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1. Introduction[1]

The aim of this study is to assess the nature of the relationship between the degree of empowerment and participation in a society, and income and poverty dynamics in Indonesia. We are interested in whether it makes a difference to poverty alleviation if it is the elite that governs the local community, compared to more democratic forms of decision making. Are there any differences in income growth between households in societies where consensus building is the main vehicle for taking decisions in the village, and households living under elitist rule? Similarly, we are interested in whether the inhabitants of a more inclusive society, a society where the degree of people's general participation in the local community is high, increase their income more rapidly than people in societies where no such mutual cooperation exists.

The standard theory of income growth takes labor, human and physical capital and technology as the starting point. Several studies assess the impact of assets, labor, endowments and technology on the welfare dynamics of households, usually measured by household per capita expenditure or, as in this study, household per capita income. Other proxies for this type of welfare assessment can be infant mortality rates, access to public services, health and personal subjective assessment. In recent times, there has been an increasing effort to complement the standard inputs of labor, capital and technology in the household welfare model with institutional factors. This has certainly been the case with macroeconomic growth models where the rule of law, corruption, quality of governance, democracy and a range of other factors have been tested (see Barro et al. 2004) for an overview). In the microeconomics literature, we have concentrated more on the category of institutions that come in under the definition of social capital, as well as on explicit risk-coping or risk-mitigating institutions, such as social safety nets and various forms of risk-pooling between households.

However, we have not found any microeconomic study that mirrors the macroeconomic interest in how democracy and governing institutions influence economic growth. When the governing system has an impact on economic growth in the economy as a whole, it might be expected that it would also be important for household incomes. We test this hypothesis by constructing an index of the degree of democratic and participatory governance in local villages in Indonesia, and investigate how it is related to changes in poverty and income during the period 1993 to 2000.

We also construct an index to try to capture the degree of participation in local society. In contrast to the social capital literature, we do not concentrate on the number of memberships in local organizations. Admittedly, there are many definitions and interpretations of the concept of social capital, but there seems to be a growing consensus that social capital stands for the ability of actors to "secure benefits by virtue of membership in social networks or other social structures" (Portes, 1998, p. 6). In our participation index, we include scores for whether or not all members participate in village organizations that are based on a shared ethic. This index also includes elements on whether or not villagers feel that there is an ethic of mutual cooperation in the village, and whether there are organizations that are based on this ethic. We therefore make use of information from survey questions that directly address the issue of whether people, generally, participate and help each other in the local community.

[1] This paper was funded by the World Bank, Social Development Department, and I am grateful both for the financial support and for their valuable comments. Thanks also to Magnus Hatlebakk for fruitful comments.

Poverty analysis usually describes a snapshot of the situation, and frequently addresses the characteristics of the poor at a single point in time. However, if our aim is to help people escape poverty, it is necessary to assess how and why poverty and incomes change over time for the same individuals. Interventions aimed at the poor need to take account of the fact that there may be different causes for a household being classified as poor in one period due to some temporary misfortune, compared to the reasons why some households are locked into constant poverty. This paper investigates whether the degree of the people's participation in decision-making in a society affects their income growth. Is it the case that letting people take part in local decision-making will result in better economic opportunities for themselves?

The types of question we are interested in concern the counterfactual, i.e. what would be the result if the same village had a different system of decision-making or a different system of participation. This is an inherently difficult task, but our data, which are representative for large parts of Indonesia, give the opportunity to use villages with different governing systems and participatory relationships as control and treatment groups. This means that if we are able to control for the characteristics that drive income changes over time, then comparison across villages with different governing systems and different degrees of participation should give us the best possible answer to the counterfactual questions.

This paper is organized as follows. Section 2 reviews the literature on welfare changes over time, with special attention to the related area of social capital. Section 3 describes the IFLS panel data, and section 4 provides a description of the data and details on how we constructed the indices. Section 5 presents our results, and a brief conclusion is drawn in section 6.

2. Determinants of income and poverty dynamics and the role of social development

We have not found any studies that try to assess the role of empowerment in income generating activities, and few that investigate how the degree of participation in a society can influence poverty and income changes. Those that are most related to the focus of this paper are social capital studies. In this section we review the literature on the determinants of income mobility, as well as other studies that try to disentangle the factors that cause households to increase their welfare and reduce their poverty over time. Due to the similarities in compiling indices as proxies with the methodology in this study, and similarities with the way of thinking about non-economic inputs in the growth function, we go into more detail with the social capital determinant of household income growth. This is the topic of section 2.2; but first we review the standard determinants of welfare changes and poverty dynamics.

2.1 Standard determinants of welfare changes and poverty dynamics: an examination of the literature

Poor households in developing countries normally suffer from unstable incomes. By measuring change in income levels or levels of poverty over time, income mobility studies present a more detailed picture of the true welfare of households compared to cross-sectional studies. The great variation in income makes some households poor in certain periods and not poor in other periods, and it is significant whether it is the same households that remain poor over time, or whether it is non-poor households that fall into poverty each year.

This mobility in and out of poverty has led researchers to categorize households into those which are poor at all times, and those which are poor at some times. Baulch and Hoddinott

(2000) call the first group chronically poor households, and the latter group is described as transient poor. A household is chronically poor when its intertemporal average level of welfare between repeated observations is less than the poverty line, set by a cut-off point. Transient poor households are those which lie in the difference between chronic and total poverty in various periods. Jalan and Ravallion (2000) highlight the fact that the chronically poor are not necessarily always poor. Typically, in longitudinal studies there is a great deal of movement in and out of poverty and the 'always' poor will therefore substitute a subgroup in the chronically poor group. Consequently, as Baulch and Hoddinott (2000) state, longitudinal studies are crucial if one is to make a distinction between chronic and transitory poverty. In the next section we first examine the relationship between chronic and transitory poverty, and then review studies identifying the determinants of income mobility.

Income mobility and the chronic and transient poor

Why do households move in and out of poverty? Haddad and Ahmed (2003) analyse this question using Egypt as a case. For the period 1997-1999, poverty is categorized into chronic and transitory poverty. The study shows that per capita consumption has decreased for the households under review. Of the 347 households in the study, 22 have managed to escape from poverty, while 49 fell into it. Haddad and Ahmed divided the households into consumption groups. Over half of the households did not move out of their initial consumption group. The study shows that as many as 67 per cent of the Egyptian poor were chronically poor.

Another interesting study investigated changes in the poverty situation of blacks in South Africa. The first national South African household income and living standards survey of 1993 showed that half of all black South Africans were living in poverty. A repeat survey was made in 1998. In their study, Carter and May (2001) examine whether the poor in the first period had managed to escape from poverty, or whether they were trapped in poverty. The study shows that the poverty rate increased from 27 to 43 per cent among black households and that the distribution of scaled per capita expenditure had become less equal. The study indicates that nearly 40 per cent of the households reviewed were stuck in chronic poverty. Carter and May conclude that few poor households are able to escape from poverty; they do not possess the means to do it.

In a study of China, McCulloch and Calandrino (2003) look at the situation of the poor in rural Sichuan in the period 1991 to 1995. They register a lot of movement in and out of poverty. Only 2.4 per cent of the households in the study were poor for the whole of the five years analyzed. This considerable mobility makes targeted poverty reduction strategies extremely difficult. Households which were poor for more than a year were more likely to fall back into poverty than those which were poor for a single year. It seems as though once a household has been poor for some time, it is more likely to fall into poverty again.

In a household panel study from Vietnam in the 1990s, Baulch and Masset (2003) analyze whether monetary and non-monetary indicators give the same output concerning who is chronically poor. They note that most quantitative studies of poverty examine only the first, in terms of income and expenditure, and they question whether this is a good way of measuring chronic poverty. Their study shows that monetary factors alone might not be a good indicator of poverty, because poverty is a multidimensional concept. Even though, as Baulch and Massets highlight, measures of income only give a partial picture of poverty, they do give an indication of how poor a household is at a certain time.

Determinants of income mobility

What are the determinants of change in income for households in developing countries? The literature identifies several categories, hypothesized to have a determining effect on the household economy. The categories, which we will describe further below, are human capital, demographic factors, location, physical assets, occupational status, economic growth and development and structural factors.

Human capital

In a panel study of Indonesia's 285 districts, the determinants of poverty change are investigated. Balisacan et al (2003) find that human capital is one of the determinants of poverty change in Indonesia. In like manner, Haddad and Ahmed (2003) found that average years of schooling of adult members of the household reduced chronic poverty, and also had a lesser but still certain effect on transitory poverty in Egypt. Contrary to this, in a study of income distribution in Colombia Birchenall (2001) finds that the accumulation of human capital led to a decline in the dispersion of income distribution at the end of the 1970s. This resulted in the stagnation of income distribution from 1983 to 1990, when mobility declined.

Turning to education, a lower level of education is associated with poverty in China (McCulloch and Calendrino 2003). Maluccio and collaborators (2000) support this finding and point to the results from South Africa, where better educated households had higher per capita expenditure. In the same way, Grootaert and Narayan (2000) show that one additional year of education, on average, will give a 4.7 per cent higher level of household welfare.

Demographic factors

The composition of the household and the gender of its head member are other determining factors highlighted in the literature. Orr and Mwale (2001) measure changes in livelihood strategies for households in Blantyre and the Shire Highlands in Southern Malawi. More than half of the questioned households stated that their economic situation had improved, while one quarter reported that it had worsened. Divorce and widowhood were among the reasons for this decline in their economic mobility. From their Egyptian study, Haddad and Ahmed (2003) report that both size of household and number of children under 15 were determinants that increased poverty. In addition, the poor households in rural Sichuan were likely to be large (McCulloch and Calandrino 2003). In the same way, Maluccio and colleagues (2000) support these findings and report that in South Africa per capita expenditure was lower for larger households. Furthermore, they found that male-led households had higher per capita expenditure. McCulloch and Calandrino (2003) find those households led by a woman experience a higher level of vulnerability. Similarly, Grootaert and Narayan (2000) report that female-headed households have a 10 per cent lower level of welfare than households led by men.

Location

Does location matter for household welfare? Several studies confirm this, but in a slightly different way. Skoufias (2001) measures changes in 53 rural and urban regions of Indonesia, in the 1996 to 1999 period. He reports that a drop in average regional consumption was the reason for the decrease in social welfare within the Indonesian regions under review. Skoufias underlines the fact that it was not caused by an increase in inequality within each region; it was especially due to urban households, a finding that confirms the popular assumption that urban regions were more affected by the financial crises. By contrast, Haddad and Ahmed (2003) identified the fact that, in Egypt, urban households were less likely to experience transitory poverty. In addition, the analysis in South Africa shows that urban households enjoy higher per capita expenditure (Maluccio et al 2000). In the mountain landscape of Sichuan, flat land is crucial for not falling into chronic poverty and McCulloch and Calandrino (2003) also note that many of the poor households live in remote mountain areas.

Physical assets

It is likely to be assumed that physical assets will give higher outcomes in terms of households' income level. As Baulch and Hoddinott (2002) state, "[p]overty reflects a conjunction of low endowments, low returns to those endowments and vulnerability to shocks." These factors are related to each other. Higher assets and higher returns will, logically, prevent households from falling into poverty and they will be less vulnerable to shocks. Haddad and Ahmed (2003) report evidence from Egypt, which shows the value of land and livestock as being crucial for not falling into chronic poverty. Carter and May (2001) also find that initially better off households have shown more upward mobility than initially poorer households; ownership of cultivated land has some implications for the design of insurance mechanisms in rural areas. Other results show low returns from ownership of land and livestock, but high returns from owning farm equipment (Grootaert and Narayan 2000).

Occupational status

It is evident that the occupation of the members of the households will highly influence the level of income of the household. Empirical evidence confirms this assumption. In their study of household income dynamics in the four countries of Indonesia, South Africa, Spain and Venezuela, Fields and collaborators (2003) find that reported initial income and job changes of the head of household are the most important determinant for income changes. This is so for all households, including initially poorer households. Their study also reports that changes in initial income are more important for income changes than changes in the size of households and that changes in labor earnings are more important than changes in all other sources of household income combined. This topic is also dealt with in a household panel study of 21 villages in Bangladesh (Sen 2003). The survey, which was conducted in 1987-88 and resurveyed in 2000, reports that households rising out of poverty underwent a reorientation from agricultural to non-agricultural activities and managed to derive income from various different sources.

Crises and shocks

How do economic crises determine incomes, and how do poor households cope with natural shocks? Sen (2003) shows that of the reasons given by households for downward economic mobility, health problems and natural disasters were the ones most reported. In a household study of Indonesia, the impact of the country's economic crises on household welfare is the topic. Skoufias et al. (2000) used household surveys from May 1997, just before the onset of the Indonesian crisis, then 14 months later, in August 1998, about a year after the onset. They reported an extensive decline in household welfare, and that inequality became greater. Mobility into and out of poverty is still a fact; even though many fell into poverty, some managed to escape from poverty in the first year of the Indonesian crisis.

Economic growth / economic development

Economic growth is hypothesized to increase the average household income. Yet this will not always be the case. Adelman and his collaborators (1994) investigate the impact on economic growth of income mobility in Brazil. Using census data from 1970 and 1980, they find that all workers gained from the growth, but the growth also turned out to lead to inequality: those workers who started with higher wages benefited more than those who started with lower incomes. In a study of rural Ethiopia, the link between economic reforms, growth and poverty change is investigated. Dercon (2001) uses a panel data set on 326 rural households in six

Ethiopian communities collected in 1989 and 1994-95. He shows a complex picture. The overall conclusion is that growth led to a decline in poverty. Diffusion took place into the rural areas, and farmers got more back from their grain crops. Liberalization, devaluation and other reforms raised the relative price level, and, on average, real producer prices increased by 26 per cent. Those who gained most from the growth were those households that were able to benefit from their land endowment, increase production, and so on. Some households became poorer: mainly those which not were able to enjoy the benefits, because of having a poor land endowment or living in remote areas.

Structural factors

What impact do structural factors have on income mobility? We are likely to believe that improvements in infrastructure will have a positive effect on poor households. Marked liberalization may also be expected to increase their income, making it easier for them to sell their goods. Most of the households in Orr and Mwale's (2001) study of Malawi believed that their economic situation had improved over the past decade. The majority linked this perception directly to the marked liberalization. Many of these households had increased their maize production and were involved in micro-enterprises that could now take advantage of more lucrative investments or more contact with urban areas. But their study also shows that some households experienced a decline in their income. These were mainly vulnerable, for example female-headed households, they were involved in a low-paying micro-enterprise, or they suffered from a decline in maize production. Balisacan and his colleagues (2003) find that infrastructure has a direct effect on the welfare of the Indonesian poor, as well as having an indirect effect on economic growth.

2.2 The role of social capital in explaining welfare changes and poverty dynamics

This section contains four parts. After this introduction to the concept of social capital, we describe more closely how social capital is defined. The following section discusses how this concept is measured in practice, while the final section presents the results of the analysis, which includes various measures of social capital as explanatory variables.

The concept of social capital has been discussed in several influential works (Jacobs 1961; Bourdieu 1983; Coleman 1988 and Putnam 1993; 2000). In the literature on poor households, there is a growing recognition that income mobility cannot be explained solely from traditional inputs like land, labor and physical assets, but that social interaction is also a determining factor. The American political scientist Robert Putnam's works on, respectively, Italian and American societies (Putnam et al 1993; Putnam 2000) are used as a starting point for a multitude of studies. As a pioneer in research on social capital, the study of Italian communities concluded: "Historically, […] norms and networks of civic engagement have fostered economic growth, not inhibited it. This effect continues today" (Putnam et al 1993:176). Following the seminal work of Putnam, growing attention is being given to social capital and its impact on household income, including in developing countries.

Narayan and Pritchett (1999) stress the importance of the dimension of social capital in studies of income and poverty. They argue that studies which concentrate solely on the capital of each individual miss an important part of what they call the 'poverty puzzle'. The important role played by local associations concerns the mechanisms of information sharing through members of the association, the reduction of opportunistic behavior and the simplification of making collective decisions (Grootaert 1997; Collier 1998; Grootaert 1999). Contemporary scholars have asked whether social capital may reduce poverty by contributing to the income generation of households. Does social capital facilitate access to credit? Are these social interactions a way of learning skills which are lacking, due to poor schooling, or will these nets of social interaction function as safety nets in times of crisis?

As Maluccio, Haddad and May (2000) show, it is extremely difficult to measure social capital accumulation and states; they cannot be measured directly. Consequently, researchers use different proxies to measure the impact of social capital. Despite the fact that the concept is difficult to measure, it is nevertheless an important factor in household studies. In fact it is a "major omitted variable" in most analyses of economic mobility (Baulch and Hoddinott 2000). Several researchers call for a stronger emphasis on social capital in policy and poverty reduction strategies.

The next section contains a review of studies analyzing social capital and its impact on the income mobility of households; how they define, operationalize and measure social capital; and the results of these studies.

Defining social capital

Putnam defines the concept in the following way: "…social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them […] In other words, interaction enables people to build communities to commit themselves to each other, and to knit the social fabric" (Putnam 2000:19). Several studies define social capital in similar ways. Baulch and Hoddinott refer to a related definition from one of Putnam's other works, where he states that social capital "refers to features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit." (Putnam 1995:67, cited in Baulch and Hoddinott 2000). Similarly, Grootaert and Narayan (2000) define social capital as formal and informal institutions of society, where norms, networks and social interaction enable people to synchronize action and achieve preferred goals.

While Putnam's analysis mainly focuses on 'horizontal' organizations, in which members relate to each other on an equal basis, Coleman (1988, 1990) suggests that it should also include 'vertical' organizations, in which the relationships are hierarchical and power is distributed unequally among members. Grootaert (1999) studies social capital both at the micro level, by studying individuals and households, and the meso level, the community. He uses the definition of Portes (1998:6, cited in Grootaert 1999) and defines social capital as "the ability of actors to secure benefits by virtue of membership in social networks or other social structures." The definition is applied in a broader manner and includes both horizontal and vertical organizations. Narayan and Pritchett (1999:872) use the concept as "the quantity and quality of social life and the related norms". Grootaert and collaborators (2002) simply state that even scholars do not agree on an exact definition, but it is widely accepted that the concept has an influential impact on economic outcomes.

Measuring social capital

The previous section revealed that definitions of social capital can be very broad. One main question in the empirical studies of income mobility is, therefore, how to operationalize this concept.[2] This section summarizes how social capital is measured in recent studies on income mobility in developing countries.

[2] Income mobility, consumption mobility and welfare changes are all concepts that try to measure how people's wellbeing changes over time. To measure the welfare of households, several studies (Grootaert 1999; Maluccio et al 2000; Grootaert et al 2002) were conducted by using per capita expenditure as a proxy. Grootaert and Narayan (2000) choose to expand this by adding indicators like livestock held by the households; equipment in

Maluccio, Haddad and May (2000) seek to determine the relationship between social capital and household welfare in South Africa. The first national household study was conducted in 1993, and households in the country's biggest province, KwaZulu-Natal, were resurveyed in 1998. The second survey followed the template of 1993, but an important section was added, about participation in groups. This section listed almost 20 different groups, belonging to several categories, such as financial groups, production, sports and music, community services, and religious and political groups. The households were asked to list every group of which an individual was a member in 1998 and in 1993. For the groups appearing to be most important for each household, additional questions were asked regarding gender composition, performance of the group, etc. Additional interviews were made with key informants of the community. Maluccio and his colleagues could report an increase in group membership in South Africa during the years of the study. In 1993 the average membership per household was 0.8 and by 1998 this had increased to 1.3. They further found two types of groups most frequently reported: financial groups, which involve stokvels and burial societies, and religious organizations.

In a study of household income and social capital in rural Tanzania, Narayan and Pritchett (1999) combine two household surveys conducted in 1993 and 1995 in rural areas. The respondents were asked questions about their membership of voluntary groups concerning three dimensions of social capital: (1) their memberships of groups, (2) the characteristics of those groups (which include kin heterogeneity of membership, income heterogeneity of membership, group functioning, group decision-making and voluntary membership), and (3) the individual's values and their trust in various groups. The average number of groups per person in Tanzania was 1.5. Among the groups of which most respondents said they were a member were churches, political parties and burial societies. Panel studies like the ones performed in South Africa and in Tanzania have a great advantage: they are able to draw conclusions concerning changes over time.

The impact of social capital on household welfare and poverty in Indonesia was examined by Grootaert (1999). The data set used in the study was part of the Local Level Institutions Study, and was collected at community, district and households levels. At the community level, leaders of the community and focus groups of households were interviewed. The results served as an organizational map of the community. Data from the district administrative level was gathered about the district administration and its relation to civic organizations and the institutional arrangements for the provision of services. The household survey was constructed in six parts: (1) demographic information on household members, (2) participation in local institutions, (3) characteristics of the most important groups, (4) service provision profiles, (5) perceptions of community trust and collaboration, and (6) household economy and coping strategies. Grootaert use six dimensions to measure social capital: (1) density of membership, measured by numbers of household in various associations; (2) internal heterogeneity of the group; (3) meeting attendance, measured by the average time a household member attend a group meeting; (4) active participation in the group's decision making; (5) payment of memberships dues; and (6) community orientation, or whether the organizations were initiated by the community. Grootaert could report that the average number of memberships per household in various groups was five.

order to buy necessities; food intake; children's school attendance; electricity; and tap water. A different approach is to use household income as a measure of income mobility (Narayan and Pritchett 1999; Piazza-Georgi 2002).

Two other studies from the Local Level Institutions Studies similarly examine social capital and local institutions in Bolivia (Grootaert and Narayan 2000) and Burkina Faso (Grootaert et al 2002). Data collection was performed in an identical manner to the Indonesian study, at community, district and household level, using the same six dimensions of social capital. In the study of Burkina Faso a seventh was added: mode of organization, which examines whether the organization is constituted formally or informally. Grootaert and Narayan (2000) report that each of the Bolivian households belonged on average to 1.4 groups and associations. Almost half of the memberships were in community-wide organizations. Sub-community gender groups and productive groups were also often reported. The small number of reported memberships in religious groups surprised the analysts. However, they point to the fact that it might depend on the interpretation of the questions and not reflect church attendance. In their study of Burkina Faso Grootaert and others (2002) found that the average of group memberships was as high as six per household, but only 23.9 per cent of them implied active memberships. Two-thirds of all active memberships were in general farmer's associations.

Another interesting study of the impact of social capital was undertaken in Soweto by Piazza-Georgi (2002). The household survey used was accomplished in 1999. This study diverges from the other studies reviewed by carrying out an exploratory data analysis. The questionnaire in the household study consequently differs greatly from the earlier mentioned studies by asking a variety of questions. These included demographic data, household size and structure, and characteristics of household members such as age, main activity, educational level and economic situation. To measure social capital he used questions concerning membership characteristics, where a household's group membership is given, type of group, members' annual economic contribution to the group, and time spent on group activities. Data were also collected on the characteristics of groups such as homogeneity of members, the existence of formal rules and procedures, and perceptions of whether the group functions well. Further questions concerned solidarity within the neighborhood, whether household members come together to solve problems such as security, etc. The questionnaire also covered such aspects as personal perceptions and values (e.g. attitudes to wealth, individualism and risk); individual values; trust in different groups and institutions; and whether individuals use social safety nets in job-seeking. The last part concentrated on the use of personal time, work time, household work, time spent in groups, and whether people were willing to use time in voluntary work. Piazza-Georgi (2002) found that 83 per cent of all adults in Soweto were members of at least one social group. More than half of the memberships were in religious groups, but also burial societies and stokvels were often reported.

Results of analyzing social capital

What did the research find: does social capital have an influence on households' economy? To conduct statistical analysis of the gathered data on social capital, all but one study (Piazza-Georgi 2002) constructed indices by combining the different dimensions as proxies for social capital. To measure which part of social capital had the greatest influence, the indices were disaggregated and each dimension was used as a separate variable. As mentioned, Piazza-Georgi constructed an exploratory data analysis in his study of Soweto, and each dimension is analyzed descriptively.

In his analysis of Indonesia, Grootaert (1999) finds that the number of memberships had a strong effect. For every additional membership, household expenditure per capita rose by 1.5 per cent. Similar findings were reached by Grootaert et al (2002), who report strong effects on household welfare coming from the number of memberships. This is supported by the study of Grootaert and Narayan (2000) on Bolivia. Especially significant was membership in agrarian syndicates, which gave an average 11.5 per cent higher household expenditure per capita, whereas membership in other associations gave 5.3 per cent higher expenditure.

The internal heterogeneity of groups turns out to be an important factor. Grootaert (1999) reports that an increase in heterogeneity correlates positively with a higher expenditure level. He demonstrates that a large benefit derived from associations where people from different neighborhoods were gathered. In like manner, Grootaert et al (2002) find that households which are members of associations with both genders and with various ages benefit more than those in more homogenous organizations.

Active participation by the members in the groups' internal decision-making seems to heighten the effect of social capital. Grootaert (1999) noted that an increase in the participation would give a higher expenditure level. Grootaert and Narayan (2000) report evidence from Bolivia suggesting that households which actively participate in group meetings profit more than others.

Social capital turns out to be preventive of being poor. The benefits from social capital for the lower half of the population are higher than for the rest of the population. (Grootaert 1999; Grootaert and Narayan 2000; Grootaert et al. 2002). In fact, evidence from Burkina Faso shows that for the most affluent 25 per cent of the households, social capital does not lead to a higher welfare level at all. The study also demonstrates that the returns for the poor are higher from social capital than from other sorts of capital (Grootaert et al 2002). Furthermore, the study from Bolivia shows that the distribution of social capital is smoother than other forms of asset (Grootaert and Narayan 2000).

When it comes to access to credit and income fluctuations, social capital has long-term benefits: households with a higher level of social capital find it easier to build up assets or borrow capital in order to smooth out income fluctuations (Grootaert 1999; Grootaert and Narayan 2000).

The type of association in which households are a member might not be without importance. Grootaert (1999) found that membership of voluntary organizations, those whose primary role is financial and organizations related to production has a significant impact on household welfare, whereas Grootaert and Narayan (2000) note that membership of agrarian syndicates indicates a 14 per cent lower probability of being poor. It is reasonable to assume that membership of a syndicate will give some benefits, but the analysts consider the possibility that restrictions on the poor joining a syndicate might be the reason for this strong correlation.

Another interesting question is whether it is the social capital of the households themselves or the local society's social capital which gives payoffs to each household. In the study of Tanzania, the respondents were asked about their level of trust in various groups. Grootaert and Pritchett (1999) claim that a higher level of trust will give the village more social capital. They conclude that it is the social capital in the village that matters, not that in each household. Similarly, Grootaert (1999) shows that for Indonesia it was the local social capital that benefited the households. By contrast, the study of Bolivia shows that village level social capital had little effect on household welfare (Grootaert and Narayan 2000).

The consequences of paying dues to the organizations also seem to have a positive impact on returns to the households. Grootaert (1999) found this to be important in Indonesia. The study by Grootaert and Narayan (2000) also reports benefits being obtained by supporting the organization financially.

Grootaert and collaborators (2002) demonstrate that the effect of social capital in Burkina Faso is much larger than that from human capital. This is supported by findings in Tanzania (Narayan and Pritchett 1999), but diverges from the results from Indonesia (Grootaert 1999) and Bolivia (Grootaert and Narayan1999), where human capital turns out to have a positive effect similar to that from social capital. The finding from Burkina Faso may be interpreted as reflecting the benefits of learning from social interaction in associations as a substitute for education, due to the low level of education in the country.

Maluccio and others (2000) report that social capital has had a substantial impact on changes in consumption over time in South Africa, and that the impact on household welfare levels was bigger in 1998 than in 1993. Interestingly, those households with a higher level of social capital in 1993 were more upwardly mobile and Maluccio and collaborators point to the determining factor of the initial level of social capital. The researchers interpret the structural changes in South Africa as being the reason for this growth in social capital. These changes have increased both the social and the human capital of the country. However, they point to a low per capita expenditure due to the legacy of apartheid.

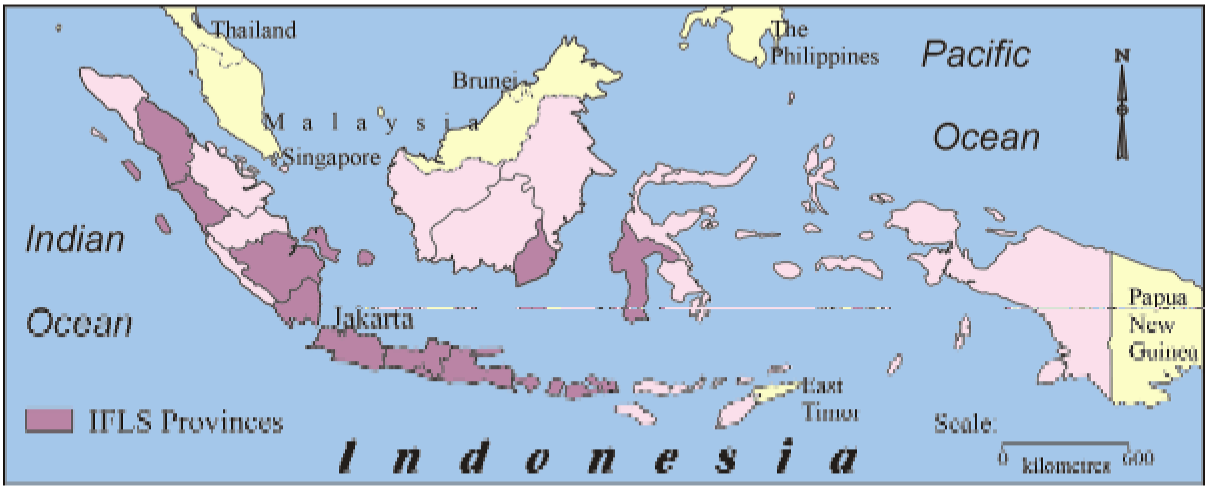
Summing up, several scholars conclude by showing a positive correlation between social capital and household income. From the analysis of the interrelationship between human and social capital and income generation in households in Soweto, the author draws few conclusions and only confirms that there are some links between social capital and some demographic and economic factors. In addition, he points to the complexity of these links and calls for a more in-depth analysis of the subject (Piazza-Georgi 2002). On the other hand, the majority of the studies reviewed conclude that households with higher social capital have higher levels of economic welfare (Grootaert 1999; Grootaert and Narayan 2000; Grootaert et al 2002; Maluccio et al 2000; Narayan and Pritchett 1999).

3. The Indonesian living standard survey

The Indonesia Family Life Survey (IFLS) is a continuing longitudinal household and community survey covering many socioeconomic and health aspects.[3] The first wave (IFLS1) collected information from 7224 households in the second half of 1993 and represents approximately 83% of the population in 13 of Indonesia's 26 provinces. The survey collects data on individual respondents, their families, their households, the communities in which they live, and the health and education facilities they use. IFLS2 sought to re-interview the same respondents four years later, and was also extended to include important information regarding traditional law, customs and the degree of the villagers' participation in various tasks in the community and in governing the village. The latest phase, IFLS3, covered the full sample in the second half of 2000.

[3] The first wave of the IFLS (IFLS1) was conducted in 1993/94 by RAND in collaboration with Lembaga Demografi, University of Indonesia. IFLS2 was conducted in 1997 by, respectively, RAND in collaboration with UCLA and Lembaga Demografi, University of Indonesia. IFLS3 was conducted in 2000 and covers the full IFLS1 sample, and was conducted by RAND in collaboration with the Population Research Center, University of Gadjah Mada.

Figure 1. Map of the IFLS provinces covered by the IFLS



Source: *Rand.*

IFLS1 also contains detailed individual-level data from over 22,000 individuals, and together with the household information, over 30,000 individuals were sampled. In IFLS2, 94.4% of IFLS1 households were re-contacted, and the corresponding re-contact rate for IFLS3 was 95.3% of IFLS1 households. These re-contact rates are very impressive for a developing country where there is a rather high level of migration and other reasons for difficulties in tracking individuals who move. The IFLS is comparable to most longitudinal surveys in the United States and Europe with respect to high re-interview rates. It is crucial for panel data sets that the re-contact rates are high since this improves data quality substantially. With high attrition in the sample from one round to another, it may be that those who are not re-interviewed differ in important ways from the remaining respondents. Estimating relationships with a sample where such non-random attrition is a major problem may cause bias in the results.

Another important reason for using the IFLS, and especially when interested in the possible effect of empowerment and cooperation on poverty reduction, is that it contains detailed data about the characteristics of the respondents' communities along these lines. The community data can be combined with household and individual data on income from a wide range of different sources as well as very detailed information about household and individual characteristics. In fact, we know of no better data set for testing our hypothesis about a relationship between income growth and the degree of empowerment and cooperation in a society.

The information collected from someone the village head identified as a local expert in the *adat* (traditional law) of the community is of particular importance to our study. This information was new in IFLS2, and was collected in the second half of 1997. The topics surveyed range from the respondent's own religious, educational and ethnic background to general characteristics of the village society. Information about traditional laws and contemporary practice relating to community organization, governance, mutual aid and decision-making enables us to get a detailed picture of these important aspects of community life. Finally, this part of the data set contains information on marriage, childbirth, divorce, gender roles, living arrangements for the elderly, and death and inheritance.

The questions on the household economy were typically answered by the household head or the head's spouse. Information was collected about household businesses (farm and non-farm), non-business assets, and non-labor income. When this information is coupled with individual-level data on labor and non-labor income, we get a complete picture of the households' income from market-wage labor, self-employment, family businesses, informal sector activities, and non-labor income such as pensions, transfers and bonuses.

The first phase of IFLS, which we use in this study, started several years prior to the economic crisis that hit Indonesia. The third phase, which we combine with the first to construct measures of income changes, was collected three years after the crisis. As a result, our study incorporates this tumultuous period in many Indonesians' lives.

4. Descriptive results

The Asian financial crisis, which started to influence Indonesia in April 1997 and peaked in 1998, was one of the major events affecting the welfare of households during the IFLS panel period. Figures measuring real GDP per capita from 1993 to 2001 show that there was a decline in this welfare proxy of nearly 15 % from 1997 to 1998. However, we also note that real GDP per capita started growing in 2000, a growth that continued in 2001.

Table 1. Real GDP per capita

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real GDP per capita	197	209	220	236	251	259	221	220	228	233
% growth in real GDP pc.	5.3	6.1	5.3	7.3	6.4	3.2	-14.7	0	3.6	2.2

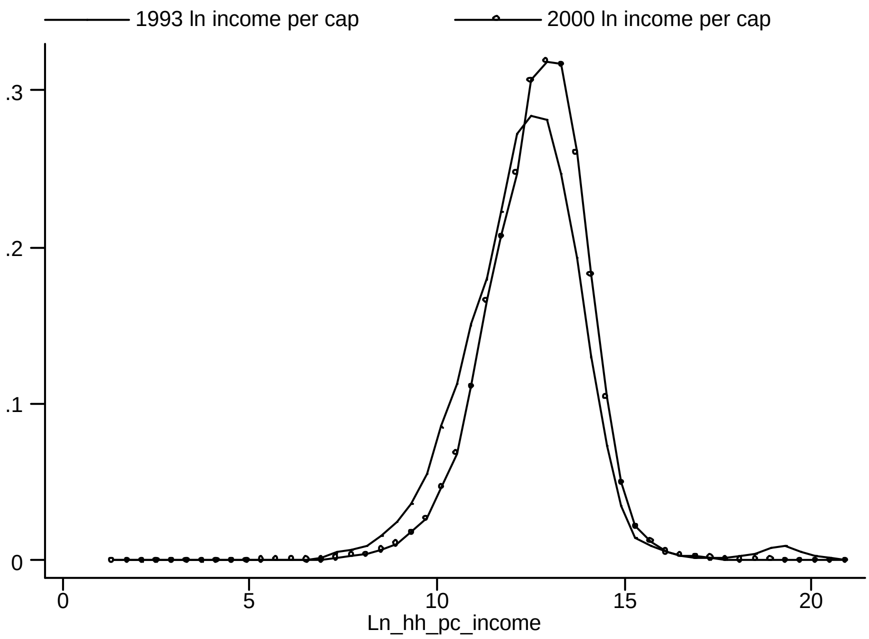
Source: WDI 2003.

So if the economy of average household income is mirrored in the national real GDP per capita figures, then we would expect an increase in household income of around 9 % from 1993 to 2000.

Now turn to the changes in incomes from 1993 to 2000 based on the IFLS survey data.[4] Figure 1 displays the density functions of real logarithmic per capita incomes in Rp for our sample in 1993 and 2000. Two interesting points emerge from this figure. First, we can see a rightward shift in the curves from 1993 to 2000. This indicates that the mean income is higher in 2000 than in 1993. The second finding is that the 1993 density function is somewhat flatter than the 2000 function, and this indicates that there has been a small decrease in inequality during the panel period.

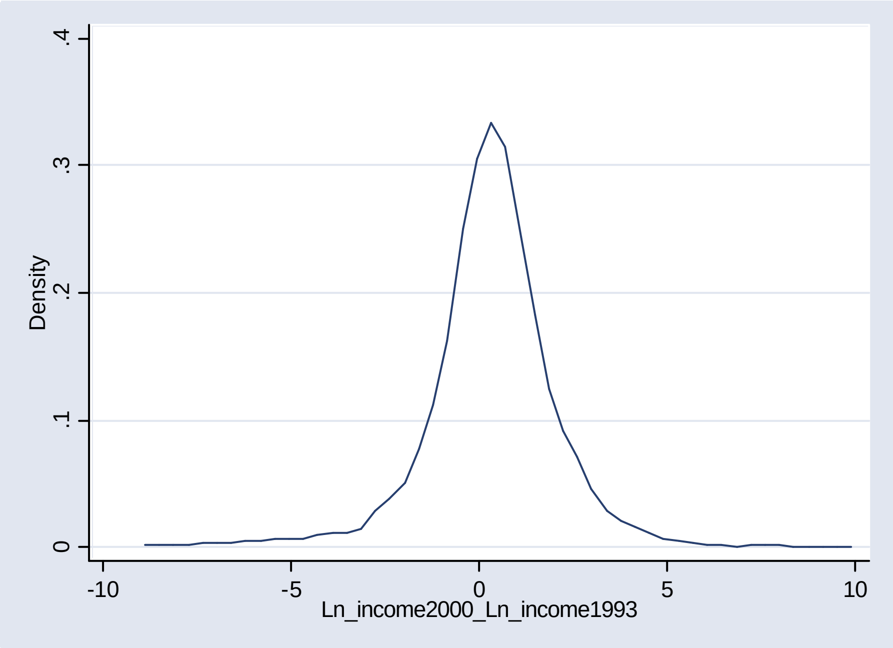
[4] The deflation factor for IFLS3 is 2.696 based on the Indonesian consumer price index (WDI 2003).

Figure 1. Density functions of real logarithmic per capita income in 1993 and 2000 (1993 prices).



The interesting question is, of course, why those who were poor in 1993 and became non-poor in 2000 managed to escape poverty. The density functions in figure 1, however interesting, cannot tell us very much about the changes for the particular households over time since they display the cross-section for each survey round (1993 and 2000). This highlights the importance of using panel data to track changes for the same households over time. The panel structure allows us to calculate each household's income change from 1993 to 2000, and figure 2 gives the kernel density of the change in real logarithmic per capita income in the period. It is evident that a large share of the sample experienced an increase in income. Our calculations show that around 60 % of the sample increased their income, while the rest experienced declines in income from 1993 to 2000.

Figure 2. Density function of change in real logarithmic per capita income from 1993 to 2000 (1993 prices).



Finally, let us look at how the different income groups fared with respect to income changes. According to a thorough calculation of poverty rates using the consumption component of the IFLS data, Strauss et al (2003) find the head-count poverty rate in Indonesia to be 15.5 % in late 2000. In order to set a reasonable poverty line based on the income figures, we define the 15.5 % of the households with the lowest incomes of the sample in 2000 to be poor. This cut-off point in income is 85,776 Rupees per capita per year in 1993 prices and serves as our poverty line. Then we divide the households into 5 income groups where income group 1 are poor, i.e. they have an income per capita of less than 85776 Rp in 2000, while income group 5 consists of the richest. The cut-off points for the income groups are constructed so that each income group contains approximately 1200 observations in 2000. Details of these cut-off points are given in table 2.

Table 2 gives the probabilities of movement between absolute income categories. The bold figures represent those that remained in the same income group in both 1993 and 2000. We can see that there is a substantial movement within the distribution, and especially out of poverty. Only 20.9 % of those who were poor in 1993 remained poor in 2000. The table also indicates that relatively few of those in income group 2 remained in that group in 2000. Moreover, most of those moving out of income group 2 moved one or two income groups upward in the distribution, which confirms the positive pattern with respect to poverty reduction. Only 14.5 % of those in income group 2 in 1993 fell into poverty in 2000, while 62.7 % moved one or more groups upward.

Table 2. Transition matrix for absolute income over 1993 – 2000.

Household per capita income in 1993 prices = *y*:
Income group 1: *y < 85,776 Rp*
2: *85,776 Rp>= y < 230,000 Rp*

3: *230,000 Rp >= y < 450,000 Rp*

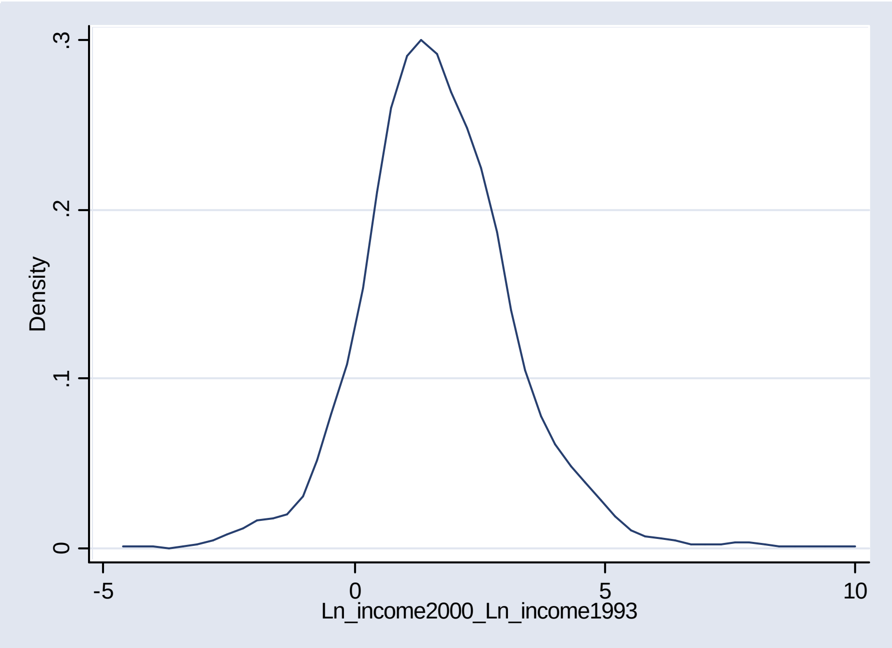
4: *450,000 Rp >= y < 900,000 Rp*

5: *y < 900,000 Rp*

		Income group in 2000					
		1	**2**	**3**	**4**	**5**	Total
Income group in 1993	**1**	**28.11**	31.25	21.09	13.57	5.98	100.0
	2	11.63	**29.39**	26.09	17.42	9.46	100.0
	3	12.06	19.58	**25.29**	25.84	17.23	100.0
	4	6.97	13.11	19.36	**32.58**	27.97	100.0
	5	5.51	7.61	10.14	24.15	**52.59**	100.0
	Total	15.49	21.86	21.09	21.66	19.90	100.0

These figures are confirmed if we look at the income distribution. Figure 3 gives the distribution of the income changes for households that were poor in 1993. We can see that a very large share of those who were poor in 1993 experienced increased income from 1993 to 2000.

Figure 3. Density function of change in real logarithmic per capita income from 1993 to 2000 (1993 prices) for those who were poor in 1993.



Constructing an index of participation and empowerment

The methodology we use for constructing an index of participation and empowerment follows that of Naryan and Pritchett (1999), Grootaert (1999) and Maluccio, Haddad and May (2000), which was used to build social capital indices. Based on information collected from someone the village head identified as a local expert in the *adat* (traditional law) of the IFLS community, we ranked the communities according to their degree of democratic decision-making, and their degree of mutual cooperation and participation in the society. We believe that a different impact on income generation may arise when people are empowered to take part in community decision making, compared with when people participate in other community activities, such as assisting those who experience times of hardship. Since the purpose of this paper is to study income growth and poverty reduction, we make a distinction between participation and decision-making, even if the elements of the empowerment index can also be classified as participation in a community. These indices are in turn treated as proxy measures for participation and empowerment.

The information used to construct the index is taken from the IFLS2 community and facility survey conducted in 1997. The reason for basing the index solely on the 1997 data is that no corresponding information was surveyed in the first round of IFLS in 1993. Furthermore, the community survey in IFLS3 is yet to become publicly available. When released, this information may open up new possibilities for testing the impact of these aspects of social development on income generation.[5] Thus, we take the 1997 information used to build the indices as proxy for the degree of empowerment and participation in the communities during the panel period 1993-2000.

The empowerment index consists of two elements. The first element uses the information from the answers to the question "What type of decision-making process is used by local residents to select the head of the village?" The respondent could choose from the following alternatives that best described the current common practice in the village: "All residents engage in consensus building", "Voting", "Decided by local institutions", "Appointed by the government", "Local elites decide" and, finally, there was a category for "Other processes". We ranked these alternatives from the most inclusive form of decision making to the most exclusive form. Thus, consensus building was ranked highest, while voting was ranked as second and local institutions third. The fourth category comprises the least inclusive form of decision making, namely when the village head was appointed by the government or by the local elites.

The second element is the response to the question "In deciding about issues of community importance (like construction, celebrations), what policy is used to make decisions?" The alternatives were the same as above, except that "Appointed by the government" was not a feasible response to this question. These alternatives were thus ranked as for the first element, the only difference being that the least inclusive decision making category consisted solely of the alternative "Local elites decide".

We assume that the degree of empowerment increases with the inclusiveness of the decision making process. The empowerment index is thus computed by adding the two elements for each village.

[5] The community data from IFLS3 enables us to assess whether there have been any changes in the practice of community decision making and mutual cooperation from 1997 to 2000. If such change has occurred, then the analysis should be extended to check whether these changes have also had an impact on income changes and poverty.

The participation index is composed of four components. The first component is the response to the question "Is there a community activity (or organization) that is conducted on a routine basis that was formed by members of this village?" The next three elements are the answers to the questions "Is there an ethic of mutual cooperation in this village?", "Are there community groups in this village that utilize the principle of mutual cooperation?" and "Is there a specific activity conducted by local residents to assist a community member that is experiencing difficulty / a lack of something?". The final element in the participation index consists of the answer to the question: "Who participates in this activity?" where "this activity" refers to the community groups utilizing an ethic of mutual cooperation.

The answers to the first four questions could be either yes or no, and we assigned the value 1 to "yes" and 0 if the response was "no" to each of the questions. The answers to the final question were divided into two groups, whether all or not all members of the community participated in this organization. The first response was given the value 1, while the latter was assigned the value 0. Then we added all the elements into one index ranging from the least to the most participatory society. Table 3 gives an overview of the mean score on both indices for households belonging to the different income groups.

Table 3. Distribution of the cooperation index (1997) and the empowerment index (1997) for income groups in 1993 and 2000

Household per capita income in 1993 prices = *y*:
Income group 1: *y < 85,776 Rp*
2: *85,776 Rp>= y < 230,000 Rp*
3: *230,000 Rp >= y < 450,000 Rp*
4: *450,000 Rp >= y < 900,000 Rp*
5: *y < 900,000 Rp*

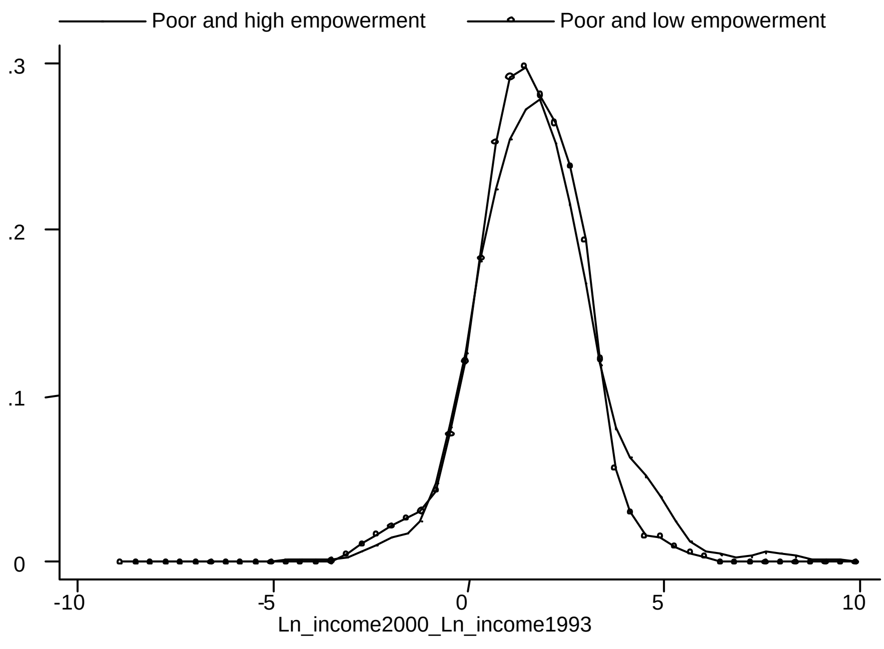
		1993			2000		
	Index	**Obs**	**Mean**	**Std. Dev**	**Obs.**	**Mean**	**Std. Dev.**
Income group 1	Cooperation	1354	4.10	1.07	853	4.06	1.13
	Empowerment	1350	3.06	0.77	852	3.09	0.75
Income group 2	Cooperation	1317	4.06	1.09	1191	4.06	1.06
	Empowerment	1316	3.08	0.74	1190	3.07	0.76
Income group 3	Cooperation	968	4.11	1.14	1101	4.08	1.19
	Empowerment	967	3.06	0.75	1095	3.03	0.76
Income group 4	Cooperation	796	3.99	1.28	1076	4.13	1.16
	Empowerment	786	2.86	0.80	1069	2.95	0.78
Income group 5	Cooperation	702	4.16	1.22	916	4.08	1.19
	Empowerment	686	2.84	0.81	889	2.89	0.80

All groups	Cooperation	5137	4.08	1.15
	Empowerment	5105	3.00	0.77

Note first that these figures support the suggestions in kernel densities in figure 1 that there has been a reduction in income poverty from 1993 to 2000, and these numbers suggest that income poverty fell from 26 % in 1993 to around 15 % in 2000. As noted above, the trend of reducing poverty in the period could be expected from the rise in GDP per capita of around 15 % from 1993-2000. It is evident from table 3 that the indices do not vary much across income groups. The cooperation index is close to its mean value for all groups in both years, while the empowerment index seems to decrease slightly with higher income groups. However, the mean of the indices and the static need not be very telling. Let us therefore investigate the change in income from 1993 to 2000, and to ease the disposition, we apply the composite index derived from multiplying the empowerment index with the cooperation index.

Focusing on income group 1, it is evident from figure 4 that those who were poor in 1993 and scored high (>12) on this composite index were relatively much more likely to experience an increase in income from 1993 to 2000 than those who scored low (<6). Similarly, those who were poor in 1993 and scored high (>12) on this composite index were also relatively much less likely to experience a reduction in income in the panel period compared to those who scored low on this index. From these figures, it seems as though empowerment and participation may contribute towards increased incomes for the poor, and also prevent some poor from experiencing reductions in income.

Figure 4. Density function of change in real logarithmic per capita income from 1993 to 2000 for two sub-groups of those who were poor in 1993. The first group, "Poor and low empowerment" are those with a low score on a composite index of empowerment and participation, while the second sub-group of the poor, "Poor and high empowerment", are those with a high score on the same index (1993 prices).



It is necessary to underline the fact that these relationships need to be examined when controlling for other factors like education and household characteristics. This is the topic of the next section, where we attempt to reveal the factors explaining the households' income growth.

5. Does empowerment and participation affect poverty? Econometric analysis

It may be interesting to start by investigating the possible correlations between the social development indices and the *levels of income* for particular households in 1993 and 2000, before in the next section we turn to their *income growth* in this period.

5.1 Does empowerment and participation affect levels of income?

All the standard variables that are supposed to influence household per capita income are included in our specification, and we have tested a wide range of alternative variables.[6] We control for household size,[7] for whether the household is in a rural area, and for the gender, age and education of the household head. The household composition is often found to be an important explanatory variable in income regressions, so we also include the number of children aged 0 to 5 years and 5 to 15 years, and the number of household members above the age of 60. Thus, the number of adults is omitted, and the coefficients of the proportional variables included are relative to the number of adults in the household.

The education of household members other than the head is also a potential explanatory factor for income differences. We therefore include the proportion of adult members of the household with different levels of schooling. We also include the value of non-farm assets and farm assets, together with the value of income-bearing household assets.[8] Finally, we include dummies for 12 of the 13 provinces that were sampled in the IFLS. Table 4 gives the results from ordinary least squares estimation of the income functions in the respective years when the indices are included.

[6] Descriptive statistics of all the variables are given in the appendix.

[7] We also tested logarithmic household size, household size squared and logarithmic household size squared (see for example Jalan and Ravallion 2001 for these combinations). None of these variables or combinations of variables adds to the information that is provided by the standard measure of household size and they were therefore excluded.

[8] Income-bearing household assets are houses and buildings, farm land, livestock/poultry/fish ponds, vehicles, savings/deposits and stocks. Thus, we exclude the value of household jewellery, receivables and household appliances in our household asset measure.

Table 4. The cross-section income function for 1993 and 2000 with the empowerment and the participation index

Dependent variable: logarithmic per capita real income

		1993		2000	
		Coef.	Std. Err.	Coef.	Std. Err.
Demographic characteristics of the household	Household size	-0.043***	0.017	-0.039***	0.012
	Age of household head	-0.007***	0.002	-0.005***	0.002
	Male head (dummy)	0.163***	0.066	0.091*	0.051
	Number of children 0 to 5 years	-0.158***	0.038	-0.003	0.035
	Number of children 5 to 15 years	-0.148***	0.026	-0.047**	0.025
	Number of elderly	-0.629***	0.2404	-0.101***	0.026
Education	Primary educated head (dummy)	0.039	0.076	0.134***	0.052
	High-school educated head (dummy)	0.404***	0.100	0.529***	0.067
	College or university educated head	0.930***	0.140	1.161***	0.097
	Proportion of adults without education	-0.968***	0.137	-0.507***	0.062
	Proportion of adults with primary education	-0.624***	0.117	-0.188***	0.061
	Proportion of adults with Junior Secondary education	-0.551***	0.129	-0.043	0.085
	Proportion of adults with Senior Secondary education	-0.070	0.158	0.316***	0.093
Empowerment index		0.023	0.030	-0.019	0.024
Cooperation index		-0.030	0.022	0.005	0.017
Living in rural areas		-0.531***	0.051	-0.389***	0.040
Value of assets	Logarithmic value of non-farm assets	0.022***	0.004	0.013***	0.003
	Logarithmic value of household assets, excluding non-productive items	0.150***	0.013	0.090***	0.010
	Value of farm assets	0.435	0.751	0.164	0.378
Constant		11.90***	0.29	12.06***	0.23
R 2		0.27		0.26	
N		4700		4721	

Note: Ordinary least squares estimates. Dummies for 12 of the 13 districts are included in the regressions, but not displayed for dispositional convenience. Omitted variables are number of adults, dummy for unschooled head, proportion of adults with college or university education. Significance levels are indicated by *** 1 per cent, ** 2 per cent and * 10 per cent.

The results of the household composition variables conform to typical findings in the literature. The number of children in a household is negatively related to the per capita income level of the household, and so is the number of people above the age of 60 (elderly). Thus, households with more children and more elderly tend to be poorer. With regard to the other elements of the demographic characteristics, we get the standard result in this type of regression in that the size of the household is negatively related to the per capita income of the household. Households with older heads also tend to have a lower income, and those residing in rural areas tend to have lower incomes than those living in urban areas.

Turning to education, we find that household heads with primary education do not have significantly different incomes in 1993 than households with uneducated heads in the same year. However, this differs from the pattern in 2000, where primary-educated heads contribute significantly more to income than uneducated heads. In both years we find, as expected, that households that have heads with high school, college or university education have a substantially higher per capita income than households with uneducated heads. A similar pattern is found for households with a larger proportion of adults with higher education (Senior Secondary education or more); they tend to have significantly higher incomes than those with lower education (Junior Secondary education or less in 1993, primary education or less in 2000). The impact of human capital on incomes, whether it is the education in itself or attributes of the people that are selected into the educational system, is mirrored by the impact of physical capital on income. The higher the value of the productive assets, the higher the income of the household.

The results obtained by entering the empowerment and the cooperation index together and separately (not shown) into the income regressions are not surprising, given the descriptive analysis in the previous section. We also tested these indices in a range of different specifications, and they never featured significantly. Because of our special interest in the poor, we also excluded the richest households, i.e. income group 5, and ran the same regressions. Even if one can argue that this approach may cause methodological problems in theory,[9] we would argue that such a relatively small reduction in the upper tail of the income distribution will not give rise to problems as long as one is careful in interpreting the results. Our results are unchanged using this sub-sample that excludes the richest. This suggests that the insignificance of the indices in explaining the levels of income in 1993 and 2000 in the full sample is probably not derived from the characteristics of the richest income group. However, the interesting issue is whether the indices have an impact on income changes, which is considered next.

5.2 Does empowerment and participation increase income growth?

In order to escape income poverty, households need to increase their incomes. Table 5 illustrates the main results from the regressions of change in logarithmic per capita real income from 1993 to 2000. The specification differs from the levels regressions due to the opportunity to include the change in the variables over the panel period, but also because of a better fit of the econometric model.

First note an important issue in studies of income change. We seldom find macroeconomic studies of economic growth which do not include initial income as an explanatory variable. The reason for the emphasis on this variable is that theoretically, standard models of growth predict that the income growth of a country is partly determined by how far its income is from its steady state level of income. This type of conditional convergence may also appear at the household level. It is often found that those with the lowest income increase their income the most relative to their starting point, after controlling for other factors (see for example Grootaert et al. 1997). To capture any such convergence effects in our sample, we included household income in 1993 as an explanatory variable. The results confirm that there is a

[9] One encounters the problem of censoring. See Jalan and Ravallion (2001) for a discussion.

conditional convergence effect in the data; the coefficient of this variable is negative and highly significant.

Turning to the other control variables, note that neither the change in household size nor the age or gender of the household head had any impact on how the household income changed over time. However, increases in the proportion of children were a substantial factor in reducing household incomes. Thus, more mouths to feed may have caused hardship for some households, especially those that were already poor in 1993. The best indicator of how education affects income growth is found if we use the proportion of adults with different levels of education in 2000 as a proxy for how well the breadwinners of the households are educated. The higher the proportion of adults without schooling, the lower the income growth of the household.[10]

Turning to the variables of interest, it is evident that the cooperation index is positive and highly significant. Thus, societies with a higher degree of mutual cooperation and support experience higher income growth compared to otherwise identical societies with lower degrees of cooperation. We are reluctant to interpret these results into real world magnitudes, especially since all uses of indices are inherently arbitrary. However, if we were to make an attempt to estimate the magnitude of the impact, we could use the average value of the index and see how much income would increase for the average household if the index increased from the lowest to the highest value. Holding the other coefficients constant, then, indicates that a household would have 2 percentage points higher income growth from 1993 to 2000 if the coefficient reflected causality. This must be said to be substantial since the average income growth in the period is 11.1 %.

[10] It is somewhat surprising that the proportion of adults with Senior Secondary education is associated with a decrease in income relative to the proportion of adults with college or university education, while an increase in the proportion of adults with Junior Secondary education and primary education does not follow a similar pattern. This needs to be investigated in future research on the impact of education.

Table 5. Change in logarithmic household per capita real income 1993-2000, full sample

Dependent variable: change in logarithmic per capita income 1993-2000

		Coef.	Std. Err.
Demographic characteristics of the household	Household size (log)	0.258***	0.067
	Change in household size	-0.015	0.014
	Age of household head	-0.001	0.002
	Male head (dummy)	-0.050	0.064
	Proportion children aged 0-5 years (1993)	-0.515	0.379
	Proportion children aged 5-15 years (1993)	-0.423	0.286
	Proportion elderly (1993)	-0.068	0.162
	Change in proportion children aged 0 to 5 years	-1.345***	0.319
	Change in proportion children aged 5 to 15 years	-0.908***	0.263
	Change in proportion elderly (aged 60+)	-0.319	0.155
Education	Proportion of adults without schooling (2000)	-0.136*	0.083
	Proportion of adults with primary education (2000)	-0.061	0.085
	Proportion of adults with Junior Secondary education (2000)	-0.171	0.111
	Proportion of adults with Senior Secondary education (2000)	-0.351***	0.114
Cooperation index		0.042**	0.022
Living in rural areas in 1993		0.076	0.047
Value of assets	Logarithmic value of non-farm assets in 1993	-0.014***	0.004
	Value of farm assets in 1993	-0.369	0.489
	Logarithmic value of non-farm assets in 1993	0.019	0.029
	Household income in 1993	-0.6***	0.016
Constant		0.116	0.198
R2 = 0.24 N = 5113			

Note: Ordinary least squares estimates. Dummies for 12 of the 13 districts are included in the regressions, but not displayed for dispositional convenience. Omitted variables are proportion of adults (1993), change in proportion of adults, proportion of adults that are unschooled, change in proportion of adults that are unschooled. Significance levels are indicated by *** 1 per cent, ** 2 per cent and * 10 per cent.

We did not get a significant coefficient from the empowerment index in our full sample. However, we also ran regressions on the sample where the richest were excluded to see if the characteristics of this group might affect the results, taking into account the methodological issues noted above. The results from the sample that omits the richest income group are almost identical to those from the full sample, except for one interesting finding. When omitting the richest, we obtain a significant value for the composite empowerment-cooperation index. We take this to indicate that, for households with low to moderate incomes, the degree of empowerment *and* cooperation plays a role in increasing incomes. Recall the pattern discovered in figure 4: that poor households with higher scores on the empowerment-cooperation index were also associated with larger increases in income from 1993 to 2000. We believe that this pattern is reflected in the statistical significance of the empowerment-cooperation index reported in table 6.

We can also make an attempt here to calculate the impact of the relationship. First note that the average income growth for this restricted sample was 7.1 %, which confirms our concern that there may be some particular characteristics of the rich that may influence the results in the full sample. Assume first that the coefficient reflects causality. Holding the other coefficients constant, then, indicates that an average household would increase its income growth by 2.1 percentage points from 1993 to 2000 if it lived in a community with the highest degree of empowerment and cooperation, compared to living in the community that scored worst on the index. Again, this is a substantial increase, but the warning about taking the figures as empirical facts rather than suggestions should be borne in mind.

Table 6. Change in logarithmic household per capita real income 1993-2000, sample excluding income group 5.

Dependent variable: change in logarithmic per capita real income 1993-2000

		Coef.	Std. Err.
Demographic characteristics of the household	Household size (log)	0.333***	0.074
	Change in household size	0.012	0.016
	Age of household head	0.002	0.002
	Male head (dummy)	-0.074	0.069
	Proportion children aged 0-5 years (1993)	-0.535	0.408
	Proportion children aged 5-15 years (1993)	-0.356	0.313
	Proportion elderly (1993)	-0.006	0.176
	Change in proportion children aged 0 to 5 years	-1.287***	0.344
	Change in proportion children aged 5 to 15 years	-0.970***	0.289
	Change in proportion elderly (aged 60+)	-0.224	0.169
Education	Proportion of adults without schooling (2000)	-0.023	0.091
	Proportion of adults with primary education (2000)	0.072	0.096
	Proportion of adults with Junior Secondary education (2000)	-0.083	0.124
	Proportion of adults with Senior Secondary education (2000)	-0.447***	0.132
Composite cooperation-empowerment index		0.092*	0.054
Living in rural areas in 1993		0.121	0.053
Value of assets	Logarithmic value of non-farm assets in 1993	-0.026***	0.004
	Value of farm assets in 1993	-0.947	0.567
	Logarithmic value of income bearing household assets in 1993	0.920	0.338
	Household income in 1993	-0.611***	0.191
Constant		-0.101	0.238
$R2 = 0.25$ N = 4189			

Note: Ordinary least squares estimates. Dummies for 12 of the 13 districts are included in the regressions, but not displayed for dispositional convenience. Omitted variables are proportion of adults (1993), change in proportion of adults, proportion of adults that are unschooled, change in proportion of adults that are unschooled. Significance levels are indicated by *** 1 percent, ** 2 percent and * 10 percent.

6. Conclusion

The objective of this study has been to assess whether there are any effects on income changes and poverty reduction from being a member of a community that has a more democratic system of decision making, or from being a member of a society with a higher degree of participation and cooperation. Hence, we constructed one empowerment index and one participation index. Both indices have been tested by themselves and in various combinations, and some clear results have emerged. However, due to the methodological caveats discussed in the text, and to the fact that these results do not necessarily represent causal relationships, one should be careful about basing policy recommendations on the findings of one single study of this type. Further research is needed before any firm conclusions can be drawn, and we would suggest extending this analysis by comparing our results with the impact of the indices on income changes from 1993 to 1997 (i.e. the IFLS2 survey), and also with the changes from 1997 to 2000.

In our full sample, we find the cooperation index to be positive and highly significant. Thus, societies with a higher degree of mutual cooperation and support experience higher income growth compared to otherwise identical societies with a lower degree of cooperation. We attempt to estimate the magnitude of the impact and find that a household would have had two percentage points higher income growth from 1993 to 2000 if it had lived in a society with a high degree of cooperation compared to living in a society with the lowest degree of cooperation. This is substantial, since the average household per capita real income growth in the period 1993 to 2000 was 11.1 %.

We did not get a significant coefficient from the empowerment index in our full sample. However, we also excluded the richest quintile of the households to see if the characteristics of this group might affect the results.[11] This produced similar results to the full sample, but gave a significant value for the composite empowerment-cooperation index. We interpret this as indicating that, for households with low to moderate incomes, the degree of empowerment *and* cooperation plays a role in increasing incomes, a pattern supported by our descriptive statistics. The magnitude of this variable was also substantial in that an average household would have increased its income growth by 2.1 percentage points from 1993 to 2000 if it had lived in a community with the highest degree of empowerment and cooperation, compared to living in a community that scored worst on the index. This figure should be compared to the average income growth for this restricted sample, which was 7.1 %. We take this change in significance from the full sample to the sample excluding the rich to be a sign that there may be a particular growth pattern that is different for the richer households.

[11] We use absolute income groups, so the actual share of the sample that is excluded amounts to 18 % of the full sample.

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Appendix: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Number of households : 5818				
Income 1993	1.64e+07	1.26e+08	-112000	2.01e+09
Income 2000, deflated	2974190	8629112	1854.599	4.20e+08
Income 1993, per capita	4366713	4.00e+07	-56000	1.00e+09
Income 2000, per capita, deflated	728238.4	2970546	317.9313	1.40e+08
Household size 1993	4.740117	2.1107	1	17
Household size 2000	4.560674	2.026686	1	22
Change in household size, 1993 – 2000	-.1794431	1.982243	-13	18
Gender of household head	.8595737	.3474586	0	1
Unschooled household head	.1833964	.3870244	0	1
Primary educated household head	.5084221	.499972	0	1
High school educated household head	.255758	.4363239	0	1
College or university educated household head	.0512204	.2204658	0	1
Number of children between 0-5 years 1993	.5137504	.6939657	0	4
Number of children between 5-15 years 1993	1.146098	1.171096	0	8
Number of adults 1993	2.726882	1.482638	0	13
Number of elderly 1993	.353386	.6363358	0	8
Proportion of children 0-5 years 1993	.1004446	.1369418	0	0.67
Proportion children 5-15 years 1993	.2106022	.1952445	0	1
Proportion adults 1993	.5901985	.2370582	0	1
Proportion elderly 1993	.0987547	.2097032	0	1
Number of adults without schooling 1993	.3752149	.6845512	0	7
Number of adults with primary education 1993	1.248883	1.145254	0	7
Number of adults with Junior Secondary education 1993	.4341698	.7374282	0	7
Number of adults with Senior Secondary education 1993	.3215882	.7067187	0	7
Number of adults with college or university education	.1412857	.5094708	0	6
Number of children between 0-5 years 2000	.4025438	.6237578	0	4
Number of children between 5-15 years 2000	1.12977	1.122314	0	8
Number of adults 2000	3.84462	2.084164	0	25
Number of elderly 2000	.7052252	.8374365	0	5
Proportion of children 0-5 years 2000	.058439	.0916162	0	0.5
Proportion children 5-15 years 2000	.1770823	.167135	0	0.7
Proportion adults 2000	.6242334	.2220784	0	1
Proportion elderly 2000	.1402453	.2088018	0	1
Number of adults with primary education 2000	2.475077	1.811225	0	17
Number of adults with Junior Secondary education 2000	.9369199	1.068872	0	8
Number of adults with senior Secondary education 2000	1.063424	1.404186	0	11
Number of adults with college or university education 2000	.3458233	.9076493	0	10
Proportion of adults without education 2000	.3437711	.3464363	0	3.5
Proportion of adults with Junior Secondary education 2000	.2120354	.2452645	0	1.67
Proportion of adults with Senior Secondary education 2000	.2138747	.2586172	0	1.5
Proportion of adults with college or university education 2000	.0675102	.1683709	0	1
Change in proportion of children 0-5 years	-.0420056	.1508989	-0.67	0.5
Change in proportion of children 5-15 years	-.0335199	.2391269	-0.86	0.67
Change in proportion of adults	.0340348	.2543977	-1	1
Change in proportion of elderly	.0414907	.1656614	-1	1
Change in proportion of adults with primary education	.187228	.4007529	-1	4
Change in proportion of adults with Junior Secondary education	.0790677	.2498927	-1	1.5

Change in proportion of adults with Senior Secondary education	.1260162	.2328436	-1	1
Change in proportion of adults with college or university education	.026355	.1290144	-1	1
Age of household head squared	2250.286	1350.017	196	9801
Value of farm assets	3702762	4.02e+07	0	2.00e+09
Value of non-farm assets	1874695	3.62e+07	0	2.00e+09
Value of income bearing household assets	1.45e+07	7.59e+07	0	1.25e+09
Dummy for living in rural areas in 1993	.5422826	.4982518	0	1
Dummy for living in rural areas in 2000	.5450327	.4980107	0	1

Summary

The objective of this study is to assess whether living in a community that has a more democratic decision making system or in a society with a higher degree of participation and cooperation has any effect on household income changes and poverty reduction in Indonesia. Constructing an empowerment index and a participation index, we find that a household would have had a two percentage point higher income growth from 1993 to 2000 if it had been in a society with a high degree of cooperation compared to a society with the lowest degree of cooperation, if our results imply causality. This is substantial, since the average household per capita real income growth between 1993 and 2000 was 11 %. The participation index was found to be insignificant.

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