Effective Financial Development, Inequality and Poverty

Submitted by
Humaira Asad
to the University of Exeter as a thesis for the degree of
Doctor of Philosophy in Economics
In February 2012

This thesis is available for Library use on the understanding that it is copyright material and that no quotation from the thesis may be published without proper acknowledgement.

I certify that all material in this thesis which is not my own has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: Humaira Asad
Acknowledgements

Alhamdolillah! I am about to finish this long and exhausting journey of my Ph.D. that took almost four years. This thesis that covers all the efforts I have made during this period will be incomplete if I do not mention the names of the people who made this adventure less difficult and helped me in moving on to the end. I am grateful to my supervisors, Professor John Maloney and Professor James Davidson, who helped me in becoming a researcher from a simple student. I must acknowledge the timely and critical feedback on my drafts by Professor John. Without Professor James, it would have not been possible for me to experiment with very sophisticated econometric techniques. The guidance and suggestions by Professor John and Professor James always stimulated me to learn and try new things. That certainly helped me in learning a lot and in developing my research from a proposal of four pages into a Ph.D. thesis. I am also thankful to Punjab University, Lahore Pakistan for granting the scholarship to me. I am particularly thankful to Professor Steve McCorriston for giving me the GTA-ship that certainly eased my financial worries.

I would also like to thank Dr. Joao Madeira for helping me with the theoretical model. I would also like to thank Dr. Surajeet Chakravarty for giving me the tip of incorporating stock markets in the analysis during the PGR Conference. I thank Dr. Jack Rogers for his useful suggestions given to me on many occasions on different aspects like Scientific Workplace and writing. It is important to mention the efforts of Dr. Christopher Wood, and all the speakers and presenters arranged by Effective Researcher Development Program (ERDP). Surely, their suggestions helped me in planning and carving my work and all other areas such as efficient reading and academic writing, etc. I particularly thank Patrick Overy and the staff of library for always helping me whenever I needed their help. I am also very grateful to the office and IT staff, especially Helen Bell, Emma Roberts, Trevor Sharp and Jan Adkins for always being very helpful to me. I would also like to thank David Roodman, Christopher F. Baum, Mark Bryan, Georgios Marios Chrysanthou, Dr Carlos Cortinhas, Dr. Rajesh Tharyan and many experts on the statalist for helping me with Stata and other econometric problems related to model specification etc.

I am also very grateful for the emotional support and advice on many issues by my friends. I also thank my colleagues at IBA, Punjab University, for their motivation and support. I also owe my deepest gratitude to my grandmother and my maternal uncles for their prayers for me. I pay my deepest gratitude to my father Muhammad Yaqoob Asad, my brothers Waqas Asad, Abuzar Asad and Obaidullah Asad and my sisters-in-law Naseera Bilal and Saima Waqas for taking care of my children during my long absence. I render my special thanks to my brother
Muhammad Bilal Asad for the motivation, emotional support and for always being there for me whenever I needed his help.

I offer my deepest gratitude to my mother Saeeda Asad, without whom it would not have been possible to do this Ph.D. I thank her for her un-ending support and encouragement. I especially thank her for taking care of my two little kids like a mother, who were infants when I handed them over to her, when I came here to Exeter for my Ph.D., and she is still looking after them when they have grown as big kids. Finally, I want to say thank you to my little daughter Maryam and my son Muhammad Ahmad for bearing the pain of being away from their mother for such a long time. I missed all those beautiful years when they were growing up and moving on from their infancy to being toddlers.

I dedicate this thesis to my mother, Saeeda Asad and my little stars Maryam and Muhammad.
2.3.1 Structure of the panel dataset ................................................. 25
2.3.2 Control Variables ................................................................. 28
2.4 Contemporaneous Relationship- Inequality and Growth .................. 29
  2.4.1 Theoretical Framework ......................................................... 29
  2.4.2 Empirical Methodology ....................................................... 31
  2.4.3 Hypotheses Testing and Policy Implications .............................. 33
  2.4.4 Panel Data Estimation Techniques ......................................... 34
  2.4.5 Why System Generalized Method of Moments (GMM)? ............... 35
  2.4.6 Empirical Analysis ............................................................. 36
  2.4.7 Empirical Results-All Countries Data set ............................... 38
  2.4.8 Empirical Results-Developing and Developed Countries Data sets .... 42
  2.4.9 Regional Analysis .............................................................. 51
  2.4.10 Robustness Checks ............................................................ 51
  2.4.11 Comparison with Previous Studies ....................................... 52
  2.4.12 Hypotheses Testing and Policy Implications ............................ 54
2.5 Initial Inequality and Economic Growth ...................................... 55
  2.5.1 Theoretical Framework ....................................................... 55
  2.5.2 Empirical Methodology ....................................................... 56
  2.5.3 Hypothesis Testing and Policy Implications .............................. 58
  2.5.4 Panel Data Estimation Techniques ......................................... 59
  2.5.5 Why Generalized Method of Moments (GMM)? .......................... 59
  2.5.6 Empirical Analysis ............................................................. 60
  2.5.7 Empirical Results-All Countries Data set ............................... 60
  2.5.8 Empirical Results-Developing Countries Data set ..................... 62
  2.5.9 Regional Analysis .............................................................. 64
  2.5.10 Initial Inequality, Growth and Democracy ............................... 68
3.8.2 Proxy Measures of Economic Growth and Economic Activity .......................... 128
3.8.3 Income Inequality .......................................................................................... 128
3.8.4 Human Capital .............................................................................................. 129
3.8.5 Financial Instability ....................................................................................... 130
3.8.6 Control Variables .......................................................................................... 130
3.8.7 Instrumental Variables ................................................................................... 131
3.8.8 Linearity of Relationships ............................................................................. 134
3.9 Empirical Analysis ......................................................................................... 137
3.9.1 Summary Statistics and Correlation ............................................................. 137
3.9.2 Empirical Results-All Countries Data set ..................................................... 140
3.9.3 Initial Values of GDP per capita and Gini Index ......................................... 156
3.9.4 Legal origins as the Instrumental Variables ............................................... 156
3.9.5 Lagged dependent variable .......................................................................... 157
3.9.6 Windmeijer’s Corrected Standard Errors ..................................................... 158
3.9.7 Empirical Results-Developing Countries ..................................................... 159
3.9.8 A Note on the Number of Clusters ............................................................... 166
3.10 Robustness Checks ....................................................................................... 169
3.10.1 Check for Omitted Variables ...................................................................... 170
3.10.2 Alternative Sample Composition ................................................................. 171
3.10.3 Robustness across Time Periods .................................................................. 171
3.10.4 Inclusion of Quadratic Terms ....................................................................... 171
3.10.5 Alternative Indicator of Dependent Variable ............................................. 171
3.10.6 Comparison with Previous Studies ............................................................. 173
3.11 Hypothesis Testing and Policy Implications .................................................... 175
3.12 Conclusions ..................................................................................................... 180
Chapter 4 Effective Financial Development and Poverty ........................................ 189
4.8 Empirical Analysis ......................................................................................................213
4.8.1 Summary Statistics and Correlation ................................................................. 215
4.8.2 Empirical Results-All Countries Data set ....................................................... 218
4.8.3 Poverty Gap at $2 a day ..................................................................................222
4.8.4 Poverty Gap at $1.25 a day ........................................................................... 225
4.8.5 Poverty Headcount Ratio at $2 a day ............................................................... 227
4.8.6 Empirical Results-Developing Countries Data set ......................................... 229
4.8.7 Regional analysis .......................................................................................... 247
4.8.8 Governance Indicators .................................................................................. 254
4.8.9 Diagnostic Checks ........................................................................................ 254
4.9 Robustness Checks ............................................................................................ 255
4.9.1 Omitted Variables ......................................................................................... 255
4.9.2 Alternative Indicators of the Dependent Variable ........................................ 255
4.9.3 Alternative Sample Composition ................................................................... 257
4.9.4 Robustness across Time Periods ................................................................... 257
4.9.5 Inclusion of Quadratic Terms ......................................................................... 257
4.9.6 Comparison with Previous Studies ................................................................. 258
4.10 Hypotheses Testing and Policy Implications ................................................... 261
4.11 Conclusions .......................................................................................................267

Chapter 5 Conclusions ...............................................................................................273
5.1 Summary of Findings ......................................................................................... 273
5.2 Contribution to Literature ................................................................................ 274
5.3 Policy Implications and Directions for Further Research .................................276
5.3.1 Further Research ......................................................................................... 276
5.4 Limitations .......................................................................................................... 277
5.5 Conclusion ..........................................................................................................277
References .................................................................................................................................................. 278
Appendix: A List of Abbreviations .................................................................................................................. 302
Appendix: B Summary of Variables .................................................................................................................. 303
Appendix: C Classification of Countries in Income Groups .............................................................................. 313
Appendix: D List of Countries and Regions ..................................................................................................... 314
Appendix: E Summary Statistics - Data set covering 53 Developing Countries .............................................. 315
Appendix: F Notes on Econometric Concepts Applied ..................................................................................... 316

List of Tables
Table 2.1 Summary Statistics .......................................................................................................................... 37
Table 2.2 Correlation Matrix ............................................................................................................................. 38
Table 2.3 Kuznets’ Hypothesis .......................................................................................................................... 45
Table 2.4 Kuznets’ Hypothesis - Choice of Instruments ..................................................................................... 46
Table 2.5 Kuznets’ Hypothesis - All, Developing & Developed Countries Datasets ..................................... 47
Table 2.6 Kuznets’ Hypothesis - Developing Countries .................................................................................. 48
Table 2.7 Kuznets’ Hypothesis - Developed Countries ................................................................................... 49
Table 2.8 Kuznets’ Hypothesis - Regional Analysis ......................................................................................... 50
Table 2.9 Economic Growth and Initial Income Inequality ............................................................................... 65
Table 2.10 Economic Growth and Initial Income Inequality - Developing and Developed Countries ........ 66
Table 2.11 Economic Growth and Initial Income Inequality - Regional Analysis ........................................ 67
Table 2.12 Economic Growth and Initial Income Inequality - Full Democracies ........................................... 74
Table 2.13 Economic Growth and Initial Income Inequality - Flawed Democracies .................................... 75
Table 2.14 Economic Growth and Initial Income Inequality - Hybrid Regimes ............................................. 76
Table 2.15 Economic Growth & Initial Income Inequality - Authoritarian Regimes ..................................... 77
Table 2.16 Economic Growth, Initial Income Inequality and Type of Government - A Comparison .............. 78
Table 2.17 Growth Rate of Income of the Lowest 20 percent ................. 85
Table 3.1 First stage G2SLS results with two types of instrumental variables .... 135
Table 3.2 Summary Statistics ..................................................... 138
Table 3.3 Correlation Matrix ........................................................ 139
Table 3.4 Comparison of Different Estimators .................................... 145
Table 3.5 Private Credit by Banks-Developed & Developing Countries ......... 146
Table 3.6 Private Credit by Banks & Other Institutions-Developed & Developing Countries ................................................................. 147
Table 3.7 Stock Market Capitalization-Developed & Developing Countries ...... 148
Table 3.8 Comparison between the Coefficients of three indicators of financial development .......................................................... 152
Table 3.9 Initial Values of GDP per capita and Income Inequality .............. 153
Table 3.10 Estimates With and Without Windmeijer’s Correction ............... 154
Table 3.11 Comparison-Lagged values of Regressors and Legal Origins .......... 155
Table 3.12 Private Credit by Banks-Developing Countries ....................... 160
Table 3.13 Private Credit by Banks & Other Institutions-Developing Countries .. 163
Table 3.14 Developing Countries- Less Time-Variant Factors and Choice of Estimator ................................................................. 164
Table 3.15 Stock Market Capitalization-Developing Countries .................. 167
Table 3.16 Stock Market Capitalization-Developing Countries- Less Time-Variant Factors ................................................................. 168
Table 3.17 Partial Derivatives evaluated at Mean, Max & Min values ............ 176
Table 3.18 Bank Deposits-Developed & Developing Countries ................... 184
Table 3.19 Liquid Liabilities -Developed & Developing Countries ............... 185
Table 3.20 Robustness Check- 1980-2010 ............................................ 186
Table 3.21 Robustness Checks-Bank Deposits and Liquid Liabilities ............ 187
Table 4.20 Poverty Gap at $ 1.25 a day-Developing Countries (3/3) .................................................. 250
Table 4.21 Poverty Headcount Ratio at $ 1.25 a day-Developing Countries (1/3) .. 251
Table 4.22 Poverty Headcount Ratio $ 1.25 a day-Developing Countries (2/3) . . . . . . . . . . . . . . . . . . . . . . . . . . . 252
Table 4.23 Poverty Headcount Ratio $ 1.25 a day-Developing Countries (3/3) . . . . . . . . . . . . . . . . . . . . . . . . . . . 253
Table 4.24 Poverty Headcount Ratio at $ 1.25 a day-Developed & Developing Countries (1/4) ........................................................................................................ 269
Table 4.25 Poverty Headcount Ratio at $ 1.25 a day-Developed & Developing Countries (2/4) ........................................................................................................ 270
Table 4.26 Poverty Headcount Ratio at $ 1.25 a day-Developed & Developing Countries (3/4) ........................................................................................................ 271
Table 4.27 Poverty Headcount Ratio at $ 1.25 a day-Developed & Developing Countries (4/4) ........................................................................................................ 272

List of Figures

Figure 1.1 Theoretical Framework showing inter-relationship among Financial Development, Human Capital, Economic Growth, Income Inequality, Financial Instability and Poverty .......................................................... 11
Figure 2.1 Income Inequality and Economic Growth-Kuznets’ Hypothesis .................................................................. 32
Figure 2.2 Kuznets’ Curve: Inverted U Hypothesis .................................................................................................. 39
Figure 2.3 Kuznets’ Curve: Developing countries, Developed countries and All .................. 39
Figure 2.4 Initial Inequality and Economic Growth .................................................................................................. 57
Figure 3.1 Mechanism of Effective Financial Development influencing Income Inequality ........................................................................................................ 105
Figure 3.2 Gini Coefficient and GDP growth rate .................................................................................................. 182
Figure 3.3 Gini Coefficient and the Ratio of Private Credit to GDP ............................................................................. 182
Figure 3.4 Changes in Gini coefficient in Developed and Developing Countries-1960 to 2010 .................................................................................................. 183
Figure 4.1 Mechanism of Effective Financial Development influencing Poverty .................. 201
Figure 4.2 Measures of Poverty-Developing Countries (1980-2010) .................................................. 219
Figure 4.3 Measures of Financial Dev-Developing Countries (1980-2010) ....... 220

Figure 4.4 Measures of Human Capital Accumulation-Developing Countries (1980-2010) ................................................................. 221

Figure 4.5 Partial derivatives - Developing Countries ......................... 264
Abstract

This thesis addresses the question, whether the impact of financial development on the relative and absolute indicators of poverty is dependent on the levels of the human capital present in an economy. To answer this question, first we develop a theoretical framework to explain the growth process in the context of financial development assuming that human capital is heterogeneous in terms of the skills and education people have. Then, by using the data sets based on five-year averages over 1960-2010 and 1980-2010, covering 107 developed and developing countries, we empirically investigate the extensions of the theoretical framework developed earlier. These extensions cover the relationships between:

1. Income inequality and economic growth
2. Financial development, human capital and income inequality, and
3. Financial development, human capital and poverty

We provide empirical evidence using modern panel data techniques of dynamic and static GMM. The findings elucidate that income inequality and economic growth are inter-dependent on each other. There exists an inverse relationship between initial inequality and economic growth. The changes in income inequality follow the pattern identified by Kuznets (1955) known as Kuznets’ hypothesis. The results also show that financial development helps in reducing income inequalities and in alleviating poverty, only when there is a sufficient level of human capital available. On the basis of our findings we develop the term "effective financial development" which means that financial development is effective in accelerating growth levels, reducing income inequalities and alleviating poverty only if there is a sufficient level of human capital available.

The empirical study covers multiple aspects of financial development like private credit extended by banks and other financial institutions, liquid liabilities and stock market capitalization. The results of the empirical investigations are robust to multiple data sets and various indicators of income inequality, financial development, poverty and human capital. The study also provides marginal analysis, which helps in understanding the impact of financial development on inequality and poverty at different levels of human capital.

This research study of effective financial development can be a useful learning paradigm for the academics and researchers interested in growth economics and keen to learn how poverty and income inequality can be reduced effectively. This study can also be useful for the policy makers in the financial institutions, because it provides robust empirical evidence that shows that financial development cannot
help in alleviating poverty and in reducing inequalities unless there is a sufficient level of human capital available. The findings can be useful for policy makers, particularly in the developing countries where high levels of income inequalities and poverty are big problems. This study explains the mechanism of how effective financial development can be used to reduce income inequalities and to alleviate poverty. It also explains the process of inter-linkages between financial development, human capital, inequality, economic growth and financial instability. The policy makers can also take advantage from the marginal analyses that illustrate the minimum levels of private credit and primary and secondary schooling above which the effects of financial development and human capital become significant in reducing inequalities and poverty.

Key words: Financial Development, Poverty, Income Inequality, Economic Growth, Developing Countries, Financial Instability, Generalized Method of Moments (GMM), Arellano-Bond.