

Financial Inclusion and Gender Disparity in Risk Appetite for Micro, Small and Medium Enterprises Performance: *Evidence from Ethiopia*

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1. Abstract

The proposed study will undertake a non-experimental impact evaluation of finance and training on MSMEs performance and examines entrepreneurial risk appetite of male and female entrepreneurs and its implications on MSMEs performance. First, we address the nature of risk preference of entrepreneurs and answer: Do women entrepreneurs are more risk averse than men entrepreneurs? What factors influence risk attitude of entrepreneurs? Second, we evaluate whether access to credit alone, training alone or their combination improve performance of entrepreneurs in MSMEs and assess if women entrepreneurs have higher return to capital than their men counter parts. Our study has two novel contributions. We contribute to the on-going debate whether woman entrepreneurs are more risk averse than men by providing evidence in urban setting of least developed country. Besides, we provide credible impact estimations through evaluating the impact of capital-cum-training on MSMEs performance. We use propensity scores matching approach for multiple treatments due to (Imbens, 1999 and Lechner, 2001). Understanding the risk attitude of entrepreneurs will help to mold economic policies that target at the entrepreneurial population to enhance performance. The credible impact estimations will also signal which intervention is more effective and for whom to foster growth in the MSMEs. We purposely select Urban Ethiopia given the size of the country, the recent rise of unemployment and large MSME sector. We use recent survey data of 1445 male and female entrepreneurs in MSE sector in urban Ethiopia. Also, we adapt econometric approach to estimate risk preference due to Antle (1987) based on survey data of MSEs.

2. Main research questions and contribution

2.1 Main research question

The development literature long ago recognized the importance of economic inclusion of women as a central driver of economic growth. Women economic participation comes among others in more female in the labor market, faire treatment, equality in wage and improving practices that can promote women in leadership (Ghani et. al, 2013). Economic empowerment of women who constitute about half of the potential workforce has a vital economic importance than only promoting gender equality (Duflo, 2005). In the last two decades, policy makers are attracted to the idea of encouraging women enterprise development that contributes towards flourishing women owned Micro and Small Enterprises (MSEs). International Finance Cooperation (2011) estimated that MSEs with full or partial female ownership represent 31 to 38% (8 to 10 million) of formal MSEs in developing country.

MSEs have a capacity to create jobs, innovate and adopt new technology, broaden tax base, and diversify risks (Vijverberg 1991; McPherson 1996; Daniels and Mead 1998; Mead and Liedholm 1998). One of the main characteristics of a flourishing economy is a vibrant MSE sector. Among others, the role of MSEs as engines of growth in transition economies is evidenced by China's recent growth. In developing countries, with growing population, high level of unemployment and low economic growth, it is very important to encourage creation and expansion of businesses that generate new jobs and enhance economic growth. Accordingly, promoting women entrepreneurship in MSEs sector have been designated as the new engines for growth in developing countries to reduce poverty and improve welfare.

The rising number of women-owned MSEs has attracted a considerable amount of research that compare male and female entrepreneurs and their businesses. Klapper and Parker (2011) review the existing literature and conclude that there exists increasing evidence that women MSEs tend to underperform relative to their male counterparts in terms of earnings and profits, rates of return on capital, venture growth rates, and survival. The underperformance of female owned MSEs persist after controlling for classic business performance indicators such as industry, age of business, and size of business (Watson and Robinson, 2003). Understanding what explains this gender disparity and its policy implication to encourage female entrepreneurs in MSE sector is hence an immediate consequential research issue in the developing world.

According to Kelly et al (2012) in the 2012 Global Entrepreneurship Monitor Women's Report from 59 economies around the world, women entrepreneurs in MSE sector appear to have less access to external sources of capital than men when securing

finances. Other existing literature on women entrepreneurship also confirms lack of access to credit as a main challenge for women to establish and run a successful business (Minniti, 2009; Jamali, 2009). Financial market imperfections in developing countries are particularly constraining for small entrepreneurs who lack collateral, credit histories, and connections.

Several studies both theoretically and empirically have discussed the role of finance on firm growth and how financial constraints affect MSEs compared to large firms. Theoretically, Stiglitz and Weiss (1981), de Meza and Webb (1987) and Evans and Jovanovic (1989) explain why small enterprises become financially constrained. Demirguc-Kunt and Maksimovic (1998), Ayyagari *et al.* (2005), Bigsten *et al.* (2003) and Fafchamps (2004) empirically show that MSEs often face financial constraint both during start-up and expansion. Relaxing the financial constraint of the firms could enable them grow faster. Beck and Demirguc-Kunt (2006) suggest that improving the access to finance for firms result in relatively better growth in small than large firms. Standard models of investment also predict that credit-constrained firms grow faster when given additional capital (Fafchamp *et al.*, 2011). This view partly led to microfinance institutions to lend for MSEs, since these firms can earn high returns to capital given access to finance. However, the evidence of high marginal returns to capital from MSEs raised doubts on empirical credibility ground. Evidence based on randomized control trials by Fafchamp *et al.* (2011), de Mel *et al.* (2008) and Karlan and Zinman (2009) confirm the doubt.

Fafchamp *et al.* (2011) based on RCT in urban Ghana found large and positive average treatment effects of in-kind grants for both men and women entrepreneurs. However, they reported almost zero gain in profit for women with initial profit below the median. This suggests that capital alone is not sufficient for enhancing the growth of women owned enterprises. Similarly, de Mel *et al.* (2008) based on RCT also reports positive and high return to capital for microenterprises in Srilanka. However, they found no positive return in women owned enterprises. Karlan and Zinman (2009) report a shrink in business investment size and scope and only some gains in profit for men borrowers.

Creation and expansion of business involves risk. Risk is more prevalent in developing countries where the labor market is thin; the financial markets are sparse or inexistent in some cases. The implication of this high-risk environment on economic behavior and performance is under researched (Dercon, 2008). Therefore, assessing entrepreneurial risk appetite of male and female entrepreneurs and its implications on MSEs performance could enhance our understanding of how to better support the growth of MSEs. Moreover, adjusting for risk while studying the difference in the performance of male and female-owned MSEs provides a clear picture to policy makers to design a policy that promote growth of female-owned MSEs.

While the economics literature on agricultural household has already given attention to risk and its implication on household investment decisions and welfare; the MSEs literature hardly examine risk. There is a growing body of literature in both developed and developing countries that elicit risk preference of individuals in experimental setting. In the developed country setting, Schubert *et al* (1999), Holt and Laury (2002, 2005), Harrison *et al* (2005), Hartog *et al* (2002), Dohmen *et al* (2011) and Eckel and Grossman (2008) are among others. In developing countries setting, though the experimental evidence dates back to the work of Binswanger (1980), it is only recently gained momentum and it only focuses on student and farmer population. To mention a few, Wik *et al* (2004), Humphrey and Verschoor (2004), Mosely and Verschoor (2005), Yesuf and Bluffstone (2007), Tanaka *et al* (2006), Akay *et al* (2011) and Brick *et al* (2012). Part of research on developed countries examined the gender difference in attitudes towards risk. The studies suggest that women are more risk-averse than their male counterparts, *ceteris paribus* (see Schubert *et al.*, 1999; Powell and Ansic, 1997; Eckel and Grossman, 2002; Le *et al* (2011) and Charness and Gneezy, 2012). A good review of the works on gender difference in risk preference in developed countries is given in Croson and Gneezy (2009) and Eckel and Grossman (2008). Unlike these studies, we focus on the entrepreneur risk preference from least developed country. Furthermore, the previous works on developing countries do not examine gender difference in risk attitude. An exception is Brick *et al* (2012).

Upgrading knowledge-base and skill of all types of workers and managers is also central to improve firm performance. The quality of the entrepreneur is particularly important for MSEs that must be able to adapt quickly to dynamic markets and changing circumstances. For instance, Bloom *et al* (2011) attribute the differential in firms' performance to poor management practices. However, very little and contrasting evidence is documented that business training could affect entrepreneurs' performance. For instance, Karlan and Valdivia (2011) found no significant effect of business training on both men and women owned MSEs. While Berg and Bergemann (2008) found a strong positive effect on male entrepreneurs but insignificant effect on female entrepreneurs. According to OECD (2002) business management training reduces the failure rates of small and medium enterprises and improves their performance in Canada, Finland, Germany, Japan, United Kingdom and United States.

Thus, we propose to evaluate the impact of access to credit, business training and the combination of finance and training on the performance of female and male owned MSEs in urban Ethiopia controlling for gender risk disparity. For this study, we purposely select Urban Ethiopia, Addis Ababa. Ethiopia is a country in which the informal and microenterprise sector dominate the landscape of private business with more than 38% of employment contribution in urban areas. The past and current five-

year development plans of the Ethiopian government give due attention on promoting the growth of MSE sector, hence, an excellent case to study the sector.

To address the evaluation questions of whether access to credit, training and their joint impact on MSEs performance, we use recent data on MSEs in Ethiopia collected by Addis Ababa University and Addis Ababa City Administration Bureau of MSEs Development Bureau. . The data covers 1,445 MSEs randomly drawn from Addis Ababa. The dataset enables to answer the proposed research question and gives a good picture of MSE sector in urban area of the country. Specifically, it provides a rich array of information on main characteristics of MSEs employment, capital, support provision, capital, sector as well as major challenges to their involvement in the economy as well as future prospects for their further development. To assess the nature of risk preference of men and women entrepreneurs operating in the MSE sector, we utilize the details of production information in the survey data and econometrically estimate risk attitudes of the entrepreneurs.

Our study would like to address the following research questions:

- What is the nature of risk preference of entrepreneurs and the factors that influence their risk attitude in urban MSEs? Is there difference between female and male entrepreneurs?
- Does access to credit, training and their combination impact MSEs performance? Is there impact heterogeneity between female and male entrepreneurs?

The novelties in our study are twofold: In terms of filling the gap in literature, we adapt econometric approach to estimate risk preference due to Antle (1987) and estimate risk attitudes based on survey data of MSMEs in urban setting from non-student and non-farmer population. First, we want to contribute to the on-going debate that woman entrepreneurs are more risk averse than men by providing evidence in urban setting of least developed country for the first time. We adapt an econometric approach to estimate risk preference due to Antle (1987) and estimate risk attitudes based on survey data of MSMEs in urban setting from non-student and non-farmer population. Second, we evaluate the impact of capital-cum-training on MSMEs performance to obtain credible impact estimators for female and male owned MSEs after controlling to their difference in risk appetite. From policy perspective, understanding the risk attitude of women entrepreneurs will help to mold economic policies that targets entrepreneurial population to enhance their performance. Further, our result will inform financial institution such as microfinances the risk-taking behavior of women and male entrepreneurs to reform their client intake criteria's and development of new products to encourage women entrepreneurs in MSEs sector. The credible impact estimators we provide will also signal which interventions are more effective for female owned MSEs versus male owned MSEs to foster growth in the MSMEs sector.

2.2 Policy relevance

Ethiopia is the second most populous country, with growing population in Africa. Despite efforts in agricultural sector, the productivity of the sector is low. The growing population pressures with the limited available arable land could limit employment opportunity in the sector not to be able to provide further employment. Micro level studies (Woldehanna, 2000; Dercon, 2006; Bekele and Muchie, 2008) support the claim. So, further employment is expected from the non-farm sector.

According to CSA (2011) urban employment to population rate is 49.4%, females having low employment to population ratio of 40%. Significant proportions of urban employed population are self-employed accounting for 38.9% followed by Government employee of 21.2%. The informal sector contributes about 36.5% of total employment in urban areas and females dominate the sector (CSA, 2011).

In the above same report the level of unemployment rate is 18%. The unemployment rate is even higher for youth (15-29) which is 23.7 %. By gender, the unemployment rate is more than double for female (25.3%) as compared to male (11.4%). Region-wise, Addis Ababa accounts for majority of the urban unemployed (25.1%) followed by Dire Dawa (22.9 %). These figures call for due consideration on policies that foster employment creation in the MSEs sector.

Cognizant of the facts, the current five-year development plan of the country, Growth and Transformation Plan (GTP-II), boldly sets the importance of sustaining broad based economic growth in order to eradicate poverty and *create employment*. In the GTP, one of the strategic pillars is creating favorable condition for industry to play a key role in the economy in terms of generating foreign exchange and *creating employment opportunities for the growing labor force*. In the industrial sector the government focus on strengthening small scale manufacturing enterprises, since they are the foundation for establishment and expansion of medium and large scale industries, *open opportunities for employment generation*, expansion of urban development and provide close support for further agricultural development.

According to CSA (2004) in the latest available survey of urban informal sector, the three major problems faced by the establishments are lack of sufficient capital (37.9 %), inadequate skills (9.8 %) and lack of premises (6.15 percent) (CSA, 2004). In order to address the constraints, the GTP emphasized on provision of capital for MSEs through saving and credit institutions, integrating the MSEs with Technical and Vocational Educational Training (TVET) system to provide necessary skills and education.

Thus, our study will contribute to the existing national development plan providing robust empirical evidence for the successful implementation of the plan. We provide evidence on the nature of *entrepreneur's behavior in terms risk attitude* and the factors that influence their risk attitude. We also reveal credible causal impact estimates of providing *training and capital* to operators in the MSEs. This is significant since there is no prior credible evidence about the impact of training and capital on MSEs in Africa. Notable exception is Fafchamp *et al* (2011) and they only focus on the impact of capital provision. By doing so, we contribute to evidence-based policy making and improve implementation of the current policy. More importantly, we will contribute inputs to the refinement of the MSEs development strategy in particular and the forthcoming national development plan.

3. Methodology

This section discusses the empirical techniques we employ to address our research questions. First, we present the econometric procedure for estimating risk preference due to Antle (1987) based on cross-sectional survey data; and a regression model we estimate to understand the determinants of risk aversion. Second, we discuss our non-experimental evaluation approach.

3.1 Risk preference and its determinants

In order to estimate risk-attitude parameters of a population of producers, Antle (1987) proposed a moment-based approach that relies on some assumptions. First, given inputs that are assumed predetermined variables, the producer solves an optimization program in a period. Second, all producers use similar technology in which the distribution of profit represents the stochastic technology. It implies that each enterprise has some profit distribution and each entrepreneur also forms some expectation.

We assume that an entrepreneur maximizes a function of moments of the profit distribution given in (1).

$$Max E[U(\pi)] = F[\mu_1(X), \mu_2(X), \dots, \mu_m(X)] \quad (1)$$

Where μ_j , $j=2, \dots, m$, is the m th moment of profit. Using first order condition of the problem and applying Taylor series expansion, Antle (1987) show that the marginal contribution of an input j to the expected profit is:

$$\frac{\partial \mu_1}{\partial X_j} = \theta_{1j} + \theta_{2j} \frac{\partial \mu_2}{\partial X_j} + \theta_{3j} \frac{\partial \mu_3}{\partial X_j} + \dots + \theta_{mj} \frac{\partial \mu_m}{\partial X_j} + u_j \quad (2)$$

Where θ_{2j} and θ_{3j} are directly interpretable as Arrow-Pratt and down-side risk aversion coefficients respectively (Antle, 1987) and u_j is the usual random error term.

Antle's approach amounts to estimating (2) for each input to account for differential contribution of each input in the moments of profit distribution. While all inputs could increase the expected profit, the inputs effect on the variability of profit could either increase or decrease risk. Equation (2) shows that the marginal contribution of input j to the expected profit, is a linear combination of the marginal contributions of input j to the variance, skewness as well as higher order moments.

This model presupposes that whether an input is risk increasing or risk decreasing is purely an empirical issue. A negative (positive) sign on the marginal contribution of an input to second moment indicates that the input is risk reducing (increasing), whereas a negative (positive) sign on the marginal contribution of an input to the third moment presumes that the input is downside-risk increasing (reducing).

Equation (3) below shows that the Arrow-Pratt (AP) absolute risk aversion coefficient, which is greater than zero for risk averse producer.

$$AP = \frac{E(U''(\pi))}{E(U'(\pi))} \cong -\frac{\partial F(X)/\partial \mu_2(X)}{\partial F(X)/\partial \mu_1(X)} = 2\theta_2 \quad (3)$$

Equation (4) provides the downside (DS) risk aversion, which is greater than zero for a producer averse to downside risk, who prefers to avoid disaster.

$$DS = \frac{E(U'''(\pi))}{E(U'(\pi))} \cong -\frac{\partial F(X)/\partial \mu_3(X)}{\partial F(X)/\partial \mu_1(X)} = -6\theta_3 \quad (4)$$

We assume that the risk preference is individual but not input specific following Groom *et al* (2006), which means $\theta_{mj} = \theta_j$ that implies $AP_j = AP$ and $DS_j = DS$. We compute risk premium (RP) based on AP and DS coefficients and assuming only the first three moments of distribution are of concern to the producer as in equation (5) below.

$$RP = \mu_2 AP / 2 - \mu_3 DS / 6 \quad (5)$$

where μ_2 and μ_3 are respectively a measure of the second and third-order moments of the distribution. The producer prefers insurance against risk given a positive willingness to pay for insurance as indicated by positive risk premium.

Econometric procedure

Practically, we implement the procedure as follows. First, we generate the three moments of MSE's revenue function. We regress the value of production (revenue) on set of production inputs to get an estimate of the mean revenue (first moment) and the residuals. We take the squared value of estimated residuals and regress it on the same set of explanatory variables to generate the second order moment (variance). Using the same procedure, we finally estimate the third moment or skewness (the estimated residuals raised to the power of 3).

Second, for each input we estimate its marginal effect on each moment in line with Groom et al (2006) and run a SUR regression of the marginal effect of the expected revenue on the marginal effect of the variance and skewness of the revenue. The coefficients for the marginal effect of the variance and skewness of the revenue, respectively are proxies for AP and DS. Third, we compute the risk premium based on AP and DS as in equation (5) above.

In order to analyze factors that affect entrepreneurs risk attitude, we estimate an OLS regression as in (6), where the dependent variable is the estimated risk premium (RA_i). The vector of regressors (Z_i) will be composed of demographic and socio-economic characteristics of the sampled entrepreneurs in MSME sector who participated in our experiment. δ is vector of coefficients that measure the effect of a regressor on risk attitude of the entrepreneur. v_i is the error term.

$$RA_i = \delta Z_i + v_i \tag{6}$$

3.2 Treatment Effect Model for Multiple Treatments: Propensity Score Estimation Using Generalized Boosted Models

Standard models of investment predict that entrepreneurs financially constrained grow fast when given additional finance (Fafchamps *et al*, 2011). The type of finance should not affect their investment decision or consumption of the capital. Similarly, de Mel *et al* (2008) formally show that missing financial (both credit and insurance) market result in high marginal return to capital. In contrast, Karlan and Valdivia (2011) doubt the "poor but rational" presumption behind the microfinance intervention that focus on provision of credit and saving product for micro-entrepreneurs. Since most of the micro-entrepreneurs have no formal business training and may fail to optimally manage their business. Therefore, in this study, we test *whether relaxing financial constraint result in to growth of MSEs, whether business training or combination of two have an impact on MSEs performance and importantly, does the impact vary with gender.*

To find the treatment effects of access to credit and training on enterprise performance, we apply propensity score estimation for multiple treatments following Imbens (1999) and Lechner (2001). To the best of our knowledge, previous non-experimental evaluations considered either a single program or a package of programs. Indeed, package of programs are usually implemented by GOs and NGOs because of its efficiency and also because single programs are very costly compared to a package. As a result, researchers analyze these programs either separately or the effect of a package as a whole. In this study, we apply propensity score estimation for multiple treatments (credit, training, and both credit and training) and demonstrate the application of evaluating multiple treatments using propensity scores following Mc Caffrey *et al* (2013).

Over the last decade, the use of propensity score method has become popular in estimating the causal effect of an intervention using observational data. In observational studies, the intervention is not randomized that may result difference in observable characteristics of both groups (the treatment and comparison group). In order to balance the distribution (or features of distribution such as mean) of observed covariates across the treatment and control groups, propensity score is often used to match, stratify or weight the samples from the treatment and control groups. Most of these studies use propensity score in binary treatment cases (i.e., the treatment and control). However, there are studies that extend the propensity score in to the multiple treatment cases (Imbens, 2000 and Frolich, 2004). Perhaps implementation challenges have limited the application in the multiple treatment approaches.

Recently, Imbens (2000), Imai and van Dyk (2004), Robins *et al* (2000), Lechner (2001), Zunnatto *et al* (2005) and McCaffrey *et al* (2013) have demonstrated the implementation of multiple treatments evaluation. Moreover, there are studies (Harder *et al*, 2010 and Lee *et al*, 2010) that show propensity score estimation in the binary treatment case can be improved using machine learning methods than parametric regression models. These studies report that machine learning based propensity score estimation outperforms simple logistic regression based estimation in terms of bias reduction and mean squared error. For the multiple treatments case, McCaffrey *et al* (2013) demonstrate that propensity score estimation based on machine learning method, specifically Generalized Boosted Model (GBM), outperforms the propensity score estimation based on multinomial logistic regression (MNL) in balancing the treatment and control groups. Therefore, in this study we propose to apply propensity score estimation for multiple treatments using Generalized Boosted Model following McCaffrey *et al* (2013). Below we describe the notations and definition, identifications, estimation of propensity score, weighting and estimating the causal effects quantities of interest.

a. Notation and definitions

In microeconomic evaluation, an individual faces two states of the world, participation in a program or non-participation in such a program. In either case, an individual gets two potential outcomes for each state. Causal effect is defined as the difference between these potential outcomes. This is commonly known as Roy-Rubin Model.

Let there be $(M+1)$ mutually exclusive treatments in which the potential treatments are denoted as (Y^0, Y^1, \dots, Y^M) . For each individual, only an element of the potential treatments is observable and the remaining are counterfactuals. Participation in a particular treatment is indicated by the variable $T \in \{0, 1, \dots, M\}$. Each individual has $M+1$ potential outcome, but only the one corresponding to the observed treatment (T_i) is observed. That is, if for a given unit i , $T_i = t$, then $Y_i = Y_i[t] = \mu_t$. In the multiple treatments framework, the definition of average treatment effect (ATE) and average treatment effect on the treated (ATT) developed for binary treatment needs adjustment. Here the focus is on the relative effectiveness of all possible pairs of treatments.

Average treatment effect (ATE): ATE of treatment t' relative to t'' is the comparison of mean outcomes had the entire population been observed under one treatment t' versus had the entire population been observed under another treatment t'' (Wooldridge, 2010 and McCaffrey *et al* 2013). Formally, ATE (denoted by $\tau_{ate}^{t't''}$) is:

$$\tau_{ate}^{t't''} = \mu_{t'} - \mu_{t''} \quad (7)$$

Average treatment effect on the treated (ATT): In the multiple treatments case, the ATT focus is on the pairwise comparison of the effects of treatments t' and t'' for one of the participants in either t' or t'' . formally, the multiple treatments version of ATT is:

$$\tau_{att}^{t't''} = \mu_{t't''} - \mu_{t't'} \quad (8)$$

ATT of treatment t'' among those treated with t' (stated as ATT of t' relative to t'') is the comparison among study participants who were treated with t' , of their mean outcome when treated with t' , as they were, with the mean outcome they would have had if they had instead been treated with treatment t'' (Wooldridge, 2010).

In the multiple treatments case, there are several quantities of interest and the choice depends on the research question the study would like to address. When the interest is to offer the treatment for all the members of MSEs, estimating ATE would provide more relevant information. For instance, if the interest is to provide training for every MSE operator, we need to estimate and know the ATE.

When the interest is to understand the relative effectiveness of an intervention versus another intervention, ATT provides appropriate information. Moreover, if the interest is also to know the appropriateness of an intervention or a particular group, ATT provides relevant quantities of the treatment effect. In this study, we propose to estimate both ATE and ATT, given in Table 1.

Table 1: ATE and ATT of multiple treatments*

	ATE	ATT		
		<i>Credit (cr)</i>	<i>Training (tr)</i>	<i>Both Credit and Training (ctr)</i>
Credit vs. Training	$\mu_{cr} - \mu_{tr}$	$\mu_{cr,tr} - \mu_{cr,cr}$	$\mu_{tr,cr} - \mu_{tr,tr}$	**
Credit vs. both Credit and Training	$\mu_{cr} - \mu_{ctr}$	$\mu_{cr,ctr} - \mu_{cr,cr}$	**	$\mu_{ctr,tr} - \mu_{ctr,ctr}$
Training vs. Both credit and training	$\mu_{tr} - \mu_{ctr}$	**	$\mu_{tr,ctr} - \mu_{tr,tr}$	$\mu_{ctr,tr} - \mu_{ctr,ctr}$

* It is possible to compute the ATE in comparison to the groups that did not receive any treatments.

** These are nonsensical cases to estimate the ATT.

b. Identification

Estimating the treatment effects is challenging, since the counterfactuals are unobservable. Identification, however, is obtained by untestable assumptions. These are *the common support* and *conditional independence assumption (CIA)*. It is important to understand the implications these assumptions and assess their plausibility in the context of each evaluation study using observational data. Their plausibility depends on the available data and economic questions the study aims to address.

Common Support condition: each individual has a positive probability of receiving each treatment. This implies that there are no values of covariates that could occur only among units receiving one of the treatments. Precisely, there is a sufficient overlap between groups receiving different treatments. Formally, the common support condition is:

$$0 < p(T_i = m | \mathbf{X}) < 1 \text{ for all } \mathbf{X} \text{ and } m \quad (9)$$

Conditional Independence Assumption (CIA): treatment participation and treatment outcome is independent conditional on a set of observable attributes. This implies that the set of observed covariates \mathbf{X} are sufficiently rich such that it includes all variables directly influencing both T_i and Y_i .

Imbens (1999) and Lechner (2001) show that the multiple treatments version of conditional independence assumption that identifies the parameters of interest. Formally, the CIA is:

$$Y^0, Y^1, \dots, Y^M \perp\!\!\!\perp T | X = x \text{ for all } x \quad (10)$$

They also show that properties similar to the propensity score property hold in multiple treatments framework. That is instead of conditioning on the attributes, it is possible to condition on the participation probability (propensity score). Under the two assumptions, we can in principle estimate the treatment effects in Table 1.

Though difficult to prove, we will provide the overlap in the empirical distribution of different groups using observed data. Likewise, we will include large set of regressors in the propensity score model based on thorough review of literature. Moreover, the survey data collected large number of variables and was designed to collect data useful for treatment assignment and generally known to be related to post treatment outcomes.

c. Estimating the Propensity Score using GBM

There are several approaches to estimate the propensity score in the case of multiple treatments. Lechner (2001) estimates the propensity score using multinomial probit. It is also possible to use multinomial logit or other machine learning methods. McCaffrey et al (2013) apply GBM to estimate the multiple propensity scores. GBM is a non-parametric approach that builds data-driven predictive models (McCaffrey et al, 2013). GBM is attractive since it provides more stable weights than parametric models (Harder et al, 2010 and Lee et al, 2010) and it has also automated variable selection mechanism McCaffrey et al (2005). McCaffrey et al (2013) also show that GBM outperforms MNL in balancing the different groups to estimate the treatment effects.

Practically, we follow McCaffrey et al (2013) in estimating the propensity score and deriving the weights using the GBM. For each $M+1$ categories, we construct binary variables and separately run the GBM on each to get the corresponding estimated propensity score. Using the propensity scores, we derive the necessary weights for estimating the average treatment effect and average treatment effect on the treated.

d. Estimating the Weighted Mean of Potential Outcomes for each treatment and Treatment Effects

In order to estimate the treatment effects in Table 1, we need to estimate the means of potential outcomes. A problem in estimating the mean outcomes is the possibility that samples receiving different treatments typically differ in their distribution of covariates

that likely also differ in their observed outcomes that are not attributable to treatment. Hence, it is important to ensure that the distribution of covariates for the samples under different treatments is as similar as possible except in the treatment they receive.

An approach for achieving this is to reweight the treatment sample so that the distributions of covariates match that of any other treatment groups. Several studies (Frolich, 2004 and Wooldridge, 2010) show that under CIA and common support, reweighting the treatment sample using the reciprocal of the probability that an individual received the treatment. This approach of weighting to estimate the mean outcome and ultimately the treatment effects is known as inverse probability weight (IPW). Thus, the mean of potential outcomes are estimated using IPW approach.

To estimate the pairwise ATEs (e.g., $\mu_t - \mu_{t'}$), consistent estimates of the population means of the potential outcomes for each of the treatments (μ_t and $\mu_{t'}$) is required. Given the propensity score, $p_t(X)$, the probability that an individual with pretreatment characteristics X receives treatment t ($p_t(X) = pr(T[t] = 1|X)$). A consistent estimate of μ_t is given by the weighted mean in (13), where the weights satisfy $w_i[t] = 1/p_t(X)$.

$$\hat{\mu}_t = \frac{\sum_{i=1}^n T_i[t] Y_i w_i[t]}{\sum_{i=1}^n T_i[t] w_i[t]} \quad (13)$$

Then, ATE for $\mu_t - \mu_{t'}$ is $\tau_{att'}^{tt'} = \hat{\mu}_t - \hat{\mu}_{t'}$.

To estimate the pairwise ATTs for one of the treatments t' (e.g., $\mu_{t',t''} - \mu_{t',t'}$), consistent estimates for the mean of the potential outcomes for MSEs like those who received the treatment t' had they received the other treatment conditions t'' . Given the above two assumptions hold, a consistent estimate of $\mu_{t',t''}$ and $\mu_{t',t'}$ will be given, respectively by the weighted and unweighted mean in Equations (14 a and 14b).

$$\hat{\mu}_{t',t''} = \frac{\sum_{i=1}^n T_i[t''] Y_i w_i[t',t'']}{\sum_{i=1}^n T_i[t''] w_i[t',t'']} \quad (14a)$$

$$\hat{\mu}_{t',t'} = \frac{\sum_{i=1}^n T_i[t'] Y_i}{\sum_{i=1}^n T_i[t']} \quad (14b)$$

The weight in Eq. (14a) is $w_i[t',t''] = p_{t'}(X)/p_{t''}(X)$. Taking the difference between Eq. (14a) and (14b), we can estimate the ATT for $\mu_{t',t''} - \mu_{t',t'}$ as $\tau_{att'}^{t't''} = \hat{\mu}_{t',t''} - \hat{\mu}_{t',t'}$.

A key limitation in the propensity score approach is the problem of unobservables. Though, we provide sensitivity tests on our PSM results, we complement our treatment effect estimates using results from endogenous switching regression.

4. Data requirements and sources

Micro, Small and Medium Enterprises (MSMEs) in Ethiopia cover a wide range of business activities which can broadly be classified into industry and service sector. The industry sector is composed of manufacturing, construction and mining while the service sector includes retail, transport, hotel and tourism, ICT and maintenance service (CSA, 1997). Until recently total capital, labour force and the level of automation of the enterprises were used for the classification of MSMEs. Based on these, two types of working definitions were used by the Ethiopian Ministry of Trade and Industry (MoTI) and the Ethiopian Central Statistics Authority (CSA) in 1997 and 2011.

Table 1: Current Definitions of MSMEs in Ethiopia

Level of the Enterprise	Sector	Human power	Total Asset
Micro Enterprise	Industry	≤ 5	≤ Birr 100,000(\$6000)
	Service	≤ 5	≤ Birr 50,000(\$3000)
Small Enterprise	Industry	6-30	≤ Birr 1.5 million (\$90,000)
	Service	6-30	≤ Birr 500,000 (\$300,000)
Medium and large scale	Industry	>50	> Birr 500,000 (\$300,000)
	Service	>50	> Birr 500,000 (\$300,000)

Source: MoTI (2011)

The definition of MoTI (1997) classifies MSMEs based on the level of capital investment of the firm, while the CSA classifies enterprises into different categories based on total full-time employees and level of automation of the firm. With the main objective of reflecting the current situation of the country and harmonizing the national definition of MSMEs with international definition, MoTI (2011) in the Micro and Small Enterprise Development Strategy makes a clear classification of MSMEs based on total asset and human power of the enterprises.¹ Table one below summarizes the current definition of MSMEs in the country with their respective sector.

¹ When ambiguity is encountered between manpower and total assets as explained above, total asset is taken as the primary yardstick.

To address the evaluation questions of whether access to credit, training and their joint impact on MSEs performance, we use recent data on MSEs in Ethiopia collected by Addis Ababa University and Addis Ababa City Administration Bureau of MSEs Development Bureau. The data covers 1,445 MSEs randomly drawn from Addis Ababa. The dataset enables to answer the proposed research question and gives a good picture of MSE sector in urban area of the country. The survey covered topics on MSEs characteristics (age, size, owner’s gender, education, experience, etc), performance (sales, employment, etc), business practices, access to support services (finance, training, land, etc), status of the business (formality and legality), challenges of MSEs and other issues. It also provides details of inputs used over the last 12 months and outputs produced over the same period.

To assess the nature of risk preference of the MSEs operators, we utilize the details of production information in the survey data (details of inputs used over the last 12 months and value of outputs produced over the same period) and econometrically estimate risk attitudes of the entrepreneurs.

5. Policy Influence Plan (Research Communication Strategy)

Institution	Contact	Target	Remark
Decision Makers			
Ethiopian Ministry of Trade	P.O. Box: 704, Addis Ababa, Ethiopia Tel: +251-11-551-8025 /8029 Fax: +251-11-551-5411 /+251-11-552-4285	H.E Dr. Bekele Bulado Ahmed Abitew	Have contacts within the institution
Ministry of Urban Development and Housing	P.O. Box: 24134/1000 Tel: +251-11-554-1261 Fax: +251-11554-1268 Email : tekesteab@ethionet.et	H.E Dr. Ambachew Mekonen	Have contacts within the institution
Women’s Affairs Department, Ethiopian Trade State Minister	P.O. Box: 704, Addis Ababa, Ethiopia Tel: +251-11-551-8025 /8029 Fax: +251-11-551-5411 /+251-11-552-4285 Email : nigesthaile@yahoo.com	Wro. Nigest Haile	Have contacts within the institution
Ministry of Labour and Social Affairs (Woman’s affair directorate)	P.O.Box: 2056, Addis Ababa, Ethiopia Tel: +251-11-551-7080/6217 Fax: +251-11-551-8396/5316	Wro. Atsede Gutta	Have contacts within the institution

	Email : moisa-comt@telecom.net.et		
Federal Micro & Small Enterprises Development Agency	P.O.Box: 1463, Addis Ababa , Ethiopia Tel: +251-11-551-1122 Fax: +251-11-551-8435 Mob : +251-911-69-4572 E-mail: y_eshete@hotmail.com	Eshete Yehualawork	Have contact within the institution
AA Micro and Small Enterprises Development Agency	P.O. Box: 8697/5212, Addis Ababa, Ethiopia	Ato Luelseged Yifru	Have contacts within the institution
Minister of Women, and Children	P.O. Box: 8697/5212, Addis Ababa, Ethiopia Tel: +251-011-859-0184 / 011-554-5696 Fax: +251-011-667-2243 Mob: +251-091-102-7630 E-mail: abiyhany@yahoo.com	H E Demitu Hambisa	Have contacts within the institution
Donor Organizations			
ILO, Women's Entrepreneurship Development and Gender Equality Project	Africa Hall, 6th Floor, Menelik II Avenue , Addis Ababa , Ethiopia Tel: +251-11-544-4246 Fax: +251-11-544-5573/ +251-11-551-3633 E-mail: addisababa@ilo.org	Ato Dereje Alemu, (Dereje@ilo.org)	No contact within the institution
EU Micro and Small Enterprise Development Programme	P.O. Box: 5570 , Addis Ababa, Ethiopia Tel: +251-11- 661-2511 Fax: +251 11- 661-2877 Email: DELEGATION-ETHIOPIA@eeas.europa.eu	Mr. Xavier Marchal	Have contacts within the institution
ACDI/VOCA	P .O. Box: 4771 , Addis Ababa , Ethiopia Tel : +251-11-553-4650 Mob: +251 - 091-120-3832/091-1228753 E-mail: Bdabdi@acdivocaeth.org , askbru3@yahoo.com	w/ro Biruktawit Abdi	Have contact within the institution
SNV (the	P.O. Box : 40675, Addis Ababa,	Mr. Jan Vloet	Have

Netherlands Development Organization) why SNV?	Ethiopia Tel : +251-11-465-43 86/7/9 Fax : +251-11-465-4388 E-mail : ethiopa@snvworld.org	W/ro Eyerusalem Regassa	contacts within the institution
Associations			
Addis Ababa Women Entrepreneurs Association	P.O. Box : 2728/1250, Addis Ababa, Ethiopia Tel: +251-11-416-9294/ 011-618-5213 Mob : +251-091-138-3071 Email: konimix@ethionet.et	W/ro Achamyesh Ashenafi Bizunesh Kidane	Have contacts within the institution
Financial Institutions			
Addis Credit and Saving Institution	P.O.Box: 1074, Addis Ababa, Ethiopia Tel: +251-11-157-2720/11-111-1512 E-mail : adcsi@telecom.net.et	Ato Awash Abetew	Have contacts within the institution
Association of Ethiopian Micro-Finance Institutions	P.O. Box : 338, Code 1110, Addis Ababa , Ethiopia Tel: +251-11-550-3829, +251-11-155-1567 Fax: +251-11-550-3830 E-mail: aemfi@telecom.net.et	Dr. Wolday Amha	Have contacts within the institution
Research Institutes			
Ethiopian Development Research Institute	P.O.Box : 2479, Addis Ababa, Ethiopia Tel: +251-11-550-6066/+251- 11-552-5315/5316 Fax: +251-11-550-5588 E-mail: info@edri-eth.org	H.E Mr. Newai Gebre-Ab	Have contacts within the institution
Ethiopian Economic Association	P.O.Box : 34282 Addis Ababa, Ethiopia Tel: 251-11-645-3200 Fax: 251-11-645-3020 Email: eea@ethionet.et	Dr. Assefa Admassie	Have contacts within the institution
Addis Ababa University	P.O.Box : 1176 Tel: +251-11-123-9780 Fax: +251-11-123-9729 Email: external.relations@aau.edu.et	Admasu Tsegaye (PhD)	Have contacts within the institution

According to the Ethiopian Economic Association (2004) and ILO (2003) small businesses and

enterprises operated by women entrepreneurs contribute significantly to the national economy in terms of job creation, but are provided with very little or no policy related support from the government. Therefore, the primary audiences of our study are policy makers at different level. Other target audience includes women associations, academics institutions, financial institutions, NGOs working towards strengthening the SMEs sector in general and female entrepreneurs in particular and the wider public. The research team will work diligently to include primary audiences (policy makers) during the whole process of the study.

To disseminate the findings of our research and to facilitate informed policy making the following dissemination channel will be used:

- 1) **An Expert Meeting with Policy Makers:** After producing a first draft results, we will hold an expert group meeting with officials from Ethiopian Ministry of Urban Development and Housing, Ministry of Trade, Federal Micro & Small Enterprises Development Agency, Regional Micro and Small Enterprises Development Agency, Ethiopian Development Research Institute, Ethiopian Economic Policy Research Institute and Addis Ababa University. The main topics of discussion are introduction of the study objective, research design and policy implication. This also helps us to facilitate the process of gaining access to workplace where we can conduct the experiment and integrate the ideas of the policy makers at earlier stage.
- 2) **Strategic Mailing List of Stakeholders:** We have the ambition to establish a mailing list of strategic stakeholders where results (policy brief, abstracts, publications and meeting reports) distributed and seminars can be announced. In sum, as a means of coordinating the multi-stakeholders of the project we have the objective to constantly and consistently inform actors on the progress of the research electronically through email.
- 3) **Joint Seminars for Policymakers, Researchers and Other Key Stakeholders (National Conference):** We intend to organize joint seminars for policymakers, researchers, associations, financial institutions and NGOs. The goal of the seminar is: first, to communicate our study result to inform policy making and development interventions that can enable entrepreneurs to take advantage of new opportunities and development of MSE sector in the country. Second, create common understanding among policymakers, researchers and other stakeholders to create enabling environment for women entrepreneurs in SME sector. Therefore, we intend to invite Federal Micro & Small Enterprises Development Agency to present the general picture, challenges and opportunities of MSE sector in the country along with its current activity. Policy briefs and working papers will also be distributed to the stakeholders before and during the meeting.
- 4) **Conferences and Seminars:** Team members, specifically junior researchers, will participate in both national and international conference to present findings in order to disseminate the knowledge to other academia and initiate similar researches in other developing counties.

5) **Publication:** We aim at writing articles that will be published in international and national peer reviewed journals. Since the team has different affiliation organizations, (namely; Addis Ababa University, University of Pretoria, University of Johannesburg, Tshwane University of Technology, UNU-MERIT and Maastricht University) we will use the web pages of each institution in addition to PEP website to reach out different scientific community. Table-4 below presents a strategy matrix for dissemination of findings to primary and secondary target groups.

Table 4: Overview of Primary and Secondary Target Groups for Research Result Dissemination

Target Group	Method						
	Expert meeting	Email	Website	National conference	International seminars	Publication	
						Academic publication	Policy brief and meeting reports
Decision Makers							
Ministry of Urban Development and Housing	xx	xx	Xx	Xx		x	Xx
Ministry of Trade	xx	xx	Xx	Xx		x	Xx
Ministry of Labour and Social Affairs	xx	xx	Xx	Xx		x	Xx
Federal Micro & Small Enterprises Development Agency	xx	xx	Xx	Xx		x	Xx
Addis Ababa Micro & Small Enterprises Development Agency	xx	xx	Xx	Xx		x	Xx

Associations							
Addis Ababa Women Entrepreneurs Association		xx	Xx	Xx		x	Xx
Ethiopian Women's Exporters' Forum		xx	Xx	Xx		x	Xx
Ethiopian Chamber of Commerce		xx	Xx	Xx		x	Xx
Others							
NGOs		xx	Xx	Xx		x	Xx
Ethiopian Development Research Institute (EDRI)		xx	Xx	Xx	Xx	xx	X
Ethiopian Economic Policy Research Institute (EEPRI)		xx	Xx	Xx	Xx	xx	X
Academia		xx	Xx	Xx	Xx	xx	X
General public	x	X	X	X	X	x	X
Xx-Primary Target Groups		x-Secondary Target Groups					

6. List of Team Members

Name	Age	Sex (M,F)	Training and experience
Jonse Bane Boka	Over 30	M	Jonse Bane is currently a PhD student at AAU and he has Double masters in natural resources and environmental economics in 2005 from Addis Ababa University and international economics in 2009 from Consortium of seven European Universities, He has

			<p>strong educational background with strong theoretical and applied understanding. He was a researcher at the National Bank of Ethiopia before joining AAU in 2004. After his MSc graduation, he joined Young Lives at EDRI from 1 October, 2005- 31 December, 2005, where he participated in data management and research on child education and nutrition. In Feb 2006, he joined Economics Department of AAU as lecturer and since then he has participated in various projects in value chain analysis of agricultural sector; vulnerability of Ethiopian farmers to climate changes and their adaptation strategies in collaboration with Ethiopian Development Research Institute (EDRI); team leader of the project titled “Baseline study on Challenges and Constraints faced by the MSEs in Addis Ababa City Administration-ways forward” and various final performance evaluation of the projects/programs.</p> <p>He has also ample experiences and expertise in baseline studies in agricultural related activities in smallholder farmers; pastoral and agro-pastoral communities. Thus, he has ample experiences in project/program evaluation, baseline surveys, and situation analyses of rural communities in different corners of the country. Finally, Jonse also has strong technical skills including statistical packages like STATA, SPSS and E-views.</p>
Eleni Abraham Yitbarek (Junior Researcher)	Over 30	F	<p>Eleni is a Post-doctoral fellow at University of Pretoria. She was a PhD research fellow at UNU-MERIT/Maastricht Graduate School of Governance and a visiting researcher at university of Pretoria. She has MSc in Public Policy and Human Development from Maastricht University. She did a fellowship at the world Bank and was part of chief economist office of Africa region office.</p> <p>She worked for the National Bank of Ethiopia (NBE) for two years as microfinance supervisor. During her stay at the National Bank, she was a part of on-site supervision team and supervised almost all microfinance institutions in the country. She worked for SNV-Ethiopia as Economic Development Advisor and Impact Investment Advisor after her MSc.</p> <p>During her stay in SNV she acquired deep knowledge</p>

			<p>on evidence based evaluation, working with the private sector especially MSMEs, and gender analysis for the assessment of innovation processes in value chain development programs.</p> <p>Eleni also participated in different researches that helped her to acquire extensive experience in analysis of large household data sets. Eleni was also a part of a World bank team that prepare “Poverty in a rising Africa”. She also conducted different policy oriented research for UNDP-Africa region office, UN-AIDS and Bill & Melinda Gates Foundation , among others. Her research interest includes Pubic Policy, Informal Private Sector Development with a focus on developing countries, Applied Econometrics and Impact Evaluation.</p>
Yesuf Mohammednur Awel (Junior Researcher)	Over 30	M	<p>Yesuf is an economist-consultant for UNECA. He holds PhD in economics from Maastricht University. Prior, he earned MPhil in Environmental and Development Economics from University of Oslo and BA in Economics from Mekelle University. Yesuf has an experience in teaching; he taught undergraduate and graduate classes in Economics. He also offered short term tailor-made intensive training in an adult learning environment. His research experience encompasses issues of productivity and efficiency analysis, non-experimental impact evaluation on microfinance and micro-insurance, micro and small enterprises dynamics and issues of Poverty. He also works on issues of industrialization and structural transformation in Africa</p> <p>Yesuf also has experience in survey and data management and use of statistical software (STATA, Eviews, Rand SPSS). Further, he is also an expert on risk and insurance in which he defended his PhD dissertation on ‘Empirical essays on insurance demand and impacts’.</p> <p>Yesuf was a PhD fellow at Maastricht Graduate School of Governance/UNU-MERIT and Lecturer in Economics at Mekelle University. His research interest</p>

			includes Pubic Policy, Development and Agricultural Economics, Applied Econometrics, Impact Evaluation and Behavioral Economics.
Mulatu F. Zerihun	Over 30	M	<p>Dr. Zerihun is a passionate academician, researcher, consultant, systems thinker, business strategist, creative problem solver, excellent communicator, skillful negotiator, and skillful organizer. He also operates with ease in diverse cultural and socio-political business environments and.</p> <p>Mulatu holds a PhD in Economics from the University of Pretoria in 2015 and a Doctorate in Business Administration from the Tshwane University of Technology in 2014. His two doctoral theses focused on exploring developmental issues in South Africa and Southern Africa for the advancement of the social welfare of the societies in the region. He has extensive teaching & research experience (for about 15 years), 5 years' experience in industry, and has published widely in the areas related to macroeconomics and environmental economics. Mulatu has been equipping himself by presenting scientific papers in international conferences and attending workshops in various research instruments and skills development courses. His research interest areas include; macroeconomic policy analysis, development economics, regional economic integrations, poverty analysis, income inequalities, interest rate persistence, exchange rate dynamics, rural-urban development dynamics, applications of environmental economics, and natural resources management in sub Saharan Africa.</p>
Ajebush Argaw Shafi	Over 30	F	<p>Ajebush holds a Ph.D. in Business Administration from Tshwane University of Technology (TUT). Her dissertation focus on Effects of Access to Finance on Small and Medium Enterprises' Productivity and Profitability. She also managed Area Development Programs of World Vision Ethiopia in 28 local administrative units of Digeluna Tijo District. She also has an excellent network with regional government organizations, civil societies and other NGOs for collaboration in joint planning, implementation and evaluation of programs that target SMEs in Ethiopia. Ajebush also participated in different research projects that helped her to acquire extensive experience in analysis of large data sets on small and medium enterprises.</p>

Hiwot Menker Girma	Over 30	F	Hiwot Menker is a postdoctoral fellow at University of Johannesburg located in South Africa. Previously, Hiwot worked as a researcher and lecturer in a number of higher institutions both in Ethiopia and South Africa. Her expertise includes research and teaching in agricultural, development and environmental economics. While working as a lecturer in Alemaya University, in Ethiopia, she had contributed towards actions that resolve the problems faced by female students at the University. In addition she had been working as a planning officer during the same period. She earned her BSc and MSc degrees from Alemaya University in Ethiopia, and got her PhD degree from University of Pretoria.
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7. Expected capacity building

During this process, the junior researchers will get a chance to work with other team members and acquire knowledge on *Theories of Firm, Decision under Uncertainty, Risk and Risk Aversion*. Issues of risk and risk management are very integral to the current and future work of Yesuf and Eleni who are working on Micro-insurance and Informal Risk Management Mechanisms in developing countries in general and Ethiopia in particular.

Though the junior researchers have experience in data management and survey analysis, the project is a golden opportunity to build their capacity of undertaking *non-experimental rigorous impact evaluation*. Further, participating in both national and international seminars/conferences improves their presentation skill and helps them to create network with academia and policy makers in their home country and abroad.

Most of the team members are recent PhD holders, a perfect timing for them to further build their capacity participating in a policy analysis research project that allow them gain a hands-on learning opportunity in doing policy analysis and interaction with policy makers. They will gain in-depth understanding of the impact evaluation literature and will be able to use the evaluation technique for further evaluation of development interventions in developing countries.

In further building capacity, the research team will organize a training seminar, where field risk experiment and impact evaluation techniques are presented to junior staffs from public universities in Ethiopia in collaboration with Ethiopian Economic Association.

Participation in policy analysis research project, interaction with policy makers and

other stakeholders, knowledge on impact evaluation technique, and participation in conferences will enhance the capacity of the junior researchers to emerge as competent researchers and policy analysts in their future career.

Name	Task
Jonse Bane Boka	Jonse Bane Boka will oversee the data management, econometric analysis of the data and reports write-up. Moreover, as a lead researcher of the team he is responsible for ensuring the quality of the analysis and report write-up. He will also ensure timely distribution of study output to different stakeholders. Moreover, as coordinator of the team, he is the point of contact between the research team and PEP.
Eleni Abraham Yitbarek	Eleni will be involved in the data management, analysis and write-up, facilitate the national conference and meeting with government officials.
Yesuf Mohammednur Awel	Yesuf will be involved in data management, analysis and write-up, facilitate the national conference and meeting with government officials, coordinates the meeting with stakeholders. He will lead the econometric analysis and engage in the knowledge and skill transfer of the project.
Mulatu F Zerihun	Mulatu will be involved in the data management, analysis and write-up.
Ajebush A. Shafi	Ajebush will be involved in the data management, analysis and write-up.
Hiwot M. Girma	Hiwot will be involved in the data management, analysis and write-up.

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

Name of funding institution	Title of project	Team members involved
Addis Ababa City Administration Bureau of MSEs Development	Baseline study on Challenges and Constraints faced by the MSEs in Addis Ababa City Administration-ways forward	Jonse Bane, Abrham Seyoum, Seiager Alem, Mengasha Mamo
Ministry of Water and Irrigation	Economic Benefits of Cooperation for Equitable Allocation of International	Jonse Bane, Tewodros Negash, Alemu Mekonnen, Alemnesh, Adane Tufa

	Water Resources: the Case of Eastern Nile River Sub-basin	
Christian Aid-Ethiopia	Livelihoods Outcomes Assessment of PPA Projects in Borana Zone, Oromia Regional State, Ethiopia	Jonse Bane
CRS	Cost-Benefit Analysis of Oxen Fattening and Market Linkages in Abbaya District of Borena Zone, Oromiya	Jonse Bane, Beyene Taddese
The World Bank	Final Program Evaluation of Pastoral Development Program (PCDP) of the WB	Jonse Bane, Beyene Taddese
University of America in Cairo, Center for Migration and Refugee Studies	The Economic Implications of Remittance in Household Welfare and Foreign Currency Earnings	Eleni Abraham Yitbarek
The World Bank	Impact of Regional Power Trade to the Poor Communities in the Nile Basin Countries	Eleni Abraham Yitbarek
UNDP-Africa region office	Advancing women's empowerment, gender equality and sustainable human development: linkages between empowerment, gender equality and sustainable development	Eleni Abraham Yitbarek
Tigray Bureau of Construction, Roads and Transport and Mekelle University Recurrent Budget	Impact Assessment of Rural Roads on Poverty Reduction in Tigray, Northern Ethiopia	Yesuf Mohammednur Awel
Tigray Bureau of Plan and Finance	Region wide Socioeconomic Baseline Survey in Tigray	Yesuf Mohammednur Awel
IRI, Columbia University (US) and HARO, Oxfam	Evaluating impacts of the HARITA program on	Yesuf Mohammednur Awel

America (Ethiopia)	farmers' decisions and livelihoods	
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9. Describe any ethical, social, gender or environmental issues or risks that should be noted in relation to your proposed research project.

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1. Expected Timeline

Task	Number of Months
Review of Related Literature on: Entrepreneurial Risk Appetite, Impact Evaluations	2
Data Cleaning and Preliminary Analysis-Impact Evaluation	2
Data Analysis: Entrepreneurial Risk Appetite, Impact Evaluations	2
Expert Group Meeting with Policy Makers and other stakeholders	1
First Draft submission to PEP Submission to UNU-MERIT Working Paper	1
Training on Non-experimental Evaluation	1
Revisions	1
Final Report	1
Policy Brief	1
Total Number of Months	12

2. Budget

Description	Cost Unit	Rate (USD)	Total Cost (USD)
Core Research Grant			
Data cleaning	1445 observations	3.5 USD/Observation	5,057.5
Training expenses	4 trainers (researchers) for 5 days	250 USD/ day / researcher	5,000
Travel expense for 2 trainers (South Africa-Ethiopia-South Africa)	2 trainers (researchers)	1500 USD per person	3,000
Refreshment (coffee and lunch) for junior academic staffs of new universities in Ethiopia	30 junior staffs for 5 days	30 USD/ day / participants	4,500

Stationaries			1,000
Contingency (10%)			1855.75
Sub-total (1)			20,413
Additional Grant			
Participation of Team Members in 2 PEP general meeting			10,000
Study visit of 1 Team Member			5,000
Participation of 5 team members in PEP Schools			20,205
Sub-total (2)			35,205
Total			55,618

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