## Contents

Acknowledgements ................................................................. i
List of Tables ........................................................................... v
List of Figures ........................................................................... viii
List of Abbreviations ................................................................. x

1 Introduction ........................................................................... 1
  1.1 Statement of the Problem .................................................. 2
  1.2 Research Objectives ......................................................... 3
  1.3 Research Questions .......................................................... 4
  1.4 Organization of the Study ................................................... 5
  1.5 Literature Review ............................................................. 5

2 Approaches to Explain Income Generation by Private Households 9
  2.1 Income Generation Supplying Labor ..................................... 9
     2.1.1 Theory of Labor Supply ............................................. 9
     2.1.2 The Mincer Model .................................................. 13
  2.2 Income Generation by Producing and Selling Goods ............. 17

3 Research Methodology ......................................................... 21
  3.1 Sampling, Data Collection and Analysis ................................. 21
     3.1.1 Sampling Techniques ............................................. 22
     3.1.2 Data Analysis ..................................................... 23
  3.2 Operationalization of Key Concepts ..................................... 24
     3.2.1 Household Income ................................................ 24
  3.3 The Mincer Model ........................................................... 26
  3.4 The Production Function ................................................... 28
  3.5 Measurement of Household Income Inequality ....................... 29
     3.5.1 The Lorenz Curve as a Measure of Income Inequality .... 30
     3.5.2 The Gini-Coefficient as a Measure of Income Inequality .. 30
     3.5.3 The Quintile as a Measure of Income Inequality ........... 31
     3.5.4 An Analysis of Variance as a Measure of Income Inequality . 32
     3.5.5 The Theil Index as a Measurement of Income Inequality .. 32

4 Descriptive Analysis of Income and Activities .......................... 34
  4.1 The Study Area ............................................................. 34
  4.2 Household Characteristics ................................................. 35
CONTENTS

4.3 Household Size of the Sample Households ........................................... 37
4.4 Provinces and Household Composition .................................................. 39
4.5 Age of Household Heads in the Research Area ......................................... 39
4.6 The Educational Level of Sample Households in each Province ................. 41
4.7 Income Sources of Sample Households .................................................. 42
4.8 Income and Activities ................................................................. 43
4.9 Sources of Household Income of the Sample Household in Urban Areas ...... 44
4.10 Sources of Household Income of the Sample Household in Rural Areas ...... 45

5 Measurement of Income Inequality ......................................................... 47
  5.1 Income Inequality Among the Sample Households .................................... 47
  5.2 Measurement of Income Inequality by the Lorenz Curve in the Sample Households ............................................................. 48
  5.3 Measurement of Income Inequality by Analysis of Variance ..................... 51
  5.4 The Theil Index as a Measure of Income Inequality .................................. 52
  5.5 Quintile Income Inequality in a Sample Household .................................. 54
  5.6 Quintile Income Inequality in Sample Households of Five Provinces ......... 56

6 The Contribution of the Different Sources of Income to Monthly Income of the Sample Households ......................................................... 59
  6.1 Sources of Household Income in the Study Areas .................................... 59
    6.1.1 Non-Farm Sources of Household Income ........................................ 59
    6.1.2 Farm Sources of Household Income ............................................. 60
  6.2 Household Income from Different Sources ............................................ 61
    6.2.1 Income of Households from Different Sources ................................ 61
  6.3 The Application of the the Mincer Earning Regression Model in the Form of a Multiple Regression Analysis .............................................. 63
    6.3.1 The Justification of the Mincer Model Variables ............................... 64
    6.3.2 The Assumption of the Multiple Regression Analysis Regarding the the Mincer Model ............................................................ 66
  6.4 Quintile Regression ........................................................................... 70
  6.5 Justification and Description of Quantile Regression Results .................... 74
    6.5.1 Slope Equality Testing for Quantile Regression ................................ 76
    6.5.2 Wald Test or Symmetry Test ......................................................... 77
  6.6 Application of the Production Function on to Monthly Income of Households .................................................................................... 77
  6.7 Justification of the Variables Results of the Production Function ............... 80

7 A Separate Analysis of the Mincer Regression Model for the Five Provinces .... 82
  7.1 The Chow Test or a Structural Break Test of Sample Data ....................... 82
  7.2 An Econometric Analysis of Variables for Each Province ........................ 83
7.2.1 Factors Effecting the Household Income in Kabul Province ........................................ 83
7.2.2 Factors Effecting the Household Income in Herat Province ........................................ 85
7.2.3 Factors Effecting the Household Income in Kandahar Province ................................... 87
7.2.4 Factors Effecting the Household Income in Nangarhar Province .................................. 88
7.2.5 Factors Effecting the Household Income in Balkh Province ........................................ 90
7.3 Estimation of Pooled Data ..................................................................................................... 91

8 A Separate Analysis of the Cobb-Douglas Production Function for the Five Provinces 97
8.1 The Chow Test or a Structural Break Test of Samples of Data .......................................... 97
8.2 An Econometric Analysis of Variables for Each Province ............................................... 98
     8.2.1 Factors Effecting the Household Income in Kabul Province ..................................... 98
     8.2.2 Factors Effecting the Household Income in Herat Province ..................................... 100
     8.2.3 Factors Effecting the Household Income in Kandahar Province ................................ 101
     8.2.4 Factors Effecting the Household Income in Nangarhar Province ................................ 102
     8.2.5 Factors Effecting the Household Income in Balkh Province ..................................... 104
8.3 Estimation of Pooled Data ..................................................................................................... 105

9 Household Income Sources in Urban and Rural Areas of Afghanistan 111
9.1 Analysis of Income Sources in Urban and Rural Areas by Mincer Model 111
     9.1.1 Differences of Regression Equations between Urban and Rural Regions in Afghanistan ........................................ 112
     9.1.2 Differences in Rural Areas Across the Five Provinces ............................................. 116
     9.1.3 Differences in Urban Areas Across the Five Provinces ............................................. 120
9.2 Difference between Urban and Rural Regions ................................................................. 123
     9.2.1 Kabul Province ........................................................................................................... 124
     9.2.2 Herat Province .......................................................................................................... 125
     9.2.3 Kandahar Province .................................................................................................... 125
     9.2.4 Nangarhar Province .................................................................................................. 126
     9.2.5 Balkh Province ......................................................................................................... 126
9.3 Analysis of Income Sources in Urban and Rural Areas by the Cobb-Douglas Production Function ................................................................................................................. 127
     9.3.1 Differences in Rural Areas Across the Five Provinces ............................................. 130
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.3.2 Differences in Urban Areas Across the Five Provinces</td>
<td>134</td>
</tr>
<tr>
<td>9.4 Difference between Urban and Rural Regions</td>
<td>136</td>
</tr>
<tr>
<td>9.4.1 Kabul Province</td>
<td>137</td>
</tr>
<tr>
<td>9.4.2 Herat Province</td>
<td>138</td>
</tr>
<tr>
<td>9.4.3 Kandahar Province</td>
<td>138</td>
</tr>
<tr>
<td>9.4.4 Nangarhar Province</td>
<td>139</td>
</tr>
<tr>
<td>9.4.5 Balkh province</td>
<td>139</td>
</tr>
<tr>
<td>10 A Comparison of the Sources of Household Income in 2009 and 2015</td>
<td>141</td>
</tr>
<tr>
<td>10.1 Methodology and Sampling Techniques</td>
<td>141</td>
</tr>
<tr>
<td>10.2 Sources of Income Reported by Households in 2009 and 2015</td>
<td>142</td>
</tr>
<tr>
<td>10.3 Comparison of Average Monthly Household Income in the Five Provinces</td>
<td>143</td>
</tr>
<tr>
<td>10.4 Effect of Household Size and the Income of Households</td>
<td>144</td>
</tr>
<tr>
<td>10.5 Average Income Sources between 2009 and 2015</td>
<td>145</td>
</tr>
<tr>
<td>10.6 Results for the Mincer Model Compared between 2009 and 2015</td>
<td>147</td>
</tr>
</tbody>
</table>

11 Summary 150

Bibliography 153

Appendices 161

.1 Appendix I 162
.2 Appendix II 167
.3 Appendix III 172
.4 Appendix IV 182
.5 Appendix V 187
.6 Appendix VI - Questionnaire 197
.7 Appendix VII - Curriculum Vitae 203