

SOCIAL CAPITAL AND WOMEN'S EMPOWERMENT IN KENYA

CASE STUDY OF MURANG'A COUNTY

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Abstract

Women empowerment is essential for the achievement of pro-poor growth and sustainable development (OECD, 2012). The building of social institutions and social capital is considered as one of the pillars towards directly bringing about empowerment (World Bank, 2001). This study sought to examine the relationship between social capital and women empowerment in Gikindu location, Murang'a county in Kenya. Women empowerment was measured as an index capturing employment, ownership of enterprises, decision making on major purchases, decision making of food, decision making on how to use earnings and decision making on visiting. Social capital index was measured along three dimensions: groups and networks, trust and solidarity and collective action and cooperation. A total of 9,482 individuals were interviewed from 3,479 households, of these about 2,806 were women aged 18 years and above who were the focus in this study. The study measured social capital and women empowerment using an index generated by principal component analysis. We use two measures from the women empowerment index, the index itself (ranging from 1 to 10) which we estimate using OLS and a binary variable generated from the index which we estimate using a Probit model. The study finds a positive and significant relationship between social capital and women empowerment. Because of potential reverse causality between social capital and women empowerment, we also estimate a 2SLS and an ivprobit model. The estimates show a doubling of the marginal effects of social capital after we control for endogeneity from 1.6 to 3.3 percentage points suggesting that endogeneity biases downwards the effect of social capital on women empowerment. Other determinants of women empowerment are woman's education, access to credit, wealth index, male headship, marital status and distance to market.

Key words: Empowerment, Social capital, Women, CBMS, Murang'a, Kenya

1. Introduction

Women empowerment is essential for the achievement of pro-poor growth and sustainable development (OECD, 2012). When women are economically empowered, a direct path to poverty eradication, inclusive economic growth and gender equality is opened up¹. No wonder promoting gender equality and empowerment of women was recognized as one of the Millennium Development Goals (MDG). This agenda is still part of the Sustainable Development Goals. The concept of women's empowerment gained increased attention after two landmark conferences: the ICPD conference in Cairo in 1994 and the Fourth World Conference on Women, Beijing 1995. These conferences led to acknowledging women as autonomous agents of change and development. Since, there has been an explosion of conceptual and empirical work that attempts to gain a deeper understanding about how empowerment works, how it can be fostered and what kind of impacts it can have on the lives of women and their families (Brody and Dunbar, 2012).

Women represent one-half of the population and therefore enhancing their ability to contribute boosts economic growth at all levels (Hausmann *et al.* 2012). When women are empowered in all areas (economically, politically, in education and in health), they are equipped with knowledge to make informed decisions about their everyday lives and to gain bargaining power. With higher levels of education, women tend to have lower fertility rates, improved nutrition, and increased use of health services for themselves and their children (Vos 1996). In addition, women's involvement in government influences the policy-making process. It gives them responsibilities for planning, making decisions, recommending policies, and coordinating empowerment efforts. Furthermore, improved women's abilities to make decisions regarding childbearing, childrearing, sexual relations, and use of contraceptives can bring about broader development in many areas.

The term empowerment has been variously defined in the literature. In its broadest sense, empowerment is the expansion of freedom of choices and action (Nega *et al.*, 2009). According to Narayan (2002), empowerment is the expansion of assets and capabilities of poor people to participate in, negotiate with, influence, control and hold accountable institutions that affect their

¹ Source: "In Brief: Economic Empowerment of Women," UN Women

lives. Jetti (2006) defines empowerment as “bringing about equality between women and men in the control of production factors and the control of distribution of the benefits of development” (Jetti, 2006 p. 61). In the world over, and particularly in developing countries, women are mainly involved with childcare and management of the household as their primary function, consequently limiting their financial independence. Even if they manage to enter into the labour market, their participation comes in as an extra burden of work to the already existing chores of childcare and household maintenance.

Policy planners have come to recognize social capital as one channel of empowering women by enabling them to take more active roles in decision-making on everything from household finances to healthcare. There are many definitions of social capital in the sociological and economic literature. Coleman, (1988) defines social capital as a structure of relations between and among individuals. Coleman conceptualizes social capital as consisting of some aspect of social structures which facilitates certain actions of the individuals. Like other forms of capital, social capital is productive thereby making possible the achievement of certain ends. However, unlike other forms of capital, social capital subsists in the structure of relations between and among actors.

Durlauf and Fafchamps (2005), after a review of literature came up with three main ideas of social capital. First, social capital generates positive externalities for members of a group through shared trust, norms, and values and their consequent effects on expectations and behavior. Secondly, shared trust, norms, and values arise from informal forms of organizations based on social networks and associations. Thirdly, they acknowledged the existence of negative social capital in that not all kinds of social interactions are positive and lead to valuable results.

According to Lin (1999), the premise behind the notion of social capital is “investment in social relations with expected returns” (Lin, 1999, p. 30). Individuals engage in interactions and networking in order to produce profits (both monetary and non-monetary). One explanation as to why resources invested in social networks will produce results is the fact that networks facilitate the flow of information, exert influence in favor of the individual and provide reinforcements of identity and recognition. Members of social groups with similar interests and resources derive identity from their membership and claim to resources of the group (Lin, 1999).

2. Literature review

Studies have over the years attempted to estimate the factors that affect women empowerment. Most studies of these studies have especially concentrated on the effect of microfinance on women's empowerment (Gonzales et al., 2016; Rahman et al., 2009; Swain and Wallentin, 2009; Li et al., 2011; Hushemi et al., 1996; Garikipati, 2012; Pitt et al., 2006). These studies are mainly on Asian countries especially India and Pakistan. Mixed findings are reported on the effect of microfinance on women's empowerment. Some studies find that women empowerment improves their economic empowerment (Gonzales et al., 2016; Hushemi et al., 1996; Swain and Wallentin, 2009; Pitt et al., 2006). A few studies however find no significant difference between those who received credit and those who did not (Rahman et al., 2009; Garikipati, 2012). Rahman et al., 2009 found that non-borrowers were as equally empowered as the borrowers. Similarly Garikipati found that microcredit had little impact on women's time use and hence on their empowerment.

Other studies like Alcazar et al., 2016 also examine the impact of Peruvian conditional cash transfer program on women's empowerment. They found that women who had benefited from the conditional cash transfer program were empowered in terms of economic decision making, self-esteem and perception of life. Burshra and Wajiha (2015) also identified content of education, economic participation of women, poverty and economic opportunities available for women and ownership of a bank account to be significant determinants of women empowerment.

Slowly studies on women empowerment have broadened to also consider the effect of social capital on women's empowerment. The building of social institutions and social capital is considered as one of the pillars towards directly bringing about empowerment (World Bank, 2001). Social capital overtime has therefore been accepted as an important form of capital just as physical, financial and human capital. Viewed as a form of capital, social capital can be used to yield economic benefits (WHO, 1998). Social capital is also thought to magnify the pay-off of physical and human capital investments (Putnam, 1993). Social capital influences economic outcomes such as growth, poverty alleviation and equity (Grootaert, 1998). This is because associations and institutions set up informal frameworks for organizing sharing of information, activity coordination and joint decision making. This is made possible through peer monitoring, a set of norms binding members and some form of sanctions. Social capital can therefore be viewed both as a consumption good as well as an investment good just like human capital

(Grootaert, 1998). That is there is satisfaction in being a member of a group for example but being a member also allows members to achieve some economic milestones.

Ali et al. (2017), Mayoux (2002), Nega et al. (2010), Schroeder et al. (2013) estimate the effect social capital on women's empowerment. In a qualitative case study of NERICA rice technology in Benin, Schroeder et al. (2013) found that social networks and collective actions helped empower women by enabling them have access to additional opportunities to earn income and to participate in decision making. Mayoux (2002) also examined the experience of microfinance programmes with a focus on formation of social capital and found that micro-finance programs that build on and fostered social capital had the potential to empower women. Women empowerment was measured in terms of increased incomes from economic activities, control over income and development of collective social activities. Nega et al (2010) in a study of Northern Ethiopia define empowerment by the power of a household to make decision that change their course of life. Social capital was measured by the number of local associations that a household was a member of. They found that while social capital promoted empowerment among male headed households, it did not among female headed households. Instead, access to credit and education were what were the strongest determinants of empowerment among female headed households. In a Bangladesian study Ali et al. (2017) also found social networks to have increased family income; increased control over income, credit and savings; spurred participation in different income generating activities, as well as participation in decision making.

Studies on relationship between women empowerment and social capital are very scarce especially the ones that empirically model this relationship and where indices of social capital and women empowerment are used. The objectives of this paper are:

1. To assess the patterns of different dimensions of women empowerment across sub-population groups such as age, sub-location etc.
2. To examine the extent of access to government funds and micro credit/finance among women across sub-population groups such as age, sub-location etc.
3. To study the effect of various household characteristics (such as household size) and individual characteristics (such as education, age, health, marital status) on women's empowerment?

4. To examine the effect of use of WEF and micro credit/finance on women's empowerment?
5. To analyze the effect of social capital on women's empowerment

The corresponding research questions and hypothesis are provided in the table 1 below.

Table 1: Research Questions and Hypothesis

	Research Question	Hypothesis
1	What are the patterns of different dimensions of women empowerment across sub-population groups such as age, sub-location	There is variation in the various dimensions of women empowerment across the sub-groups
2	What is the extent of access to government funds and micro credit/finance among women across sub-population groups	A small proportion of women have access to government funds and micro credit/finance and this varies by sub groups
3	What is the relationship between household characteristics (such as household size) and individual characteristics (such as education, health, marital status) and women's empowerment?	Household and individual characteristics significantly influence women's empowerment
4	What is the effect of use of WEF and micro credit/finance on women's empowerment?	Use of WEF and micro credit/finance significantly affects women's empowerment
5	What is the effect of social capital on women's empowerment	There is a significant effect of social capital on women's empowerment

3. Methodology

3.1 Measurement and construction of women empowerment index

Malhotra et al. (2002) identify three sets of indicators of empowerment frequently used in literature. These include domestic decision making, access to and control over resources and freedom/mobility indicators. The decision making indicator captures decision making on family finances; investments; spending; domestic matters like cooking and on welfare of children like their schooling, health and etc. Access to and control of resources concern whether a woman has access to income, assets, cash of the household and whether she has control over these. It also captures woman's participation in paid employment.

In this study, we use a woman's employment status, asset ownership (house, land, livestock and household assets), savings and enterprise ownership as measures of access to and control of resources. Domestic decision making is measured by whether a woman makes decisions on her own earnings, major purchases, food cooked and own health. Freedom and mobility is measured by whether a woman makes decisions on visiting her family and/or relatives. All the variables are then coded 1 and 0.

To get the women empowerment index, we run pca on the variables above. Then we predict the score. Then using xtile command we generate an index that separates the score into 10 quantiles. We also generate a binary variable for women empowerment where we only divide the score into two quantiles.

3.2. Measurement and construction of social capital index

According to Jones and Woolcock (2007), social capital can be assessed across six dimensions. The first is groups and networks which considers the extent to which an individual/household participates in various social organizations, informal networks as well as participation in activities in the community. The second is trust and solidarity which evaluates how individuals trust their neighbors and how their perception of trust has changed over time. The third has to do with collective action and cooperation which concerns the community coming together to work on communal projects. The other three dimensions that will not be considered in this study include information and communication, social cohesion and inclusion and empowerment and political action.

On groups and networks, this study will consider membership to various groups (finance/investment, farm, trade, religious, women), whether a woman was visited or visited friends in the past three months, whether a woman went out or met a group of friends in the past three months. Participation in a community project in the past one year is used to measure collective action and cooperation. Trust and solidarity is measured by whether a woman thinks the neighbors can be trusted, how often she stops to talk to people in the neighborhood, whether she has someone to talk to when in trouble and whether she has someone she confides in.

To construct the social capital index, we run *pca* on the variables above. Then we predict the score. Then using *xtile* command we generate an index that separates the score into 10 quantiles. We also generate a binary variable for social capital where we only divide the score into two quantiles.

3.3. Model specification

Objectives 1 and 2 will be addressed using descriptive statistics. For objectives 3, 4 and 5, the study will estimate an OLS regression since the dependent variable is a continuous variable, women empowerment index. We will also estimate a probit for the binary indicator of women empowerment. The model can be specified as follows:

$$WE = \alpha_0 + \alpha_1 SI + \alpha_2 WC + \alpha_3 HC + \alpha_4 CC \quad (1)$$

Where *WE* is women empowerment, *SI* is social capital, *WC* is an indicator of women characteristics which include her age, education, marital status, *HC* is an indicator of household characteristics which include wealth index, education level of household head, sex of household head, age of household head, employment status of household head and household size. And *CC* is an indicator of community characteristics which are the distance to market and sub-location.

There may be a reverse causality between social capital and women empowerment in the sense that in as much as social capital may lead to women empowerment, women empowerment can also lead to creation of social capital. It is possible, for example, that more empowered women appreciate the gains of collective action and can work together in a productive and mutually beneficial way, which in turn is likely to add to their stock of social

capital. This brings about simultaneity bias that causes a problem of endogeneity whereby the error term in equation 1 may be correlated with the social capital variable (Wooldridge, 2002). To address the endogeneity problem we'll use two stage least square (2SLS) estimation technique. The 2SLS estimation technique requires valid instrumental variables. These are variables that are highly correlated with the social capital variable but not correlated with women empowerment. Previous studies have attempted instrumenting social capital especially those investigating the relationship between self-rated health and social capital. A number of instrumental variables have been used. Fiorillo and Sabatini (2015) Instrumental for social capital using mass attendance and average frequency with which people meet friends at the community level. Schultz (2008) used attendance of religious services and residence in community for more than 6 years as instrumental variables for social capital. Choice of the later instrumental variable was motivated by the finding by DiPasquale and Glaeser (1998) that homeowners were more likely to invest in social capital. Adepoju and Oni (2012) also used length of household in the community and membership to religious groups. This study uses three instrumental variables measured at community level: proportion of women per cluster who have people they can confide in (PC), proportion of women per cluster who went out or met up with a group of friends (PF) and proportion of women per cluster who participated in a community project in the past one year (PS).

The reduced form model for social capital is given as,

$$SC = \beta_0 + \beta_1 WC + \beta_2 HC + \beta_3 CC + \beta_4 CC + \beta_5 PC + \beta_6 PF + \beta_7 PS \quad (2)$$

Where WC, HC, and CC are as defined before. PC, PF and PS are instrumental variables defined above.

We will then use 2SLS estimation technique to estimate equation 1 and 2 jointly.

3.4. Data and study site

The study will use CBMS data collected in Gikindu location in Murang'a County. This was a census data where all the households in Gikindu location were interviewed. Gikindu location has three sub-locations: Mirira, Gikindu and Kambirwa. Data was collected using three sets of questionnaires. The household questionnaire covered basic information about all the household members (such as demography, education etc.) and household characteristics (such as poverty and basic access to services like water and sanitation, housing, headship (whether male or female-headed), etc). One household member such as the household head or equivalent was the respondent to the household questionnaire. The rider questionnaire on social capital and

women empowerment covered the additional information specifically on women. This targeted women respondents in the household. All females who were either household heads or spouses to household heads were sampled and interviewed. The community level questionnaire was designed to complement and provide additional information such as available education facilities, industries present, employment programs and credit institutions in the area. The community questionnaire was completed by the sub-chiefs and the village elders.

The census was done on 3,479 households in Gikindu location comprising of 9,482 individuals. This study focuses on women aged 18 years and above. There were about 2,806 such women. 37% of these women came from Kambirwa, 37% came from Mirira and 26% came from Gikindu location. Definitions of the variables used in the analysis are provided in table 2 below.

Table 2: Variable definitions

Variable Name	Definition
Dependent variable	
Women empowerment index	An index ranging between 1 and 10
Binary Women empowerment variable	A binary variable taking value 1 if woman is empowered and 0 otherwise
Key independent variable	
Social capital index	An index ranging between 1 and 10
Binary social capital variable	A binary variable taking value 1 if woman is has social capital and 0 otherwise
Independent variables: Women characteristics	
Age 18 to 34 years dummy	A binary variable taking value 1 if a women is aged between 18 to 34 years, 0 otherwise
Age 35 to 64 years dummy	A binary variable taking value 1 if a women is aged between 35 to 64 years, 0 otherwise
Age 65 and above dummy	A binary variable taking value 1 if a women is aged 65 and above, 0 otherwise
No formal education dummy	A binary variable taking value 1 if a women has no formal education, 0 otherwise
Primary education dummy	A binary variable taking value 1 if a women has primary education, 0 otherwise
Secondary education dummy	A binary variable taking value 1 if a women has secondary, 0 otherwise
Tertiary education dummy	A binary variable taking value 1 if a women has tertiary, 0 otherwise
Single dummy	A binary variable taking value 1 if a women is single, 0 otherwise
Married dummy	A binary variable taking value 1 if a women is married, 0 otherwise
Widowed dummy	A binary variable taking value 1 if a women widowed, 0 otherwise
Divorced/separated dummy	A binary variable taking value 1 if a women is divorced/separated, 0 otherwise
Chronic illness dummy	A binary variable taking value 1 if a women had a chronic illness, 0 otherwise
Disabled dummy	A binary variable taking value 1 if a women was disabled, 0 otherwise
Access to credit dummy	A binary variable taking value 1 if a women had accessed credit , 0 otherwise
Access to government funds dummy	A binary variable taking value 1 if a women had accessed government funds (women enterprise fund(WEF), uwezo fund and youth enterprise fund(YEF)), 0 otherwise
Independent variables: Household level variables	
Household size	Number of household members
Wealth index	An index ranging between 1 and 5
Sex of household head	Binary variable taking value 1 if the head is male, 0 otherwise
Age of household head	Age of household head in years
Head no education dummy	Binary variable taking value 1 if the head has no formal education, 0 otherwise
Head primary education dummy	Binary variable taking value 1 if the head has primary education, 0 otherwise
Head secondary education dummy	Binary variable taking value 1 if the head has secondary education, 0 otherwise
Head tertiary education dummy	Binary variable taking value 1 if the head has tertiary education, 0 otherwise
Head employment status	Binary variable taking value 1 if head is employed, 0 otherwise
Independent variables: Community level variables	
Distance to market	Distance to market in KM

Kambirwa sub-location dummy	Binary variable taking value 1 if the woman comes from Kambirwa sub-location, 0 otherwise
Gikindu sub-location dummy	Binary variable taking value 1 if the woman comes from Gikindu sub-location, 0 otherwise
Mirira sub-location dummy	Binary variable taking value 1 if the woman comes from Mirira sub-location, 0 otherwise

4. Results

4.1. Descriptive statistics

Table 3 presents the descriptive statistics. The statistics show that the average women empowerment index was 5.37. That 48% of women in the sample were empowered. The average social capital index was 5.41. Approximately 50% of the women had sufficient stock of social capital. On women characteristics, we see that most of the women were aged between 35 and 64 years and most of them had primary education. More than half of the women were married, 14% had some form of chronic illness and 1% were disabled. Only 2% of the women had accessed government fund and 24% had accessed credit from microfinance institutions.

On the household characteristics, we also see that most of the household heads had primary education. The average age of household head is 51 and 67% were male heads. Only 27% of the household heads were employed. The average wealth index was 2.95.

On the community variables, the average distance to the market was 4.4 whereby the minimum was 0 and the maximum was 43km. In this sample, 37% of the women came from Kambirwa sub-location, 37% from Gikindu sub-location and 26% from Mirira sub-location.

Table 3: Descriptive statistics

Variable definition	N	Mean	SD	Min	Max
Dependent variable					
Women empowerment index	2744	5.37	2.82	1	10
Binary Women empowerment variable	2744	0.48	0.50	0	1
Key independent variable					
Social capital index	2744	5.41	2.87	1	10
Binary social capital variable	2744	0.50	0.50	0	1
Independent variables: Women characteristics					
Age 18 to 34 years dummy	2806	0.29	0.46	0	1
Age 35 to 64 years dummy	2806	0.50	0.50	0	1
Age 65 and above dummy	2806	0.20	0.40	0	1
No formal education dummy	2803	0.31	0.46	0	1

Primary education dummy	2803	0.51	0.50	0	1
Secondary education dummy	2803	0.16	0.36	0	1
Tertiary education dummy	2803	0.03	0.16	0	1
Single dummy	2806	0.04	0.20	0	1
Married dummy	2806	0.70	0.46	0	1
Widowed dummy	2806	0.20	0.40	0	1
Divorced/separated dummy	2806	0.06	0.23	0	1
Chronic illness dummy	2806	0.14	0.35	0	1
Disabled dummy	2806	0.01	0.12	0	1
Access to credit dummy	2744	0.24	0.48	0	1
Access to government funds dummy	2744	0.02	0.13	0	1
Independent variables: Household level variables					
Household size	2806	3.11	1.45	1	9
Wealth index	2806	2.95	1.42	1	5
Sex of household head	2670	0.67	0.47	0	1
Age of household head	2670	51	17.53	18	110
Head no education dummy	2670	0.25	0.43	0	1
Head primary education dummy	2670	0.48	0.50	0	1
Head secondary education dummy	2670	0.21	0.41	0	1
Head tertiary education dummy	2670	0.06	0.24	0	1
Head employment status	2806	0.27	0.44	0	1
Independent variables: Community level variables					
Distance to market	2806	4.40	2.81	0	43
Kambirwa sub-location dummy	2798	0.37	0.48	0	1
Gikindu sub-location dummy	2798	0.26	0.44	0	1
Mirira sub-location dummy	2798	0.37	0.48	0	1

In table 4, the descriptive statistics of the variables used in the construction of the women empowerment index are provided. Only 13% of the women owned enterprises and 44% were employed. Further 67% and 41% of the women owned assets and had savings respectively. Most of the women were involved in decision making.

Table 4: Descriptive statistics of variables used in the construction of Women Empowerment Index

Dimensions of women empowerment					
1 if own enterprise	2744	0.13	0.33	0	1
1 if employed	2806	0.75	0.44	0	1
1 if has assets	2806	0.67	0.47	0	1
1 if has savings	2744	0.41	0.50	0	1
1 if makes decision on purchases	2744	0.79	0.41	0	1
1 if makes decision on earnings	2744	0.96	0.20	0	1
1 if makes decision on visiting own family/relative	2744	0.95	0.23	0	1
1 if makes decision on food cooked	2744	0.97	0.17	0	1
1 if makes decision on own health	2744	0.97	0.18	0	1

Table 5 presents the descriptive statistics of the variables used to construct social capital index. About 38% of the women belonged to women groups, 13% belonged to finance/investment groups, 10% belonged to religious groups and only 1% belonged to farm group and trade groups. Thirty one percent of the women had participated in a community project in the past one year. Majority of the women trusted their neighborhoods, had people to talk to when in trouble, had people to confide in and also had a network of friends.

Table 5: Descriptive statistics of variables used in the construction of Social Capital Index

Social capital indicators					
1 if member of finance/investment group	2744	0.13	0.34	0	1
1 if member of a farm group	2744	0.01	0.10	0	1
1 if a member of a trade group	2744	0.01	0.09	0	1
1 if a member of a religious group	2744	0.10	0.30	0	1
1 if a member of a women group	2744	0.38	0.49	0	1
1 if has participated in a community project	2744	0.31	0.46	0	1
1 if feels people in the neighborhood can be trusted	2744	0.86	0.35	0	1
1 if stops to talk to people in the neighborhood	2744	0.92	0.28	0	1
1 if has someone to talk to when in trouble	2744	0.91	0.29	0	1
1 if has someone to confide in	2744	0.88	0.32	0	1
1 if was visited or visited by friends in the past 3 months	2744	0.92	0.28	0	1
1 if went out or met group of friends in the past 3 months	2744	0.80	0.40	0	1
1 if spend time on internet social activity in the past 3 months	2744	0.29	0.29	0	1

4.2. Patterns of different dimensions of women empowerment across sub-population groups

The first objective of this study was to assess the patterns of different dimensions of women empowerment across population groups such as age. To achieve this objective, this study uses descriptive statistics. Table 6 shows the distribution of different dimensions of women empowerment by age. From the table the mean women empowerment index is highest among women aged over 65 years followed by those between 35 and 64 years and lowest among youthful women. Same pattern is observed when we consider the binary women empowerment.

That older women are more likely to be empowered than the younger ones. Asset ownership also increases with age of women. Just like expected women above 65 years are less likely to own assets than those below 65 years. Women in the mid years are also more likely to be employed. Not much variation is observed between age and decision making except for decision on purchases where we see that older women are more likely to make purchases decisions.

Table 6: Distribution of dimensions of women empowerment by age

Dimension of women empowerment	Age 18-34 years	Age 35 and above	Age 65 and above
Women empowerment index	4.35	5.42	6.68
Binary variable for women empowerment	33	48.5	68.6
Percentage employed	69.5	84.4	58.3
Percentage with enterprise	14	15.9	6.5
Percentage who own assets	58.2	67.9	78.5
Percentage with savings	44.5	46.5	26.7
Percentage who make decision on major purchases	73.1	80	86.3
Percentage who make decisions of use of own earnings	95.8	96.2	95.6
Percentage who make decision on visits	92.5	95.6	95.3
Percentage who make decision on food to be cooked	97.8	98	94

Again some variations can be observed when the women empowerment dimensions are distributed by the highest level of education attained by women. Women with tertiary education have the highest mean women empowerment index. Similarly, the highest proportion of those empowered is among women with tertiary education. A slightly lower proportion of women with tertiary education are employed compared to those with primary and no formal education. This could be explained by the fact that data shows that a good proportion of women work on own agricultural holdings. However, more educated women are more likely to own enterprises, assets and to have savings.

Table 7: Distribution of dimensions of women empowerment by education levels

Dimension of women empowerment	No formal education	Primary	Secondary	Tertiary
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Women empowerment index	6.03	5.03	5.05	6.04
Binary women empowerment	57.92	42.90	42.99	65.75
Percentage employed	70.44	80.33	65.53	68.00
Percentage with enterprise	6.50	13.41	22.20	19.18
Percentage who own assets	72.11	76.06	62.56	76.00
Percentage with savings	26.33	46.05	52.57	72.60
Percentage who make decision on major purchases	81.80	76.83	81.07	86.30
Percentage who make decisions of use of own earnings	95.86	95.77	96.73	97.26
Percentage who make decision on visits	93.74	94.84	96.03	94.52
Percentage who make decision on food to be cooked	95.04	98.21	97.66	97.26

3.3. The extent of access to government funds and micro credit/finance among women across sub-population groups

The second objective of this study concerned assessing the extent of access to government funds and micro credit/finance among women across sub-population groups. This objective is achieved using descriptive statistics. The study hypothesized that a small proportion of women have access to government funds and micro credit/finance. The result show that only a small proportion of women accessed UWEZO, YEF and WEF funds. Less than 1% of the women accessed each of the funds with YEF recording the lowest percentage, close to zero. Most of the women who accessed the three funds came from Kambirwa sub-location. Slightly more of the non-youthful women accessed UWEZO and WEF but a slightly higher proportion of the youthful ones accessed YEF which is expected given that the fund is targeted to the youth. The fraction of women accessing all the three government funds increased considerably with the level of education. For instance while only 0.24% of women with no formal education accessed UWEZO fund, 4.11% of those with tertiary education accessed UWEZO fund.

The statistics also show that about 24% of women access micro credit/finance. Non-youthful women were more likely to access credit than the younger ones. This finding may be explained by the fact that older women have more access to assets that maybe used as collateral. There is minimal variation in access to credit by sub-locations. Just like for government funds, the proportion of women with access to credit increases considerably with the level of education. Among those with no formal education, only 13% accessed credit, but among those with tertiary education, 44% accessed credit.

Table 8: Distribution of access to government funds and micro credit/finance by sub-location

	All	Kambirwa	Gikindu	Mirira
Access to credit	23.72	24.34	24.79	22.21
Access to UWEZO fund	0.80	1.82	0	0.39
Access to YEF fund	0.07	0.20	0	0
Access to YEF fund	0.95	1.41	0.83	0.59

Table 9: Distribution of access to government funds and micro credit by age groups

	Age 18-34 years	Age 35 and above
Access to credit	22.91	24.06
Access to UWEZO fund	0.50	0.93
Access to YEF fund	0.12	0.05
Access to YEF fund	0.37	1.18

Table 10: Distribution of access to government funds ad micro credit/finance by educational level

	No formal education	Primary	Secondary	Tertiary
Access to credit	13.24	25.90	34.11	43.84
Access to UWEZO fund	0.24	0.43	2.57	4.11
Access to YEF fund	0	0.07	0	1.37
Access to YEF fund	0.35	0.93	1.64	4.11

Objectives 3, 4 and 5 concerned analyzing the effect of social capital, access to credit and household and women characteristics on a woman's empowerment. Table 11 presents the basic results before controlling for potential endogeneity of social capital. Both OLS and probit estimates are provided. OLS model is used in the case where women empowerment is measured as an index. Probit model is used where women empowerment is measured as a binary variable. In both models, results show a positive and significant relationship between social capital and women empowerment. Probit results show that social capital increases the probability of a woman being empowered by 1.6 percentage points.

Results further show that being married reduces chance of being empowered though being a widow increases chance of being empowered relative to being single. That married women are 24 percentage points less likely to be empowered relative to their single counterparts. And that widowed women are 17 percentage points more likely to be empowered relative to single women. Education especially tertiary education increases chance of a women being

empowered. Women with tertiary education are 13 percentage points more likely to be empowered. Similarly, access to government funds and credit increases chance of women empowerment. Women who accessed government funds and micro credit are 12 and 13 percentage points more likely to be empowered than those who did not access.

On household characteristic, we find that household wealth increases chance of women being empowered. Increase in wealth increases chance of women empowerment by 1.6 percentage points. Also women coming from households headed by males are more likely to be empowered. Women from male headed households are 22 percentage points more likely to be empowered than those from female headed households. On the community variables, we find that increase in distance to the market reduces likelihood of women empowerment. We also find that women in Gikindu and Kambirwa are less likely to be empowered compared to those in Mirira.

Table 11: The effect of social capital, access to credit and women and household characteristics on women empowerment

Variables	OLS	Probit: margins
	Women empowerment index	Binary women empowerment
Social Capital Index	0.0737*** [0.015]	0.0163*** [0.003]
Age bracket (Base: Age 18 to 34 years)		
Age 35 to 64 year	0.2981** [0.142]	0.0197 [0.026]
Age 65 and above	0.0743 [0.258]	-0.0086 [0.050]
Marital status (Base: Single)		
Married	-1.5578*** [0.285]	-0.2356*** [0.050]
Widowed	1.1517*** [0.229]	0.1663*** [0.046]
Divorced/separated	0.2458 [0.256]	0.0549 [0.051]
Education (Base: No formal education)		
Primary education	0.2074 [0.138]	0.0505* [0.026]
Secondary education	0.2834 [0.187]	0.0362 [0.035]
Tertiary education	0.5888* [0.321]	0.1259** [0.058]

Disability status	-0.8095**	-0.0132
	[0.383]	[0.074]
Chronic illness	-0.108	-0.045
	[0.131]	[0.027]
Access to government funds	0.9678***	0.1253**
	[0.314]	[0.061]
Access to credit	0.7724***	0.1212***
	[0.101]	[0.019]
Household size	0.0831**	0.0164**
	[0.040]	[0.008]
Age of household head	0.0066	0.0017*
	[0.005]	[0.001]
Sex of household head	1.8745***	0.2232***
	[0.217]	[0.037]
Wealth index	0.0786**	0.0166***
	[0.032]	[0.006]
Household head's education (Base: No formal education)		
Primary education	-0.0755	-0.0552**
	[0.144]	[0.027]
Secondary education	-0.1777	-0.0541
	[0.180]	[0.034]
Tertiary education	0.2915	0.0401
	[0.249]	[0.044]
Household head's employment status	0.3118***	0.0299
	[0.106]	[0.021]
Distance	-0.0425***	-0.0130***
	[0.015]	[0.003]
Sub-location (Base: Mirira)		
Gikindu	-0.2390**	-0.0192
	[0.106]	[0.021]
kambirwa	-0.6982***	-0.0977***
	[0.100]	[0.019]
Constant	2.4396***	
	[0.552]	
Observations	2,601	2,601
R-squared	0.481	

Standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

In table 10, we did not control for potential endogeneity of social capital although in the methodology we indicated that there is a possibility of reverse causality between social capital and women empowerment leading to endogeneity. Table 12 presents results once we have

controlled for potential endogeneity using 2SLS for the women empowerment index and using ivprobit for the binary women empowerment variable. The instrumental variables used are presented in the methodology. The results still show a positive and significant relationship between social capital and women empowerment. However from both the 2SLS and ivprobit results we see an increase in the magnitude of coefficient/marginal effect of social capital. Social capital increases chance of women empowerment by 3.3 percentage points. This value is double what was reported in the Probit model (1.6 percentage points), thus failure to control for endogeneity biases downwards the effect of social capital on women empowerment.

Like previously, being married reduces chance of women empowerment but being widowed increases chance of women empowerment relative to being single. Access to credit is also a significant determinant of women empowerment. Access to credit increases chance of women empowerment by 9 percentage points. Further, male headship and wealth increase chance of women empowerment and distance to markets reduces chance of women empowerment.

Table 12 also identifies the determinants of social capital. Our instrumental variables are highly correlated with social capita. Results also show that there is a positive and significant relationship between being married/widowed/divorced/separated and social capital relative to being single. This implies that single people are less likely to have social capital. Education increases chance of accumulating social capital and the higher the level of education the larger the stock of social capital. Both disability and chronic illness reduce chance of having social capital. There is also a positive relationship between access to credit and government funds and having social capital.

Table 12: The effect of social capital, access to credit and women and household characteristics on women empowerment once we control for potential endogeneity of social capital

Variables	2SLS	Ivprobit	OLS
	Women empowerment index	Binary women empowerment	Social capital index
Social Capital Index	0.2042** [0.091]	0.0332** [0.016]	
Age bracket (Base: Age 18 to 34 years)			
Age 35 to 64 year	0.2855** [0.143]	0.0178 [0.026]	0.0882 [0.181]
Age 65 and above	0.1471 [0.265]	0.0017 [0.050]	-0.6294* [0.328]

Marital status (Base: Single)			
Married	-1.6876*** [0.301]	-0.2476*** [0.051]	1.0490*** [0.362]
Widowed	1.0430*** [0.243]	0.1486*** [0.049]	0.8645*** [0.291]
Divorced/separated	0.1764 [0.263]	0.045 [0.051]	0.5742* [0.326]
Education (Base: No formal education)			
Primary education	0.1516 [0.144]	0.0421 [0.027]	0.3737** [0.175]
Secondary education	0.1828 [0.201]	0.0222 [0.037]	0.6707*** [0.238]
Tertiary education	0.3926 [0.350]	0.0976 [0.064]	1.3561*** [0.408]
Disability status	-0.6333 [0.405]	0.0096 [0.076]	-1.3100*** [0.487]
Chronic illness	-0.0672 [0.135]	-0.0387 [0.028]	-0.2945* [0.167]
Access to government funds	0.7801** [0.342]	0.0977 [0.066]	1.3657*** [0.398]
Access to credit	0.5862*** [0.163]	0.0940*** [0.033]	1.4052*** [0.126]
Household size	0.0511 [0.046]	0.0118 [0.009]	0.2203*** [0.051]
Age of household head	0.0056 [0.005]	0.0016 [0.001]	0.0064 [0.007]
Sex of household head	1.8720*** [0.219]	0.2180*** [0.037]	0.0396 [0.277]
Wealth index	0.0770** [0.032]	0.0160*** [0.006]	-0.0027 [0.041]
Household head's education (Base: No formal education)			
Primary education	-0.1034 [0.147]	-0.0581** [0.027]	0.2158 [0.184]
Secondary education	-0.1832 [0.181]	-0.054 [0.033]	0.0888 [0.229]
Tertiary education	0.3054 [0.251]	0.0405 [0.044]	-0.0523 [0.317]
Household head's employment status	0.2786** [0.109]	0.0246 [0.021]	0.2602* [0.134]
Distance	-0.0356**	-0.0119***	-0.0554***

	[0.016]	[0.003]	[0.019]
Sub-location (Base: Mirira)			
Gikindu	-0.1964*	-0.0129	-0.2734**
	[0.111]	[0.021]	[0.137]
kambirwa	-0.5537***	-0.0763***	-0.7860***
	[0.141]	[0.029]	[0.134]
Instrumental variables			
Proportion of women by cluster who participated in community project in the past 1 year			3.1390***
			[0.577]
Proportion of women by cluster who met with group of friends in the past 3 months			2.5984***
			[0.703]
Proportion of women by cluster who have people they can confide in			2.6534***
			[0.903]
Constant	2.0145***		-2.1055*
	[0.628]		[1.208]
Observations	2,601	2,601	2,601
R-squared	0.466		0.191
Standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1			

6. Summary, conclusion and policy recommendations

This study sought to examine the effect of social capital, access to credit, woman characteristics and household characteristics on women empowerment. Women empowerment is measured using women empowerment index and a binary version of it. First a probit and an OLS model is estimated but due to potential endogeneity, an ivprobit and a 2SLS are also estimated. Findings show a positive and significant relationship between social capital and women empowerment. Once we control for potential endogeneity, the marginal effect of social capital increases from 1.6 to 3.3 percentage points suggesting that endogeneity may be biasing downwards the effect of social capital on women empowerment. Social capital increases chance of women empowerment by 3.3 percentage points. Other significant determinants of social capital are marital status, education of women, access to credit, wealth status, gender of household head and distance to market. The study also finds woman education, marital status, disability status, chronic illness and access to credit to be significant determinants of social capital

Findings from this study indicate that women empowerment can be promoted through building of social capital, promotion of women education and reducing distance to markets. Married women are particularly less likely to be empowered, such women need to be sensitized and supported to learn to be proactive and to engage in meaningful economic activities as well as to learn to negotiate in their families.

This study recommends that women are made to understand that they have a very key resource, social capital that they can use to empower themselves. Women are especially very social but they may fail to use this to greater benefit if they are not aware that coming together and sharing and interacting can have long term positive effects on them. The government can also facilitate women coming together and interactions. For instance the requirement that women come together to form groups to access government funds is useful to this end.

Access to government funds and micro credit also matter for women empowerment as well as social capital formation. The government should make it easier for women to access funds. Women usually lack the much needed collateral. The government can leverage on women grouping as a form of collateral to enable them access credit which eventually help get them empowered but also the groupings help create social capital further leading to empowerment.

Long distance to markets is also a deterrent to women empowerment. Building of roads and markets to allow women to access markets can help them be empowered. Many women are involved in agricultural activities and in small scale trade and so access to markets is key for them to market their crops and other goods. It also allows them to meet with other women hence building social capital.

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