

THE INTERNATIONAL LIBRARY OF
CRITICAL WRITINGS IN ECONOMICS 237

INEQUALITY
AND ECONOMIC
DEVELOPMENT
THE MODERN PERSPECTIVE

Oded Galor

1-08113
142

Inequality and Economic Development: The Modern Perspective

Edited by

Oded Galor

*Herbert H. Goldberger Professor of Economics
Brown University, USA*



THE INTERNATIONAL LIBRARY OF CRITICAL WRITINGS IN ECONOMICS



E2009003832

An Elgar Reference Collection

Cheltenham, UK • Northampton, MA, USA

© Oded Galor 2009. For copyright of individual articles, please refer to the Acknowledgements.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without the prior permission of the publisher.

Published by
Edward Elgar Publishing Limited
The Lypiatts
15 Lansdown Road
Cheltenham
Glos GL50 2JA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

A catalogue record for this book is available from the British Library

Library of Congress Control Number: 2009930435



ISBN 978 1 84720 676 3

Printed and bound by MPG Books Group, UK

Inequality and Economic Development: The Modern Perspective

The International Library of Critical Writings in Economics

Series Editor: Mark Blaug

Professor Emeritus, University of London, UK
Professor Emeritus, University of Buckingham, UK

This series is an essential reference source for students, researchers and lecturers in economics. It presents by theme a selection of the most important articles across the entire spectrum of economics. Each volume has been prepared by a leading specialist who has written an authoritative introduction to the literature included.

A full list of published and future titles in this series is printed at the end of this volume.

Wherever possible, the articles in these volumes have been reproduced as originally published using facsimile reproduction, inclusive of footnotes and pagination to facilitate ease of reference.

For a list of all Edward Elgar published titles visit our site on the World Wide Web at
www.e-elgar.com

Acknowledgements

The editor and publishers wish to thank the authors and the following publishers who have kindly given permission for the use of copyright material.

American Economic Association for articles: Torsten Persson and Guido Tabellini (1994) 'Is Inequality Harmful for Growth?', *American Economic Review*, **84** (3), 600–621; Oded Galor and David N. Weil (1996) 'The Gender Gap, Fertility, and Growth', *American Economic Review*, **86** (3), June, 374–87; Kenneth L. Sokoloff and Stanley L. Engerman (2000), 'History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World', *Journal of Economic Perspectives*, **14** (3), Summer, 217–32; Roland Bénabou (2000), 'Unequal Societies: Income Distribution and the Social Contract', *American Economic Review*, **90** (1), March, 96–129; David de la Croix and Matthias Doepke (2003), 'Inequality and Growth: Why Differential Fertility Matters', *American Economic Review*, **93** (4), September, 1091–113.

Blackwell Publishing Ltd for articles: Oded Galor and Joseph Zeira (1993), 'Income Distribution and Macroeconomics', *Review of Economic Studies*, **60** (1), 35–52; A.B. Atkinson (1997), 'Bringing Income Distribution in from the Cold', *Economic Journal*, **107**, March, 297–321; Oded Galor and Omer Moav (2004), 'From Physical to Human Capital Accumulation: Inequality and the Process of Development', *Review of Economic Studies*, **71** (4), October, 1001–26; Oded Galor and Omer Moav (2006), 'Das Human-Kapital: A Theory of the Demise of the Class Structure', *Review of Economic Studies*, **73** (1), 85–117; Oded Galor, Omer Moav and Dietrich Vollrath (2009), 'Inequality in Landownership, the Emergence of Human-Capital Promoting Institutions, and the Great Divergence', *Review of Economic Studies*, **75**, 143–79.

Elsevier for article: William Easterly (2007), 'Inequality Does Cause Underdevelopment: Insights from a New Instrument', *Journal of Development Economics*, **84** (2), November, 755–76.

MIT Press Journals for articles: Alberto Alesino and Dani Rodrik (1994), 'Distributive Politics and Economic Growth', *Quarterly Journal of Economics*, **109** (2), May, 465–90; William Easterly and Ross Levine (1997), 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *Quarterly Journal of Economics*, **112** (4), November, 1203–50; Daron Acemoglu and James A. Robinson (2000), 'Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective', *Quarterly Journal of Economics*, **115** (4), November, 1167–99.

Springer Science and Business Media for articles: Roberto Perotti, (1996), 'Growth, Income Distribution, and Democracy: What the Data Say', *Journal of Economic Growth*, **1** (2), June, 149–87; Alberto Alesina, Arnaud Devleeschauwer, William Easterly, Sergio Kurlat and Romain

Wacziarg (2003), 'Fractionalization', *Journal of Economic Growth*, **8** (2), June, 155–94. Abhijit V. Banerjee and Esther Duflo (2003), 'Inequality and Growth: What Can the Data Say?', *Journal of Economic Growth*, **8** (3), 267–99.

University of Chicago Press for article: Abhijit V. Banerjee and Andrew F. Newman (1993) 'Occupational Choice and the Process of Development', *Journal of Political Economy*, **101** (2), 274–98.

Every effort has been made to trace all the copyright holders but if any have been inadvertently overlooked the publishers will be pleased to make the necessary arrangement at the first opportunity.

In addition the publishers wish to thank the Library of Indiana University at Bloomington, USA, for their assistance in obtaining these articles.

Introduction

Inequality and the Development Process: An Overview

Oded Galor

1. From the Classical and Neoclassical Viewpoints to the Modern Perspective

Conventional wisdom about the relationship between income distribution and economic development has been subjected to dramatic transformation in the past century. While the Classical economists advanced the hypothesis that inequality is beneficial for economic development, the Neoclassical paradigm, which subsequently dominated the field of macroeconomics, dismissed the Classical hypothesis and advanced the viewpoint that the study of income distribution has no significance in the understanding of the growth process.

A metamorphosis in these perspectives has taken place in the past two decades, and analysis of the role of income distribution in economic development was brought in from the cold.¹ Both theory and recent empirical evidence have demonstrated that income distribution does, in fact, have a significant impact on the growth process. Moreover, unlike the Classical viewpoint, which underlined the beneficial effects of inequality for the growth process, the modern perspective has highlighted the potential adverse effects of inequality on the growth process.

1.1. The Classical and the Neoclassical Approach

The Classical approach advanced the hypothesis that inequality is beneficial for economic development in the post-industrialization period (Keynes, 1920; Kaldor, 1956).² It suggested that since the marginal propensity to save increases with wealth, inequality channels resources towards individuals whose marginal propensity to save is higher, increasing aggregate savings, capital accumulation, and economic growth.³

The Classical hypothesis, however, was implicitly dismissed by the representative agent paradigm that had dominated the field of macroeconomics. The influential neoclassical approach rejected the relevance of heterogeneity, and thus the distribution of income, for macroeconomic analysis, interpreting implicitly the observed relationship between inequality and economic growth as capturing the effect of the growth process on the distribution of income.⁴

1.2. The Origins of the Modern Perspective

The Neoclassical viewpoint has been challenged in the past two decades, as both theories and subsequent empirical evidence have demonstrated that income distribution has a significant

impact on the growth process. The origin of the modern perspective can be traced to Galor and Zeira (1988, 1993). In contrast to the representative agent approach that dominated the field of macroeconomics for several decades, Galor and Zeira analyzed the role of heterogeneity in the determination of macroeconomic activity. They advanced the novel viewpoint that heterogeneity, and thus income distribution, plays an important role in the determination of aggregate economic activity and economic growth. This research demonstrated that under plausible conditions (i.e., credit market imperfections and fixed costs in the acquisition of human capital), income distribution has a long lasting effect on investment in human capital, aggregate income, and economic development.⁵ Moreover, in contrast to the Classical hypothesis, which underscored the virtues of inequality for economic growth, this research advanced the hypothesis that inequality, in the presence of credit market imperfections, may be detrimental for human capital formation and economic development.

The modern perspective about the relationship between inequality and economic development has subsequently evolved, resulting in hundreds of research papers that have highlighted the adverse effect of inequality on the process of development.⁶ The initial research on the subject has been widely classified into two broad approaches for the examination of the relationship between inequality and growth: the credit market imperfection approach and the political economy approach.⁷

1.3. The Credit Market Imperfections Channel

The credit market imperfection approach explored the implications and the robustness of the effect of inequality on the process of development in the presence of credit market imperfections.

Galor and Zeira have demonstrated that in the presence of credit market imperfections and fixed costs associated with investment in education, occupational choices (and thus the efficient segmentation of the labor force between skilled and unskilled workers) are affected by the distribution of income. In particular, if the interest rate for borrowers is significantly higher than that for lenders, inequality may result in an under-investment in human capital.⁸ Inequality may therefore adversely affect macroeconomic activity and economic development in the short-run, and due to intergenerational transfers and their effect on the persistence of inequality, it may adversely affect economic development in the long-run as well.⁹

The basic Galor–Zeira model establishes the potential adverse effect of inequality on economic growth in an economy in which wages, for simplicity, are unaffected by the composition of the labor force. However, as established in the second model developed in Galor and Zeira (1993, Chapter 2), the main hypothesis is robust to the endogenization of wages and thus to the incorporation of interdependence in investment decisions across dynasties.

The credit market imperfection approach for the study of the effects of income distribution on economic growth, which subsequently emerged, maintained the two fundamental assumptions of the Galor–Zeira model (i.e., credit market imperfections and fixed costs associated with investment), and establishing the robustness of its main hypothesis.¹⁰ Notably, Banerjee and Newman (1993, Chapter 3) examine the effect of inequality on a different type of occupational choice (i.e., the choice between becoming an entrepreneur or a worker, rather than the choice between becoming either a skilled or an unskilled worker). They demonstrate that if credit markets are imperfect and fixed costs are associated with entrepreneurial activities,

inequality may result in an under-investment in entrepreneurial activity and may therefore be harmful for economic development.¹¹ Their study establishes that as long as wages are endogenous, the main hypothesis of the credit market imperfection approach as a whole is robust to the introduction of random shocks to the outcome of investment (in human capital or entrepreneurial activities).¹²

The interplay between income inequality and equality of opportunities that was emphasized by Galor and Zeira led to an additional strand of research within the credit market imperfection approach. This research examines the effect of inequality on the degree of intergenerational mobility and thus the efficiency in the allocation of talents across occupations (Fershtman, Murphy and Weiss, 1996; Owen and Weil, 1998; Maoz and Moav, 1999; Checchi, Ichino and Rustichini, 1999; Hassler, Mora and Zeira, 2007).¹³

Furthermore, the interaction between income inequality and credit market imperfections was placed at the center of an important literature that examines the relationship between segregation and persistent inequality. These studies have demonstrated that in the presence of credit market imperfections, inequality enhances segregation across communities and thus, in the light of local externalities in the production of human capital, it may generate persistent education and income gaps (Bénabou, 1996; Durlauf, 1994, 1996; Fernandez and Rogerson, 1996).

1.4. The Political Economy Channel

The political economy approach further advanced the viewpoint that inequality is harmful for economic development. Earlier studies have argued that inequality generates a pressure to adopt redistributive policies, and that distortions associated with these policies adversely affect investment in physical and human capital and thus the growth process.

The incentives for productive accumulation of physical capital human capital, and knowledge hinge on the ability of individuals to privately appropriate their return on their investment. In societies that are characterized by inequality, distributional conflict may bias political decisions in favor of appropriation and may therefore diminished investment and economic growth. In particular, using the median voter paradigm, it was hypothesized that in a more equitable society, taxation on physical capital (Alesina and Rodrik, 2004, Chapter 4) and human capital (Persson and Tabellini, 2004, Chapter 5; Perotti, 1993) is lower, limiting the degree of distortions in investment decisions, and promoting economic growth.

In light of the inconsistency of this mechanism with empirical evidence (Perotti, 1996, Chapter 16), subsequent theories advanced the hypothesis that inequality may in fact generate an incentive for better endowed agents to lobby against redistribution, preventing efficient redistribution policies from being implemented (Saint-Paul and Verdier, 1996; Bénabou, 2000 [Chapter 6], 2002).

Others have examined the long-run effects of inequality in the ownership of factors of production on the incentive for better endowed agents to block the implementation of institutional changes and policies that promote human capital formation and thus economic growth (Sokoloff and Engerman, 2000, Chapter 8; Galor, Moav and Vollrath, 2009, Chapter 9). This long-run view is examined in sections 2.2–2.4.

2. A Unified Theory of Inequality and Development

The impressive research that constituted the modern perspective on the relationship between inequality and economic development has been initially largely segmented. It lacked a unified hypothesis regarding the role of inequality in the process of development, particularly in light of the contrasting predictions generated by the classical approach and the modern approach.

2.1. From Physical to Human Capital Accumulation as the Main Engine of Growth

The development of a unified theory of the dynamic implications of inequality on the growth process (Galor and Moav, 2004, Chapter 7) has provided a needed intertemporal reconciliation between the Classical viewpoint and the modern perspective, while permitting the dominating theories within the modern perspective to be placed within a broader structure.

The theory suggests that the replacement of physical capital accumulation by human capital accumulation as the prime engine of economic growth has changed the qualitative impact of inequality on the process of development. In early stages of industrialization, as physical capital accumulation is a prime source of economic growth, inequality enhances the process of development by channeling resources towards individuals whose marginal propensity to save is higher. In later stages of development, however, as physical capital accumulates, the demand for human capital increases (due to capital–skill complementarity) and human capital becomes the prime engine of economic growth.¹⁴ A more equal distribution of income, in the presence of credit constraints, stimulates investment in human capital and promotes economic growth. Lastly, as economies become wealthier and credit constraints become less binding while the differences in the marginal propensity to save decline, the aggregate effect of income distribution on the growth process becomes less significant.

The central hypothesis of this unified approach stems from the recognition that human capital accumulation and physical capital accumulation are fundamentally asymmetric. In contrast to physical capital, human capital is inherently embodied in humans and the existence of physiological constraints subjects its accumulation at the individual level to diminishing returns. The aggregate stock of human capital would therefore be larger if its accumulation would be widely spread among individuals in society, whereas the aggregate productivity of the stock of physical capital is largely independent of the distribution of its ownership in society. This asymmetry between the accumulation of human and physical capital suggests therefore that as long as credit constraints are largely binding, a more equal distribution of income is conducive for human capital accumulation, whereas, provided that the marginal propensity to save increases with income, inequality is conducive for physical capital accumulation.

The theory, therefore, provides an intertemporal reconciliation between the conflicting viewpoints about the effect of inequality on economic growth. It suggests that the Classical viewpoint, regarding the positive effect of inequality on the process of development, reflects the state of the world in early stages of industrialization, when physical capital accumulation is the prime engine of economic growth. In contrast, the central hypothesis of the credit market imperfection approach regarding the negative effect of equality on economic growth reflects later stages of development when human capital accumulation becomes the prime engine of economic growth, and credit constraints are largely binding.

Although the replacement of physical capital accumulation by human capital accumulation as a prime engine of economic growth in currently developed economies is instrumental for understanding of the role of inequality in their process of development, this research is especially relevant for currently less developed economies (LDCs) that evolved differently. In LDCs, the presence of international capital inflows diminishes the role of inequality in stimulating physical capital accumulation. Moreover, the adoption of skilled-biased technologies has increased the return to human capital and, thus, given credit constraints, has strengthened the positive effect of a more equal distribution of income on human capital accumulation and economic growth.

The theory generates a testable implication about the effect of inequality on economic growth, which may provide greatly needed theoretical guidance for empirical research in this field. In contrast to the credit market imperfection approach, which suggests that the effect of inequality depends on the country's level of income (i.e., inequality is beneficial for poor economies and harmful for rich ones), this research suggests that the effect of inequality on growth depends on the relative return to physical and human capital. In economies in which the return to human capital is relatively lower, inequality is beneficial for economic growth, whereas in economies in which the return to human capital is relatively higher and credit constraints are largely binding, equality is beneficial for economic growth.

2.2. The Emergence of Economic Conflict Between the Landed Aristocracy and the Capitalists Regarding the Desirability of Human Capital Promoting Policies

While the process of industrialization raised the importance of human capital in the production process, reflecting its complementarity with physical capital and technology, human capital accumulation has not benefited all sectors of the economy. Inequality in the ownership of factors of production generated an incentive for better endowed agents to block the implementation of institutional changes and policies that promote human capital formation, resulting in a sub-optimal level of investment in human capital from a growth perspective.

As argued by Galor, Moav and Vollrath (2009, Chapter 9), the transition from an agricultural to an industrial economy changed the nature of the main economic conflict in society. Unlike an agrarian economy, which was characterized by a conflict of interest between the landed aristocracy and the masses, the process of industrialization has brought about an additional conflict between the entrenched landed elite and the emerging capitalist elite. The capitalists, who were striving for an educated labor force, supported policies that promoted the education of the masses, whereas landowners, whose interests lay in the reduction of the mobility of the rural labor force, favored policies that deprived the masses from education.

In light of a lower degree of complementarity between human capital and land, a rise in the level of education increased the productivity of labor in industrial production more than in agriculture, decreasing the return to land due to labor migration and an associated rise in wages. Thus, while industrialists had a direct economic incentive to support education policies that would foster human capital formation, landowners had no economic incentives to support these growth enhancing educational policies as long as their stake in the productivity of the industrial sector was insufficient.¹⁵

The adverse effect of the implementation of public education on landowners' income from agricultural production was magnified by the concentration of land ownership, and thus, as

long as landowners affected the political process and thereby the implementation of growth-enhancing education policies, inequality in the distribution of land ownership was a hurdle for human capital accumulation, slowing the process of industrialization and the transition to modern growth. Economies in which land was more equally distributed, implemented earlier public education campaigns, and benefited from the emergence of a skill-intensive industrial sector and a rapid process of development. In contrast, among economies marked by a more unequal distribution of land ownership, land abundance that was a source of richness in early stages of development, led in later stages to under-investment in human capital, an unskilled-intensive industrial sector, and a slower growth process. Thus, variations in the distribution of land ownership across countries contributed to variations in the industrial composition of the economy, and thereby to divergent development patterns across the globe.

This hypothesis is consistent with historical evidence underlined by Galor, Moav and Vollrath in Chapter 9 that suggests that indeed the distribution of land ownership affected the nature of the transition from an agrarian to an industrial economy and has been significant in the emergence of sustained differences in human capital formation and growth patterns across countries. Moreover, the adverse effect of the concentration of land ownership on education expenditure is confirmed empirically by Galor, Moav and Vollrath based on data from the beginning of the twentieth century in the USA. Variations in the concentration of land ownership as well as in public spending on education across states in the USA are exploited in order to demonstrate that inequality in the distribution of land ownership was indeed a hurdle for public investment in human capital.

2.3. Inequality and the Implementation of Oppressive Institutions

An alternative mechanism that underlines the adverse effect of inequality on human capital formation and economic development has been advanced by Sokoloff and Engerman (2000, Chapter 8). They argued and provided evidence that geographical conditions that led to income inequality brought about oppressive institutions (e.g., restricted access to the democratic process and to education) designed to maintain the political power of the elite and to preserve the existing inequality between the elite and the masses. Similarly, Acemoglu, Johnson and Robinson (2005) maintain that reversals in economic performance across countries have a colonial origin, reflecting institutional reversals that were introduced by European colonialism across the globe. 'Reversals of fortune' reflect the imposition of extractive institutions by the European colonialists in regions where favorable geographical conditions led to prosperity, and the implementation of growth-enhancing institutions in poorer regions.

Thus, Sokoloff and Engerman in Chapter 8 underlined the role of the sustained conflict between the elite and the masses in the delay in the implementation of growth enhancing educational policies and thus in the adverse effect of inequality on the process of development. Their viewpoint about the nature of the conflict, as well as that of Acemoglu *et al.* (2005), suggests the perpetual desirability of extractive institutions for the ruling elite. In contrast, Galor, Moav and Vollrath (2009, Chapter 9) advance the viewpoint that, in fact, economic development may ultimately alter the incentives of the elite to block growth-enhancing education policies. In light of a conflict of interest *among* the economic elites (i.e., industrialists and landowners), and a partial cooperation between the elite (i.e., the industrialists) and the masses, the timing of the implementation of growth-enhancing education policies was

influenced by the effect of economic development on the degree of asset diversification held by the divided elite. Unlike the conflict-based political mechanism that governs the hypothesis of Sokoloff and Engerman (2000, Chapter 8) and Acemoglu *et al.* (2005), the hypothesis advanced by Galor and Moav (2006, Chapter 11) and Galor, Moav and Vollrath (2009, Chapter 9) emphasizes a direct economic mechanism (i.e., the adverse effect of education reforms on the land rental rate) that governs the relationship between inequality and the process of development. In particular, they demonstrate that even if the political structure in the economy remains unchanged, economic development and a gradual diversification of the assets held by the landed aristocracy may ultimately trigger the implementation of growth-promoting institutions once the stake of the landed aristocracy in the efficient operation of the industrial sector, dominates their overall economic interest.¹⁶

2.4. *Inequality as a Trigger for Growth Promoting Social, Political, and Economic Transitions*

Inequality and its association with sociopolitical instability have been identified as an additional adverse force in the process of development. In particular, the effect of inequality on social conflict and on political and educational reforms was examined by Alesina and Perotti (1996), Acemoglu and Robinson (2000, Chapter 10), and Bourguignon and Verdier (2000), as well as Gradstein (2007).¹⁷ These studies suggest that reforms and redistribution from the elite to the masses diminish the tendency for sociopolitical instability and may therefore stimulate investment and economic growth. In particular, Acemoglu and Robinson (2000, Chapter 10) argue that the extension of the franchise during the nineteenth century can be viewed as a commitment device to ensure future income redistribution from the elite to the masses.

In contrast, Galor and Moav (2006, Chapter 11) have argued that the transformation in class structure and inequality can be viewed as a byproduct of a productive cooperation between capitalists and workers, rather than an outcome of a divisive class struggle.¹⁸ In line with the unified approach for the study of inequality and economic development, this research suggests that capital accumulation in the process of industrialization gradually intensified the relative scarcity of skilled labor and generated an incentive for human capital accumulation. Investment in human capital, however, has been sub-optimal due to credit market imperfections, and public investment in education has been therefore growth-enhancing, as per Galor and Zeira (1993, Chapter 2). Due to the complementarity between physical and human capital in production, the capitalists were among the prime beneficiaries of the accumulation of human capital by the masses. They therefore had the incentive to support the provision of public education that improved their economic well-being and contributed significantly to the demise of the capitalists-workers class structure and to changes in the nature of inequality in society that were conducive to economic development.¹⁹

2.5. *Gender Inequality, Fertility, and Economic Development*

As suggested by the unified approach, the replacement of physical capital accumulation by human capital accumulation as the prime engine of economic growth has changed the qualitative impact of inequality on the process of development. In early stages of industrialization, as physical capital accumulation is a prime source of economic growth, inequality enhances the

process of development by channeling resources towards individuals whose marginal propensity to save is higher. In later stages of development, however, as physical capital accumulates and the demand for human capital increases, due to capital–skill complementarity, human capital becomes the prime engine of economic growth and a more egalitarian distribution of income stimulates investment in human capital and promotes economic growth.

The decline in gender inequality, that was brought about by the rise in the demand for human capital in the process of development, reinforced the positive association between a more egalitarian distribution of income and economic growth. The decline in gender inequality contributed to the onset of the demographic transition as well as to the rise in female labor force participation, fostering the growth process as a whole. The decline in the gender wage gap has affected household fertility decisions, female labor force participation and thus the growth process. As suggested by Galor and Weil (1996 [Chapter 12], 1999), technological progress and capital accumulation complemented mentally intensive tasks and substituted for physically intensive tasks in industrial production. In light of the comparative physiological advantage of men in physically intensive tasks and of women in mentally intensive tasks, the demand for women's labor input gradually increased, inducing a decline in fertility rates, a significant increase in labor force participation, and a transition from stagnation to growth.

Moreover, the decline in the overall level of inequality that was associated the emergence of human capital has been linked theoretically, empirically and quantitatively to the reduction in fertility and therefore lower levels of investment in human capital and income (Galor and Zhang, 1997; Dahan and Tsiddon, 1998; Kremer and Chen, 2002; de la Croix and Doepke, 2003, Chapter 13; Moav, 2005).

3. Diversity and Economic Development

Alternative sources of heterogeneity and thus inequality that may have affected the growth process are ethnic and genetic diversity. There are potentially two conflicting effects of diversity on the development process. The first effect pertains to the detrimental role of diversity in hindering the transmission of society-specific human capital within and across the generations of a given society. Diversity may disrupt the socioeconomic order by increasing the likelihood of mis-coordination and distrust between economic agents. Greater heterogeneity in a society's population may be associated with a lower total factor productivity, which inhibits society's ability to operate efficiently with respect to its production possibility frontier and the available production technologies.²⁰

The second effect concerns the beneficial role of diversity in enhancing technological advancements. A wider spectrum of traits is more likely to contain those complementary to the development and successful implementation of more advanced technologies, thereby expanding society's production possibility frontier. As such, greater heterogeneity in a society's population may also confer the social benefit of increased total factor productivity, fostering the ability of a society to incorporate more sophisticated and efficient modes of production.

Higher diversity in a society's population can therefore have conflicting effects on the level of its total factor productivity. Productivity is enhanced on the one hand by an increased capacity for technological advancement while simultaneously diminished on the other by a greater

likelihood of uncoordinated or disruptive activities. While the overall effect of diversity on development outcomes is theoretically ambiguous, it appears that while the ethnic fractionalization is detrimental for growth, there exists an optimal level of heterogeneity *within* ethnic groups.

Ethnic diversity has been shown to have an adverse effect on economic development. Easterly and Levine (1997, Chapter 14) and Alesina *et al.* (2003, Chapter 15) find that ethnic-linguistic fractionalization is associated with a low level of development, as reflected by schooling, political instability, underdeveloped financial systems, and insufficient infrastructure.²¹ In contrast, Ashraf and Galor (2008) establish empirically that the beneficial productivity effect of diversity *within* ethnic groups is dominant at lower levels of diversity and the detrimental effect is dominant at higher levels, thereby yielding an inverted U relationship between diversity and development outcomes.

4. Empirical Evidence

Several attempts have been made to examine the theoretical predictions of the credit market imperfections approach and the political economy approach about the effect of inequality and heterogeneity on economic growth. Consistent with the hypothesis advanced by the theories, early cross-country analyses by Alesina and Rodrik (1994, Chapter 4), Persson and Tabellini (1994) and Perotti (1996, Chapter 16) have established a negative association between the level of inequality and economic growth.

Importantly, Perotti (1996, Chapter 16) conducted a careful examination of the various channels through which inequality may affect economic growth, as proposed by the modern theoretical perspective. His study provides support for the Galor–Zeira hypothesis, showing that inequality is indeed associated with lower level of human capital formation, and lower human capital formation is associated with lower levels of economic growth.²² Further support for the main predictions of the education channel advanced in the context of the credit market imperfection approach has been generated by Deininger and Squire (1998). Utilizing the distribution of land as a proxy for the distribution of assets, they find that initial inequality has a significant adverse effect on education and economic growth. Moreover, consistent with the theories advanced by the credit market imperfections approach – that these imperfections ought to have a larger effect on the investment decisions of individuals with lower income – they find that initial inequality primarily hurts the poor.²³

In contrast to the human capital channel, Perotti's examination of the political economy channel was not favorable to the theories advanced by Alesina and Rodrik (1994, Chapter 4) and Persson and Tabellini in Chapter 16 (1994). His findings refute this early hypothesis of the political economy approach, demonstrating that in contrast to their proposed channel, inequality is in fact associated with lower levels of taxation, while lower levels of taxation, contrary to the theories, are associated with lower levels of economic growth.

Later studies have deviated from the desirable examination of the channels through which inequality may affect growth, and restricted their attention to the reduced form relationship of between inequality and growth. Notably, Forbes (2000) and Barro (2000) examined the effect of inequality on economic growth in a panel of countries. They find a positive and zero effect, respectively, of an increase in inequality on economic growth. These findings, however, ought