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WIDER Working Paper 2017/134

**The differential impact of economic crisis on
men and women, and its connection to intra-
household bargaining**

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June 2017

Abstract: This paper discusses whether the Asian financial crisis affected men and women differently in Indonesia by estimating the effect of district consumption shock during the crisis on changes in men's and women's working status and assets. I found that in rural areas there seems to be no effect of district consumption shock. In urban areas the fall in district consumption increases women's employment and decreases men's non-business assets. The effect in both cases is large. I also found that intra-household bargaining may be related to the effect of crises on men and women. Specifically, women who have sole decision-making power on employment prior to the crisis do not need to increase employment as much as a response to the fall in district consumption compared with women without sole decision-making power on employment prior to the crisis.

Keywords: economic crisis, coping strategies, gender, intra-household decision-making, Indonesia

JEL classification: J16, D13, E32, O1

Figures and tables: at the end of the paper.

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This study has been prepared within the UNU-WIDER project on '[Gender and development](#)'.

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ISSN 1798-7237 ISBN 978-92-9256-360-8 <https://doi.org/10.35188/UNU-WIDER/2017/360-8>

Typescript prepared by Gary Smith.

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The Institute is funded through income from an endowment fund with additional contributions to its work programme from Denmark, Finland, Sweden, and the United Kingdom.

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The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

1 Introduction

Households in developing countries face high risks of economic shocks such as natural disasters, health shocks, price shocks, asset loss, employment shocks, etc.¹ Due to the lack of adequate formal insurance coverage in developing countries, households usually have to rely on informal coping mechanisms such as decreasing consumption, borrowing from friends and family, selling assets, and increasing working hours (see Heltberg et al. (2014), Dercon (2002), and Morduch (1995) for surveys on coping strategies). These coping mechanisms are often costly either in terms of reduction in current consumption or leisure, or in terms of less investment or higher debt in the future. Studying these coping mechanisms will shed important light on household behavior and help to guide social safety net policies aimed at alleviating the negative effects of economic shocks.

One strand of risk and coping literature looks at the gender-specific effects of economic shocks. For example, Behrman (1988) finds that in rural India girls are affected more than boys in terms of health outcomes by lack of food before the major harvest. Behrman and Deolalikar (1990) find that women's and girls' food intake share a disproportionate burden of rising food prices in rural India. Dercon and Krishnan (2000) find that in rural Ethiopia women are more affected by adverse health shocks than men as their nutritional intake varies more with these shocks.

Many studies have also used aggregate shocks to analyze the gender aspect of coping strategies. The phenomenon that women's employment increases during economic crisis while men's decreases is found during several crisis episodes in Latin America and Asia.² Friedman and Schady (2009) and Baird et al. (2007) also find that girls' health is more negatively affected during recessions than boys' in low-income countries.

The evidence shows that there is a gender difference in responses to shocks, and in many cases women are more adversely affected. From an equity perspective, it is important to understand why women are affected differently and whether and how we should ameliorate this gender difference.³ Also, studying the gender difference in responses to shocks will add to our understanding of intra-household allocation and decision-making. Economic shocks may have differential impacts on men and women for many reasons. First, men and women may have different initial conditions

¹Using household surveys from 16 developing countries, Heltberg et al. (2014) find that households in all 16 countries face frequent economic shocks.

²For a survey of these studies, refer to Sabarwal et al. (2011).

³There may also be long-term consequences of the short-term effects of economic shocks on women.

before the shock that cause different responses to the shock. For example, if increasing working hours is the only strategy a household can use to cope with economic shocks, women may have to increase their hours more than men since men are already working full-time. Another potential reason for differential impact of economic shocks is related to the intra-household power structure within the family. Who has more power within the household may determine who bears more of the cost of economic shocks.

Whether intra-household bargaining structure matters for who bears more of the cost of economic shocks is an interesting question. Standard intra-household bargaining literature mostly looks at whether bargaining matters for the allocation of household resources during normal times.⁴ None of these effects, however, are in the context of economic shocks. One can imagine that bargaining may matter less during the status quo, but more when there is a crisis. In times when dramatic changes have to take place, for example in order to make ends meet, intra-household bargaining may be more important as allocations will deviate from non-crisis times.

This study takes a systematic gender approach to estimate the impact of an aggregate economic shock on men and women separately, and tries to assess whether the differential impact is partly caused by the difference in bargaining power between men and women prior to the shock.

The aggregate shock I look at is the 1998 Asian financial crisis (AFC) in Indonesia. This is an interesting crisis episode to study because Indonesia was the hardest-hit country during the AFC. GDP dropped by 15% in just one year, and had not recovered to pre-crisis levels until about six years later. The AFC is the biggest aggregate economic shock experienced by Indonesia in the last several decades and has changed the course of Indonesian politics and economy. It is important to study the impacts and legacy of a shock of this magnitude.⁵

To study the impact of economic crisis, one approach is to look at the change in outcomes during the crisis and paint a descriptive picture of what has happened during the crisis. Many studies that have looked at the impact of the AFC in Indonesia took this approach. For example, Frankenberg et al. (2002) looked at the change in household consumption, wages, and working

⁴In a survey of literature on household bargaining in developing countries, Doss (2013) has listed studies that found effects of women's bargaining power on household consumption, household production decisions, household labor allocation, children's health and education outcomes, etc.

⁵The abundance of data also help to study the impact of this crisis. Annual National Socio-Economic Household Surveys (SUSENAS) from Indonesia that are representative at the district level are available to look at the change in many variables over time by region. The Indonesian Family Life Survey (IFLS) is a large-scale longitudinal survey that also covers the crisis period and elicits rich information on household and individual outcomes.

status of individuals during the crisis and found that there is a significant decrease in household consumption and wages, and a substantial increase in women's employment. This study takes one step further by trying to estimate the causal effect of aggregate shock on men's and women's outcomes. I exploit the regional diversity of Indonesia and construct a measure of the severity of the crisis at district level in terms of decrease in district average consumption. Treating the decrease in district average consumption as an exogenous shock, I estimate the effect of this shock on men's and women's outcomes. I choose the decrease in average consumption of the district as my measure of the severity of the crisis because consumption is one of the more accurately measured household outcomes in Indonesia, and has been consistently measured by the SUSENAS for decades. Also, since SUSENAS is representative at the district level, I will be able to track the change in consumption over time at this level. Furthermore, decrease in consumption level is widely used as a measure of the severity of the crisis since consumption is closely related to households' living standards.

While many outcomes can be studied when looking at the effect of economic shocks, the outcome variables I concentrate on are working status and assets of adult men and women. I choose working status as one of the outcomes for two reasons. First, the increase in female employment during the AFC in Indonesia has been documented by Frankenberg et al. (2002) and Smith et al. (2002). Preliminary analysis of IFLS also shows that female employment increased by about 10 percentage points between 1997 and 2000. Therefore it is interesting to test whether the increase in female employment is caused by the decrease in district consumption level and how big the causal effect is.

Another reason for studying the employment effect is its contribution to the added worker effect literature. Standard added worker effect is associated with the phenomenon that the wife works more when the husband becomes unemployed (see Lundberg (1985) and Stephens (2002) for important works on the added worker effect in the US). This hypothesis has been studied in developing countries, and many of these studies also look into the context of economic crises. For example, Cerutti (2000) found that women's labor force participation increased during the Latin American economic crisis in the 1990s in urban Argentina. Smith et al. (2002) also found that women's employment rate increased during the AFC in Indonesia. These studies, however, are mostly descriptive and assume that the increase in women's employment is associated with decreased earning or unemployment of other household members. Skoufias and Parker (2006)

formally tested this hypothesis by estimating the effect of unemployment of the husband on the wife's working status during the Mexico peso crisis, and found that women transit from outside the labor force into the labor force if their husbands move from employment to unemployment. This approach, however, is subject to the simultaneous decision problem since first of all the wife's working status and the husband's working status are jointly determined. Also we can expect that during a crisis the factors that cause husbands to lose jobs will also affect women's work choices. Furthermore, in many developing countries household surveys do not distinguish between unemployment and being outside the labor force. Another approach to look at the added worker effect is to look at the relationship between business cycle fluctuation and women's work. For example, Pessino and Gill (1997) found a negative relationship between women's work and national GDP across time in Argentina. The current study follows the same spirit but exploits regional variation by testing whether women's work increases as a result of a fall in aggregate district consumption level during a crisis. Although this approach is less direct than looking at the relationship between the husband's unemployment and the wife's working status, it is less subject to the simultaneous decision problem and also reflects the effect of many changes during the crisis in addition to unemployment, such as price increases, wage cuts, etc.

I also study the effect of the AFC on men's and women's assets because this is another potentially important mechanism to cope with shocks, as pointed out by Heltberg et al. (2014), but is less studied due to limited data on assets. In the IFLS there is rich information on assets that allow me to distinguish between husbands' and wives' assets. Also from the IFLS it is possible to distinguish business and non-business assets. Selling non-business assets is considered a less costly coping mechanism than selling business assets since selling business assets will affect income generation in the future. Using IFLS data I can explicitly test whether the decrease in district consumption level affects men's and women's assets differently. Also I can test whether the effect is on business or non-business assets.

I find that the drop in district consumption increases women's employment (although imprecisely estimated in some specifications) and decreases men's non-business assets in the urban area, and has no effect on men's and women's working status or assets in the rural area. More specifically, a 10 percentage points decrease in growth rate of district consumption causes women to increase employment by 4–7 percentage points. A 10 percentage points decrease in growth rate of district consumption causes men to decrease assets by about 3230000 to 7890000 rupiah (about

323 to 789 US dollars). The gender difference in the impact of the decrease in district consumption level is robust to controlling for change in men's and women's wage at the district level during the crisis, and to controlling for the size of the informal sector by gender prior to the crisis. Also the estimates are robust to using different periods to estimate the change in consumption level during the crisis. I also found some preliminary evidence that the effect of crisis on women's work is more driven by poor households, and the effect of the crisis on men's non-business assets is more driven by richer households.

After finding the differential impact of the crisis on men and women, I further ask the question of whether the differential impact is related to the household decision-making structure prior to the crisis. I find that when I interact the dummy variable indicating whether the wife has sole decision-making power on work prior to the crisis with the change in district average consumption, the coefficient on the interaction term is positive and larger in magnitude than the coefficient on the change in district consumption level. In other words, the negative effect of the change in consumption level on women's work is entirely gone if the woman has sole decision-making power on work. Therefore it seems that women's bargaining power does matter for how women respond to economic shocks. Also, the result that women with higher bargaining power regarding working increase work less is driven more by poor households. To my knowledge, this is one of the first attempts to look at the effect of intra-household bargaining power on household coping strategies during shocks.

The rest of the paper is organized as follows: Section 2 introduces the various data sources I use in this study. Section 3 describes the change in district consumption level during the crisis. Section 4 shows the effect of the change in district consumption level on the change in men's and women's working status and assets. Section 5 shows whether bargaining power prior to crisis matters for the effect of the crisis on women's work. Section 6 concludes.

2 Data

There are three main data sources I use in this study. Individual and household level information come from the IFLS. The IFLS is a household panel survey conducted by RAND in collaboration with several research and survey institutions in Indonesia. The baseline was administered in 1993 with around 7000 households interviewed in 13 provinces in Indonesia (North Sumatra,

West Sumatra, South Sumatra, Lampung, Bali, West Nusa Tenggara, South Kalimantan, South Sulawesi, and all provinces on Java). Five rounds of follow-up surveys have been administered in 1997, 1998, 2000, 2007, and 2014. The 1998 round only followed about 25% of the original sample as a quick response to the AFC, and is not publicly available. The IFLS boasts low attrition and rich information. Round to round follow-up rates are over 90%. The IFLS covers a wide array of information at both the household and the individual level. At the household level, detailed information about household condition, assets, consumption, and household businesses are available. For most adult members of a household, detailed individual-level information about education, employment, and assets are available. I use the 1997 IFLS as the survey right before the crisis, as the real hit of the AFC was felt in Indonesia in 1998, and use the 2000 IFLS as the survey during the crisis.⁶ By 2000, Indonesia had partially recovered from the crisis. As evidenced by the fact that GDP per capita had not recovered to the 1997 level until 2004, however, the 2000 observation should still reflect changes during the AFC.

The change in average consumption at the district level is calculated using SUSENAS. SUSENAS is the social and economic survey conducted by the Indonesian Bureau of Statistics (BPS). It is conducted at least once per year, and since 1993 has been representative at the district level. Much of the SUSENAS questionnaire aims at eliciting detailed information on household consumption, but SUSENAS also covers information on health and employment for adult members in the household. In this study I use SUSENAS data from 1993 to 2000 to analyze the change in mean and median consumption of districts over time and calculate measures of the aggregate consumption shock at the district level during the AFC.

The third data source I use is the Indonesian Labor Force Survey (SAKERNAS), from which I calculate the change in wages during the AFC. The SAKERNAS is Indonesia's official labor force survey, and has been conducted by the Indonesian BPS since 1976. SAKERNAS has a smaller sample size than SUSENAS, at least during the 1993–2000 period, and until recently is only representative at the province level but not at the district level. It elicits basic education information, detailed employment information, and basic income information from adult members in the household.

⁶The attrition rate between 1997 and 2000 is less than 5%.

3 The AFC in Indonesia and change in consumption at the district level during the AFC

The AFC started in May 1997, when the Thai baht came under speculative attacks. Indonesia began to be affected in July 1997, when the local currency, rupiah, also came under attack due to a contagion effect. The Indonesian government first tried to defend the rupiah within a trading band and then allowed the currency to float freely on August 14, 1997. A 30% depreciation followed in the next two months (Figure 1). The sharp depreciation of the rupiah made many banks and corporations insolvent, because they had borrowed heavily in foreign currency denominated short-term debts (Soesastro 1998). In October, 1997, the Indonesian government closed 16 insolvent banks.

The credit crunch had a significant impact on the modern sector, bringing production to a halt in many firms (Manning 2000). Several studies reported large-scale layoffs in construction and manufacturing (Hartono and Ehrmann 2001; Soesastro 1998). In January 1998, after the announcement of the state budget plan, the rupiah collapsed. Under pressure from the IMF to cut government expenditures and foreign debt, the Indonesian government removed subsidies on rice and fuel in January 1998. The removal of subsidies led to a surge in food and other prices (Figure 2). Inflation in 1998 was 80%, partly the result of the removal of subsidies and partly due to the increase in the relative prices of tradable goods, including rice and other cash crops. The surge in the prices of basic necessities led to nation-wide protests and riots against the government, which eventually led to the resignation of Suharto in May 1998 and the end of 32 years of Suharto's regime. Real GDP decreased by 14% in 1998, and GDP per capita did not recover to the 1996 level until 2008 (Figure 3).

Strauss et al. (2004) explain that for Indonesian households, the major crisis during the AFC was the surge in prices, which caused a sharp, rapid reduction in households' real income. Losses and firm closings in the modern sector also had a significant impact on the household sector through layoffs and wage cuts. The result was a substantial decline in living standards. Frankenberg et al. (1999) found that from 1997 to 1998 mean household per capita consumption decreased by 34% in urban areas, and median household per capita consumption decreased by 5%. At the same time, enrollment rates for urban children aged 13 to 19 years old fell from 67% to 62% (Popele et al.

1999).

When we look at the change in household per capita consumption at the district level calculated by the author using SUSENAS, we can see from Table 1 that before 1997, district mean and median consumption on average have not changed between 1993 and 1994, have increased rapidly between 1994 and 1996, and have not changed between 1996 and 1997. Between 1997 and 1998, both district mean and median consumption on average have decreased by about 5%. For 25% of districts, between 1997 and 1998 mean consumption decreased more than 11% and median consumption decreased more than 9%. The decrease in district consumption level seems to be quickly reversed in 1999. By 1999 it seems that on average the districts have recovered from the loss during the 1997–1998 period. And from 1999 to 2000, district consumption on average grew further.

One may wonder why we do not see a drop in consumption level as big as the drop in GDP level, and also why we do not see the drop in consumption persist into the 2000s like the drop in GDP. Several possible explanations exist. First, the consumption change calculation depends heavily on the inflation data used. I use the BPS inflation data which track prices in major cities in each province and provide a single inflation measure for each province each month. This measure may underestimate inflation especially in rural areas during the crisis, as pointed out by Frankenberg et al. (2002), who state that using their own measure of inflation they found a much larger drop in consumption during the AFC. Second, consumption may not drop as much as GDP since for households surviving at subsistence level it may not be feasible to decrease consumption which mainly satisfies basic living needs. They may use many other coping strategies to deal with the crisis to maintain the same consumption level.

Instead of looking at change in level, an alternative way to analyze the shock in household consumption at the district level is to look at the deviation from trend of the pre-crisis period. Although with a short pre-crisis period in my analysis, there seems to be a general increasing trend of household consumption between 1993 and 1997. Therefore we can assess whether the change in district consumption level has deviated from this trend during the crisis period. I followed this logic to calculate another measure of consumption shock for each district, which is the difference between annual growth rate of district consumption during the crisis period and annual growth rate of district consumption during the pre-crisis period. The annual growth rate during the 1993–1997 period (the pre-crisis period) is calculated as an average of the 1993–1994

growth rate, the 1994–1995 growth rate, the 1995–1996 growth rate, and the 1996–1997 growth rate. For example, if consumption has increased by 5% between 1993 and 1994, 3% between 1994 and 1995, 2% between 1995 and 1996, and 4% between 1996 and 1997, then annual growth rate in the 1993–1997 period is calculated as 3.5%. The same method is used to calculate annual growth rate in consumption during the crisis period. I use three different crisis periods: 1997–1998, 1997–1999, and 1997–2000. I do this because the IFLS data I rely on for individual level information are observed only in 1997 and 2000. Therefore I want to find an estimate of the consumption shock for the 1997–2000 period as well.

Table 2 summarizes this measure of consumption shock. We can see that when we look at the shock relative to the pre-crisis trend, the shock has a much bigger magnitude than only looking at year-to-year changes. Also by 2000 the shock is not recovered. By 2000, for 25% of districts, the difference between annual growth rate during the 1997–2000 period and annual growth rate during the 1993–1997 period is still below –6 percentage points. To look at the regional distribution of the consumption shock during the crisis, I also mapped my measure of the 1997–1998 consumption shock and the 1997–2000 consumption shock. Figures 4 and 5 show these distributions. We can see that first of all there is a correlation between the 1997–1998 shock and the 1997–2000 shock, with the 1997–2000 shock being milder. There is also geographic correlation between neighboring districts. Kalimantan seems to be the area that is hit the hardest, while parts of Sumatra are also hit hard. Java is hit hard as well, but the crisis’s negative impact on consumption is clearly not limited to Java. Wetterberg et al. (1999) also found similar geographic variation of the crisis using a self-conducted survey in 1998.

4 The effect of crisis on men and women

The idea of the paper is to test whether and how the AFC affected men and women differently, and how the impact is related to intra-household bargaining. In order to do such a test, I need a measure of the severity of the crisis that has substantial variation. Otherwise it is hard to test the causal effect of crisis on men’s and women’s outcomes beyond a simple time difference. Due to Indonesia’s substantial regional diversity, one would expect that the AFC had different impacts on different regions within Indonesia. Following this approach, one can look at the variation in the severity of crisis across regions to identify the effect of the crisis on people’s outcomes. What

we can use to measure the severity of the crisis at a regional level in Indonesia, however, is not obvious. One can use change in regional GDP, but it is hard to find reliable data on regional GDP at administrative levels that would give substantial variation.

In this paper I use the change in regional consumption level as a measure of the severity of the crisis, and this choice is based on several considerations. First, SUSENAS is considered the most reliable Indonesian household survey. Since SUSENAS mainly focuses on eliciting information on consumption patterns of households, household consumption should be relatively accurately measured. Also, it is well known in the development literature that consumption is usually more accurately measured than income in developing countries. Also SUSENAS has been representative at the district level since 1993. Therefore I can get accurately measured average consumption at the district level since 1993. Since there are 255 districts consistently observed by SUSENAS between 1993 and 2000, there is potentially substantial regional variation in consumption shock I can exploit. Second, consumption level is the best proxy for households' living standards, and this is the main reason the Indonesian government spends substantial resources on SUSENAS every year, so that the government can observe cross-section distribution of and track the change in living standards of people in Indonesia. When we define an economic crisis, the ultimate standard is whether the crisis has had serious impacts on people's living standards. Therefore, change in consumption level is also a highly relevant measure to use to measure the severity of the crisis at the regional level.

As discussed in the previous section, to measure consumption shock during the crisis at the district level, I can either use the change in average consumption during the crisis, or use the deviation of annual growth rate from the pre-crisis trend. I choose to use the second measure, as it not only takes into consideration the change just between two years, but also takes into consideration the pre-existing situation in the district. I also choose to use the shock in median district consumption instead of in mean district consumption since median consumption is more relevant to poor households. As a result, the equation I estimate is:

$$\Delta y_{i,d,1997-2000} = \beta_0 + \beta_1 shock_d + \varepsilon_{i,d} \quad (1)$$

where $\Delta y_{i,d,1997-2000}$ is the change in men's or women's outcome in couple i and in district d . $shock_d$

is the consumption shock in district d . I look at the change in men's and women's working status (whether working), business assets and non-business assets as outcome variables.⁷ For $shock_d$ I use the 1997–1998 shock, and alternatively use the 1997–2000 shock, whose calculations are explained more in detail in the previous section. I use the linear probability model to model the change in working status.⁸

I use all couples in each household to conduct the regressions. I estimate Equation 1 separately for urban and rural areas because urban and rural areas in Indonesia are systematically different in terms of stage of development, industrial composition, cultural norms, etc. The dynamics during the AFC were also different for urban and rural areas. Table 6 shows results from Equation 1. We can see that in urban areas, fall in district consumption relative to trend increases the likelihood that the wife works. This effect is imprecisely estimated using either period of shock, but the sign of the effect is consistent using both periods of shock, and the standard error when using the 1997–2000 shock is almost half of the coefficient. A 10 percentage points drop in growth rate between 1997 and 1998 will increase women's employment rate by about 1.6 percentage points. A 10 percentage points drop in annual growth rate between 1997 and 2000 will increase wives' employment rate by about 4.1 percentage points. In urban areas, the consumption shock has no effect on change in men's working status, but has a significant effect on men's non-business asset. A 10 percentage points drop in growth rate between 1997 and 1998 will reduce husbands' non-business assets by about 3230000 rupiah on average, and the effect of the 1997–2000 consumption shock is even larger. In rural areas, there is no consistent evidence that the district consumption shock has an effect on the change in wives's and husbands' working status or assets. The effect of the crisis in urban areas does seem to differ by gender. The effect on women is increased employment, and the effect on men is decreased non-business assets.

⁷Asset is calculated in monetary value. If the husband says he owns 20% of a particular asset, the value of this asset is 20% of the total value of the asset.

⁸I also tried to use ordered logit, and the results are similar. Since the linear probability model is easier to interpret, I use the linear model in my main results.

4.1 Robustness checks of the effects of crisis on men and women and connection with household condition prior to crisis

Regional shock in consumption is caused by the AFC, and therefore we should have some confidence in treating the consumption shock measures as exogenous aggregate shocks at the district level. Nonetheless, there are still some potential concerns with claiming causality from Equation 1, especially if the outcome variable is change in working status. First of all, it is possible that districts that were hit harder also had an increase in women's wage relative to men's, and therefore women increased work more in districts that were hit harder. Second, it is possible that districts that were hit harder had certain industrial structures that make the labor market more flexible and allow for an increase in employment during times of crisis. This omitted variable on industry structure will confound estimates from Equation 1. I address both of these concerns in turn.

To address the first concern, I construct an estimate of the change in men's and women's wage at the district level. The most naive approach would be to calculate the average of men's and women's wages for each district and find the change in average wage over time. SUSENAS, which is the only district level representative survey during the period studied, however, does not have income information before 1998. Therefore this naive approach is not possible. Assuming the crisis affects wage by industry at the national level, and only affects the change in wage at the district level due to different industrial compositions in each district, I can construct a proxy for change in men's and women's wages. I can first calculate the change in wage by industry at the national level. Then I can get a proxy for the wage change of men and women by weighting the change in industry wage by the share of men's and women's employment in each industry at the district level. Therefore the change in wage estimate is calculated by the following equation:

$$\Delta wage_{g,d} = \sum_k \frac{Emp_{g,d,k}}{Emp_{g,d}} \Delta wage_k \quad (2)$$

where k represents the industry, g represents gender, and d represents district. $Emp_{g,d,k}$ represents total employment of gender g in industry k in district d . $Emp_{g,d}$ represents total employment of gender g in district d . I classify industries into 18 industries in the formal sector (wage

employment) and five industries in the informal sector (self-employment), so there are 23 industries for which I calculate change in wage (income) at the national level. The change in wages for these industries during the crisis are shown in Tables 3 and 4. The wage change during the crisis does seem to vary substantially across industries. For my measure of wage change by gender in each district, I use change of industry wage between 1997 and 2000 and district industry composition in 1999 to calculate this measure.⁹ Change in wage in the formal sector is calculated using SAKERNAS and SUSENAS, and change in income in the informal sector is calculated using the IFLS. I also only calculate these measures according to industry composition in urban areas and change in wage in urban areas, as industry classification is more accurate in urban areas. Also I just want to test the robustness of the results in urban areas, since I only found a significant impact of the crisis in urban areas from the previous regressions.

We can see in the summary statistics that on average there is no difference between the change in women's wage and change in men's wage at the district level. Although these measures are only proxies for the true change of women's and men's wages, if we find that controlling for these proxies does not change the previous results, then we would be less concerned about this confounding explanation.

To address the second concern, I control for the size of the informal sector and the size of the informal sector occupied by women in the district. During the crisis there has been a shift of labor from the formal sector into the informal sector. This is well documented by Manning (2000) and Soesastro (1998). In fact it is argued that the informal sector in Indonesia functioned as a fallback option that households can switch into if the formal sector experiences negative shocks. How large the informal sector was in a district prior to the crisis can potentially affect how many people can be absorbed into it. Since the informal sector is often the only option if women want to increase their working hours, whether there is a sizable informal sector that allows women to increase hours may potentially matter for the realized increase in women's hours. One can also control for more detailed industrial structure of the district to account for initial conditions, but doing this beyond controlling for the size of the informal sector may not matter for accounting for the flexibility of the labor market. Also doing this will create a collinearity problem since the initial industrial structure is also potentially highly correlated with the severity of the crisis in the district due to the

⁹District industry composition at two-digit level are only available from SUSENAS starting in 1999. Therefore I use the 1999 industry composition.

differential impact of crisis by industry.

Columns (1) and (2) in Table 7 show the results when I include the additional controls of change in men's and women's wage and initial size of the informal sector.¹⁰ We can see that when these additional controls are added, the effect of consumption shock on change in whether the wife works is more accurately estimated and also larger than the effects in Table 6. We can also see that the size of the informal sector is highly and positively correlated with the change in women's work, which confirms that it is easier to increase work during the crisis if there is a large informal sector initially. The effect of the size of the initial female informal sector is negative, however, and this may be explained by the possibility that women in districts with large female informal sector were already working substantially before the crisis, and thus not able to increase work much during the crisis. In general, using additional controls has confirmed and reinforced the previous results.

Besides the concerns about the omitted variable problem, there is also a concern about reverse causality. If women in a district all had an increase in work during the crisis, we would expect that the consumption level of the district would decrease less during the crisis. It is hard to address this concern by tests, but there are three reasons that this may not be an important problem for my study. First, my independent variable, the shock in consumption, is at the district level and is therefore an aggregate shock. My dependent variables are all at the individual level. Therefore it is hard to think that the action of an individual would have an impact on the change in consumption at the district level. Second, even if there is reverse causality, the reverse effect should be positive, since increase in women's work should lead to increase in district consumption. Since I find a negative relationship between district consumption and women's work, the reverse effect should be less of a concern. In the presence of positive reverse causality, my estimates may even be an underestimate of the true negative effect of consumption change on change in women's work. Third, I also tried to use the 1997–1998 consumption shock (from February to February) to predict change in wife's working status between 1997 and 2000 (late 1997 to late 2000), and find a similar effect as using the 1997–2000 shock. It is hard to think there is reverse causality of change in working status between late 1997 and late 2000 on change in district consumption between February 1997 and February 1998.

Another interesting question to ask is whether the results in Table 6 are driven by poor or rich

¹⁰Another additional control is household per capita consumption for the particular household in 1997; including this control does not affect the results of columns (1) and (2) in Table 7.

households. Therefore I use two measures of household wellbeing to look at this question. The first one is household per capita consumption in 1997. The second one is a dummy variable indicating the household has household per capita consumption that is below the first quartile in 1997. Then I interact these two measures with the shock variable to see if the effect of shock is driven by the household consumption level in 1997. Columns (3) to (10) of Table 7 show the results from this set of exercises. If we use the 1997–2000 consumption shock, we can see that negative effect of shock on women’s work is mitigated by the higher household consumption level in 1997. In other words, if the household was richer in 1997, the women in the household do not need to increase work as much to cope with the crisis. On the contrary, being poor mitigates the effect of the shock on men’s non-business assets. In other words, if the household was poor in 1997, men in the household reduced assets less to cope with the crisis. This may be caused by the fact that poor households in general have few assets to begin with, and therefore they may need to rely on the increase in women’s work as the main coping mechanism.

5 Connection to intra-household bargaining

In the previous section we have seen that there is a differential impact of the crisis on men and women in the urban area of Indonesia. More specifically, the crisis increases women’s work and decreased men’s non-business assets. A natural follow-up question would be what has caused this differential impact. One potential cause may be related to intra-household bargaining between wives and husbands. If wives have more bargaining power, they may not need to increase work as much during the crisis since they can let their husbands bear more of the cost of the crisis. This section will provide a preliminary test of this hypothesis by using direct measures of the wife’s bargaining power prior to the crisis. One unique feature of IFLS is that starting in 1997 it includes a module that asks about household decision-making. For 17 decision categories in household life, such as routine purchases, expenditure on children’s education, monthly savings, etc., both wife and husband need to answer who makes a decision on these 17 decision categories. The wife and the husband can report one or multiple decision makers in that category. One category among the 17 is about work, which is “who makes decision on wife/husband’s work” in the questionnaire. Therefore this category asks specifically who makes decision on whether the wife and husband work. Since this question is specific and directly related to the working decision, I use the answer

from this question to measure the wife’s bargaining power in deciding about work. I construct a dummy variable which is equal to 1 if the wife has sole decision-making power on work and 0 otherwise (0 therefore means the husband decides or the wife and husband jointly decide).¹¹ Then I use the interaction between this bargaining power measure and the consumption shock to test whether bargaining power matters for the effect of consumption shock on women’s work.

As alternative measures of women’s bargaining power that takes more information on household decision-making into consideration, I also construct indexes of women’s decision-making power using seven categories of decision-making to which most husbands and wives report answers.¹² One index is percentage of categories in which the wife has sole decision-making power, one index is the average decision weight across all categories, decision weight being 1 divided by the number of people who participate in making the decision in that category.

Therefore I estimate:

$$\Delta y_{i,d,1997-2000} = \beta_0 + \beta_1 shock_d + \alpha_1 power_{i,d,1997} + \alpha_2 power_{i,d,1997} \times shock_d + \varepsilon_{i,d} \quad (3)$$

where *power* is whether the wife has sole power on work, the percentage of categories in which the wife has sole decision-making power, or the average decision weight index.

Table 8 shows the result from using whether the wife has sole power on work as the measure of the wife’s bargaining power. From columns (1) and (2) we can see that whether the wife has sole power on work before the crisis seems to not matter for the change in the wife’s work during the crisis. The interaction term, however, is a significant determinant of change in women’s work. The coefficient is positive and larger in absolute magnitude than the coefficient on the consumption shock, which means that the women with sole decision-making power on work prior to the crisis

¹¹Besides using sole decision-making power on work, I can also use whether participating in the decision on work as the measure of bargaining power on work. Since about 10% of women in my sample have sole decision-making power on work, and about 76% of women participate in the decision on work, using sole decision-making power seems to be a more appropriate measure of the wife’s bargaining power in this category. I’ve also done the same analysis using a participating dummy as the measure of bargaining power, and the coefficients on the shock variable and the interaction variables are both not significant.

¹²These seven categories are expenditure on food eaten at home, expenditure on routine purchases for the household of items such as cleaning supplies, expenditure on the wife’s clothes, expenditure on the husband’s clothes, gifts for parties/weddings, time the husband spends socializing, and time the wife spends socializing.

have a smaller increase in work responding to the crisis than women without sole decision-making power on work prior to the crisis. Furthermore, the negative effect of consumption change on the change in the wife's work is completely gone if the wife has sole power on work prior to the crisis.

This result could be driven by the fact that many variables such as the wife's education and household economic condition will affect the change in the wife's work during the crisis and also affect women's bargaining power, thus presenting an omitted variable problem. Therefore I control for the wife's ethnicity, education, and age, and household consumption level in 1997 in addition to the variables in Equation 3. These results are presented in columns (3) and (4) in Table 8. We can see that the estimates of the shock effect and the effect of the interaction term between shock and bargaining power are highly similar to the ones without the additional controls, although they are less precisely estimated.

Another interesting question to ask is whether the effect of bargaining power on coping strategies is more driven by poor households. Therefore I include interactions between the bargaining power, consumption shock, and household consumption level in 1997. We can see that for richer households the mitigating effect of more bargaining power of women on the increase in their work during crisis is less. Therefore it does seem that the bargaining power effect is more driven by poor households.

Table 9 shows the result when using indexes derived from seven decision categories. We can see that when we use the indexes, the estimates of the effect of consumption shock on women's work and men's non-business asset become highly unstable. Therefore not much can be concluded from the results using the indexes.

6 Conclusion

This paper has tested whether the AFC affected men and women in Indonesia differently by estimating the effects of district consumption shocks during the crisis on the change in men's and women's working status and assets. I found that in the rural area, there seems to be no effect of the district consumption shock on men's and women's working status or assets. In the urban area, there seems to be different effects of district consumption shock on men and women. Specifically, a fall in district consumption increases women's work (in terms of whether they are working) and decreases men's non-business assets. The effect on wives' work and on husbands' assets are both

large. The effect on wives' work is also robust to controlling for change in men's and women's wages in the district during the crisis and controlling for size of the informal sector prior to the crisis. The effects on women's work is more driven by poor households, while the effect on men's non-business assets is more driven by rich households.

I also found that intra-household bargaining may be related to the effect of the crisis on men and women. Specifically, I found that if a wife has sole decision-making power on work prior to the crisis, a fall in district consumption would not increase her work as much compared with wives without sole decision-making power on work prior to the crisis. This result is also more driven by poor households.

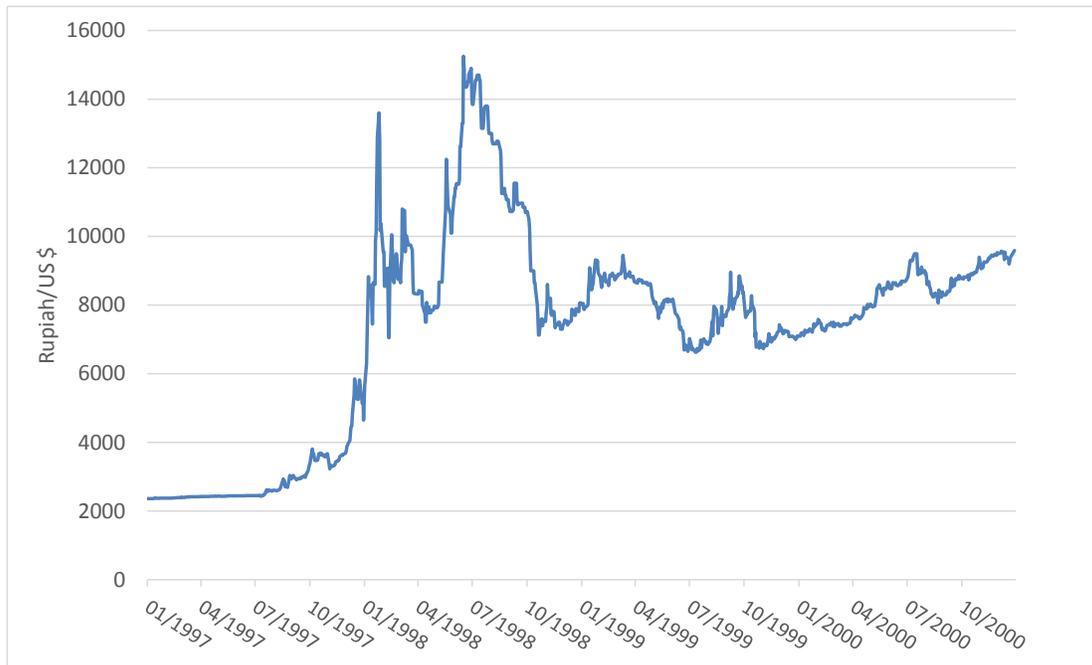
Several caveats need to be kept in mind when interpreting the results from this paper. Although the consumption shocks may be largely treated as exogenous aggregate shocks, they are still subject to endogeneity concerns which are explained more in detail in Section 4. I tried to address each of these endogeneity concerns, but these concerns should remain as caveats.

For assets it is hard to distinguish ownership between the wife and husband. Although the IFLS provides detailed information on what percentage of each asset is owned by whom in the household, we should keep in mind that there could be mis-reporting of ownership of assets. In that case, some of the decrease in non-business assets we found for men in urban areas could be shared by women as well.

I have only tested the impact of an aggregate shock on men and women; whether idiosyncratic shocks would also have the same impacts is an interesting question to ask. The ways in which men and women respond to idiosyncratic shocks have important social safety net policy implications.

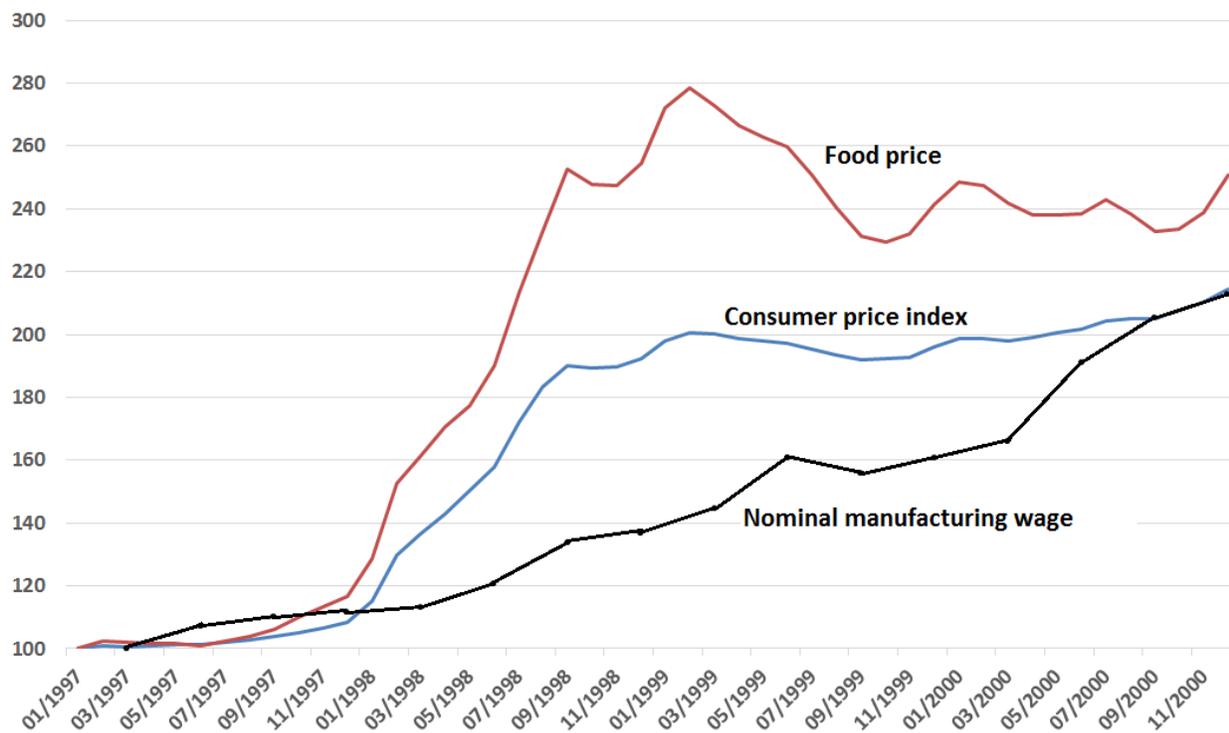
This paper only provides a highly preliminary test of the connection between intra-household bargaining and response to shocks. Significant results have only been found if using a single question in a survey to measure the bargaining power of women on a specific decision category: work. Much more can be done to analyze the connection between intra-household bargaining and household allocation during shocks, and it may add important insight to the household decision-making literature and also have interesting policy implications.

Figure 1: Exchange rate fluctuation during crisis



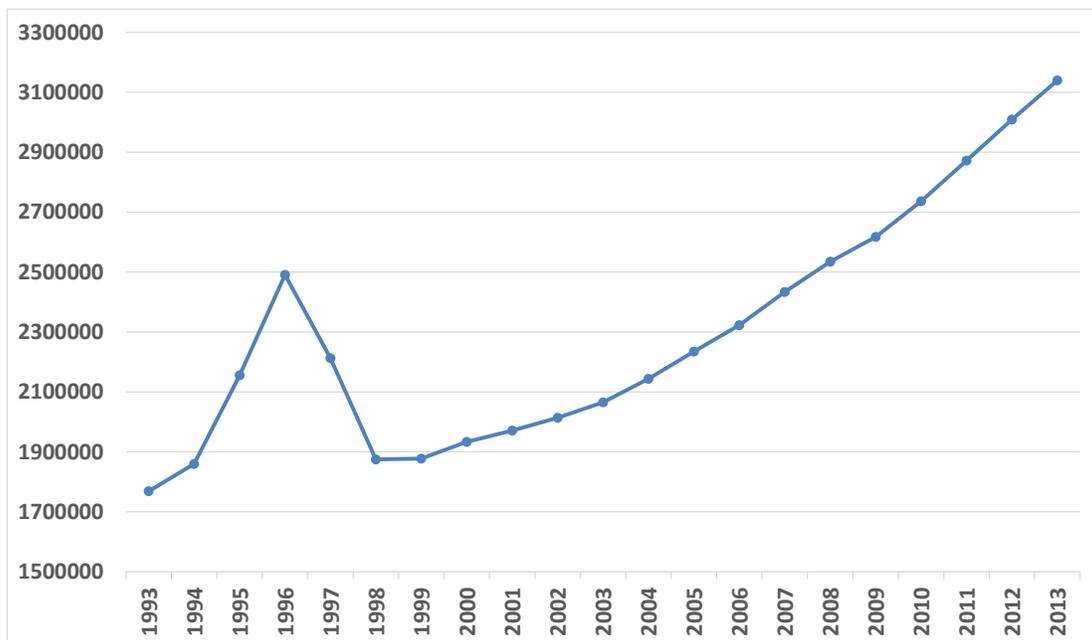
Source: author, based on daily exchange rate data from Bank of Indonesia, via CEIC

Figure 2: Change of price and nominal wage



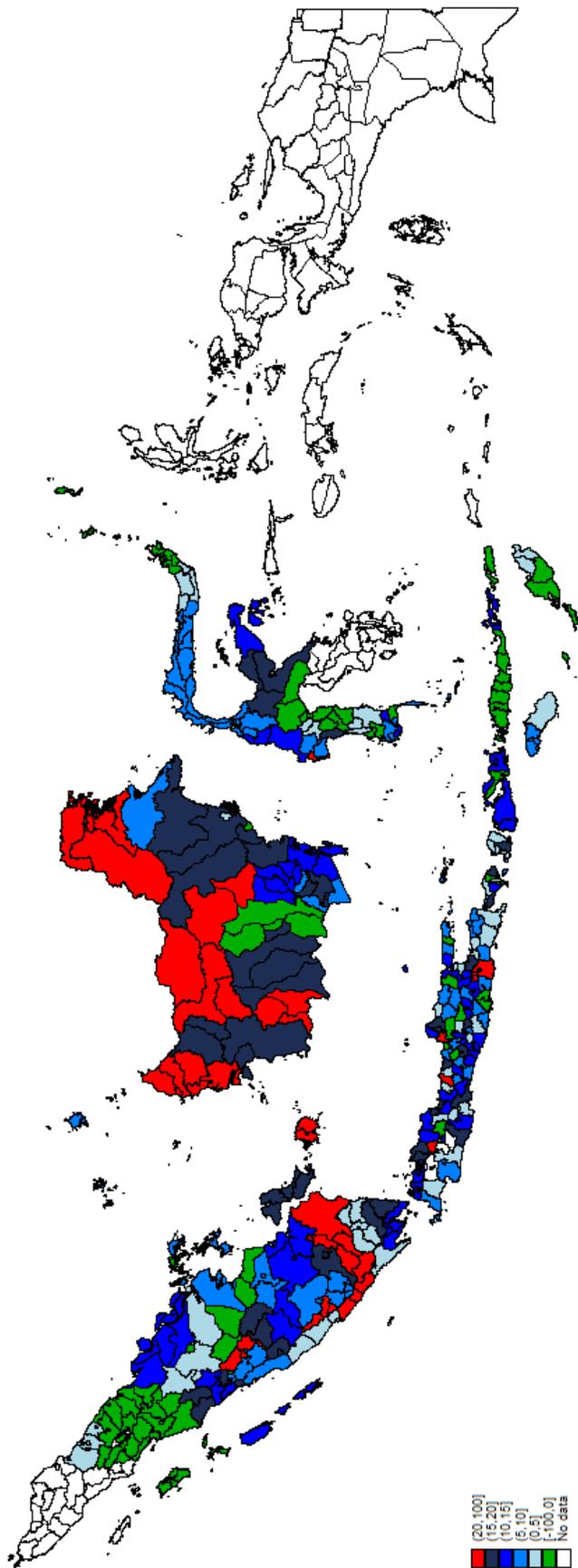
Source: author, based on monthly price data from Indonesian Central Bureau of Statistics (43 cities price data excluding East Timor) and quarterly wage data from Bank of Indonesia, via CEIC

Figure 3: GDP per capita (IDR) 1993–2013, 1993 price



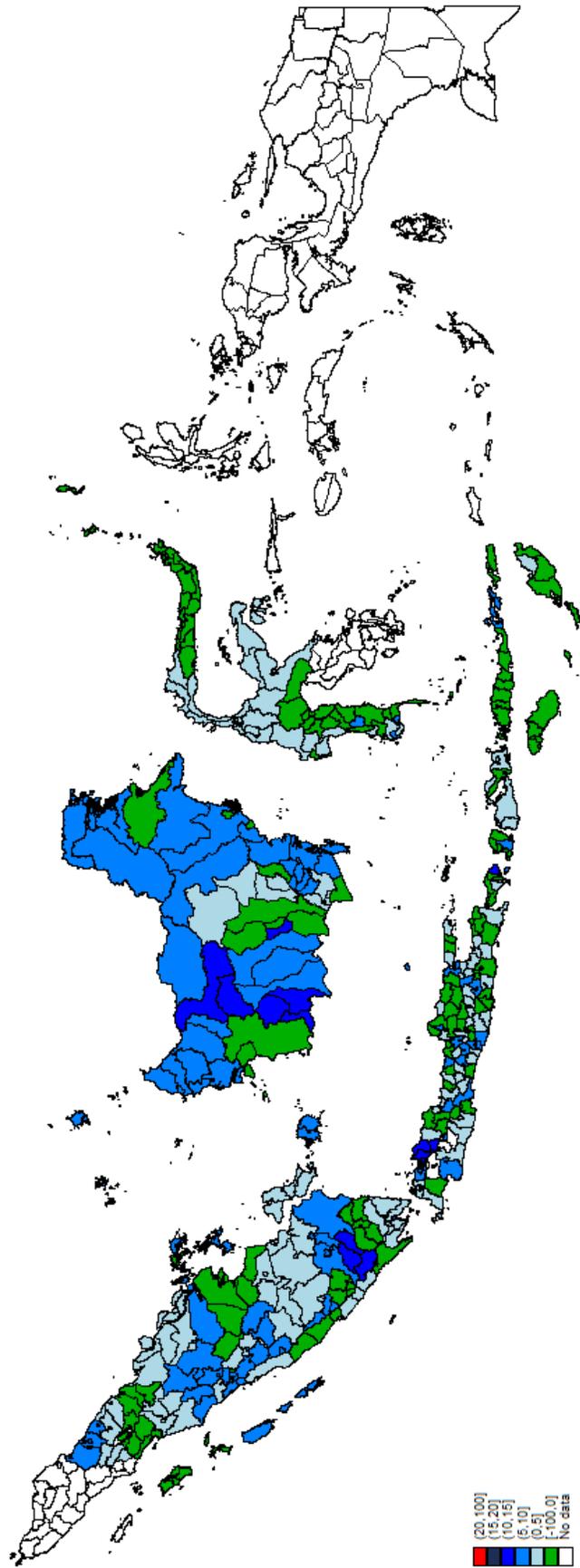
Source: author, based on data from Indonesian Central Bureau of Statistics, via CEIC

Figure 4: Drop (%) in median district consumption 1997–1998 relative to 1993–1997 trend



Source: author, based on data from SUSENAS 1993–2000. Median consumption is calculated as the median of household per capita consumption across households in the district. Shocks computed for 255 1993 districts for which there are consumption data for all years between 1993 and 2000. Then the shocks of the 1993 districts are mapped onto the 2010 districts. Numbers in the legend represents the drop in consumption relative to the trend. For example, 20 means the difference between annual growth rate in district median consumption during 1997–1998 and annual growth rate in district median consumption during 1993–1997 is –20 percentage points. Therefore green areas are the districts that had no drop in growth rate compared with the pre-crisis period.

Figure 5: Annual drop (%) in median district consumption 1997–2000 relative to 1993–1997 trend



Source: author, based on data from SUSENAS 1993–2000. Median consumption is calculated as the median of household per capita consumption across households in the district. Shocks computed for 255 1993 districts for which there are consumption data for all years between 1993 and 2000. Then the shocks of the 1993 districts are mapped onto the 2010 districts. Numbers in the legend represents the drop in consumption relative to the trend. For example, 20 means the difference between annual growth rate in district median consumption during 1997–2000 and annual growth rate in district median consumption during 1993–1997 is –20 percentage points. Therefore green areas are the districts that had no drop in growth rate compared with the pre-crisis period.

Table 1: % change in district level consumption over time

| N=255 | 1993–1994 | 1994–1995 | 1995–1996 | 1996–1997 | 1997–1998 | 1998–1999 | 1999–2000 |
|-----------------|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Change in ln of district mean*100 | | | | | | |
| Mean | -0.18 | 9.09 | 8.63 | 0.61 | -4.65 | 4.45 | 6.05 |
| 25th percentile | -6.77 | 2.19 | 1.69 | -6.55 | -11.34 | -2.87 | -1.54 |
| Median | -0.69 | 7.65 | 8.08 | -1.55 | -5.17 | 4.43 | 4.95 |
| 75th percentile | 5.12 | 14.42 | 15.35 | 6.22 | 1.3 | 11.96 | 13.15 |
| | Change in ln of district median*100 | | | | | | |
| Mean | 0.74 | 9.54 | 5.08 | 1.83 | -3.66 | 4.64 | 6.62 |
| 25th percentile | -4.73 | 2.84 | -1.37 | -3.86 | -9.28 | -1.91 | -0.27 |
| Median | 0.96 | 8.48 | 3.7 | 1.53 | -4.93 | 3.96 | 5.55 |
| 75th percentile | 6.6 | 15.38 | 12.33 | 6.98 | 1.22 | 11.88 | 12.79 |

Source: author, based on data from SUSENAS 1993–2000. District mean(median) is calculated as the mean(median) of household per capita consumption across households in the district. Districts are defined using 1993 boundaries. There are 255 1993 districts for which there are consumption data for the whole period.

Table 2: Annual shock in district consumption relative to 1993–1997 trend

| N=255 | 1997–1998 | 1997–1999 | 1997–2000 |
|--------------------------|-----------|-----------|-----------|
| Shock in district mean | | | |
| Mean | -9.18 | -4.61 | -2.57 |
| 25th percentile | -17.04 | -9.78 | -6.44 |
| Median | -9.18 | -4.47 | -2.1 |
| 75th percentile | -1.32 | 1.07 | 1.86 |
| Shock in district median | | | |
| Mean | -7.96 | -3.81 | -1.76 |
| 25th percentile | -15.05 | -8.59 | -5.76 |
| Median | -9.4 | -3.61 | -2.09 |
| 75th percentile | -2.42 | 0.77 | 1.7 |

Source: author, based on data from SUSENAS 1993–2000. District mean(median) is calculated as mean(median) of household per capita consumption across households in the district. Districts are defined using 1993 boundaries. There are 255 1993 districts for which there are consumption data for the whole period. For each district, the shock is the difference between annual change (percentage) in district mean/median consumption during the crisis period and annual change (percentage) in district mean/median consumption between 1993 and 1997.

Table 3: % change in wage by industry at the national level (urban) from August 1997: wage employment

| | To Aug 1998 | | To Feb 1999 | | To Aug 1999 | | To Feb 2000 | |
|------------------------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|
| | Mean | Median | Mean | Median | Mean | Median | Mean | Median |
| Agriculture | -30 | -29 | -17 | -31 | -19 | -18 | -11 | -17 |
| Mining | -7 | -22 | -14 | -10 | -18 | -2 | 6 | -3 |
| Food and tobacco | -38 | -31 | -26 | -31 | -29 | -21 | -23 | -22 |
| Textile | -45 | -43 | -31 | -34 | -40 | -32 | -28 | -24 |
| Furniture and paper | -38 | -33 | -27 | -31 | -28 | -20 | -20 | -22 |
| Manufacture other | -30 | -34 | -17 | -31 | -28 | -30 | -6 | -17 |
| Utility | -38 | -25 | -38 | -31 | -31 | -11 | -32 | -18 |
| Construction | -40 | -41 | -26 | -34 | -33 | -30 | -23 | -24 |
| Trade | -29 | -34 | -12 | -29 | -18 | -25 | -16 | -23 |
| Restaurant and hotel | -34 | -37 | -40 | -40 | -37 | -35 | -35 | -36 |
| Trans land water | -29 | -30 | -2 | -29 | -23 | -25 | -9 | -20 |
| Trans other | -39 | -37 | -37 | -42 | -41 | -38 | -37 | -37 |
| Finance and business service | -31 | -26 | -23 | -30 | -19 | -27 | -21 | -25 |
| Teacher | -31 | -31 | -31 | -34 | -14 | -12 | -8 | -13 |
| Army | -30 | -27 | -20 | -23 | -2 | 1 | 8 | -1 |
| Doctor | -26 | -30 | -21 | -30 | -21 | -20 | -4 | -15 |
| Non-personal service other | -38 | -34 | -26 | -33 | -26 | -16 | -16 | -19 |
| Personal service | -31 | -35 | -14 | -36 | -25 | -21 | -32 | -39 |

Source: author, based on data from SAKERNAS and SUSENAS. August wage calculated using SAKERNAS, February wage calculated using SUSENAS

Table 4: % change in income by industry at the national level (urban) from 1997 to 2000:
self-employment

| | Change in mean | Change in median |
|---------------------------------------|----------------|------------------|
| Agriculture | 16 | -20 |
| Manufacturing | 45 | -23 |
| Sale, hotel, and restaurant | 13 | -10 |
| Personal service | 26 | 17 |
| Mining, construction, transport, etc. | 97 | -1 |

Source: author, based on data from IFLS 1997 and IFLS 2000.

Table 5: Summary statistics

| | Urban | | | Rural | | |
|--|-------|----------|-----------|-------|----------|-----------|
| | Obs. | Mean | Std. dev. | Obs. | Mean | Std. dev. |
| Change in working wife | 1386 | 0.092 | 0.491 | 1965 | 0.139 | 0.551 |
| Change in working husband | 1386 | -0.005 | 0.286 | 1965 | -0.002 | 0.226 |
| Change in business asset wife | 1386 | -337591 | 1.67E+07 | 1965 | 521936.8 | 9803498 |
| Change in business asset husband | 1386 | 378161 | 2.31E+07 | 1965 | 1652365 | 2.93E+07 |
| Change in non-business asset wife | 1386 | 2045144 | 2.95E+07 | 1965 | 1242691 | 6621301 |
| Change in non-business asset husband | 1386 | -2270067 | 4.65E+07 | 1965 | 1046286 | 7846242 |
| 1997–1998 shock | 1386 | -0.086 | 0.101 | 1965 | -0.087 | 0.092 |
| 1997–2000 shock | 1386 | -0.030 | 0.063 | 1965 | -0.022 | 0.055 |
| Change in men’s wage | 1081 | -15.096 | 1.004 | | | |
| Change in women’s wage | 1081 | -15.166 | 1.419 | | | |
| Informal sector size 1997 | 1386 | 0.551 | 0.157 | | | |
| Female informal sector size 1997 | 1386 | 0.169 | 0.065 | | | |
| Household consumption 1997 | 1383 | 843715.5 | 3314964 | | | |
| Wife has sole power on work 1997 | 1383 | 0.092 | 0.289 | | | |
| Perc. of Cat. wife has sole power 1997 | 1362 | 0.312 | 0.219 | | | |
| Wife’s average decision weight 1997 | 1362 | 0.554 | 0.163 | | | |

Source: author, based on data from IFLS, SUSENAS and SAKERNAS. Urban and rural status are status in 1997, regardless of status in 2000. All couples in a household are included if there is no missing variables. Summary statistics are for couples for which there are no missing variable for either husband or wife in Equation (1). These would exclude couples that can no longer be followed in 2000 due to death or other kinds of attrition. Since attrition is rather low in IFLS, and we include couples who have migrated or changed urban/rural status, this requirement would not exclude too many couples.

Table 6: Effect of shock on median district consumption on wives and husbands

| Dependent variable | Urban N=1386 | | Rural N=1965 | |
|--|-----------------|-------------------|-----------------|-----------------|
| | Wife | Husband | Wife | Husband |
| Effect of shock 1997–1998 | | | | |
| Change in working | -0.16 (0.16) | -0.03 (0.08) | 0.07 (0.21) | 0.01 (0.06) |
| Change in business asset (in 10000 IDR) | 36 (388) | 259 (521) | 317 (263) | -707 (1350) |
| Change in non-business asset (in 10000 IDR) | -98 (1130) | 3230*** (1150) | -147 (187) | 91 (169) |
| Effect of shock 1997–2000 | | | | |
| Change in working | -0.41 (0.25) | 0.03 (0.14) | 0.10 (0.34) | 0.11 (0.09) |
| Change in business asset (in 10000 IDR) | 1180 (749) | 642 (923) | 589 (470) | 2420* (1410) |
| Change in non-business asset (in 10000 IDR) | -120 (2440) | 7890*** (2990) | 308 (357) | 240 (347) |

Source: author, based on data from IFLS, SUSENAS and SAKERNAS. Shock is change in growth rate of median district consumption compared with average growth rate between 1993 and 1997. Asset value at 1997 price level. 1 USD was worth about 2000 IDR in 1997 before the AFC and was worth about 9000 IDR in mid to late 2000. Urban and rural status are status in 1997, regardless of status in 2000. Standard errors in brackets. Standard errors are clustered at enumeration area level. The IFLS uses two-stage sampling. This first stage is randomly selecting enumeration areas. The second stage is randomly selecting households within each enumeration area. Each district has multiple enumeration areas. * p<.10, ** p<.05, *** p<.01

Table 7: Robustness and effect of baseline consumption

Urban

| | Change in whether working wife | | | | | Change in non-business asset husband | | | | |
|--|--------------------------------|----------------------|---------------------|---------------------|--------------------|--------------------------------------|--------------------|-------------------|-------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Shock 97–98 | -2.697 (.1833) | | -2.537 (.1757) | | -2.139 (.1726) | | 4245*** (1465) | | 2868*** (1074) | |
| Shock 97–00 | | -6.652** (.294) | | -4.186* (.244) | | -5.683** (.2764) | | 9194*** (3513) | | 5422** (2560) |
| District wage change men | .0134 (.0197) | .0071 (.0188) | | | | | | | | |
| District wage change women | -.0113 (.0159) | -.0087 (.0157) | | | | | | | | |
| Size of informal sector 1997 | .8013** (.3541) | .7307** (.3311) | | | | | | | | |
| Size of female informal sector 1997 | -2.156*** (.7452) | -2.197*** (.7154) | | | | | | | | |
| Household consumption 1997 | -.0057 (.0036) | -.0059 (.0039) | | | .0091 (.0074) | .0075 (.0053) | | | -40.43 (75.36) | 7.071 (69.96) |
| Shock 97–98*Household consumption 1997 | | | | | .0745 (.0569) | | | | 388.5 (940.1) | |
| Shock 97–00*Household consumption 1997 | | | | | | .1858* (.0976) | | | | 2813 (3514) |
| Poor household 1997 | | | .03 (.0456) | .0059 (.0399) | | | -111.7 (208.1) | -19.76 (146.7) | | |
| Shock 97–98*Poor household 1997 | | | .3817 (.3409) | | | | -4365*** (1468) | | | |
| Shock 97–00*Poor household 1997 | | | | .0053 (.7419) | | | | -8284** (3525) | | |
| Constant | .0183 (.2675) | .015 (.2547) | .0697*** (.0205) | .0784*** (.0161) | .071*** (.0215) | .0737*** (.0167) | 90.91 (205.5) | 21.43 (143.5) | 82.18 (144) | 13.67 (108.7) |
| N | 1078 | 1078 | 1386 | 1386 | 1383 | 1383 | 1386 | 1386 | 1383 | 1383 |
| R ² | 0.014 | 0.018 | 0.002 | 0.003 | 0.002 | 0.005 | 0.007 | 0.013 | 0.008 | 0.018 |

Source: author, based on data from IFLS, SUSENAS and SAKERNAS. Shock is change in growth rate of median district consumption compared with average growth rate between 1993 and 1997. Asset value at 1997 price level. 1 USD was worth about 2000 IDR in 1997 before the AFC and was worth about 9000 IDR in mid to late 2000. Standard errors are clustered at enumeration area level. The IFLS uses two-stage sampling. This first stage is randomly selecting enumeration areas. The second stage is randomly selecting households within each enumeration area. Each district has multiple enumeration areas. * p<.10, ** p<.05, *** p<.01

Table 8: Effect of having sole decision power on change in work of women
Urban

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Shock 97–98 | -.219 (.1681) | | -.1806 (.1851) | | -.28 (.1783) | |
| Shock 97–00 | | -.5359** (.2611) | | -.4444 (.293) | | -.7218** (.2825) |
| Wife sole power in work 1997 | .1501* (.0785) | .1096 (.0666) | .1288 (.0792) | .097 (.0682) | .2278** (.1025) | .1632** (.0807) |
| Shock 97–98*Sole power | .8923* (.486) | | .8784* (.4682) | | 1.541** (.6898) | |
| Shock 97–00*Sole power | | 1.272 (.7955) | | 1.433* (.7926) | | 2.704** (1.143) |
| Household consumption 1997 | | | .0026 (.0053) | .0024 (.0054) | .0103 (.007) | .0092* (.005) |
| Household consumption*Sole power | | | | | -.1087** (.047) | -.0602** (.0253) |
| Shock 97–98*Household consumption | | | | | .0806 (.0547) | |
| Shock 97–98*Consumption*Sole power | | | | | -.9823** (.4379) | |
| Shock 97–00*Household consumption | | | | | | .2203** (.0867) |
| Shock 97–00*Consumption*Sole power | | | | | | -1.868** (.8402) |
| Wife no education | | | .0068 (.0537) | .0061 (.0535) | | |
| Wife junior high education | | | -.0017 (.0453) | -.003 (.0453) | | |
| Wife senior high education | | | -.0267 (.0331) | -.0269 (.0326) | | |
| Wife post secondary education | | | -.0536 (.0537) | -.0539 (.0537) | | |
| Wife's age | | | -7.3e-04 (.0016) | -7.5e-04 (.0015) | | |
| Constant | .0682*** (.0205) | .0714*** (.0162) | .1081 (.107) | .1128 (.1037) | .0595*** (.022) | .064*** (.0171) |
| <i>N</i> | 1383 | 1383 | 1351 | 1351 | 1380 | 1380 |
| <i>R</i> ² | 0.005 | 0.007 | 0.033 | 0.034 | 0.007 | 0.012 |

Source: author, based on data from IFLS, SUSENAS and SAKERNAS. Shock is change in growth rate of median district consumption compared with average growth rate between 1993 and 1997. Wife's ethnicity is also controlled for in models (3) and (4). Standard errors in brackets. Standard errors are clustered at enumeration area level. The

IFLS uses two-stage sampling. This first stage is randomly selecting enumeration areas. The second stage is randomly selecting households within each enumeration area. Each district has multiple enumeration areas. * p<.10,

** p<.05, *** p<.01

Table 9: Results using bargaining power index
Urban

| | Change in whether working wife | | | Change in non-business asset husband | | | | |
|--|--------------------------------|---------------------|--------------------|--------------------------------------|-------------------|-------------------|-------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Shock 97–98 | .0297 (.2174) | .5673 (.4017) | | | 1812 (1271) | 264 (2475) | | |
| shock 97–00 | | | -.5785 (.3738) | -.3741 (.6528) | | | 7215 (6222) | 1.3e+04 (1.4e+04) |
| Perc. of cat. wife has sole power 1997 | -.1084 (.0841) | | -.0344 (.0652) | | 244 (523.4) | | -164 (351) | |
| Shock 97–98*Perc. sole | -.6283 (.6181) | | | | 4418 (3995) | | | |
| Shock 97–00*Perc. sole | | | .4977 (.8725) | | | | 1602 (1.3e+04) | |
| Wife's average decision weight 1997 | | -.2016* (.1095) | | -.0728 (.0857) | | 1232 (908.2) | | 453.5 (548.6) |
| Shock 97–98*Average decision weight | | -1.321* (.7573) | | | | 5097 (5175) | | |
| Shock 97–00*Average decision weight | | | | -.0674 (1.109) | | | | -9179 (2.2e+04) |
| Constant | .1137*** (.0335) | .1931*** (.0647) | .092*** (.0277) | .1222** (.0515) | -11.87 (198.6) | -632.1 (510.3) | 69.09 (112.4) | -230.7 (273.9) |
| N | 1362 | 1362 | 1362 | 1362 | 1362 | 1362 | 1362 | 1362 |
| R ² | 0.002 | 0.004 | 0.004 | 0.003 | 0.005 | 0.006 | 0.011 | 0.012 |

Source: author, based on data from IFLS, SUSENAS and SAKERNAS. Shock is change in growth rate of median district consumption compared with average growth rate between 1993 and 1997. Asset value at 1997 price level. 1 USD was worth about 2000 IDR in 1997 before the AFC and was worth about 9000 IDR in mid to late 2000. Standard errors are clustered at enumeration area level. The IFLS uses two-stage sampling. This first stage is randomly selecting enumeration areas. The second stage is randomly selecting households within each enumeration area. Each district has multiple enumeration areas. * p<.10, ** p<.05, *** p<.01

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