ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

INSTITUTE OF REGIONAL AND LOCAL DEVELOPMENT STUDIES (IRLDS)

CHALLENGES AND PROSPECTS OF RURAL-URBAN MARKETING LINKAGES IN DEBRE MARKOS TOWN AND ITS HINTERLAND, AMHARA ADMINISTRATIVE REGIONAL STATE, ETHIOPIA

A THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES, FOR THE IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN REGIONAL AND LOCAL DEVELOPMENT STUDIES

MULUADAM ALEMU BEKELE

JULY 2009

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Acronyms and Abbreviations

CBOs	Community Based Organizations
DAs	Development Agents
DMTID	Debre Markos Town Information Desk
ECSC	Ethiopian Civil Service College
EEA	Ethiopian Economic Association
FDRE	Federal Democratic Republic of Ethiopia
GDPR	Global Donor Platform for Rural Development
GPS	Geographical Positioning System
GWARDO	*Gozamin* Wereda Agricultiural and Rural Development Office
ILRI	International Livestock Research Institute
IRD	Integrated Rural Development
MDGs	Millennium Development Goals
MFA	Ministry of Federal Affairs
MSEs	Micro and Small-scale Enterprise
MWUD	Ministry of Works and Urban Development
NGOs	Non-Governmental Organizations
NUPI	National Urban Planning Institute
PADMI	Press and Audio Visual Department Ministry of Information
PAs	Peasant Associations
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
RUL	Rural-Urban Linkages
RUML	Rural-Urban Marketing Linkages

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Abstract

The study was conducted in Debre Markos town and its hinterland. The main objective of the study was to assess the challenges and prospects of RUMLs in the study area. It has made use of primary and secondary data sources and 237 households were selected through systematic random sampling. The data was analyzed by making use of a blend of descriptive and inferential statistical tools. The study discloses wide differences between hinterland farmers and their urban counterparts to recognize and identify pertinent challenges that hamper RUMLs. To hinterland farmers, shortage of land, subsistence agriculture, lack of market facilities, price fluctuations and shortage of farm inputs are the first five main challenges in ascending order that affect RUML. The x^2 analysis reveals that both groups of farmers are equally victims of these challenges. Urban households on the other hand identified, Price fluctuation, lack of market facilities, inflation, lack of agro-processing industries and subsistence nature of agriculture as the first five main challenges in order of severity that affect RUML in the study area. The study has identified weak and partial backward RUML while forward production marketing linkage is almost non-existent. The only linkage found relatively strong is consumption linkages. The analysis using One-way ANOVA shows that urban households do not differ significantly based on age and duration from each other on the mean cost incurred and mean amount of farm outputs purchased. The correlation analysis on the other hand reveals that the amount of farm outputs purchased and cost incurred by urban households decreases, as people get older and older. Among ten variables, shortage of land is the first problem that affects agricultural production in the hinterland. Production is subsistence often used for consumption that never satisfies urban peoples' demand. The multiple regression results show that age of the household and distance are equally important factors to explain the variance on the amount of cereals sold. While the amount of farm inputs used and farm size are less significant to explain any unique variance on the amount of cereals marketed by farmers. PASDEP, agricultural sector policy, industrial sector policy, road sector policy and decentralization are identified as national prospects to enhance RUMLs. While expansion of MSEs, investment activities, consumers' associations, cooperatives and farm output marketing services are some of the local prospects that would harness RUMLs. No significantly coordinated efforts have been made by local governments to harness RUMLs in the study area. Finally, it is recommended that to ameliorate the pertinent RUML challenges and promote mutual development; a pooled effort is needed from all concerned stakeholders.

Chapter One

Introduction

1.1 Background of the Problem

Earlier theoretical and empirical approaches in development studies and planning were done on the assumption that there is a distinction between rural and urban areas (Lynch, 2005). The urban-rural duality thesis reveals that development should come through the diffusing influence of urban centers acting on the countryside as means of change (Slater, 1986:9).

The adverse impact of urban-based industrialization policy on rural development was recognized later in the 1970s and the paradigm has shifted towards Integrated Rural Development (IRD), which in turn failed to bring desired outcomes owing to neglect of urban aspect in development process (Tegegne, 1999; Lynch, 2005). Hence, both spatial units have been given different emphasis in practice and planning which obscured the collective synergy of Rural-Urban Linkage (RUL) for poverty reduction and mutual development where one is cause for a problem instead of being remedy (Tegegne , 2005).

However, in the past few decades, there had been a changing concept of spatial dynamics between urban and rural areas. Thus, migration, information, consumption and capital flows transcend a strictly rural-urban dichotomy and rely on resources of both spatial units (GDPRD, 2007). Consequently, mere consideration of rural developments as an entirely distinct aspect from urban development is no longer acceptable. Instead, rural-urban linkages development approach becomes the appealing regional development strategy (Okpala, 2003).

Rural and urban areas are mutually interrelated spatial units in various socio-economic, cultural and environmental aspects (GDPRD, 2007). Hence, designing a balanced and mutually supportive approach to development of both geographic units is vital (Okpala, 2003). It seems evident that such symbiotic development pattern can be realized through RUL (Tegegne, 1999). Therefore, researchers, development practitioners and other stakeholders need to view development issues along the broad spatial continuum than treating the two areas independently (GDPRD, 2007).

The challenge for regional planning is to narrow rural-urban divide by incorporating this fact in to development frameworks, and further identifying policy measures to bring mutual benefits (Douglass, 1998). Therefore, in developing countries like Ethiopia RUL should form central part of policies that guide rural-urban development (Tegegne, 2006). As a response to this quest, the Ethiopian government has incorporated strengthening RUL as a prioritized development strategy in its PASDEP initiatives (MWUD, 2006).

However, designing a sound policy framework and development strategy is not an end by itself; rather a consolidated effort is yet needed from the scientific community to bridge the prevailing rural-urban divide (Tegegne, 2005). This can be done by diverting current emphasis of research away from a mere analysis of physical linkage to in favor of a stronger focus on inherent relationships between urban and rural areas (Lynch, 2005).

In the preceding section, an attempt has been made to show the motion and consensus on the importance of strengthening rural-urban linkages to foster a holistic development. It is also indicted that, yet there exists a wider rural-urban dichotomy. Even if linkages exist, types, strength, prospects and factors that shape them would however vary from place to place. Thus, a micro level detailed study on certain aspects such as rural-urban marketing linkages on a single town and its hinterland provides a paramount importance on the nature of linkages and policy formulation for local economic development.

1.2. Statement of the Problem

Rural and urban areas are symbiotically interrelated geographic units in various aspects (GDPRD, 2007). Their interactions are key strategic elements for livelihood diversifications. (Tacoli, 1999). Positive and strong RUL stimulate growth, reduce poverty (GDPRD, 2007) and have serious implications on economy of a nation (Assefa, 2006). Such potentials could be well cultivated if the two spaces are made to complement and function each other in a more coordinated way (Tegegne, 2005). New research findings suggest that, RUL should form critical parts of national policies and strategies that guide both rural and urban development (Tegegne, 2006; Tacoli, 2006).

However, past development policies and research works have treated rural and urban areas independently (Lynch, 2005). Besides, development strategies and policies of developing

countries are often based on the dichotomy of rural and urban areas. Hence, the choice of development strategy is one of the debated issues on rural-urban development literature (Asefa, 2006). Similarly, Ethiopia's development strategies have been shared between rural and urban issues. In this regard, failure of country's development policies during the imperial and *Derg* regime to integrate the two spatial units in a meaningful way undermined the role of market to create interaction between urban and rural areas (Assefa, 2006; Tegegne, 2005).

Prior development policies in Ethiopia had failed to bring rural development since farmers have faced with several problems: market and marketing systems, infrastructure and social facilities. This in turn, hindered farmers' opportunities to use agricultural inputs, non- farm activities and ultimately exhibit a weak rural-urban interaction (Tegegne, 1999; Demese, 2006). Similarly, recent development policies and planning frameworks such as ADLI in Ethiopia with the exception of PASDEP yet remains rural centered with minimal opportunity for the potential of urbanization to contribute in country's socio-economic development (Befekadu and Birhanu, 2003; Assefa, 2006). Therefore, the policy environment in Ethiopia reveals that RULs have not received adequate attention in development strategies of the country that calls for more research and investigation to identify its adverse effect on the ongoing development process.

Research reveals that Rural-Urban Marketing Linkage (RUML) in Ethiopia is continually affected by a serious of interrelated problems. In this regard, lack of adequate means of transport, market facilities, agro-processing industries, farm inputs, limited flow of finance, unfavorable rural land tenure policy, subsistence nature of agriculture, natural resource degradation, poverty and lack of enabling environment were identified as threats for the positive RUMLs in the country (Tegegne, 1999; Tegegne, 2005; Goitom, 2005; Bezabih, 2006).

Tegegne (1999) noted that small towns in Ethiopia are key nodal points to enhance agricultural and rural development by serving as market, processing, service and employment centers for the rural hinterland. *Debre Markos* town in this regard has linkages with the surrounding rural areas and other small urban centers in the vicinity. In line with this, Sewnet (2008) underlined that one part of economic dynamism is the flow of agricultural products in to the town with large range of product diversity. However, some factors affect the linkage between the town and its hinterland. For instance, traditional farming is common in the hinterland that would obscure farmers' demand to urban goods and services due to meager agricultural output. Besides, the nature of

infrastructure and services provided by the town does not enhance RULs; hence, the town's relation with its hinterland is yet constrained with physical and social infrastructure backlogs (Behayilu, 2008). Sewnet (2008) also noted that the present status of the town is not yet well planned. Market areas in *Debre Markos* are not arranged in a suitable way to foster smooth transaction among producers, consumers and suppliers (Melaku et al.2001).

In general, rural-urban linkage studies in Ethiopia are limited (Tegegne, 1999). More specifically, no linkage study has so far been conducted in *Debre Markos* and its hinterland. Besides, what makes *Debre Markos* town and its hinterland to remain underdeveloped with chronic poverty is not clearly known (Esubalew, 2006) and creates a knowledge gap, which necessitates specific investigation. Therefore, a detailed assessment on the challenges and prospects of RUMLs in *Debre Markos* and its hinterland is worth researching to bridge the existing knowledge gap.

1.3. Objectives

1.3.1. General Objective

The main objective of the study is to investigate the challenges and prospects of RUMLs in *Debre Markos* and its hinterland.

1.3.2. Specific Objectives

The specific objectives of the study include:

1. To identify types of RUMLs in *Debre Markos* and its hinterland.
2. To investigate the existing opportunities of RUMLs in the study area.
3. To assess the role of urban and rural local governments to strengthen RUMLs.
4. To identify challenges of RUMLs in *Debre Markos* and its hinterland.

1.4. Research Questions

The study answers the following questions:

1. What factors influence rural-urban marketing linkages in the study area?
2. What is the nature of farm households' demand for urban goods and services?
3. What is the nature of farmers' demand for farm inputs and from where do they get it?

4. What is the nature of demand of urban households for farm products in the study area?
5. How far the RUML is influenced by rural-urban local governments in the study area?

1.5. Methodology

1.5.1. Study Design

The study is mainly aimed to collect data on the existing RUMLs in *Debre Markos* and its hinterland. A cross-sectional survey method is used to assess the challenges and prospects of RUMLs in the study area. This method is chosen instead of longitudinal approach owing to the study's limitation in terms of both time and money. Unlike the longitudinal approach, survey method is efficient for one time data collection and analysis which make the researcher keen to use it to undertake the study under consideration. Besides, it is the most frequently used method in most social science researches (ECSC, 2008).

Consistent to such fact, previous studies have also used a cross-sectional method to show the existing rural-urban linkages (Tegegne, 1999; Goitom, 2005). Following other researchers' method (Tegengne, 1999; Goitom, 2005), the study adopted an area of 10 km radius around *Debre Markos* as an area of intensive interaction between the town and its hinterland. Such 10 km distance is also assumed reasonable to be covered on a daily walking travel since it is the dominant mode of transport in the study area.

1.5.2. Sampling Techniques

A four-stage sampling strategy has been used to select farm households for the study. First, the researcher has contacted *woreda* agricultural and rural development experts and identified six Peasant Associations (PAs) that are found within 10 km radius from *Debre Markos*. Second, stratified sampling technique was used to subgroup the six PAs in to two groups based on proximity to the town. As per of the stratification, two PAs: *Qebi* and *Chemoga* are wholly found within the first 5km radius from the town while the rest four PAs: *Wonka*, *Enerata*, *Yebo* and *Chimburd* are wholly found within the next 6 - 10 km radius. Thirdly, two PAs are purposively drawn, one PA within each successive 5 km of radius from *Debre Markos*. The selection of the two PAs is not haphazardly done, instead the availability of infrastructures like roads and telecommunication services are taken in to consideration to see their impacts on RUMLs.

Accordingly, from the four PAs that fall within 6 -10 km, *Wonka* is purposively chosen as one of the study PA since it is found along the highway that run from Addis Ababa to *Bahir Dar* and has access to telecommunication services. The second PA is chosen from those *kebeles* that fall within the first 5 km. Since *Chemoga* has similar characteristic with *Wonka*, *Qebi* that has no access to any infrastructure is selected as the second study PA. Fourthly, after preparing a sample frame from *kebele* registration file 123 (81 from *Wonka* and 42 from *Qebi*) rural sample households are selected for the survey through simple random systematic sampling. As shown in section 1.5.3, the sample size is determined using statistical methods.

To select sample urban households and traders for the study, a two stage sampling technique has been used. Initially the researcher has contacted with municipality officials in *Debre Markos* town to identify *kebeles* that host main market centers in the town. As per his investigation, three small daily markets, literally called as *Gullits*, one general market (literally known as *Kidamen Gebeya*) and two cattle markets are identified. Since *kebele*, 01 hosts the main market (*Kidamen Gebeya*) that serves both as a daily and weekly market place where the lion share of transaction between different stakeholders can take place; it is purposively chosen for the survey. In the second stage, 124 residents (62 urban households and 62 urban traders) are selected through simple random systematic sampling from *kebele* 01 using dwellers association rosters, municipality and *kebele* records. As shown in section 1.5.3, the sample size is determined using statistical methods.

1.5.3. Population and Sample Size

The study was conducted in three *kebeles*: two rural and one urban. The available data in the *woreda* agricultural and rural development office reveals that the hinterland has 7,035 (6,212 male and 823 female) households, of which 764 (696 male and 67 female) are found in *Wonka* while 397 (363 male and 34 female) households are found in *Qebi*. Besides, *kebele* 01 in *Debre Markos* town has 1,238 (409 male and 829 female) households.

Sample size determination is not an easy task since it is affected by several factors. Sample size for instance, depends on the type of research design, the desired level of confidedence, population characteristic, cost and time availability. To minimize the problem and to keep the representativeness of the sample in the population, the research has made use of the following

formulas often used in most social science researches for sample size determination when the target population is less than 10,000 (ECSC, 2008).

1) $n = (z\alpha/2)^2 pq/d^2$ 2) $n_f = n/1+((n-1)/N))$

Where: n - is desired sample size (when the population is greater than 10,000)

n_f - is the desired sample size (when the population is less than 10,000)

$z\alpha/2$ - is the standard normal deviate at the required (95%) confidence limit (1.96)

p – is 0.1(Proportion of in the target population to be included in the sample)

q – is 1- p (1- 0.1=0.90)

d – is the level of statistical accuracy (margin of error) set usually at 0.05

N - is the total number of the population

Using the above formulas, the desired sample size (n_f) is calculated as follows:

$n = (z\alpha/2)^2 pq/d^2$ Therefore $n = (1.96)^2(0.1*0.9) / (0.05)^2 = 138$

Substituting the value of n (138) in the second formula the actual sample household number are calculated for both urban (where N =1,238) and rural (where N = 1161).

a) Calculation of sample urban households

$n_f = n/1+((n-1)/N))$

$n_f = 138/1+((138-1)/1,238)) = 124$

b) Calculation of sample rural households

$n_f = n/1+((n-1)/N))$

$n_f = 138/1+((138-1)/1,161)) = 123$

The method resulted a sample size of 124 and 123 urban and rural households respectively. However, out of 124 urban sample households, 120 valid samples (60 urban households and 60 traders) were entered in to the analysis. Likewise, out of 123 rural sample households, 116 valid samples (76 from *Wonka* and 40 from *Qebi*) were entered in to the analysis. The remaining samples (4 urban sample households and 6 rural sample households) are accounted to be unacceptable because enumerators missed pertinent variables at the time of data collection and it was not viable to make an interview for the second time due to time and money constraints. Besides, the researcher believes that such insignificant number will not have any major effect on the results of the study. Number of sample households in each *kebele* was determined as per of

the proportion to the population size and samples are drawn using systematic sampling method. A total of 236 sample households were interviewed and entered in to the analysis (Table 1.1).

Table 1.1 Distribution of samples in the study area (both urban and rural)

Survey Site	*Kebele*	TNHH			TNSHH			SPTHH			Distance from DMT
		M	F	Total	M	F	Total	M	F	Total	
Rural	*Wonka*	697	67	764	57	19	76	7.5	2.5	10	6 - 10 km
	Qebi	363	34	397	28	12	40	7.0	3.0	10	Up to 5km
Urban	01	409	829	1,238	48	72	120	3.9	5.8	9.7	None
Total		1,469	930	2,399	133	103	236	5.5	4.3	9.8	None

Source: Own Survey, March 2009 *TNSHH- Total Number of Sample Households*
TNHH- Total Number of Households *SPTHH- Sample as percentage of the Total Household*

1.5.4. Data Type and Sources

The research makes use of both primary and secondary sources to collect data for the study. Primary data were collected through structured and semi-structured questionnaires of open ended and close-ended type, key informant and focus group discussion techniques. Secondary data were collected from relevant documents such as books, articles, magazines, news papers, statistical reports and above all from documentary records of *Gozamin Woreda* Agricultural Office (GWARDO) and *Debre Markos* town information desk.

The study makes use of both qualitative and quantitative data types. The former were data collected from focus group discussions, key informant interviews and response from structured questionnaires. While the later were data on the number of livestock owned, farm size, consumption linkages, forward production linkages and backward production linkages of both urban and rural households.

1.5.5. Data Collection Instruments

Numerous data collection techniques can be used in any scientific investigation. However, the study has employed selected data collection techniques such as structured questionnaires, key informant interviews and focus group discussions. Close-ended structured questionnaires were used to collect information that does not need further explanation where as semi-structured questionnaires were used to collect information that needs further probing. Key informant interviews are chosen to collect general information from urban and rural government officials. Focus group discussion is mainly chosen as an instrument by the researcher and used in the study

to collect information that are hardly possible to be caught by other methods to triangulate the reliability and validity of data collected by other methods.

i. Structured Questionnaire

Since the study is multidimensional, three separate groups of structured questionnaires were prepared independently for urban households, urban traders and hinterland farmers. The questionnaires consist of both open and close-ended questions. Prior to actual data collection process, the questionnaires were translated in to native language (*Amharic*) and their reliability was pre-tested to take corrective measures. After the correction, enumerators are chosen based on educational status (all the ten enumerators were college students in *Debre Markos* Teachers Training College), hinterland and town experience and previous data collection familiarity. All enumerators were given trainings how to conduct face-to-face interviews. To overcome any difficulty of understanding from respondents' side, interviewers read each question, elaborate it, recorded the response, and allow minimizing non-repose rates and missing values.

ii. Focus Group Discussion (FGD)

To triangulate the reliability of data collected by other instruments, four FGD groups' with 8-10 members were established. Two FGDs (one in each PA) were conducted in the hinterland with selected farm households. The first FGD was conducted with farm households who live in the first 5 km of radius; the second FGD was conducted with farm households who live in the next 6 -10 km of radius from *Debre Markos* town. Two FGDs were conducted with urban households and trading units. An attempt has been made to keep the homogeneity of members in the four groups by incorporating members of similar characteristics together in a group. Selection of FGD members was made through the help of DAs and *kebele* officials. Women are active participants in all FGDs and consists at least 50% of the discussants since they are the main actors as far as the issue market is concerned. The researcher himself and two enumerators recorded the information obtained from the FGDs manually.

iii. Key Informant Interview

In addition to the above instruments, key informant interview was used to gather relevant information from urban and rural government officials to assess the role of rural-urban local governments to strengthen marketing linkages. In this approach, development agents of sample

rural *Kebeles*, chair person of sample rural *kebeles*, key officials in *Gozamin Woreda* Agricultural and Rural Development Office (GWARDO) and key municipal and *kebele* officials are included. The researcher himself and an enumerator recorded the information obtained from the key informant interview manually.

IV. Personal Observation

In order to triangulate, the accuracy of information gathered using the preceding instruments, personal observation of the researcher to sample rural *kebeles*, market and trading places were made and relevant photos were taken and included in the result and discussion part of the study.

1.5.6. Methods of Data Analysis

Initially, the data cleaning process was conducted to identify any missing value and to take corrective measures by crosschecking the corresponding questionnaires. Owing to the complexity of variables in data analysis for linkage studies, the data gathered were analyzed using various descriptive and statistical tools. To make the analysis simple, response gathered from close and open-ended questions were edited and coded. The coded responses were fed in to computer and thoroughly analyzed using a soft ware SPSS version 15.0 (Schematic Program for Social Sciences). This version of the soft ware is selected to be used due to its compatibility, updatability and suitability to transport, edit and analyze data and create relationships.

Analysis of data was conducted to show important relationships of variables under the study. To this end, mixes of qualitative and quantitative models were used in the study. Descriptive and inferential statistics such as ratios, percentages, mean, standard deviations, variance, chi-square, t-test, one-way ANOVA (F- test), correlation and multiple linear regressions are used to analyze and describe the data quantitatively by making use of SPSS version15.0. Besides, the researcher used narration to analyze and present the qualitative data. More specifically, data gathered through FGDs, key informant interview, personal observation and open-ended questions are analyzed through narration.

1.5.7. Model Specification

Multiple linear regression models are understandably the most valuable and widely used multivariate statistical techniques in most linkage studies that involve ratio/interval variables. The model uses two or more independent variables to predict the value of one dependent variable. The model is chosen owing to its appropriateness to analyze the causal relationship between dependent and independent variables that are quantitative in nature. The model can be specified as:

Model (1) $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots + \beta_k x_k + \varepsilon$.....first order linear model

Model (2) $y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_{12} x_{12} + \beta_{11} x^2_1 + \beta_{22} x^2_2 + \varepsilon$.....second order linear model

The multiple linear regression models have two orders. However, because of its simplicity and aptness with the empirical data, the study adopted the first order model. Where:

Y = the dependent variable

β_0= the constant term/intercept

$x_1 x_2 \ldots x_k$ = the independent variables

$\beta_1 \beta_2 \ldots \beta_k$ = the slope coefficient of continuous variable

ε = Random error/ residual term

1.5.8. Model Variables and hypothesis

In the model, variables like farm size, distance from *Debre Markos,* age of the respondents, amount of farm inputs used and number of draught oxen owned are used as independent (explanatory or constant) variables while amount of farm outputs produced, sold and goods purchased by rural households are used as dependent (regressed) variables. Similarly, three major variables: age, education and duration in the town are identified as independent (explanatory) variables whilst amount of farm outputs purchased and the associated costs incurred by urban households are used as dependent (regressed) variables.

1. Distance: Sampled farmers are categorized into two groups based on distance. Distance was assumed to affect RUMLs negatively. It is, therefore, hypothesized that farmers within the first 5 km radius in the hinterland have better market access compared with farmers in the next 6-10 km

radius from *Debre Markos* town.

2. Farm size: The amount of land owned by a household was assumed to influence RUMLS. Hence, it is, hypothesized that farmers with large farm size have a strong production and consumption linkages.

3. Age of farm households: Older farmers were assumed to restrain from buying consumption goods and selling farm outputs. It is, therefore, hypothesized that farmers' age negatively affects consumption and production linkages.

4. Age of urban households: Older urban households are assumed to have advanced social attachments and relatively more family members. Consequently, it is hypothesized that households' age positively affect RUMLs.

5. Farm inputs: Farm inputs like fertilizer, selected seeds and weed controls are widely used by hinterland farmers to increase agricultural production and productivity. It is therefore, hypothesized that the amount of input used positively affects RUMLs.

6. Draught oxen: Traditional farming driven by pair of oxen is common feature of agriculture in the study area. Draught oxen are main sources of labor. Hence, it is hypothesized that number of draught oxen owned positively affect RUMLs.

7. Education: Educated urban households are supposed to have diversified income sources and that can be used to purchase farm outputs produced in the hinterland. Hence, it is hypothesized that level of education positively affects RUMLs.

8. Duration: Urban households who lived long in the town are supposed to have more social affiliations and family members. It is therefore, hypothesized that duration in the town positively affects RUMLs.

1.6. Significance of the Study

The current development thought reveals that the symbiotic development of both urban and rural area is the preferred development strategy. The linkage that exists between the two spatial units is the means to foster such development. Therefore, knowledge on the challenges and prospects of RUMLs could provide insights about the nature of Socio-economic variable that could be induced for the adoption of mutual development of rural and urban areas.

Linkages are not universally alike rather varies from place to place, therefore, it is worth researching to study a representative town and its hinterland that may have unique linkage. Thus, by investigating the pattern of production, consumption, input and service flows between *Debre Markos* and its hinterland, this study:

1. Provides clues to strengthen RUMLs in *Debre Markos* and its hinterland.
2. Offers an input for policy makers, NGOs, CBOs and other stakeholders who are interested in the development of the town and its hinterland.
3. No similar study has been conducted in the study area, this inquiry, therefore, will serve as a springboard for future studies.

1.7. Scope of the Study

Rural-urban linkage is a wide concept, which consists of multiple interactions. Nevertheless, the scope of this study is restricted to assess the challenges and prospects of RUMLs between *Debre Markos* and its hinterland that fall within 10 km radius around the town. Besides, the study has used only three (two rural and one urban) *kebeles* for the survey. Meanwhile, the study does not give more emphasis to other spatial and sectoral linkages except marketing linkages.

1.8. Limitations of the Study

Research works are constrained by various factors in one way or another; hence, none is free of limitations. Likewise, this paper is therefore, constrained by the following limitations.

1. As a zonal and old aged capital in the region, RUML might not be limited only to the 10 km radius. Therefore, both resource constraints and objectives of the study are limitations in this paper.
2. Some sensitive variables like income, number of livestock and other assets may not be correctly obtained and valued since some respondents were reluctant to tell the exact amount. As a result, the responses obtained are not all perfect.
3. The reference to obtain surveyed households is the land tax registration file for hinterland farmers and *kebele* registration file for urban households and urban traders, hence vital information that could have been obtained from landless hinterland farmers and urban households without house number is missing in the study.
4. RUL is the result of the interaction of multitude of variables. Despite this fact, the study

has analyzed the impact of some few variables assumed to meet the objective. Therefore, it is the researcher's view that, the study could have been too inclusive if all pertinent factors were integrated.

1.9. Organization of the Paper

The thesis has six main chapters. The first chapter consists of the introduction, research problem, research objective, research question, methodology, model specification and hypothesis. The second chapter deals with review of related literatures. Issues like evolution of RULs, conceptual/theoretical frameworks of RULs, rural-urban nexus approach to development, dimensions of RULs and empirical frameworks of RULs that offer bird's eye view from the global, continental and country level (like Ethiopia) are well discussed in the second chapter.

The third chapter presents description of the study area. Result and discussion part of the study, is presented in the next two chapters. The descriptive analysis is presented in the fourth chapter. While the statistical analysis and hypothesis testing is presented in the fifth chapter.

The last chapter presents the summary, conclusion and policy implications as per of the empirical finding discussed and analyzed in the fourth and fifth chapters. It recapitulates and concludes the foremost findings and forwarded feasible policy implications that would help to strengthen RUMLs in the study area. Tables, maps, questionnaires and checklists are included as appendixes in the last part of the thesis.

Chapter Two

Literature Review

The first chapter offers general synopsis of the thesis explaining the basic premise, methodology and unit of analysis. The second chapter assesses the related conceptual, theoretical and empirical frameworks, which are stepping-stones for the analysis. Pertinent issues like evolution of RULs, the contending debates and theories on rural-urban continuum and RUL development approaches are discussed. Moreover, the available empirical findings are reviewed to identify the nature, magnitude, challenge and opportunities of RULs from global, regional, national and local levels.

2.1. Evolution of Rural-Urban Linkage Concepts and Theory

Historically, evolution of RUL goes back to the emergence of urban centers and ancient civilization of the Middle East especially in areas like Mesopotamia (Lynch, 2005). However, RUL started to be scientifically investigated since the work of von Thunen (1826) in his classical analysis of the spatial allocation of economic activities. von Thunen has explicitly explained the interaction between an urban center and its hinterland using the model of agricultural land use in which he showed how market process determined land use in different geographical locations. He showed how land use is a function of transport costs to markets and farmers' land rent. In general, his model while explaining rural-urban linkages has generated a concentric ring of agricultural activity around a central city that is arranged sequentially (Braun, 2007).

Later in the first half of twentieth century, Walter Christaler has achieved another breakthrough in the area of rural-urban linkage, when he developed the central place theory to explain how urban settlements are formed and spaced out relative to each other. The basic premise of Christaler's assumption was that "if the centralization of mass around a nucleus is an elementary form of order, then the same centralistic principle can be equated in urban settlements" (Agarwal, 2007). However, his model was later refined by Loch (1954) that anticipated an urban hierarchy of human settlements around a city with different size of centers. While explaining RULs, Loch (1954) cited in Braun (2007) argued that the size of the center is determined by the type of goods and services it offers. To Loch, large urban centers provide higher order goods and services with large market, capital and population while small urban centers provide goods and services of lower order (*Ibid*).

Braun (2007) argued that the preceding conceptual frameworks not only explained the evolution of RULs but also urban-urban linkages between urban centers of differing scales. However, these models were based on an assumption that is far from the reality and their applicability to the real world is limited and they do nevertheless clarify the nature of differentiation between urban and rural areas. Despite such defects, they do really have made a paramount contribution to explain the evolution and importance of RULs and laid the base for the emergence of various conceptual and theoretical frameworks in the area that are briefly discussed in the following section.

2.2. Theoretical Framework

RULs emerge from two distinct but mutually interrelated geographic units (rural and urban) (Tegegne, 1999). The interface between the two spatial units has been an important part that underlies principal assumptions of development theory and practice. Thus, the nature of relationship is interpreted in a different way as per of diverse theoretical perspectives (Lynch, 2005). Consequently, debates on the nature of RULs hold a prominent position in development theory and planning. For instance, dialogues of the 1950s entirely focused on whether towns played parasitic or generative roles in their interactions to the immediate rural hinterlands (Douglass, 1998).

As it was initially argued, generative forces of modernization associated with urbanization were hypothesized to outweigh possible parasitic impacts on rural areas (Singer, 1964; cited in Douglas 1998). Modernization theory, which originally arose in post second world war period, had become dominant form of development analysis in the 1950s and 1960s. As per of this theory, under development was coined with traditionalism and backwardness where as development was perceived in terms of the desertion of these features for the acceptance of the modernity of western countries. Modernization theory advocates that change from traditional to modern was to occur through the diffusion of capital, technology, values, and institutional arrangements and political believes from the west to the traditional societies (Slater, 1986).

Rostow (1960) cited in Lynch (2005), argued that economic growth progresses through a number of stages that centered industrialization and modernization as ultimate ends of development. As one of the most influential modernization theorists, Rostow argued that all economies began from stage of low economies that he call it as 'traditional society' and ultimately transformed to final

stage of 'high mass consumption'. Rostow illustrates the intimate links between the rural-agricultural and the urban-industrial implying that modernization will diffuse outwards from the core city in to the rural hinterland and beyond (Rostow, 1990; cited in Lynch, 2005).

According to Slater (1986), the concept of urban-rural duality was derived from the conformist literature that considers urban areas as centers of modernization and rural areas as corridors of economic backwardness and cultural traditionalism. Alike modernization theory, in this paradigm development should come through the positive diffusing influence of the city acting on the countryside as a catalyst of transformation (Slater, 1986).

The most important of many RULs is the synergistic role that agriculture plays in the development of non-agricultural sector through the supply of labor force and surplus food (Ray, 1998). In line with this premise, the Lewis model of economic development under the principle of dual economy acknowledged the idea that economic growth and modernization necessitates the flow of surplus from an assumed dilapidated agricultural sector to urban industry. That summoned for the appropriation of rural resources, labor and capital by cities under the virtues of long-term national development plan (Ray, 1998).

In the late 1950s, a divergent view appeared in a new field of regional planning that was constructed, in part, on core periphery and spatial polarization models which argued that in most of the third world countries, the gain of economic growth become more and more agglomerated either in one or a few core urban centers (Douglas, 1998). The main argument of these models is that the benefits accruing to urban centers were mainly at the expense of rural periphery, which in turn obscured the development potential of rural areas owing to the tightening RULs (Douglas, 1998).

A further substantive challenge to modernization theory that strongly condemn the principle that rural areas serve the interest of urban centers came in to being with the emergence of the dependency theory (Slater, 1986). Supporters of this theory argued that the metropolitan nations of the north vigorously underdeveloped the agrarian economies of the south. More specifically, they argued that RULs were thus part of global chains of power and control that perpetuated conditions of rural poverty and underdevelopment (Douglas, 1998).

Though, the assumption that urban centers inhibit rural development has gained few supporters, the idea that has assumed a wider acceptance was the 'backwash' effects urbanization has on rural areas at the early stages of development (Williamson, 1965; cited in Douglas, 1998). According to these adherents, as spatial systems matured, development impulses are expected to became more readily articulated over national territories, thus reversing previously dominant polarization processes. Despite much research was stimulated by this thesis, writers like Douglas are equivocal whether such polarization rehearsal has occurred in a sustained manner.

In line with this, if polarization rehearsal is to occur for policy intervention through induced urbanization in the periphery, Friedman (1968) proposed growth pole/growth center approach to regional development. As a strategy, this theory argued that only the emergence of cities in the periphery could confront the growth of core urban centers. As far as this strategy is concerned, Douglas (1998) argued that though the likelihood that linkage and spread effects will be captured locally is extremely low, the growth pole remains the dominant spatial development strategy.

In the 1970s a novel perspective on the idea that towns were the source rather than remedies to rural problems gained a new thrust under the work of Lipton (1977), hence the relative neglect of rural areas may be partly explained by his theory of 'urban bias' (Cypher and Dietz, 2004). Lipton argued that unrelenting political, social and economic forces favoring cities over the countryside perpetuate rural development. His thesis reveals the ways in which urban-based industrialization policies can have an adverse impact on development of rural areas. In particular, he further indicated that taxation, trade, tariff as well as investment policies followed by most governments deprived rural areas not to have equal access to resources and infrastructures (Lipton, 1977).

Being instigated by Lipton's thesis, soon when it was clear that the preceding policies had failed to bring the expected balanced development on both spatial units, the pendulum swung in the opposite direction. Consequently, the emphasis was shifted to IRD programs under the main thrust to bring agricultural change while little attention was given to the vital role that urban centers would play in the rural economy (Baker and Pederson, 1992).

As far as IRD is concerned, a review made by Tegegne (2005) identified two paradigms namely the right based approach and agricultural growth thesis. The former approach emphasized on

access to basic needs and the universal coverage of primary education (Eicher and Staatz, 1984), while the agricultural growth thesis on its part argued that agriculture is the engine of growth. It further, indicated that agriculture offers not only food staffs to urban centers, but also stimulates demand for industrial growth and urban development. In a crude term, as per of this view urban development is expected to be dependent on rural development (Tegegne 2005). However, in the late 1980s, it became evident that this 'myopic focus on rural development' lost its appeal as the expected results and objectives were not achieved (Baker and Pederson, 1992).

In the preceding section, it is made clear that the theories and models under consideration have failed to narrow the compartmentalized rural-urban divide. This is so because most approaches in development studies (both theoretical and empirical) are made based on the premise that there is a clear distinction between the rural and urban areas. However, this idea has been endlessly confronted (Lynch, 2005). Consequently, the emphasis was shifted, and is shifting with a renewed interest among policy makers, governments and researchers towards RULs with an explicit rejection of the earlier dictomy of the two spatial units. Analysis of small and medium urban centers and their hinterland is, therefore, a principal focus of the new orientation (Baker and Pederson, 1992).

An alternative approach, which tried to investigate and clarify mutual linkage between urban centers and their rural hinterlands was emerged at the end of 1970s, and termed as Urban Functions in Rural Development (UFRD). The approach argued that the notorious and exploitative nature of urban centers is not vested on small towns themselves, but in highly centralized economic and governmental systems. In effect, it has suggested that real decentralization of decision-making would provide the means to articulate local needs and priorities that would in turn instigate both rural and urban development (Baker and Pederson, 1992). Kammeier, (2005) argues that, the current development paradigm integrates localism and globalization in to a peculiar global-local amalgam which offers due emphasis to sustainable development and strengthening of RULs.

The input-output model in April 1965 by Wissely Leontif, Nobel Prize Award (1973) is the famous model often used by economists and promotes the need to harness linkages between agricultural and industrial sector to bring mutual development (*http://math.carleton.ca/~vdabbagh/leontief.pdf*).

While most of the debates and theories on RULs remained abstract without conclusive empirical evidence supporting pro-or anti-urban perspective, over the decades, as discussed above, the cumulative effect has been a curious divide in development planning (Douglass, 1998). The 'virtuous circle' model of rural-urban development perhaps best reflects the thinking on RULs and regional development in the 1980s and 1990s (Tacoli, 2006). The model envisions a mutually reinforcing pattern of linkages between urban and rural centers (Tegegne, 2005).

The 'virtuous circle' model describes the economic linkages between agriculture and urban activities as co-dependent, that is, rising agricultural income stimulates demand for consumer goods, which leads to the creation of non-farm jobs and diversification of activities. This in turn absorbs surplus labor, raises demand for agricultural products and once again boosts agricultural productivity and income in rural areas (Evans, 1992; cited in Tacoli, 2006). However, research reveals that applicability of this model especially in developing countries has not yet been seriously considered (Douglas, 1998; Tacoli, 2006).

Despite the above debates, formulating comprehensive rural-urban development frameworks to promote a symbiotic development began to receive more attention by the current theorists and development policy makers (Tacoli and Satterthwaite, 2003). There is a growing recognition that RULs are, therefore, the crucial elements of economic growth and social and cultural change by properly addressing the issues of poverty and inequality.

2.3. Rural-Urban Nexus Approach to Development

Whereas a number of people recognize and appreciate the wisdom and the strategic role of urban centers, a rapid urban growth has often frightened policy makers. The synergy between simultaneous urban and rural development is not well recognized among development practitioners (Assefa, 2006). Assefa , also indicated that such opposition to urban growth comes from the fear that large urban centers with unmanageable size would aggravate poverty and are sources of overwhelming social hitches even for its hinterland. Therefore, the argument with respect to RUL should not be the question of priority; rather it should be the achievement of mutual development on both spatial units (Assefa, 2006).

A spatial system theory has coupled the development process with a set of dynamic nodal regions. Hence, to cultivate all benefits associated with urban centers, development of strong

links between urban and rural area is a prerequisite (Ndegwa, 2005). Therefore, the importance of RUL is acknowledged as one of the key approaches towards sustainable economic and social development (Lynch, 2005). In explaining positive RULs within the context of sustainable development, Okpala (2003) notes that RUL development approach is increasingly becoming the most appealing scheme in the national development processes. Okpala, on behalf of the UN-HABITAT indicated that rural-urban interdependence would be key entry point to execute programs meshed to alleviate poverty and inequality given the strong synergy between urban and rural areas.

Tacoli (2005), while outlining the importance of RUL from policy point of view, argued that such approach could contribute to poverty reduction, by enabling households and individuals to diversify their alternatives for income generating activities. Tacoli also, however, argued that most processes of social transformation give rise to the peril of increasing social polarization by further marginalizing the poor and vulnerable. Hence, the best remedy suggested by the researcher is that rural-urban approach to development needs to pay special attention to impacts of intensification of RUL on the poor and support formulation and execution of policies that are planned to curtail negative impacts while enhancing positive ones (Tacoli, 1999).

Tacoli (2003), in a study entitled rural-urban transformations, underlined that RUL approach to development is one among the various ways that should be used to realize Millennium Development Goals (MDGs). Tacoli and Satterthwaite (2003), while investigating the urban part of rural development emphasized the role of small and medium urban centers for economic growth and poverty reduction. They also indicated that these small and medium urban centers have sought the attention of policy makers and researchers in regional development and poverty reduction due to the growing recognition of importance of exchanges between rural and urban households, enterprises and economies.

Current political and economic reforms in developing regions and countries coupled with new interest in decentralized development have opened prerequisite for local government in steering local economic development (Mwangi, 2005). In line with this, Mwangi pointed out that local economic development is predicted on strong regional and RUL development strategies. Totemeyer (1993) has also noted that regionalization and capacity for designing effective urban and rural planning and management systems is key to successful local economic development.

Braun (2007),while explaining the role of RULs for growth, employment, and poverty reduction, highlights the need for new attention to the spatial dimension of development through RULs approach for inclusive growth that amalgamate rural areas and the poor. Gete et.al (2006), pointed out that the rural-urban approach to development would provide basis for actions using cities as engines for rural development through better incentives for environmental stewardship. The research team further indicated that the model offers for a clear supportive role of research for development in defined benchmark sites where MDG impacts can be measured. In general, rural-urban approach to development can be perceived through various dimensions of interdependence between the two spatial units that are briefly discussed in the forthcoming section.

2.4. Dimensions of Rural-Urban Linkages

The available literature on RULs reveal that there are various types of linkages identified by researchers as per of their study objective, scope and nature of relationship between the town and its hinterland. Therefore, for the sake of simplicity, the major dimensions of RULs are summarized from the works of notable researchers in the area. Mush (2005) classified RULs in to two broad categories: spatial linkages and sectoral linkages.

2.4.1 Spatial Linkages

Spatial linkages comprise flows of agricultural products, manufactured and imported goods, people, market information, and finance (Mush, 2005). Rondinelli and Rundle (1976) cited in Ndegwa (2005) have classified spatial linkages as physical linkages, economic linkages, market linkages, population movement linkages, social linkages, service delivery linkages, and political and administrative linkages.

2.4.1.1. Physical linkages

Physical linkage is expressed through the development of infrastructure (Tegegne, 2006). Road infrastructure is the main form of infrastructure that dominates rural-urban physical linkages. Thus, a road net work is an indication of connectivity and improves RULs in a country. Rondinelli and Rundle (1976) cited in Ndegwa (2005) have pointed out that transportation networks allow greater access to agricultural employment, improve communications and also allow better access to non-agricultural employment and extended areas of service delivery. More

specifically, the report indicates that farm to market roads with in the East African region have promoted new markets, enhanced interface between urban and rural areas, linked agricultural production areas to crop collection and distribution centers and made new crops economically viable.

Besides road net works, Ndegwa (2005) identified telephone, postal facilities and rural electrification as the other domains of rural-urban physical linkages. Ndegwa, emphasized the importance of physical linkages by saying "if due consideration is not given to the development of infrastructures, it is possible to stifle local development initiatives when rural areas are opened up to urban entrepreneurs". Tegegne (2006), underlined that apart from good beginning at policy level, the current physical linkage in Ethiopia between the two spatial units is far from desirable given that substantial segment of rural areas lack any link to the urban centers. Consequently, socio-economic development in the country is not benefiting from mutual relation.

2.4.1.2. Economic linkages

Baker and Pederson (1992),pointed out that, the economic aspect of RULs are associated with the livelihood diversification and production systems, which includes diverse types of resource flows including labor, natural resources, agricultural commodities, financial flows and industrial goods and service flows. In such linkage, agricultural raw materials flow from rural to urban areas while industrial goods and services flow from urban areas to rural (Bezabih, 2006). Hence, selling of goods and services produced in one settlement to another reveals the trading and commercial relationships between an urban center and its hinterland as towns provide access to markets and serve as means of livelihood for the rural communities (Tostensen, 2004; cited in Bezabih, 2006).

2.4.1.3. Market Linkages

The term market linkage as described by White (2005) on rural development literature clearly implies the physical connection between the producer and the ultimate consumer. It also involves financial transactions such as buying and selling of goods. Such definitions are made based on type of market intermediaries, form of financial transactions, market channels, transport and communication networks and spatial distribution of transactions. The main purpose of marketing linkages is to facilitate the flow of products between different levels of marketing system. In this

aspect, White (2005) argued that if the marketing system were made more efficient it would be more competitive, enhance economic growth and maximize benefit to farmers.

Most often RUMLs are discussed under economic linkages. For instance, Ndegwa (2005) described marketing linkages as economic linkages. To Ndegwa urban centers offer outlets for primary products produced in rural areas and provide non-farm employment opportunities. Hence, the establishment of linkages between resource areas and the market centers is the primary force in the commercialization of agriculture, diversification of production and expansion of spatial systems of exchange.

In a study of market towns in china , Rondinelli and Rundle (1976) cited in Ndegwa (2005) have noted that the upward flow of agricultural products to higher reaches of marketing system vis-à-vis to the downward flow of imported items destined for peasant consumption lies in the establishment of links between urban and rural areas.

The simplest link between production and consumption is where farmers sell their products directly in the market located in urban areas. In most developing countries, the private sector is playing an active role to offer inputs, agro-processing and marketing services. Therefore, the linkage between urban and rural area is often provided through a network of traders and intermediaries whose costs are being paid for through the marketing margins. Such linkages would, therefore, create mutual trust and dependency relationship among various functionaries in the marketing system (White, 2005).

Conventionally, the most common marketing intermediaries includes petty traders, assemblers, independent collectors, commission agents, market agents, wholesalers and semi-whole sellers and retailers. Marketing channels vary based on the kind of agricultural produce. In this case the major types of markets includes: rural primary markets, assembly market, wholesale markets, retail markets, supermarkets, retail shops, marketing groups and farm gate sales (White, 2005).

White, argued that in most of the developing countries, RUML is hampered by the lack of all forms of transport facilities plus the poor roads, which discourage the use of personal transport. The trade links in the agricultural marketing system are those routes used by farmers and transporters carrying farmer's produce. In this case, the mode of transport, length and time of journey and transport cost will affect the efficiency of the marketing linkage. Over all, in

developing countries like Cambodia, around (91%) of trips made in rural areas are on foot. In rural areas, roads are the only means used to strengthen RUMLs (White, 2005).

2.4.1.4. Social linkages

Ndegwa (2005) indicated that market centers are key nodal points where numerous social linkages take place between towns and their corresponding rural hinterlands. In most African countries, economic exchange grew out of traditional social gatherings and rituals. Hence, occurrence of economic activities were intimately correlated to social dealings since traditional African markets offered an important locus of social linkages. A study conducted in Kenya indicated that, periodic market centers were important meeting places that strengthen social linkages between urban and rural communities (Ndegwa 2005). Research reveals that, currently, social linkages have shown improvements due to the development of communication technologies that offer the potential to connect urban and rural areas with minimum cost (Lynch, 2005).

2.4.1.5. Population Movement Linkages

Short term and permanent migration of people from rural to urban areas or vice-versa is an important form of RULs (Ndegwa, 2005). Permanent migration, commuting, stepwise migration, circulatory migration, cyclical migration, and multi-dimensional and chain migration are the basic forms of population movement linkages (Ndegwa, 2005; Lynch, 2005).Through commuting and circulation, hinterland farmers can become more familiar with various work, living style and social environments that makeup the urban areas. Almost in all cases, the prime motive for people to move is economic and the type of model used to analyze such movement is the 'push or pull' model. Furthermore, transportation facilities, distance, costs and information are other factors that determined population movement (Mantra, 2000).

2.4.1.6. Political and Administrative Linkages

The available literature disclose that spatial systems are incorporated and altered through a set of political and administrative linkages that are reflected in the formal structure relationships, flows of public budget resources, administrative authority, supervision and approval of expenditure. Political linkages are vital means to secure development of resources from urban-based agencies and central government to rural areas. In this regard, a study from Kenya indicated that in the

district of Kimbu, there is a strong political linkage between the urban based and rural based political interest (Ndegwa, 2005).

2.4.2 Sectoral Linkages

Sectoral linkages between urban and rural area can be manifested through three principal mechanisms: consumption linkages, forward production linkages and backward production linkages (Bagachwa and Stewart, 1992). These linkages are influenced and intensified by macro-level changes and local contexts including access to natural, physical, financial, social and human resources (Tacoli and Satterthwaite, 2003).

Consumption linkages result from the expenditure of farm incomes on locally produced consumer goods and services (Bagachwa and Stewart, 1992). More broadly, it refers the flow of consumption goods and services across the rural-urban continuum based on the final demand for food items and services (Tassew, 2000). Bezabih (2006) noted that consumption linkages arise from improved livelihood systems, which manifests themselves through income growth that increases demand for basic consumer goods. The available studies suggest that magnitude of consumption linkage is relatively weaker in Africa than in Asia. Hence, poor communication due to inefficient infrastructure between towns and their hinterland impedes farmers' access to non-food items and services (Bagachwa and Stewart, 1992).

Forward production linkage refers the supply of raw materials for processing and distribution (Helmising, 2000). Bagachwa and Stewart (1992) indicated that forward linkages occur when agricultural outputs are locally processed. It should be noted that there is an overlap between forward production linkages and consumption linkages since those agricultural products that are produced, processed and consumed locally fall in to both categories. Therefore, forward linkages, which consists the processing and distribution of farm outputs should be distinguished between household processing and commercial forward linkages. While the former is mainly used for own consumption accounting the lion share of local processing, the later on the other hand depend on the extent of farm output marketing, market location and organization, crop consumption and technological choices (Bagachwa and Stewart, 1992).

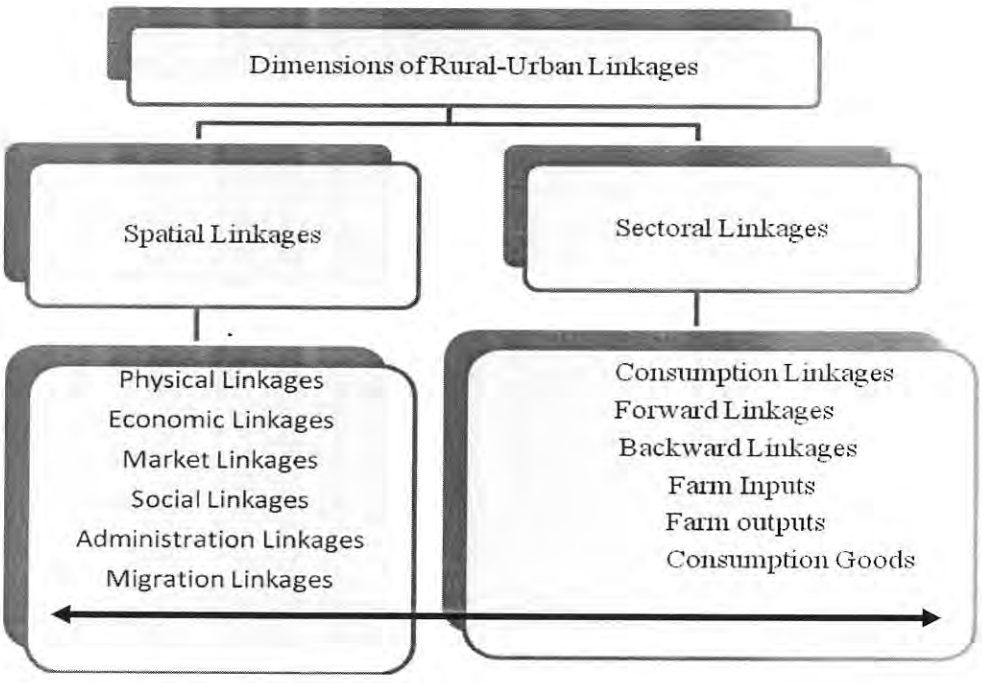
Backward production linkages occur where agriculture absorbs modern inputs produced by local industry or supplied by nearby urban center (Bagachwa and Stewart, 1992). Researchers like

Helmising (2000) argued that an increase in agricultural productivity and commercialization of agriculture necessitates the use of industrial products, agricultural technologies, farm inputs and modern farming systems that in turn strengthen backward linkages.

Bagachwa and Stewart (1992) indicated that the type and magnitude of backward linkages from agriculture to small industry relies on the extent of input usage and how far such inputs are produced or supplied by the nearby urban center or rural industry. They also add that smallholder farms that use locally manufactured inputs have better potential to generate backward linkages than large-scale farms that use modern imported tools. The available empirical finding reveals that backward linkages are relatively low in Africa compared to Asia owing to lower usage of farm inputs and inadequate local capacity to produce the inputs (Bagachwa and Stewart, 1992).

Dimensions of RULs discussed above can be shown in the following conceptual framework. This conceptual framework is adopted to be used as a general skeleton for the analyses and interpretation in the next chapters.

Figure 2.1 Conceptual Framework of Rural-Urban Linkages



Source: Developed by the Researcher, 2009

2.5 Empirical Framework

Conventionally, rural and urban areas have been viewed as two independent spatial units. Despite this fact, interdependence between the two has always existed and become more complex (Mwangi, 2005). As a response to such quest, currently a number of international, national and local aid agencies and research institutions have started to revisit the issue of RUL as one way to achieve MDGs across the globe (Lynch, 2005). In line with instigation, researchers have studied RULs, come up with various types, magnitudes and extent of linkages, and identified numerous factors that affect the linkages. Therefore, it is worth researching to draw a consolidated empirical framework for this study by reviewing the available research works at the global, regional and national level.

2.5.1 Rural-Urban Linkages: A Global Glimpse

Gone are the days when the issue of RUL has started to be seen as a means to bring balanced development by fostering mutual benefit between urban and rural areas across the earth. Consequently, it seems evident that researchers have given more emphasis to identify the opportunities, challenges, type and magnitudes of RULs both in the developed and developing world. To substantiate and enrich this study with the available empirical findings and to offer a global glimpse, the work of notable researchers from Europe, Asia and Latin America are shortly presented in the forthcoming section.

Unlike other parts of the world, Europe has undergone an urbanization process that is more or less completed in the sense that rural-urban migration is non-existent nearly in all countries. Bengs (2005) has made an excessive RUL study almost in all countries of Europe. The result reveals that the clear demarcation line and division of labor between urban centers and their rural hinterland is blurred indicating a tendency towards increasing spatial interconnectedness. The empirical evidence from the same study indicates that the accessible and attractive areas close to diversified urban centers get greatest gain from increasing RULs. In Europe, rurality is increasingly viewed as a mindscape connected to spatial unit and as an economic asset for tourism and recreation indicating the existence of strong RULs (Bengs, 2005).

Bengs (2005) identified RUL of a functional kind that is connected to the process of socio-economic diversification and linkage of the various functions located in both urban and rural

areas. The improvement in physical infrastructure, accessibility and development of communication technology were singled out as the main driving forces that resulted functional RULs in Europe. Bengs, also assessed the occurrence and nature of urban-rural policies in various European countries. For instance, a review of various EU sector policy documents reveals that in the agricultural, rural and regional policy documents there is an already some focus to on RULs. Surprisingly the transport policy appears rather ignorant to promote the issue explicitly although its spatial impacts can hardly be denied (Bengs, 2005).

Asia is another area of focus where the issue of RUL has been highly researched. A longitudinal RUL study was conducted in Indonesia, Special Region of Yogykarta. The study reveals that urban-rural gap in the Yogykarta has narrowed in terms of various socio-economic indicators, while it has widened in other areas of Java (Rotge, 2000). In the same year, Rijanta pointed out that the role of RUL in the process of regional integration is great in Yogykarta since it has brought important physical and socio-economic transformations, diversification of rural economy, commercialization of agriculture and enhanced forward and backward linkages (Rijanta, 2000). The low land communities of the plain of Bantul in Indonesia is another area of focus where RUL has enhanced labor mobility, capital formation, spread of sub-contracted activities, backward and forward flows of commodities and diffusion of information (Rotge, 2000).

Douglass (1998) studied the available regional network strategy for reciprocal RULs in Indonesia. The empirical evidence identified socio-economic relations, structure of rural economy, rural production regimes, natural resources, built environment and spatial systems as key factors that determine RULs at local level. The study also pointed out that there is weak RUL between urban centers and their hinterlands owing to poor transportation linkage and specific socio-economic condition of the hinterland.

Hariss and Hariss (1989) cited in Tegegne (2001) assessed the extent how far the market town of Arni in India serves as growth pole or not. The finding reveals that Arni market town is parasitic rather than generative in relation to its rural hinterland. Despite the visible growth in the silk handloom industry, no linkage was made to the immediate rural hinterland in terms of both inputs and outputs. Besides, even if the silk industry employs labor and transfers wage to the hinterland

people, the value of wage in relation to the actual turnover was meager as compared to the profit, which accrues to the urban silk manufacturers.

Xiaohe (1995) assessed the impact of growth of China's rural enterprises to enhance RULs. The result reveals that rural industries have grown faster than the overall national economy and the complementarities between rural and urban enterprises are likely to dominate their future economic development and interaction (Xiaohe, 1995). Braun (2007) studied the role of RULs for growth, employment and poverty reduction. The report reveals that despite the increasing levels of RULs and sustained economic growth, major rural-urban disparities continue to exist in China and India.

Latin America is not different from Europe and Asia as far as the issue of RUL is concerned. For instance, a study from Mexico reveals that poverty rather than physical distance from market centers is found to be much bigger constraint on the demand of rural consumers to urban goods and services (Tacoli and Satterthwaite, 2003). In general, in the preceding section an attempt has been made to show how far the issue of RUL has gained a paramount importance in the current development agenda to achieve MDGs in both developed and developing countries of Europe, Asia and Latin America which is followed by empirical evidences from African countries.

2.5.2 Rural-Urban Linkages in Africa

The role of rural sector in the growth of African economies is often supposed in terms of agriculture (Bagachwa and Stewart, 1992). As a result, national, regional and local development and change in Africa are inevitably bound up with the discussion of the role, nature and impact of agriculture on the overall economy. Agriculture as a lead sector does not function in a spatial vacuum; instead, the rural-urban settlement pattern and extent of interaction play an imperative role to renovate both spatial units (Backer and Pederson, 1992). As a response to such mission, the emphasis on research has shifted from a mere analysis of either spatial unit to the inherent symbiotic relations. Therefore, it is worthwhile to assess what had been done so far in Africa to address the problems, challenges and opportunities of RULs.

Until recently, numerous RUL studies in Africa focused only on a single town and its hinterland. However, it seems evident that current linkage studies have shown a paradigm shift to continental, regional and intra-regional level Tacoli (2005). Tacoli's finding reveals that small-

scale traders in West Africa are the main actors to enhance RULs by creating an ease access to market and credit services. Conversely, lack of physical infrastructure, inaccessibility, lack of market information and shortage of storage and processing facilities affect RUMLs in the region. The study concludes that rural and urban distinctions in west Africa have become increasingly blurred where there are households and individuals straddling the divide in terms of occupations, choice of residences and local and national economies benefiting from exchanges of goods and services between urban centers and their rural hinterlands (Tacoli, 2005).

Adebayo (2005) has studied the role of enhancing positive RUL approach to sustainable development and employment generation in southern Africa. His finding reveals that different countries in the region have put in place policies that are aspired to have an impact on the development of both the urban and rural areas. Hence, some policies have been more effective to shape the nature of RULs. For instance, it was identified that the small and micro-enterprises policy in the Republic of South Africa (RSA) offers the basis to understand the complex interaction between urban and rural areas.

In Zimbabwe and Botswana, land policies are key to understand the nature and extent of RULs (Adebayo, 2005). As far as the issue of RUL is concerned in the region, what is special is the case in Malawi where the country's policy experience offers suitable environment to strengthen RULs. Finally, Adebayo concluded that the role of communication and information technology is central to enhance RULs in the region (Adebayo, 2005).

Oucho (2005) indicated that emerging from different colonial milieu, which prejudiced their development planning; Eastern and Central African countries have adopted varying forms of RULs approach. The study reveals that the macroeconomic environment hampers RULin the Democratic Republic of Congo (DRC). In general, RULs in central Africa is weak. As a way out from such problem, Oucho recommended that Angola and Zimbabwe need a fresh start in planning for RULs (Oucho, 2005).

The available literature reveals that RUL studies have been given more concern in East Africa, particularly in Tanzania and Kenya. Tanzania has witnessed some significant studies that offer key insights on RULs. Mush (2005) analyzed the impact of socio-economic infrastructure on RULs in Dar es Salaam and its hinterland. The study reveals that change in land ownership structure from large to small lots in Tanzania enhanced RULs by encouraging production of high

value marketable farm outputs. The availability of reliable infrastructure in Tanzania is also found to be essential in strengthening RULs. Finally, Mush concludes that RULs are extremely affected by contexts, including socio-economic and institutional infrastructures (Mush. 2005).

A study in Biharamulo town and its hinterland in north-west Tanzania by the Scandinavian Institute of African Studies at Upsala University identified a well-established non-farm employment, production, consumption and market linkages between the town and its hinterlands (Oucho, 2005). Another study in Himbo and Lindi towns in southern and northern Tanzania identified a strong RUL in the form of remittance particularly during special events such as holidays (Oucho, 2005).

Mwangi (2005) studied the role of regional development strategies to strengthen RULs in Kenya. The study found out that RULs in Kenya are weak due to the failure to endorse commuted rural-urban local government institutions equipped with necessary human resources and strong urban economies. Finally, the study concludes that the future of RULs that would enhance local economic development in Kenya should lie on the extent how far rural-urban local governments are ready to take full accountability and responsibility (Mwangi, 2005). In the preceding section, an attempt has been made to show the nature, challenge, type and magnitude of RULs in Africa followed by review of available empirical studies in Ethiopia.

2.5.3 Rural-Urban Linkages in Ethiopia

Agriculture is the main stay of most people (84%) in the country (Tegegne, 2008). Despite this fact, the sector is not well developed and integrated to the urban centers. Consequently, it needs the support and development of other sectors for its own proper development to meet urban market demands. Therefore, development of non-agricultural sectors including urbanization is important for the progress of rural economy (Assefa, 2006). Hence, it is evident that without well developed urban system and rural economy that is linked to national and international markets, symbiotic rural-urban development is unthinkable.

In Ethiopia, the field of development has been shared between urban and rural issues. Prosperity/underdevelopment of the two spatial units is the direct outcome of development strategies adopted by the country. These strategies have failed to integrate the two spatial units for mutual development in a meaningful way, since they have been either rural or urban biased

(Assefa, 2006). A review of development strategies of previous regimes in Ethiopia viewed rural areas as the key for national development. The imperial regime has drafted three successive five year plans between 1957 and 1974. However, none of these plans explicitly considered the issue of RULs and they all have failed to recognize the inherent interdependence between urban and rural area by focusing on mutual linkages (Assefa, 2006).

Later, the socialist ideology replaced the imperial regime (Tegegne, 2008) and adopted a centrally planned economic system, which undermined the role of market to create interaction between urban and rural areas (Assefa, 2006).The *Derg* period was characterized by slow urbanization, strict control of migration, industrialization by nationalization and weak RULs. Overall, the socialist policy did not offer a favorable condition to small scale and informal sector as compared to large industries that were concentrated in major cities. Due to their primary location and character, these large industries were able to create only few local linkages that underscored the role of small towns and their hinterland for development (Tegegne, 2005).

In the post Derg period, Agricultural Development-Led Industrialization (ADLI) had been officially affirmed as key development strategy of the country. The strategy was adopted on the premise that increases in agricultural production and inter-sectoral linkages would fuel industrialization (Tegegne, 2005). Since ADLI anticipates that urbanization to be the derivatives of the rural sector, it was highly criticized by researchers like Assefa (2006) as it neglects urban development and RULs. On this ground, Assefa also argued that the current development paradigm is not fundamentally different from the previous regimes when it comes to RULs.

The argument for and against ADLI is endless with no consensus on its appropriateness and effectiveness. Likewise, a review of the available literature reveals that ADLI draws somewhat a strong support with few intense criticisms. Supporters argued on the premise that rising income in the agricultural sector would offer a huge market for non-agricultural sectors enhancing both forward and backward linkages between the urban and rural areas (FDRE, 2003). Despite such arguments in favor of ADLI, critics argue that urbanization should be a prerequisite to foster a symbiotic rural-urban development (Birhanu, 2003).

Another strategy in which the government gave its primacy to rural people was the Sustainable Development and Poverty Reduction Strategy (SDPRP). Although the logical arguments

included in SDPRP are sensible, it has failed to achieve its objectives due to threats posed by limited domestic market for farm outputs, weak RULs and the slow urbanization (Assefa, 2006).

Though the national economic policy envisages bringing about Agricultural-Led Industrialization Development, there was a constraint in creating linkages between urban and rural areas (MFI, 2005). Recently, however, the Ethiopian government designed Plan for Accelerated and Sustainable Development to End Poverty (PASDEP) since 2005, as the most consolidated policy framework in the country's history. In terms of RUL, the strategy states, "RULs need to be strengthened to maximize the poverty impacts and to take full advantage of the synergy" (MWUD, 2006).

Gete, (2006) assessed the need for strengthening RULs in Ethiopia in the context of current development efforts. The study reveals that except the newly crafted plan (PASDEP) the previous development strategies were either urban or rural biased. The plan aims to enhance RULs by promoting deeper linkages between agriculture and industry and by supporting the development of small urban centers. The availability of well functioning markets and marketing service, strengthened non-farm activities between town and their hinterland, improved rural access roads, improved telecommunications, spread of general education and technical-vocational training in peri-urban areas are set as preconditions to achieve PASDEP's overall objectives in general and to strengthen rural-urban linkages in particular(Assefa, 2006).

Compared to East African countries like Tanzania and Kenya, RUL studies in Ethiopia are limited (Tegegne, 1999). Even the studied ones are mainly concentrated in and around Addis Ababa (Assefa, 2006). Backer (1992) conducted the first consolidated RUL study in the country. He studied the role of the Guraghe people who have developed a special expertise in trading and business affairs to enhance RUMLs. The study disclosed that the acumen Guraghe, have played a great role to strengthen RUMLs in the country owing to the close links maintained between the urban based Guraghe and their rural area of origin (Backer, 1992). Backer (1986) cited in Tegegne (2002) assessed the rural-urban gap in Ethiopia and found out that towns are serving mainly as regional market centers. Nevertheless, the study circumvents and does not give much more emphasis to RULs though small urban centers were focus of the study (Tegegne, 2002).

Mesfin, (1995) conducted a comparative study on ten market towns to assess their role in strengthening rural-urban economy in the former *Jibat ena Mecha Awraja*. His finding reveals a weak RUL owing to inadequate socio-economic and physical infrastructure to intensify the interaction. Tegegne and Tilahun (1996) studied the impact of agricultural performance on the development of *Itaya* and *Huruta* towns and concluded that apart from trade linkages other forms of linkages were weak or non-existent. Tegegne, (1999) conducted a comparative study on two towns (Limu and Robe) and their hinterlands. The study found out that except consumption linkages all other linkages are non-existent. Besides, the virtuous circle model of RULs gets a poor fit. Instead, he identified a truncated linkage that fits well the study areas. Similarly, Goitom (2005) in assessing the RUMLs in *Mekelle* town and its surrounding reported that except consumption linkages, other forms of linkages are found to be weak.

Tegegne (2005) studied the nature of RULs in Ethiopia. He noted that luck of transport, market facilities, market information and other related institutional constraints hampered RUMLs in the country. To enhance RUMLs in the country and if towns are expected to accommodate the needs of the rural sector, the study recommended that improved marketing facilities, infrastructures and information would help them to full fill their marketing role (Tegegne, 2005).

Different researchers often quote RUL as one means for livelihood diversification and poverty reduction (Gete, 2006; Braun, 2007). Bezabih (2006) on his part assessed implications of RULs for livelihood diversification in *Kafa* zone. He identified factors that lead to positive and negative interactions between *Bonga* town and its hinterland. Exchange of commodities, supply of agricultural and forest products and presence of well established social relationships are among the positive driving forces. On the contrary, unlimited expansion of *Bonga* town, natural resource degradation, poverty, lack of enabling environment, market imperfection and lack of processing plants were among the factors that lead to negative RUL in the study area (Bezabih, 2006).

Tegegne, (2006) studied the status, challenges and opportunities of RULs in Ethiopia. As per of his finding, Ethiopia has underdeveloped RULs which can be manifested by the weak spatial and inter-sectoral linkages due to low agricultural productivity, shortage of input supply and lack of rural financing and communication net works. The most important opportunity/prospect identified by Tegegne, to enhance RUL in the country is the current policy environment set to address various socio-economic dimensions.

Besides these good prospects, RUL have been faced with numerous challenges that range from some policies to the functioning of the socio-economic environment. Rural land tenure policy, inadequate marketing facility, poor road net work, inaccessibility, limited flow of finance, traditional agriculture, lack of small and medium enterprises, absence of agro processing industries are the major threats that affect RUMLs in Ethiopia (Tegegne, 2006). Strengthening marketing facilities, promoting decentralized urbanization, fostering linkages between agriculture and industry, intensifying physical connection, avoiding threats to rural-urban migration are strategies suggested by Tegegne to combat the aforementioned challenges.

To sum up, RUL is important parts that underlie the basic assumptions of development theory and practice. Previous theories like modernization have failed to narrow the rural-urban divide. In the current contemplation, the importance of RUL is acknowledged as key approach to bring sustainable development. However, the type, extent, magnitude and factors that shape them vary infinitely across the globe. In Ethiopia, the issue of RUL is not well studied. Based on the above conceptual and theoretical frameworks, the upcoming sections attempts to synthesis the empirical data pertinent to *Debre Markos* town and its hinterland.

Chapter Three

Description of the Study Area

3.1. Location

Debre Markos town is found in Northern Ethiopia, at about 300 kilometers North-West of Addis Ababa and 265 kilometers South-East of *Bahir Dar*, capital of *Amhara* National Regional State (figure 3.2). Astronomically, it is situated between $10^0\ 21^1$ latitude North and $37^0\ 43^1$ longitude East. The town is found at an elevation of 2,420 meters above sea level. Located at the higher altitude, the town enjoys a *Woyna Dega* (temperate) type of climate with 1,380 mm and 16^0_c mean annual rainfall and temperature respectively. Altitude affects the distribution of both rainfall and temperature (DMTID, 2009).

3.2. Topography and Drainage

The area covered by *Debre Markos* town is not much suitable for urban development. This is mainly because the town is dissected by three swampy areas and to some extent by gullies, ridges and escarpments. In addition, the town is drained by three rivers: *Weseta, Wutrin* and *Ahahim* that flow to the south but in different directions. For instance, *Wutrin* drains the Western part of the town, while *Weseta* drains the Eastern part of the town. Particularly the swampy area of *Wutrin* is the major source of water supply. Overall, the swampy areas along these riverbanks are main sources of grazing land for the town and its hinterland (NUPI, 2001).

3.3. Foundation

Debre Markos town is believed to be established in 1853 by *Dejazmach Tedla Gualu* who ruled *Gojjam* from 1853-1881. Formerly, the town was named as *Menkorer* that later assumed the current name *Debre Markos* immediately after the establishment of the first church: saint *Markos* in 1881. Since its establishment, the town has been serving as center of commerce and administration. Despite this fact, it has never seen a dramatic socio- economic transformation as it was expected (Melaku et al 2001).

3.4. Economy

The present municipal boundary of the town encompasses an area of about 6,160 hectares, of which 75% is suitable for building and investment, 20% is swampy and small hills, streams and

valleys cover the remaining 5%. The current land use structure of the town reveals that 4,512 hectare is arable land, of which 50% is already under cultivation, 1,123 hectare is grazing land, and 790 hectare is forestland and the remaining 303 hectare is barren land (DMTID, 2009).

People in the town have been engaged in various economic activities such as trade, industry, agriculture, civil service, wage labors, hotel and tourism. Investment in the town has shown tremendous improvements between 2005/06 and 2008/09. Five sectors such as trade, industry, municipal services, social services and urban agriculture were selected as lucrative investment areas. The data compiled by town's Finance and Economic Development Office (2009) reveals that 231 investors (with a registered capital of 279,214,212.65 birr) are investing since 2005/06. For this effect, 279,011 square meter land was allotted to these investors, which has created job opportunities for 6,328 people. Besides, this has created the chance to strengthen the existing RUMLs between the town and its hinterland (*Ibid*).

3.5. Demographic Characteristics

The available source reveals that the town had a total population size of 21,536 in 1967, of which 41.2% were male while the rest 58.8% were female. This number has been observed to increase by 25.71% (27,073), 91.01% (41,136) and 128.9% (49, 297) during the years 1970, 1984 and 1994 respectively (NUPI, 1998).

The recent population census report enumerated the population of the town to be 102,630, of which 47,557 were male while the rest 55,074 were female. Disaggregated by rural and urban origin, 97,072 are classified as urban dwellers while the rest (5,558) are classified as peri-urban residents that are recently included as part of the town. Of the total (97,072) urban dwellers 44,790 are male while the rest 52,283 are female. Similarly, from the total (5,558) rural dwellers, 2,767 are male and the rest (2,791) are female (Table 3.1). Ethnic composition of people in the town reveals that *Amhara* who accounts 97 percent are dominant ethnic groups. *Tigres, Oromos, Agew* and others accounts 1.3, 0.7, 0.6 and 0.4 percents respectively (DMTID, 2009).

Table 3.1. Population size by sex and age group and urban-rural, Debre Markos Town, 2008

Age Group	Urban-Rural			Urban			Rural		
	M/F	M	F	M/F	M	F	M/F	M	F
0-4	12226	6792	6435	12102	6229	5873	1125	562	562
5-9	12541	6166	6376	11772	5783	5990	769	383	386
10-14	14877	7123	7754	14187	6778	7409	690	345	345
15-19	13661	6426	7235	13068	6129	6939	594	298	296
20-24	10201	4574	5627	9696	4321	5375	505	253	253
25-29	7890	3403	4487	7492	3208	4285	398	195	203
30-34	6719	2888	3831	6397	2732	3665	322	156	166
35-39	5337	2296	3041	5080	2173	2906	257	123	135
40-44	4167	1928	2240	3955	1827	2128	212	101	112
45-49	3347	1576	1771	3171	1490	1682	175	86	89
50-54	2654	113o	1424	2509	1057	1453	144	73	72
55-59	2208	904	1304	2093	844	1248	115	60	56
60-64	2017	810	1207	1928	763	1165	89	47	42
65-69	1601	637	963	1533	601	932	68	36	32
70-74	1112	447	665	1065	422	643	47	25	22
75-79	572	249	324	544	233	311	28	15	13
80+	499	209	289	480	199	281	19	10	8
Total	**102,630**	**47,557**	**55,074**	**97,072**	**44,790**	**52,283**	**5,558**	**2,767**	**2,791**

Source: *Debre Markos* Town Public Relation Office (2008)

3.6 Infrastructure and Municipal Services

Debre Makos town is beneficiary of better infrastructure facilities. It has digital automatic telephone and mobile service with quite fair distribution as compared to most towns in the country. The town had postal and abattior service since 1937 and 1961 respectively. *Debre Markoss* gets 24 hours electric service, potable water supply and transportation. Horse-drawn carts, taxies, *bajages*, bicycles and walking are the dominant modes of transport often used both in the town and in its hinterland. Therefore, road transport is means to harness interaction between the town and its hinterland (DMTID, 2009).

Debre Markos has various educational institutions that are playing vital roles to strengthen RUMLs. It has one university, two teachers training colleges (one private and one governmental), one private health Science College, one vocational and technical school, one preparatory school, two secondary schools, eleven elementary and junior schools, eleven kindergarten and two adult education centers. Similarly, health centers are also areas where RULs can be observed. In this regard, there are three health centers (two of them are under construction), zonal hospital, eight medium and higher clinics and seven drug centers (DMTID, 2009).

3.7. Description of the Hinterland

Hinterland is an area of influence/continuous area around a town from where people frequently commute to the town to obtain certain goods and services. In the study, an area of 10 km radius from *Debre Markos* town is adopted as hinterland. The town is enclaved by *Gozamin woreda* in all directions. The hinterland is the main geographic unit that has immediate interface with the town. Among 26 Peasant Associations (PAs) in the *woreda*, six of them (*Wonka, Yebo, Qebi, Yewebi, Enerata and Chemoga)* are found in the hinterland with in 10 km radius (fig 3.1 & 3.2).

Fig 3.1 Conceptual frame work showing the interface between DMT and its hinterland

Represents RUMLS of DMT with other small towns

Represents RUMLs among small towns

Represents DMT

Represents RUMLbetween DMT and hinterland PAs

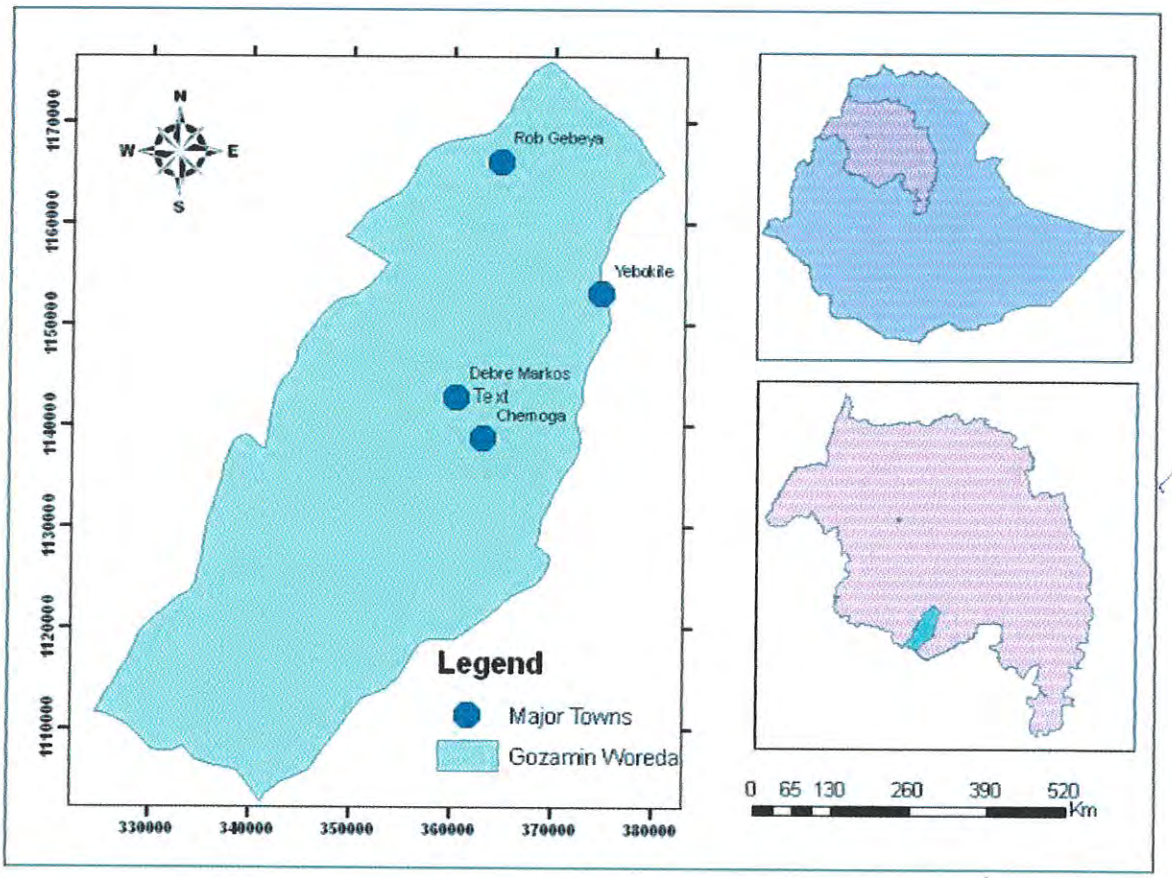
Represents hinterland PAs

Represents other Small towns around DMT

Source: Developed by the researcher, April 2009

Mixed farming is the dominant economic activity in the hinterland. Cereals are most frequently grown crops. The hinterland has almost the same topography and climate with *Debre Markos* town. The available data in GWARDO reveals that the hinterland has 7,035 (6,212 male and 823 female) households, of which 764 (696 male and 67 female) are found in *Wonka* while 397 (363 male and 34 female) households are found in *Qebi.* As shown in figure 3.1, *Debre Markos* has also interaction with other small towns that are found in East *Gojjam* zone (*Amanuel, Debre Elias, Yejube, Amber, and Rebu Gebeya*).

Figure 3.2 Location of Debre Markos Town and Gozamin Woreda



Source: Ethio GIS Archive

The above conceptual framework (figure 3.1) shows the RUMLs between *Debre Markos* and hinterland PAs (10 km radius) and other small towns that are found within 30 km radius. This

framework is used as base to describe and analyze production and consumption linkage between *Debre Markos* town and hinterland peasant associations in the next two chapters.

To sum up, this chapter offers bird's eye view on the overall socio-economic condition and location of the study area. It discloses that the area covered by the town is not suitable for future urban development and negatively affects RUMLs. Despite this fact, investment is flourishing in the town since 2005/06. Nevertheless, the hinterland is not beneficiary from the fruits of the investment. The town does not have a recent master plan that is designed to accommodate current needs and interests. Hence, it has an impact on the strength of rural-urban marketing linkages between *Debre Markos* and its hinterland. Based on this general description the next chapter will synthesize and analyze the empirical findings from the area under consideration.

Chapter Four

Results and Discussion

In the preceding chapters, an attempt has been made to assess the basic theoretical debates, conceptual frameworks, empirical findings and basic characteristics of the study area that are supposed to serve as stepping stones for the analysis. In line with this, in the descriptive analysis section of the thesis, the basic socio-economic characteristics of respondents, types, magnitudes, challenges and prospects of RUMLs in *Debre Markos* and its hinterland are discussed in detail.

4.1 Demographic Characteristics of Sample Households

In this section, the demographic characteristics of both rural and urban households are described. Basic demographic variables: age, marital status, sex, level of education, occupation, religion and ethnicity are summarized from the field survey data to offer bird's eye-view to readers on the general characteristics of the studied population.

4.1.1 Demographic Characteristics of Sample Rural Households

Demographic characteristics of the sample rural households reveal that out of the total respondents, 73.3% are male, while the rest 26.7% are female. All respondents belong to the *Amhara* ethnic group and orthodox religion. The majority (91.4%) of respondents are married while the rest 6%, 1.7% and 0.6% are unmarried, widowed and divorced respectively. In terms of education, 31.9% are illiterate who cannot read and write while the rest 1.7%, 32.8%, 22.4%, 10.3% and 0.9% have attended informal education, adult education, primary and junior education, secondary education and above secondary education respectively. It is surprising to note that 61.1% of farmers have had access to attend education of any kind.

Respondents' age structure reveal that almost half (49.1%) of them are found in the age category of 46-65 years, while the second largest frequency, 26.7% are found in the age category of 31-45 years. The rest, 9.5% and 14.7% are found between15-30 and above 65 years respectively. From this data, it is evident that most of the respondents (85.3%) are found in the active work force category, which has an affirmative implication for development (see Goitom, 2005) (Annex 15).

4.1.2 Demographic Characteristics of Sample Urban Households

Demographic characteristics of sample urban households reveal that out of the total respondents, more than half (60%) are female, while the rest (40%) are male. Almost all respondents (98.3%) belong to the *Amhara* ethnic group and orthodox religion. Nearly half (45%) of respondents are married while the rest 23.3%, 20% and 11.7% are widowed, unmarried and divorced respectively. Whatever may be the case, the marital status of the respondents clearly reveal the fact that is prevalent in most market areas in the country (see Mesfin, 1995).

In terms of education, 23.3% are illiterate while the rest 16.7%, 25% and 21.7% have attended primary, junior and secondary education respectively. It is surprising to note that respondents who can read and write assume equal percentage with those who have diploma and first degree. The age structure of the respondents discloses that the majority (90%) are bellow 65 years with in the active work force. More specifically, 36.7%, 33.7% and 20% are in the age category of 46-65 years, 31-45 years and 15-30 years respectively. The rest 10% are found in the old age category above 65 years (Annex 16).

A significant number (75%) of sample urban households lived in the *kebele* for more than 15 years while the rest 13.3%, 8.3% and 3.3% stayed in the *kebele* from 1- 5, 11- 15 and 6 - 10 years respectively. Nearly half (48.3%) of sampled households indicated that they are not born in *Debre Markos*. Besides, 93.3% of sample households who are not born in the town are migrants from other place other than the hinterland. The occupational structure of urban households reveals that house wife ranked first with 41.7% followed by merchants (35%). The rest 23.3% works as private employees, public employees and as daily laborers.

4.2 Economic Structure of the Hinterland and its Market Linkage to Debre Markos

Under this section, the general economic structure of the hinterland such as land holding and ownership, agricultural production and productivity and basic problems of agriculture are discussed in line with their implications on RUMLs.

4.2.1 Land holding and Ownership System in the hinterland

In the hinterland, land is the only resource on which the lives of most farmers depend on. The data collected from the GWARDO reveals that the average holding size in *Wonka* and *Qebi* are 0.26 and 0.32 hectares respectively. The average land holding in the two *kebeles* is less than

woreda, zonal and regional average that is 0.29 hectares. The same source also reveals that the maximum holding size is 6.5 and 5.25 hectares while the minimum is 0.01 and zero hectares in *Wonka* and *Qebi* respectively. There are 122,964 farm plots in the *woreda*, of which 4,272(3.5%) and 2,056(1.7%) are found in *Wonka* and *Qebi* respectively. Out of 35,326.93 hectares of land in the *woreda*, 1,123.7(3.2%) and 663.97(1.9%) hectares are found in *Wonka* and *Qebi* respectively (Table 4.1).

Table 4.1. Farm Size and Land Holding in the Study Area.

No	Name	Av.land holding (ha.)	Max.land holding (ha.)	Min.land holding(ha.)	Total farmland(ha.)	No.of farm plots(ha.)
1	*Wonka*	0.26	6.25	0.01	1,123.70	4,272
2	*Qebi*	0.32	5.25	0.00	663.97	2,056
3	*Gozamin*	0.29	101.25	0.50	35,326.93	122,964

Source: Gozamin Woreda Agricultural and Rural Development Office, March 2009

Out of the total sample households, 95.7% own land and the rest, 4.3% are landless. The data gathered on the land ownership system reveals that 45.7% of the sample households own four *timad* (one hectare) of land. The rest, 16.4%, 14.7%, 15.5% and 3.4% own two, six, eight and twelve *timad* of land respectively.

Land renting is a common phenomenon in most rural Ethiopia. To asses this fact, sample households are asked whether they rent in/ rent out land. The result reveals that only 12.9% rent out land to rural folk in the last 12 months. Besides, the amount of rent out land was very small. Out of 15 respondents who rent out land, only a single farmer rented out above five *timad* (1.2 hectare) of land. The rest two have rented out three *timad* of land while the other 12 (four respondents in each group) have rented out one, two and three *timad* of land respectively. Shortage of oxen and human capital are the main reasons mentioned to rent out land by 60% and 26.7% of respondents respectively. The rest, 13.3% have mentioned multiple reasons like accessibility, border conflict and lack of land management knowledge as reasons to rent out land.

On the other hand, out of 116 sample households, more than half (67.2%) have rented in land in the last 12 months. Shortage of land is the main reason to rent in land as mentioned by most respondents (94.9%) while the rest (3.8%) and (1.3%) of respondents cited accessibility and other

multiple reasons respectively. The amount of land rented in last year, shows that most respondents rent in land that is bellow five *timad*. More specifically, only 9% of the respondents rent in above five *timad* while 5.1% of the respondents rented in five *timad* of land. The rest 20.5%, 28.2%, 21.8% and 15.4% of respondents have rent in one, two, three and four *timad* of land. Generally, no single farmer in the hinterland have rented out land to urban folk revealing the absence of land rent marketing linkage between Debre Markos town and its hinterland.

More than half (63.8%) of the respondents indicated that they do not have any problem to use their land for future development. On the other hand, the rest (36.2%) of the respondents indicated that they feel in secured to use their land for future development. In line with this, future land redistribution is mentioned as the main reason for insecurity by more than half (52.4%) of the respondents. The rest, (7.1%) and (40.7%) of respondents cited urban expansion and other multiple reasons (natural disaster and shortage of agricultural inputs) as potential causes of insecurity respectively.

4.2.2 Farming System and Problems of Agriculture in the Hinterland

Rain-feed agriculture is common feature of rural economy in the country. Farmers in the hinterland were asked whether they use other sources of water for agricultural production. The data gathered reveals that more than half (61.2%) of the farmers use other sources of water for farming. Irrigation is the main source of water used by 88.7% of farmers while water harvest is used only by 5.6% of the respondents. Both irrigation and water harvest are found to be used together only by a single farmer (1.4%). The rest, 4.2% of respondents have used underground water. Land developed through water harvest/irrigation is very small. In this regard, the data gathered discloses that 93% of the respondents used less than one *timad* of land for irrigation/water harvest. The rest, 7% have used two or more *timad*. Among farmers who use irrigation/water harvest, 69% of them produced fruits and vegetables. In both rural *kebeles*, vegetables are often produced for sale. Hence, the use of irrigation has good prospect to strengthen RUMLs (see Goitom, 2005).

The agriculture sector in Ethiopia has been faced with numerous problems. Likewise, hinterland farmers were asked whether they have any problem in crop production. The finding reveals that most (80.2%) of farmers have faced with various problems in their crop production. In an attempt

to identify the first five serious agricultural problems in the hinterland, ten assumed variables were identified and farmers are asked to rank the first five problems in an ascending order as per of their severity.

The writer's analysis of the likely variables as perceived by sampled farmers in rank order identified shortage of land as the first main problem that affect agricultural production and productivity in the hinterland followed by shortage of agricultural inputs, shortage of capital, crop pests and disease and shortage of human capital respectively. More surprisingly, among the ten variables, draught oxen which is the main source of labor is ranked as the sixth major problem followed by lack of access to transportation facilities, lack of extension services and tenure insecurity respectively (see Tegegne, 1999). Besides, variables like tenure insecurity, transport problems, lack of market and extension services are not the major problems since they are ranked first by none of the respondents (Table 4.2). Therefore, shortage of land that affects agricultural production is also a threat to pursue positive RUMLs.

Table 4.2. Constraints of Agricultural Production as perceived by sampled farmers

		Rank Frequency					Sum of the 1st five ranks	Rank order
No	Variable	First	Second	Third	Fourth	Fifth		
1	Land shortage	54	17	5	1	4	81	1
2	Shortage of oxen	17	15	8	3	2	45	6
3	Human capital shortage	4	12	17	7	13	53	5
4	Shortage of input	12	26	11	13	15	77	2
5	Lack of Market service	0	3	4	4	11	22	8
6	Shortage of capital	2	16	19	25	11	73	3
7	Tenure insecurity	0	1	3	1	0	5	10
8	Lack of extension service	0	0	3	5	4	12	9
9	Transport problem	0	1	10	7	12	30	7
10	Crop pests and disease	4	2	13	26	18	63	4

Source: Own Survey, March 2009

Despite the above problems, 44.8% of respondents indicated that their agricultural production has increased in the last three years while 41.4% of respondents noted that their agricultural production has decreased in the last three years. The rest, 13.8% of sample households indicated that their agricultural production remained static showing no change in the last three years. Good rain and use of modern inputs are identified as the main pacemakers to increase agricultural production by 28.4% and 16.4% of the respondents. On the other hand, absence of adequate rain, shortage of modern inputs, decreasing soil fertility and others (like soil erosion, natural disaster

and disease) are identified as factors for the diminishing pattern of agricultural production and productivity in the last three years by 16.4%, 14.7%, 6.9% and 3.4% of sample households respectively.

The principal crops cultivated in the study area are cereals (*teff,* barley, wheat, maize, and *engdo*) followed by oil seeds and pulses. Most farmers (88.8%) indicated that they want to expand cereal crops in the future while the rest, 6%, 4.3% and 0.9% of farmers preferred to grow oil seeds, fruits and vegetables and pulses respectively. About 35.3% of respondents indicated that they want to expand the above crops due to high productivity while the rest 32.2%, 28.4%, 1.7% and 1.7% of farmers opt to expand the above crops owing to attractive market price, high demand, minimum production cost and others (like resistance against natural disaster) respectively. Such analysis reveals that yet farmers are not ready to produce commercial crops that would intensify RUMLs. The finding is alike with Goitom 2005.

4.2.3 Cereal Production in the Hinterland and Marketing linkages with *Debre Markos* town

Crop production is the primary agricultural activity that engaged most of the farmers in the hinterland. Varieties of rain fed crops are widely grown in a mono-season growing called *Meher.* The crops produced are mainly food crops that can be categorized as cereals, pulse and oilseed in their order of importance in terms of local consumption, marketing, hectarage and volume of production.

The available data from the *kebeles*' agricultural and rural development office reveals that 95%, 3%, and 2% of households in *Wonka* participate in farming, animal husbandry and trade respectively. Unlike *Wonka*, in *Qebi* almost all households participate in both farming and animal rearing. In the study *kebeles,* half of the farmers are surplus producing while the rest lead subsistence and extremely impoverished life.

The data collected from sampled farmers on the type of crops cultivated and amount of land allotted in the last twelve years for cereals reveal that almost all (95.7%) of respondents cultivated *teff* followed by maize (63.8%), oil seeds (56%), *engdo* (42.2%), wheat (40.5%), pulses (39.7%) and barley (31.9%) respectively. As indicated by the respondents, about 808 *timad* (202 hectare) of land was allotted for cereal production in the last twelve months. Out of the total cultivated land, *teff* covered 365 *timad* (45.2%) followed by maize 93 *timad* (11.5%), oil

seeds 82 *timad* (10.1%), *engdo* 77 *timad* (9.5%), pulse 74 *timad* (9.2%), wheat 69 *timad* (8.5%) and barley 48 *timad* (6%) respectively(Table 4.3).

Table 4.3 Land Allotted for Cereal Production in timad in the last 12 Months

No	Cereal	Amount of land allotted for each crop in *timad*						NCF	TLA
		<=1	2	3	4	5	>5		
1	*Teff*	14(21.1)	19(16.4)	24(20.7)	29(25)	12(10.3)	13(11.2)	5(4.3)	365
2	Barley	29(25.0)	6(5.20)	1(0.90)	1(0.90)	0(0.00)	0(0.00)	79(68.1)	48
3	Wheat	30(25.9)	10(8.60)	5(4.30)	1(0.90)	0(0.00)	0(0.00)	69(59.5)	69
4	*Engdo*	25(21.6)	22(19.0)	1(0.90)	0(0.00)	1(0.90)	0(0.00)	67(57.8)	77
5	Maize	59(50.9)	13(11.2)	1(0.90)	0(0.00)	1(0.90)	0(0.00)	42(36.2)	93
6	Oil seeds	52(44.8)	10(8.60)	2(1.70)	1(0.9)	0(0.00)	0(0.00)	51(44.0)	82
7	Pulses	28(24.1)	10(8.6)	7(6.0)	0(0.00)	1(1.90)	0(0.00)	70(60.3)	74

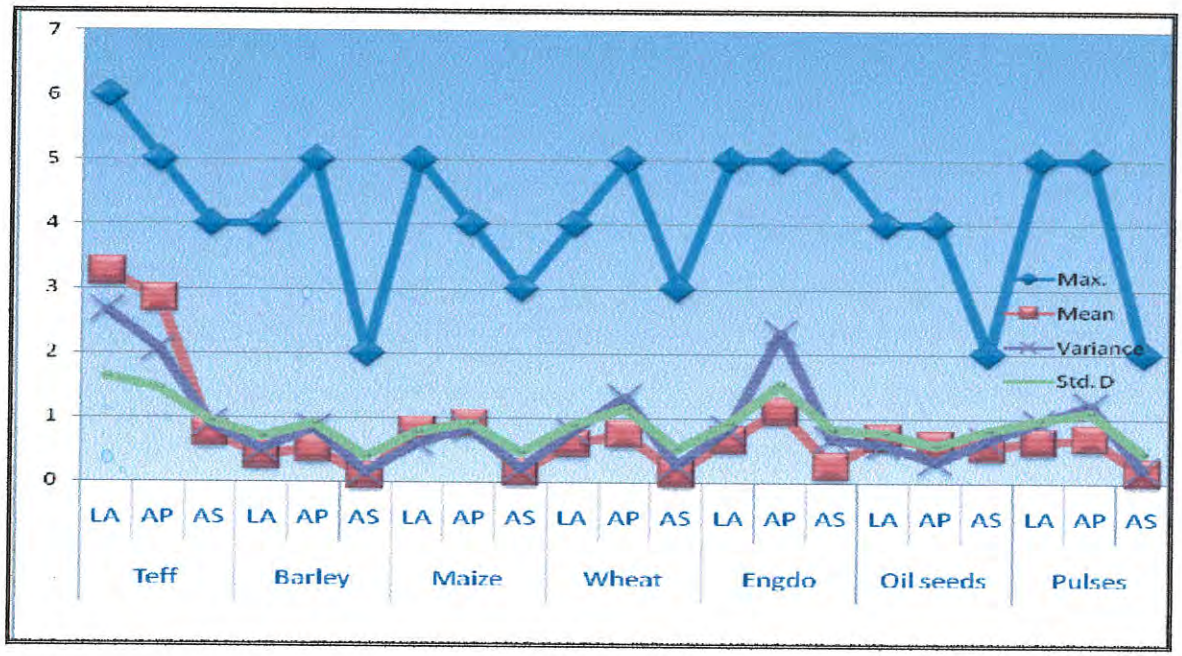
Source: Own Survey, March 2009 *Note: Figures in parenthesis are percentages.*
NCF=Non-Cultivating Farmers *TLA = Total Land Allotted*

The average land allotted to each cereal crop reveals that on average each farmer allotted 3.25 *timad* (0.81 hectare) of land for *teff*. To measure the variability on the amount of land allotted to *teff*, both variance and standard deviation were calculated. The result reveals a high variability as compared to other cereals with 1.63 and 2.66 standard deviation and average squared deviation from the mean respectively. The average land allotted to each cereal by farmers is found to be less than one *timad*. More specifically, on average 0.80, 0.66, 0.60, 0.59, 0.50 and 0.41 *timad* of land was allotted by each respondent for maize, *engdo*, wheat, oil seeds, pulses and barley respectively. Land allotted to pulses show high variability next to *teff* with 0.97 and 0.94 standard deviation and average squared deviation from the mean respectively. On the other hand, the calculated variation on the amount of land allotted is not as such significant for maize, barley, *engdo*, wheat and oil seeds indicating that all farmers cultivate an amount of land that is almost closer to the grand average.

The data collected on cereal production reveals that the average *teff* produced per farmer in the last 12 months was 2.83 quintals. Among all cereals, *teff* assumes the first rank in terms of average production per farmer followed by *engdo* (1.1 quintal). Besides, *teff* also stand in the forefront in terms of participation, since almost all (95.7%) of farmers cultivated *teff* in the last *meher* season. The average production per farmer for maize, barley, wheat, oil seeds and pulses is 0.91, 0.50, 0.75, 0.55 and 0.68 quintals respectively. This clearly reveals that agricultural production in the hinterland is low and does not harness RUMLs. (Annex14 and Fig 4.1).

Crops produced in the hinterland are used for consumption, seed and sale. In this regard, the data gathered from sampled farmers on the proportion of cereals allocated for sale indicated that oil seeds are the major crops brought to the market. On average 96.1% of oilseed produced sold in the market followed by *teff* (26.4%) pulses (25%), *engdo* (23.25%), wheat (19.7%), barley (18.6%) and maize (17%) respectively. Sampled farmers indicated that they opt to sale more of oil seeds than other crops mainly due to its attractive market price (Fig 4.1).

Figure 4.1: Land Allotted to cereals, Amount Produced and sold



Source: Own Survey, March 2009 LA=land allotted, AP= amount produced, AS= amount sold

Cereal production in the hinterland is not market oriented. In this regard, farmers were asked whether they produce cereals mainly for sale. The result reveals that 50.9% of sampled farmers produce crops mainly for sale. On the other hand, the rest (49.1%) never produce crops for sale. As indicated by 45.6% and 24.6% of sampled farmers, the subsistence nature of agriculture and high cost of production are the principal factors that hinder them not to produce cereals for sale. Besides, factors like lack of knowledge and absence of agro-processing industries are cited as reasons by14% and 12.3% of respondents respectively. To hinterland farmers', lack of access to market and market related facilities is not major factor since it is stated as an impediment only by 3.5% of the sampled households (Table 4.4).

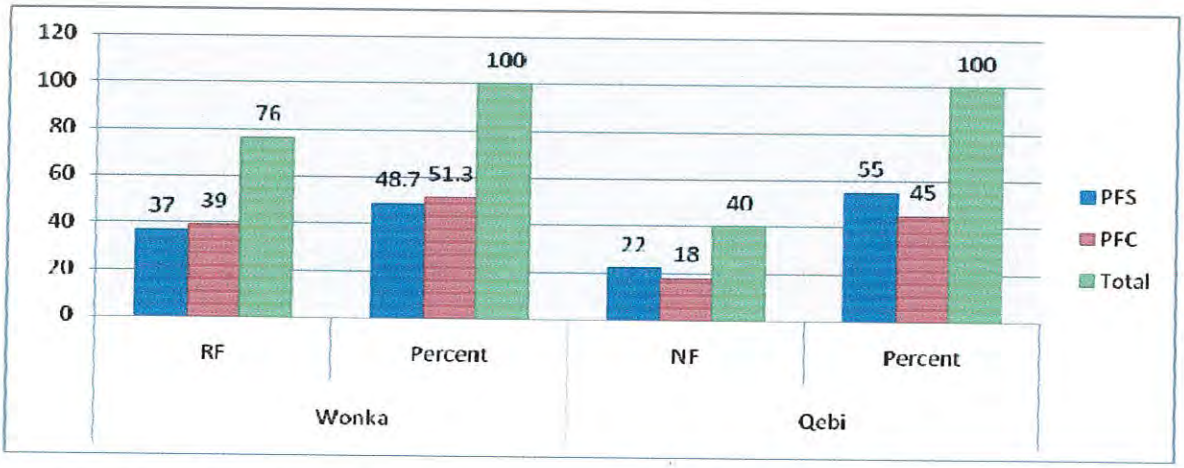
Table 4.4 Extent of Cereal Production for Sale and Related Reasons

	Response type	Frequency	Percent	Valid percent	Cumulative percent
Do you produce commercial crops for sale?	Yes	59	50.9	50.9	50.9
	No	57	49.1	49.1	100
Total		116	100	100	
Reasons for not producing cereals mainly for sale	High cost	14	24.6	24.6	24.6
	Lack of market	2	3.5	3.5	28.1
	Lack of knowledge	8	14	14	42.1
	Subsistence Agriculture	26	45.6	45.6	87.7
	Others	7	12.3	12.3	100
Total		57	100	100	

Source: Own Survey, March 2009.

The *kebele* level analysis in terms of cereals mainly produced for sale reveals that 55% of farmers from *Qebi* produced cereals mainly for sale compared to 48.6% of farmers from *Wonka*. On the other hand, more (51.3%) farmers from *Wonka* produced cereals principally for consumption as compared to 45% of farmers from *Qebi*. It is therefore, worth to mention that farmers from *Qebi* have a strong market linkage with *Debre Markos* than farmers from *Wonka (*Fig 4.2).

Figure 4.2: Extent of Cereal Production for Sale by Kebele



Source own Survey, March 2009
PFS=Produced Mainly for Sale

RF=Reporting Farmers
PFC=Produced for Consumption

The town is the major market place for cereals produced in the hinterland. In line with this, sampled households indicated that, *engdo*, pulses and wheat are wholly marketed in *Debre*

Markos town. Similarly, out of the total sampled farmers who sale cereals, 98%, 85.7%, 92.8% and 97.7% are reported to market their *teff*, barley, maize, and oil seeds in *Debre Markos* respectively. The rest, 2%, 7.2% and 2.3% are reported to market their *teff*, maize, and oil seeds in local markets. Barley is the only crop sold at the farm gate, with 14.3% of farmers marketed it at the farm gate. In terms of variety, all crops produced in the hinterland have been brought to the market; however, in terms of amount, it is hardly enough to satisfy town's need, showing weak RUMLs. Tegegne (1999) came up with similar finding especially in *Limu* town and its hinterland.

Urban dwellers are found to be the principal customers almost for all cereals (except oil seeds) brought to the market from the hinterland. The data reveals that 78.8%, 71.4%, 85.7%, 88.9%, 14%, and 73.3% of farmers have sold their *teff*, barley, maize, wheat, *engdo*, oil seeds and pulses to urban dwellers respectively. On the other hand, urban traders are not the principal customers of cereals brought to the market except oil seeds where 86% of farmers sold their produce to urban trader who own small-scale edible oil refinery industries. This clearly reveals that, hinterland farmers have strong marketing interaction with urban dwellers than urban traders (Table 4.5).

Table 4.5. Marketed Cereal, Market Place and Customers.

	Marketed cereals						
Market place	Teff	Barley	Maize	Wheat	Engdo	Oil seeds	Pulses
Debre Markos	51(98)	6(85.7)	13(92.8)	9(100)	11(100)	43(97.7)	15(100)
Local market	1(2)	-	1(7.2)	-	-	1(2.3)	-
Farm gate	-	1(14.3)	-	-	-	-	-
Customer							
Urban dwellers	41(78.8)	5(71.4)	12(85.7)	8(88.9)	7(63.6)	6(14)	11(73.3)
Urban traders	10(19.2)	1(14.3)	2(14.3)	1(11.1)	4(36.4)	37(86)	4(26.7)
Farmers	1(2.0)	1()14.3	-	-	-	-	-

Source: Own Survey, March 2009. Figures in parenthesis are percentages.

4.2.4 Fruits and Vegetables Production and Marketing Linkage with Debre Markos

Under normal circumstances, hinterlands are expected to supply fresh fruits and vegetables while urban centers are expected to accommodate peri-urban products and supply industrial out puts. Reporting farmers indicated that, 37.9% of them have produced fruits and vegetables in the last two years. In terms of *kebele* level, 68.2% of vegetable and fruits producers are from *Wonka* while the rest 31.8% are from *Qebi*. More than half (62.1%) of the respondents had never been produced fruits and vegetables in the last two years. Farmers identified shortage of water (73.6%)

and lack of modern inputs (26.4%) are principal factors that hardly allow them to produce fruits and vegetables (see Goitom 2005). Among farmers who produced fruits and vegetables, 88.6% brought their product to the market. Therefore, fruits and vegetables are good prospects to harness RUMLs.

In terms of market place, reporting farmers reveal that all fruits and vegetables are marketed in *Debre Markos* town. Like cereals, urban dwellers are found to be the principal customers for fruits and vegetables followed by traders. The data reveals that, 56.4% and 38.5% of sampled households have sold their fruits and vegetables to urban dwellers and traders respectively. The rest, (5.1%) of respondents indicated that local farmers are their customers. This clearly reveals that, hinterland farmers have strong marketing interaction through the sale of fruits and vegetables with urban dwellers than urban traders.

4.2.5 Livestock Ownership, Livestock Products and Marketing Linkages

Livestock are the principal indicator of wealth, prestige, source of draught power, transportation, and nutrition for hinterland farmers next to land. About 94% of sampled households indicated that they posses different types of livestock. In terms of *kebele*, 94.7% of farmers from *Wonka* and 92.5% of farmers from *Qebi* owned different types of livestock. Only 6% of sampled farmers do not own livestock, of which, 57% are from *Wonka* while the rest 43% are from *Qebi*. Most farmers in the hinterland are reported to own a single heifer, bull and donkey while they are found to own a pair of oxen and cows respectively. On the other hand, horses and goats are the least owned livestock by hinterland farmers (Table 4.6).

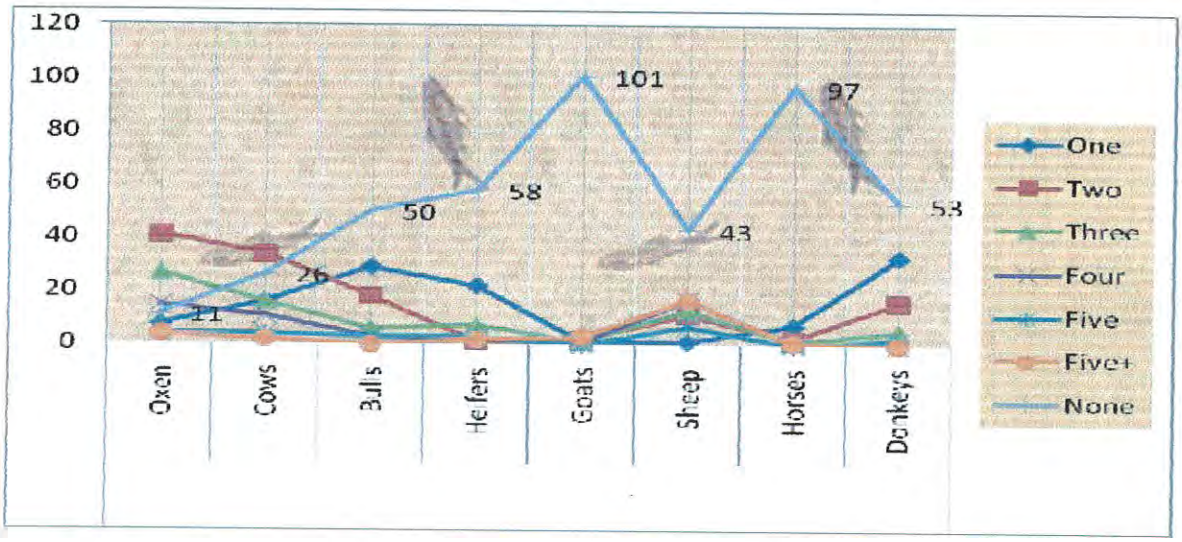
Table 4.6 Livestock type and ownership by hinterland farmers in the last 12 months

No.of livestock owned	Type of livestock owned							
	Oxen	Cows	Bulls	Heifers	Goats	Sheep	Horses	Donkeys
One	7(6)	16(13.8)	29(25)	22(19)	1(0.9)	1(0.9)	7(6)	33(28.4)
Two	41(35.3)	34(29.3)	18(15.5)	15(13)	2(1.7)	11(9.5)	2(1.7)	16(13.8)
Three	27(23.3)	16(13.8)	6(5.2)	7(6)	1(0.9)	13(11.2)	1(0.9)	5(4.3)
Four	15(12.9)	11(9.5)	3(2.6)	2(1.7)	1(0.9)	17(14.7)	1(0.9)	0(0.0)
Five	4(3.4)	4(3.4)	3(2.6)	3(2.6)	0(0.0)	7(6)	0(0.0)	2(1.7)
>Five	4(3.4)	2(1.7)	0(0.0)	2(1.7)	3(2.6)	17(14.7)	1(0.9)	0(0.0)
None	11(9.5)	26(22.4)	50(43.1)	58(50)	101(87)	43(37.1)	97(83.6)	53(45.7)
Missing	7(6)	7(6)	7(6)	7(6)	7(6)	7(6)	7(6)	7(6)
Total	116	116	116	116	116	116	116	116

Source: Own Survey, March 2009. *Note: Figures in parenthesis are percentages*

On average, farmers in both rural *kebeles* have little more than two oxen, which indicate that shortage of oxen is not problem of agricultural production (see Tegegne, 1999). Hinterland farmers own more oxen than other livestock followed by sheep and cows. The data collected from sampled households on livestock ownership reveals that the average number of cows, bulls, heifers, goats, sheep, horse and donkeys is 1.9, 1.0, 0.99, 0.27, 2.44, 0.22, and 0.82 respectively(Table 4.7 and Fig.4.3).

Figure 4.3 Livestock Type and Ownership in the Hinterland in the last 12 Months



Source: Own Survey, March 2009 TLU refers Tropical Livestock Units

Table (4.7) bellow reveals that 94% of sampled households owned 804.28 TLU in the last 12 months. It also reveals that the average farmer owns a little more than 10 livestock. Sheep, oxen, goats and cows are reported to have been brought to the market, by 56.9% of sampled households. Out of 94% of sampled farmers who own livestock, 56.9% are reported to sale livestock in the last 12 months. This clearly reveals that livestock resources in the hinterland are not only used for domestic purposes. However, as compared to the number owned, livestock used for sale are minimal (10.9%). Surprisingly, sheep are found to be the most liquid livestock accounting 54.5% of total livestock brought for sale creating good RUMLs (Table 4.7).

Out of the total sample households, 43.1% indicated that they never buy and sale any kind of livestock in the last 12 months. While the rest, 56.9% reported either they bought or sold

livestock in the last 12 months. *Debre Markos* town is the major market place to buy and sale livestock for 74% of hinterland farmers; though local markets and farm gates are also cited by 6 and 4 percent of sampled farmers respectively. The rest 13% of farmers used the three markets alternatively. Besides, 3% of farmers indicated that they have been buying and selling livestock from other market place outside the *woreda*, indicating hinterland farmers' marketing linkages with other small towns in the zone.

Table 4.7 Livestock owned, sold and bought by Hinterland farmers in the last 12 months

	Type of livestock								Total
	Oxen	Cows	Bulls	Heifers	Goats	Sheep	Horses	Donkeys	
TNLO	274(98)	208(83)	110(59)	108(51)	30(8)	267(66)	24(12)	90(56)	1,111
TLU*	274	208	110	108	3	26.7	16.08	58.5	804.28
ANLO	2.5	1.90	1.00	0.99	0.27	2.44	0.22	0.82	10.14
TNLS	18	11	4	1	15	66	3	3	121
TNLB	25	6	2	5	0	26	3	3	70

Source: Own Survey, March 2009. *TNLO: Total number of livestock owned*
Note: Figures in parenthesis are reporting farmers *ANLO: Average number of livestock owned*
TNLS: Total number of livestock sold *TNLB: Total no. of livestock bought*
**Conversion factor for TLU are: cattle=1.0, sheep/goat=0.1, horse=0.67, donkey=0.65*

The participation of hinterland farmers are not only limited to livestock market. Instead, they are also actors in the livestock product market. As a result, more than half of the respondents (54.3%) ascertained that they sale livestock products. In terms of *kbele*, 57.5 and 52.6 percent of farmers indicated to sale livestock products from *Qebi* and *Wonka* respectively. This indicates that little more farmers from *Qebi* participated in the sale of livestock products than from *Wonka*. *Debre Markos* is the principal market for livestock products from the hinterland, since almost all (98.4%) of farmers have sold their product in the town. Only a single respondent from *Wonka* has been found to supply dairy products to *kebele's* dairy processing center. The analysis on the income earned from the sale of livestock products reveals that nearly half (49.2%) of respondents earned less or equal to 100 birr per annum. On the other hand, only 12.1% of the respondents earned relatively above 500 birr per year. The rest, 19.7%, 12.1%, 3%, and 1.5% of farmers earned from101-200 Birr, 201-300 Birr, 301-400 Birr and from401-500 Birr per annum respectively. In general, the income earned from the sale of livestock products is less satisfactory as compared to number of participants due to low production and productivity.

4.3 Type and Magnitude of RUML in Debre Markos and Its Hinterland

As discussed well in the second chapter, the nature and type of linkage varies from one spatial unit to another as per of existing socio-economic, political and cultural conditions. One of the main objectives of this study is to identify the type and magnitude of linkages in the study area. To this end, the available spatial and sectoral RUMLs between *Debre Markos* and its hinterland are explained under this section.

4.3.1 Backward Production Marketing Linkages in Debre Markos and its Hinterland

Backward production linkages occur where agriculture absorbs farm inputs produced by local industries or supplied by nearby urban center. In turn, small towns are expected to improve farmers' access to farm inputs and services. The magnitude to which hinterland farmers use farm inputs and services , and whether nearby towns are centers of such services to farmers reveal the impact of urban centers on hinterland farmers. Above all, it shows the nature of backward linkages the hinterlands may have on the nearby town. Such mutually reinforcing pattern of linkage between an urban center and its hinterland will result the virtuous circle of rural-urban development.

4.3.1.1 Agricultural Inputs Usage and its Marketing Linkages

In the hinterland, most farmers (94%) use agricultural inputs. In terms of *kebele*, 94.7% of farmers in *Wonka* and 92.5% of farmers in *Qebi* are reported to use any of the farm inputs. The predominant type of input used in terms of participation and amount in both *Wonka* and *Qebi* is chemical fertilizer. About; 91.4% of sampled farmers reported to use chemical fertilizers. In the hinterland, it is a common practice to use both organic and chemical fertilizers together. Out of 109 farmers who use agricultural inputs, 80.7% use both chemical and organic fertilizers while the rest 15.6% and 3.7% use only chemical and organic fertilizers respectively. Though hinterland farmers are highly encouraged to use organic fertilizers, yet, 18.3% of sampled farmers do not adopted it. Out of these, more than half (52.1%) of farmers do not use organic fertilizers due to lack of cattle while lack of knowledge and domestic fuel usage are equally indicated as constraints by 47.9% of sampled farmers.

The data collected on the amount of farm inputs reveals that hinterland farmers from *Qebi* and *Wonka* have used 184 quintal (18,400 kg) of chemical fertilizer in the last 12 months. It is

therefore, possible to deduce that the average farmer in the hinterland uses 1.7 quintal of chemical fertilizer. In terms of cost, most (83%) of farmers have used above 600 birr to purchase chemical fertilizers. The rest 1%, 14.1% and 1.9% of farmers have used between 101-200 birr, 301-400birr and 501-600 birr respectively. In a simple term, farmers have incurred 54,800 birr to purchase fertilizer in the last 12 months.

The second farm input widely used in the hinterland next to fertilizer in terms of participation is weed controls, that is exactly adopted by half (50%) of farmers. However, it is the least in terms of amount, with only 310 kg of weed control purchased in the last 12 months. The average farmer in both *kebeles* used 5.3 kg of weed control with 55 Ethiopian Birr average expenditure. A comparison with in the two *kebeles* on weed control users reveals, that it is more practiced in *Qebi* than *Wonka* with 67.5% and 40.8% sampled farmer users respectively. In terms of amount, selected seeds are the second principal inputs purchased by hinterland farmers next to fertilizers, with 19.3 quintal (1,930kg). With respect to participation, 43.1% of farmers have purchased selected seeds in the last *meher* season. Like weed controls, more purchasers of selected seeds are reported from *Qebi* than *Wonka*, with 52.5% and 38.1% sampled farmer participants respectively.

In terms of cost, the average farmer incurred 196 Ethiopian Birr for 38.6 kg of selected seed. Pesticides are the least marketed farm inputs in terms of farmers' participation and cost incurred. Yet, more participants are reported to use pesticides from *Qebi* than *Wonka*, with 37.5% and 32.9% sampled household participants respectively (Table 4.8).

Table 4.8 Farm Input Type, Amount Purchased, Place of Purchase and Suppliers

		Type of Agricultural Inputs			
Descriptions		Fertilizers	Selected Seed	Weed Control	Pesticides
Total number of users		106 (91.4)	50 (43.1)	58 (50)	40 (34.5)
Amount purchased(kg)		18,400	1,930	310	350
Total cost incurred(Birr)		54,800	9,800	3,190	2,390
Suppliers	Traders	10(9.4)	4 (8.0)	40 (69)	30 (75)
	Cooperatives	69 (65)	33 (66)	11 (19)	4 (10.0)
	GWARDO	27 (25.6)	13 (26)	7 (12)	6 (15.0)
Place of purchase	Debre Markos	18 (17.1)	10 (20)	47 (81)	31(77.5)
	With PA	86 (80.9)	38 (76)	11 (19)	9 (22.5)
	Others	2 (2.0)	2 (4.0)	0 (0.0)	0 (0.00)
Reasons for not using	High cost	6 (60)	48 (72.7)	4 (6.9)	4 (5.30)
	Locally available	4 (40)	9 (13.6)	51 (87.9)	65 (85.5)
	Lack of knowledge	0 (0.0)	7 (10.6)	0 (0.0)	5 (6.6)
	Others	0 (0.0)	2 (3.10)	3 (5.2)	2 (2.6)

Source: Own Survey, March 2009. *Note: Figures in parenthesis are reporting farmers*

The analysis on the supplier and place of purchase of farm inputs is the central point to identify the type and nature of back ward linkage in the study area. Principal suppliers of fertilizers and selected seeds are the service cooperatives established in each peasant association. In line with this, 65% and 66% of farmers identified service cooperatives as the primary suppliers of fertilizers and selected seeds respectively. GWARDO that is located in *Debre Markos* is also identified as the second most important supplier of fertilizer and selected seeds by 25.6% and 26% of sampled farmers respectively (Table 4.8).

The role of traders and other town-based institutions in supplying fertilizers and selected seeds to hinterland farmers is limited only to 9.4 and 8 percent. Besides, most (80.9% and 76%) of farmers purchased fertilizers and selected seeds within their PAs while 17.1% and 20% of farmers have purchased these farm inputs from *Debre Markos*. The rest two and four percent of farmers indicated that they have purchased their fertilizer and selected seeds from other small towns in the zone. It is surprising to learn from the finding that hinterland PAs are alienated from their immediate urban center (*Debre Markos*) in the supply and use of fertilizers and selected seeds. In a simple term, this reveals the prevalence of weak backward RUMLs between *Debre Markos* and its rural hinterland mainly due to the absence of agro-processing industries. It has also an implication on the absence of mutual local development endeavor (see Tegegne, 1999).

Despite the preceding fact, the role of service cooperatives and GWARDO in supplying weed controls and pesticides is found to be minimal. Instead, traders are identified as the principal suppliers of weed control and pesticides by 69% and 75% of farmers. While service cooperatives supply19 and 10 percent of weed controls and pesticides, GWARDO is limited to 12 and 15 percent. Unlike fertilizers and selected seeds, most of the weed controls (81%) and pesticides (77.5%) are purchased from *Debre Markos*, the rest, 19 and 22.5 percent are purchased within each peasant association. From this discussion, it is possible to deduce that there exists a partial back ward RUMLs between *Debre Markos* and its hinterland in terms of farm inputs usage.

As indicated in table 4.8 above, non-users of farm inputs were also asked to identify the pertinent factors that hinder them from participation. The study identified high cost as the principal obstacle that hinders farmers' participation. On the other hand, most non-users of weed controls (87.9%) and pesticides (85.5%) indicated that they opt not to purchase such inputs since they are locally available. From such finding, it is therefore straightforward to deduce two argumentative

facts. Affirmatively, it saved farmers from the cost that they would have incurred otherwise and surpass farmers' creativity as well as their reliance on traditional knowledge. On the other hand, the more farmers are dependent on locally available farm inputs, the thinner would become the expected backward RUMLs between *Debre Markos* and its hinterland.

To assess the overall trend of input usage in the hinterland, sampled farmers are asked to describe the magnitude they have perceived in the last three years. As per of the result, 65.5% of sampled farmers reported an increased usage while 19.8% indicated that it has decreased. The rest, 14.7% of farmers asserted that their input usage show no change in the last three years.

4.3.1.2 Veterinary and Extension Service Usage and its Marketing Linkages

Veterinary and extension services are the other strand of ingredients to better of agricultural production and productivity in the hinterland. Often, the government offers such services, however, small urban centers like *Debre Markos* have a considerable say to surpass farmers access in terms of quality, quantity, price and speed of delivery.

Most (87.1%) of farmers indicated that they have access to extension services. PAs are the principal sources of extension services for most (92%) of users while *Debre Markos* town remains to offer the service for few (8%) of users. More than half (66.7%) non- extension users identified lack of knowledge as the principal limitation to access the service. Besides, high cost and shortage of extension services are cited as other set of hindrances by 20% and 13.3% of non-extension service users. In both *Wonka* and *Qebi* extension workers are playing an indispensable role to promote agricultural production and productivity by introducing farmers with new technologies and farming systems. There are three agricultural extension and two health extension workers in each rural *kebele.* In terms of the place where extension workers dwell, most (83.6%) of farmers indicated that they stay within the *kebele* while the rest,16.4% of sampled farmers indicated that they commute from *Debre Markos* to *Wonka* and *Qebi* indicating another form of linkage between the town and its hinterland.

As it is vividly described in section 4.2.5 of this chapter, livestock is the principal indicator of wealth, prestige, as well as means of production and transportation for hinterland farmers next to land. Cognizant of this fact, hinterland farmers are keen to take care of livestock. Among sampled farmers who own livestock, 89.9% have access to veterinary service. With respect to

place of purchase, *Debre Markos* and GWARDO are market centers to 37.8% and 41.8% of veterinary service users respectively. The rest 20.4% of farmers received the service from their PAs. Government, with 80.6% service coverage is the sole provider of veterinary service to hinterland farmers. Besides, 12.2% of veterinary users indicated that government together with the private sector is the source of the service. Overall, the role of the private sector in veterinary service provision is limited to 7.2 percent. Lack of knowledge, high cost and inaccessibility are identified equally by 61.1% of non-veterinary service users as the principal limitation to access the service. The rest, 38.9% mentioned lack of skilled work force and livestock as reasons to retaliate from service usage.

The preceding discussion has something to inform as that there exists a disparity on the provision of veterinary and extension services vis-à-vis its impact to promote RUMLs between *Debre Markos* and its hinterland. The fact that most veterinary services are offered in *Debre Markos* , asserts the prevalence of back ward RUMLs (see Tegegne, 1999 and Goitom, 2005).

4.3.2 Forward Production and Marketing Linkages in *Debre Markos* and Its Hinterland

Forward production marketing linkage refers the supply of raw materials for processing and distribution; obtained through local processing of agricultural outputs. Under normal circumstances, a growing and surplus producing agriculture will stimulate establishment of agro-processing industries in the nearest urban center (Helmising, 2000). Despite the fact that the hinterland is part of surplus agricultural producing areas of the *Amhara* National Regional State, in fact it is barely adequate to satisfy the consumption needs of urban dwellers (see Goitom, 2005).

Town based small-scale industries, on the other hand, have not been capably produced and supplied goods and services required by hinterland farmers. Besides, agro-processing industries like local edible oil refineries, and powder processing industries currently seem non-functional due to lack of adequate and sustainable agricultural raw material supply. Grain mills are the only small-scale industries, yet functioning and serving hinterland farmers. In line with this, the study reveals that almost all (95%) of sampled farmers from *Qebi* have got grain mill service from *Debre Markos* while the rest 5% got it done from other neighboring *kebeles*. On the contrary,

78.9% of farmers in *Wonka* have got grain mill service within their peasant association, while the rest 21.1% of farmers identified both spatial units as center of grain mill service.

As indicated in the third chapter, in the current investment climate, people in the town are engaged in various economic activities and the sector has shown remarkable improvements between 2005/06 and 2008/09. Though, this has the chance to strengthen the existing RUMLs between the town and its hinterland, most investment choices are not yet capable to promote at least a slight forward production linkage between the two spatial units.

In the current development arena, establishment of MSEs attracted the attention of local economic planners. Likewise, the sector has given more emphasis in *Debre Markos* too. However, in an interview with head of micro and small-scale enterprises, the study found out that yet no formal market linkage has been created between the industry and hinterland farmers. Therefore, it is clear that forward production marketing linkage between *Debre Markos* and its hinterland is almost non-existent. Tegegne (1999) came up with alike finding.

4.3.3 Consumption and Marketing Linkages of Hinterland Farmers with DMT

Consumption linkages result from the expenditure of farm incomes on locally produced consumer goods and services (Bagachawa and Stewart, 1992). In line with, the premise made on this study is the assumption that hinterland farmers create demand for urban goods and services, while *Debre Markos* is expected to meet the demand. To assess the extent and nature of the interface, pertinent data are collected on farmers' expenditures on durable/non-durable goods, construction materials and place of purchase are presented bellow with plausible explanations.

Table 4.9 Non-Durable Goods Purchased by Rural Households

Non-durable Goods	Name of Peasant Association(PA)							
	Wonka					*Qebi*		
	TRF*	Ave. Exp	RHH	Market place		RHH	Market	
				DMT	PA		DMT	PA
Soap/omo	105(90.5)	1285	65(85.5)	55(84.6)	10(15.4)	40(100)	40(100)	-
Coffee	100(86.2)	2700	63(82.9)	61(96.8)	2(3.2)	37(92.5)	37(100)	-
Edible oil	109(94)	1135	70(92.1)	68(97.1)	2(2.9)	39(97.5)	39(100)	-
Pepper/spice	105(90.5)	3205	68(89.5)	67(98.5)	1(1.5)	37(92.5)	37(100)	-
Sugar/tea	98(83.6)	1825	63(82.8)	56(88.8)	7(12.2)	35(87.5)	35(100)	-
Match/battery	103(88.8)	1020	66(86.8)	55(83.3)	11(16.7)	37(92.5)	37(100)	-
Kerosene	43(37.1)	520	26(34.2)	24(92.3)	2(7.7)	17(42.5)	17(100)	-
Cloth	56(48.3)	4830	32(42.1)	32(100)	-	24(60)	24(100)	-
Shoes	45(38.5)	3130	25(32.9)	25(100)	-	20(50)	20(100)	-
Medicament	38(32.8)	1830	24(31.6)	21(87.5)	3(12.5)	14(35)	14(100)	-
Recreation	51(44)	1065	38(50)	35(92.1)	3(7.9)	13(32.5)	13(100)	

*Source: Own Survey, March 2009 *TRF: Refers total reporting farmers *Figures in () are percentages*

As indicated in table 4.9, sampled farmers from both *kebeles* have purchased non-durable goods with varying scale. Soap/omo, edible oil, pepper/spice, match/battery, coffee and sugar/tea are the principal durable goods purchased by more than 88.9% of respondents. On the other hand, hinterland farmers have shown relatively less demand to kerosene, cloth, shoes, medicament and recreation. Overall, 22,445 Ethiopian Birr have been expended by hinterland farmers to purchase durable goods per month. Sampled farmers from *Qebi* are found to purchase more consumption goods than households from *Wonka*. More specifically, 71.1% of farmers from *Qebi* have purchased all sorts of durable goods as compared to 64.5% of sampled farmers from *Wonka*.

Unlike *Wonka* where some consumption goods are purchased within the PA, farmers from *Qebi* have all purchased their non-durable goods from *Debre Markose*. Therefore, the hypothesis that farmers within the first five km of radius in the hinterland have better access to urban services than farmers within the next 6-10 km of radius from *Debre Markos* have got support from the preceding discussion. Besides, the statistical analysis in the next chapter supports the assertion.

Table 4.10 Durable Goods Purchased by Rural Households in the last Twelve Months

Durable Goods	Name of Peasant Association(PA)							
	Wonka					*Qebi*		
	TRF*	Ave.Exp	RHH	Market place		RHH	Market	
				DMT	PA		DMT	PA
Tape/radio	21(18)	3040	11(14.5)	11(100)	-	10(25)	10(100)	-
Watch	21(18)	530	15(19.7)	15(100)	-	6(15)	6(100)	-
Utensil	50(43.1)	3210	27(35.5)	27(100)	-	23(57.5)	23(100)	-
Bed	13(11.2)	1805	8(10.5)	4(50)	4(50)	5(12.5)	5(100)	-
House	7(6)	10564	2(2.6)	2(100)	-	5(12.5)	5(100)	-
Jewelry	5(4.3)	260	3(3.9)	3(100)	-	2(5.0)	2(100)	-

*Source: Own Survey, March 2009 *TRF: Refers total reporting farmers*Figures in () are percentages*

As compared to consumable goods, farmers' are not found more keen to purchase durable goods. Consequently, small numbers of farmers are reported to purchase durable goods than non-durable goods since durable goods can depreciate gradually. Relatively, sampled farmers from *Qebi* are found to purchase more durable goods than households from *Wonka*. More specifically, 21.2% of farmers from *Qebi* have purchased all sorts of durable goods as compared to 14.5% of sampled farmers from *Wonka*. Besides, unlike *Wonka* where some durable goods like bed are purchased within the PA, farmers from *Qebi* have all purchased their durable goods from *Debre Markose*. Utensils are the most principal durable items purchased by 57.5% and 43.1% of sampled farmers

from *Qebi* and *Wonka* respectively. In terms of cost, hinterland farmers have incurred 19,404 Ethiopian Birr to purchase durable goods (Table 4.10). In general, hinterland farmers have a strong consumption linkage with *Debre Markos* (*see Tegegne, 1999 and Goitom, 2005*).

Another dimension of consumption linkage that exists between *Debre Markos* and its hinterland is the purchase of construction materials. Among sampled farmers, 39.6% of them indicated that they have purchased construction material of any kind. In terms of *kebele*, farmers from *Qebi* and *Wonka* have shown almost equal participation with 40% and 39.4% respectively. Out of the total 74,250 Ethiopian Birr, farmers from *Wonka* spent 44,000 Birr while sampled farmers from *Qebi* spent the rest 30,250 Birr. Corrugated iron sheet and wood are the most frequently purchased construction materials by hinterland farmers while labor and grass remain least demanded. In terms of market center, more than half (52.1%) of farmers indicated that they have purchased construction materials from *Debre Markos* while the respective PAs supplied construction materials only for 26% of hinterland farmers. The rest, 21.7% of reporting farmers indicated as they have purchased construction materials from both *Debre Markos* and respective PAs. Therefore, yet *Debre Markos* and its hinterland rural PAs are linked together through the supply and purchase of construction materials (Table 4.11).

Table 4.11 Construction Materials Purchased By Rural Households and place of purchase

Kebele	Construction materials purchased					Av.Exp	Market place		
	CIS*	Wood	Grass	Labor	All		DMT	PA	Both
Wonka	5(83.3)	8(86.9)	2(66.7)	0(0.0)	15(56)	44,000	16(66.7)	6(50)	8(80)
Qebi	1(16.7)	1(11.1)	1(33.3)	1(100)	12(44)	30,250	8(33.3)	6(50)	2(20)
Total	6(100)	9(100)	3(100)	1(100)	27(100)	74,250	24(100)	12(100)	10(100)

Source: Own Survey, March 2009 **CIS: Corrugated Iron Sheet* **Figures in () are percentages*

4.3.4 Consumption and Marketing Linkages of Urban Households

In the study, the purchase of farm outputs by urban dwellers is assumed as one of the ways through which urban households are linked to their rural counterparts. Hence, the market is the main channel that facilitates the transaction. The study reveals that the food crops bought by many urban households in terms of participation are *teff* (95%), pea (78.3%), wheat (50%), bean

(43.3%) and maize (30%). On the other hand, urban households' demand is found to be less for food crops like vetch, cheek pea, oil seeds and *engdo* (Table 4.12).

The data collected on the amount of cereals bought and cost incurred reveals that the average household purchased 54.12kg, 48.6kg, 25.3kg, 23.3kg, and 21.15kg of *teff*, maize, wheat, pea, barley and incur 359.65, 223.61, 130, 147.3 and 73.10 birr respectively. Farmers are the principal suppliers of consumption goods for the majority (71%) of urban households while the share of urban traders and whole sellers remained minimal supplying 20.4% and 2.6% respectively. Nearly all (97.4%) of farm outputs purchased by urban dwellers are from *Debre Markos,* While the rest 2.6% are purchased from farm gates in the hinterland.

Table 4.12 Consumption of Food Items Purchased by Urban Households per Month

				Suppliers			Market Place		
Crop type	RHH	Amount	Av.Cost	Farmers	Traders	WS	DMT	FG	RM
Teff	57(95)	54.12	359.65	47(82.4)	7(12.3)	3(5.3)	55(96.5)	2(3.5)	-
Maiz	18(30)	48.6	223.61	12(66.7)	4(22.3)	2(11)	17(94.4)	1(5.6)	-
Wheat	30(50)	25.3	130	25(83.3)	4(13.3)	1(3.4)	28(93.3)	2(6.7)	-
Barley	13(21.7)	21.15	73.10	8(61.5)	4(30.8)	1(7.7)	13(100)	-	-
Engdo	4(6.7)	18.75	56.25	3(75)	1(25)	-	4(100)	-	-
Bean	26(43.3)	17.5	66.35	13(50)	10(38)	3(12)	24(92.3)	2(7.7)	-
Pea	47(78.3)	23.3	147.3	33(70.2)	10(21)	4(8.8)	46(97.9)	1(2.1)	-
Ch. Pea	15(25)	17	48.3	13(86.6)	1(6.7)	1(6.7)	15(100)	-	-
Vetch	13(21.7)	18.5	76	10(76.9)	3(23.1)	-	13(100)	-	-
Oil seeds	9(15)	16.1	44.45	7(77.8)	1(11.1)	1(11.1)	9(100)	-	-

Source Own Survey, March 2009 ** Figures in parenthesis are percentages*

As depicted in annex 13, the purchase of fruits and vegetables, dairy products, charcoal and fuel wood by urban households in *Debre Markos* is another form of marketing linkage. In the *Debre Markos*, the main fruits and vegetables bought by many urban households in terms of participation are onion (95%), pepper (78.3%), tomato (71.7%), potato (70%), cabbage (41.7%) and banana (33.3%). On the other hand, citron, avocado, mango and radish are fruits and vegetables not frequently purchased by urban households. The data collected on the amount of fruits and vegetables bought and cost incurred per month reveals that the average household

purchased 3.42kg and incur14.50birr for each fruits and vegetables (annex 13). Farmers and urban traders are the main suppliers of fruits and vegetables to urban dwellers with 48.45% and 46.1% respectively. However, the share of whole sellers to supply fruits and vegetables is yet minimal (5.4%). Nearly all (96.6%) of fruits and vegetables purchased by urban dwellers are from *Debre Markos,* While the rest 3.4% are purchased from farm gates in the hinterland.

Like any other rural parts of the country, in *Debre Markos*, charcoal and fuel wood are the principal sources of energy used for cooking. For this reason, about 80% and 68.3% of sampled urban households indicated that they often purchased charcoal and fuel wood for cooking. The data collected on the amount of charcoal and fuel wood bought and cost incurred per month reveals that the average household is required to incur 77.10 birr to purchase 35.2 kg of charcoal and fire wood. Like cereal and pulse, farmers are the chief suppliers of charcoal and fuel wood for 86.3% of urban dwellers while *Debre Markos* is the principal market place where the lion share (97.8%) of charcoal and fuel wood are purchased. The demand of urban households for milk and milk products is minimal and hinterland farmers are not linked with urban dwellers through the supply of milk and milk products. Instead, urban traders are the main suppliers of milk and milk products for those few urban households who reported to purchase the items.

In general, from the above discussion it is possible to deduce that urban households are linked to farmers through the purchase of farm outputs for consumption. Besides, *Debre Markos* is the principal market place from where most urban dwellers have purchased farm outputs. In this regard, 76.7% of urban households indicated that they have never visited the hinterland for market purpose, the rest 23.3% assured that they sometimes visited the hinterland for market purpose using foot and vehicles as means of transportation. However, hinterland farmers are not the principal suppliers of consumption goods, since 65% of sampled urban households indicated that production from the hinterland never satisfy urban peoples' demand in *Debre Markos*. In its place, about 74.3% and 25.7% of the respondents indicated that the excess demand could be meet from other PAs within the *woreda* but outside the hinterland and other PAs from neighborhood *woredas* respectively (for comparison purpose see Goitom, 2005 and Tegegne, 1999).

Whatever may be the source (in/out of the hinterland), 66.7% of sampled households indicated that the amount of marketed farm outputs in the last three year has increased. Urban households

in *Debre Markos* are not linked with hinterland farmers merely through the purchase of consumption goods; to certain extent, they also offer some services to hinterland farmers. More specifically, 41.7% urban households indicated that they provide services to hinterland farmers. Sale of food items and non-durable goods are the common services offered to hinterland farmers by 56% and 28% of urban households respectively. Unlike forward and backward production linkages, *Debre Markos* and its hinterland exhibits relatively strong consumption linkage.

4.4 Farmers' Travel to Debre Markos Town and purpose of Travel

Towns and their hinterland areas often exert a mutual relationship. Among other things, the extent of such linkages can be depicted by analyzing farmers travel to the nearby urban center in terms of travel frequency, mode of transport, actors in the travel and the very purpose of travel. The common functions offered by *Debre Markos* to its hinterland include marketing, education, health service, administration/court, employment and serves as center of information.

The study reveals that all sampled farmers from *Wonka* and *Qebi* visited *Debre Markos* for market purpose with diverse travel frequencies. None of the reporting farmers had a daily market visit to the town while most farmers marched for it once in two weeks followed by three times per week. Majority of farmers indicated that they often went to *Debre Markos* on foot regardless of the purpose and frequency. Unlike *Qebi* a sizable number of farmers from *Wonka* use vehicles due to their access to the main highway that runs from *Addis Ababa* to *Bahir Dar* through *Debre Markos*. As a result, wives are the principal actresse in the family who frequently visited the town for market purpose. Surprisingly, the use of animal backs as mode of transportation is non-existent in the hinterland except some reporting farmers from *Wonka* who use it for market and administration purpose (Annexes 11 & 12).

Almost in all activities (but education entirely dominated by children), husbands are in the forefront in terms of travel frequency to *Debre Markos*. In general, compared to other activities, hinterland farmers have a better market linkage with *Debre Markos* followed by education. On the other hand, the role of *Debre Markos* as center of administration, information and employment is minimal. Such finding is contrary to Mangawi's (2005) finding from Kenya. Therefore, to pursue a mutual development between *Debre Markos* and its hinterland, the

prevailing marketing linkage should be strengthened by curbing problems related to market and marketing systems.

4.5 Non-Farm Activities Performed by Hinterland Farmers

Besides agricultural production, rural non-farm activities are sources of extra money for hinterland farmers. Hence, *Debre Markos* town is expected to serve as sources of raw materials, place of work and above all market center for non-farm products. The empirical finding of this study reveals that rural non-farm sector is yet immature with only 19.8% of sampled farmers to take part in the activity. In terms of *kebele* more farmers are reported to participate from *Qebi* (27.5%) than from *Wonka* (15.8%).

Daily labor and handcraft are activities repeatedly performed by 39.1% and 26% of participants from both PAs. While few participants are reported to engage in activities like, charcoal making, sale of *areki/tella* (local beer) and repair services. Though, most (75%) of non-farm activities are carried out in the respective rural *kebeles*, *Debre Markos* on the other hand serves as partial market center for raw materials and out puts. This is a clear signal for the existence of linkage between the town and its hinterland through non-farm activities. In the family, more than half (52.7%) of non-farm participants are husbands followed by children (21.7%). Since, women's roles are limited to manage the family; their involvement on non-farm activities remained scanty.

Table 4.13 Non-Farm Activities Performed in the Hinterland by Kebele

		Name of Peasant Association			
		Wonka		*Qebi*	
Description		RF	Percent	RF	Percent
Non-farm activities	Handcraft	3	25	3	27.2
	Charcoal making	1	8.3	2	18.2
	Sale of *Araki/tella*	1	8.3	1	9.1
	Repair service	2	16.7	1	9.1
	Daily laborer	5	41.7	4	36.4
Place of work	Home	4	33.3	5	45.6
	Local town	5	41.7	3	27.2
	Debre Markos	3	25	3	27.2
Place of Raw-material purchase	Local market	2	16.7	3	27.2
	Debre Markos	7	58.3	5	45.6
	No purchase made	3	25	3	27.2
Place of market for output	Local market	6	50	6	54.5
	Debre Markos	6	50	5	45.5

Source: Own Survey, March 2009 *RF = Reporting Farmers*

Figur 4.4 Marketing non-farm products in Kidamen Gebeya

Source:Photo taken by Researcher, March 2009

Money earned from non-farm activity is not sufficient to supplement hinterland farmers with extra income. For instance, the study shows that 73.9% of non-farm participants earned less than or equal to 500 birr per annum. The remainder, 22.1% and 4.3% of participants earned 501-1,500 birr and above respectively. Despite the fact that non-farm activities are expected to harness RUMLs, the practical finding of this study has identified a weak linkage between *Debre Markos* and its hinterland due to lack of participation (see also Tegenge, 1999). Hence, strengthening non-farm activities between the town and its hinterland is vital to harness RUMLs and promote Local Economic Development (LED).

4.6 The Nature of Market and Marketing Services in Debre Markos and its Hinterland

It is imminent that urban people and their counterpart rural farmers are not identical in all circumstances to identify level of market services and pertinent challenges that hamper marketing linkages owing to varying socio-economic and cultural backgrounds. Therefore, for the sake of simplicity and comparison purpose, market services and the likely marketing linkage challenges are discussed separately as perceived by both rural and urban sample households.

4.6.1 The Nature of Market Places in *Debre Markos* Town

In *Debre Markos*, there are no ways other than the market on which fierce RUL can be observed. In the town, there are three small daily markets, literally called as *Gullits*, one general market (literally known as *Kidamen Gebeya*) and two cattle markets. The general market, located in the

heart of the town (*kebele* 01) serves both as a daily and weekly market place where the lion share of transaction between different stakeholders can take place.

Figer 4.5 kidamen Gebeya: A Market for Agricultural Outputs.

Source: photo taken by the researcher, March 2009

Kidamen Gebeya, is the place where both agricaltural and industrial products are transacted at the same time. It is the only permanent market center that served as the focal point of interaction between *Debre Markos*, other small towns in the zone, and mainly the hinterland.The total area of land covered by the market as calculated by the researcher using Geographic Positioning System (GPS) is only 2.51 hectares. Hence, the area and number of people served by the market are unbalanced. Particpants of FGD indicated that the market is too crowded to offer the appropraite market service to both urban and rural participants. They also expressed their suspition that unless other alternative market areas are added, the problem will negatively affect the existing RUMLs.

The livestock markets in the town operate under very good situation particularly in the dry season when there is no rain. Fenced with stone, the first livestock market has two compartments (one for cattle and the other one for equine), an office for tax collectors and an auxiliary enclosure for temporary detention of cattle bought by local butchers. As can be seen from the actual field photo bellow, the livestock market comprises cattle (for meat, draught power and breeding) and equine (for carriage traction and as pack animals). The second livestock market that is found to the East of the cattle market separated by the main road running from *kebele* 02 to *kebele* 01 is mainly left for sheep and goats. Its facilities are not as such attractive like the cattle market since it does not

have an office for tax collectors and is fenced with wood. Besides, it is full of dust in the dry season and mud in the rainy season. This has forced both buyers and sellers to transact mainly on the main roads in the town (Figure 4.6). In general, the market situation in *Debre Markos* is not suitable to promote positive RUMLs between the town and its hinterland due to various challenges discussed in the next sections.

Figure 4.6 Market Areas and Location of Kidamen Gebeya, Debre Markos Town

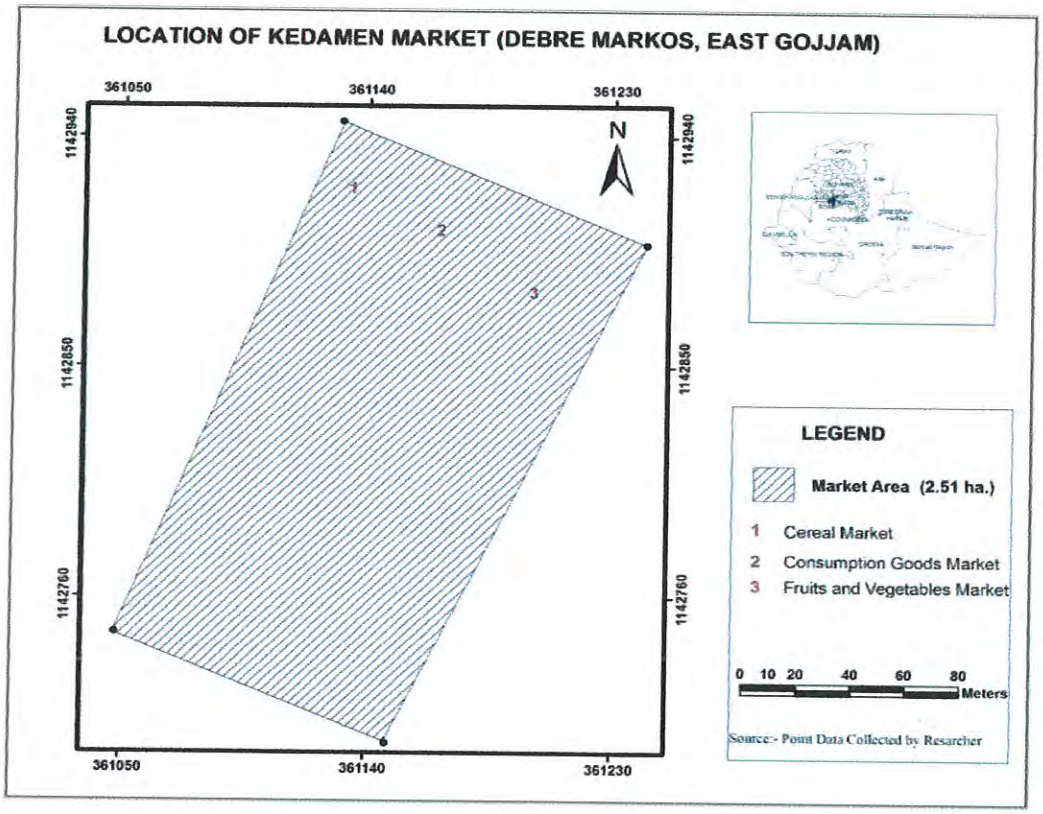


Table 4.14. Value of Coordinate Points and Height above Sea level (m), Kidamen Gebeya

Point	X	Y	Height(m)	Point Code
1	361130	1142946	24540	NE
2	361242	1142898	24360	SE
3	361148	1142703	24530	SW
4	361048	1142746	24510	NW

Source: Own Survey using GPS, March 2009

Figure 4.7. Livestock Markets in Debre Markos Town

Source: Photos Taken by the Researcher from Debre Markos Town, March 2009.

4.6.2 Challenges of Rural-Urban Marketing Linkages as Perceived by Hinterland Farmers

Farmers' access to basic market and market related information mainly on the demand and price of farm products is vital to strengthen the RUMLs, while the lack of it handicapped the linkage. The study in this case, tells that nearly half (51.7%) of farmers have often received updated information on the demand and price of their farm outputs. In terms of *kebele*, 70% of sampled farmers from *Qebi* have access to market information while less number (42.1%) was reported from *Wonka*. Hence, farmers with in the first 5 km have more access to market and market related information than farmers in the next 6-10 km radius.

The source of information is another area of interest that determines the credibility of market information. Out of the total sampled households with access to market information, 41.7% of them singled out personal communication with other farmers as the principal source followed by self-assessment with 28.4%. The role of extension workers, radio and relatives from *Debre*

Markos town remains minimal with 15%, 10% and 5% respectively (Table 4.15). Despite their access to transport and telecommunication facilities, farmers from *Wonka* do not get as much market information as their counterparts from *Qebi.* Therefore, it is possible to conclude that the availability of transport and other facilities are not sufficient condition to guarantee farmers' access to information on demand and price of agricultural outputs.

Table 4.15 Farmers' Access to Market Information and Sources of Information

	Access to market information		Sources of market information				
PA	Yes	No	Radio	Other farmers	Extensio n workers	Relatives from DMT	Self assessment
Wonka	32(42.1)	44(57.9)	4(6.70	13(21.7)	2(3.3)	3(5.0)	10(16.7)
Qebi	28(70)	12(30)	2(3.3)	12(20)	7(11.7)	0(0.0)	7(11.7)
Total	60(51.7)	56(48.3)	6(10)	25(41.7)	9(15)	3(5.0)	17(28.4)

Source: own survey, March 2009. Figures in parenthesis are percentages

Apart from market information, it is imminent that the type and nature of market service offered by urban centers to its hinterland can play a vital role to strengthen the existing RUMLs. To assess what is really going on in the study area; farmers were given the chance to evaluate the market service offered from *Debre Markos.* As per of their evaluation, nearly half (48.28%) of sampled farmers indicated that it is good while a quarter (25.86%) labeled it as poor. Only 2.59% of sampled farmers indicated that they are highly satisfied by the service offered from *Debre Markos* town. The rest, 13.79% and 9.48% of sampled farmers labeled the market service as very good and satisfactory respectively. As per of this finding it is possible to conclude that, 60.35% of farmers in the hinterland received a market service that is categorized as good and above.

Availability of small rural market centers in the respective hinterland exerts an affirmative influence on the RUMLs either by reducing farmers' travel frequency or by serving as collecting centers of a farm outputs that would have been otherwise delivered to the relatively bigger urban center. About 41.4% of farmers assured the availability of rural markets in their locality. However, in terms of preference all (100%) indicated that they opt to transact both industrial and agricultural outputs in *Debre Markos* other than rural markets. The study found out that 37%, 32.6% and 30.4 % of farmers identified better price, accessibility and better market services

respectively as the principal pulling factors and comparative advantages that invite hinterland farmers to visit markets in *Debre Markos* town.

Market service fees (literally called as *keret*) have a paramount significance to improve the overall marketing system by increasing municipal revenue and in turn civilizing the market service offered to hinterland farmers. In line with this, most (89.7%) of sampled farmers indicted that they paid market service fees whenever they use the services in *Debre Markos* town. More specifically, 71.6% of the sampled farmers are found to pay the fee for all sorts of outputs that they sale in the town. Vegetables are found the least taxed with 1.7% service fee payers since outputs can be sold everywhere in the town that is unreachable for tax collectors.

Availability and quality of infrastructures such as road and telecommunication services have an overriding significance to harness the RUMLs. In the study area, the two *kebeles* have entirely different level of access to these services owing to their location. In this regard, most (80.3%) of farmers from *Wonka* indicated that their PA and DMT are connected by asphalted road followed by mud road (19.7%). On the contrary, farmers from *Qebi* have no access to any kind of asphalted road. To assure this, most (90%) of sampled farmers from *Qebi* indicated that their PA is connected to the town by mud road, while 5% indicated the absence of any kind of permanent road which has an embarrassing impact on RUMLs. The majority (84.2%) of farmers from *Wonka* indicated that a continuous effort have been made to enhance the road network while the effort remains less (50%) in *Qebi*.

The type and nature of road net work also determines the time taken to reach to the nearest urban center. The majority (94.7% from *Wonka* and 92.5% from *Qebi*) of farmers indicated that they spent two hours and bellow to go to *Debre Markos* town on foot for market and other purposes. The time taken to reach to the nearest main/feeder road is another challenge even for those who have access to transport services. In this regard, 94.8% of respondents from *Wonka* indicated that they only spent ten minutes and bellow to reach to the main asphalt road that runs from *Addis Ababa* to *Bahir Dar*. In the case of *Qebi,* half (50%) of sampled farmers indicated that they spent ten minutes and bellow to reach to the gravel road that runs from *Debre Markos* to the Prison center towards *Qebi* while the rest (50 %) of farmers spent one hour and more.

Despite the fact that farmers from *Qebi* dwell within the first five kilometers in the hinterland, surprisingly none of them had access to any sort of telephone service. However, half (50%) of the

sampled farmers from *Wonka* indicated that they have access to manual telephone service, though they dwell within six to ten kilometers far from the town. As compared to farmers from *Wonka*, farmers from *Qebi* have a little bit surplus farm outputs that can be brought to the market. Nonetheless, they do not have access to a well-developed transportation and telephone services that has a significant impact to hamper RUMLs.

Access to finance, credit services and financial institutions by hinterland farmers obviously excel the existing RUMLs. More than half (63.8%) of sampled farmers indicate that they save money. But only 21.9% use banks in *Debre Markos* while more than half (54.8%) of farmers reported that they mostly use traditional saving like *iquib,* home based squared wooden boxes or carry it in their pocket. The role of credit unions as center of saving is limited since it serves only 19.1% of sampled farmers. Insignificant number (16.4%) of sampled farmers reported that they have borrowed money for market purpose in the last twelve months while the majority (83.6%) assured that they never borrowed money for market purpose in the last twelve months. Micro finance institutions are the principal sources of credit for 57.7% of sampled farmers who borrowed money for market purposes followed by relatives (42.1%).

RUMLs in Ethiopia have been faced with numerous upheavals related to socio-economic, cultural and political factors. In an attempt to identify the critical impediments of RUMLs in the study area, hinterland farmers were asked to identify and rank the major challenges. As per of the request, more than half (52.8%) of sampled farmers reported that there are various challenges that affect the smooth operation of RUML in the study area. To identify the first five serious RUML problems between *Debre Markos* and its hinterland, thirteen assumed variables were identified and farmers are asked to rank the first five problems in an ascending order as per of their severity.

The writer's analysis of the likely variables as perceived by sampled farmers in rank order identified shortage of land as the first main challenge that affect RUML followed by the subsistence nature of agriculture, lack of market facilities, price fluctuations and shortage of farm inputs respectively. It is surprising to learn that, among the thirteen variables, natural resource degradation that is a serious challenge in the development endeavor of the country is ranked as the sixth major problem to affect RUML followed by lack of access to transportation facilities, lack of agro-processing industries and inadequate market information respectively. Besides,

variables like tenure insecurity, weak local government and distance are not major problems since they are ranked first (but weak local government) by none of the respondents (Table 4.16).

Table 4.16. Constraints of RUML in Debre Markos as Perceived by Sampled Farmers

No	Variable	Rank Frequency					Sum of the 1st five ranks	Rank order
		1	2	3	4	5		
1	Land shortage	18	10	11	6	4	49	1
2	Poor road network	9	5	3	2	4	23	6
3	Lack of market information	6	4	4	3	3	20	9
4	Subsistence agriculture	4	10	12	7	6	39	2
5	Lack of AP industries	3	2	5	5	6	21	8
6	Weak local government	1	0	3	3	3	10	11
7	Distance	0	2	2	4	2	10	11
8	Inflation	3	1	1	4	4	13	10
9	Tenure insecurity	0	2	0	3	1	6	13
10	Lack of market facilities	5	10	3	6	5	29	3
11	Price fluctuation	5	6	6	4	8	29	3
12	Resource degradation	1	4	6	6	10	27	6
13	Limited farm inputs	7	5	5	7	4	28	5

Source: Own Survey, March 2009 AP refers Agro-processing industries

It is astonishing to note that shortage of land is identified by sampled farmers as the first challenge to affect both agricultural production and RUML. The result obtained from discussants of FGD from both rural kebeles is found to be consistent with this finding. However,to urban dwellers, shortage of land is ranked ninth among thirteen variables that are assumed as challenges of RUML indicating a wide disparity between urban and rural households in identifying market services and related challenges.

4.6.3 Challenges of Rural-Urban Marketing Linkages as Perceived by Urban Households

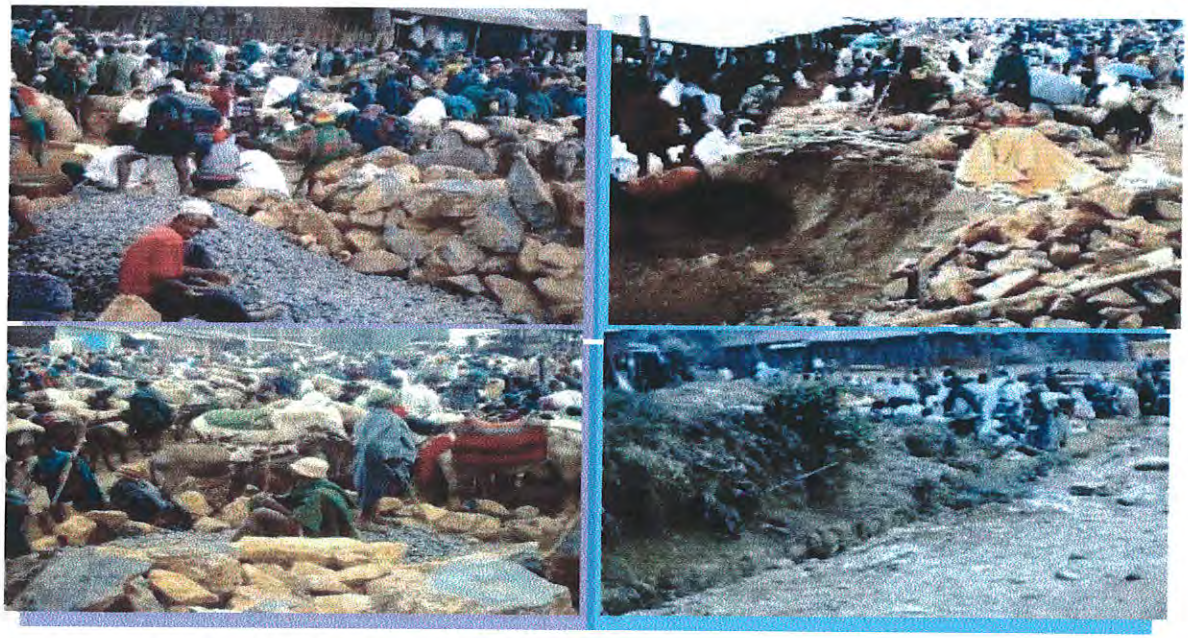
The virtuous circle model of RUL presupposes the presence of tough and circular linkage between an urban center and its hinterland (Tacoli, 2006). However, such assumption does not hold true in the study area since 65% of sampled urban households indicated that production from the hinterland never satisfy the demand of urbanites in *Debre Markos*. About 74.3% and 25.7% of the respondents indicated that the excess demand could be meet from other PAs within the *woreda* but outside the hinterland and other PAs from neighborhood *woredas* respectively (see Tegegne, 1999). Whatever may be the source, 66.7% of sampled households indicated that the amount of marketed farm outputs in the last three year has increased.

However, some 20% of respondents identified price anticipation by farmers as the principal reason to experience fluctuation on the amount and price of agricultural outputs brought to the market. This clearly reveals the increase in farmers' marketing skills and their access to frequently updated market information. Such argument has a support since the majority (71.7%) of urban households indicated that hinterland farmers have adequate skill to market their farm products. Despite this fact, the rest, 28.3% of urban households identified price fluctuation and lack of adequate market information as the principal factors that hinder farmers not to have sufficient skills to market farm outputs.

To assess how far market services offered in the town are suitable to urban dwellers; sampled households were given the chance to evaluate it. As per of their assessment, more than half (55%) of sampled households indicated that it is unsuitable while 28.8% and 13.3% labeled it as good and very good respectively. Only 3.3% of sampled households indicated that it is highly suitable. The result obtained from FGD and personal observation substantiate the finding too. For instance, the market area is not only used for transaction purposes. Instead, it is busy to serve as storage place for construction materials like stones and sands until they are made ready for use by stone carvers. Besides, the main market center does not have enough space to serve both rural and urban marketers. As a result, they are forced to transact their goods and services in health hazard areas; near garbage and sewerages (Figure 4.7).

Pictures on figure 4.7 are taken from *Kidame Gebeya* on a market day while people are exchanging their goods and services at an extremely difficult situation. They blamed that the sharp stone cut their bare foot and the accumulated construction materials make movement too complicated to save their property from robbers and thieves. Their eyes are badly bitten by flying pieces of stones and liabled to incur extra medication costs. It also makes it impossible to keep the quality of marketable goods and services owing to dirt nature of market places that has negative impact on the price offered from buyers. Therefore, the situation is too serious that necessitates immediate attention from the municipality sooner than it is too late.

Figure 4.8. Market Problems/Market Challenges in Kidame Gebeya



Source: photo Taken by the Researcher, March 2009

To identify the critical impediments of RUMLs in the study area, the same question that is raised for hinterland farmers again presented to be ranked by urban households. As per of the request, 45% of urban households reported that there are various challenges that affect the smooth operation of RUML in the study area. In an attempt to spot out the first five serious problems that affect marketing linkages between *Debre Markos* and its hinterland, thirteen assumed variables are identified and urban households are asked to rank the first five problems in an ascending order as per of their severity.

The writer's analysis of the likely variables as perceived by sampled urban households in rank order identified price fluctuation as the first main challenge that affect RUML followed by lack of market facilities, inflation, lack of agro-processing industries and the subsistence nature of agriculture respectively. It is astonishing to learn that, among the thirteen variables, shortage of land that is identified as the first principal challenge by sampled farmers is ranked ninth by urban households equally with natural resource degradation and lack of market information. Shortage of land is also preceded by other factors like poor road network and shortage of farm inputs that are labeled as sixth and seventh. Besides, variables like tenure insecurity and distance are not

major problems since they are ranked first by none of the respondents. The result obtained from discussants of FGD from urban households and traders found to be consistent with this finding(Table 4.17).

Table 4.17. Constraints of RUML in Debre Markos as Perceived by Urban Households

No	Variables	Rank Frequency					Sum of the 1st five ranks	Rank order
		First	Second	Third	fourth	Fifth		
1	Land shortage	1	1	1	2	1	6	9
2	Poor road network	4	3	3	2	0	12	6
3	Lack of market information	3	2	2	0	0	6	9
4	Subsistence agriculture	2	5	3	2	3	15	5
5	Lack of AP industries	3	7	3	0	3	16	4
6	Weak local government	0	3	3	1	1	8	8
7	Distance	0	0	0	1	1	2	12
8	Inflation	6	1	5	5	1	17	3
9	Tenure insecurity	0	0	0	0	0	0	13
10	Lack of market facilities	4	3	3	3	6	19	2
11	Price fluctuation	4	3	2	6	5	20	1
12	Resource degradation	2	0	1	1	2	6	6
13	Limited farm inputs	0	0	1	4	4	9	7

Source: Own Survey, March 2009 *AP refers Agro-processing*

From the preceding discusion, it is amazing to observe wide difference between hinterland farmers and their urban counterparts to recognize and identify market services and pertinent challenges that hamper RUMLs. For hinterland farmers land shortage is the critical challenge to affect RUML while price fluctuation is too grave for urban households. Such diversification is a vital input for local governments, policy makers and economic planners to act together in designing a program that integrates both urban and rural interests to foster mutual development.

4.7 The Role Urban Traders to Promote RUMLs in Debre Markos and Its Hinterland

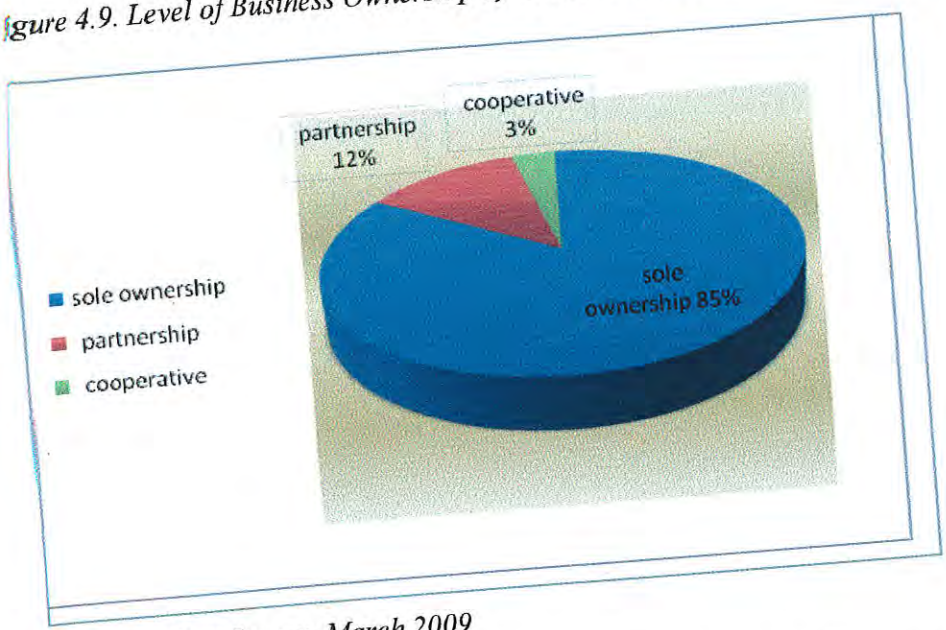
Urban traders are the primary actors who can play a significant role to promote and strengthen RUMLs between *Debre Markos* and its hinterland. Therefore, assessing to what extent traders are linked to hinterland farmers has vital impulsion to make the study inclusive. To this end, sixty urban traders were included as part of the sample survey and the data collected are analyzed and presented under this section.

Traders are found to participate in various trading activities as per of their interest and capital. The initial and current capital as calculated from the data collected for an average trader is found

to be 5,208.33 and 18,933.35 Birr respectively. The analysis on the source of startup capital reveals that saving is the principal source for 65.5% of respondents while relatives and microfinance institutions are sources of initial capital for 27.7% and 10% of respondents. More surprisingly, the role of banks as source of capital to begin any of the trading activity has remained minimal serving 3.4% of respondents.

Small-scale retailing is the principal level of service performed by most (93.3%) of sampled traders. Consequently, sale of consumer goods is the dominant type of trading activity for 51.7% of traders followed by sale of food items (25%). Retailing of agricultural products such as cereals, pulses and fruits and vegetables are also performed by 20% of the respondents. Traders are mediators to purchase and sale various types of goods and services from suppliers to customers. In *Debre Markos*, traders are not merly linked to farmers through the sale of goods and services, instead 31.7% of respondents indicated that they purchase their trading commodities from hinterland farmers. While the rest 41.1%, 18.3% and 11.3% of commodities are obtained from whole sallers, other towns in the region and other towns outside the region respectively.

Figure 4.9. Level of Business Ownership by Urban Traders in Debre Markos



Source: Own Survey, March 2009

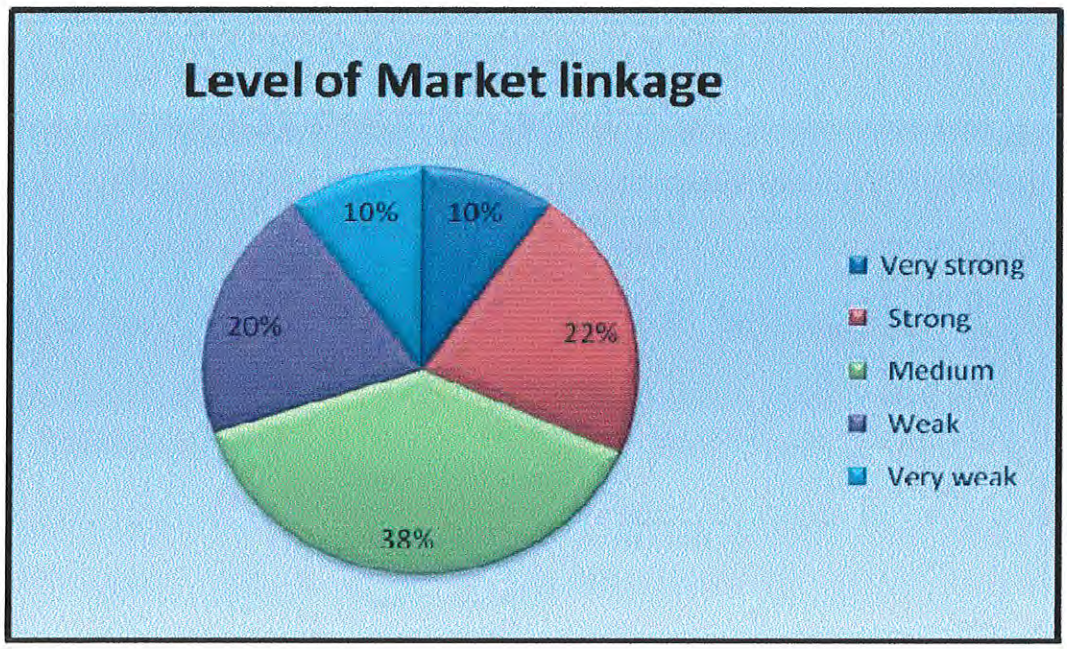
In terms of ownership, the majority (85%) of respondents indicated that they have sole proprietorship over their business while the rest 11.7% and 3.3% of sample traders are organized

in a partnership and cooperative system respectively (Figure 3.8). Urban folks are the foremost customers who purchased 60% of goods and services supplied by traders followed by hinterland farmers. Town traders are also linked to people from other town in/outside the region. The study tells that 10% and 3.4% of their goods and services are purchased by people from other small towns in the region and outside the the region respectively.

It is obvious that a certain level of interface exists between urban traders and hinterland farmers through trasacting goods and services. However the level of linkage varies from place to place. In this regard, the data collected to assess the level of interface (figure 4.9) discloses that 38% of traders have a medium marketing linkage with farmers while the two extrame levels of linkages (very weak and very strong) are eqally weighted (10% each) by trders. The rest 22% and 20% of traders indicated that they have strong and weak marketing linkages with farmers respectively.

In general, urban traders in *Debre Markos* are linked to farmers through the supply and purchase of various goods and services. However, due to shortage of land and farm inputs agriculture in the hinterland remains subsistence which in turn hand caped the expected rural RUMLs between traders and farmers.

Figure 4.10. Level of Market Linkage between Traders and Farmers



Source: Own Survey, March 2009

4.8. Prospects of Rural-Urban Marketing Linkages in Debre Markos and Its Hinterland

In section 4.6 of this chapter, the major challenges of RUMLs in the study area are identified as perceived by sampled households. However, investigating the pertinent threats is not an end by itself, instead detailed inquiry on the available prospects of RUMLs would have a paramount impetus to reinforce the linkage. In the study, various national, regional and local opportunities that are expected to have vital impact are identified and briefly discussed under this section.

4.8.1. National Policy Environment

The current national policy environment in the country: PASDEP, the agricultural sector policy, industrial sector policy, road sector policy and decentralization have some opportunities in one way or another to enhance RUMLs. In the post *Derg* era, Agricultural Development-Led Industrialization (ADLI) has been legitimately confirmed as the key labor-intensive development strategy in Ethiopia. ADLI has been adopted on the premise that the increase in agricultural production and inter-sectoral linkages would fuel industrialization (Tegegne, 2005). The debate for and against ADLI is endless with no agreement on its aptness and efficiency. Supporters argued on the premise that rising income in the agricultural sector would offer a huge market for non-agricultural sectors enhancing both forward and backward linkages between the urban and rural areas (FDRE, 2003). Despite such arguments in favor of ADLI, critics argue that urbanization should be a prerequisite to foster a symbiotic rural-urban development (Birhanu, 2003).

Though, the national economic policy envisages bringing about Agricultural-Led Industrialization Development, there was a constraint in creating linkages between urban and rural development (MFI, 2005). Recently, however, the Ethiopian government designed Plan for Accelerated and Sustainable Development to End Poverty since 2005, as the most consolidated policy framework in the country's history. In terms of RULs, the strategy states that "RULs need to be strengthened to maximize the poverty impacts and to take full advantage of the synergy" (MWUD, 2006). PASDEP aims to enhance RULs by promoting deeper interface between agriculture and industry and by supporting the development of small urban centers. The availability of well functioning markets and marketing service, strengthened non-farm activities between town and their hinterland, improved rural access to roads, improved

telecommunications, spread of general education and technical-vocational training in peri-urban areas are set as preconditions to achieve PASDEP's overall objectives in general and to strengthen rural-urban linkages in particular (Assefa, 2006).

Decentralization of political power and decision making to lower government levels like *woreda* and *kebele* is one pillar of the national policy environment to strengthen RUMLs. More specifically, decentralization is deemed as a scene to strengthen RULs in the country since it envisages creating bottom up approach to development. For instance, the strategy aspires for the development of small and intermediate towns that could serve as collection and distribution centers of farm outputs and inputs.

In the near past urban centers in Ethiopia could not serve as organized centers of market let alone become centers for industry and services. However, it is evident that the linkage of rural-urban development coupled with linkages among urban centers helps to accelerate development. As a response to such quest, the Ethiopian government has formulated urban development policy that envisions harnessing RULs in the country (MFA, 2006). The policy is formulated on the premise that rural areas serve as a base for growth of industry, service and market in urban areas while urban areas in turn serve as centers of local economic development by absorbing farm outputs and excess labor. Based on this rational, the policy sets a direction that strengthens forward and backward RULs to promote mutual development.

4.8.2. Regional and Local Opportunities to Promote Rural-Urban Linkages

In addition to national prospects, regional and local opportunities could play vital roles to promote RULs in a specific urban center and its hinterland. To identify the pertinent regional and local prospects that would inspire RULs in the study area relevant documents are revised, FGDs and interviews are made with selected urban and rural households and officials. A short account of the investigation is summarized under this section.

As part of its development strategy the *Amhara* Administrative Regional State is currently promoting the development of small and intermediate urban centers (literally called *Gilgel* and *Awra ketema*) and establishment of micro and small scale industries that would make use of farm

outputs. This has a paramount importance to promote forward and backward RULs in the region in general and in *Debre Markos* and its hinterland in particular.

The interview made with head of Finance and Economic Development Office reveals that huge investment work has been undertaken in *Debre Markos* town since 2005/06. He said that, the investment climate of the town has shown tremendous improvements. Five sectors such as trade, industry, municipal services, social services and urban agriculture were selected as lucrative investment areas. The director finally added that, the current investment arena is a promising prospect to strengthen RUMLs. Discussants in the FGD, also witnessed that the investment climate in the town is fast, promising and inclusive to harness RUMLs in *Debre Markos* and its hinterland. However, they have a suspicion that unless agro-processing industries are established, to them, it is unthinkable that the hinterland would benefit soon from the fruits of investment.

To strengthen RUMLs, the municipality has gone one-step further and established the office of market promotion and marketing linkage development at department level since 2009. The main activities performed by the office includes collecting and distributing market information, conducting market research, organizing trainings, offering advisory services, creating market linkages and providing market promotion services. Besides, as part of its price stabilization strategy, the office organized nine consumer associations with 3,465 (1,223 male and 2,042 female) members. However, only few consumer associations (*Abo* Consumers Associations) are actively working to create forward and backward marketing linkages in the town and its hinterland. Whatever may be the current performance, the office and established consumer associations, have immense prospects to strengthen the RUMLs in the study area.

Alike urban municipality, *woreda* and *kebele* agricultural and rural development offices are actively working to strengthen RUMLs. Two separate offices are established for this purpose at *woreda* level. The first is the office of agricultural output marketing services. It performs several activities like farm output price forecast, creating farm output market linkages within and outside the country, establishing rural market centers, purchasing farm outputs from hinterland farmers with reasonable price and providing training and advisory services to farmers. During an interview, head of the office underlined that the office of agricultural output marketing service is a good start and future hope that would ensure a strengthened RUMLs.

Department of Farmers' Service Cooperative is the second coordinating body established under the *woreda* agricultural and rural development office. So far, it has organized 14 farmers' cooperative associations with 20, 569 (19,374 male and 1,195 female) members that purchases farm outputs and supply industrial products from and to farmers. In an interview, head of the office indicated that associations have been played vital role to stabilize the market and create market linkages between farmers and urban dwellers. In general, from the preceding discussion, it is vital to note that both *Debre Markos* and its hinterland each consists of some prospects that would be used as a stepping stone to improve RUMLs in the study area.

4.9. Roles of Local Government to Promote Rural-Urban Marketing Linkages

Local governments in the context of this study refer both rural local governments in the hinterland and the municipality in *Debre Markos*. It is imminent that in the current decentralized development climate of the country, local governments would play a principal role to promote development in their locality. Hence strengthening RUMLs is the first prioritized option to be promoted by both governing units. To identify what is actually expected to be done by local governments in the context of the study area, relevant data are collected through open ended questionnaires, interview and FGDs and the actual results are presented under this section.

The municipality in *Debre Markos* is working at its best level to provide urban infrastructures and other facilities to dwellers and investors. Market centers are one of the priority areas that need the attention of the municipality since they are the principal networks to interface both urban and rural areas. Despite this fact, the municipality has so far done no tangible tasks to strengthen RUMLs except for the establishment of the office of market promotion and marketing linkage at department level since 2009. There is only a single market center with an area of 2.51 hectare, which is hardly enough to serve marketers. Besides, the main market center that is found at the heart of the town is full of garbage with poor sewerage system that has been a cause for numerous health hazards.

Despite resource constraints, as compared to the urban municipality, rural local governments in the hinterland are actively working with *woreda* and *kebele* agricultural and rural development offices to strengthen RUMLs. For instance, owing to their effort, farm inputs are often distributed to farmers in their respective PAs that reduces the cost that would have been incurred by farmers

in terms of time and money. However, they yet lack the endeavor to work with the urban municipality to solve market problems like double taxation and shortage of market centers.

Both urban and rural FGD discussants indicated that local governments are not working together on the ways to improve RUMLs. If this so, what should be done by both governments to promote healthy RUMLs that would harness local economic development? As response to such quest, sampled households have identified the following roles to be done by each unit of government.

From the FGDs and analysis of open-ended questions, it is learned that to strengthen the RUMLs, the municipality should establish new market centers, improve the market service fee system, avoid double taxation, control illegal traders and manage on market hygiene. Besides, it has to ensure peace and order and work on price stabilization to calm down the impact of recurring inflation. On the other hand, rural local governments are expected to provide updated market information on the demand and price of farm inputs and outputs, solve market problems soon through discussion with municipal officials, offer market training and advisory services to farmers on marketing systems and insure ample supply of farm inputs.

So far, an attempt has been made to interpret and discuss the results descriptively based on the data that has been collected to assess the challenges and prospects of RUMLs. Except consumption linkages, other forms of linkages are found to be weak. Shortages of land and price fluctuation are the principal challenge of RUMLs as identified by rural and urban sample households respectively. National, regional and local prospects of RUMLs are also identified. Based on the results of this chapter, the subsequent chapter analyses the statistical relationship among diverse variables.

Chapter Five

Statistical Analysis and Hypothesis Testing

The major socio-economic, institutional and biophysical factors that are assumed as key challenges of RUMLs in *Debre Markos* and its hinterland are well described in the preceding chapter. However, such descriptive analysis is not an end by itself to test the hypothesis designed at the outset of the study. To this end, various statistical tests are made and the inherent associations are discussed under this section.

5.1 Analysis of Continuous Variables

This section presents the results of selected continuous variables of the two essential normal distribution functions: Leven's test for equality of variance and the independent sample t-test for equality of means. Variables that are expected to display the disparity in consumption and backward production linkages in the hinterland are analyzed. The interpretation and analysis of the result has gone through two steps. Leven's test for equality of variance (F-test) has been first examined for each variable to check whether homogeneity of variance can be assumed followed by selection of correct t-test value.

As shown in annex 1, the study tested the significance of expected values of cereals produced and sold and livestock owned, bought and sold by farmers in the last 12 months as dependent variables and distance from *Debre Markos* town as independent variables. Assuming equal variance within the hinterland for F-test, and equality of means with in the first 5km and the next 6-10 km in the t-test, the study examined the significance of proximity and availability of infrastructure up on RUMLs.

In the F-test category, it is found that the amount of barley, wheat, *engdo*, and pulses sold and the amount of wheat, *engdo* and pulses produced are statistically significant in explaining the prevalence of disparity in RUMLs in the hinterland at 99.9% confidence level. The t-test analysis on the amount of cereals produced in the hinterland reveals that there is a statistically significant difference on maize ($t = -5.675$, $p < 0.01$), *engdo* ($t = -3.594$, $p < 0.01$), and pulses ($t = -4.891$, $p < 0.01$) between farmers that are found within the first 5 km and the next 6-10 km radius in the hinterland. Similarly, the t-test on the amount of cereals sold indicated that there is a statistically

significant difference on wheat ($t = -3.306$, $p < 0.05$), *engdo* ($t = -2.257$, $p < 0.05$), and pulses ($t = -3.178$, $p < 0.01$) between the two groups of farmers in the hinterland.

In the F-test category, it is found that the number of goats and donkeys owned and the number of horses, sheep and goats sold shows a statistically significant difference at 99.9% confidence level in the hinterland. The t-test analysis on the number of livestock owned, sold and bought in the last 12 months reveals that there is a statistically significant difference on goats owned ($t = -2.451$, $p < 0.01$) and donkeys owned ($t = -2.284$, $p < 0.05$) between farmers that are found within the first 5 km and the next 6-10 km radius in the hinterland.

In general, the preceding finding reveals that the research hypothesis that is stated as farmers with in the first 5 km in the hinterland have better access to urban services and shows strong market linkage is accepted since the t-test result clearly indicates that farmers from *Qebi* (within the first 5 km) have a strong marketing and production linkage. However, this fact does not hold true in the marketing of livestock. For example, farmers from *Wonka* (6-10km) have shown a better marketing linkage in the sale of bulls, sheep, and horses while farmers within the first 5km of radius have shown a strong marketing linkage through the sale of cows and goats.

The most common premise made on RUL studies is the assumption that hinterland farmers create demand for urban goods and services, while immediate urban centers are expected to meet the demand. In line with this, it is assumed in the study that farmers in the first 5 km have strong consumption linkage than farmers from the next 6-10 km. To check this assertion, farmers' expenditure on consumable (in the month just passed) and durable goods (in the last 12 months) is analyzed using F-test and T-test.

As indicated in annex 2, the statistical analysis made using F-test shows no significant statistical difference except farmers' expenditure on pepper ($F = 10.59$, $p < 0.01$) and salt ($F = 6.898$, $p < 0.01$). The t-test analysis on the amount birr expended by hinterland farmers on durable and non-durable goods reveals statistically significant difference on coffee ($t = -2.153$, $p < 0.05$), pepper ($t = -2.391$, $p < 0.05$), and radio/tape ($t = 4.721$, $p < 0.01$) between farmers that are found within the first 5 km and the next 6-10 km radius in the hinterland. It is worth to mention here that in the descriptive analysis under section 4.3.3 farmers within the first 5 km seems to have more consumption linkage than farmers within the next 6-10 km. However, this does not hold true when it is tested using the F and t-tests.

In section 4.3.1 of the thesis, it is indicated that most (94%) of farmers use agricultural inputs. However, this is not the only mission of this study. Rather, assessing whether there is a significant statistical difference on farm input usage between the two groups of farmers in the hinterland would make it complete. As a response to this mission, a statistical analysis has been made on selected variables that are supposed to show the existing backward production linkage using F and t-tests.

As disclosed in table 5.1, the statistical analysis made using F-test on the amount of input used shows a significant statistical difference for fertilizer ($F = 19.435$, $p < 0.01$), selected seeds ($F = 5.236$, $p < 0.05$) and pesticides ($F = 18.281$, $p < 0.01$) between the two groups of farmers in the hinterland. In terms of expenditure, the F-test shows a statistically significant difference only on fertilizer ($F = 39.112$, $p < 0.01$). The t-test analysis on the amount of inputs used by hinterland farmers reveals statistically significant difference on fertilizer ($t = -4.749$, $p < 0.01$) and pesticides ($t = 2.295$, $p < 0.05$) between farmers that are found within the first 5 km and the next 6-10 km radius in the hinterland. Surprisingly, the t-test value on farm input expenditure like the F-test shows a statistically significant difference for fertilizer ($t = -3.261$, $p < 0.01$). Therefore, the F and t-test results confirm that farmers from 6-10 km have shown a strong rural-urban forward marketing linkage than farmers within the first 5 km radius from *Debre Markos* (Table 5.1).

Table 5.1 Continuous Variables on Backward Linkages and Independent Sample t- Tests

		Within 6-10 km radius		Within the first five km radius		Leven's test for equality of variance		T-test for equality of means	
Variables		Mean	SD	Mean	SD	F	Sig.	Value	Sig.
Fertilizer	AU	2.4493	0.75802	3.4595	1.16892	19.435	0.000**	-4.749	0.000
	Cost	5.3043	1.32070	5.8919	0.51552	39.112	0.000**	-3.261	0.002
Selected seeds	AU	0.8966	0.67320	1.33333	1.19722	5.136	0.028**	-1.508	0.142
	Cost	1.6207	2.12828	1.3333	2.03306	0.436	0.512*	0.480	0.633
Weed control	AU	0.000	0.0000	0.0000	0.0000	***	***	***	***
	Cost	0.0000	0.0000	0.0000	0.0000	***	***	***	***
Pesticides	AU	0.2400	0.52281	0.0000	0.0000	18.281	0.0000**	2.295	0.031
	Cost	0.0400	0.2000	0.0667	0.285820	0.534	0.469*	-0.366	0.717

Source Own Survey, March 2009 ****t-test cannot be computed because the SD is zero*
AU= Amount Used ** Equal variance not assumed* * Equal variance assumed*

5.2 Analysis of Categorical Variables

This section presents the results of selected categorical socio-economic, biophysical, and consumption linkage variables using the Chi-square (x^2) test to determine whether there is a statistically significant association between the two groups of farmers in the hinterland. A number of socio-economic, institutional and biophysical variables affect rural-urban marketing linkage in the study area. These factors are analyzed by categorizing the population in to two categories based on distance. The first group being farmers within the first 5km radius while the second group consists of farmers within the next 6-10 km radius and the prevailing group differences in relation to specified variable are discussed here after.

As shown in annex 3, 96.6% of farmers from *Wonka* and 95% of farmers from *Qebi* own land. The statistical analysis on land ownership (x^2 =0.70, $p > 0.05$) shows no statistically significant association between the two groups of farmers. Similarly, no statistically significant association is found in terms of livestock ownership (x^2 =0.231, $p>0.05$). Several factors affect agricultural production and the related marketing linkages in the hinterland. However, the x^2 analysis on the likely factors show no statistically significant association between the two groups of farmers in terms of irrigation usage (x^2 =1.08, $p>0.05$), fruits and vegetables production (x^2 =0.05, $p>0.05$) and cash crop production (x^2 =0.418, $p>0.05$). Besides, no significant difference has been found in the case of farm input usage (x^2 =0.321, $p>0.05$), access to extension services (x^2 =1.559, $p>0.05$) and access to veterinary services (x^2 =0.183, $p>0.05$).

RUMLs can be affected by several institutional factors. The x^2analysis on selected variables reveals no statistically insignificant association in terms of access to credit services (x^2 =0.671, $p> 0.05$), saving (x^2 =2.693, $p > 0.05$) and local market services (x^2 =1.984, $p > 0.05$) between the two groups of farmers in the hinterland. Nearly equal number of farmers from both PAs (53.9% from *Wonka* and 50%from *Qebi*) indicated that they have been faced with several challenges of RUMLs. The x^2 analysis made on the challenges that affect RUMLs with (x^2 = 0.1640, $p > 0.05$) substantiates the finding by insuring that there is no statistically significant association between farmers who dwell in the first 5km and the next 6-10 km (Annex 3) .

The writer's analysis of the likely variables as perceived by sampled farmers in rank order identified land shortage, shortage of farm inputs, shortage of capital, crop pests and shortage of human capital as the first five problems that affect agricultural production and productivity in the

study area. As shown in annex 3, most (90%) of farmers from *Qebi* have problems in crop production compared to 75% of farmers from *Wonka*. The x^2 test with (x^2 =3.709, p=0.05) also shows that there is a statistically significant association between farmers in the first 5km and the next 6-10km in terms of problems faced in agricultural production and productivity.

Farmers' access to basic market and market related information principally on the demand and price of farm yields is essential to reinforce the RUMLs. The study in this case, reveals that nearly half (51.7%) of farmers have often received consistent information on the demand and price of their farm outputs. However, the disparity is high in terms of *kebele*, hence more (70%) of sampled farmers from *Qebi* (the first 5km) have access to market information while less number (42.1%) was reported from *Wonka* (the next 6-10km). More specifically, the x^2 test with (x^2 =8.167, p<0.01) also shows that there is a statistically significant association between farmers in the first 5km and the next 6-10km (Annex 3).

From the finding of this study, it is surprising to note that availability of infrastructure like telecommunication and transport services do not guarantee farmers' access to market and market related information. For instance, 64.5% of farmers from *Wonka* (6-10km radius) indicated that they have access to telecommunication services as compared to 12.5% from *Qebi* (within 5 km radius). Similarly, the statistical analysis on the availability of telecommunication service shows a significant association with (x^2 =31.367, p<0.001). In addition, most (82.9%) of farmers from *Wonka* indicated that continuous efforts have been made to repair the road network that connects their PA with *Debre Markos* as compared to 50% from *Qebi*. Likewise, the result of x^2 test with (x^2 =16.250, p<0.01) reveals that there is a statistically significant association between the two groups of farmers (Annex 3).

The preceding finding from x^2analysis discloses that the research hypothesis that is stated as farmers with in the first 5 km in the hinterland have better access to market and market related information, assume a support. This is so because the x^2-test result clearly indicates that farmers from *Qebi* (within the first 5 km) have received recent information on the price and demand of their farm yields. Therefore, the availability of infrastructure like telecommunication services and road network does not guarantee farmers' access to market and market related information. Instead, proximity plays a great role to facilitate farmers' access to market and market related information.

Consumption linkages result from the expenditure of farm incomes on locally produced consumer goods and services. As discussed in section 4.3.3 of the thesis, sampled farmers from both PAs have purchased almost all types of non-durable goods with varying scale. The x^2 analysis on durable goods purchased by hinterland farmers reveals statistically insignificant association between the two groups of farmers for consumable goods except soap/omo. All farmers from the first 5km in the hinterland reported that they have purchased soap/ omo in the month just passed as compared to 85.5% of farmers from 6-10km. The statistical analysis for soap/omo ($x^2 = 6.396$, $p < 0.01$) shows a significant difference between the two groups of farmers. Alike non-durable goods, no significant difference is found between the two group of farmers through the purchase of non-durable goods except the purchase of house. The x^2 test for house with ($x^2 = 4.501$, $p < 0.05$) reveals a statistically significant difference between the two groups of farmers indicating that farmers within the first 5 km opt to purchase house from *Debre Markos* than farmers from the next 6-10 km (Annex 4).

5.3 Analysis of Variance (ANOVA)

The purchase of food item by urban dwellers is assumed as one of the ways through which urban households are linked to their rural counterparts. However, their purchasing power is affected by several socio-economic factors. To compare whether the mean of one dependent variable differ significantly across the categories of another independent variables, the study has made use of one way ANOVA, while it has employed two way ANOVA to assess the effect of two or more independent variables on the dependent variable. The statistical analysis made to examine the effect of two or more independent variables on the dependent variables using two- way ANOVA is done together with multiple regressions; hence, more emphasis is given on the use of one-way ANOVA under this section.

The writer has analyzed urban households' consumption linkage with hinterland farmers through one-way ANOVA by using age and duration in the town as independent variables and amount of farm outputs purchased and cost incurred as dependent variables. Within and between groups comparisons are made based on Post-Hoc comparison as per of Scheffe-test (a commonly used comparison) to identify the significant statistical association.

Surprisingly, urban households do not differ significantly based on age from each other on the mean cost incurred and amount of farm outputs purchased. However, a significant difference is found between groups as per of their duration in *Debre Markos* town. The statistical findings from table 5.2 and annex 5, shows that households who live in the town from1-5 years are significantly different ($F = 4.132$, $p < 0.05$) on the cost incurred to purchase bean from those who live 6-10 years. They are also significantly different from the group who lived in the town from 11-15 years ($F = 5.761$, $p < 0.01$) and above 15 years ($F = 3.624$, $p < 0.05$) on the amount of cost incurred to purchase onion and wheat respectively. Households who lived in the town from 6-10 years are significantly different from those who lived above 15 years ($F = 4.132$, $p = 0.01$) on the amount of cost incurred on bean.

Table 5.2. Analysis of Urban Households' Consumption Linkages through One-Way ANOVA

Variable	Level of Comparison	Sum of Squares	Df	Mean Square	F	Sig.
Cost of bean	Between groups	17.326	3	5.775	4.132	0.010*
	Within groups	78.274	56	1.398		
	Total	95.600	59			
Cost of wheat	Between groups	19.889	3	6.630	3.624	0.018*
	Within groups	102.444	56	1.829		
	Total	122.333	59			
Cost of onion	Between groups	56.837	3	18.946	5.761	0.002*
	Within groups	184.147	56	3.288		
	Total	240.983	59			
Amount of onion purchased	Between groups	3.793	3	1.264	6.813	0.001*
	Within groups	10.391	56	0.186		
	Total	14.183	59			
Amount of bean purchased	Between groups	5.495	3	1.832	5.259	0.003*
	Within groups	19.505	56	.348		
	Total	25.000	59			

Source: Own Survey, March 2009 **The mean difference is significant at 0.05 level of confidence*

Urban households do not show much more significant difference in terms of the amount of farm out puts purchased except for bean and onion. As shown in table 5.2 and annex 5, urban households who lived from1-5 years are significantly different from those households who lived in the town above 11 years ($F = 1.264$, $p<0.01$) on the amount of onion purchased. The same table also shows that households who lived from 6-10 years are significantly different from those who

lived in the town above 15 years ($F = 5.259$, $p < 0.01$) on the amount of bean purchased. In general, the statistical analysis using One- Way ANOVA reveals that urban households do not differ significantly based on age and duration in the town from each other on the mean cost incurred and mean amount of farm outputs purchased except for bean, onion and wheat. Therefore, the hypothesis that was stated as urban households' consumption linkages differ based on age and duration is not accepted under this test.

5.4 Correlation and Multiple Linear Regression Results

Under this section, the study has made use of Pearson's Product Moment Correlation Coefficient (r) to determine the relationship between two interval/ratio variables, direction of relationship and strength of relationship. Besides, multiple linear regressions model is used to decide whether two or more independent variables are causes or predictors of one dependent variable.

5.4.1 Correlation Results

Analysis of the interaction between two variables using correlation coefficient is made for both rural and urban households. In the previous sections of this chapter, as perceived by sampled farmers, the study identified shortage of land as the principal challenge that affect agricultural production and RUMLs. Therefore, it is worth researching to see the statistical significance of the variables (farm size and age) when they are correlated with other multiple variables. The result shows that age of the household exhibits statistically significant negative correlation when correlated with the amount of *teff* sold ($r = -0.0273$, $p<0.001$), maize sold ($r= -0.253$, $p < 0.01$), *engdo* sold ($r = -0.210$, $p<0.05$) and amount of maize produced ($r = -0.193$, $p <0.05$). As far as farmers' consumption linkage is concerned, age does not show any statistically significant relation on the cost incurred by farmers to purchase durable and non-durable goods except for expenditure on utensils ($r = - 0.374$, $p <0.01$). The analysis made on the correlation result also shows that age of the households reveal statistically significant negative correlation when correlated with the amount of land allotted to cereal production like barley($r -0.250$, $p =<0.01$), maize ($r = -0.187$, $p <0.05$), and *engdo* ($r = -0.183$, $p <0.05$).

From these correlation values, it is possible to deduce that the amount of cereals produced (maize), cereals sold (*teff*, maize and *engdo*), land allotted (barley, maize and *engdo*) and cost incurred for utensils have an inverse relation with age of farmers. Although, statistically

significant, the strength of relationships is relatively low accounting less than 10% of the variance.

In the hinterland, land is the only resource on which the lives of most farmers depend on. The amount of farm size is therefore, the principal variable that determines consumption and production linkage in the hinterland. Discussants of FGD indicated that the amount of land allotted to each crop principally depends on the farm size. The statistical analysis shows that farm size demonstrate statistically significant positive correlation when correlated with the amount of land allotted for *teff* ($r = 0.387$, $p<0.001$), wheat ($= 0.270$, $p < 0.005$) and pulses ($r =0.324$, $p<0.005$). Besides, the amount of farm outputs produced and sold is also affected by farm size. For instance, the study reveals that farm size shows a statistically significant positive relationship when it is correlated with the amount of cereals produced for barley ($r = 0.205$, $p <0.05$), maize ($r = 0.187$, $p <0.05$), wheat ($r = 0.292$, $p <0.005$), *engdo* ($r = 0.211$, $p <0.05$), pulses ($r = 0.285$, $p <0.005$) and amount of barley sold ($r = 0.220$, $p <0.005$). From these correlation values, it is possible to deduce that the amount of land allotted for cereals, amount produced and sold have a direct relation with farm size. However, while the relationship is statistically significant, the strength of relationships is weak signifying that farm size assumes less than 10% of the variance.

Farmers in the FGD indicated that farm size and number of livestock owned have a direct relationship. Likewise, the statistical analysis substantiates the finding by revealing a positive relationship between the amounts of farm size and number of livestock owned. Nevertheless, no statistically significant relationship is found with the number of livestock sold and bought. More specifically, the statistical analysis shows that farm size demonstrate statistically significant positive correlation when correlated with the number of livestock owned for oxen ($r = 0.249$, $p<0.05$), cows ($= 0.264$, $p < 0.01$) and donkeys ($r =0.194$, $p<0.05$). Moreover, farm size has a statistically significant positive relationship with the amount of fertilizer used ($r = 0.216$, $p<0.05$), expenditure on soap ($r = 0.280$, $p < 0.01$) and medicament ($r =0.317$, $p<0.05$). In general, the result from correlation analysis reveals that land is vital asset to determine RUMLs through its direct and indirect impact on the consumption and production linkages of farm households. Therefore, the hypothesis that was stated as farm size positively affects farmers' production and consumption linkage has gained acceptance.

So far, an attempt has been made to check the association of farm size and age with other multiple variables for rural households. Since the study incorporates the two spatial units, it is also important to see the correlation of age and duration in the town with other multiple variables on the consumption linkages of urban households. Participants of urban households in the FGD indicated that urban dwellers who lived in the town long have more market linkage with hinterland farmers through the purchase of farm outputs. Similarly, the statistical analysis validates the result with a positive relationship between duration in the town and amount purchased and cost incurred on cereals. In line with this, the study reveals that duration in the town shows a statistically significant positive relationship when it is correlated with the amount of cereals purchased for maize ($r = 0.268$, $p < 0.05$), wheat ($r = 0.313$, $p < 0.05$) and cost incurred on the purchase of maize ($r = 0.273$, $p < 0.05$) and wheat ($r = 0.395$, $p < 0.01$). On the other hand, a statistically significant negative relationship is found between duration in the town and amount of onion purchased ($r = -0.345$, $p < 0.0$) and cost incurred on pea ($r = -0.291$, $p < 0.05$), pepper ($r = -0.258$, $p < 0.05$), butter ($r = -0.281$, $p < 0.05$), and cheese ($r = -0.260$, $p < 0.05$).

Age of the respondent is another factor that determines consumption linkage of urban households. The result shows that age of the household exhibits statistically significant negative correlation when correlated with the amount of consumption goods purchased such as banana ($r = -0.271$, $p<0.05$), orange ($= -0.332$, $p < 0.01$), mango ($r = -0.318$, $p<0.05$) and butter ($r = -0.297$, $p <0.05$). Similarly, as far as urban households consumption linkage is concerned, age once again reveals statistically significant negative correlation on the cost incurred by urban dwellers to purchase onion ($r = - 0.293$, $p <0.05$) and butter ($r = - 0.307$, $p <0.05$). The cost incurred on the purchase of wheat($r = 0.279$, $p <0.05$) is the only variable that shows statistically significant positive correlation when correlated with the age of urban households. From this result, it is possible to infer that the amount of consumption goods purchased and cost incurred decreases, as people get older and older. Besides, those urban households who stayed in the town for long opt to purchase more cereals than fruits, vegetables and milk products.

5.4.2 Multiple Linear Regression (Model) Results

To confirm the consistency of the result from previously used statistical techniques and to decide whether two or more independent variables are cause/predictors of the variance on one dependent variable, the study has made use of the first order multiple linear regression model. Owing to the very nature of the study, multiple linear regressions are calculated for both rural and urban households on hypothesized ratio/interval variables for each group of sample population.

In the model, variables like farm size, distance from *Debre Markos,* respondents' age, amount of farm inputs used and number of draught oxen owned are used as independent (explanatory/ constant) variables while amount of farm outputs produced, sold and goods purchased by rural households are used as dependent (regressed) variables. Similarly, three variables: age, education and duration in the town are identified as independent (explanatory) variables whilst amount of farm outputs purchased and the associated costs incurred by urban households are used as dependent or regressed variables. To make regression results and the interpretation easier and vivid for readers, coefficients boxes are presented with their summarized ANOVA boxes. Besides, standardized regression coefficients (beta values) are also used to compare the strength of each independent variable in explaining the variation in the dependent variable.

5.4.2.1 Multiple Linear Regression Results on Farmers' Production and Consumption Linkages

Hinterland farmers in the study area are linked to their urban counterparts through the sale of farm outputs and purchase of consumption goods to and from *Debre Markos*. However, such market linkages are affected by variables: age of the household, farm inputs usage, farm size, number of draught oxen and distance from the town. The result of multiple linear regressions reveals that these independent variables account unique variance in the amount of *teff*, barley, maize, wheat, *engdo*, oilseeds and pulses sold by hinterland farmers. On the other hand, the regression analysis also reveals that the variation in the amount of fruits, vegetables, milk and milk products sold are not significantly shown by the selected variables.

The analysis of variance (table 5.3) on the amount of cereals sold reveals that the regression statistic is significantly different from zero for *teff* ($F = 3.478$, $p < 0.01$), barley ($F = 3.748$, $p < 0.01$), maize ($F = 2.259$, $p < 0.05$), wheat ($F = 6.583$, $p < 0.001$), *engdo* ($F = 2.869$, $p < 0.05$), oil seeds ($F = 2.205$, $p = 0.05$) and pulses ($F = 8.114$, $p < 0.001$). A critical evaluation of these

ANOVA results surpass the credibility of the study and uncover that regression results do not occur either by chance or sampling error.

Table 5.3. Multiple Regression Results on the Amount of Cereals sold by Farmers (ANOVA Box)

Dependent Variable	Sum of Squares			Degree of Freedom			Mean square		F	Sig
	REG	RES	Total	REG	RES	Total	REG	RES		
Teff Sold	14.164	89.586	103.75	5	110	115	2.833	0.814	3.478	0.006*
Barley Sold	2.614	15.343	17.957	5	110	115	0.523	0.139	3.748	0.004*
Maize Sold	2.348	22.859	25.207	5	110	115	0.470	0.208	2.259	0.050*
Wheat Sold	7.021	23.466	30.487	5	110	115	1.404	0.213	6.583	0.000*
Engdo Sold	9.027	69.214	78.241	5	110	115	1.805	0.629	2.869	0.018*
Oil seeds Sold	6.985	69.705	76.690	5	110	115	1.397	0.634	2.205	0.050*
Pulses Sold	6.615	17.937	24.552	5	110	115	1.323	0.163	8.114	0.000*

Source: Own Survey and Computation *REG= Regression* *RES=Residuals*
** Predictors: (Constant), Farm inputs, Age , Farm Size, Oxen Owned and Distance*

The regression result (annex 6) on the amount of cereals marketed reveals that respondents' age explains a significant amount of variance on the amount of *teff* sold (sig =0.001, $p < 0.01$), maize sold (sig =0.006, $p < 0.01$), *engdo* sold (sig =0.024, $p < 0.05$) and pulses sold (sig =0.045, $p < 0.05$). Perhaps surprisingly, the regression result reveals that the coefficient for age is negative for all significant values portraying an inverse relationship between age of the respondent and the amount of cereals marketed. The result is also consistent with previously used statistical analysis. Hence, the hypothesis that age of the household negatively affect production and consumption linkage is accepted.

Distance from *Debre Markos* affects the amount and type of farm outputs sold by hinterland farmers. Consistent with the t-test analysis, the regression result (annex 6) on the amount of cereals marketed reveals that distance explains a significant amount of variance on the amount of barley sold (sig =0.007, $p < 0.01$), wheat sold (sig =0.001, $p < 0.01$), *engdo* sold (sig =0.025, $p < 0.05$) and pulses sold (sig =0.038, $p < 0.05$). Besides, the number of draught oxen owned by hinterland farmers explains a significant amount of variance on the amount of barley sold (sig =0.001, $p < 0.01$).

Shortage of land is the principal factor that affects agricultural production and productivity in the study area. Despite this fact, the regression analysis uncovers that farm size explains no

significant variance on the amount of cereals sold. On the other hand, the amount of farm input used that is identified as the second principal factor to affect agricultural production and productivity in the study area explains a significant amount of variance on the amount of pulses sold (sig =0.001, $p < 0.01$).

From the preceding discussion and multiple regression results (table 5.3 and annex6), it is possible to deduce that age of the household and distance from *Debre Markos* are equally important factors to explain the variance on the amount of cereals sold. While the amount of farm inputs used (except for the amount of pulses sold) and farm size are less significant to explain any unique variance on the amount of cereals marketed by farmers.

Farmers' consumption linkages result from the expenditure of farm incomes on locally produced consumer goods and services. The study reveals that farmers in the hinterland almost purchased all types of consumption goods with varying scales. The analysis of variance (table 5.4) on the amount of money expended by farmers on the purchase of non-durable goods reveals that the regression statistic is significantly different from zero for soap ($F = 2.937$, $p < 0.05$), sugar/tea ($F = 2.656$, $p < 0.05$), coffee ($F = 2.642$, $p < 0.05$), pepper/spices ($F = 2.361$, $p < 0.05$). Similarly, the analysis of variance (same table) on money expended by farmers to purchase durable goods reveals that the regression statistic is significantly different from zero for tape/radio ($F = 3.419$, $p < 0.01$), watch ($F = 1.472$, $p < 0.1$) and utensils ($F = 2.179$, $p < 0.1$). These ANOVA results vividly show that regression outcomes on hinterland farmers' consumption linkages are free from sampling error (table 5.4).

Table 5.4 Multiple Regression Results on Consumption Linkage of Hinterland Farmers (ANOVA Box)

Dependent Variable	Sum of Squares			Degree of Freedom			Mean square			
	REG	RES	Total	REG	RES	Total	REG	RES	F	Sig
Exp. on Soap	14.252	106.738	120.990	5	110	115	2.850	0.970	2.937	0.016*
Exp. on Sugar	12.232	101.319	113.551	5	110	115	2.446	0.921	2.656	0.026*
Exp. on Coffee	24.043	200.175	224.218	5	110	115	4.809	1.820	2.642	0.027*
Exp. on Pepper	25.031	233.216	258.248	5	110	115	5.006	2.120	2.361	0.045*
Exp. on Radio	6.161	39.648	45.810	5	110	115	1.232	0.360	3.419	0.007*
Exp. on Watch	1.171	17.496	18.667	5	110	115	0.234	0.159	1.472	0.205*
Exp. on Utensils	26.725	269.775	296.500	5	110	115	5.345	2.453	2.179	0.062*

Source: Own Survey and Computation, March 2009 *Exp=Expenditure* *REG= Regression*
** Predictors: (Constant), Farm inputs, Age, Farm Size, Oxen Owned and Distance* *RES=Residuals*

The regression result (annex 7) on the amount of money expended by hinterland farmers to purchase consumption goods reveals that respondents' age explains a significant amount of variance on the Birr amount expended to purchase utensils (sig =0.007, $p < 0.01$) with negative beta coefficient ($\beta = -0.254$). Hence, the coefficient for age shows the existence of an inverse relationship between age of the respondent and the Birr amount expended by farmers to purchase utensils. The variance on cost incurred by hinterland farmers on the purchase of soap/omo is best described by farm size (the independent variable) (sig =0.036, $p < 0.05$, $\beta = 0.203$). Number of oxen owned by hinterland farmers is another independent variable that describes a significant amount of variance on the Birr amount expended to purchase coffee (sig =0.021, $p < 0.05$). The positive beta coefficient ($\beta = 0.240$) on the regression coefficient box shows the direct relationship between number of oxen owned and accost incurred by farmers to purchase coffee.

The result of multiple regressions (annex 7) reveals that distance from *Debre Markos* explains a significant amount of variance on the Birr amount expended to purchase pepper/spice (sig =0.026, $p < 0.05$, $\beta = 0.245$) and radio/tape (sig =0.000, $p < 0.001$, $\beta = -0.384$). Finally, compared to other variables, the amount of farm inputs used by hinterland farmers best explains a unique variance on the cost incurred to purchase watch (sig =0.034, $p < 0.05$, $\beta = 0.243$). The foregoing discussion and multiple regression results (table 5.4 and annex 7), indicates that independent variables: age of the household, number of draught oxen, farm size and input usage and age explains a significant amount of variance on the Birr amount expended by farmers to purchase utensils, coffee, soap and watch respectively. Distance from *Debre Markos* is the only independent variable that explains the unique variance for two dependent variables (expenditure on pepper and radio/tape).

5.4.2.2 Multiple Linear Regression Results on Consumption Linkages of Urban Households

The previous section uncovers the major independent variables that best explains the unique variance on production and consumption linkages of hinterland farmers. Likewise, this part is devoted to identify the principal independent variables that describe significant variances on consumption linkages of urban households with hinterland farmers. The purchase of food item by urban dwellers is one of the ways through which urban households are linked to their rural counterparts. However, the amount, type and related expenditures on farm outputs show

significant variation owing to the impact of two or more independent variables on the dependent variable (s). To identify the variable that best describes a unique variance, three major variables: age, education and duration in the town are identified as independent (explanatory) variables whilst amount of farm outputs purchased and the associated costs incurred by urban households are used as dependent or regressed variables.

The study shows that urban households purchased agricultural outputs with varying scales. The analysis of variance (annex 8) on the amount farm outputs purchased by urban households reveals that the regression statistic is significantly different from zero for wheat ($F = 2.233$, $p > 0.05$), barley ($F = 2.282$, $p > 0.05$), pea ($F = 2.486$, $p > 0.05$), onion ($F = 2.706$, $p > 0.05$), mango ($F = 2.324$, $p > 0.05$) and orange ($F = 2.523$, $p > 0.05$). Similarly, the analysis of variance on cost incurred to purchase farm products reveals that the regression statistic is different from zero for maize ($F = 2.179$, $p > 0.05$), wheat ($F = 4.026$, $p < 0.05$), barley ($F = 3.009$, $p < 0.05$), pea ($F = 3.887$, $p < 0.05$), onion ($F = 3.292$, $p < 0.05$), cabbage ($F = 1.934$, $p > 0.05$) and mango ($F = 1.385$, $p > 0.05$). Hence, it is straightforward to note that regression outcomes on urban households' consumption linkages are free from sampling error (Annex 8).

The regression result (annex 9) reveals that duration in the town explains a significant amount of variance on the amount of maize purchased ($sig = 0.024$, $p < 0.05$), wheat purchased ($sig = 0.048$, $p < 0.05$) and onion purchased ($sig = 0.017$, $p < 0.05$). It is surprising to note that (annex 10) duration in the town also maintains a unique variation on the amount of money expended by urban households to purchase maize ($sig = 0.018$, $p < 0.05$), wheat ($sig = 0.013$, $p < 0.05$) and onion ($sig = 0.050$, $p = 0.05$). The beta coefficient is negative for both amount purchased ($\beta = -0.338$) and money expended ($\beta = -0.267$) on onion ensuring that there is an inverse relationship between duration and the amount of onion purchased and Birr expended (annex 9 and 10).

The amount of farm output purchased and cost incurred by urban households depend on the level of education. In this regard, the regression result (annex 9) reveals that respondents level of education explains a significant amount of variance on the amount of barley ($sig = 0.012$, $p < 0.05$) and pea ($sig = 0.013$, $p < 0.05$) purchased. The regression coefficient box (annex 10) shows that level of education also maintains a unique variation on the amount of money expended by urban households to purchase barley ($sig = 0.013$, $p < 0.05$), pea ($sig = 0.022$, $p < 0.05$) and

cabbage (sig =0.046, p = 0.05). The beta coefficient (β = -0.324) for the amount of cost incurred on cabbage is negative ensuring that there is an inverse relationship between level of education and cost incurred to purchase cabbage (annex 10). Age of the household is the third independent variable that exhibits a unique variance on the amount of farm outputs purchased and cost incurred by urban households to buy farm outputs. The result of multiple regressions (annex 9) reveals that age of the respondent explains a significant amount of variance on the amount of mango purchased (sig =0.022, $p < 0.05$, β = -0.397), orange purchased (sig =0.030, $p < 0.05$, β = -0.374) and cost incurred on mango (sig =0.048, $p < 0.05$, β = -0.348 (annex 10). The negative regression coefficients for age shows the existence of an inverse relationship between age of the respondent and the amount purchased and cost incurred on mango and orange.

To sum up, in this chapter, various statistical tests (t-test, x^2, ANOVA, Correlation and Multiple regression) are made and the inherent associations between categorical and continuous variables are discussed. The result shows that farmers within the first five kilometers have better market services compared to farmers in the next 6-10 km radius. Based on the findings, the next chapter will offer the summary, conclusion and policy implications.

Chapter Six

Summary, Conclusion and Policy Implications

6.1 Summary

The study was conducted in *Debre Markos* town and its hinterland. The main objective of the study was to assess the challenges and prospects of RUMLs in *Debre Markos* and its hinterland. The study has made use of both primary and secondary data sources. A total of 237 (120 urban and 116 rural) sample households were selected through systematic random sampling and data was analyzed by making use of both descriptive and inferential statistical tools.

Out of the total sample households, 95.7% own their land while the rest, 4.3% are landless. The finding discloses that most (80.2%) of farmers have faced with various agricultural problems. Among ten variables, shortage of land is the first main problem that affects agricultural production and productivity in the hinterland. The x^2 test on the likely variables shows that there is a statistically significant association between the two groups of farmers.

The primary economic activity in the hinterland is farming. The principal crops cultivated are cereals followed by oil seeds and pulses. The correlation analysis on the amount of land allotted for cereals, amount produced and sold shows direct relation with farm size. However, while the relationship is statistically significant, the strength of relationships is weak signifying that farm size assumes less than 10% of the variance.

Agricultural production and productivity in the hinterland is low. Hence, most crops produced in the hinterland are used for consumption. Oil seeds are the major crops brought to the market. On average 96.1% of oilseeds, produced are sold in the market followed by *teff* (26.4%) and pulses (25%). Overall, cereal production in the hinterland is not market oriented owing to the subsistence nature of agriculture and high cost of production.

The descriptive analysis shows that more (55%) of farmers from *Qebi* produced cereals for sale compared to (48.6%) of farmers from *Wonka* indicating that farmers within the first 5 km have better market linkage with *Debre Markos* than farmers in the next 6-10 km. The t-test analysis on the amount of cereals produced in the hinterland reveals that there is a statistically significant difference on maize, *engdo*, and pulses produced between the two groups of farmers. Similarly, the t-test analysis on the amount of cereals sold indicated that there is a statistically significant

difference on wheat, *engdo* and pulses between the two groups of farmers. Hence, farmers in the first 5 km exhibit relatively better marketing linkage.

The multiple regression results show that age of the household and distance from *Debre Markos* are equally important factors to explain the variance on the amount of cereals sold. While the amount of farm inputs used and farm size are less significant to explain any unique variance on the amount of cereals marketed by farmers.

Debre Markos town is the major market place for cereals produced in the hinterland; however, it is hardly enough to satisfy town's need. The study discloses that hinterland farmers are not the principal suppliers of farm outputs, since 65% of sampled urban households indicated that production from the hinterland never satisfy urban peoples' demand. Despite this fact, hinterland farmers have relatively better marketing interaction with urban dwellers through the sale of cereals than urban traders do.

The study discloses that 37.9% of sampled farmers have produced fruits and vegetables in the last two years. Most farmers (88.6%) brought their products to the market. All fruits and vegetables are marketed in *Debre Markos* town and 48.45% of urban households have purchased fruits and vegetables from hinterland farmers.

Debre Markos town is the major market place to buy and sale livestock for 74% of farmers. Almost all (98.4%) of farmers have sold livestock products in the town. However, income earned from the sale of livestock products is less satisfactory as compared to number of participants.

The statistical analysis using correlation coefficient exhibits positive relationship between the amounts of farm size and number of livestock owned. The t-test analysis on the number of livestock owned, sold and bought in the last 12 months reveals that there is a statistically significant difference on goats and donkeys between the two groups of farmers.

Most farmers (94%) use agricultural inputs. The F and t-test results confirm that farmers from 6-10 km have shown a strong rural-urban forward marketing linkage than farmers within the first 5 km radius from *Debre Markos* on fertilizer usage. About 65.5% of sampled farmers indicated that the amount of input used in the last three years has increased.

The principal suppliers of fertilizers and selected seeds are the service cooperatives while traders are identified as the chief suppliers of weed control and pesticides. The study has identified a weak and partial backward RUML resulted due to the absence of agro-processing industries. Forward production marketing linkage between *Debre Markos* and its hinterland is almost non-existent except grain mills.

The descriptive analysis shows that farmers within the first 5 km have purchased more consumable goods. However, the x^2 analysis on durable and non-durable goods purchased by farmers reveals statistically insignificant association between the two groups of farmers except for soap/omo and house. The t-test analysis on the amount cost incurred by farmers on durable and non-durable goods reveals statistically significant difference on coffee, pepper, and radio/tape between the two groups of farmers.

The analysis on the interaction between selected variables using correlation coefficient shows that the amount of cereals produced (maize), cereals sold (*teff*, maize and *engdo*), land allotted (barley, maize and *engdo*) and cost incurred for utensils have an inverse relation with farmers' age. The strength of relationships is relatively low accounting less than 10% of the variance.

The multiple linear regression results, indicate that independent variables: age of the household, number of draught oxen, farm size and input usage explain a significant amount of variance on the cost incurred to purchase utensils, coffee, soap and watch respectively. Distance from *Debre Markos* is the only independent variable that explains the unique variance for two dependent variables (expenditure on pepper and radio/tape).

The statistical analysis using One-way ANOVA reveals that urban households do not differ significantly based on age and duration from each other on the mean cost incurred and mean amount of farm outputs purchased except for bean, onion and wheat. The correlation analysis on the other hand reveals that the amount of farm outputs purchased and cost incurred by urban households decreases, as people get older and older. Besides, those urban households who stayed in the town for long opt to purchase more cereals than fruits, vegetables and milk products.

The regression result reveals that duration in the town explains a significant amount of variance on the amount of maize, wheat and onion purchased. It also maintains a unique variation on the amount of cost incurred by urban households to purchase maize, wheat and onion. The beta

coefficient is negative for both amount purchased and money expended on onion ensuring that there is an inverse relationship between duration and the amount of onion purchased and cost incurred.

The regression analysis uncovers that urban households' level of education explains a significant amount of variance on the amount of barley and pea purchased. The same analysis indicated that level of education also maintains a unique variation on the amount of money expended by urban households to purchase barley, pea and cabbage. The beta coefficient for cost incurred on cabbage is negative ensuring that there is an inverse relationship between level of education and amount of cost incurred to purchase cabbage.

Age of the household is another independent variable that exhibits a unique variance on the amount of farm outputs purchased and cost incurred by urban households to buy farm outputs. The result of multiple regressions reveals that age of the respondent explains a significant amount of variance on the amount of mango and orange purchased and cost incurred on mango. The negative regression coefficients for age shows the existence of an inverse relationship between age of the respondent and the amount purchased and cost incurred on mango and orange.

All sampled farmers from *Wonka* and *Qebi* visited *Debre Markos* for market purpose with diverse travel frequencies. None of the reporting farmers from the hinterland had a daily market visit to the town. Majority of farmers indicated that they often went to *Debre Markos* on foot regardless of the purpose and frequency. Unlike *Qebi* a sizable number of farmers from *Wonka* use vehicles. Compared to other activities, hinterland farmers have a better market linkage with *Debre Markos* followed by education. While the role of *Debre Markos,* as center of administration, information and employment is minimal.

The empirical finding reveals that rural non-farm sector is yet immature with only 19.8% of sampled farmers to take part in the activity. Money earned from such activity is not sufficient to supplement hinterland farmers with extra income.

The study reveals that nearly half (51.7%) of farmers have received updated information on the demand and price of their farm outputs. In terms of *kebele*, 70% of sampled farmers from *Qebi* have access to market information while less number (42.1%) was reported from *Wonka*. Hence, the availability of transport and other facilities are not sufficient condition to guarantee farmers'

access to information on demand and price of agricultural outputs. More specifically, the x^2 test also shows that there is a statistically significant association in terms of access to market information and telecommunication services between the two groups of farmers in the hinterland.

The study shows that more than half (52.8%) of sampled farmers identified various challenges that affect the smooth operation of RUML in the study area. Shortage of land, the subsistence nature of agriculture, lack of market facilities, price fluctuations and shortage of agricultural inputs are the first five main problems in ascending order that affect RUML in the study area. The x^2 analysis made on the challenges that affect RUMLs shows that there is no statistically significant association between farmers who dwell in the first 5km and the next 6-10 km away from the town. Hence, both groups of farmers are equally victims of the challenges.

Similarly, 45% of urban households reported that there are various challenges that affect the smooth operation of RUML in the study area. Price fluctuation, lack of market facilities, inflation, lack of agro-processing industries and the subsistence nature of agriculture are the first five main challenges in order of severity that affect RUML in the study area. The study discloses a wide difference between hinterland farmers and their urban counterparts to recognize and identify market services and pertinent challenges that hamper marketing linkages.

Urban traders in *Debre Markos* are linked to farmers through the supply and purchase of various goods and services. However, due to shortage of land and inputs agriculture in the hinterland remains subsistence which in turn hand caped the expected RUMLs between traders and farmers.

The study identified the current national policy environment in the country: PASDEP, agricultural sector policy, industrial sector policy, road sector policy and decentralization as good prospects to enhance RUMLs. Besides, expansion of micro and small-scale enterprises, expansion of investment, establishment of consumers' associations, establishment of cooperatives and agricultural output marketing services are some of the local prospects that would harness RUMLs in the study area.

Finally, the study shows that no significantly coordinated effort have been made by local governments to strengthen the rural-urban marketing linkage in the study area.

6.2 Recommendations and Policy Implications

Based on the empirical results of the study, the following feasible recommendations and policy implications are forwarded to be used by different stakeholders who are keen to harness the RUMLs and foster the virtuous cycle of linkage between *Debre Markos* and its hinterland.

The concept of RUL is multidimensional. The study has assessed only the challenges and prospects of RUML within 10 km radius from *Debre Markos*. It is therefore, the writer's opinion that future researchers should study the nature, type and magnitude of RUL at *Woreda* and zonal level to get a wider outlook of linkage profiles and policy implications. This can be seen from spatial and sectoral linkages analysis point of view.

The study has revealed that *Debre Markos* town lacks basic market infrastructures. The single permanent market place in the town is too crowded to offer adequate market services to both rural and urban marketers. Therefore, the municipality and rural local governments should work together to look for other alternative market places that would be included in the newly designed master plan of the town that is under preparation.

Sampled farmers have identified shortage of land as the primary challenge that affects agricultural production and RUML. In the hinterland, land is scarce and the average farmer own below one hectare of land. Therefore, to curb the problem concerned government bodies, NGOs and CBOs should work together to promote various land management programs and to surpass land productivity by creating awareness among farmers how to conserve their land.

Farmers identified shortage of farm input as another principal challenge that affects agricultural production and RUML in the study area. The study also shows that farmers' service cooperatives and GWARDO are the principal suppliers and distributors of farm inputs. However, the delivery system has to pass through routine procedures and sometimes lags behind the actual time than it is needed. Therefore, traders' participation should be permitted so that there would be flexibility in the delivery system, avoid the monopolistic supply system and foster competition that benefits farmers in the hinterland.

Urban households indicated that price fluctuation is the principal challenge that affects RUML. As result, municipality officials, urban-based consumer associations and farmers' service cooperatives should work together so as to promote strong RUML and to empower purchasing

power of urban households, stabilize the fluctuating price and minimize its adverse effect on RUML.

The regression analysis uncovers that urban households' level of education explains a significant amount of variance on the amount of farm outputs purchased and cost incurred. Hence, adequate education is central to surpass purchasing power of urban households. Therefore, the recently introduced private and governmental educational institutions would play exciting roles and they therefore should be offered due emphasis.

Agriculture in the hinterland is not dynamic in producing surpluses and commercializing its activities. Rain-fed agriculture, traditional farming and shortage of land are the common features of farming. Production is mainly used for consumption. Marketed farm outputs in the hinterland are meager and hardly enough to meet urban demand. Therefore, farmers, DAs and agriculturalists from GWARDO should work together to foster strong forward and backward production linkages that would curb the problem and bring mutual development in the study area.

The study identified no efforts made by local governments to strengthen RUMLs. Rather the two government units do development efforts independently. Besides, there is no established legal framework to promote RUL. Therefore, the two units of government are expected to work together to establish legal framework that would govern RUMLs which is vital to promote virtuous circle of linkage.

The study uncovers various national, regional and local prospects/opportunities that would be of a great help to foster a strong RUMLs in the study area. Hence, rural local governments and urban municipal officials should therefore scrutinize these opportunities and implement them by reconciling the fact with the local situation to strengthen RUML and foster mutual development.

Under normal circumstances, non-farm activities can play an indispensable role to strengthen RUMLs. However, the empirical finding reveals that rural non-farm sector is yet immature and exhibits a weak linkage due to lack of participation. The micro and small-scale industries in the town is one of the potential areas that would create the chance for rural non-farm activities. Nevertheless, none of them has market linkage with hinterland farmers. Therefore, farmers in the hinterland should be given skill development trainings and encouraged to participate in non-farm

activities. Moreover, an attempt should be made by municipality officials to create marketing linkages between MSEs and hinterland farmers.

Forward and backward production linkages are non-existent in the study area owing to the absence of agro-processing industries. The hinterland is not the source of raw materials for processing and distribution. Besides, the town is not capable to produce and distribute agricultural inputs needed by farmers. Therefore, to promote positive production linkages, investment experts should first identify potential investment areas in agro-processing sector and sizable promotional works should be done to attract investors in to the town. Second, farmers should be encouraged to produce market oriented farm outputs that would be used as raw materials for the proposed agro-processing industries.

In general, the challenges of RUMLs can be ameliorated to a considerable level and mutual development of the two spatial units can be fostered so long as there are pooled efforts to identify the causes, consequences and commitments in the implementation from governmental, non-governmental and community based organizations, academia, farmers, urban dwellers and any other volunteer stakeholder.

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Addis Ababa University

School of Graduate Studies

Regional and Local Development Studies

Structured Questionnaire for Rural Households: Sample Survey

Objective: The purpose of this questionnaire is to gather information on the challenges and prospects of RUMLs in Debre Markos Town and its hinterland for the partial fulfillment of the Masters of Arts Degree in Regional and Local Development Studies at Addis Ababa University.

General Directions

1. You are kindly requested to offer genuine responses.
2. The study is entirely academic and all responses are confidential.
3. Feel free to respond.

Thank you in Advance!

A. **Questionnaire Identification**

1. Name of woreda _____ 3. Name of interviewer_____

2. Name of kebele _____ 4. Supervisor's signature_____

B. General Information

1. Age of HH head 0 = =< 15 1=15-30 2= 31-45 3= 46-65 4= Above 65

2. Sex 0 = Male 1 = Female

3. Marital Status 0 = Never married 1 = Married 2 = Divorced 3 = Widowed

4. HHH education level

0 = Illiterate 1 = Informal education 2 = Adult education

3= Prim. &Jun. (1-8) 4 = Secondary (9-12) 5 = above secondary

5. Religion Denomination

0 = Orthodox Christian 1 = Muslim 2= Protestant 3=Others (Specify) _____

6. Ethnicity 0 =Amhara 1= Tigre 2= Oromo 3= others (specify) _____

C- Land holding and Farming System

7. Do you have your own land? 0 = Yes 1 = No

8. If "Yes" how much is your farm size in *Timad*?

0 = Two 1 = Four 2 = Six 3 = Eight 4 = Twelve

9. In the last 12 months, have you rent out land? 0 = Yes 1 = No

10. If 'Yes', to whom do you rent out land? 0 = Urban folk 1 = Rural folk

11. How much area is the rent out land in *timad*?

0 = one 1 = two 2 = three 2 = four 3 = five 4 = above five

12. What is the reason for the rent out?

0 = Shortage of draught oxen 2 = Input Shortage

1 = Shortage of labor 3 = others (specify) _____

13. Do you rent in land in the last 12 months? 0 = yes 1 = No

14. If 'Yes' how much is the area in t*imad*?

0 = One 1= Two 2 = Three 3 = Four 4 = Five 5 = Above five

15. What is your reason to rent in land?

0 = Land shortage 2 = To help the renter

1 = Accessibility 3 = others (specify)

16. Do you feel in secured to use your farmland for future development?

0= Yes 1= No

17. If 'Yes', what is the reason?

0 = Urban expansion 1= Land redistribution 2 = others (specify)

18. Do you use other sources of water apart from rain for farming?

0 = Yes 1 = No

19. If 'Yes', which type? 0 = Irrigation 1 = water harvest 2 = Both 3 = Others_____

20. What is the area of land developed through Irrigation/water harvest in *Timad*?

0 = <one 1 = one 2 = Two 3 = Three 4 = above three

21. If you use Irrigation/ water harvest, which crops do you produce?

0 = Fruits and vegetables 1= Cereals 2 = others (specify) _____

22. Do you produce cereal mainly for sale? 0 = Yes 1 = No

23. If 'No' what is the reason?

0 = High cost 1 = Lack of market 2 = Lack of knowledge

3 = No surplus 4 = others (specify) _____

24. Do you have problem in crop production? 0 = Yes 1 = No

25. If 'Yes' please rank the top five in order:

1. Shortage of land _____ 6. Shortage of capital_____

2. Shortage of oxen _____ 7.Tenure insecurity_____

3. Shortage of labor _____ 8. Lack of extension service_____

4. Shortage of inputs _ 9 Transport problem_____

5. Lack of market _____ 10. Crop pests and disease_____

26. Please indicate the amount of crop you produced and sold last year

No	Type	Area Cultivated (Timad)	Amount produced (qauintal)	Amount sold (in quintal)	Place of Sale	Travel Time	Customers
1	'Teff'						
2	Barely						
3	Maize						
4	Wheat						
5	Engdo						
6	Millet						
7	Niger seed						
8	Line seed						
9	Bean						
10	Pea						
11	Chickpea						
12	Vetch						

Area cultivated (code)

0 = none 1 = <=one 2 = two 3 = three 4 = four 5 = five 6 = six 7 = seven 8=above seven

Amount produced (quintal) (code)
0 = none 1= 1-3 2 = 4-6 3 = 7-9 4 = 10-12 5 = 13-15 6 = 16-18 7=above 18
Amount sold (in quintal) (code)
0 = none 1 = =<one 2 = three 3 = four 4 = five 5 = six 6 = seven 7 = above seven
Place of sale (code)
0 = DMT 1 = local market 2 = farm gate 3 = others (specify) _____
Travel time (hour) (code)
0 = 30 minute 1 = one 2 = two 3=three 4=above three

27. Which crop do you like to expand further and why?

0 = cereals 1 = Oil seeds 2 = Pulses 3 = Fruits &vegetables

28. What is your reason for question number 27?

0 = high price 1= High demand

2 = High productivity 3 = Low cost 4= Others_____

29. Your overall production in the last three years has:

0 = Increased 1 = Decreased 2= Show no change

30. If it is increasing what is the reason? (Multiple answers is possible)

0 = Good rain 1 = Use of modern inputs

2 = Use of irrigation/water harvest 3 = Others_____

31. If it is decreasing what is the reason? (Multiple answers is possible)

0 = Shortage of rain 1 = Shortage of modern inputs

2 = Decreasing soil fertility 3 = others (specify) _____

32. In the last 2 years, have you produced fruits and vegetables?

0 = Yes 1= No

33. If 'No' what is the reason?

0 = Shortage of water 1= Shortage of land 4 = lack of market

2 = Lack of knowledge 3 = Shortage of inputs

34. If 'Yes' indicate amount produced and sold (use local unit or quintal)

No	Type of vegetable	Yes=1	No=2	Amount Produced	Amount Consumed	Amount Sold	Place of sale	**customer**
1	Tomato							
2	Potato							
3	Onion							
4	Pepper							
5	Key sir							
6	Carrot							
7	Cabbage							
8	Mango							
9	Orange							
10	Banana							
11	Avocado							

Amt. consumed &sold (code) **place of sale (code)** **customer (code)**
0=All 1=Half 0= DMT 1=Local market 0=Farmers 1=urban dwellers
2=one-third 3=Quarter 2=Farm gate 3= Others 2= Urban traders 3= others

D. Livestock Production and Dairy Products

35. Do you own any kind of livestock? 0 = Yes 1= No

36. If 'Yes' indicate the type, number, place of sell and purchase in the last 12 months.

No	Type	Yes=1	No=2	Number at present	Number sold	Price of sale	Place of sell	No. bought	purchase price	**purchase place**
1	Oxen									
2	Cows									
3	Calves									
4	Bulls									
5	Heifer									
6	Goats									
7	Sheep									
8	Horses									
9	Donkeys									
10	Mules									

No. at present (code)
0 = none 1= One 2 = Two 3 = Three 4 = four 5 = five 6 = six 7 = above 6
No. sold and bought (code)
0 = none 1= One 2 = Two 3 = Three 4 = four 5 = five 6 = six 7 = above six
Price of purchase and sale (in Birr) (code)
0 = up to 1000 1 = 1001-2000 2 = 2001-3000 3 = 3001-5000 4 = above 5000
Place of sale and purchase (code)
0 = DMT 1 = local market 2 = farm gate 3 = others (specify) _____

37. Indicate the type of animal products you sell in the last 12 months.

No	Product	For sell		Place of sale	Income earned(birr)	Customer(code)
		Yes=1	No=2			
1	Milk					
2	Butter					
3	Cheese					
4	Hides/ skins					

Place of sale (code) 0 = DMT 1=local market 2 = farm gate 3 = others (specify) _____

Income earned (code)
0 = none 1=up to 100 2 =101 200 3=201-300 4 = 302-400 5=401-500 6=above 500
Customer (code)
0 = urban dwellers 1= urban traders 2 = farmers 3 = others_____

E. Agricultural Inputs extension and veterinary services

38. Do you use agricultural inputs? 0 = Yes 1= No

39. If "Yes" identify its type:

0 = Modern inputs 1 = Organic fertilizer 2 = both

40. If your do not use organic fertilizer, what is the reason?

0 = Have no cattle 1 = Used as domestic fuel

2 = Used for sell 3 = Lack of knowledge

41. If you use modern inputs, indicate the amount, value and place of purchase in the last 12 months.

No	Type	Amount(kg)	Cost	Supplier(c)	Place of purchase(c)	Reasons for not using(c)
1	Fertilizers					
2	selected seeds					
3	Weed control					
4	Pesticides					
5	Others					

Amount (kg) (code)
0 = up to 10 1 = 11-50 2 = 51-100 3 = 101-200 4=201-300 5=3001-400 6= above400
Cost (Birr) (code)
0 = up to100 1=101-200 2=201-300 3=301-400 2=401-500 5=501-600 6=above 600
Supplier/s (code
0 = DMT 1 = traders 2= Cooperatives 3 = GWAO 4 = others (specify) _____
Purchase place (code) 0 = DMT 1 = PA 2 = others (specify) ____
Reasons for not using (code)
0 = high cost 1 = locally available 2 = lack of knowledge 3 = others_____

42. The amount of modern input usage in the last 3 years has:

0 = Increased 1= Decreased 2 = Show no change

43. Do you get extension services? 0 = Yes 1= No

44. If "Yes", from where? 0 = DMT 1 = PA 2 = others (specify) _____

45. Where do your PA extension workers live?

0 = Within PA 1= DMT 2 = Others (Specify) _____

46. If you do not get extension service, what is the reason?

0 = High cost of service 1 = shortage of extension workers

2 = Lack of knowledge 3 = others (specify) _____

47. Do you get veterinary services? 0 = Yes 1= No

48. If "Yes" from where?

0 = PA's ARDO 1=GWARDO

2 = DMT 3 = others (specify) _____

49. Who provides you veterinary service?

0 = Private sector 1 = Government

2 = Both 3 = Others (Specify) _____

50. If you do not get veterinary service, what is the reason?

0 = High cost 1= Lack of knowledge

2 = Inaccessibility 3 = others (specify) _____

F. Non-farm Source of Income

51. Do you participate in any of non-farm income generating activity in the last 12 months?

No	Non-farm activity	Yes=0 No=1	Place of work	Actors in the family	Income earned	Place of Raw material purchase	Place of product sell
1	Handcraft						
2	Charcoal making						
3	Fire wood sale						
4	Araki/Tella sale						
5	Repair Service						
6	Daily laborer						
7	Others						

Place of work (c)
0= Home
1=Local town
2=Debre Markos
3=Others_____

Family members engaged (c)
0=Fathers
1=Mother
2=Children
3= All

place of RM purchase(c)
0=no purchase made
1=local market
2=DMT
3=others_____

product sell(c)
0=local market
1=DMT
2=others____

Income (Birr) (code)
0= Up to 500 1= 501-1000 2= 1001-1500 3=1501-2000 4=above 2000

G. Market and Marketing Services

52. Where do you get grain mill services?

0 = DMT 1= With PA 2 = Both 3 = others (specify) _____

53. Do you get current information on demand and price of your products? 0=yes 1=No

54. If 'Yes' what is the source of information?

0 = Radio 1= other farmers 2 = extension workers 3 = Relatives in DMT 4= Self assessment 5 = Others (Specify) _____

55. Your last month expenditure on non-durable goods and place of purchase

No	Items	Did you buy?		Expenditure	Place of Purchase(c)
		Yes=1	No=2		
1	Soap /Omo				
2	Sugar/Tea				
3	Match /batteries				
4	Coffee				
5	Oil				
6	Pepper /spices				
7	Salt				
8	Kerosene				
9	Cloth				
10	Shoes				
11	Medicament				
12	Entertainment				
13	Others				

Market place purchased (code)
0= Debre Markos 1= With in PA 2= other small towns 3=others_____
Expenditure (Birr) (code)
0= none 1=1-10 2=11-20 3=21-30 4=31-40 5=41-60 6=61-80 7=above-80

56. Your last month expenditure on durable goods

No	Item	Did you buy?		Cost	Place of Purchase
		Yes=1	No=2		
1	Radio/Tape				
2	Watch				
3	HH Furniture				
4	Bed				
5	House				
6	Jewelry				
7	Others				

Market place purchased
0= DMT 1= within PA 2= other small towns 3= others (specify) _____
Cost of goods (Birr) (code)
0= none 1=1-30 2=31-60 3=61-90 4=91-120 5=121-150 6=151-180 7=above 180

57. Your last year expenditure on construction materials and labor

No	Items	Did you buy?		Cost(code)	Place of Purchase(code)
		Yes=1	No=2		
1	Corrugated I.S				
2	Nails				
3	Wood				
4	Cement				
5	Grass				
6	Labor				
7	Others				

Market place purchased
0= DMT 1= within PA 2= other small towns 3= others (specify) _____
Cost of goods (Birr) (code)
0= none 1=<100 2=101-200 3=201-300 4=301-400 5=401-500 6=501-600 7=above 600

58. Frequency, reasons and transport mode to visit Debre Markos

No	Frequency	Frequency(code)	Transport mode(c)	Actor/s(code)
1	Market			
2	Education			
3	Health			
4	Administration/court			
5	Family visit			
6	To get information			
7	To look for employment			
8	Others (Specify)			

Frequency (code)
0=daily 1=three times per week 2= Once in two weeks **3=** Monthly 4= Once in two months
5=Never go 6=others (specify) _____
Transport mode (Code) 0= on foot 1= Animal back 2= Vehicle 3= Other's _____
Actors (code) 0= Husband 1= Wife 2= Children 3=all 4= others_____

59. How do you evaluate the market service offered in Debre Markos?

0 = Excellent 1= Very good 2 = Good 3= Satisfactory 4= Poor

60. Are there rural markets in your locality other than Debre Markos?

0 = Yes 1= No

61. If "Yes" which market do you prefer often? 0 =DMT 1 = Rural Market

62. Do you pay tax when you sell you products in Dbere Markos town? 0= Yes 1= No

63. If 'yes' for which product? 0 = Livestock 1= Cereals 2= Vegetables 3= for all

64. What is the comparative advantage of going to Debre Markos than rural markets?

0 = Better Price 1= Better market service 2 = Accessibility 3 =others_____

65. How many hours do you spend to go to Debre Markos on foot?

0 =15 minutes 1= 30 minutes 2=one hour 3=two hours 4=above 2 hours

66. How long does it take you to reach the nearest main (feeder) road on foot?

0= 10 minutes 1= Half an hour 2=1 hour 3=2 hours 4=above 2 hours

67. What kind of road network your PA has with Debre Markos town?

0 = No road 1= Mud road 2=Gravel road 3= Asphalted road

68. Is there an effort made to enhance the road net work? 0 = Yes 1= No

69. Is there telecommunication service in your PA? 0 = Yes 1=No

70. If "Yes" what is its type? 0 = Digital 1= Manual 2= Mobile phone 3= Others ____

71. Do you borrow money for marketing purpose in the last 12 months? 0=Yes 1= No

72. If yes from where?

0= Bank 1=Relatives 2= MFIs 3= Rural money lenders 4=Urban money lender

73. Do you save money? 0=Yes 1= No

74. If "Yes" where do you save?

0 = Bank 1= Traditional saving (Iquib)

2= Credit union 3= others (specify)

75. Is there any challenge that affects rural-urban marketing linkages in Debre Markos town and its hinterland? 0= Yes 1=No

76. If 'yes' list the top five in an order?

1=Poor road network_____
2=Inadequate information_____
3=Subsistence agriculture_____
4= Lack of agro-processing industries___
5= weak local government_____
6=Distance_____
7= inflation_____
8= Tenure insecurity_____
9= Shortage of land_____
10= Lack of market facilities_____
11=price fluctuation_____
12=natural resource degradation___
13=Limited agricultural input ____

H. Open Ended Questions

77. In your opinion, what kind of improvement needs to be made to improve the existing rural-urban marketing linkage between Debre Markos and its hinterland?

_____

_____

78. In your opinion what is expected from rural government to enhance rural urban marketing linkages?

_____

_____

79. In your opinion what is expected from the municipality to enhance rural -urban marketing linkages?

_____

_____

80. In your opinion what are the future prospects of rural-urban marketing linkages between Debre Markos and its hinterland? _____

Structured Questionnaire for Urban Households- A Sample Survey

Objective: The purpose of this questionnaire is to gather information on the challenges and prospects of rural-urban marketing linkages in Debre Markos Town and its hinterland for the partial fulfillment of the Masters of Arts Degree in Regional and Local Development Studies at Addis Ababa University.

General Directions

1. You are kindly requested to offer genuine responses.
2. The study is entirely academic and all responses are confidential.
3. Feel free to respond.
4. You are not obliged to tell your name.

Thank you in Advance!

A. **Questionnaire Identification**

1. Date of interview _____ 4.Respondent's code_____
2. Questionnaire's code_____ 5.Kebele_____
3. Interviewer's name _____ 6. Supervisor's Signature _____

B. Household characteristics

1. Age of HH head 0 = <15 1 = 15-30 2 = 31-45 3= 46-65 4= Above 65
2. Sex 1= Male 1= Female
3. Marital Status

   0=Married 1=Never Married 2=Divorced 3=Widowed

4. Religion Denomination

   0 = Orthodox Christian 1= Muslim 2= Protestant 3= Catholic 4=others___

5. Ethnic Group

   0= Amhara 1= Tigrie 2= Oromo 3= Others (Specify) ____

6. HHH education level

   0= Illiterate 1= Read &Write only 2= Primary (1-5) 3=Junior (6-8)

   4= Secondary (9-12) 5= Diploma 6= First Degree 7 = Above First Degree

C. General Questions

7. How long do you live in the kebele?

0 = 1-5 years 1= 6-10 years 2 = 11-15 years 3= above 15 years

8. Is your place of birth in Debre Markos town? 0 = Yes 1= No

9. If 'no' where is it?

0 = in the hinterland 1= Other PA's out of the Hinterland 2= other towns in the zone 3= other towns outside the zone 4= Others (Specify) _____

10. Your occupation: 0 = Merchant 1= Public employee 2 = Private sector employee 3= Daily laborer 4=House wife 5= Un employed 6=Others (Specify) __

11. Do rural out puts from the hinterland satisfy the demand of urban dwellers?

0 = Yes 1= No

12. If 'no' from where do they meet the unsatisfied need?

0 = Other PA's in the *woreda* 1= Other PA's outside the *wereda* 2 = Others___

13. How do you evaluate the suitability of market areas in Debre Markos?

0 = Excellent 1= Very good 2 = Good 3 = Unsuitable 4= others (specify) ___

14. Do you think that farmers in the hinterland have enough skill to market their products?

0 = Yes 1 = No

15. If 'no' why?

0 = Lack of education 1= Lack of adequate information 2 = Price fluctuation 3 = Unfavorable market place 4 = Others (Specify) _____

16. In the last three years marketed farm outputs in Debre Markos has:

0 = Increased 1= Decreased 2= Show no change

17. If 'decreased' why? 0 = Low agricultural production 1= Low demand 2 = Growth of other small urban centers 3 = Price anticipation by farmers

18. Indicate the type, amount, value and suppliers of each food item (cereals and pulses) that you purchase in last month.

No.	Items	Amount(K(kg)	Cost (Birr)	Suppliers	Purchase place
1	Teff				
2	Maize				
3	Wheat				
4	Barely				
5	Millet				
6	Engdo				
7	Bean				
8	Pea				
9	Cheek pea				
10	Guaya				
11	pulses				

Amount (kg) (code)
0=none 1= up to 20 kg 2=21-40 3=41-60 4=61-80 5=81-100 6=above 100
Cost (Birr) (code)
0=none 1=up to50 2=51-100 3=101-200 4=201-400 5=401-800 6=above 800
Suppliers (code)
0= none 1=farmers 2=urban traders 3= whole sellers 4=others _____
Purchase place (code)
0= none 1=DMT 2= Farm gate 3= Rural market 4= others_____

19. Indicate the type, amount, value and suppliers of each food item (fruits, vegetables, dairy products) that you purchase in last month.

S.N	Items bought	Amount(kg)	Cost(birr)	Suppliers(c)	Market Place(c)
1	Onion				
2	Tomato				
3	Potato				
4	Pepper				
5	Cabbage				
6	Banana				
7	Carrot				
8	Orange				
9	Key sir				
10	Mango				
11	Avocado				
12	Citron				
13	Milk				
14	Better				
15	Cheese				
16	Charcoal				
17	Fuel wood				

Amount (kg) (code)
0=none 1= up to 10 kg 2=11-20 3=21-30 4=31-40 5=41-50 6=above 50
Cost (Birr) (code)
0= none 1=up to10 2=11-20 3=21-30 4=31-40 5=41-50 6=above50
Suppliers (code)
0=n0ne 1=farmers 2=urban traders 3= whole sellers 4 =others _____
Market place (code
0=none 1=DMT 2= Farm gate 3= Rural market 4= others_____

20. Do you visit the hinterland mainly for market purpose? 0 = Yes 3= No

21. If yes, what kind of transport do you use?

0 = Foot 1= Animal back 2= Vehicles 3= others_____

22. Do you sell any commodity to rural people? 0 = Yes 1=No

23. If 'yes' what kind?

0 = Food items 1= Durable assets 2= Non durable items 3= Advisory services 4= Others (Specify) _____

24. Is there any challenge that affects rural-urban marketing linkages in Debre Markos town and its hinterland? 0= Yes 1= No

25. If 'yes' list the top five in an order?

1=Poor road network_____
2=Inadequate information_____
3=Subsistence agriculture_____
4= Lack of agro-processing industries___
5= weak local government_____
6=Distance_____
7= inflation_____
8= Tenure insecurity_____
9= Shortage of land_____
10= Lack of market facilities_____
11=price fluctuation_____
12=natural resource degradation___
13=Limited agricultural input ____

26. In general, are you satisfied with the market services offered by the hinterland?

0 = Yes 1= No

26. Does the increasing price of farm output affect your purchasing power?

0 = Yes 1= No

D. Open Ended Questions

27. In your opinion what are the main prospects of rural urban-marketing linkages in Debre Markos and its hinterland?

_____

28. What factors do you suggest that must be improved in order to enhance rural-urban marketing linkages?

_____

30. In your opinion what is expected from rural government to enhance rural urban marketing linkages?

_____

31. In your opinion what is expected from the municipality to enhance rural -urban marketing linkages?_____

Interview Questions for Urban traders

Objective: The purpose of this questionnaire is to gather information on the challenges and prospects of rural-urban marketing linkages in Debre Markos Town and its hinterland for the partial fulfillment of the Masters of Arts Degree in Regional and Local Development Studies at Addis Ababa University.

General Directions

1. You are kindly requested to offer genuine responses.
2. The study is entirely academic and all responses are confidential.
3. Feel free to respond.
4. You are not obliged to tell your name.

Thank you in Advance!

A. **Questionnaire Identification**

1. Date of interview _____
2. Questionnaire's code_____
3. Interviewer's name _____
4. Name of enterprise_____.
5. Respondent's code_____
6. Kebele_____
7. Supervisor's Signature _____

B. **General information**

1. Is the business owned by you? 0= Yes 1= No

2. How much was your initial capital?_____

0 = <=1000 1 =1001-2000 2 = 2001-3000 3 = 3001-4000 4 = 4001-5000

5 = 5000-10,000 6 = 10,001-20,000 7 = above 20,000

3. Indicate the source of capital:

0 = Bank 1 = Self

2 = Microfinance 3 = Relatives 4 = Others (Specify) _

4. What about the current capital?

0 = <=1000 1=1001-5000 2=5001-10,000 3=10,001-20,000 4=20,001-30,000

5 = 30,001-40,000 6 = 40,001-50,000 7 = above 50,000

5. Indicate the level of service: 0 = Whole selling 1= retailing 2 = both

6. Indicate the type of service (trade):

0 = Cereal and grain 1= Fruit and vegetable 2 = Dairy products 3= Hides and skins

4. Consumer goods 5=Food items 6.Others (specify) _____

7. What is the type of ownership?

0= Sole ownership 1= Partnership 2=cooperative 3=others_____

8. From where do you purchase commodities?

0 = Hinterland farmers 1= Whole sellers in the town

2 = other small towns in the region 3 = other small towns outside the region

4 = Others (Specify) _____

9. Who are your main customers?

0 = Urban folk 1= Hinterland farmers

2 = People from other towns in the region 3 = other towns outside the region

10. What is the scale of your marketing link with the hinterland farmers?

0 = Very strong 1= Strong 2 = Medium 3 = weak 4 = Very weak

C. Open ended questions

11. Indicate the main market days and months

Days_____ Months _____

12. In your opinion what are the main prospects of rural urban-marketing linkages in Debre Markos and its hinterland?

_____

13. What factors do you suggest that must be improved in order to enhance rural-urban marketing linkages? _____

14. In your opinion what is expected from rural government to enhance rural urban marketing linkages? _____

15. In your opinion what is expected from the municipality to enhance rural -urban marketing linkages? _____

Checklists for key informants and FGDs

1. How do you see the nature of RUMLS between Debre Markos and its hinterland?
2. In your opinion what are the main challenges of RUML in Debre Markos and its hinterland?
3. What factors do you suggest that must be improved in order to enhance rural-urban marketing linkages?
4. How do you see the suitability of market areas in the town?
5. In your opinion what are the main prospects of rural urban-marketing linkages in Debre Markos and its hinterland?
6. In your opinion what is expected from rural government to enhance rural urban marketing linkages?
7. In your opinion what is expected from the municipality to enhance rural -urban marketing linkages?
8. Does production from the hinterland satisfy urban demand?

Annexes

Annex 1: Continuous Economic Variables and Respective Independent Sample t-Tests

		Within 6-10 km radius		Within the first five km radius		Leven's test for equality of variance		T-test for equality of means	
Variables		Mean	SD	Mean	SD	F	Sig.	Value	Sig.
Teff	P	2.9737	1.39498	2.5750	1.51721	0.253	0.616*	1.419	0.159
	S	0.7632	0.978000	0.7250	0.90547	0.261	0.610*	0.205	0.838
Barley	P	0.4079	0.89707	0.7000	0.93918	0.864	0.354*	-1.640	0.104
	S	0.263	0.22942	0.2250	0.57679	30.04	0.000**	-1.617	0.110
Maize	P	0.6974	0.81682	1.3250	0.97106	0.401	0.528*	-3.682	0.000
	S	0.1316	0.41125	0.2000	0.56387	2.010	0.159*	-0.747	0.457
Wheat	P	0.2895	0.58460	1.6250	1.42662	45.68	0.000**	-5.675	0.000
	S	0.000	0.0000	0.4250	0.81296	125.8	0.000**	-3.306	0.020
Engdo	P	0.7368	1.31015	1.8250	1.66237	6.295	0.014**	-3.594	0.001
	S	0.1053	0.47830	0.5500	1.19722	35.42	0.000**	-2.257	0.029
Oil seeds	P	0.6579	0.57856	0.4750	0.55412	0.005	0.943*	1.642	0.103
	S	0.6579	0.84147	0.3500	0.73554	3.465	0.065*	1.954	0.053
Pulses	P	0.2895	0.53705	1.4500	1.44914	45.08	0.000**	-4.891	0.000
	S	0.0526	0.22478	0.4000	0.67178	78.24	0.000**	-3.178	0.003
Oxen	O	2.64	1.356	2.27	1.446	0.246	0.621*	1.314	0.192
	S	0.1806	0.42215	0.1351	0.34658	1.399	0.239*	0.564	0.574
	B	0.26	0.503	0.16	0.442	3.784	0.540*	1.040	0.301
Cows	O	1.9306	1.47588	1.8469	1.60143	0.177	0.675*	0.214	0.831
	S	0.1250	0.40897	0.541	0.22924	4.102	0.045**	1.160	0.249
	B	0.0694	0.34910	0.270	0.16440	2.055	0.155*	0.699	0.486
Bulls	O	0.9028	1.21214	1.2162	1.29390	1.616	0.206*	-1.249	0.214
	B	0.0278	0.16549	0.000	0.000	4.399	0.038**	1.424	0.159
	S	0.556	0.28527	0.000	0.000	0.597	0.016**	1.653	0.103
Heifers	O	0.9028	1.39577	1.1622	1.46275	0.407	0.525*	-0.904	0.368
	S	0.0139	0.11785	0.000	0.000	2.105	0.150*	0.715	0.476
	B	0.556	0.33098	0.0270	0.16440	1.029	0.313*	0.493	0.623
Goats	O	0.0278	0.23570	0.7568	1.80132	55.45	0.000**	-2.451	0.019
	S	0.000	0.000	0.4054	1.40356	28.81	0.000**	-1.757	0.087
	B	0.000	0.000	0.000	0.000	***	***	***	***
Sheep	O	2.4722	2.33752	2.4054	2.22939	0.892	0.347	0.144	0.886
	S	0.7500	1.68464	0.3243	1.13172	7.973	0.006**	1.564	0.121
	B	0.2917	1.04055	0.1351	0.58510	2.874	0.093*	0.848	0.399
Donkeys	O	0.6389	0.79267	1.1892	1.35068	10.51	0.002**	-2.284	0.027
	S	0.139	10.11785	0.541	0.22924	6.016	0.016*	-1.211	0.229
	B	0.0278	0.16549	0.0270	0.16440	0.002	0.964*	0.022	0.982
Horses	O	0.2361	0.84742	0.1892	0.73929	0.208	0.649*	0.285	0.776
	S	0.417	0.20123	0.000	0.000	6.904	0.010**	1.757	0.083
	B	0.0278	0.16549	0.270	0.16440	0.002	0.964*	0.022	0.982

Source Own Survey and Computation, March 2009 P produced S=sold O=owned B=bought
*****T-test cannot be computed because the SD is zero * Equal variance assumed** Equal variance assumed*
Farm outputs are measured in quintals while livestock are measured in numbers

Annex 2: Continuous Variables on consumption linkage and Respective Independent Sample T-Tests

	Within 6-10 km radius		Within the first five km radius		Leven's test for equality of variance		T-test for equality of means	
Variables	Mean	SD	Mean	SD	F	Sig.	Value	Sig.
Exp. on soap	0.5846	0.8995	0.8250	1.3182	1.439	0.233	-1.110	0.269
Exp. on sugar	1.2540	1.07716	1.4571	1.09391	0.160	0.690	-0.890	0.376
Exp. on battery	0.5909	1.02247	0.4474	0.89132	0.376	0.397	0.722	0.379
Exp. on coffee	2.4286	1.38790	3.0789	1.60036	1.438	0.233	-2.153	0.034
Exp. on pepper	2.0147	1.33263	2.8378	1.84863	10.591	0.002**	-2.391	0.020
Exp. on salt	0.3088	1.02589	0.6923	1.47173	6.898	0.01**	-1.439	0.155
Exp. on kerosene	0.7303	0.82741	0.6471	1.05719	0.238	0.628	0.290	0.773
Exp. on cloth	5.5313	1.24394	5.6667	0.76139	1.662	0.203	-0.471	0.640
Exp. on shoes	6.8400	12.2599	6.5000	8.10133	0.198	0.658	0.107	0.916
Exp. on medicine	2.5200	2.60000	3.5333	2.89992	1.172	0.286	-1.143	0.260
Exp. on recreation	1.4615	1.81871	2.2308	1.83275	0.054	0.816	-1.318	0.193
Exp. on radio/tape	5.2727	0.90453	3.1000	1.19722	0.280	0.603	4.721	0.0000
Exp. on watch	0.4667	1.12546	0.0000	0.0000	4.845	0.040**	1.606	0.131
Exp. on utensils	3.1111	2.42318	2.6522	2.53357	0.202	0.655	0.654	0.516
Exp. on bed	4.0000	2.20389	4.8000	2.68328	0.018	0.897	-0.587	0.569
Exp. on jewelry	2.0000	3.46410	0.0000	0.0000	9.600	0.053	0.775	0.495
Exp. on CMS	2.2667	2.25190	2.9375	2.93187	0.379	0.541	-0.753	0.456

Source Own Survey and Computation, March 2009 Exp= expenditure CMS= Construction Materials
Expenditure is measured in Birr and on monthly bases for consumption goods while durable goods are computed on annual bases.
*** Equal variance not assumed * Equal variance assumed*

Annex 3: Categorical Socio-Economic and Biophysical Variables and Related Chi-Square (x^2) Tests

	Response	From 6-10 km radius		Within 5 km radius		X^2 statistics	Significance
		N	Percent	N	Percent		
Do you have your own land?	Yes	73	96.1	38	95	0.70	0.791
	No	3	3.9	2	5.0		
Do you use other sources of water for farming?	Yes	44	57.9	27	67.5	1.08	0.313
	No	32	42.1	13	32.5		
Do you produce crops mainly for sale?	Yes	37	48.7	22	55	0.418	0.518
	No	39	51.3	18	45		
Do you have problem in crop production?	Yes	57	75	36	90	3.709	0.050
	No	19	25	4	10		
In the last two years, have you produced fruit and vegetables?	Yes	29	38.2	15	37.5	0.05	0.945
	No	47	61.8	25	62.5		
Do you own any kind of livestock?	Yes	72	94.7	37	92.5	0.231	0.631
	No	4	5.3	3	7.5		
Do you use agricultural inputs?	Yes	72	94.7	37	92.5	0.231	0.631
	No	4	5.3	3	7.5		
Do you get extension service?	Yes	64	84.2	37	92.5	1.599	0.206
	No	12	15.8	3	7.5		
Do you get veterinary services?	Yes	65	85.5	33	82.5	0.183	0.669
	No	11	14.5	7	17.5		
Do you get current information on the demand and price of your products?	Yes	32	42.1	28	70	8.167	0.004
	No	44	57.9	12	30		
Are there rural markets in your locality?	yes	35	46.1	13	32.5	1.984	0.159
	No	41	53.9	27	67.5		
Are there efforts to repair the road network?	Yes	63	82.9	20	50	16.250	0.001
	No	13	17.1	20	50		
Is there telecommunication service in your PA?	Yes	49	64.5	5	12.5	31.367	0.000
	No	25	32.9	35	87.5		
Do you borrow money for marketing purpose?	Yes	14	18.4	5	12.5	0.671	0.413
	No	62	81.6	35	87.5		
Do you save money?	Yes	44	57.9	29	72.5	2.693	0.260
	No	32	42.1	11	27.5		
Is there any challenge that affects RUML?	Yes	41	53.9	20	50	0.1640	0.686
	No	35	46.1	20	50		

Source Own Survey, March 2009

Annex 4: Categorical Variables on consumption linkages and Related Chi-Square ($x^{2)}$) Tests

Goods purchased	Farmers' Response	From 6-10 km radius		Within 5 km radius		X^2 statistics	Significance
		N	%	N	%		
Soap/omo	Yes	65	85.5	40	100		
Sugar/tea	No	11	14.5	0	0.00	6.396	0.011
	Yes	63	82.9	35	87.5		
Battery	No	13	17.1	5	12.5	0.994	0.608
	Yes	66	86.8	38	95		
Coffee	No	10	13.2	2	5.0	3.680	0.159
	Yes	63	82.9	38	95		
Pepper/spies	No	13	17.1	2	5.0	5.150	0.076
	Yes	68	89.5	37	92.5		
Salt	No	8	10.5	3	7.50	0.280	0.597
	Yes	68	98.5	39	97.5		
Kerosene	No	8	10.5	1	2.50	2.359	0.125
	Yes	26	34.2	17	42.5		
Edible oil	No	50	65.8	23	57.5	0.772	0.380
	Yes	70	100	40	100		
Cloth	No	0	0.00	0	0.00	5.139	0.077
	Yes	32	42.1	24	60		
	No	44	57.9	16	40	3.361	0.067
Shoes	Yes	25	32.9	20	50		
	No	51	67.1	20	50	3.229	0.072
Medicament	Yes	24	31.6	14	35		
	No	51	67.1	26	65	0.637	0.727
Recreation	Yes	38	50	13	32.5		
	No	38	50	27	67.5	3.258	0.071
Radio/tape	Yes	11	14.5	10	25		
	No	65	85.5	30	75	1.959	0.162
Watch	Yes	15	19.7	6	15		
	No	61	80.3	34	85	0.397	0.529
Utensils	Yes	28	36.8	23	57.5	5.458	
	No	48	63.2	17	42.5		0.065
Bed	Yes	8	10.5	5	12.5	0.103	
	No	68	89.5	35	87.5		0.749
Jewelry	Yes	3	3.9	2	5.0	0.070	
	No	73	96.1	38	95		0.791
House	Yes	2	2.6	5	12.5	4.501	
	No	74	97.4	35	87.5		0.034
Construction materials	Yes	30	39.5	16	40	0.003	
	No	46	60.5	24	60		0.956

Source Own Survey and Computation, March 2009

Annex 5: Post-Hoc Comparisons using Scheffe Test (One-Way ANOVA)

Dependent Variable	(I) DIK	(J) DIK	MD(I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower bound	Upper bound
Cost of bean	1-5	6-10	-3.20000(*)	0.91578	0.011	-5.8397	-0.5603
		11-15	-0.70000	0.64755	0.761	-2.5665	1.1665
		>15	-0.46744	0.41507	0.737	-1.6638	0.7290
	6-10	1-5	3.20000(*)	0.91578	0.011	0.5603	5.8397
		11-15	2.50000	0.98916	0.107	-0.3512	5.3512
		>15	2.73256(*)	0.85521	0.024	0.2675	5.1976
Cost of wheat	1-5	6-10	0.10000	1.04767	1.000	-2.9198	3.1198
		11-15	-0.70000	0.74082	0.827	-2.8353	1.4353
		>15	-1.41163(*)	0.47485	0.041	-2.7803	-0.0429
Cost of onion	1-5	6-10	-0.10000	1.40463	1.000	-4.1487	3.9487
		11-15	3.80000(*)	0.99323	0.004	0.9371	6.6629
		>15	1.77209	0.63664	0.062	-0.0630	3.6071
	11-15	1-5	-3.80000(*)	0.99323	0.004	-6.6629	-0.9371
		6-10	-3.90000	1.51718	0.098	-8.2731	0.4731
		>15	-2.02791	0.85682	0.146	-4.4976	0.4418
tion chased	1-5	6-10	0.60000	0.33366	0.366	-0.3617	1.5617
		11-15	1.00000(*)	0.23593	0.001	0.3199	1.6801
		>15	0.53023(*)	0.15123	0.011	0.0943	0.9661
ean rchased	6-10	1-5	1.70000(*)	0.45714	0.006	0.3823	3.0177
		11-15	1.20000	0.49377	0.129	-0.2232	2.6232
		>15	1.55814(*)	0.42691	0.007	0.3276	2.7887

urce: Own Survey, March 2009

IK= Duration in the Kebele

** The mean difference is significant at the .05 level.*

MD= Mean Devation

Annex 6: Multiple Regression Results on the Amount of Cereals sold by Farmers (Coefficients Box)

Dependent Variables	Independent Variables	Un standardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
Teff sold (Quintal)	(Constant)	1.325	0.426		3.109	0.002
	Distance	-0.027	0.212	-0.013	10.126	0.900
	Age	-0.334	0.101	-0.295	-3.298	0.001
	Farm Size	0.126	0.086	0.138	1.464	0.146
	Oxen owned	0.135	0.071	0.192	1.906	0.59
	Farm input	-0.056	0.104	-0.059	-0.541	0.589
Barely sold (quintal)	(Constant)	-0.189	0.176		-1.073	0.286
	Distance	0.240	0.088	0.290	2.746	0.007
	Age	-0.059	0.042	-0.125	-1.404	0.163
	Farm Size	0.046	0.036	0.121	1.287	0.201
	Oxen owned	0.072	0.029	0.247	2.471	0.015
	Farm input	-0.046	0.043	-0.114	-1.060	0.292
Maize sold (Quintal)	(Constant)	0.450	0.215		2.088	0.039
	Distance	0.132	0.107	0.135	1.239	0.218
	Age	-0.142	0.051	-0.254	-2.775	0.006
	Farm Size	0.024	0.043	0.054	0.560	0.576
	Oxen owned	0.040	0.060	0.115	1.118	0.266
	Farm input	-0.080	0.053	-0.170	-1.530	0.129
Amount of wheat sold (Quintal)	(Constant)	-0.605	0.218		-2.771	0.007
	Distance	0.373	0.108	0.346	3.445	0.001
	Age	-0.049	0.052	-0.080	-0.947	0.346
	Farm Size	-0.017	0.044	-0.033	-0.375	0.709
	Oxen owned	0.070	0.036	0.183	1.930	0.056
	Farm input	0.082	0.053	0.158	1.543	0.126
Engdo sold in quintal	(Constant)	0.229	0.375		0.610	0.543
	Distance	0.424	0.186	0.245	2.278	0.025
	Age	-0.204	-0.204	0.089	-0.208	0.024
	Farm Size	0.082	0.076	0.0104	1.088	0.279
	Oxen owned	-0.001	0.062	-0.001	-0.012	0.990
	Farm input	-0.037	0.091	-0.045	-0.407	0.685
Oil seeds sold (Quintal)	(Constant)	1.160	0.376		3.085	0.003
	Distance	-0.178	0.187	-0.104	-0.954	0.342
	Age	-0.139	0.089	-0.143	-1.555	0.123
	Farm Size	-0.073	0.076	-0.093	-0.963	0.338
	Oxen owned	0.126	0.062	0.208	2.014	0.46
	Farm input	-0.074	0.092	-0.090	-0.808	0.421
Pulses sold (Quintal)	(Constant)	-0.359	0.191		-1.880	0.063
	Distance	0.199	0.095	0.205	2.101	0.038
	Age	-0.092	0.045	-0.167	-2.030	0.045
	Farm Size	0.002	0.039	0.005	0.052	0.959
	Oxen owned	0.025	0.032	0.074	0.802	0.424
	Farm input	0.159	0.047	0.340	3.408	0.001

Source: Own Survey and Computation, March 2009

Annex 7: Multiple Regression Results on Consumption Linkage of Hinterland Farmers (Coefficients Box)

Dependent Variables	Independent Variables	Un standardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
Expenditure on Soap (Birr)	(Constant)	-0.398	0.45		-0.855	0.395
	Distance	0.032	0.231	0.015	0.138	0.891
	Age	0.032	0.111	0.025	0.276	0.783
	Farm Size	0.199	0.094	0.203	2.122	0.036
	Oxen owned	0.092	0.077	0.121	1.189	0.237
	Farm input	0.155	0.114	0.150	0.368	0.174
Expenditure on Sugar/ Tea(Birr)	(Constant)	0.333	0.453		0.735	0.464
	Distance	0.091	0.225	0.044	0.404	0.687
	Age	0.000	0.108	0.000	-0.003	0.997
	Farm Size	0.053	0.092	0.056	0.579	0.564
	Oxen owned	0.173	0.075	0.235	2.294	0.024
	Farm input	0.129	0.111	0.129	1.169	0.245
Expenditure on coffee (Birr)	(Constant)	1.543	0.637		2.422	0.017
	Distance	0.664	0.316	0.227	2.100	0.038
	Age	-0.142	0.152	-0.085	-0.937	0.351
	Farm Size	0.069	0.129	0.052	0.539	0.591
	Oxen owned	0.248	0.106	0.240	2.346	0.021
	Farm input	-0.037	0.156	-0.026	-0.238	0.813
Expenditure on Pepper/ Spices(Birr)	(Constant)	1.580	0.688		2.298	0.023
	Distance	0.770	0.341	0.245	2.256	0.026
	Age	-0.228	0.164	-0.128	-1.394	0.166
	Farm Size	0.172	0.139	0.120	1.239	0.218
	Oxen owned	0.113	0.114	0.102	0.991	0.324
	Farm input	0.082	0.053	0.158	1.543	0.126
Expenditure on Radio/ Tape(Birr)	(Constant)	4.816	0.284		16.984	0.000
	Distance	-0.508	0.141	-0.384	-3.606	0.000
	Age	0.002	0.067	0.002	0.026	0.979
	Farm Size	-0.064	0.057	-0.106	-1.121	0.265
	Oxen owned	-0.032	0.047	-0.069	-0.681	0.497
	Farm input	0.097	0.069	0.152	1.401	0.164
Expenditure on utensils (Birr)	(Constant)	4.080	0.740		5.516	0.000
	Distance	-0.534	0.367	-0.159	-1.453	0.149
	Age	-0.486	0.176	-0.254	-2.763	0.007
	Farm Size	0.196	0.149	0.127	1.313	0.192
	Oxen owned	0.004	0.123	0.003	0.029	0.977
	Farm input	0.199	0.181	0.123	0.029	0.272
Expenditure on Watch (Birr)	(Constant)	0.184	0.188		0.977	0.331
	Distance	-0.165	0.093	-0.195	-1.761	0.081
	Age	0.031	0.045	0.065	0.693	0.490
	Farm Size	0.002	0.038	0.005	0.054	0.957
	Oxen owned	0.003	0.031	0.010	0.099	0.921
	Farm input	0.099	0.046	0.243	2.146	0.034

Source: Own Survey and Computation, March 2009

Annex 8: Multiple Regression Results on Consumption Linkage of Urban Households (ANOVA Box)

Dependent Variable	**Sum of Squares**			**Degree of Freedom**			**Mean square**		**F**	**Sig**
	REG	RES	Total	Reg.	Res.	Total	REG	RES		
Maize Purchased	16.978	141.956	158.933	3	56	59	5.659	2.535	2.233	0.094*
Wheat Purchased	9.107	74.493	83.600	3	56	59	3.036	1.330	2.282	0.089*
Barely Purchased	3.941	22.659	26.600	3	56	59	1.314	0.405	3.246	0.029*
Pea Purchased	5.742	43.108	48.850	3	56	59	1.914	0.770	2.486	0.070*
Onion Purchased	1.796	12.388	14.183	3	56	59	0.599	0.221	2.706	0.054*
Orange Purchased	1.278	9.455	10.733	3	56	59	0.426	0.169	2.523	0.067*
Mango Purchased	0.685	5.499	6.183	3	56	59	0.228	0.098	2.324	0.085*
Exp. on Maize	15.649	134.085	149.733	3	56	59	5.216	2.394	2.179	0.101*
Exp. on Wheat	21.703	100.631	122.333	3	56	59	7.234	1.797	4.026	0.012*
Exp. on Barley	5.821	36.112	41.933	3	56	59	1.940	0.645	3.009	0.038*
Exp. on Pea	27.057	129.927	156.983	3	56	59	9.019	2.320	3.887	0.014*
Exp. on Onion	36.131	204.852	240.983	3	56	59	12.044	3.658	3.292	0.027*
Exp. on Cabbage	6.941	66.992	73.933	3	56	59	2.314	1.196	1.934	0.135*
Exp. on Mango	2.500	33.684	36.183	3	56	59	0.833	0.601	1.385	0.257*

Source: Own Survey and Computation, March 2009 *Exp=Expenditure*

Reg= Regression *Res=Residuals*

** Predictors: (Constant), Education, Age , Duration in the town*

Annex 9: Multiple Regression Results on Consumption Linkage of Urban Households (Coefficients Box)

Dependent Variables	Independent Variables	Un standardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
Maize Purchased (kg)	(Constant)	0.886	0.804		1.103	0.275
	Age	-0.285	0.262	-0.183	-1.085	0.282
	Education	-0.406	0.280	-0.229	-1.453	0.152
	Duration	0.460	0.198	0.322	2.327	0.024
Wheat Purchased (kg)	(Constant)	-0.349	0.582		-0.599	0.551
	Age	0.126	0.190	0.112	0.665	0.509
	Education	0.163	0.203	0.126	0.802	0.426
	Duration	0.290	0.143	0.279	2.024	0.048
Barley Purchased (kg)	(Constant)	-0.478	0.321		-1.490	0.142
	Age	0.101	0.105	0.159	0.968	0.337
	Education	0.291	0.112	0.401	2.608	0.012
	Duration	0.091	0.079	0.156	1.158	0.252
Pea Purchased (kg)	(Constant)	0.529	0.443		1.194	0.238
	Age	0.219	0.145	0.254	1.517	0.135
	Education	0.380	0.154	0.386	2.467	0.017
	Duration	-0.172	0.109	-0.217	-1.581	0.119
Onion Purchased (kg)	(Constant)	1.412	0.237		5.949	0.000
	Age	-0.003	0.078	-0.007	-0.044	0.965
	Education	0.044	0.083	0.083	0.533	0.596
	Duration	-0.144	0.058	-0.338	-2.471	0.017
Orange Purchased (kg)	(Constant)	0.480	0.207		2.314	0.024
	Age	-1.151	0.068	-0.374	-2.232	0.030
	Education	-0.004	0.072	-0.008	-0.051	0.959
	Duration	0.038	0.051	0.103	0.754	0.454
Mango Purchased (kg)	(Constant)	0.419	0.158		2.648	0.010
	Age	-0.122	0.052	-0.397	-2.363	0.022
	Education	0.043	0.055	-0.123	-0.782	0.437
	Duration	0.007	0.039	0.025	0.181	0.857

Source: Own Survey and Computation, March 2009

Annex 10: Multiple Regression Results on Consumption Linkage of Urban Households (Coefficients Box)

Dependent Variables	Independent Variables	Un standardized Coefficients		Standardized Coefficients	t	Sig
		B	Std. Error	Beta		
Exp. on Maize (Birr)	(Constant)	0.912	0.781		1.167	0.248
	Age	-0.310	0.255	-0.205	-1.216	0.229
	Education	-0.336	0.272	-0.195	-1.237	0.221
	Duration	0.466	0.192	0.336	2.427	0.018
Exp on Wheat (Birr)	(Constant)	-0.295	0.677		-0.436	0.665
	Age	0.212	0.221	0.155	0.960	0.341
	Education	0.004	0.235	-0.002	0.015	0.988
	Duration	0.425	0.166	0.339	2.554	0.013
Exp. on Barley (Birr)	(Constant)	-0.593	0.405		-1.464	0.149
	Age	0.134	0.132	0.168	1.012	0.316
	Education	0.360	0.141	0.394	2.552	0.013
	Duration	0.104	0.100	0.142	1.047	0.300
Exp. on Pea (Birr)	(Constant)	1.666	0.769		2.167	0.034
	Age	0.227	0.251	0.147	0.904	0.370
	Education	0.630	0.268	0.357	2.354	0.022
	Duration	-0.461	0.189	-0.324	-2.437	0.018
Exp. on Onion (Birr)	(Constant)	4.022	0.965		4.167	0.000
	Age	-0.216	0.315	-0.112	-0.684	0.497
	Education	0.319	0.336	0.146	0.590	0.346
	Duration	-0.470	0.238	-0.267	-1.977	0.050
Exp. on Cabbage (Birr)	(Constant)	1.249	0.552		2.263	0.028
	Age	-0.310	0.180	-0.292	-1.718	0.091
	Education	-0.393	0.192	-0.324	-2.045	0.046
	Duration	0.223	0.136	0.229	1.642	0.106
Exp. on Mango (Birr)	(Constant)	0.725	0.391		1.853	0.069
	Age	-0.258	0.128	-0.348	-2.021	0.048
	Education	-0.146	0.136	-0.172	-1.071	0.289
	Duration	0.098	0.096	0.143	1.017	0.314

Source: Own Survey and Computation, March, 2009

Annex11: Frequency, Transport mode and Purpose of Visit from Wonka to Debre Markos

	Purpose of travel to *Debre Markos* Town						
Frequency	Market	Education	Medication	ADMN	FV	INFO	EMPL
Daily	-	24 (31.6)	1 (1.3)	2(2.6)	0(0.0)	1 (1.3)	2(2.6)
TTPW	28(36.8)	0 (0.0)	0 (0.0)	2 (2.6)	0(0.0)	1(1.3)	3 (3.6)
OITW	30(39.5)	2(2.6)	2(2.6)	2 (2.6)	3(3.9)	2(2.6)	0(0.0)
Monthly	7(9.2)	0(0.0)	5(6.6)	4(5.3)	6(7.9)	3(3.9)	1(1.3)
OITM	11(14.5)	0(0.0)	9(11.8)	5(6.6)	11(14.5)	1(1.3)	0(0.0)
Never go	0(0.0)	49(64.5)	59(70)	61(80.3)	56(73.7)	68(89.5)	70(92.1)
Transport mode							
On foot	40(52.6)	25(32.9)	6(7.9)	6(7.9)	8(10.5)	6(7.9)	3(3.9)
Animal back	3(3.9)	0(0.0)	0(0.0)	1(1.3)	0(0.0)	0(0.0)	0(0.0)
Vehicle	33(43.4)	2(2.6)	11(14.8)	8(10.5)	12(15.8)	2(2.6)	3(3.9)
Actors in the family							
Husband	27(38.2)	3(3.9)	8(10.5)	14(18.4)	13(17.1)	7(9.2)	4(5.3)
Wife	29(38.2)	0(0.0)	2(2.6)	1(1.3)	2(2.6)	0(0.0)	0(0.0)
Children	6(7.9)	24(31.6)	2(2.6)	0(0.0)	0(0.0)	1(1.3)	1(1.3)
All	14(8.4)	0(0.0)	5(6.6)	0(0.0)	5(6.6)	0(0.0)	1(1.3)

Source: Own Survey, March 2009 ** Figures in parenthesis are percentages*

TTPW refers three times per week

EMPL = Employment

INFO = Information

OITM = Once in two months

ADMN= Administration

OITW=Once in two weeks

FV = Family Visit

Annex 12: Frequency, Transport mode and Purpose of Visit from Qebi to Debre Markos

	Purpose of travel to *Debre Markos* Town						
Frequency	Market	Education	Medication	ADMN	FV	INFO	EMPL
Daily	-	25 (62.5)	1 (1.5)	0(0.0)	1(2.5)	0 (0.0)	3(7.5)
TTPW	15(37.5)	0 (0.0)	0 (0.0)	0(0.0)	0(0.0)	1(2.5)	1 (2.5)
OITW	16(40)	0(0.0)	0(0.0)	2 (5.0)	7(17.5)	0(0.0)	1(2.5)
Monthly	5(12.5)	0(0.0)	3(7.5)	0(0.0)	2(5.0)	1(2.5)	0(0.0)
OITM	4(10)	0(0.0)	8(20)	1(2.5)	2(5.0)	1(2.5)	0(0.0)
Never go	0(0.0)	15(37.5)	28(70)	37(92.5)	28(70)	37(92.5)	35(87.5)
Transport mode							
On foot	36(90)	25(62.5)	10(25)	1(2.5)	11(27.5)	1(2.5)	4(10)
Animal back	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Vehicle	4(10)	0(0.0)	2(5.0)	2(5.0)	1(2.5)	2(5.0)	1(2.5)
Actors in the family							
Husband	18(45)	1(2.5)	6(15)	3(7.5)	3(7.5)	2(5.0)	3(7.5)
Wife	14(35)	0(0.0)	1(2.5)	4(10)	4(10)	0(0.0)	2(5.0)
Children	1(2.5)	24(60)	2(5.0)	5(12.5)	0(0.0)	1(2.5)	0(0.0)
All	7(17.5)	0(0.0)	3(7.5)	0(0.0)	5(12.5)	0(0.0)	0(0.0)

Source: Own Survey, March 2009 *TTPW refers three times per week* *INFO refers information*

OITW refers once in two weeks *OITM refers once in two month* *FV refers family Visit*

EMPL refers employment *ADMN refers administration*

** Figures in parenthesis are percentages*

Annex13. Vegetables, Dairy Products and Fuel Wood Purchased by Urban Households per Month

				Suppliers			Market Place		
Type	RHH	AAP	AVC	Farmers	Traders	WS	DMT	FG	Others
Onion	57(95)	3.42	25.70	11(19.2)	42(73.6)	4(7.1)	55(96.5)	-	2(3.6)
Tomato	43(71.7)	5.7	10	15(34.9)	26(60.4)	2(4.7)	43(100)	-	-
Potato	42(70)	6.4	15.60	19(45.2)	22(52.4)	1(2.4)	41(97.6)	1(2.4)	-
Pepper	47(78.3)	5.63	26.20	11(23.4)	33(70.2)	3(6.4)	47(100)	-	-
Cabbage	25(41.7)	5.0	10	13(52)	11(44)	1(4.0)	25(100)	-	-
Banana	20(33.3)	5.0	14	10(50)	9(45)	1(5.0)	18(90)	2(10)	-
Carrot	20(33.3)	5.0	10	10(50)	9(45)	1(5.0)	19(95)	1(5.0)	-
Orange	14(23.3)	5.0	14.30	13(64.3)	4(26.6)	1(7.1)	15(92.9)	1(7.1)	-
Radish	14(23.3)	5.0	9.30	10(71.4)	3(21.4)	1(7.2)	14(100)	-	-
Mango	7(11.7)	5.0	13.60	3(42.9)	3(42.9)	1(14.2)	6(86)	1(14)	-
Avocado	2(3.3)	5.0	10	1(50)	1(50)	-	2(100)	-	-
Citron	2(3.3)	5.0	15	1(50)	1(50)	-	2(100)	-	-
Milk	8(13.3)	15.6	36.25	2(25)	6(75)	-	8(1000	-	-
Butter	17(28.3)	5.0	57.05	7(41.2)	10(58.8)	1(5.9)	17(100)	-	-
Cheese	2(3.3)	5.0	10	-	2(100)	-	2(100)	-	-
Charcoal	48(80)	17.8	39.20	41(87.2)	7(12.8)	-	47(97.9)	1(2.1)	-
Fuel wood	41(68.3)	17.7	37.9	35(85.4)	6(14.6)	-	40(97.6)	1(2.4)	-

Source Own Survey, March 2009
RHH=Reporting HH
AVC=Average Cost incurred per HH
Figures in parenthesis are percentages
AAP=Average Amount Purchased per HH
WS=Whole Sellers FG=Farm Gate

Annex 14: Land allotted, Cereals Produced and Amount Sold in the Hinterland

Crop Type	Variables	N	Min.	Max.	Mean	Std. D	Variance
Teff	Land allotted	116	.00	6.00	3.2586	1.63186	2.663
	Amount produced	116	.00	5.00	2.8362	1.44429	2.060
	Amount sold	116	.00	4.00	0.7500	0.94983	0.902
Barley	Land allotted	116	.00	4.00	0.4138	0.71102	0.506
	Amount produced	116	.00	5.00	0.5086	0.91837	0.843
	Amount sold	116	.00	2.00	0.0948	0.39515	0.156
Maize	Land allotted	116	.00	5.00	0.8017	0.78264	0.612
	Amount produced	116	.00	4.00	0.9138	0.91906	0.845
	Amount sold	116	.00	3.00	0.1552	0.46818	0.219
Wheat	Land allotted	116	.00	4.00	0.6000	0.88655	0.786
	Amount produced	116	.00	5.00	0.7500	1.14872	1.320
	Amount sold	116	.00	3.00	0.1478	0.51714	0.267
Engdo	Land allotted	117	.00	5.00	0.6638	0.91313	0.834
	Amount produced	116	.00	5.00	1.1121	1.52527	2.326
	Amount sold	116	.00	5.00	0.2586	0.82484	0.680
Oil seeds	Land allotted	116	.00	4.00	0.7089	0.76916	0.592
	Amount produced	116	.00	4.00	0.5948	0.57451	0.330
	Amount sold	116	.00	2.00	0.5517	0.81662	0.667
Pulses	Land allotted	116	.00	5.00	0.6379	0.97264	0.946
	Amount produced	116	.00	5.00	0.6897	1.09872	1.207
	Amount sold	116	.00	2.00	0.1724	0.46205	0.213

Source: Own Survey, March 2009

Annex 15: Demographic Characteristics of Sample Rural Households

		Frequency	Percentage	Valid%.	Cumm. %
Sex	Male	85	73.3	73.3	73.3
	Female	31	26.7	26.7	100
	Total	116	100	100	
Marital Status	Married	106	91.4	91.4	91.4
	Unmarried	7	6.0	6.0	97.4
	Divorced	1	0.9	0.9	98.3
	Widowed	2	1.7	1.7	100
	Total	116	100	100	
Educational Level	Illirate	37	31.9	31.9	31.9
	Informal Edu.	2	1.7	1.7	33.6
	Adult Edu.	38	32.8	32.8	66.4
	Pri & Junior	26	22.4	22.4	88.8
	Secondary	12	10.3	10.3	99.1
	Secondary+	1	0.9	0.9	100
	Total	116	100	100	
Age of the Household	15-30	11	9.5	9.5	9.5
	31-45	31	26.7	26.7	36.2
	46-65	57	49.1	49.1	85.3
	65+	17	14.7	14.7	100
	Total	116	100	100	

Source: Own Survey, March 2009

Annex 16: Demographic Characteristics of Sample Urban Households

		Frequency	Percentage	Valid %.	Cumm.%
Sex	Male	24	40	40	40
	Female	36	60	60	100
	Total	60	100	100	
Marital Status	Married	27	45	45	45
	Unmarried	12	20	20	65
	Divorced	7	11.7	11.7	76.7
	Widowed	14	23.3	23.3	100
	Total	60	100	100	
Educational Level	Illirate	14	23.3	23.3	23.3
	Read& Write	4	6.7	6.7	30
	Primary	10	16.7	16.7	46.7
	Junior	15	25	25	71.7
	Secondary	13	21.7	21.7	93.3
	Secondary+	4	6.7	6.7	100
	Total	60	100	100	
Age of the Respondents	15-30	20	33.3	33.3	33.3
	31-45	12	20	20	53.3
	46-65	22	36.7	36.7	90
	65+	6	10	10	100
	Total	60	100	100	

Source: Own Survey, March 2009

Declaration

I declare that, Challenges and Prospects of Rural-Urban Marketing Linkages in Debre Markos and its Hinterland is my own unaided work and all the sources that I have used or quoted have been indicated and acknowledged by means of complete reference.

Muluadam Alemu Bekele

This thesis has been submitted for examination with my approval as an academic advisor.

Mulugeta Abebe (PhD)

July 2009

Addis Ababa, Ethiopia