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Effect of education and gender on household ownership of asset types in rural Western Kenya Region

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Abstract
Asset development is a key strategy to promote economic and social development. Measurement of inequality has been given relatively little attention to the asset ownership by households. The study examines relative importance of asset types and extent to which household headship factors affect ownership among households of Western Kenya.
The study was cross sectional descriptive using quantitative methods. A total of 538 households were selected for the study comprising 184(34%) households with under-five death and 355(66%) as controls.
Findings show that the extent to which asset types demonstrate significant differential inequality in ownership (p-value <0.05) varies by household headship factors, where gender clustered by education shows the highest number of asset types exhibiting significant inequality 17(50%) between households; followed by education 7(21%) and lastly gender 4(12%).
Results underscore importance of high education, although the impact is different across the different genders.The impact is greater among the male headed households
Key Words: Rural households, asset types, asset ownership, household headship, education, gender.

1.1 Introduction

Assets have increasingly become recognized as important measures of wealth index. In rural economies where the main livelihood is farm production based, majority of households rely on supplies from seasonal harvest which also act as source for income. In this context the concept of regular income streams (for example monthly income) is, therefore, not one of the commonest among households. The lack of regular income has presented a challenge to examining and understanding household differential inequality and the effect of the same on health and development. In view of this, a search for an appropriate approach to measure and describe within household inequalities in wealth consistent with rural livelihoods has been of major interest to researchers and policy makers in an effort to address persistent health disparities.

Research in developing countries has demonstrated that assets owned by families tend to be the gateway to accessing essential services (Thind, 2004; Xie & Dow, 2005); lowering child mortality (Armstrong et al., 2003); improving child development outcomes (Paxson & Schady, 2007); as well as preventing occurrences of negative incidences (Basu 2007). In addition, owning assets (land and livestock) has a shown positive consequence on rates of children's school enrollment and educational attainment (Filmer & Pritchett, 2001). As a consequence, households with access to various forms of assets are better able to provide for basic needs as well as to make investments in future generations through healthcare, education, and training (Aryeetey, 2004). Conversely, households lacking assets are more vulnerable to the negative child outcomes associated with living in poverty (McKernan 2007).

However, just as with any of measures of income and consumption, not only are assets unequally distributed between rich and poor, they are also unequally distributed between men and women, nationally as well as within communities and households (Deere and Doss 2006). Therefore building of assets among low-income and poor households as a means of poverty alleviation and self-empowerment is at the heart of community based development efforts and of new thinking among development researchers and international organizations.

In terms of the development and poverty reduction processes, the concept of gender goes beyond the social differentiation of women and men, to also include different needs and concerns based on their natural or biological differences that should drive the development process. The extent of participation of women and men in the development agenda in terms of designing poverty reduction programmes and sharing of accrued benefits is also an important aspect of gender.

Low literacy level among women contributes to high population growth rate which in turn exacerbated poverty among both women and men. Sachs in his research work in Niger and Tanzania in 2005 titled, “The end of

Poverty: Economic Possibilities of Our Time", found that in Tanzania, women without any formal education had a total fertility rate of 6.5; with incomplete primary education: 6.2; with complete primary education: 6.0; and with secondary and higher education 4.2 (Sachs, 2005). Inclusion of women in poverty reduction strategies is, key in the achievement of all the Millennium Development Goals (MDGs) (Kimani E., 2006).The UNICEF/ESARO's work in 2007 on United Nations initiative on lessons learnt from four African countries, available statistics on school enrolment in most African countries indicated that a near gender parity is achieved at pre-primary and primary level of education but as the education level increases, glaring gender disparities start to manifest (UNICEF, ESARO, 2007). At the university level in Kenya, Omutoko (2006) affirm that female students constitute an average of only 39% of the total enrolment, 70% of who are found in social sciences and humanities.

In Kenya majority of the poor are women as few of them access educational opportunities due to the low value placed on the girl child, as compared to the boy. Based on the traditional beliefs and practices, women have had less or no ownership, access and control to family assets and resources, as compared to their male counterparts. Furthermore, the strategies to develop women capacities have been less than adequate in the country. In this respect, in the incidences of deprivation through poverty, they are more vulnerable.

1.2 Empirical evidence and gaps

Much research has been conducted in the area of gender and education and measurement of association with asset ownership using national DHS data with emphasis on urban/rural residence comparison. Furthermore, much research is more evident in developed countries with scanty work in developing countries. In Kenya, in particular, very little research has been done to understand the relationships between gender, education and asset ownership as a poverty issue and development issue. Furthermore, in Kenya, with heterogeneous population in aspects of residence, tribe and gender as indicated by poverty indices, no research has been done to measure inequalities in ownership of asset types. The implication of this is that little is then known as to the implication of national equity policies towards poverty alleviation and development of the overall community especially in the rural areas of the country.

This study therefore sort to examine the relationships between 1) gender and asset type ownership; 2) education and asset type ownership; and 3) effect of education on gender and asset type ownership in a rural set up of Western Kenya Region.

1.3Methodology

The study was nested in the broader Health Systems Research Project on "Uptake and Cost-Effectiveness of Community Based Health Care Program in Kenya.The study designed as quasi-experimental was implemented in 4 Districts drawn from Butere and Mumias in Western province; Kisumu in Nyanza and Garissa in North Eastern province with a total of 40 Community Health Units (CHUs) implementing the Community Health Strategy (CHS) under the Ministry of Public Health and Sanitation (MOPHS) (GoK-MOPHS 2006).

Data on a comprehensive list of 34 asset types owned by households in the region was collected using quantitative techniques from 538 households drawn across Western region of Kenya comprising both Western and Nyanza provinces. The region was selected because of commonality in their geographical features in the area; fairly uniform socio-cultural practices across the two predominant communities of Luhya and Luo; predominance of rural economy and with fairly high persistence of high under-five mortality rates in comparison to other regions in the country (KDHS, 2008/9). Furthermore, the study Districts comprised partnership sites where both MOPHS and GLUK worked in partnership with the communities to strengthen implementation of the Community Health Strategy. Participating households were those with under-five years' old children resident in 38 CHUs that had duly updated village household registers during January to December 2011 period as follows: Butere 25 CHUs; Mumias 7 CHUs; and Kisumu 6 CHUs.

The study sample included all households in the 38 CHUs that had experienced under-five death within the last half of year 2011 as index households comprising 183(34%) households and 355(66%) households with under-five year's old children within immediate neighborhoods to the index households. Index households were selected from the village registers to which a maximum of 2 immediate neighbouring households were identified based on immediate proximity to index households but not situated beyond the third intermediate neighbouring household to index.

2.1 Findings

2.2.1Asset ownership among household

A total of 34 asset items are examined to establish their relevancy for use in determining household assed based capability / vulnerability. Only 12 (35%) of the asset items are accessed by at least half or more of households surveyed. The top 10 asset items common among households include: mattress (95%); table (94%); bed (93%); land (93%); hand tools (89%); cultivated land (88%); chicken (74%); radio (70%); mobile phone (70%); and staple food (65%). The last 10 poorly accessed asset items include: engine boat (0%); tractor (0%); animal-drawn cart and refrigerator both with 0.2% each; car or truck (0.7%); other birds (1.5%); permanent housing (2%); motor cycle (2.2%); dairy cow (3.2%); and ox-plough (4.1%). Ownership for the rest of asset items ranges between 10.4% and 53.5% of the households as shown in table 1.

A majority of asset types in the set of 12 owned by more than 50% of households, comprise of household furniture and equipment 3(25%), agricultural based 3(25%), and communication 2(17%) asset types. Livestock and cash savings each are owned by less than 20% of households. Together with food security asset type, household furniture and equipment, agricultural based and communication constitute up to three quarters of those asset types owned by over 50% of households. Birds, housing and transport types of assets constitute the remainder 25%.

2.2.1Ownership of asset types by gender

Out of 34 asset items, only 4 items show significance difference between households headed by different genders. These assets show a higher ownership among male headed households than female ones. They include mobile phone (p-value = 0.002; OR=1.9; 95% CI = [1.27 – 2.96]); radio (p-value = <0.0001; OR = 2.5; 95% CI = [1.62 – 3.77]); TV (p-value = 0.004; OR = 4.2; 95% CI = [1.47 – 11.76]); and bicycle (p-value = <0.0001; OR = 2.5; 95% CI = [1.62 – 3.75]). However, although without a significant difference, female headed households show a higher ownership in 9 asset types including sofa set, mattress, land and local cow ownership, sheep, chicken, proportion with semi-permanent and permanent housing, and having staple food in the house. Male headed households have higher ownership on rest of asset types compared to their female counterpart, as shown in figure 1.

2.2.2 Association of asset ownership by education levels

The effect in association of asset type and ownership on 3 household head related characteristics based on education level is analyzed using 3 variables including 1) “none”, 2) “primary” and 3) “secondary and above”. Trend analysis is generated to indicate any progressive differentiation of asset type and ownership among households. In total the classification of households in three categories of education generates 13 (38%) asset items with significant difference of association.

There is a significant progressive difference on 7 (21%) asset types based on levels of education of household heads. Five asset items including mobile phone, radio, TV, sofa set and wheel barrow all have p-value of <0.0001, while clock and chicken have p-values of 0.003 and 0.007 respectively. Primary school education heads, on one hand, have highest proportion of households (50%) under temporary housing as compared to households headed by individuals with no education and those with secondary and above level of education (49 and 27% respectively). On the other hand, households of primary heads have the lowest proportion (50%) for semi-permanent housing in comparison (51 and 74% for heads of none and secondary and above education levels respectively). The difference is statistically significant in both cases with p-value <0.0001. Similarly, the primary level of education show low proportions for ownership of both permanent housing and availability of staple food compared to the other two levels and in both cases, the differences are significant (p-value = 0.007 and < 0.0001 for permanent housing and staple food respectively). Animal-drawn cart is available with households headed by individuals with no education while motorcycle is among households headed by primary and secondary and above education levels. The rest of asset types, while they may show differences in proportions, the differences are not significant.

2.2.3 Association of asset ownership by gender and education levels

The list of asset types showing significant differential proportions between different households by gender and education increases to 17(50%), up from the initial list of 4(12%) and 13 (38%) based on gender or education levels respectively. The new asset items on the list of significance include car/truck, ox-plough, other major tools, and sheep. Animal-drawn cart drops off the list of significant assets based on this classification.

Only 3(18%) on the list of significant asset items appear across all the three classifications (gender, education and gender controlled for education). The three assets include mobile phone, radio and TV. Assets that appear in at least two categorizations are 10(59%) including clock, sofa set, bicycle, motor cycle, wheel barrow, chicken, temporary, semi-permanent and permanent housing and staple food availability. Items appearing under only one

classification include 5(29%) assets including animal-drawn cart, car/truck, ox-plough, other major tools and sheep.

Under the female headed households, comparison show that households headed by individuals with no-education have significantly low proportions owning sofa set, sheep and chicken compared to those of primary level heads and vice versa for staple food availability. Secondary and above education level demonstrates significantly higher levels of proportional ownership for mobile phone, radio, TV, sofa set and other major tools as compared with female with no education counterparts. Similarly, ownership of mobile phones, radio, motor cycle and staple food is significantly higher among the secondary and above female headed households compared with their primary level counterparts.

The male secondary and above headed households have disproportionately higher levels of ownership among their households for 13 asset types (mobile phone, TV, clock, sofa set, motor cycle, car/truck, ox-plough, wheel barrow, sheep, chicken, semi and permanent housing and staple food) compared with their male primary headed households. They also show similar trend in comparison to male headed households of no-education heads but with a reduced number of asset types to 5 (mobile phone, TV, sofa set, chicken and semi-permanent housing). Both primary and no-education male headed households have higher ownership for temporary housing compare to the secondary and above headed households. There is no single asset type which shows significant variation in ownership between households headed by males of primary and those with no education.

Comparing males and females headed households for heads of no-education, show the significance in ownership of bicycle in favour of male households. Among the primary male and females, the trend shows that more male headed households own mobile phones and bicycles than female headed households, while more female headed households own sofa set, car/truck, sheep and chicken in comparison to males. There is no difference in asset types ownership levels between the secondary and above headed male and female households as shown in figure 2.Three asset types appear significant by all three characteristics of heading, while 10 and 5 items appear under two and one classifications respectively.(see figure 2)

3.1 Discussion

Results show that just slightly above a third of the asset types are owned by more than half of households. Furthermore, up to three quarters of these assets comes from household basic, agricultural based, communication and food security asset types. The bicycle asset among transport asset items is owned by more than half of households, while all asset items in the livestock and cash savings category are owned by less than a quarter of the households. This means that most households rely on agriculture for household livelihoods with very little from businesses such as transport. Furthermore, the presence of food security item in most households compared to savings also is indicative of the subsistence nature of agriculture livelihoods. The most common asset type (agricultural based) seems to provide food for household consumption and most likely leaving no surplus for building savings as shown by a high proportion of households without savings rather with food available. This may imply that in the rural areas, agricultural based assets have no much impact as productive asset to generate products or services that can be consumed and sold to generate cash for saving at the same time. This finding corroborate with that of Deere (2006) where it was found that there is limited potential for assets' flexibility to serve multiple functions including provision of both security through emergencies and opportunities in periods of growth and capacity to improve well-being (Sherraden 1991; Carter and Barrett 2006). These findings imply that asset types in the rural context generally have lower flexibility which in itself acts as a barrier for production and further asset expansion.

The study show that four asset types that have significant differential ownership between households by gender of headship, comprising three communication asset items (mobile phone, radio and TV) and bicycle. All the four types of assets show higher probability of ownership by male headed households. This implies that households headed by females have low proportions amongst the group that own communication and transport assets which appear to be the region's common assets. This finding agrees with results by (Deere and Doss 2006; Swaminathan 2011), that these assets are unequally distributed between men and women headed households, nationally as well as within communities and households. This may have implication that female headed households are disadvantaged towards any social and economic developments that might be accruing from assets given that assets "are not simply resources that people use to build livelihoods but they give them the capability to be and act" (Bebbington 1999) and forming the basis of agents' power to act to reproduce, challenge or change the rules that

govern the control, use and transformation of resources (Sen, 1997). In the rural context, disparities are real the gender of the household head.

Findings show that the male headed households, on the other hand, are advantaged compared to their female counterparts in relation to receiving and remitting information as well as ability to move about to access basic services. Considering that communication and transport assets are important in facilitating communication and movement, the observed gender disparities demonstrate limited access to these assets may reflect also differential health and economic resources development, and political participation in decision-making at community and societal levels as elsewhere found by Bryan and Varat (2008) for members due to household headship factor. However, the disadvantage of female headed households is surprisingly not found with access to land, livestock and financial savings. This implies that contrary to results elsewhere that showed that for land, the key farm household asset, there are significant gender differences in access across regions, with female-headed households also typically operating smaller land holdings than male-headed households, and lacking livestock (FAO, 2011), the rural in Western Kenya presents a different situation. The finding implies that some regions of rural have different inequalities.

Education level of household head show differential ownership in asset types with over a third of asset types investigated as compared to four types of assets under gender disparity. Of these there is a clear incremental difference by progressive education levels in five asset types including four communication asset items, chicken and sofa set. However, households headed by primary educated individuals have a higher association with temporary housing ownership as compared to households headed by individuals with no education, contrary to what would have been expected. This means that progressive education levels are positively associated with high ownership of communication, household furniture and equipment and chicken asset types access and accumulation. It may also suggest that the five asset types would be the immediate transitory routes through which household income due to education levels is invested. The implication of this is that, progressive education levels are positively associated with incremental resources that lead to incremental access and accumulation of these five asset types. This leads to differential inequalities due to different levels of education for household headships. This finding is consistent with the findings of Achia, *et* al, (2010), that showed that increases in educational attainment have an important impact on reducing the probability that a household is poor.

Households clustered by gender and education level of headship increases assets types with significant differential inequality to 17 up from 4 and 13 asset types under gender and general education level disparities respectively. This means that education has far greater impact on differential disparities for asset ownership when households are grouped into gender specific clusters. Among the female headed households, results indicate that incremental educational gap also means incremental disparities by asset types. For instance households headed by females with secondary and above education have higher differential ownership in five asset types compared with their counterparts of no education, while female headships of primary show higher ownership in four asset types over no education as secondary and above have higher ownership in three asset types in comparison with primary headed female households. However, the set of asset types vary between different levels.

Male headship of secondary and above education level show equal number of asset types (5) in which the group has unequal higher ownership compared with their counterparts with no education. However, the group has a significantly higher ownership in a whooping 13 asset types in comparison with their primary counterparts. Surprisingly, the headship with primary education level presents no differential ownership compared with households headed males with no education.

These results imply that incremental education levels have greater impact within the male headed households compared with the female headed households, with major disparity observed between headship of secondary and above against primary headship. This result underscores importance of higher education, particularly secondary and above among the male headed households. While the results supports evidence regarding incremental effect in development due to progressive education levels. The evidence is contrary to earlier empirical evidence, which showed that increases in female education improve human development outcomes (World Bank 2001, Schultz 2002). Earlier, it was found that more educated women work more hours in the market labor force, (Schultz 2002). These results, suggest that in the rural Kenya, education appear to have a greater impact in development than their female counterparts. This contrast may be explained due to differential in employment opportunities arising from education.

4.1 Conclusions and recommendations

The study findings show that both gender and education are associated with differential inequalities in ownership of certain asset types. The greatest association is observed by clustering gender by education. Asset types that appear to present greater differentiation inequality are found in the categories of household furniture and equipment, communication and to some extent transport asset types. Productive assets such as agricultural related assets and livestock, consistently demonstrate no disparities across the headship factors examined. The results underscore importance of high education, with differential impact across gender.

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List of tables and figures

Table 1: Distribution of asset ownership among households

Asset		% ownership	Asset		% ownership
1	Engine boat	-	18	Other major tools	16.4
2	Tractor	-	19	Cash saving	17.8
3	Animal-drawn cart	0.2	20	Sofa set	38.1
4	Refrigerator	0.2	21	Temporary housing	45.8
5	Car or truck	0.7	22	Local cow	48.5
6	Other birds	1.5	23	Semi-permanent housing	52.2
7	Permanent housing	2.0	24	Bicycle	53.5
8	Motorcycle	2.2	25	Staple food	65.4
9	Dairy cow	3.2	26	Mobile phone	70.1
10	Ox-plough	4.1	27	Radio	70.3
11	TV	10.4	28	Chicken	74.2
12	Bull	10.6	29	Cultivated land	87.9
13	Clock	12.3	30	Hand tools	88.5
14	Goat	14.3	31	Land	92.8
15	Sheep	14.3	32	Bed	93.1
16	Wheel barrow	14.9	33	Table	94.2
17	Other animals	16.0	34	Mattress	95.0

Figure 1: Distribution of assets comparison by gender of household head

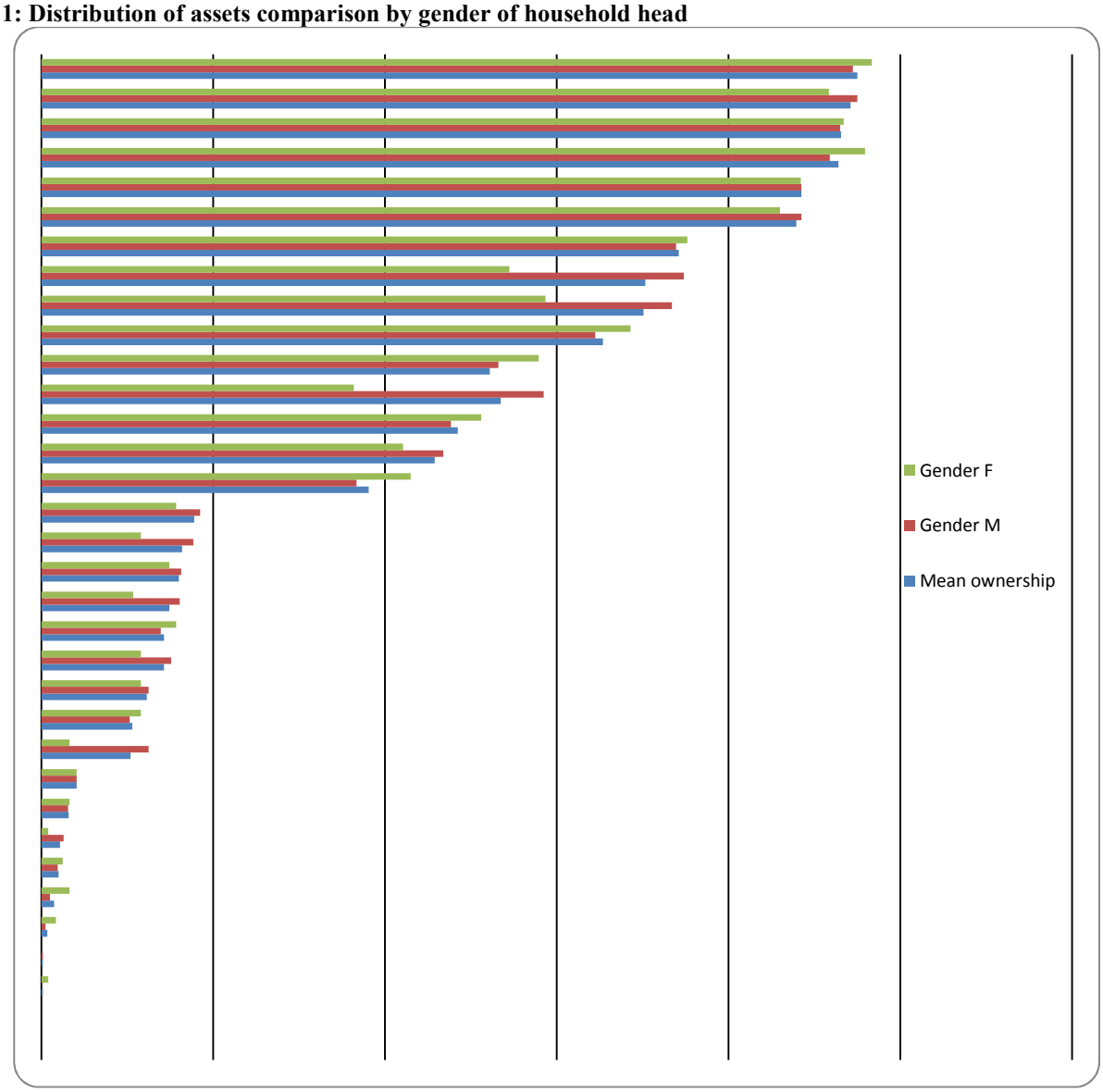

Figure 2: Association of assets by levels of analysis

Level 1: Gender		**Level 2: Education level**		**Level 3: Gender & education**		3 levels		2 levels		1 level	
1	M/phone	1	M/phone	1	M/phone	1	M/phone	1	Clock	1	Car/truck
2	Radio	2	Radio	2	Radio	2	Radio	2	Sofa set	2	Ox-plough
3	TV	3	TV	3	TV	3	TV	3	Bicycle	3	Other m/tools
4	Bicycle	4	Clock	4	Clock			4	W/barrow	4	Sheep
		5	Sofa set	5	Sofa set			5	Chicken	5	Anim.-drawn cart
		6	M/cycle	6	Bicycle			6	Temp hse		
		7	Anim.-drawn cart	7	M/cycle			7	S/p hse		
		8	W/barrow	8	Car/truck			8	Perm. hse		
		9	Chicken	9	Ox-plough			9	Staple food		
		10	Temp hse	10	W/barrow			10	M/cycle		
		11	S/p hse	11	Other m/tools						
		12	Perm. Hse	12	Sheep						
		13	Staple food	13	Chicken						
				14	Temp hse						
				15	S/p hse						
				16	Perm. hse						
				17	Staple food						