will save; but above, impatience will lead households to dissave, i. e., to use up their wealth surplus.

5. The Nakamura-Nakamura test used to detect the problem of endogeneity reveal that effectively our measure of uncertainty is endogenous.

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