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Women Left Behind? Poverty and Headship in Africa

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Abstract

This paper is motivated by two stylized facts about poverty in Africa: female-headed households tend to be poorer, and poverty has been falling in the aggregate since the 1990s. These facts raise two questions: How have female-headed households fared? And what role have they played in Africa's impressive recent aggregate growth and poverty reduction? Using data covering the entire region, the paper reexamines the current prevalence and characteristics of female-headed households, and asks whether their prevalence has been rising over time, what factors have been associated with such changes since the mid-1990s, and whether poverty has fallen equi-proportionately for male- and female-headed households. Rising gross domestic product has dampened rising female headship. However, other subtle transformations occurring across Africa—changes in marriage behavior, family formation, health, and education—have put upward pressure on female headship, with the result that the share of female-headed households has been growing. This has been happening alongside declining aggregate poverty incidence. However, rather than being left behind, female-headed households have generally seen faster poverty reduction. As a whole, this group has contributed almost as much to the reduction in poverty as male-headed households, despite the smaller share of female-headed households in the population.

Women Left Behind? Poverty and Headship in Africa

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1. Introduction

Among the geographic regions of the world, Sub-Saharan Africa has had the highest incidence of poverty since around 1990. Furthermore, progress against poverty has long been slower than in other regions. This has changed in the new millennium. Sub-Saharan Africa has enjoyed a sustained period of economic growth, as well as robust poverty reduction since the late 1990s. In addition to its high incidence of poverty, Sub-Saharan Africa has, in the past, been singled out for the significant share of households headed by women. The literature to date has generally suggested that female-headed households tend to be poorer.

This raises the question of what has been happening to the prevalence of female-headed households (FHHs) and their living standards during the recent period of sustained growth and declining poverty. Hypotheses can be advanced either way. On the one hand, high poverty can constrain the prospects of escaping poverty, such as when caught in a poverty trap. On the other hand, poor people may face relatively high economic returns to the new opportunities unleashed by growth; the poor are also likely to have benefited disproportionately from the expansion of social protection in the region (World Bank 2012). To complicate matters, the group of people living in FHHs may be fundamentally changing over time. Hence our interest in the two broad questions addressed by the paper: Have we seen more or less female headship during the recent period of aggregate reduction in poverty? And is poverty also falling for FHHs, or are they being left behind?

The paper provides new evidence on FHHs for Sub-Saharan Africa (Africa hereafter) drawing on the micro data from all suitable national household surveys. All the available Demographic and Health Surveys (DHS) for Africa are used to describe the current prevalence and characteristics of FHHs, and to examine changes in their prevalence over the last 25 or so years covered by the data. The macro, population and demographic factors that correlate with the incidence of FHHs, and changes in that incidence, are also explored. With these supplementary data we investigate the roles of rising education levels, and changing social norms, as well as the roles of circumstances and exogenous shocks, such as economic, health and conflict crises, and the breakup of traditional systems of patriarchal marriage and family norms.

Using a set of high-quality household consumption surveys for 24 countries with comparable surveys for at least two dates, the paper goes on to examine how FHHs have fared during the recent improvements in living standards, and provides a breakdown of the total change in poverty into that contributed by male- versus female-headed households. To examine potential heterogeneity among FHHs, the paper extends this analysis to different types of FHHs.

The paper demonstrates that the share of households (and of the population living in households) headed by women is rising over time across the continent. Yet the paper also shows that, controlling for other factors, higher GDP is associated with lower female headship. The apparent paradox that female headship has been rising during a period of economic growth is explained by the fact that other things are changing across Africa. Changes in demographic and population characteristics, social norms, education, and the nature of the family all appear to be encouraging female headship. The paper also tries to reconcile this finding with the recent aggregate reduction in poverty. Poverty is found to have declined for both male- and female-headed households, but in most countries for which the data are adequate, poverty has been falling faster for FHHs as a whole. A decomposition of the change in poverty further indicates that, rather than putting a break on poverty-reduction, FHHs are contributing nearly as much, despite their smaller share in the population.

The next section reviews the literature relevant to the topic. This is followed by a discussion of the data in Section 3. In Section 4, we present some descriptive statistics and analysis detailing the prevalence and overall attributes and characteristics of FHHs relative to male headed households (MHHs). Section 5 examines and explains the trends in prevalence, while Section 6 analyzes changes in consumption poverty by headship. Section 7 concludes.

2. Literature

A number of studies have now convincingly established that Africa has seen falling aggregate poverty incidence (Chen and Ravallion 2013; World Bank 2015). How do female headed households and the population living in FHHs figure into this story?

Much has been written and claimed about FHHs since the dawning realization going back to the 1970s that a rising share of households were headed by women in developed countries, and recognition, as well as worries, that similar trends were emerging in the developing world.[2] Observing that FHHs in the West were most prevalent among poor and minority groups, concern arose about the transmission of poverty over time on the argument that poor women would be ill-equipped to care for their children on their own and unless aided by public policies, poverty would be perpetuated. Some of the literature has further claimed that FHHs are the poorest of the poor or worried about 'the feminization of poverty.' Against that, the literature has also recognized the diversity among FHHs and rejected blunt generalizations

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[2] Begun with the seminal paper by Buvinic et al. (1978).

(Varley 1996, Chant 1997a, 2008).

Several past studies have addressed whether and why the prevalence of female headship has altered globally over time and uncovered considerable variation across and within regions.[3] Using data from 43 DHS surveys conducted between 1990 and 1998, Bongaarts (2001) found that the proportion of households headed by women ranged from 13% in the Near East and North Africa to 24% in Latin America, with Asia (16%) and Africa (22%) in between. Large variation was also exposed within regions, especially in Africa, where the fraction of FHHs during 1990-96 was less than 10% in Burkina Faso, Mali, and Niger, and over 30% in Ghana, Kenya, Namibia, and Zimbabwe (Ayad et al., 1997). To our knowledge, there have been no updates since 2000.

In industrialized countries, significant increases in female headship from the 1970s have been associated with demographic and socio-economic changes among which the following figure prominently: the expansion of women's rights, including legal rights to divorce, child custody and housing; increased women's labor force participation; increases both in unmarried fertility and its social acceptability, higher female longevity and aging populations (see Chant 1997a, and Moghadam 2005). Similar factors have contributed to the upward trends in female headship in most regions–and further include erosion of the extended family system, increases in age at marriage and reductions in spousal age gaps.[4] In Africa, labor-related migration has been dominated by men seeking work in urban areas and leaving behind households headed by women (Buvinic and Gupta 1997). Additional explanations for the high incidence in Africa center on HIV infection and AIDS deaths (especially in Southern Africa); violent civil conflicts that have generated family dislocation and widows (Buvinic et al. 2013); a culture emphasizing lineage more than conjugal ties and descent systems evolved from matrilineal kinship; and changes in women's legal access to property, land and labor markets.

The literature is infused by an assumption of increasing prevalence in FHHs across regions. Yet, there is relatively little empirical evidence on trends beyond the 1990s. Arias and Palloni (1999) even contest this view for Latin America over the 1970-1990 period. They find declining or stationary incidence in the majority of countries and argue that women's propensity to head a household has not risen as much as has the incidence of surviving widows and

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[3] Kishor and Neitzel (1996) and Ayad et al. (1997) provide a descriptive analysis of the incidence of female headship internationally using the DHSs carried out during 1990-96.

[4] See Jensen and Thornton (2003), and Mensch et al. (2005) for an overview of trends in age at first marriage in developing countries.

divorcees. The latter is the key reason for households with female heads.

Intimations of rising female headship in many parts of the developed and developing world have heightened fears of large future increases in poverty, given the well-documented economic disadvantages faced by women (Chant 1997a, 2008; Buvinic and Gupta 1997).[5] A considerable number of studies, often focusing on a single country, have investigated whether households headed by men or by women are poorer. The most common practice has been to make simple comparisons of mean household per capita consumption or poverty measures, or by regressing log consumption per capita on controls and a dummy for the head's gender.

Most observers have concluded that FHHs are poorer than MHHs (Buvinic and Gupta 1997; Chant 1997a, 2008). Yet, the evidence is far from conclusive on this point and little consensus has emerged in the literature. Buvinic and Gupta (1997) review 61 studies covering countries in Africa, Asia, and Latin America and the Caribbean, to conclude that on balance, the evidence supports the hypothesis of higher poverty among FHHs. Lampietti and Stalker (2000) review 58 World Bank Poverty Assessments carried out since 1994 and conclude that FHHs are on average poorer in 43 percent of countries examined.[6] Using survey data for Africa, Asia, and Central America, Quisumbing et al. (2001) find that FHHs are poorer than MHHs only in 2 of 10 countries (Ghana and Bangladesh). There are a number of reasons for the lack of agreement, including inconsistent definitions of headship; considerable diversity among FHHs and differences in how well-being is measured and in particular, how the distinctive demographics of FHHs are taken into account.

There is no universally accepted definition of headship.[7] Household-based surveys came to collect information on heads as a natural way to anchor relationships among household members and provide a framework for describing family structure. Such surveys typically rely on self-reported headship status. The DHS interviewer's manual states that "the person who is identified as the head of the household has to be someone who usually lives in the household. This person may be acknowledged as the head on the basis of age (older), sex (generally, but not necessarily, male), economic status (main provider), or some other reason. It is up to the respondent to define who heads the household." (ICF International 2012, p. 26).

Dissatisfied with survey definitions, many analysts have imposed their own definitions. It

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[5] The concept that women are overrepresented among the poor is known as the "feminization of poverty".

[6] The disadvantage is found only for de jure FHHs in 17%; in 26 percent no difference is found and in the remainder (14%), higher poverty for MHHs.

[7] See Rosenhouse 1989; Handa 1994; Kishor and Neitzel 1996; Ayad et al. 1997; Bruce and Lloyd 1997; Buvinic and Gupta 1997; Chant 1997a, b, 2008; Quisumbing et al. 2001.

has been popular to equate headship with the person holding responsibility for the household's economic well-being and multiple versions have been attempted (Rosenhouse 1989; Lloyd and Gage-Brandon 1993; Buvinic and Gupta 1997). The literature has also identified "male-absent households," and distinguished between *de jure* (typically households with no live-in male partner and no economic support from one) and *de facto* FHHs (with married heads whose husbands live elsewhere due to labor migration or non-co-residence of wives in polygamous unions). The absent male partner in *de facto* households is assumed to maintain a large role in household decision making and to contribute remittances. As the literature has noted, these definitions impose strong assumptions for which surveys typically do not allow corroboration. Holding responsibility for a household's economic well-being or contributing to its income does not necessarily lead to headship assignment or vice-versa.[8] And one might ask why being the main breadwinner is more salient to headship than looking after household well-being in other ways. In this paper, we prefer not to make such judgments and rely on self-reported headship.

As can be surmised from the above, female heads are a diverse group. Distinctions are largely based on the motives that led them to be heads.[9] Female heads include widows, divorced, separated, and abandoned women, married women with a nonresident (polygynous or migrant) husband, single women and mothers. Female headship can also be transitory.[10]

While all FHHs are unlikely to be worse off than MHHs, certain types of female heads are frequently found to head relatively disadvantaged households. In Africa, widow-headed households have been identified as significantly impoverished in Uganda (Appleton 1996), Zimbabwe (Horrell and Krishnan 2007), and Mali (van de Walle 2013). FHHs who receive transfers from a male member are consistently found to be as well-off (in terms of consumption or income) as MHHs—and substantially better off than other FHHs (Buvinic and Gupta 1997; Lampietti and Stalker 2000; Horrell and Krishnan 2007). Those who do not can be among the poorest (Kennedy and Haddad 1994, for Kenya).

The lack of consensus concerning the relative well-being of FHHs is also due in part to the use of non-comparable or inconsistent measures of living standards and/or benchmarks for judging deprivation. The sensitivity of results to methods is reasonably well-recognized in the more academic literature (Louat et al. 1993; Haddad et al. 1996; Quisumbing et al. 2001). With respect to comparisons between male and female headed households, a major factor concerns

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[8] See Buvinic and Gupta 1997; Rosenhouse 1989 for Peru; Handa 1994, for Jamaica; Lloyd and Brandon 1993, for Ghana; Posel 2001, for South Africa.

[9] See Handa 1994; Kennedy and Haddad 1994; Chant 1997a, b 2008; Joshi 2005; and Klasen et al. 2015.

[10] Buvinic and Gupta 1997; Joshi 2005; Clark and Hamplova 2013.

how adjustments are made for household size and composition. Poverty comparisons are sensitive to this choice. Failure to consider that FHHs are typically smaller overstates poverty among them (Quisumbing et al. 2001). There may also be economies of scale in consumption. Not accounting for these—a more common mistake—typically results in an understatement of poverty in FHHs. Allowing for scale economies can reverse conclusions about whether FHHs are richer or poorer (Drèze and Srinivasan 1997 for India; van de Walle 2013 for Mali).

FHHs tend to have higher dependency ratios and a higher share of children. Different demographic composition can be corrected to account for the different consumption needs of adults and children by using adult equivalent scale-adjusted poverty measures. However, this implies knowing the consumption needs of different household members (usually based on actual consumption data in household surveys), which may differ significantly across areas and countries, and not accurately reflect actual biological needs (Quisumbing et al. 2001).

The paper aims to investigate changes in the prevalence of FHHs in Africa and whether FHHs have enjoyed a similar pace of poverty reduction as MHHs. We are not aware on any past work on the latter question taking an Africa-wide perspective.[11] We test the sensitivity of our main results to distinguishing between different types of FHHs and to allowing for scale economies in consumption. The issues noted above may be somewhat less worrying when examining changes instead of levels. Furthermore, in asking these questions we do not assume that female headship is exogenous. Our objective is not to establish the causal effect of headship but to take stock of the correlations found in the data in a methodologically consistent way that is sensitive to the measurement issues across countries.

3.   Data

The paper makes use of two types of household surveys. The first is the 100 or so existing Demographic and Health Surveys (DHSs) for Africa and also draws on the World Bank's Povcalnet data base of harmonized household surveys for Africa. The DHSs are primarily used to briefly describe the prevalence and characteristics of FHHs relative to MHHs, and then to investigate Africa-wide changes in prevalence. The latter can be more effectively examined with DHSs since these surveys contain demographic characteristics that prove key to explaining changes over time. We use the full series of DHSs over the last 25 years. These cover about 89 percent of Africa's population.

The DHSs have the advantage of administering the same questionnaires (altered only to

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[11] Posel and Rogan (2012) has explored the issue for South Africa for the period 1997-2006.

fit local particularities) and collecting the same data across countries as well as that of collecting interesting demographic information. When using the DHSs, we define the household exclusive of non-resident visitors and adults as those aged 15 and above. The dependency ratio is given by the number of household members younger than 15 and over 65 to the number of members aged 15 to 64. We will sometimes refer both to the share of FHHs and to the share of the population living in FHHs. When we examine changes in the share of the population living in FHHs in Section 5, a number of explanatory variables come from sources other than the DHS. The variables and their sources are described in Appendix Table A1.

To complement the DHS-based analysis, the paper employs a second set of surveys, namely the harmonized household consumption survey data base compiled by the World Bank expressly for the purpose of making sound comparisons across countries for Africa. We use these to examine changes in consumption poverty over the last 20 years or so. In particular, we explore changes in the headcount index of poverty calculated based on household per capita consumption expenditures, for male and female headed households separately using common measures and methods across all countries. The consumption data are converted to real (country CPI adjusted) 2005 PPP and we use the international poverty line of $1.25 at PPP (Ravallion et al. 2009).[12] We also test the sensitivity of the results to dividing household consumption by the square root of household size, to allow for the generally smaller size of FHHs and economies of scale in consumption.[13]

We have a total of 24 countries—accounting for approximately 80% of Africa's current population—for which there are at least two surveys that have been deemed fully comparable and can be used to measure changes in poverty.[14] In three cases, there are two spells of comparable surveys for the same country. We thus examine a total of 27 spells. The included countries and survey dates are listed in Table 6. The resulting poverty measures are then used to examine changes in poverty and implement a decomposition of the contribution of FHHs and MHHs to the overall changes in each country. For the analysis using the consumption surveys, we define adults as 18 and above.

Rather than impose our own definition of when a household is female headed as some of the literature has done, headship self-reports are taken as given. But structure is imposed by

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[12] At the time of writing it was unclear what exactly the equivalent poverty line would be when using the newly released 2011 PPP, although it would be roughly $1.85. Note, however, that different PPPs do not affect comparisons within country, which is our sole focus here.

[13] In this case, we adjust the poverty line to $2.80/day equivalent to the $1.25 when switching to the square root scale and using a pivot point of N=5 (Ravallion 2015).

[14] Comparability was defined based on the consumption module and design of the survey. The specific criteria were: same months of survey; similar survey design; diary/recall consistency; and nationally representative.

separating FHH into those with a resident adult male member (FM) and those without one (FNM), on the assumption that this is a key distinction between male and female headed households and may explain variations in well-being. The expectation is that marital status of the head is another important factor to take into account. Parts of the analysis are therefore also conducted for the above sub-groups and by whether the head is married or not.

4.   The frequency and characteristics of female headed households in Africa

It is useful to begin with an overview of the frequency and attributes of FHHs and to emphasize how sharply some of their attributes differ from those of MHHs across Africa and its macro-regions. Table 1 presents statistics on the mean incidence of FHHs by country (total, urban and rural), as well as regional aggregates, using the latest available DHSs for 35 countries.[15],[16] Africa-wide, 26% of all households are currently headed by women, comprising 21% of Africa's population. A pronounced variance across countries and regions is apparent. West Africa exhibits the lowest incidence with one out of 5 households headed by a woman and accounting for 15% of the population. This likely reflects the continuing practice of polygamy, together with high widow and divorcee remarriage rates that continue to be widespread in majority Muslim countries (van de Walle 1990). Southern Africa has the highest rate at 43% of both households and of the region's population living in FHHs. We also note the lower variance within the region here relative to that found elsewhere, particularly in the western and middle regions. With the exception of southern Africa, FHHs are more common in urban areas.

A few key differences in the characteristics of male and female headed households are worth emphasizing (Tables 2 and 3).[17] On average FHHs have older heads (reflecting the many widowed heads), with fewer years of education (4.1 versus 5.6). These households tend to be smaller (3.9 versus 5.1), and have higher dependency ratios (1.2 versus 1.0). Mirroring the latter, female heads are 27 times more likely to live in households in which they are the only adult living with one or more children. In contrast, almost three quarters of MHHs are composed of two or more adults and children, compared to only 44% of FHHs (Table 2). FHHs are also more likely to be single adult households (16 versus 10%).

Another striking difference between these households relates to the head's marital status (Table 2). While the vast majority of male heads are married (88%), this is only true of a third of female heads. The others are primarily widows (40%) and divorcees (17%). The large gender

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[15] We group countries following UN (2012), except that we place Zimbabwe in Southern rather than East Africa.

[16] Note that we get very similar FHH prevalence rates when we use the household consumption surveys instead.

[17] This paragraph and the next draw on Milazzo and van de Walle (2015).

disparity in marital status reflects far higher male remarriage rates following widowhood and divorce, the higher life expectancy of women on average and, for some countries, the ravages of HIV and conflict. To provide a different perspective on marital status, one can examine the share of all adults of a given marital status who are heads by gender. Overall, 62% of adult men are heads compared to 18% of women. With the exception of single women, married women have the lowest probability of being heads at 10% while widows have the highest (71%), followed by divorcees (56%).

As noted, there is heterogeneity among FHHs. One aspect that may be expected to matter is whether there is an adult male resident in the household. The 26% of households that have female heads can be disaggregated into16% that contains no adult male and the10% that does. In all regions, a preponderance of FHHs contains no adult male. Among the latter, 38% of heads are widowed, 31% married, 19% divorced and the rest single (Table 3). We suspect that FHHs with no adult male and an unmarried head (and hence no remitting migrant husband) are the worst off among them. When male adults are present, they are most often sons (67%).

FHHs without a male adult tend to have younger, more educated heads, smaller household size but higher dependency ratios at 1.5 versus 0.9 (Table 3). Of these, those with an unmarried head appear to be similar to FHHs with a resident male –older, and less educated, although they have far fewer total members. They are composed of widows, divorced and single heads.

The best proxy for economic status available in the DHSs is a wealth index based on the household's assets.[18] It is important to note that the index is not comparable across countries as it is computed separately for each country. However, one can compare what share of FHHs and of MHHs are classified in their country's bottom quintile. Figure 4 shows this controlling for the age of the head and by region. We see that there is regional heterogeneity, but that with the exception of Western Africa, there is a tendency for a larger share of FHHs to be ranked in the bottom quintile with the difference rising with age.

A general pattern emerges in which female-headed households are a quite heterogeneous group, some of whom are clearly disadvantaged in a number of ways.

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[18] The DHS Asset (Wealth) Index is a composite measure of a household's living standard calculated using data on the ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities. Generated using principal components analysis, the wealth index places households on a continuous scale of relative wealth, and then places them into five wealth quintiles.

5.   Changes in the prevalence of FHHs over time

How has the prevalence of FHHs evolved over the last 20 years in Africa? What is the relative contribution of various factors in any revealed change? Figure 1 provides an overall picture of trends across the individual countries by macro-regions.[19] The share of a country's households that are headed by a woman (panel A) and the share of the population living in those households (panel B) are plotted for the country's earliest DHS survey on the horizontal axis against that for its latest survey. All points above the 45 degree line of equality indicate a rise.

The general picture is of an increase in the prevalence of FHHs for most countries. Declines are evidenced only for Ghana, Chad, Congo and Lesotho, although the change is small for the latter three.[20] Figure 2 disaggregates these data into FHHs that contain an adult male and those that do not. Here too, the overall trend is up for both types of FHHs. It is apparent that the decline in Lesotho is due to fewer FHHs with a male adult. In contrast, the marked change for Ghana arises from a drop in the share of FHHs with no adult male which swamps a smaller increase in FHHs with a male member. In general the patterns of change are quite different across the two types of households.

Finally, Figure 3 provides nonparametric plots of the probability that a woman aged 15 or older heads a household controlling for her age and disaggregating across the four regional country groupings, for the earliest and latest surveys. There are clear level differences across the macro-regions. But clearly, in all regions and across the age distribution, adult women are significantly more likely to be household heads over time.

What explains the rising share of FHHs? Turning to regression analysis, we examine the share of the population living in FHHs over the last 25 or so years by comparing DHSs across countries and years. Thus the observations are country/year DHS based. Since the share is bounded, we use its logit transformation to ensure normally-distributed errors. The dependent variable is thus the natural log of the odds ratio i.e., *ln(S/(1-S))* where *S* is the fraction of the population living in FHHs, for each of the DHS surveys, giving 98 total observations (98 surveys for 34 countries, as in Table A3).[21, 22] OLS regressions then examine the role of country

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[19] Refer to Table A2 for the list of countries by macro-region. Here, the sample is restricted to the 26 countries with at least two surveys available and use the earliest and latest years (for a total of 52 surveys).

[20] Also note that, while for most countries the earliest survey was conducted in the early 1990s and the latest in the 2010s, this is not the case for Chad, Congo, and Lesotho, for which the number of years between earliest and latest is smaller (e.g. Chad 1996 and 2004; Congo 2005 and 2011; Lesotho 2004 and 2009). See Table A2.

[21] This is not to be confused with a logit regression using a binary dependent variable.

[22] We drop one observation—the 1994 Central Africa Republic survey—as no HIV prevalence data are available for it from the World Development Indicators.

specific time-varying regressors in explaining the differences across countries and years. Table 4 gives the regression results.

Column 1 in Table 4 presents the underlying Africa-wide time trend between 1990 and 2013 based on a regression of the log of the odds ratio on time. The statistically significant trend is equal to a 0.4% annual increase in the share of population living in FHH when evaluated at the mean share over the entire sample. The next regression (column 2) additionally controls for factors or their proxies that the literature emphasizes as determinants of the preponderance of female headed households. These are log GDP per capita (based on 2005 PPP at constant 2011 international $); the agricultural share of GDP as a proxy for local employment opportunities and incentives for migration; HIV prevalence (%); the urban population share (%); whether the country has experienced a serious conflict over the last ten years (PRIO dataset); the Muslim population share (%); and the female labor force participation rate.[23] Note that all of these variables are time varying and country specific.

None of these explanatory variables account for the trend. However, the HIV prevalence and the Muslim share, with positive and negative effects respectively, are statistically significant correlates of the dependent variable (column 2). Our full specification in column 3 adds average years of schooling, life expectancy and average age of adults all separately for men and women, as well as women's mean age at first marriage.[24]

Strikingly, the time trend vanishes upon inclusion of these demographic and human capital population attributes. On closer inspection, it appears to be specifically the combination of rising age at first marriage and higher education levels that eliminates the positive trend in the FHH share. Given the high correlation between these two traits, it is difficult to say which is more important. Higher age at marriage clearly allows more schooling for girls but it also has an important independent explanatory effect. It can be expected to have a different trajectory and evolve through time and across countries differently to the other variables. Indeed, the newly entered demographic and education variables are all highly correlated both across genders and among themselves. However, they each clearly have an independent effect since in some form or the other, they retain individual significance.

The separate explanatory power of each of these factors can be better seen in column 4 of Table 4 which, based on various tests of the estimated coefficients, presents our preferred data-consistent specification, as a restricted version of the full model given in column 3. We can't

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[23] See Appendix, A1 for details on data definitions and sources.
[24] These controls are calculated from the DHS surveys. See the Appendix.

separate the effects of male and female education ($F_{(1,33)}=0.03$, prob= 0.859). When both are entered, neither is statistically significant given how correlated they are; yet entered singly, each is significant. One interpretation is that it is the rise in overall education levels that matters and that both men and women's education has been rising, with the gap changing less than the levels. Our restricted version in column 4 thus controls for the overall average although we could equally well control for female or male years of schooling instead.[25] When evaluated at the mean of the dependent variable, an extra year of schooling produces a 3 percentage point increase in the share of the population living in FHHs.

On average, a one year rise in women's age at first marriage produces a 2.5% point increase in the population share in FHHs, an effect almost as strong as that of an extra year of schooling.[26]

As with education, a test that the coefficients on male and female life expectancy are the same cannot be rejected ($F_{(1,33)}=0.01$, prob= 0.913). We therefore replace these with overall life expectancy which is significant at the 1% level. Again, this is an arbitrary choice as the individual measures are each significant on their own and not dissimilar in magnitude. This independent variable's positive effect—equal to a 0.5% point boost in the dependent variable per extra year—presumably reflects the natural survival advantage of women that is revealed with higher overall life expectancy and the resulting incidence of widow headed households.

Finally, a test of the homogeneity restriction on average age passes ($F_{(1,33)}=0.04$, prob 0.845), indicating that it is the gender age-gap that matters. We replace the gender specific measures by the gap measured as women's minus men's average age. The age gap will measure differential age distribution reflecting differential age-related mortality. An additional year added to the gap is estimated to have a 2% point influence on the dependent variable.

Among the correlates previously entered in column 2, log GDP per capita (significant only at the 10% level) and conflict emerge as statistically significant regressors once the population and human capital characteristics are added in the regressions reported in columns 3 and 4. A simple correlation indicates that higher income countries tend to have larger proportions of FHHs. However, as shown in Table 4, once other factors are taken into account, higher GDP is found to reduce the population share in FHHs. This is presumably due in part to lower work-related migration by men, associated with a growing local economy. But the effect

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[25] We also tested a full set of squared and interaction terms but this did not reveal any significant other influences.

[26] We cannot test the separate effect of average spousal age difference since the husband's is only available for currently married women and entirely missing for 19 countries.

is small—a 5% increase in GDP is estimated to reduce the population share in FHHs by 0.3%. Interestingly, the female labor force participation rate appears to play no independent role. A conflict in the last 10 years, by contrast, raises a country's FHH incidence by 3% points, and is statistically significant at the 1% level or better.

The HIV prevalence rate retains a significant positive influence equal to 0.7% point increase in the dependent variable for each percentage point increase in the HIV prevalence. In recent years, HIV prevalence rates have tended to be higher for women than for men across African countries. However, the positive effect of HIV can be explained by the fact that there are still vastly more MHHs than FHHs, and that when male heads perish, there is more often a spouse or other adult female member who can assume headship than there are men who can do so when a female head succumbs to AIDS. On balance then, HIV prevalence will tend to increase the prevalence of FHHs.

The Muslim share has no explanatory power in either the complete model or the preferred restricted form, presumably due to the high correlation between majority Muslim countries and country attributes such as first age at marriage and years of education. Religion per se does not appear to be a decisive factor.

The next two sets of regressions in Table 4 repeat the same regressions for the subsamples of FHHs with a male adult and without a male adult. Although there are many similarities in the models there are also some marked differences, underlining the need to treat these groups separately. Again focusing the discussion on the restricted model, one first notes similar trend increases which are here too explained by the demographics and education regressors. Independently of human capital and demographics, an increase in the Muslim population of one percent reduces the population share in FHHs with no male by 0.07% points. This likely reflects the continued widespread practice of polygamy together with social and cultural norms associated with the Muslim religion as practiced in much of Africa that encourages women who suffer marital breakdowns to remarry quickly or be absorbed into male headed households, unless they have a male protector such as an adolescent son (hence the positive effect on FM in column 7). The other difference for this group of households is the insignificance of age at marriage as an explanatory factor. Interestingly, it is the education of women that matters to the formation of FHHs with male adults (with an additional school year resulting in a 1.8% points increase), while it is that of men that emerges as critical for explaining the prevalence of FHHs without a male (1.4% point effect). The former suggests that women who are more educated are more empowered to assert their right to be heads when there is an adult male present—often a son or grandson. We interpret the latter to indicate that higher male

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education leads to more men migrating for work and leaving a female head behind. Finally, urbanization presumably through its effect on social norms and the acceptance of female headship by men, helps explain the prevalence of FHHs with a male adult. However, the effect is small at 0.1% increase for each extra percent of the population living in urban areas.

Table 5 presents decompositions of the explained variance of each of our three restricted regressions.[27] Overall, the regressions explain 72 - 80% of the variance in the population shares living in FHHs across African countries. The decomposition is similar for the overall share and the share living in FHHs with an adult male. Years of education, the gender age gap and age at first marriage each contribute around 20% and together account for about 60% of the explained variance (59.2% and 61.3% for the overall share and the share with an adult male, respectively). HIV prevalence systematically explains some 12% across all three groups. The Muslim share adds 9.5% to the explained variance of the overall dependent variable and 7.0% to that of FHHs with a male adult. In both cases, the effect is positive, although its explanatory role in the regressions was not statistically different from zero. Its contribution rises to 26% for the variance of FHHs with no male, yet here the effect is negative indicating that it is significantly less likely for women to head households without a male adult member in preponderantly Muslim countries.

6.   Recent changes in poverty by household headship

We compute headcount indices for the entire population and separately for the population living in FHHs and in MHHs at two dates for each of 24 countries. Table 6 lists the countries, the survey dates and the number of years between the surveys. Columns 3 and 4 give the headcount indices for the earlier and later survey dates. Next the annualized changes in poverty are presented first for the entire population and then for the population distinguished by whether they have a male or female head. In 19 out of 27 country time periods—over 70%—poverty fell. The same outcome characterizes MHHs in all the same countries. But for FHHs, poverty fell in an additional 3 countries or 22 out of 27 cases.

Figure 5 plots annualized absolute rates of change in the headcount index for MHHs on the y axis against changes for FHHs on the x axis. (The underlying numbers are given in columns 6 and 7, Table 6.) An examination of Figure 5 makes clear that overall, in countries

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[27] These are computed using the REGO command in STATA (Huettner and Sunder 2012). REGO decomposes the R^2 into the contribution of the regressors into Shapley (for individual regressors) or Owen values (for the within group regressors). Here we restrict the decomposition to Shapley values.

that have seen a spell of poverty decline, poverty has been falling at a faster pace among FHHs.[28] Where poverty has risen, households headed by women have experienced a less pronounced rise with one exception (Kenya 1994-1997). In 20 cases, FHHs appear to have done better or no worse than MHHs. However, as shown in Table 6, tests of whether these differences are statistically significant indicate that in 11 cases FHHs had a significantly better poverty performance, MHHs did so in two, while in the rest, no difference is apparent. We can thus conclude that in 25 out of 27 cases, FHHs did better or no worse than MHHs.

We next decompose the total change in poverty over each time spell into that due to changes in poverty among FHHs and MHHs, and changes in the share of the population living in FHHs. Here we exploit the fact that the overall poverty rate is the population-weighted aggregate of the sub-group rate:

$$H_t = n_t^F H_t^F + (1 - n_t^F) H_t^M \tag{1}$$

where H is the poverty measure; n stands for the share of FHHs and MHHs superscripted by F or M, respectively. Thus we have the following decomposition for the change over time: [29]

$$\Delta H = n_0^F \Delta H^F + (1 - n_0^F) \Delta H^M + \Delta n_t^F (H_1^F - H_1^M), \tag{2}$$

The first component in equation (2) gives the contribution to poverty reduction due to FHHs, the second that due to MHHs, and the final that due to changes in the share of the population living in FHHs.[30]

What has the poverty reduction record revealed above meant for the overall contribution to falling poverty rates of female versus male headed households? The decomposition in Table 7 shows that once the smaller share of the population belonging to FHHs is allowed for, MHHs contributed more to the overall changes in the majority of countries. Aggregating across all countries and weighting by the country's total population share, FHHs accounted for 27% of the overall reduction in poverty. Almost all the rest is attributed to poverty reduction among MHHs; there is negligible contribution of the changing share of FHHs. There are three countries where FHHs accounted for the majority of the reduction in poverty (Namibia, Nigeria and South Africa). In the 7 spells for which overall poverty increased, the contribution of FHHs to the increase was less than that of MHHs.

Could it be that living standards have evolved differently for different types of FHHs? Some among them may have systematically done better than others due to their distinctive

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[28] Logging the changes and plotting the proportional changes gives very a similar picture.

[29] This is a type of decomposition proposed by Ravallion and Huppi (1991).

[30] The decomposition can be easily adapted for more than two groups.

demographics or household structure. We test the sensitivity of our findings to heterogeneity among FHHs by also calculating poverty measures for both survey dates for various different types of FHHs, including those with and without a male adult (aged 18 and over); and separately for those with and without a currently married head, and again by whether they also contain a male adult or not. FHHs headed by a widow versus those not headed by a widow were also examined. Finally, the exercise was repeated for FHHs and MHHs using consumption divided by the square root of household size (rather than household size) to allow for scale economies in consumption of smaller households. This allows us to see whether our conclusions of faster falling poverty for FHHs are robust to assumptions on how household size affects consumption well-being. These results are discussed but only the results for the four way disaggregation of FHHs are shown.

The annualized changes in poverty for households with married and unmarried female heads, comprising a male adult or not, are given in the last 4 columns of Table 6.[31] A simple comparison of annual rates of poverty change shows that in all cases, MHHs were outpaced by at least one among the various FHH types. But, among the latter, there was much heterogeneity in performance with no overall pattern across countries or macro-regions. Households with a married female head and a male adult performed the best in 8 country/year spells, followed by households with a married head but no resident male (7 cases) and those with an unmarried head and a male (7 cases) and lastly, households with an unmarried head and no male (3 cases). Although a FHH category always did better than MHHs, others among the FHH types often did worse. Thus, a very mixed picture emerges in how different types of FHHs fared across countries with no obvious patterns across countries and time periods.

Disaggregating FHHs into those headed by a widowed or non-widowed female head provides a similar conclusion. In only two cases did MHHs do significantly better with respect to annual changes in poverty. But in the rest, widow headed households experienced the highest annual rate of poverty reduction (or lowest poverty increase) in 11 cases (with the difference being statistically significant in 6 cases), while non-widow headed households did so in 10 cases (4 of which are significantly different from zero).[32]

The results are also robust to using poverty measures that allow for scale economies in consumption as can be seen in Figure 6. In this case, FHHs outperformed MHHs in progress

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[31] The corresponding decomposition of the contribution to overall changes in poverty of each group is not presented as it provides little additional information given the small size of the groups.
[32] Note that the total number of country spells is sometimes lower due to missing data on marital status for some countries.

against poverty in 16 out of 27 country spells. The differences, however, are statistically significant only in 12 cases—9 in favor of FHHs, and 3 in favor of MHHs. So here again, in the majority of cases (24 out of 27), FHHs did better or no worse than MHHs.

In sum, poverty has fallen more rapidly in FHHs. Allowing for the diversity among FHHs shows marked differences in poverty changes among them but no systematic patterns. The living standards of the various types of FHHs followed dissimilar paths across countries and time periods with no one type consistently outperforming the others.

Poverty is falling overall, the incidence of FHHs is rising and on balance, FHHs have seen faster poverty reduction. Is the share of the poor accounted for by FHHs also falling over this time period? Our findings indicate a mixed picture (Table 8 and Figure 7). In 14 country/year spells, there was an increase in the share of the poor living in households headed by a woman, while in the remaining 13, an almost equal number of country/year spells, the share fell. A similarly mixed pattern is evident in each of Africa's macro-regions.

7.   Conclusion

Living standards have risen and poverty has fallen considerably across Sub-Saharan Africa since the late 1990s. There have been concerns that some groups with above average poverty rates may be left behind. The paper has focused on female headed households and asked how this group has fared during this period. Drawing on the micro data from virtually all available national surveys for the region, the paper demonstrates that the share of households headed by women is rising over time across the continent. However, a higher prevalence of female headed households is consistent with the finding that poverty is falling. We find that higher GDP itself reduces female headship. But other things are changing across Africa. Changes in demographic and population characteristics, social norms, education and the nature of the family appear to be encouraging female headship.

The paper has tried to reconcile this finding with the recent aggregate reduction in poverty. Poverty has declined for both household groups but in most countries for which the data are adequate, it has fallen faster for female headed households as a whole. When the heterogeneity among FHHs is taken into account, some countries have achieved faster improvements in poverty than others but with little discernible pattern across countries. One category of FHH does well in one country or time period while another category does best elsewhere. A decomposition of the change in poverty indicates that, rather than putting a break on poverty reduction, FHHs are contributing appreciably to the overall decline in poverty despite their smaller overall share in the population.

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Table 1: Share of FHHs and population living in FHHs, by urban and rural, using latest available DHS.

	Share of FHHs			Share of pop living in FHHs		
	total	urban	rural	total	urban	rural
WESTERN						
Benin 2011	0.23	0.24	0.22	0.17	0.20	0.15
Burkina Faso 2010	0.10	0.15	0.08	0.07	0.13	0.06
Cote D'I 2011	0.18	0.21	0.15	0.16	0.19	0.13
Ghana 2008	0.34	0.37	0.31	0.29	0.34	0.25
Guinea 2012	0.17	0.18	0.17	0.14	0.17	0.12
Liberia 2007	0.31	0.35	0.29	0.30	0.35	0.26
Mali 2006	0.12	0.14	0.11	0.09	0.12	0.08
Niger 2012	0.16	0.15	0.16	0.12	0.13	0.11
Nigeria 2013	0.19	0.23	0.15	0.13	0.17	0.10
Senegal 2010	0.25	0.32	0.18	0.21	0.29	0.15
Sierra Leone 2008	0.22	0.26	0.21	0.22	0.27	0.19
Togo 1998	0.24	0.29	0.22	0.18	0.25	0.15
Sub-Total	0.20	0.24	0.17	0.15	0.20	0.12
MIDDLE						
Cameroon 2011	0.25	0.27	0.24	0.20	0.24	0.17
CAR 1994	0.21	0.25	0.19	0.16	0.20	0.13
Chad 2004	0.20	0.22	0.19	0.14	0.19	0.12
Congo 2011	0.23	0.22	0.25	0.20	0.21	0.19
DRC 2007	0.21	0.22	0.20	0.17	0.20	0.15
Gabon 2012	0.30	0.30	0.31	0.30	0.30	0.28
Sao Tome 2008	0.39	0.43	0.35	0.37	0.40	0.33
Sub-Total	0.22	0.24	0.21	0.18	0.21	0.15
EASTERN						
Burundi 2010	0.27	0.22	0.27	0.21	0.21	0.21
Comoros 2012	0.39	0.39	0.39	0.37	0.39	0.37
Ethiopia 2011	0.26	0.36	0.23	0.20	0.31	0.17
Kenya 2008	0.34	0.29	0.36	0.31	0.25	0.32
Madagascar 2008	0.22	0.29	0.21	0.17	0.25	0.16
Malawi 2010	0.28	0.21	0.30	0.24	0.19	0.26
Mozambique 2011	0.36	0.36	0.35	0.31	0.33	0.30
Rwanda 2010	0.33	0.31	0.34	0.28	0.27	0.28
Tanzania 2010	0.24	0.23	0.25	0.20	0.21	0.20
Uganda 2011	0.30	0.31	0.29	0.26	0.30	0.26
Zambia 2007	0.24	0.22	0.25	0.20	0.20	0.20
Sub-Total	0.28	0.30	0.28	0.23	0.27	0.23
SOUTHERN						
Lesotho 2009	0.42	0.42	0.42	0.34	0.35	0.33
Namibia 2006	0.44	0.40	0.48	0.45	0.40	0.49
South Africa 1998	0.42	0.36	0.50	0.43	0.36	0.50
Swaziland 2006	0.48	0.39	0.53	0.51	0.42	0.54
Zimbabwe 2010	0.45	0.45	0.44	0.43	0.46	0.42
Sub-Total	0.43	0.38	0.48	0.43	0.38	0.48
AFRICA	**0.26**	**0.28**	**0.25**	**0.21**	**0.24**	**0.20**

Note: Based on information from the household roster in the latest available DHSs.

Table 2: Head and household characteristics, by gender of the head, Africa

	FHH	MHH
Age of head	47.44	43.34
Years of education	4.13	5.64
Single	0.08	0.07
Married	0.34	0.88
Widowed	0.40	0.02
Divorced	0.17	0.03
Household size	3.89	5.08
1 adult household	0.16	0.10
1 adult + kids	0.27	0.01
2 or more adults + children	0.44	0.74
Dependency ratio	1.24	1.01

Note: Based on latest DHSs for the 35 countries given in Table 1. Statistics are for the population of household heads aged 15 and older. Marital status statistics are from the subsample of 29 countries with information on marital status of household members in the household roster. (See Milazzo and van de Walle 2015).

Table 3: Head and household characteristics of FHHs, with and without an adult male member, Africa

	FHH, no male adult resident	FHH, with adult male resident
% of all FHH	62.26	37.74
Age of head	46.08	49.68
Years of education	4.26	3.90
Single	0.11	0.04
Married	0.31	0.39
Widowed	0.38	0.43
Divorced	0.19	0.14
Household size	3.05	5.25
1 adult household	0.25	0
1 adult + kids	0.43	0
2 or more adults + children	0.24	0.76
Dependency ratio	1.50	0.87
Resident male is spouse	-	0.19
Resident male is child	-	0.67
Resident male is grandchild	-	0.11
Resident male is other relationship	-	0.03

Note: Based on latest DHSs for the 35 countries given in Table 1. Statistics are for the population of household heads aged 15 and older. Marital status statistics use the subsample of 29 countries with information on marital status of household members in the household roster. (See Milazzo and van de Walle 2015).

Table 4: Explaining the share of population living in FHHs between 1990 and 2013 in Africa.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		All FHH				FHH with a male adult				FHH with no male adult		
Year	0.025***	0.028***	-0.002	-0.002	0.022***	0.020***	-0.003	-0.010	0.023***	0.028***	0.003	0.008
	(0.006)	(0.007)	(0.008)	(0.006)	(0.005)	(0.007)	(0.009)	(0.008)	(0.006)	(0.007)	(0.010)	(0.007)
Ln GDP pc PPP		0.103	-0.340*	-0.347*		0.082	-0.425**	-0.422*		0.058	-0.145	-0.169
		(0.196)	(0.186)	(0.177)		(0.220)	(0.208)	(0.208)		(0.149)	(0.178)	(0.163)
Ag share of GDP		0.001	0.007	0.007		-0.005	0.006	0.002		0.007	0.006	0.008
		(0.009)	(0.006)	(0.006)		(0.010)	(0.009)	(0.007)		(0.008)	(0.005)	(0.006)
HIV (%)		0.033***	0.039***	0.039***		0.035***	0.043***	0.039***		0.021**	0.022**	0.025**
		(0.009)	(0.011)	(0.010)		(0.010)	(0.012)	(0.012)		(0.008)	(0.011)	(0.009)
Urban pop share		-0.001	0.004	0.005		0.002	0.014**	0.012*		-0.004	-0.008	-0.006
		(0.007)	(0.005)	(0.004)		(0.009)	(0.007)	(0.006)		(0.006)	(0.006)	(0.005)
Conflict last 10 yrs		0.077	0.184***	0.187***		0.069	0.140	0.180*		0.070	0.174***	0.154**
		(0.136)	(0.061)	(0.062)		(0.160)	(0.088)	(0.093)		(0.086)	(0.063)	(0.061)
Muslim (%)		-0.009**	0.001	0.001		-0.006	0.007**	0.005		-0.013***	-0.009***	-0.008***
		(0.004)	(0.002)	(0.002)		(0.005)	(0.003)	(0.003)		(0.003)	(0.002)	(0.001)
FLFP		-0.005	-0.005	-0.005		-0.001	-0.002	-0.001		-0.008	-0.006	-0.006
		(0.008)	(0.005)	(0.004)		(0.010)	(0.005)	(0.005)		(0.005)	(0.004)	(0.004)
Female yrs of edu			0.078	--			0.240*	0.175**			-0.133	--
			(0.101)				(0.139)	(0.081)			(0.097)	
Male yrs of edu			0.112	--			-0.037	--			0.254**	0.155**
			(0.099)				(0.127)				(0.106)	(0.065)
Average yrs of edu			--	0.189***			--	--			--	--
				(0.067)								
Life exp female			0.021	--			0.090	--			-0.057	--
			(0.046)				(0.057)				(0.048)	
Life exp male			0.010	--			-0.069	--			0.090	--
			(0.053)				(0.063)				(0.055)	
Life exp. all			--	0.032***			--	0.028**			--	0.026***
				(0.011)				(0.013)				(0.008)
Age female15			0.123**	--			0.117**	--			0.090*	0.062*
			(0.045)				(0.054)				(0.052)	(0.032)
Age male15			-0.130**	--			-0.189**	--			-0.022	--
			(0.056)				(0.070)				(0.054)	
Age gap15			--	0.120***			--	0.118**			--	--
				(0.041)				(0.056)				
Age first marriage			0.147***	0.150***			0.141**	0.185***			0.085	0.046
			(0.047)	(0.042)			(0.062)	(0.056)			(0.051)	(0.044)
Constant	-51.896***	-57.161***	-0.520	0.691	-45.652***	-43.342***	4.557	15.403	-47.572***	-58.883***	-13.076	-21.328
	(11.773)	(12.801)	(15.197)	(11.471)	(10.962)	(13.571)	(18.675)	(15.790)	(12.489)	(12.448)	(17.633)	(12.692)
Observations	98	98	98	98	98	98	98	98	98	98	98	98
R-squared	0.064	0.520	0.801	0.800	0.046	0.415	0.734	0.716	0.064	0.620	0.771	0.759

Note: Dependent variable is the logit transformation of the share of the population living in FHHs calculated by DHS. Data are pooled from all Africa DHSs except 1994 Central Africa Republic which is missing data for HIV. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1; regressions are clustered at the country level. Data sources are given in the Appendix.

Table 5: Decomposition of the explained variance in the share of population living in FHHs, 1990 to 2013.

	(1) All FHH	(2) FHH with male adult	(3) FHH no male adult
	% of R^2 explained by explanatory variables:		
Year	2.56	1.86	3.56
Ln GDP pc (PPP)	3.71	4.53	2.74
Agriculture share of GDP	3.20	4.28	2.36
HIV	12.29	11.82	12.18
Urban pop share	1.17	2.00	2.37
Conflict last 10 yrs	1.63	1.57	1.75
Share Muslim	9.46	6.96	26.09
FLFP	1.30	0.84	3.02
Average yrs of education	21.31	--	--
Female yrs of education	--	20.37	--
Male yrs of education	--	--	23.42
Life expectancy	5.54	4.88	4.68
Gender age gap 15+	19.64	20.50	4.58
Age at first marriage women	18.20	20.39	13.26
R^2	0.80	0.72	0.76

Note: Columns 1, 2, and 3 present the decomposition of the R^2 from the regressions 4, 8, and 12 in Table 4, respectively, using the REGO command in STATA.

Table 6: Poverty and annualized changes in poverty, total and by MHH and FHH with and without a married head and a male adult.

							Annualized changes in poverty				
									FHH		
				Poverty					Married head		Unmarried head	
	Surveys	Years	t=0	t=1	Total	MHH	All FHH	male	no male	male	no male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Botswana	2002-2009	7	0.244	0.134	-0.016	-0.015	-0.016	-0.016	-0.003	-0.020	-0.015
Burkina Faso	1998-2003	5	0.764	0.503	-0.052	-0.049	-0.063**	-0.079	-0.051	-0.057	-0.067
Cameroon	2001-2007	6	0.244	0.304	0.010	0.012	0.002***	0.004	0.012	-0.002	0.001
Chad	2003-2011	8	0.613	0.361	-0.031	-0.031	-0.031	-0.033	-0.039	-0.022	-0.029
Congo, Dem. Rep.	2004-2012	8	0.862	0.823	-0.005	-0.004	-0.011***	-0.004	0.000	-0.016	-0.011
Congo, Rep.	2005-2011	6	0.547	0.328	-0.036	-0.034	-0.048***	-0.005	-0.081	-0.057	-0.042
Cote d'Ivoire	1992-1998	6	0.259	0.292	0.005	0.006	-0.004**	-0.016	-0.028	0.000	0.004
Cote d'Ivoire (2)	2002-2008	6	0.281	0.322	0.007	0.008	-0.002***	0.011	0.007	-0.004	-0.010
Ethiopia	1995-2010	15	0.618	0.378	-0.016	-0.015	-0.019***	-0.005	0.004	-0.022	-0.023
Ghana	1991-2005	14	0.534	0.267	-0.019	-0.020	-0.020	-0.024	-0.019	-0.019	-0.018
Kenya	1994-1997	3	0.276	0.318	0.014	0.012	0.019	0.033	0.030	0.000	0.010
Madagascar	1997-1999	2	0.759	0.741	-0.009	-0.010	-0.007	-0.015	-0.151	-0.014	0.005
Madagascar (2)	2001-2010	9	0.766	0.877	0.012	0.012	0.012	0.014	0.002	0.013	0.013
Malawi	2004-2010	6	0.749	0.723	-0.004	-0.004	-0.006	-0.021	0.003	-0.004	-0.004
Mozambique	1996-2009	13	0.810	0.610	-0.015	-0.016*	-0.013	-0.018	-0.006	-0.014	-0.013
Namibia	2004-2010	6	0.293	0.206	-0.014	-0.015	-0.015	-	-	-	-
Nigeria	2003-2010	7	0.616	0.615	0.000	0.000	-0.004*	0.005	-0.026	0.009	-0.007
Rwanda	2000-2010	10	0.773	0.621	-0.015	-0.014	-0.018**	0.004	0.025	-0.022	-0.015
Senegal	2005-2011	6	0.340	0.356	0.003	0.005	0.005	0.014	0.000	-0.002	-0.003
Sierra Leone	2003-2011	8	0.611	0.563	-0.006	-0.005	-0.006	-0.019	-0.004	-0.001	-0.013
South Africa	2005-2010	5	0.189	0.112	-0.015	-0.011	-0.021***	-	-	-	-
Swaziland	2000-2009	9	0.443	0.389	-0.006	-0.008	-0.005	-0.013	-0.003	0.015	0.012
Tanzania	2000-2007	7	0.834	0.683	-0.022	-0.022	-0.020	-0.024	-0.013	-0.023	-0.018
Tanzania (2)	2007-2011	4	0.500	0.431	-0.017	-0.016	-0.021	0.005	-0.009	-0.015	-0.004
Togo	2006-2011	5	0.542	0.531	-0.002	-0.003	-0.001	-0.003	0.084	-0.001	0.085
Uganda	2002-2012	10	0.591	0.292	-0.030	-0.031***	-0.026	-0.016	-0.035	-0.018	-0.030
Zambia	1998-2006	8	0.546	0.703	0.020	0.021	0.014***	0.015	0.020	0.011	0.013
Total		7.89	0.570	0.492	-0.008	-0.007	-0.011	-0.003	-0.012	-0.008	-0.012

Note: Columns 3 and 4 give the poverty headcount or the proportion of people living in households whose per capita consumption is less than the international $1.25 poverty line at 2005 PPP. Stars indicate that the double difference, or difference in the change in poverty (whether a reduction or a lower increase) between the groups, is statistically significant for the group, with *** p<0.01, ** p<0.05, * p<0.1. The surveys for Namibia and South Africa do not record marital status. The aggregates for Africa are population weighted (by the fraction of the country/year's population in the total sample population).

Table 7: Decomposition of the changes in poverty

	Total change	FHH	MHH	Change in FHH pop share
				Contribution due to:
Botswana	-0.110	-0.055	-0.055	0.001
Burkina Faso	-0.261	-0.014	-0.236	-0.011
Cameroon	0.060	0.003	0.060	-0.002
Chad	-0.252	-0.035	-0.216	-0.001
Congo, Dem. Rep.	-0.039	-0.012	-0.026	-0.001
Congo, Rep.	-0.219	-0.058	-0.161	0.000
Cote d'Ivoire	0.033	-0.003	0.035	0.001
Cote d'Ivoire (2)	0.041	-0.002	0.044	-0.001
Ethiopia	-0.240	-0.052	-0.188	0.000
Ghana	-0.266	-0.101	-0.179	0.014
Kenya	0.042	0.012	0.029	0.001
Madagascar	-0.019	-0.002	-0.017	0.000
Madagascar (2)	0.111	0.017	0.094	0.000
Malawi	-0.026	-0.007	-0.020	0.000
Mozambique	-0.200	-0.030	-0.170	0.000
Namibia	-0.087	-0.052	-0.037	0.001
Nigeria	-0.001	-0.003	0.001	0.000
Rwanda	-0.152	-0.049	-0.103	0.000
Senegal	0.016	0.005	0.026	-0.015
Sierra Leone	-0.048	-0.009	-0.035	-0.004
South Africa	-0.077	-0.045	-0.032	0.000
Swaziland	-0.055	-0.021	-0.038	0.004
Tanzania	-0.151	-0.026	-0.125	0.000
Tanzania (2)	-0.069	-0.017	-0.052	0.000
Togo	-0.011	-0.001	-0.011	0.001
Uganda	-0.299	-0.057	-0.244	0.002
Zambia	0.157	0.022	0.135	0.000
Total	-0.078	-0.021	-0.057	-0.000

Note: Computed for time spells as listed in Table 6. The aggregates for Africa are population weighted (by the fraction of the country/year's population in the total sample population).
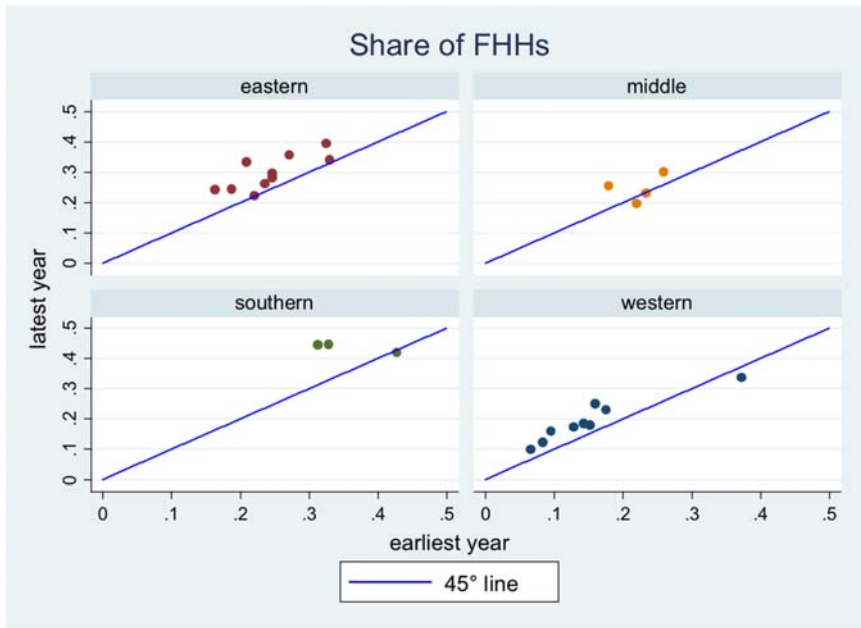
Table 8: Changes in the share of the poor living in FHHs

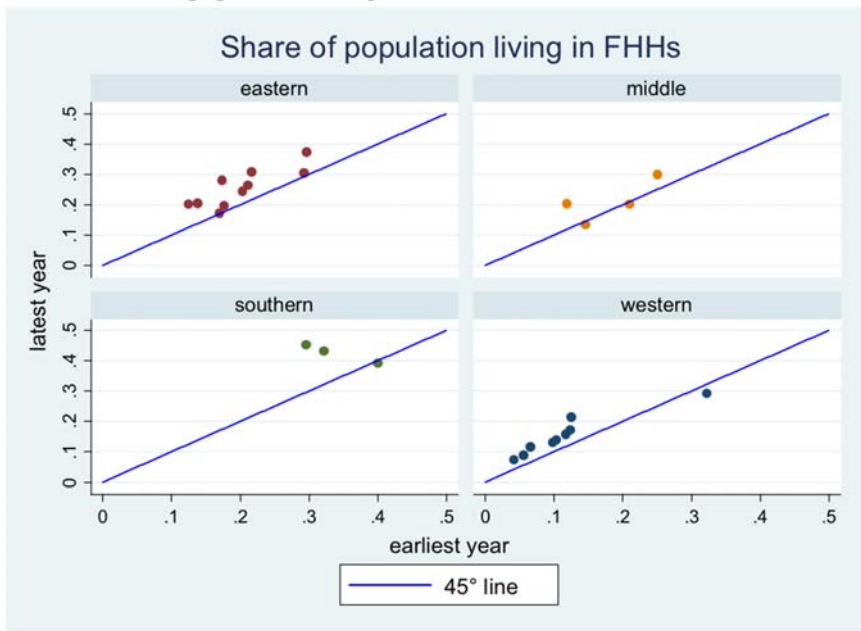|	Share of poor in FHH		
	earlier date	later date	change
Botswana	0.550	0.600	0.050
Burkina Faso	0.031	0.037	0.006
Cameroon	0.169	0.164	-0.005
Chad	0.132	0.141	0.010
Congo, Dem. Rep.	0.134	0.147	0.013
Congo, Rep.	0.229	0.222	-0.007
Cote d'Ivoire	0.103	0.069	-0.034
Cote d'Ivoire2	0.131	0.134	0.003
Ethiopia	0.181	0.156	-0.026
Ghana	0.313	0.159	-0.155
Kenya	0.221	0.266	0.045
Madagascar	0.129	0.133	0.004
Madagascar2	0.149	0.148	-0.002
Malawi	0.206	0.211	0.005
Mozambique	0.168	0.242	0.073
Namibia	0.555	0.508	-0.047
Nigeria	0.079	0.074	-0.004
Rwanda	0.287	0.227	-0.060
Senegal	0.087	0.140	0.053
Sierra Leone	0.167	0.244	0.077
South Africa	0.581	0.571	-0.009
Swaziland	0.494	0.557	0.063
Tanzania	0.183	0.205	0.021
Tanzania2	0.216	0.204	-0.012
Togo	0.156	0.149	-0.007
Uganda	0.211	0.291	0.079
Zambia	0.214	0.204	-0.009
Total	0.196	0.195	-0.001

Note: Based on the headcount indices computed above. The aggregates for Africa are population weighted (by the fraction of the country/year's population in the total sample population).

Figure 1: Prevalence of FHHs by country and macro-region, earliest and latest DHS years

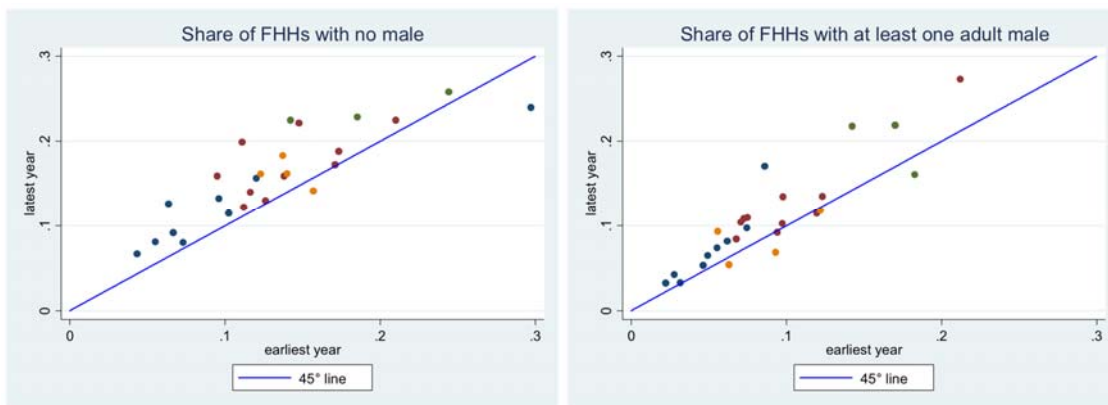A. Share of households with a female head
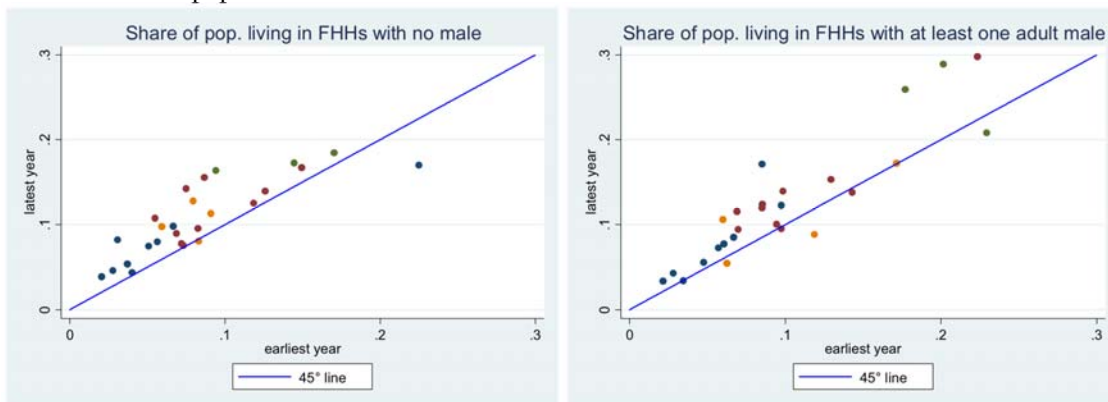

B. Share of population living in FHHs

Note: Based on earliest and latest DHSs for 26 countries. See Appendix for details.

Figure 2: Prevalence of FHHs with and without a male adult by country, earliest and latest DHS year.
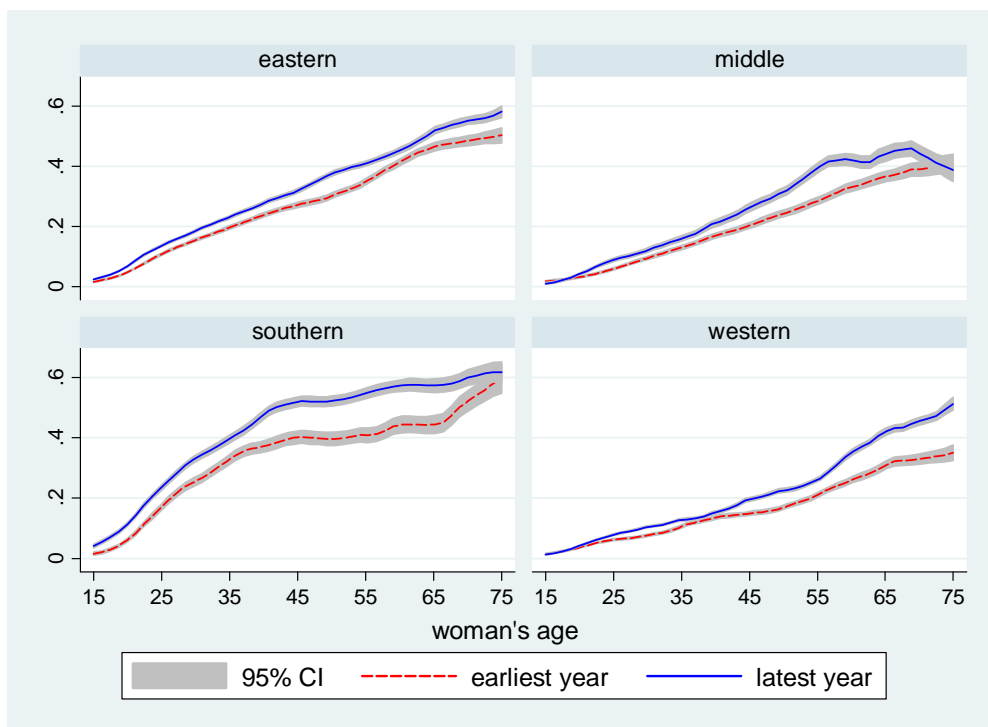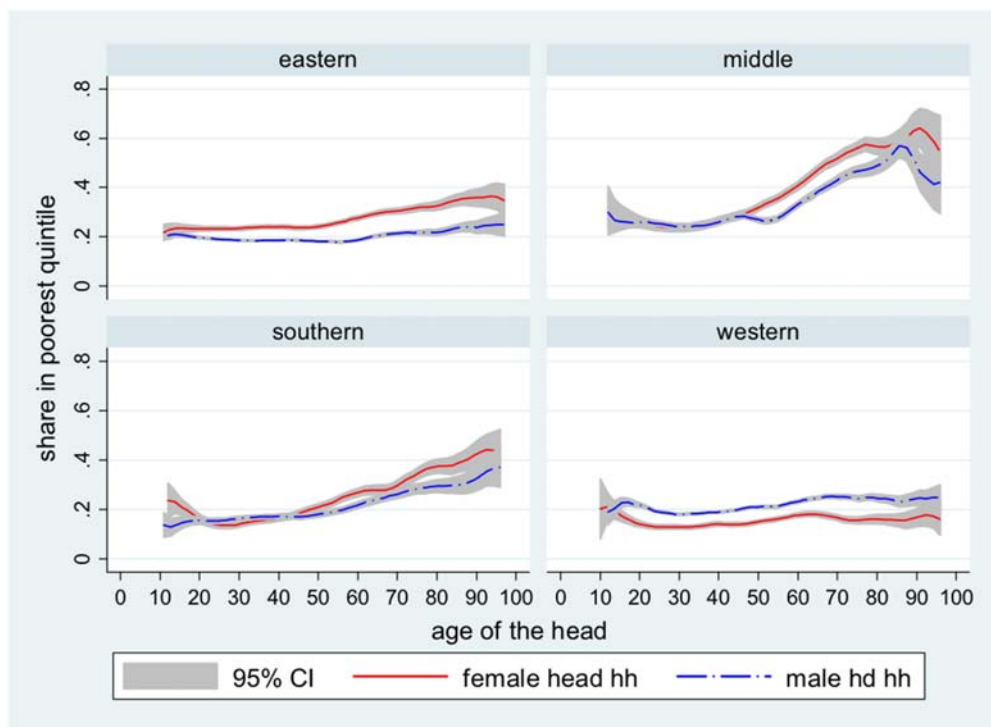
A. Share of households

B. Share of population

Note: The colors identify macro-regions as used in Figure 1. Based on earliest and latest DHSs for 26 countries. See Appendix for details.

Figure 3: An adult African woman's probability of heading a household by age, 1990-2013
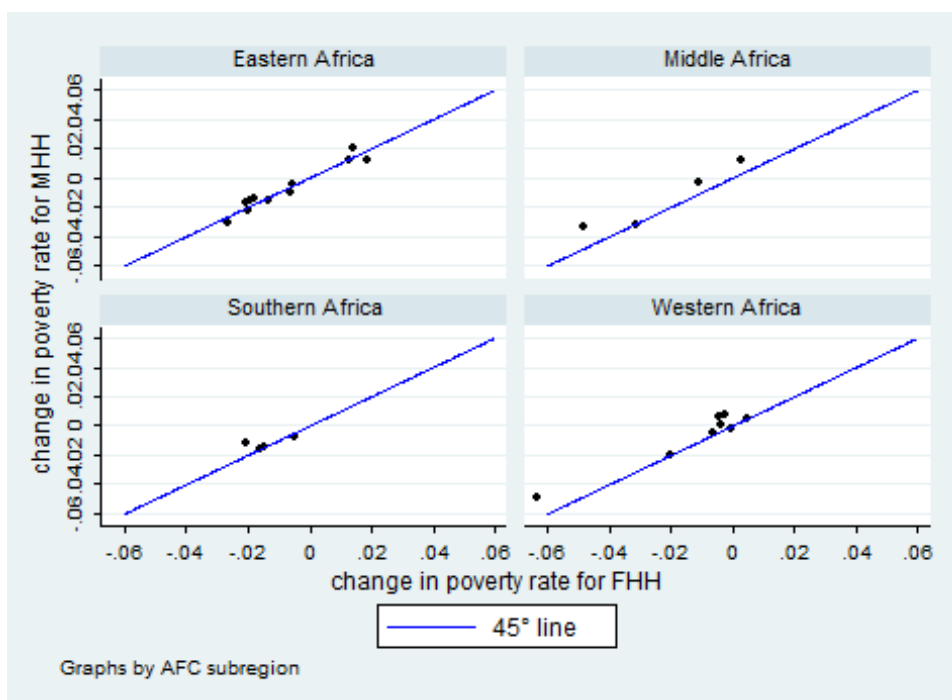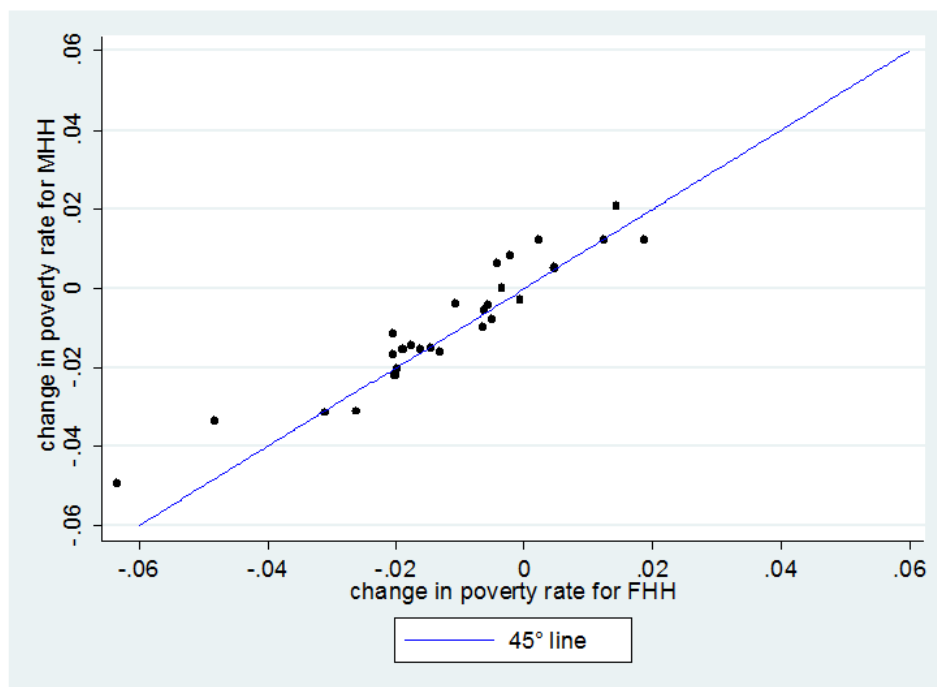

Note: Nonparametric plot of the probability that a woman aged 15 and older heads her household, based on all female members in the DHS household rosters, aged15-75 (with 75 years being the 98.8 percentile). Sample of earliest and latest surveys for 26 countries. See Appendix for details.

Figure 4: % of households in poorest DHS wealth quintile by age and gender of head
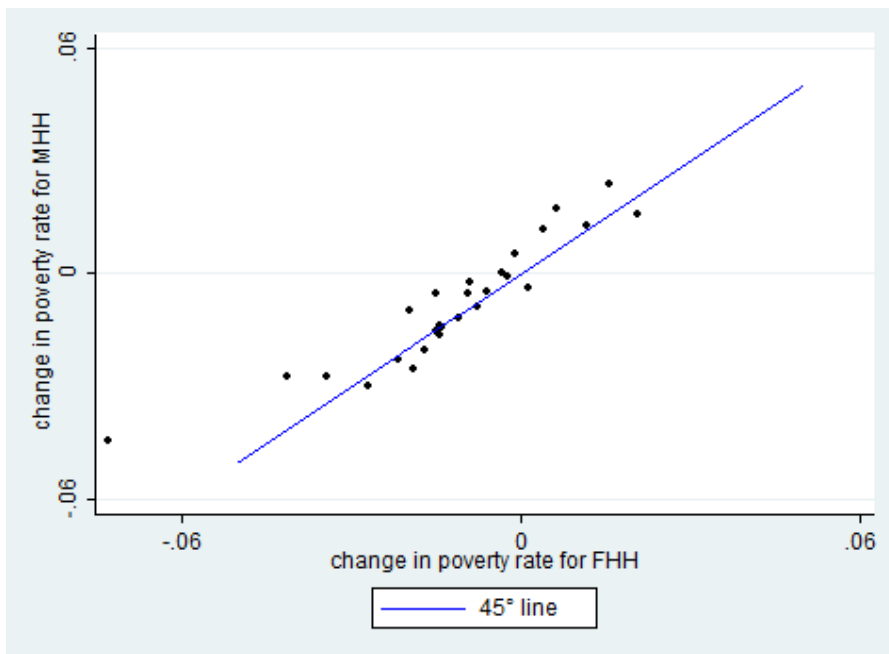

Note: Based on DHS country-specific wealth index. Sample of 32 countries as listed in Table 1 except for CAR 1994, South Africa 1998, Togo 1998 (surveys that do not include the wealth index).

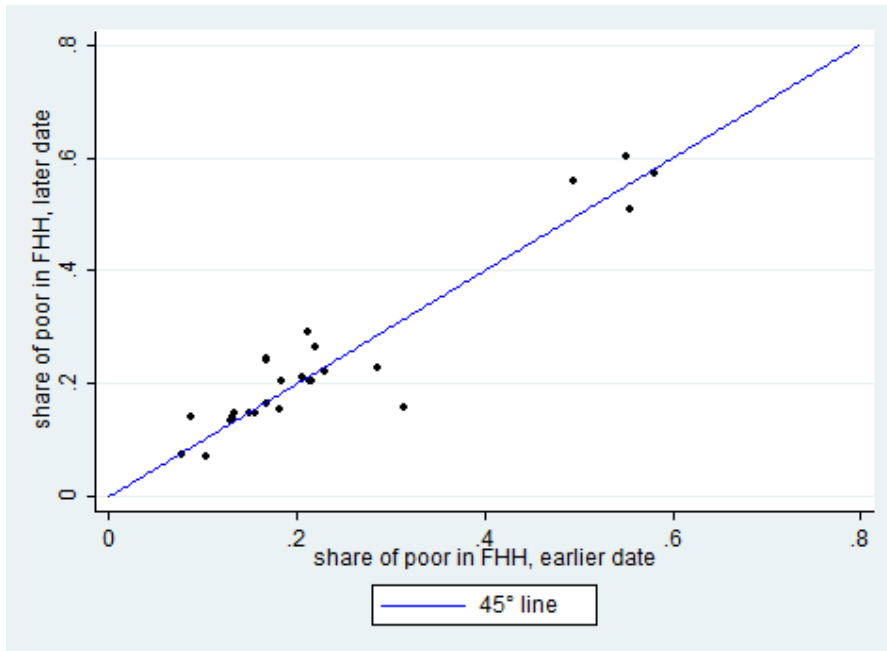**Figure 5: Annual absolute change in poverty by gender of head**

Note: Based on headcount indices of poverty measured using household consumption per capita as given in Table 6 and computed from household consumption surveys for countries and time spells listed in Table 6.

Figure 6: Annual change in poverty by gender of head allowing for scale economies in consumption.

Note: Poverty is measured using household consumption divided by the square root of household size.

Figure 7: Changes in the share of the poor living in FHHs between earliest and latest survey date

Note: Poverty is measured using household consumption per capita.

Appendix:

Table A1: Data Sources and definitions for variables in Table 4

Share of population in FHH	Share of population living in FHHs. Source: DHS household rosters.
Ln GDP pc PPP	Natural logarithm of GDP per capita, 2005 PPP (constant 2011 international $). Source: World Development Indicators (WDI), World Bank.
Agricultural share of GDP (%)	Agriculture, value added (% of GDP). Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of the sector after adding up outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Source: WDI
Urban population share (%)	Percent of people living in urban areas as defined by national statistical offices. It is calculated using World Bank population estimates and urban ratios from the United Nations World Urbanization Prospects. Source: WDI
Conflict last 10 years	Dummy =1 if the country experienced a conflict during the past 10 years, 0 otherwise. Original citation for the data: Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg, and Håvard Strand (2002) Armed Conflict 1946-2001: A New Dataset. Journal of Peace Research 39(5). A conflict-year dataset with information on armed conflict where at least one party is the government of a state in the time period 1946-2013. The most recent is version 4-2014. Source: http://www.pcr.uu.se/research/ucdp/datasets/ucdp_prio_armed_conflict_dataset/
HIV (%)	Percentage of people ages 15-49 who are infected with HIV. Source: WDI (from UNAIDS).
Muslim (%)	% of Muslims is defined based on the women's 15-49 datasets for each country-year DHS. Note: religion is missing for 8 surveys (Comoros 1996, Malawi 1992, Niger 2012, Rwanda 2000, Senegal 1992 and 1997, South Africa 1998, and Tanzania 2010). The share of Muslim is then taken from the census if implemented for the same year (as in Malawi 1998, Rwanda 2002, South Africa 2001); or from the closest DHS year. Source: DHS women's datasets
Female labor force participation (FLFP) (%)	Percent of female population aged 15+ who are in the labor force (modeled ILO estimate). Source: WDI
Female/male years of education	Average number of years of education completed for the total, and the female and male samples at the country-survey year level for household members aged 5 and older. Note: Variable missing for Madagascar 1992 (replaced with values for Madagascar 1997) and Senegal 1997 (interpolated from values for 1992 and 2005). Source: DHS household roster
Female/male/total life expectancy	Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of birth were to stay the same throughout its life. Note: for Nigeria 2013, the 2012 value is considered (2013 not yet available) Source: WDI
Average age women/men aged 15+ Age gap 15	Average age of household members 15 and older, for the subsample of females and males (at the country-year level). The gender age gap 15 is defined as women's average age minus men's average age, for all those 15 and older. Source: DHS household roster
Age at first marriage	Women's age at first marriage (at the country-year level). Source: DHS women's datasets

Table A2: DHSs used for the FHH trends by earliest/latest survey (Figures 1, 2, 3)

WESTERN
Benin   1996, 2011
Burkina Faso   1993, 2010
Cote d'Ivoire 1994, 2011
Ghana   1993, 2008
Guinea   1999, 2012
Mali   1995, 2006
Niger   1992, 2012
Nigeria   1990, 2013
Senegal   1992, 2010

MIDDLE
Cameroon   1991, 2011
Chad   1996, 2004
Congo   2005, 2011
Gabon   2000, 2012

EASTERN
Comoros   1996, 2012
Ethiopia   2000, 2011
Kenya   1993, 2008
Madagascar   1992, 2008
Malawi   1992, 2010
Mozambique   1997, 2011
Rwanda   1992, 2010
Tanzania   1992, 2010
Uganda   1995, 2011
Zambia   1992, 2007

SOUTHERN
Lesotho   2004, 2009
Namibia   1992, 2006
Zimbabwe   1994, 2010

Table A3: 98 DHSs included in the regression analysis of FHH trends

Benin	1996, 2001, 2006, 2011
Burkina Faso	1993, 1998, 2003, 2010
Burundi	2010
Cameroon	1991, 1998, 2004, 2011
Chad	1996, 2004
Comoros	1996, 2012
Congo	2005, 2011
Cote d'Ivoire	1994, 1998, 2011
DRC	2007
Ethiopia	2000, 2005, 2011
Gabon	2000, 2012
Ghana	1993, 1998, 2003, 2008
Guinea	1999, 2005, 2012
Kenya	1993, 1998, 2003, 2008
Lesotho	2004, 2009
Liberia	2007
Madagascar	1992, 1997, 2003, 2008
Malawi	1992, 2000, 2004, 2010
Mali	1995, 2001, 2006
Mozambique	1997, 2003, 2011
Namibia	1992, 2000, 2006
Niger	1992, 1998, 2006, 2012
Nigeria	1990, 1999, 2003, 2008, 2013
Rwanda	1992, 2000, 2005, 2010
Sao Tome	2008
Senegal	1992, 1997, 2005, 2010
Sierra Leone	2008
South Africa	1998
Swaziland	2006
Tanzania	1992, 1996, 1999, 2004, 2010
Togo	1998
Uganda	1995, 2000, 2006, 2011
Zambia	1992, 1996, 2001, 2007
Zimbabwe	1994, 1999, 2005, 2010