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Managing Risks: How do Poor Households Smooth Their Income and Consumption? (An Examination of Poor Households in Yogyakarta, Indonesia)

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Poor households face covariate risk, inequality and also regionally specific risks that affect their welfare. In general, households try to respond to those risks by taking various actions in order to ensure they will be able to consume at previously acceptable levels in the future, a process called consumption smoothing. However, how these households respond to those risks varies with respect to the types of risks, and demographic factors – e.g. jobs, gender, etc. Understanding these responses helps businesses and governments formulate effective policy and other strategic actions.

This article examines the various practices used to achieve consumption smoothing amongst the poorest households in Yogyakarta, Indonesia. It looks at 125 households, representing 25 households in each of the five regions of the Yogyakarta area. It employs a closed-questionnaire to collect quantitative data for descriptive causal comparative studies. We found that behaviour varies in response to the types of profession and gender. Furthermore, the source of the income fluctuation also matters in determining households' responses. However, the source of the consumption fluctuation did not appear to differ across professions.

As for the structure of this article, it is split into four sections: Introduction, Methodology, Analysis and Discussion, and Conclusion. The Introduction gives a brief overview of the ways households smooth their income and consumption and the effects of this smoothing. The Methodology section outlines the administration of the survey and the manner in which the research was conducted. The Analysis and Discussion section examines the results, with an eye towards the statistically significant and interesting. The Conclusion discusses the potential policy implications of the data analysed in this paper.

Introduction

It is widely understood that households involved in agriculture or other similar professions in poor countries generally must not only cope with severe poverty, but also with extremely variable incomes. Factors beyond their control, such as weather and variability of crop prices, can severely affect their income. For households already living close to subsistence level, these income risks are especially important because they often result in consumption fluctuations, i.e. the households having to consume less.

In order to counteract these risks, households can accumulate wealth to smooth consumption. This wealth is also important for the survival and advancement of poor households. Although wealth is traditionally associated with those in the upper end of the income distribution, it may play a more pivotal role in the lives of the poor. Recent empirical and theoretical analysis has shown that drawing on wealth can help keep poor households afloat after an income or expenditure shock. For instance, research shows that farmers in northern Nigeria appear to smooth consumption through depleting wealth after unexpected drops in income (Urduy 1995). However, a high proportion of the poor households in the world has no (or extremely low levels) of marketable wealth and limited access to financial institutions (insurance or credit) to facilitate their income and consumption smoothing activities (as evidenced by Case 1995; Dercon 1996; Zeller et al. 1997; Robinson 2002; CEPPS and Bank Indonesia 2004; Roog 2006; etc.). As a consequence, these activities, which try to raise households out of poverty, can actually end up driving them deeper into it. Thus, the ability of households to effectively smooth consumption over time reflects a key dimension of well being (See Morduch 1995; Kinsey et al. 1998; Wik 1999; Zeller 2000; Skoufias 2003; Notten & Crombrugghede 2006; and Lazzo 2007).

Being able to smooth consumption reflects an important dimension of well-being as it reflects people's capacity to satisfy their (basic) needs today as well as tomorrow, despite the existence of risks and the occurrence of shocks. Studies analyzing the relation between income and consumption show that, over time, household consumption is considerably smoother than income, i.e. a reduction in household income is not accompanied by a similarly large decline in consumption. Although there is considerable evidence that consumption smoothing takes place in both developed and developing countries, the economic literature also shows that the actual smoothing mechanisms employed is very context specific, especially in developing economies.

The economic literature typically analyzes consumption smoothing behaviour following two approaches: the first approach models household behaviour using a permanent income model or risk-sharing model and focuses on the overall smoothness of consumption vis-à-vis income flows (see Deaton 1992); the second approach models and tests particular consumption smoothing mechanisms for specific groups of households or regions (see Alessi & Lusardi 1997; Dercon 1998; Dubois, Jullien, & Magnac 2006; Hooegeveen 2001; Kochar 2004; Ligon 1998; Rosenzweig 1988; Rosenzweig & Wolpin 1993; Udry 1994; Udry 1995). Of these two techniques, this article will focus on the latter.

In order to reduce the impact of this risk, households might employ a combination of different consumption smoothing strategies. This article splits these into six distinctive strategies or actions, which fall under two broader categories: ex ante strategies and ex post strategies. The ex ante or mitigating strategies create alternative funding sources in case future income falls short of expectations. These strategies imply that the households are reserving part of current income for future contingencies. By contrast, households use the ex post or coping strategies to create alternative funding sources after it becomes clear that current

income is not sufficient to satisfy basic needs. In addition to the other two categories, this article divides these strategies by which of three different mechanisms they employ: additional income generating activities (i.e. an increase labour supply, home production or the selling of home produced goods), seeking credit/loans, or seeking transfers (Aryeetey 2004). The table below outlines each of the six strategies and roughly sketches how a household would employ them in order to smooth consumption.

Table 1: Typology of consumption smoothing strategies

| Strategies | Consumption smoothing mechanism |
|-------------------------------------|---|
| <i>Ex ante</i> | |
| Accumulation of financial capital | Financial savings finance future consumption |
| Accumulation of physical capital | Physical assets can be sold to finance consumption but they also contribute to current consumption and/or can be used as physical collateral for a loan or credit |
| Seek insurance | Insurance mitigates the impact of shocks by providing resources to finance consumption when a particular contingency occurs |
| <i>Ex post</i> | |
| Adjust income generating activities | Generate additional income to finance consumption |
| Seek loans or credit | Loans or credit finance consumption |
| Seek transfers | Transfers finance consumption |

Source: (Aryeetey 2004)

Besides the choice of various strategies, poor households can also chose their assets in such a way as to best create wealth and to create a buffer against income fluctuations. Unfortunately, as noted earlier, it is quite difficult for many poor households to save enough income to accumulate useful levels of wealth. Because of their low and variable income, saving is difficult for at least two reasons. Firstly, in poor regions or countries where many households struggle to survive, there is often little opportunity to build up a buffer, i.e. a store of income that they could use in the event of future fluctuation. If a household is struggling to survive, it is unlikely they will have spare income to set aside for future income shocks. Secondly, most households have problems in locating a liquid and safe way of storing the income that they do end up setting aside. By liquid, this means a method of storage that is easily accessible and convertible to useful wealth; if a household were to store its income by hiding it away somewhere inaccessible or by purchasing livestock that were not easily sold, that wealth would not be very useful as they could not employ it when an income shock hit them.

Additionally, due to the high overheads and institutional inefficiencies associated with banking in these regions, few poor households have access to financial products and banking services that are common methods of accumulating wealth in the more developed world. Informal community savings schemes – the local equivalent of the aforementioned financial institutions – are suboptimal because they do not provide a safe value store for households. Alternatively, whilst nonfinancial assets may present

an alternative form of savings, they come with their own risks. These assets risk being more easily expropriated through theft and, in the case of livestock, natural factors, e.g. drought; and because of these risks, they still do not constitute secure stores of value. In addition, all of these assets often require investments that are large relative to the household's income, which makes it more difficult to use assets to smooth income and consumption.

Because of these factors, a diverse portfolio of assets is not only critical for households to deal with unexpected shocks, but it can also enable access to a wider range of consumption smoothing options that are vital for them to maximize their welfare over time and for allowing them to manage risk in any one period. These attributes are especially important in developing countries where the lack of sufficient access to consumption smoothing mechanisms can perpetuate and worsen poverty. A household that is constrained in its access to credit or other assets may not be able to survive a negative shock. In practice, many households do survive, but at the cost of adopting an extremely risk averse production strategy. In many rural areas, for example, households illustrate this in the sacrifice of expected return as they choose safer, lower yield crops. This perpetuates the cycle of poverty and hampers economic growth as credit and/or other constraints push farmers to a sub-optimal path.

Before moving on to the data gathered from Yogyakarta, we will survey some general trends among poor households. To preface this with some general information, where poor households do have assets, they appear to be ones which help the households in their production of goods (Aryeetey 2004). However, a physical house is also an important asset of many households. The next few paragraphs will consider the difference in composition of asset portfolios and choice of strategies based on the demographic factors of location, age, gender, and education.

There is a difference in terms of house ownership between poor households in urban and rural areas. In urban areas, there is domination of non-farm enterprise assets, which contrast with the domination of farm assets in rural areas. The rural poor have a tendency to hold easily liquefiable assets, such as livestock and stored crops. However, the ease with which liquefaction of assets can take place tends to decrease as incomes/expenditures rise.

Turning to the factor of age, older people concentrate their wealth in their houses and land, i.e. in terms of physical static assets. By contrast, younger people are certainly more conscious of rates of return on different assets and have the physical capability to engage in other economic activities, hence their greater involvement with non-farm (and generally more active) enterprise activities. It is also interesting that younger people have higher saving and borrowing ratios than older people.

Examining the effect of gender, there is a basic difference in the composition of a household's asset portfolio because of the gender of the head of the household. While households headed by men have a greater focus on livestock, female-headed households tend to focus more on non-farm enterprises. This is not surprising, given the earnings patterns in rural areas; the larger share of loans in the portfolio of women may be associated with the fact that they are more involved in non-farm enterprise activities that are more likely to attract loans than men who deal predominately with farms and livestock.

Finally, the variation in asset choice as a function of education is quite interesting as pronounced differences emerge. The more educated tend to utilize formal savings mechanisms, such as money borrowed from friends, neighbours, traders, etc. By contrast, while avoided by those with no or high levels of education, those with some education tend to prefer livestock.

Methodology

After that rough overview of the general trends, it is now time to examine Yogyakarta itself. As for why we selected this region, we did so because whilst poor households in Yogyakarta face a wide range of risks and shocks similar to those experienced by households all over the world (Newhouse 2005), their response is unique and thus it contributes to the overall understanding of how poor households smooth their consumption. This information can help business and government to formulate necessary policy and other strategic actions.

To guide the analysis, this paper will utilise a conceptual framework to analyze households' consumption smoothing strategies. Central in this framework is a typology – discussed earlier – of consumption smoothing strategies, based on what actions households may take to smooth consumption. Then, the analysis will relate these smoothing strategies to possible institutional smoothing partners and the assets that may be required to follow a particular smoothing strategy. By applying this framework to Yogyakarta and empirically exploring rich survey data, this article intends to find out what poor household in Yogyakarta do at a given point in time and how these actions may contribute to consumption smoothing.

The sample used in this essay was not chosen randomly, but rather by non-probability purposive sampling, from the population of Yogyakarta because the target population is difficult to identify and contact via traditional random methods. This type of sampling means that households that were known to be in a particular profession in a particular region were contacted and had their data collected. The reason for choosing this method is that the completeness of sample variation is more important than the same proportion of sample class. Given the number of households surveyed, leaving the sampling to random chance posed a real risk of providing data that was too thin to be able to conduct any meaningful statistical analysis.

As for the households surveyed, this article looks at 125 households, representing 25 households in each of the five regions that meet our research purposes. In addition to surveying 25 households in the city of Yogyakarta itself, the remaining 100 households come from the four surrounding regencies – Bantul, Kulon Progo, Gunung Kidul, and Sleman – that all together comprise the Yogyakarta Special Region. Table 2 (shown below) shows the number of respondents per district based on their professions and location. The sample is limited to 25 respondents per district and it attempted to equally distribute the number of respondents among different types of professions. There are neither farmers nor fisherman from Yogyakarta due to the limited number of both of those professions in the city itself. In the Bantul, Kulon Progo, and Gunung Kidul Regencies, the survey achieved its criteria of an equitable distribution of respondents for all types of professions. For some geographic background information, these districts encompass an area near the south coast and agricultural areas, and share a border with the city of Yogyakarta. Finally, in the district of Sleman, there was—except for the fishermen—an equal distribution of respondents according to pro-

fession; the reason behind the lack of fisherman respondents is because of the district’s land-locked location in the northern part of Yogyakarta, which is closer to the mountains.

Table 2: Sample Distribution by Profession (Number of Persons)

| Profession | Yogyakarta | Bantul | Kulon Progo | Gunung Kidul | Sleman | Total | % |
|----------------------|------------|-----------|-------------|--------------|-----------|------------|------------|
| Farmer | 0 | 4 | 4 | 5 | 5 | 18 | 14.4 |
| Fisherman | 0 | 5 | 5 | 4 | 0 | 14 | 11.2 |
| Contracted worker | 6 | 4 | 4 | 4 | 5 | 23 | 18.4 |
| Uncontracted worker | 6 | 4 | 4 | 4 | 5 | 23 | 18.4 |
| Producer | 6 | 4 | 4 | 4 | 5 | 23 | 18.4 |
| Trader/Street vendor | 7 | 4 | 4 | 4 | 5 | 24 | 19.2 |
| Total | 25 | 25 | 25 | 25 | 25 | 125 | 100 |

Source: Primary Data

Analysis and Discussion

The remainder of the paper will discuss the results found from the survey by splitting them into a variety of categories and then seeing if any statistically significant results were found in said categories. In the remainder of the article, most of the statistical tables, e.g. Chi-Squared tables, are omitted and are available upon request. Finally, the tables with six-figure numbers concerning income—and others with a large number of decimal places—are rounded to a reasonable number of places, again in order to maintain clarity of presentation.

Income and Consumption Fluctuations

Starting off looking at income and consumption fluctuations, we tested the data to see if the difference in the observed data differs in a statistically significant amount from what is expected. The tests conducted in this section looked at the maximum, minimum, and range of income and consumption and attempted to see whether there was significant variability of those measures among the professions. In order to do this, it assumed that each profession would have the same value for each of those six categories and then found the probability of the actual distribution occurring by chance by using Chi-Squared values. Looking at the results of this test, the variation in income and consumption was significant for the professions, although the exact magnitude of the significance varied depending on the measure in question. Table 3 (shown below) shows the data of respondents based on income and consumption variations.

The largest fluctuation occurred in the income and consumption of the fishermen. Due to the seasonal nature of their profession, they achieved the highest maximum income and the lowest minimum income. If the season was good and there was a large catch, fishermen would take in especially large incomes, but usually this season only lasts about three months. For the rest of the year the southern coastal fishermen tend to be unemployed because they are unable to go fishing due to the seasonal weather changes that limit the possibility of catching a profitable number of fish. Because of this it is not surprising that the fishermen have one of the largest values for maximum consumption and the smallest for minimum consumption.

Table 3. Fluctuations in income and consumption, average per month in the last year (Rp/month)

| | | Producer | Farmer | Street Vendor | Fisherman | Contracted Worker | Uncontracted Worker |
|-------------|-------|----------|-----------|---------------|-----------|-------------------|---------------------|
| Income | Max | 774,000 | 957,000 | 733,000 | 1,125,000 | 886,000 | 782,000 |
| | Min | 467,000 | 559,000 | 437,000 | 439,000 | 563,000 | 435,000 |
| | Range | 306,000 | 397,000 | 297,000 | 686,000 | 324,000 | 347,000 |
| Consumption | Max | 823,000 | 1,042,000 | 655,000 | 1,032,000 | 799,000 | 782,000 |
| | Min | 521,000 | 554,000 | 420,000 | 418,000 | 536,000 | 461,000 |
| | Range | 303,000 | 488,000 | 235,000 | 614,000 | 262,000 | 322,000 |

Source: Primary Data

After the fishermen, the farmers have the second highest levels of consumption and income. Despite this, there is considerable distance between the maximum and minimum income of farmers, which also reflects a significant difference in income between those farmers who own their own land and those farmers who work for others. In addition to that, there are many factors that could affect these fluctuations, such as land area, seed capital and processing systems. Even with this variation, the data shows that farmers with high incomes have a greater consumption than their income, and thus are running a deficit. However, at least part of the deficit here exists because the analysis includes the opportunity cost, i.e. the wages they could have made working for someone else, in the cost of production. Despite this decrease in the magnitude of the deficit, it still exists to varying degrees. Based on a survey of farmers in Bantul and Sleman district, most of them consume their own crops from one harvest to the next, implying the existence of a deficit between consumption and income as the farmer's seem to lack the income to buy other foodstuffs from the markets. Furthermore, farmers have the need to repair their capital, i.e. tools and machines used in farming, and thus this is another expenditure for them.

Turning to the other end of the spectrum, the street vendor had consistently low levels of income and consumption, e.g. having the lowest maximum level in each category. For these households, their income depends on a variety of factors: type of goods sold, season, location, mode of transportation, and others. Because their average income is greater than its consumption, this suggests that income can still cover the consumption. The distance between the maximum and minimum expenditure is not too large, and this indicates that these households can maintain a relatively stable lifestyle by virtue of this stable income.

Finally, the low-income group of respondents that has the highest deficit is uncontracted workers. By virtue of both their low incomes and their large deficits, any fluctuations in consumption that other groups might simply have dealt with has a much stronger impact on them. Additionally, the nature of uncontracted work increases the possibility for income fluctuations. As they work depending on whether or not their employers need them and not on any stable basis, factors outside of their control could cause large swings in income. Furthermore, this variation cuts across this profession and different households could have very different economic situations.

Causes of Income Fluctuations

Tables 4 and 5 – shown below – show the major causes of income fluctuations based on profession and regencies, respectively. Looking first at Table 4, it appears that season is a key factor for most of the respondents. This hypothesis is supported by the fact that season has the largest net deviation from the expected values on the Chi-Squared table. Additionally, the impact of seasonal factors becomes even more pronounced when looking at the farmers and the fishermen. For these professions, the seasonal fluctuations require them to manage their work more carefully in order to attempt to limit the risk of income fluctuations. In the case of large seasonal fluctuations that diminish their income, many people reported they would switch professions and become uncontracted workers in order to get supplementary income until the appropriate season for their profession comes around again.

Table 4. Source of Income Fluctuations by Profession

| Source of Fluctuations | Producers | Farmers | Street Vendors | Fishermen | Contracted Workers | Uncontracted Workers |
|------------------------|-----------|---------|----------------|-----------|--------------------|----------------------|
| Seasons | 8 | 16 | 13 | 14 | 4 | 11 |
| Natural Disasters | 1 | 2 | 4 | 0 | 0 | 2 |
| Contract Completed | 0 | 2 | 1 | 0 | 10 | 5 |
| Project Completed | 1 | 0 | 1 | 0 | 7 | 10 |
| Low Demand | 15 | 1 | 10 | 1 | 5 | 17 |
| Others | 12 | 4 | 15 | 0 | 5 | 3 |

Source: Primary Data. Respondents may indicate more than one source of fluctuation.

Another prominent factor is low demand, which affects a different group of professions than the seasonal ones. It primarily affects the producers, street vendors, and uncontracted workers. This low demand means that these people are unable to plan their future production and consumption accurately because they will be receiving a variable level of income. Coupled with the low levels of income generally associated with these professions, these fluctuations have an even greater impact on the households involved. Overall, there is a statistically significant pattern of variation, which implies that the most important shock(s) to a household depends on its main earner's profession.

When faced with the threat and actuality of consumption and income shocks, families attempt to respond by saving using some of the ex ante and/or ex post strategies discussed above. This next sub-section of the article will look at the variations in those strategies and see if they are statistically related to the profession of the respondents.

Saving Strategies

For many households, the first and most obvious response to the possibility of fluctuations in income is to save part of their income in order to offset any eventual fluctuations. In order to analyze this, this survey looked at the four primary options by which households save: in the home, formal financial institutions (FFI), informal financial institutions (IFI), and in assets. To briefly define those four methods, the first consists of simply storing money at one's house, e.g. in a box or under a pillow. The second (FFI) is a common form of saving in the developed world that involves buying financial assets or depositing money with institutions such as banks that primarily focus on facilitating such transactions. The third (IFI) consists of using institutions run by local, informal groups of people. The final method involves purchasing durable, valuable goods (perhaps capital goods) that the households could sell if the need for additional income arises. Of these factors, saving at home is by far the most popular with the most households reporting having used this strategy. Use of financial institutions (both formal and informal) was significantly lower than saving at home because of a combination of factors including the low rate of interest on money saved at said institutions, the administrative costs of using them, and the unavailability of those institutions in many circumstances. Finally, a substantial number of households held assets as a form of saving. Looking at all of the saving strategies together, there is a statistically significant variation in the pattern of saving strategies.

Table 5. *Ex ante* Strategy

| Type of saving | Total | % of Households |
|--|--------------|------------------------|
| Money: In House | 70 | 56 |
| Money: Formal Financial Institution | 36 | 28.8 |
| Money: Informal Financial Institution | 34 | 27.2 |
| Assets | 55 | 44 |

Source: Primary Data. Respondents may indicate more than one strategy.

Ex post Strategies

Table 6 indicates the relationship between ex post strategies and types of jobs. The largest deviations from the expected values occur with the fishermen across all categories and street vendors – specifically with respect to looking for work. It is interesting that fishermen are quite unlikely to seek government assistance and that street vendors are quite unlikely to find another job. Whilst the data here cannot tell us why those discrepancies exist, they could perhaps be attributed to issues with the application process for government aid itself or with human capital (i.e. marketable skills) that the workers have. Overall, there is a statistically significant variation of the type of *ex post* strategy chosen and the profession of the household surveyed.

Table 6. Saving Preferences (*ex post* Strategies) by Profession

| Strategy | Producers | Farmers | Street Trader | Fishermen | Contracted Worker | Uncontracted Worker |
|------------------------------|-----------|---------|------------------|-----------|----------------------|------------------------|
| Looking for Work | 6 | 7 | 3 | 11 | 8 | 14 |
| Rescheduling Workload | 9 | 2 | 6 | 6 | 2 | 11 |
| Borrowing Money | 16 | 10 | 18 | 7 | 15 | 11 |
| Transfers from Relatives | 7 | 9 | 5 | 3 | 3 | 6 |
| Selling Assets | 7 | 13 | 9 | 3 | 11 | 12 |
| Obtaining Gov't Subsidies | 10 | 8 | 14 | 3 | 13 | 12 |

Source: Primary Data. Respondents may indicate more than one strategy

Consumption Fluctuation

After examining the patterns in the possible strategies which revolve around changing the income of the family, we then looked at the sources of consumption fluctuations. Before examining the data, it is necessary to say a bit about each source of fluctuation. The first one is 'new school year' and reflects the costs that are involved with educating children; there is some degree of subsidisation of these costs for the poorest families, yet it still remains a factor for a substantial number of households. Somewhat strangely, this factor still remains important even though one would expect the families to expect this annual cost and factor it into their budget. As for why it remains a consumption fluctuation, a possible explanation is that families are buying items outside of their normal consumption patterns and that the costs of said items fluctuate in an unpredictable manner.

The second – 'family member illness' – can strike any family. However, for fishermen at least, this incidence is much lower than expected (generating the largest cell's critical statistic, save in the 'other' row). The data itself does not explain this, but one of the respondents mentioned that he has a boss who will help if there is any unexpected expenditure such as family member illness. Depending on whether this practice is commonplace, it could help to explain that unusual drop.

The third source – 'Moslem Eid celebration' – would seem to function somewhat like the 'new school year' factor in the sense that it is a relatively universal phenomenon that is known beforehand, but still requires a high level of expenditure and could be classified as a shock for many families.

Finally, the fourth factor – 'contribution to neighbours' – is an unavoidable factor for many households, especially those living in villages. During rites of passage and other cultural ceremonies, e.g. marriages, it is expected that the households contribute to the ceremonies. Whilst these events might have relatively fixed costs, their unpredictable nature makes them a source of consumption fluctuation.

In Table 7 (shown below), we looked at the overall incidence of consumption fluctuations amongst all of the respondents. Despite the 'new school year' fluctuation occurring less frequently than the others, there is no statistically significant level of variation between the occurrences of the various consumption fluctuations.

Table 7. Source of Consumption Fluctuation

| Source of Consumption Fluctuation | Total | Percentage of Households |
|-----------------------------------|-------|--------------------------|
| New School Year | 62 | 49.6 |
| Family Member Ill | 81 | 64.8 |
| Moslem Eid Celebration | 90 | 72 |
| Contribution to Neighbours | 86 | 68.8 |
| Other | 12 | 9.6 |

Source: Primary Data. Respondents may indicate more than one strategy

When analyzing this data according to profession—as shown in Table 8—the level of variation is not statistically significant. Therefore, it does not appear that any of the consumption fluctuations disproportionately affect any one profession. Furthermore, even when ignoring the ‘other’ responses, there is no statistically significant difference between the occurrences of the various consumption fluctuations.

Table 8. Sources of Consumption Fluctuation by Profession

| Source of Fluctuation | Producers | Farmers | Street Traders | Fishermen | Contracted Workers | Uncontracted Workers |
|----------------------------|-----------|---------|----------------|-----------|--------------------|----------------------|
| New School Year | 12 | 7 | 11 | 6 | 12 | 14 |
| Family Member Ill | 15 | 12 | 20 | 4 | 15 | 15 |
| Moslem Eid Celebration | 16 | 9 | 17 | 11 | 18 | 19 |
| Contribution to Neighbours | 17 | 10 | 17 | 9 | 18 | 15 |
| Other | 1 | 1 | 4 | 3 | 0 | 3 |

Source: Primary Data. Respondents may indicate more than one source of fluctuation

Gender Perspective

Moving on to a demographic factor, Table 9 reports the gender perspective. It divides respondents by employment status into three categories: employed, has a family member who is employed, and unemployed. When conducting the Chi-Square test, it was necessary to merge the final two categories in order to maintain the validity of the test. However, the result was not statistically significant in either case. Therefore, the tests concluded that there is no difference in the employment status between men and women in the households surveyed.

Table 9. Employment Status by Gender

| | | |
|---------------|---------------------------|------------|
| Male | Employed | 39 |
| | Family Member Employed | 38 |
| | Unemployed | 1 |
| Female | Employed | 19 |
| | Family Member Employed | 26 |
| | Unemployed | 2 |
| Total | | 125 |

Source: Primary Data

Table 10 shows data concerning *ex ante* saving strategies and gender. Whilst it is perhaps interesting to note that men preferred FFIs to IFIs and that men were much more likely to use assets than women, there is no statistically significant pattern overall amongst the data gathered. Despite this, over half of the variation observed for all of the data in this table was due to the differences between genders in using assets as a method of saving.

Table 10. Responses by *ex ante* Strategy and Gender

| Gender | In House | Formal Financial Institution | Informal Financial Institution | Assets |
|---------------|-----------------|---|---|---------------|
| Male | 43 | 22 | 20 | 16 |
| Female | 28 | 14 | 16 | 15 |

Source: Primary Data. Respondents can indicate more than one strategy

Looking at another aspect of the data, Table 11 shows the relationship between the *ex post* strategies and gender. In contrast to the other data analysed on gender, this test did show a statistically significant difference between men and women. It appears that women were much less likely to look for an additional job whilst they were much more likely to borrow money as a response. Furthermore, there was a noticeable difference between the proportions of each gender that sought out aid from the government. Whilst this test cannot explain those patterns in and of itself, it seems that normative cultural factors might be at play. Furthermore, the fact that women may gravitate to different professions might also affect their preferred *ex post* strategy.

Table 13. Responses by *ex post* Strategy and Gender

| Strategy | Male | Female |
|--------------------------|-------------|---------------|
| Looking For Work | 40 | 9 |
| Rescheduling Workload | 28 | 8 |
| Borrowing Money | 45 | 34 |
| Transfers from Relatives | 21 | 13 |
| Selling Assets | 39 | 16 |
| Obtaining Subsidies | 34 | 26 |

Source: Primary Data. Respondents can indicate more than one strategy

Conclusion

In this section, the first part will deal with possible issues with the study conducted in this article and the latter part will deal with the possible policy implications of this study – both for Yogyakarta Special Region and for governments more generally.

Turning to the first section, it seems that the most obvious problem would be the small sample size. Whilst it was large enough to make the Chi-Square tests valid in most instances, it was necessary on several occasions to combine bins together in order to maintain the validity of the tests. Despite this objection, the combining of bins never actually altered the result, i.e. turning a seeming statistically significant one into an insignificant one. Also, there are issues with the non-probabilistic purposive sampling done for this study. Whilst it did select out specific individuals for the purpose of the research, it seems that the risks of a random sample failing to capture enough people of the various groups and thus derailing all possible tests are less than those posed by this type of sampling. For future research, it would obviously be more useful to get a large enough sample as to allow random selection but still have enough respondents in all of the relevant categories. Furthermore, there is perhaps an issue with the much smaller number of female respondents as compared to the number of male ones. This has an unknown impact on the results of the study. However, since the proportion of women surveyed roughly reflects the economic realities of the region in question, it does not appear to do serious damage to the validity of many of the results. Furthermore, since the tests concerning gender take this disparity into account, they are immune from this potential problem. Finally, another potential problem with this article is that it only employs one type of statistical test, e.g. Chi-Square, whilst some other ones – such as factor analysis – could help shine more light on the causal connections between the various sources. Despite these worries, it does appear that the data and tests still generated interesting and relevant information.

As for the policy implications of this research, there are a few actions the Indonesian government could take in the short term to help improve the lives of its citizens. First of all, seeing as there are significant variations as to the extent to which various sources of income fluctuate, it seems that the government could undertake some corrective measures in order to minimise the impact of these policies. Since seasons have the largest impact on the respondents as a whole, the government could perhaps institute retraining programmes to help people find work during the unproductive seasons and thus not experience income shocks, or at least decrease their severity. Additionally, since projects or contracts finishing disproportionately affected contracted and uncontracted workers, and since they are some of the poorest professions, perhaps the government could alter the regulations that govern the employment of those people in such a way as to ensure more employment stability or at least to improve their chances of finding employment after their contracts finish. Furthermore, it seems that since ex post strategies depend on gender, the government should take policies in order to try to correct that imbalance. Whilst the exact causes of these differences are going to be quite hard to pin down, it seems that policies to change norms, actions to increase the availability of borrowing money, and perhaps making acceptance/application for government aid easier or more socially acceptable for men could be beneficial.

In general, these results give all governments some general guidelines when conducting policy. They remind the governments that it is necessary to take peoples' professions into account when targeting policies. It is not enough to simply assume that implementing a single policy will be sufficient to help everyone; it is a much more complicated and multi-faceted process. Furthermore, the governments need to be aware of the social norms in their societies and realise that their actions might have

different impacts on different genders. Whilst a policy might formally apply to all in society, the data here—and probably more generally—indicates that there might be issues in ensuring that all people take advantage of it.

On balance, the examination of Yogyakarta in this article has hopefully shed some light on the issues underlying consumption and income fluctuations and given some insights as to how to correct it. Whilst there are many different factors that affect these fluctuations, it also seems that there are many different mechanisms by which the government could minimise them and effect change in society.

References

- Alessi, R. and A. Lusardi (1997). "Saving And Income Smoothing: Evidence From Panel Data." *European Economic Review* 41: 1251-1297.
- Aryeetey, E. (2004). "Household Asset Choice Among the Rural Poor in Ghana." Paper prepared for Workshop the Project on "Understanding Poverty in Ghana", organized by the Institute of Statistical, Social and Economic Research, University of Ghana and Cornell University, January 2004.
- Case, A. (1995). "Symposium on Consumption-smoothing in Developing Countries." *Journal of Economic Perspectives* 9(3): 81-82.
- Cooper, D. R. and P. S. Schindler (2001). *Business Research Methods*, 7th Edition, New York: McGraw-Hill.
- Deaton, A. (1992). *Understanding Consumption*. Oxford: Oxford University Press
- Dercon, S. (1998). "Wealth, Risk and Activity Choice: Cattle in Western Tanzania." *Journal of Development Economics*, 55: 1-42.
- — — (1996). "Risk, Crop Choice, and Savings: Evidence from Tanzania." *Economic Development and Cultural Change*, 44(3).
- Dubois, P., B. Jullien, and T. Magnac (2006). "Formal and Informal Risk Sharing in LDC's: Theory and Empirical Evidence." *Econometrica* 76(4): 679-725.
- Eswaran, M. and A. Kotwal (1990). "Implications of Credit Constraints For Risk Behaviour in Less Developed Economies." *Oxford Economic Papers* 42.
- Hoogeveen, H. (2001). "Evidence on Informal Insurance in Rural Zimbabwe." Tinbergen Institute Discussion Paper, TI 2001-001/2, Tinbergen Institute.
- Kinsey, B., K. Burger, and J. W. Gunning (1998). "Coping with Drought in Zimbabwe: Survey Evidence on Responses of Rural Households to Risk." *World Development* 26(1).
- Kochar, A. (2004). "Ill-health, Savings and Portfolio Choices in Developing Economies." *Journal of Development Economics* 73: 257-285.
- Ligon, E. (1998). "Risk sharing and information in village economies." *Review of Economic Studies* 65: 847-864.
- Morduch, J. (1995). "Income-smoothing and Consumption-smoothing." *Journal of Economic Perspectives* 9(3).
- Newhouse, D. (2005). "The Persistence of Income Shocks: Evidence from Rural Indonesia." *Review of Development Economics* 9(3): 415-433.
- Notten, G., and D. de Crombrughe (2006). "Poverty and Consumption Insurance in Russia." MGSOG Working Paper, 2006/004. Maastricht Graduate School of Governance, Maastricht University, Maastricht.
- Robinson, M. S. (2002). *The Microfinance Revolution: Lessons from Indonesia*. Washington, D.C.: The World Bank and Open Society Institute.

- Rogg, C. (2006). "Asset Portfolios in Africa: Evidence from Rural Ethiopia." Paper prepared for the UNU-WIDER project meeting on personal assets from a global perspective, 4-6 May, Helsinki.
- Rosenzweig, M. (1988). "Risk, implicit contracts and the family in rural areas of low-income countries." *The Economic Journal* 98: 1148-1170.
- Rosenzweig, M. and K. Wolpin (1993). "Credit Market Constraints, Consumption Smoothing, and the Accumulation of Durable Production Assets in Low-Income Countries: Investments in Bullocks in India." *The Journal of Political Economy* 101(2): 223-244.
- Skoufias, E. (2003). "Consumption Smoothing in Russia: Evidence from the RLMS." *Economics of Transition* 11(1): 67-91.
- Udry, C. (1994). "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria." *Review of Economic Studies* 61: 494-526.
- — — (1995). "Risk and Saving in Northern Nigeria." *The American Economic Review* 85: 1287-1300.
- Wik, M. (1999). "Coping with Risk in Agriculture: Income- and Consumption-Smoothing Strategies in LDCs'." *Forum for Development Studies* 2: 329-344.
- Zeller, M., G. Schrieder, J. von Braun, and F. Heidhues (1997). *Rural Finance for Food Security for the Poor. Implications for Research and Policy: Food Policy Review 4*. Washington, D.C.: IFPRI.