OFF-FARM PARTICIPATION, AGRICULTURAL PRODUCTIVITY AND FARMERS WELFARE IN EAST AFRICA

RESEARCH PROPOSAL

Presented to

Partnership for Economic Policy (PEP)

By

Dr Bethuel Kinyanjui Kinuthia

Laura Barasa

Faith Mariera

Stephene Maende

Kenya

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SECTION I – RESEARCH

1.1 Abstract

The agricultural sector is considered East Africa’s engine for development. Sustained agricultural growth is crucial for reducing hunger and poverty in the region. In doing this, the role of the smallholder farmers cannot be gainsaid. Yet, long standing challenges facing smallholder farmers in East Africa include low labour productivity and low levels of profits. One key reason for this relates to labour participation on the farms. Literature shows that farm family members seek off-farm employment for income to meet family needs, to finance farm inputs and technologies, or even as risk management strategy. However, this direction of causality is not always the case and households can be affected differently depending on their characteristics. The main objective of this proposal is to examine the determinants of off-farm participation and its impact on agricultural productivity and farmers’ welfare using multinomial endogenous switching regression. To do this, the study will focus on Uganda and Tanzania in East Africa. These two countries can be characterized as “agriculture-based,” because agriculture is the backbone of these economies and most of the citizens rely on this sector and suffer low farm productivity. The study will use households and agriculture datasets from the living Standards Measurement Study-Integrated Surveys for the two countries for the period 2005-2015.

1.2 Main research questions and contributions

The main question in this proposal is: “What are the determinants of off-farm participation and how does this affect agricultural productivity and farmers’ welfare in East Africa?”

Agricultural productivity is still lagging behind in many African countries with a majority of the land remaining uncultivated. Developing countries in Africa are now recognizing that the agricultural sector can potentially provide resources for the common goal policy of industrialization (Gollin, Parente, & Rogerson, 2002). Additionally, the agricultural sector is critical for large populations with about 70% of the poor living in rural areas. Notwithstanding Africa’s value added per worker still lags behind relative to other regions. Hence there is need to raise agricultural productivity to achieve distributed economic gains especially for the farmers. While, increasing yield per hectare through modern seeds and sufficient fertilizer is important, other policy interventions need to be implemented to ensure an improvement in agricultural productivity and eventually farmers’ welfare. For such interventions to be successful, farmer’s heterogeneity must be taken into account for tests to be conducted before policies are developed and widely applied (Haggblade, Hazell, & Reardon, 2010).

Yet, the importance of off-farm activities in Africa has been underscored with the rural non-farm economy accounting for about 37 percent of income in rural areas in Africa (Haggblade, Hazell, &
Reardon, 2007). Thus, the agricultural sector and the rural-non-farm economy typically coexist. However, their interaction is likely to result in a complementarity (Pfeiffer, López-Feldman, & Taylor, 2009; Reardon, Crawford, & Kelly, 1994) or competing effect (Barrett, Reardon, & Webb, 2001; Leones & Feldman, 1998). Consequently, an interaction resulting in a complementarity implies that policies reinforcing this relation are beneficial. However, where the interaction results in a competing effect, policies focusing on minimizing trade-offs between the two are crucial for gains to be realised.

Literature on rural livelihoods shows that farmers in the rural economy are involved in off-farms activities in order to augment their income and reduce rural poverty (Bezu, Barrett, & Holden, 2012; De Janvry, Sadoulet, & Zhu, 2005). Diversification towards off-farm activities is driven by “pull” or “push” factors (Haggblade et al., 2007). Pull factors include higher returns or lower risk arising from engaging in non-farm activities. Higher returns foster accumulation of capital, which in turn enables investment in farm inputs and technologies. Furthermore, it has been shown that farm income invested in off-farm activity finances purchases of farm inputs and further rounds of off-farm activities (Estudillo & Otsuka, 1999). Push factors relate to diversification that is undertaken for managing risk and coping with crop failure shocks. Additionally, off-farm income potentially addresses liquidity constraints by providing cash flows for purchasing productivity-enhancing agricultural inputs and technologies. Similarly, evidence of a steady stream of off-farm income improves access to credit by acting as collateral for agricultural loans (Hertz, 2009). In addition, diversification essentially absorbs surplus labour from agriculture, reduces rural-urban migration narrows down rural-urban disparities and is vital for linking on-farm and off-farm activities (Birthal, Negi, Jha, & Singh, 2014).

Yet, withdrawal of scarce resources such as capital from farm activities to off-farm activities hampers investment in farm technologies and land conservation resulting in low productivity (Barrett et al., 2001). Similarly, a negative relation between off-farm income and agricultural productivity is expected where off-farm income is used for consumption or further investment in off-farm activities as opposed to investing in on-farm activities (Pfeiffer et al., 2009). Furthermore, depending on the degree to which households integrate with factor and product markets, the labour absorbing effect of off-farm activities may adversely affect agricultural output (Leones & Feldman, 1998). Reallocation of on-farm family labor to off-farm activities decreases the available pool of family farm labor and may result in productivity loss, and declining or stagnating agricultural income (Reardon, 1997). This view is supported by Harris and Todaro (1970) who in developing a rural-urban migration model makes the assumption that there is no labor surplus in the agricultural sector. Hence, the agricultural shadow wage is always positive.

Contrastingly, Lewis (1954) suggests that allocating on-farm labor to off-farm labor does not adversely affect agricultural productivity because marginal productivity of labor tends towards zero. In addition, agricultural labor can be shifted to the industrial sector without total agricultural output declining, which implies that the agricultural shadow wage is nil. Notwithstanding, household labour supply choices are not independent of on-farm activities and vice versa. Therefore a household decision on whether to engage in on-farm or off-farm activities is also depends on the agricultural shadow wage. The implication is that households engage in on-farm activity whenever the agricultural shadow wage exceeds the wage earned from off-farm activities (Nasir & Hundie, 2014). Yet, Picazo-Tadeo, Reig-Martinez, and Hernandez-Sancho (2005) find a negative association between a high agricultural shadow wage rate and family labor input, which they suggest could be consistent with off-farm labor opportunities for household members that have attained high levels of education. Notwithstanding, evidence from Uganda shows that negative agricultural shocks such as rainfall
Various studies examining the relation between off-farm and on-farm employment suggests that in addition to off-farm and on-farm activities complementing each other, they also give rise to positive spill-over effects. For instance, Savadogo, Reardon, and Pietola (1994) observe that incomes from off-farm engagements increase livestock rearing and crop production in Burkina Faso. Similarly, (Woldenhanna & Oskam, 2001) find that in Ethiopia, off-farm income improved farm productivity and increased purchase of farm inputs; however, it also led to a decline in the use of family labour. (Kijima et al., 2006) Contrastingly, studies such as Nasir and Hundie (2014) for Ethiopia find that off-farm activities withdraw labour from agriculture, and therefore have a dampening effect on agricultural productivity. Holden, Shiferaw, and Pender (2004) argue that access to well-paying off-farm activities by household members reduces incentives for farming which eventually reduces agricultural production and hence food security. Therefore, reallocation of labour to non-farm activities will have a negative effect on agricultural production since movement of labour force from the sector increases its marginal product as labour becomes scarce. Moreover, some studies find that factors such as the level of education are significantly linked to agricultural productivity (Collier & Lal, 1986) and off-farm participation (Matshe & Young, 2004; Matsumoto, Kijima, & Yamano, 2006). Thus, educated household members are likely to opt for off-farm employment, which may result in low agricultural productivity. However, this kind of literature is new in East Africa and little has been done in this area. Furthermore, labour participation in agriculture has been reducing and this might negatively affect agricultural productivity and farmer’s welfare.

This study examines two East African countries including Tanzania and Uganda where agriculture is the backbone of these economies. The agricultural sector accounts for about 75% of the labour force and is an important sector in job creation and poverty reduction across countries. In addition, the agricultural sector is dominated by smallholder farmers and account for about 75% of agriculture outputs with farm sizes of about 2.5 Hectares. Besides, less than 4% of total land area is irrigated. Moreover, these farmers produce is mainly for home-consumption and using traditional technologies. Despite the significant boost in agricultural productivity, food security including low productivity and agricultural welfare remain a challenge in these countries (www.nepad.org).

This is therefore a focal area for policy makers because the agricultural sector is showing significant growth even after decades of policy inattention, disproportionate taxation and low investment. The agricultural sector is now gaining attention as witnessed in the African Union (AU) 2003 Maputo Declaration encompassing the Comprehensive Africa Agriculture Development Programme (CAADP) where countries in Africa pledged a progressive domestic agricultural investment increase from about 10 percent, and a 6 percent annual growth rate in agricultural productivity by 2015 (www.nepad.org). Similarly, the 2014 Malabo Declaration reiterates the commitment of countries in Africa to the objectives of CAADP (www.au.int) that should be attained by 2025. Small holder farmers are therefore instrumental in catalysing Africa’s development. Correspondingly, the 2013 Uganda National Agricultural Policy and Tanzania National Agriculture Policy 2013 highlight similar objectives that focus on increasing agricultural productivity and farmer’s welfare. Hence, the Bill and Melinda Gates Foundation, among other donors, are now focusing on agricultural development in Africa by addressing factors that are key in contributing to increased and sustainable smallholder farmers productivity by means of investment partnerships leveraging about $400 million annually. This underscores the importance of understanding the effects of off-farm participation on agricultural
productivity and farmers’ welfare for effective policy formulation in the context of East Africa.

1.3 Methodology

Off-farm participation is an important source of income. Hence, there is need to establish the characteristics of households and individuals participating in off-farm activity. Households may self-select into on-farm or off-farm participation based on productivity gains. Households may invest in individuals, and consequently assign skilled individuals to off-farm activities based on observable and unobservable characteristics that are correlated with expected earnings from off-farm participation. Thus, we model a switching equation that sorts household members into four regimes based on skill comprising off-farm by skilled members, off-farm by unskilled members, on-farm by skilled members, and on-farm by unskilled members. Skill level classification for household members is based on tasks and duties in the reported occupation as categorized by the International Standard Classification of Occupation 2008 (ISCO-08) (www.ilo.org). Following Kassie, Teklewold, Marenya, Jaleta, and Erenstein (2015), we make the assumption that households adopt the regime that yields maximum utility. We formulate our selection equation by considering the four regimes and a latent model \( I^*_jit \) that describes the \( i \)th household decision for adopting one regime \( j \) \((j = 1, \ldots, 4)\) over the alternative regimes \( m \):

\[
I^*_jit = \beta_j X_{jit} + \gamma_j \bar{X}_{ji} + \varepsilon_{jit}
\]

where \( X_{jit} \) is a vector of exogenous variables including but not limited to plot, demographic, and location characteristics, and \( \varepsilon_{jit} \) represents the unobservable characteristics. \( \bar{X} \) represents the mean of plot varying explanatory variables such as the soil fertility to address unobserved heterogeneity arising from for example unobserved soil fertility. The utility of the household as a result of adopting a given regime is not observable; nevertheless, the participation decision observable. Hence, a household will choose a given regime \( j \) with respect to the alternative regimes \( m \) if:

\[
I = \begin{cases} 
1 \text{ if } I^*_jit > \max_{m \neq 1}(I^*_mit) \text{ or } \eta_{1it} < 0 \\
\vdots \\
J \text{ if } I^*_jit > \max_{m \neq J}(I^*_mit) \text{ or } \eta_{jit} < 0 
\end{cases} \text{ for all } m \neq j
\]

where \( \eta_{jit} = \max_{m \neq j}(I^*_mit - I^*_jit) < 0 \) (Bourguignon, Fournier, & Gurgand, 2007). Equation (2) implies that the \( i \)th household will adopt a regime \( j \) to maximize the expected benefit where it yields greater expected utility than the alternative regimes \( m, m \neq j \); \( \eta_{jit} = \max_{m \neq j}(I^*_mit - I^*_jit) < 0 \). We specify the probability that household \( i \) with characteristics \( X_{ji} \) will choose regime \( j \) using a multinomial logit model under the assumption that the unobservable characteristics \( \varepsilon_{ji} \) are independently and identically Gumbel distributed:
\[ P_{jit} = pr \left( \eta_{jit} < 0 \middle| X_{jit} \right) = \frac{\exp(\beta_j X_{jit} + \gamma_j \bar{X}_{ji})}{\sum_{m \neq 1} \exp(\beta_m X_{jit} + \gamma_m \bar{X}_{ji})} \]

We adopt a multinational endogenous switching regression (MESR) model for examining how off-farm participation affects farm productivity and household welfare. The MESR is an appropriate method because it corrects for selection bias (Bourguignon et al., 2007; Kassie et al., 2015). Farm productivity is measured as the total value of the harvested crop in a given year. The relationship between farm productivity \( Q_{jit} \) and exogenous variables \( Z \) comprising inputs, demographic, plot, and location characteristics etc. is estimated for each regime using a flexible moment-based approach (Antle, 1983) and the multinomial selection-bias correction framework (Bourguignon et al., 2007). On-farm by unskilled member participation is the base category and is denoted as \( j = 1 \). The alternative participation categories include on-farm by skilled member, off-farm by unskilled member, and off-farm by skilled member \( (j = 2, 3, 4) \). The stochastic production function evaluating the farm productivity and household welfare effect arising from each regime \( j \) is therefore given as:

\[
\begin{align*}
\text{Regime 1: } Q_{1it} &= \alpha_1 Z_{1it} + \theta_1 \bar{Z}_1 + u_{1it} \quad \text{if } I = 1 \\
\text{Regime } j: Q_{jit} &= \alpha_j Z_{jit} + \theta_j \bar{Z}_j + u_{jit} \quad \text{if } I = j
\end{align*}
\]

(4)

where \( Q \) is farm productivity of the \( i \)th household in regime \( j \); \( Z \) represents the exogenous variables and \( u \) is the error term capturing the uncertainty faced by households and satisfies \( E(u) = 0 \). Where \( u' \)s and \( \epsilon' \)s are not independent, consistent estimates of \( \alpha \) and \( \theta \) are obtained by augmenting equation (4) with \( \bar{Z} \), which represents mean plot varying covariates (average plot characteristics, average fertiliser, labour, and seed use) to minimize unobserved heterogeneity (Bourguignon et al., 2007). \( J - 1 \) selection correction terms for the alternate regimes are therefore included Equation (4). Hence, the MESR models to be estimated are as follows:

\[
\begin{align*}
\text{Regime 1: } Q_{1it} &= \alpha_1 Z_{1it} + \sigma_1 \lambda_{1it} + \theta_1 \bar{Z}_1 + e_{1it} \quad \text{if } I = 1 \\
\text{Regime } j: Q_{jit} &= \alpha_j Z_{jit} + \sigma_j \lambda_{jit} + \theta_j \bar{Z}_j + e_{jit} \quad \text{if } I = j
\end{align*}
\]

(5)

where \( e \) is the error term satisfying \( E(e) = 0 \); \( \sigma \) represents the covariance between \( u \) and \( \epsilon \); and \( \lambda \) is the inverse Mills ratio computed from Equation (3) (see Kassie et al., 2015) is included as a control variable.

We follow the same estimation technique to examine the welfare effects of the defined regimes with our dependent variable in Equation (4) and Equation (5) being household welfare. This dependent variable is measured as per capita consumption expenditure. We also extend our analysis to estimate heterogeneous effects of adopting one regime in lieu of the alternative regimes on farm productivity and household welfare by means of quantile regressions. Covariates on lower quantiles may differ
from those on the mean farm productivity and household welfare of upper quantiles. The general model for the $\tau$th quantile is given as:

$$y_{it} = X_i'\beta + \epsilon_{it} \quad i = 1, ..., n$$

(6)

where the $\tau$th quantile of the error term $\epsilon_{it}$ is zero (see Koenker & Bassett Jr, 1978)

Furthermore, we shall also examine the causal effect of off-farm participation on household welfare and poverty using an unbalanced panel. We classify households as poor or non-poor based on households falling below the national poverty line. We use the per capita consumption expenditure for constructing these measures of poverty. The general form of the panel data regression model with $i = 1, ..., N, t = 1, ..., T$ assuming no attrition is as follows:

$$y_{it} = \alpha + \beta'X_{it} + \epsilon_{it}$$

(7)

where $X_{it}$ represents a vector of the explanatory variables; $\alpha$ represents the intercept and is independent of $i$ and $t$; $\beta$ is the slope and is independent of $i$ and $t$; and $\epsilon$ is the error term that varies over $i$ and $t$. Potential attrition bias is typically associated with the use of panel data. A sample selection problem arises when the observable and unobservable determinants of attrition are correlated with the variables in our Equation (6). We propose to use Anderson-Hsiao IV (A-HIV) estimator for testing for and correcting for attrition bias as it performs well in a large panel dataset over long period of time. Furthermore, A-HIV will enable us to control for attrition bias both in the short run and in the long run taking into consideration large fixed effect bias (Hsiao, 2014).

Table 1: Definition of variables to be used in the estimations

<table>
<thead>
<tr>
<th>Outcome variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farm productivity</td>
<td>Total value of harvested crop per annum (in USD)</td>
</tr>
<tr>
<td>Household welfare</td>
<td>Per capita consumption expenditure (in USD)</td>
</tr>
<tr>
<td>Poverty</td>
<td>Household falling below national poverty line (1= poor, 0=non-poor)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Gender of household head (1= male, 0 if otherwise)</td>
</tr>
<tr>
<td>Age</td>
<td>Age of household head in years</td>
</tr>
<tr>
<td>Education of head</td>
<td>Number of years of education of schooling head</td>
</tr>
<tr>
<td>Education of spouse</td>
<td>Number of years of education of schooling of spouse</td>
</tr>
<tr>
<td>Size</td>
<td>Number of household members</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plot characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenure</td>
<td>1 if own plot, 0 if otherwise</td>
</tr>
<tr>
<td>Soil quality</td>
<td>1 if soil has good quality, 0 if otherwise</td>
</tr>
<tr>
<td>Irrigation</td>
<td>1 if plot is irrigated, 0 if otherwise</td>
</tr>
<tr>
<td>Fertilizer use</td>
<td>1 if organic/inorganic fertilizer is used, 0 if otherwise</td>
</tr>
</tbody>
</table>
Slope 1 if gentle slope, 0 if otherwise
Seed 1 if improved seed, 0 if traditional

**Resources**
- Farm size: Size of land in acres
- Household assets: Total value of household assets (in USD)
- Farm productive assets: Total value of agricultural assets (in USD)
- Access to credit: Loan/credit facility (1= household has a credit/loan facility, 0 if otherwise)
- Income from off-farm activities: Monetary value of wage, salary, business profit (in USD)
- Remittances: Monetary value of cash or in-kind remittances per annum (in USD)

**Access to markets**
- Distance from output market: Distance (in Kilometers)
- Distance from input market: Distance (in Kilometers)

**Extension**
- Extension services: Number of visits from extension officers
- Advice: Household received extension advice (1= yes, 0 if otherwise)
- Advice quality: Rating of quality of advice (1=good, 0 otherwise)

**Shocks**
- Drought or floods: 1 if drought/floods occurred, 0 if otherwise
- Pests or crop disease: 1 if pests/disease occurred, 0 if otherwise
- Loss of off-farm income: 1 if loss/income occurred, 0 if otherwise
- Conflict/Violence: 1 if conflict/Violence occurred, 0 if otherwise

### 1.4 Data requirements and sources


The first round of households surveyed in Tanzania consisted of 3,265 households that were a representative sample of the whole nation. The sample provides reliable estimates of key socioeconomic indicators for Dar es Salaam, Zanzibar, and mainland rural and urban areas. All households interviewed in the first round were targeted for a revisit in the second round survey with households residing in their original location being interviewed. Households that had relocated were tracked and interviewed in their new location with their new households. The sample size for the second round and third round subsequently expanded and was 3,924 households and 5,015 households.
respectively. In Uganda, the first round of the sample had about 3,200 households, all of whom had been previously interviewed as part of the 2005/2006 Uganda National Household Survey (UNHS). The sample was representative of the national level comprising, urban, and rural main regional levels including the North, East, West and Central regions. This sample was visited for four consecutive years (2009/10, 2010/11, 2011/2012 and 2013/2014). The surveys focus on community-level questionnaire with the following units of analysis: individuals, household, and communities.
## SECTION II – CAPACITY BUILDING

### 2.1 List of team members

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Sex (M,F)</th>
<th>Training and experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Bethuel Kinyanjui</td>
<td>41</td>
<td>M</td>
<td>Dr. Bethuel Kinyanjui is a lecturer at the School of Economics, University of Nairobi. He obtained his BA and MA degrees in Economics from the University of Nairobi and has a PhD from the University of Leiden in the Netherlands. He is a development economist by training and has a wealth of experience in trade &amp; industry, migration, finance, comparative studies, and agricultural related issues. Bethuel has participated in various projects encompassing social protection, productivity employment and improved seeds in rural households in East Africa. He is experienced in organizing workshops and has participated in various development policy conferences encompassing social welfare in the context of Africa. He is also the advisor of Faith Mariera and Stephene Maende.</td>
</tr>
<tr>
<td>Laura Barasa</td>
<td>36</td>
<td>F</td>
<td>Laura Barasa is a PhD candidate in Economics at the Radboud University Nijmegen, Netherlands. She is currently residing in Kenya and a fulltime lecturer in Economics with the University of Nairobi and obtained her MA degree from the same university. She is currently studying innovation in manufacturing firms in developing countries. Her research interests include innovation, agriculture and trade. Laura has participated in social welfare projects in the past and has a good understanding of social welfare in rural households in East Africa.</td>
</tr>
<tr>
<td>Faith Mariera</td>
<td>24</td>
<td>F</td>
<td>Faith Mariera is a master’s student of Economics at the University of Nairobi. Faith has extensive knowledge on unemployment in Sub-Saharan Africa. She is also well versed with statistical data analysis and preparing reports.</td>
</tr>
<tr>
<td>Stephene Maende</td>
<td>33</td>
<td>M</td>
<td>Stephene Maende is pursuing his master’s degree in Economics at the University of Nairobi. He has experience in developing and reviewing of ministerial policy documents for Kenya’s vision 2030. He is also equipped with basic data analysis skills.</td>
</tr>
</tbody>
</table>
2.2 Expected capacity building

<table>
<thead>
<tr>
<th>Name</th>
<th>Benchmark and expected capacity building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Bethuel Kinyanjui</td>
<td>Bethuel has vast experience in Macroeconomic and Microeconomic methodology. He is also well versed with organizing workshops for dissemination of research findings. Bethuel has an established network for policy engagement on matters pertaining to social welfare for vulnerable groups. Bethuel’s participation in this project is expected to expose him to literature in agricultural productivity and related theories. It is also expected that he shall gain more knowledge on econometric techniques involving endogenous switching regressions (ESR) and their application in microeconomic analysis from PEP training, technical workshops, and resource persons. Engagement in PEP training will also equip Bethuel with knowledge of applications of software tools developed by PEP researchers including Distributive Analysis/ Analyse Distributive (DAD) and Distributive Analysis for Stata Package (DASP). Furthermore, research output is likely to influence agricultural policy decisions. In addition, it will help him supervise both masters and PhD students in these areas which will be good for both students and the University of Nairobi. It is also expected that the research findings will be published in a leading journal, which will count towards Bethuel’s career growth at the University of Nairobi.</td>
</tr>
<tr>
<td>Laura Barasa</td>
<td>Laura is has a good background in empirical analysis of microeconomic data at the household and firm-level. She has also participated in various social welfare workshops and international agricultural conferences. Laura’s participation in this project is going to be instrumental in advancing her knowledge on agricultural economics encompassing agricultural productivity, household welfare and poverty. She will also be exposed to new econometric techniques such as ESR and the application of non-parametric techniques in data analysis. Furthermore, participating in trainings and workshops relating to the research topic will also expose her to application of software tools (DAD &amp; DASP) which will strengthen her empirical background and increase the likelihood of conducting rigorous research in welfare issues. Engaging in policy workshops and conferences is also going to expose her to a wider research network and build her confidence in presenting policy briefs to policy makers. In addition, she will be able to supervise both masters and later PhD students in these areas. In addition to publishing the research output to advance knowledge in this area, engaging in this project shall improve the quality of her research and boost her chances of being absorbed into a tenure track position at the University of Nairobi.</td>
</tr>
<tr>
<td>Faith Mariera</td>
<td>Faith bears a good theoretical foundation on unemployment in the African context. She is also well versed in various parametric econometric techniques. Faith’s involvement in this project will extend her knowledge in determinants of choice of employment in relation to agriculture in East Africa. Furthermore, Faith will learn how to apply parametric and non-parametric techniques to microdata. Participating in PEP trainings and</td>
</tr>
</tbody>
</table>
Workshops will also enable her to form networks with other researchers. Faith is also going to learn ways in which research output is disseminated to different types of audience including academicians, policy makers, and stakeholders. Faith will also experience how the research process culminates into informing policy. Being a young female researcher, Faith’s participation will bolster her career development trajectory and enhance future employment and research opportunities.

<table>
<thead>
<tr>
<th>Name</th>
<th>Task and contribution to the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephene Maende</td>
<td>Stephene’s bears research experience in data collection and report writing. His participation in this project will complement the knowledge gained in his Master studies. He will be exposed to theories relating to social welfare. Furthermore, Stephene will gain experience in empirical analysis including data manipulation skills and enhance his report writing skills. Involvement in PEP training and workshops will also be instrumental in building his researching skills at an early stage. Exposure in workshops and international conferences will expose him to different research networks and sets of knowledge, and also foster his presentation skills. Furthermore, participation will enable him to have firsthand experience in writing full research reports and manuscripts for submission to journals. His career prospects will also be impacted positively because Stephene’s skills set will grow as a result of this research.</td>
</tr>
</tbody>
</table>

Add comments and describe institutional capacity building if applicable.

All the project participants are affiliated with the University of Nairobi, School of Economics. Bethuel Kinyanjui and Laura Barasa are directly involved in supervising undergraduate and postgraduate students. Faith Mariera and Stephene Maende are Master students.

Involvement in the research at the different levels provides us with different platforms for impacting our students through mentoring and sharing of scientific literature and resources made freely available by PEP. Sharing research findings and output at different stages of our research through workshops held at the University of Nairobi, School of Economics will enhance the student’s and school’s knowledge base in matters relating to agricultural productivity, estimation techniques of household welfare. The study sample includes Tanzania and Uganda, hence, we shall work on building linkages with universities based in the two countries for knowledge sharing through workshops and seminars.

Furthermore, experience gained by Bethuel Kinyanjui and Laura Barasa will be useful in fostering rigorous project supervision at the School of Economics in matters relating to agricultural productivity and rural household welfare. This should result in high quality publication of students’ research in peer reviewed journals and foster participation in international conferences.

<table>
<thead>
<tr>
<th>Name</th>
<th>Task and contribution to the project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Bethuel Kinyanjui</td>
<td>• Lead Researcher responsible for the project deliverables including overseeing proposal preparation and review, data analysis and presentation of results.</td>
</tr>
<tr>
<td></td>
<td>• Drafting and reviewing the research report.</td>
</tr>
</tbody>
</table>
Laura Barasa

- Proposal development, review of literature, modeling and data analysis.
- Team member overseeing the implementation of the policy engagement and communication strategy.

Faith Mariera

- Literature review and data analysis, drafting the report.

Stephene Maende

- Literature review and data analysis, drafting the report.

2.3 List of past, current or pending projects in related areas involving team members

<table>
<thead>
<tr>
<th>Name of funding institution</th>
<th>Title of project</th>
<th>Team members involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNCTAD, World Bank and WTO</td>
<td>Study on the impact of Economic Partnership Agreements on household welfare in Kenya</td>
<td>Dr. Bethuel Kinyanjui</td>
</tr>
<tr>
<td>Netherlands Organization for Scientific Research (WOTRO)</td>
<td>Baseline Survey on the impact of Cash transfer program for Orphans and Vulnerable Children in Kenya</td>
<td>Dr. Bethuel Kinyanjui, Laura Barasa, Stephene Maende, Faith Mariera</td>
</tr>
<tr>
<td>International Organization for Migration</td>
<td>Kenya Diaspora project</td>
<td>Dr. Bethuel Kinyanjui, Laura Barasa, Faith Mariera</td>
</tr>
<tr>
<td>PEP/Cornell University</td>
<td>The impact of technology adoption on farmers welfare in Uganda and Tanzania</td>
<td>Dr. Bethuel Kinyanjui and Edward Mabaya.</td>
</tr>
</tbody>
</table>
SECTION III – POLICY ENGAGEMENT

3.1 Policy context and needs

The outcomes and findings of this research will be important for policy makers because the results are deemed useful for informing policies directed at enhancing agricultural growth in the region through the enhancement of agricultural productivity and welfare. This is in line with the CAADP and the 2013 National Agriculture Policies in Tanzania and Uganda that primarily focus on increasing agricultural productivity and incomes, poverty reduction and improving farmers’ welfare.

3.2 Consultations to date

The following persons have been consulted for advice on-farm activities, agricultural productivity and welfare during the development of this proposal. The ideas received will help the research team in making effective policies, monitoring and evaluation of such policies.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gituro Wainaina</td>
<td>Economist</td>
<td>Vision 2030 Delivery Secretariat</td>
<td><a href="mailto:Wainainagitura@vision2030.go.ke">Wainainagitura@vision2030.go.ke</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><a href="mailto:Wainainagitura@yahoo.com">Wainainagitura@yahoo.com</a></td>
</tr>
<tr>
<td>Prudence Lugendo</td>
<td>Agricultural officer</td>
<td>Ministry of Agriculture, Animal Industry and Fisheries (Tanzania)</td>
<td><a href="mailto:prudencelugendo@gmail.com">prudencelugendo@gmail.com</a></td>
</tr>
<tr>
<td>Dr. Vincent Leyaro</td>
<td>Lecturer</td>
<td>University of Dar es Salaam (Tanzania)</td>
<td><a href="mailto:vleyaro@yahoo.com">vleyaro@yahoo.com</a></td>
</tr>
<tr>
<td>Dr. Blandina Kilama</td>
<td>Researcher</td>
<td>Research on Poverty Alleviation (Tanzania)</td>
<td><a href="mailto:Bkilama@repoa.or.tz">Bkilama@repoa.or.tz</a></td>
</tr>
<tr>
<td>Dr. Francis Mwesigye</td>
<td>Researcher</td>
<td>Economic Policy Research Centre</td>
<td><a href="mailto:Fmwesigye@eprcug.org">Fmwesigye@eprcug.org</a></td>
</tr>
<tr>
<td>Dr. Swaibu Mbowa</td>
<td></td>
<td></td>
<td><a href="mailto:Smbowa@eprcug.org">Smbowa@eprcug.org</a></td>
</tr>
<tr>
<td>Dr. Mwalimu Kamuganga</td>
<td>Researcher</td>
<td>Makerere University</td>
<td><a href="mailto:Nkamuganga@yahoo.com">Nkamuganga@yahoo.com</a></td>
</tr>
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</table>

3.3 Identify target audiences

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Charles John Tizeba</td>
<td>Minister of Agriculture and Fisheries</td>
<td>Minister of Agriculture, Livestock and Fisheries (Tanzania)</td>
<td>N/A</td>
</tr>
<tr>
<td>Hon. Ssempijja Bamulangaki</td>
<td>Minister of Agriculture, Animal Industry and Fisheries</td>
<td>Ministry of Agriculture, Animal Industry and Fisheries (Uganda)</td>
<td>N/A</td>
</tr>
<tr>
<td>Dr. Tausi Kida</td>
<td>Executive Director</td>
<td>Economic and Social Research Foundation (Tanzania)</td>
<td><a href="mailto:Tkida@esrg.or.tz">Tkida@esrg.or.tz</a></td>
</tr>
<tr>
<td>Dr. Donald Mmari</td>
<td>Executive Director</td>
<td>Research on Poverty Alleviation (Tanzania)</td>
<td><a href="mailto:Mmari@repoa.or.tz">Mmari@repoa.or.tz</a></td>
</tr>
<tr>
<td>Dr. Sarah Ssewanyana</td>
<td>Executive Director</td>
<td>Economic Policy Research Centre (Uganda)</td>
<td><a href="mailto:Ssewanyana@eprcug.org">Ssewanyana@eprcug.org</a></td>
</tr>
<tr>
<td>Dr. Mwalimu Kamuganga</td>
<td>Chair</td>
<td>Farmers Association (Uganda)</td>
<td><a href="mailto:Nkamuganga@yahoo.com">Nkamuganga@yahoo.com</a></td>
</tr>
<tr>
<td>Mr. Stephen Ruvuga</td>
<td>Executive Director</td>
<td>Mtandao wa Vikundi vya Wakulima Tanzania (MVIWATA)</td>
<td><a href="mailto:info@mviwata.org">info@mviwata.org</a></td>
</tr>
</tbody>
</table>
3.4 Define outreach and engagement strategy

We plan to engage government officials from the relevant ministries, departments, as well as public policy organizations and academia through various consultative meetings throughout the study. This will be necessary to gain an understanding of the various policies within the agricultural sector, and how they have been implemented. It will also help the team come up with policies that will receive approval and support from the relevant government institutions.

3.5 Outline your preliminary dissemination strategy

The study results will be communicated and disseminated through a final report, a PEP working paper, policy brief and the media. Additionally, seminars and workshops involving policy makers shall be used to disseminate the results and impact policy decisions. We shall also work on establishing linkages with universities and policy institutions in Tanzania and Uganda to share our findings. We shall also target national and regional policy conferences and international conferences.
SECTION IV – OTHER CONSIDERATIONS

4.1 Describe any ethical, social, gender or environmental issues or risks that should be noted in relation to your proposed research project.

None

4.2 References


