

ADVANCES IN ECOLOGICAL ECONOMICS

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ADVANCES IN ECOLOGICAL ECONOMICS

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Preface

Ecological economics continues to push the frontiers of understanding the human condition, our needs and desires, and ultimately the maintenance and sustenance of life on earth. The frontiers of 20th century science were predominantly analytical in scope, sub-dividing and probing into ever smaller units of analysis, parsing knowledge into ever finer disciplines of inquiry. However, the frontiers of the 21st century are increasingly synthetic in nature, combining hard-won insights from analysis into theory consistent across disciplinary domains and building a problem-solving approach that draws on a plurality of methods and diversity of perspectives.

Ecological economics is one of a handful of systems of thought that are blurring those centuries-old boundaries, combining methods in search of new insight, and building a coherent synthesis of the foundations and future of life on earth. The bookends of this approach have been the hallmarks of the two extremes of scientific inquiry. Traditional ecology has pushed the frontiers of holistic, synthetic thinking. Traditional economics has pushed those of reductionist, analytical thinking. Bookended by these disciplines, ecological economics is the only school of economics focusing on the human economy both as a social system and as one imbedded in the biophysical universe, and thus both holistic and scientifically based.

Ecological economics is posed to play a leading role in the current transformation of the social sciences. Two trends are particularly relevant. The first is the unification of the social sciences in terms of our basic understanding of human behavior. Currently the various social sciences – economics, sociology, psychology, anthropology, geography, political sciences – each have different and incompatible behavioral models. Within a few years the social sciences will have models of human behavior complementary to and consistent with one another (Gintis, 2000). This unification is well underway in ecological economics. The second trend is the re-introduction of biology into the social sciences. During the decades following World War II, for various reasons, biological explanations of human behavior were all but banned from social science (Hodgson, 2004). Again, ecological economics is well ahead of the crowd with its emphasis on the evolutionary origin of human ecology and the importance of evolutionary processes in economic change.

Elsewhere we have described the approach of ecological economics, including value pluralism, methodological pluralism, and multi-criteria

policy assessment (Gowdy and Erickson, 2005a). We have also encouraged a dialogue about the crossroads at which this ‘transdiscipline’ currently finds itself, a coming of age that places ecological economic theory and application at the frontier of a revolution in welfare economics and social policy design (Gowdy and Erickson, 2005b; Gowdy, 2004). Here we join forces with some of the top scholars in ecological economics to explore the cutting-edge research on its theory and application. We begin with a theoretical critique of the tradition of cost–benefit analysis and a foundation for a macroeconomics of environmental sustainability and distributive justice. Attention is then turned to applied research on the issues of our time – biodiversity loss, climate change, and sustainable energy. Each section is anchored with overviews by top scholars in these areas – including Herman Daly, Carl McDaniel, Stephen Schneider, and Nathan Hagens – followed by detailed analyses reflecting the transdisciplinary approach of ecological economics.

Contributions for this volume were drawn from the Second Biennial Meeting of the United States Society for Ecological Economics (see: www.ussee.org) in Saratoga Springs, New York, USA. From a plurality of sessions and research papers emerged a consensus of the magnitude, pre-eminence, and overlap of issues surrounding biodiversity loss, climate change, and sustainable energy. As industrialization, market economics, and globalization became the defining issues of the 20th century of the market, now the consequences of unprecedented economic growth will likely hold court as the defining issues of the 21st century of the environment (Erickson, 2002). Biodiversity, climate change, and energy are increasingly shaping the agendas of government, business, civil society, and academia alike, and here we benefit from the contributions of scholars that have been and continue to be shaped by this evolving research agenda.

We owe many thanks to the myriad of volunteers, paper contributors, session chairs, and conference participants that made the conference a success and this book possible. Graham Cox, Kathy Keenan, Murphy MacLean, the board of the USSEE, and a long list of student volunteers from Rensselaer Polytechnic Institute and the University of Vermont deserve special applause for their efforts in helping with conference organization. The conference benefited immensely from the gracious support of the Santa-Barbara Family Foundation (www.sustainable-scale.org), the Saratoga Convention and Tourism Bureau (www.discoversaratoga.org), and inspiring seminars from our keynote and plenary speakers, including Robert Costanza, Bill Dennison, James Howard Kunstler, Stuart Pimm, Stephen Schneider, and Juliet Schor. And we owe a debt of gratitude, as does the entire community of ecological economists, to one of our founding fathers, Herman Daly, who provided the inspiration for the inaugural Herman Daly Award at this meeting.

The book itself would have never seen the light of day without the critical editorial eye and manuscript preparation of Linda Gowdy and Carolyn Goodwin Kueffner. And, as always, we owe everything to our families, especially the next generation: Louis, Jon, Mickey, Livia and Anna.

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PART I

Ecological economic theory

3. Growth and equity: dismantling the Kaldor–Kuznets–Solow consensus

Brendan P. Fisher and Jon D. Erickson

SUMMARY

A post-World War II consensus emerged among growth theorists that income inequality is a driving force behind income growth, both within and between nations. The consensus has contributed to a half-century legacy of equity-blind growth policy, with particular fervor in the international development policy arena. Here we review the core principles of the inequality-growth hypothesis, highlight the long-standing theoretical critique of its central assumptions, summarize a recent explosion of empirical work testing the hypothesis, and provide some further exploration of this relationship. The growth–equity paths of 49 countries over the past 50 years are analyzed. Findings point to the wide range of outcomes that exist. Dismantling policies built on this consensus and finding alternatives that address equity and growth should be the focus of policy makers and economists concerned with this issue.

NEOCLASSICAL CONSENSUS ON INCOME INEQUALITY AND ECONOMIC GROWTH

Aghion et al. (1999) begin an extensive review of the literature on the relationship between income inequality and growth with the statement that ‘the conventional textbook approach is that inequality is good for incentives and therefore good for growth’ (p. 1615). This consensus, and ultimately the rationale for pursuing development policy focused largely on unequal growth, finds its roots in the emergence of growth theory in post-war 1950s. The work of Kaldor and Kuznets in particular helped establish the assumption that there is a trade-off between reducing inequality and promoting growth (Forbes, 2000). Simultaneously, Solow’s work on growth theory influenced policy around international income distribution and growth. The net result of the Kaldor–Kuznets–Solow consensus

was a policy mindset that inequality induced growth, growth reduced inequality, and by pursuing growth all nations would converge to the same growth path. The powerful influence of this consensus has created something analogous to a three-legged stool for neoclassical growth theory and its application.

The first leg of the stool deals principally with savings. Beginning with the post-war era, an influential paper by Lewis (1954) early on established the savings relationship between growth and equity (Ranis, 2004). His two-sector model of economic development followed classical assumptions and labeled landlords as the 'saving class'. Kuznets (1955) also referred to upper income levels as 'savers'. Kaldor (1958), following similar assumptions, formalized savings as an increasing function of real-income, and the idea that profits largely outweighed workers' savings. Building on this assumption, Kaldor (1967) used empirical data to show that productivity growth in the 1950s and 1960s in OECD countries was largely a function of investment behavior. The logic that capitalists and high-income earners had a greater marginal propensity to save, combined with the importance of investment for growth, led to the conclusion that inequality fostered growth. Greater savings per dollar earned was assumed to provide a faster growing source of wealth from which to draw private investment. Hence, the traditional and pervasive argument that inequality catalyzed capital accumulation (Aghion et al., 1999). The income gap between rich and poor has also been theorized to encourage greater labor productivity through providing incentives for hard work, risk taking and entrepreneurial spirit (Mirrlees, 1971).

A theory of inequality-induced growth with little empirical grounding became one of the pillars to growth theory emerging out of post-World War II Euro-American alliances and the era of Bretton Woods global finance and trade institutions. Building from the savings-growth framework of Lewis and Kaldor, the work of Simon Kuznets (1955) added the moral foundation to pursue the sole objective of economic growth. In his structural analysis of sparse data sets on economic growth for Germany, the United States and the United Kingdom from 1880 to 1947, Kuznets found (to his surprise) that as these nations moved from agrarian to industrial societies the income gap increased at first, peaked several decades after industrialization began, and then decreased as full industrialization approached. Due to Kaldor's savings dynamic, he expected the opposite to be true:

Other conditions being equal, the cumulative effect of such inequality of savings would be the concentration of an increasing proportion of income yielding assets in the hands of the upper groups – a basis for larger income shares of these groups and their descendants. (Kuznets, 1955, p. 7)

To explain the contradiction between empirics and theory, Kuznets addressed the 'other conditions being equal' assumption and postulated institutional and demographic drivers of a closing income gap at later stages of industrialization. He posited that legislative interference, high population growth in the lower income levels, and entrepreneurial activities, were all mechanisms that could lead to an inverted-U relationship between income growth and equality – eventually known as the Kuznets curve. Well before the current era of global trade and capital liberalization, and with scant data from three of the most industrialized nations of the early 20th century, Kuznets provided a story that, with patience, growth would eventually shrink the in-country gap between rich and poor. Kuznets warned that his work was 'speculative' and called for further empirical examination of the issue. His 'hunch' seemed to characterize the experience of most OECD countries up until the 1970s (Aghion et al., 1999). For instance, Ahulwalia (1976), undertaking a 60 country study, generally supported the 'inverted-U' hypothesis.

Addressing the between-country gap in growth rates, the work of Robert Solow provided the final leg of the growth-equity stool: a theory of income growth convergence between nations. As with Kuznets, drawing on the theorists of his day, Solow's (1956) 'A contribution to the theory of economic growth' drew heavily on early economic assumptions and his interest in the effect of capital investment on growth rates between nations. At the core of the Solow growth model is an assumption of diminishing returns to capital investment. This stemmed from the work of classical economists such as Ricardo writing in an era of agrarian-based societies and diminishing returns on capital investment to land. Solow himself built on Ramsey's (1928) earlier aggregate growth model, a now over 75-year-old framework that 'because of its simplicity . . . continues to form the basis for much of the intuition economists have about long run growth' (Romer, 1986, p. 1002). For example, the influential work of Nordhaus (1992, 1993) on climate change and economic growth, reviewed in Part III of this book, is still based on this model.

Solow's model argued that technological change was to make capital and labor more productive. With the marginal products of both capital and labor assumed to be subject to decreasing returns, Solow argued for a world in which poorer nations would naturally catch up. With low initial labor and capital productivity it was assumed that less developed countries (LDCs) would 'grow' at a faster rate and attract the bulk of international investment. The assumption remains today and is often invoked, along with the theory of comparative advantage, as the rationale for liberalization policies (Stiglitz, 2002). The long-run assumption is a world without artificial barriers to trade, where both the developed countries and the LDCs would converge to the same growth path.

While the work of Kuznets implied national income growth policy would bring greater national income equity, Solow's work had a similar effect on the international scale. This prediction has come to be known as convergence, and has provided the theoretical underpinnings of economic globalization. The presumption that growth policy would have a double payoff – greater income equality both within and among nations – has become dogmatic in the prevailing neoliberal argument in support of globalization (Wade, 2004a).

UNRAVELING THE CONSENSUS ON THEORETICAL AND EMPIRICAL GROUNDS

The three-legged consensus on the growth–equity relationship has been subject to long-standing critiques on theoretical grounds. The idea that the upper income levels can stifle growth due to dis-savings and unproductive investments has at least been around since Veblen's (1899) idea of conspicuous consumption. The Solow (1956, 1957) leg strongly suggested that increased savings could not permanently, but only temporarily, increase national growth rates. Also, although historical models have assumed otherwise, it has since been shown that rural and low income workers can have high savings rates (Hoff and Stiglitz, 2001).

The Solow leg has experienced a long-standing critique around the driving assumption of decreasing returns. While agrarian economies, characteristic of the times of early economic theorists, are marked by diminishing returns, in the modern era of manufacturing and service economies, increasing returns are possible and often likely (Skott and Auerbach, 1995). Even Adam Smith recognized the possibility and consequences of increasing returns (Romer, 1986). Likewise Marx argued that increasing returns would lead to what he called 'uneven' development (Skott and Auerbach, 1995). The work of Allyn Young in the 1920s crystallized the connection between increasing returns and competitive equilibrium (Romer, 1986). Young (1928) viewed increasing returns as a macro-phenomena and a function of the continual division of labor.

Even Kaldor early on rejected decreasing returns to scale (Setterfield, 1998) and posited that productive possibilities would depend in part on levels of production in the past. This earlier work culminated in the theory of cumulative causation by Gunnar Myrdal (1957), a contemporary of Solow whose writings represent the antithesis of the Solow growth model. Myrdal argued for a 'principle of interlocking, circular interdependence' as valid over the 'entire field of social relations' (1957, p. 23), income inequality included:

In the normal case a change does not call forth countervailing changes but, instead, supporting changes, which move the system in the same direction as the first change, but much further. Because of such circular causation a social process tends to become cumulative and often to gather speed at an accelerating rate. (Myrdal, 1957, p. 13)

This dynamic, known as path dependency to institutional economists, or positive feedback to system modelers, has taken many forms in the economic literature, including the work of Kenneth Arrow (1962) on learning-by-doing and more recently Brian Arthur (1999) on technology lock-ins. At the scale of international income growth and equity, Myrdal's theory of cumulative causation provides a mechanism for income divergence, rather than the convergence assumed in the Solow train of thought. Rather than global capital investment seeking out poorer and poorer nations along a continuum of decreasing returns, cumulative causation holds that investment begets more investment. This has been seen in Nelson's (1956) idea of a low-level equilibrium trap. Lewis's 1954 paper also hinted at the cumulative effect where international trade might lead to continued growth for the importer and exploitation for the exporter (Ranis, 2004).

Kaldor was a vocal critic of work that ignored increasing returns. In his poignant work 'The irrelevance of equilibrium economics' (1972) he lamented that the strong arguments suggesting increasing returns initiated by Marx and Young were 'wholly excluded by the axiomatic framework of Walrasian economics' (p. 1251). Kaldor (1966) argued that increasing returns were obvious in the manufacturing sectors, and in fact found the phenomena to be the dominant influence on OECD economic growth (Kaldor, 1967).

The theoretical critiques have recently led to empirical questions. Which path have nations actually followed, both within their borders (as in the Kuznets curve) and in comparison to one another (as in Solow's convergence)? Have wealth and income diverged or converged over time, particularly in a post-World War II era of global economic growth, trade liberalization and capital mobility? Does inequality drive growth, or does growth drive inequality? With the benefit of hindsight and the expansion of international data sets, the critique of the Kaldor–Kuznets–Solow consensus has expanded into more empirical grounds.

The original empirical critique of the Kuznets Curve (KC) came from Kuznets himself, when he stated that his analysis of the sparse data is 'possibly tainted by wishful thinking' (1955, p. 26). Using modern data sets, the KC hypothesis is on shaky legs, particularly within many OECD nations, which over the past 20 years have experienced a sharp increase in inequality despite strong economic growth. Earnings inequality has accelerated most notably in the US, the UK, Canada, Australia and New Zealand

(Aghion et al., 1999; Wade, 2004a). Much earlier, Fei et al. (1979) showed that the 'inverted-U' was not a pre-determined consequence of growth. Anand and Kanbur (1993) found a reversal of the inverted-U for a limited but methodologically consistent data set. By analyzing 3100 US counties, Nielsen and Alderson (1997) show a significant upswing in inequality in the US since the 1970s, a period of significant national economic growth. Despite scant evidence of an 'inverted-U' relationship with economic growth, as well as evidence to the contrary, Kuznets-type growth has been imputed as support for equity-blind economic policy (Wade, 2004b), but the results are often a function of institutions, not the market.

The Solow leg of the stool has come under even more empirical assault than Kuznets. International data on economic growth simply do not demonstrate lower income countries 'catching up' (Skott and Auerbach, 1995; Temple, 1999). The number of people living below \$1/day has soared in South Asia and Africa in the past 20 years. Between 1987 and 1998 this statistic rose 10 percent and 34 percent respectively. In a recent in-depth study on global inequality between 1820 and 1992, Bourguignon and Morrisson (2002) conclude that the income divergence across nations 'at best . . . decelerated' over the past 50 years. They also found that over the past two centuries the global Gini coefficient has increased 30 percent, driven mainly by disparities across rather than within nations. As Barro (1991) states, the idea that poor countries have greater growth rates is inconsistent with the evidence, and the rare exception is due to human capital endowment. Easterly and Levine's (1997) regression analysis, motivated by Africa's slow growth, finds that low income countries have associated inhibiting characteristics such as low levels of schooling, political instability and insufficient infrastructure, all of which have a negative effect on growth.

In place of Solow's convergence has emerged a more empirically supported view of multiple convergence states. Both Galor (1996) and Quah (1996) developed models in which there were two steady states corresponding to high and low growth paths, a model that has come to be known as 'club convergence'. Evidence suggests countries that had a GDP per capita over \$10,000 in 1960 (1985\$) may be on a convergence path towards a 2 percent growth rate (Temple, 1999).

Empirical light has also been shed on the assumptions of decreasing returns to capital and labor built into the Solow model. Kaldor (1967), assuming increasing returns to manufacturing sectors, found a correlation of 0.96 between national growth rate and the growth rate of manufacturing output. Romer's (1986) increasing returns model matched data suggesting that growth rates were a function of attained level of development. These findings, along with the club convergence work, support Myrdal's cumulative causation argument.

In addition to empirical work challenging the Kuznets curve and Solow's convergence has been a recent spate of studies looking directly at the growth-equity relationship. In the past 15 years several cross-country studies have shown inequality to slow national growth rates. Persson and Tabellini (1994) found income inequality to be an impediment to growth. The mechanism they point to is the democratic demand for transfer payments to correct inequities perceived as unfair, which in turn provide a disincentive for work and wealth accumulation. Alesina and Rodrik (1994) also argue that an unequal society will have strong demand for redistribution. By looking at cross-country land and income inequality they found that lower equilibrium levels of capital taxation accompany higher capital ownership by the middle class, perhaps resulting in less public demand for redistribution and greater incentive to save. However this mechanism has been drawn into question and a quick look at the low demand for redistribution in the UK and the United States, two countries with rising Gini coefficients, highlights this skepticism.

In this vein, Aghion et al. (1999) constructed a simple growth model with capital market imperfections that demonstrates a redistribution towards equity would increase economy-wide investment possibilities and thus stimulate growth. Putterman et al. (1998) used post-war economic experience to show that equality does not necessarily conflict with growth. Mechanisms suggested for slow growth as a function of inequity included insecure property rights, social/political instability, and voter demand for redistribution policies (Thorbecke and Charumilind, 2002). In a fairly recent review on the subject, Benabou (1996) finds that the general trend across countries is that inequality stunts national growth rates. Related to this is the fairly robust finding that human capital investment heavily influences future capital investments and subsequently growth (Aghion et al., 1999). In a study of 98 countries between 1960 and 1985 Barro (1991) found that growth was positively related to initial human capital and political stability.

In contrast, there have been some recent studies that follow the Kaldor-Kuznets-Solow consensus. Partridge (1997), investigating predictors such as the Gini coefficient, income levels and education, argues that income inequality positively affected growth rates in US states from the 1960s through the 1980s. More recently, Forbes (2000) used panel data, and the Deninger-Squire high quality data set, to conclude that in the short and medium term an increase in inequality positively affects growth. However, the long-term relationship between equality and growth is left unanswered (Forbes, 2000). Barro's (2000) panel analysis offers another angle, suggesting that inequality hinders growth in poor countries, but fosters growth in rich countries.

PATTERN AND PROCESS IN THE INTERNATIONAL GROWTH-EQUITY RELATIONSHIP

As Barro (2000) suggests, the growth-equity relationship is likely to be more nuanced than a simple function. However, building on the long-standing theoretical critique of the neoclassical consensus, the bulk of more recent empirical work has generally shown that (1) cross-country convergence has been non-existent to minimal; (2) poor countries have not seen higher investment rates due to greater marginal return; and (3) inequality can hinder or promote economic growth in the near term, but seems to come down on the side of hindrance in the longer term.

This body of literature and recent improvements in time series data on income growth and distribution beg the following questions. Do nations grow at the exclusion of greater equity? Or has the post-World War period demonstrated income growth paths that combine with greater income equity? Among nations that have demonstrated consistent economic growth, are there clear groupings into more and less equitable growth? And finally, what do equity-seeking growth paths imply about the breadth of national and international policy choices?

Methods and Data

To explore the growth-equity relationship within and between nations, the standard method has been to build a multiple regression model with growth as a function of 'fundamentals', variables such as capital expenditure or endowment, income distribution, and trade measures. The models use static independent variables from the beginning of the period of interest regressed against growth over a period of time (Partridge, 1997; Aghion et al., 1999; Temple, 1999). Here we focus the analysis on descriptive statistics in search of a pattern between national income growth and equity. The Gini coefficient serves as a proxy for wealth distribution. Using a Lorenz curve, the Gini coefficient is a statistical metric for measuring income distribution. Income has fewer data constraints than wealth estimates but still serves as a proxy for wealth (Castello and Domenech, 2002). Gini coefficients themselves are not without error, particularly due to varying measurement conventions among nations (Chen, 2003); however they are the most widely used inequality measure and therefore are the most data rich. Also Braun (1988) points out that Gini coefficients correlate well with seven other available measures of income inequality.

Gini coefficients were drawn from the World Income Inequality Database (UNU, 2005). This database consists of data from 152 countries and contains time series from pre-1960 up to the present with 4664 Gini

observations. In order for Ginis to be comparable across countries it was only possible to use Ginis where the unit of analysis was the household and the income measure was disposable income. In the cases where gross income was reported these were adjusted down by 5.6 Gini points in line with the Denniger-Squire suggestion. When multiple observations were reported for a single year these figures were averaged.

National growth rates were measured as changes in Gross Domestic Product (GDP) per capita from Maddison's *The World Economy* (2001). These figures are measured in 1990 Geary-Khamis dollars to account for purchasing power parity and international commodity price averages. The criterion for this analysis was that countries had to have at least three Gini observations (an early period of between 1950 and 1970s, later 1980s to early 1990s, and late 1990s). This criterion ensured an adequate time horizon for long-term analysis, as well as allowing for two periods of analysis – early and recent. This provided a set of 49 countries with an average time horizon of 29.4 years, and an average growth rate of GDP per capita over the whole set of 1.99 percent (see Tables 3.1 and 3.2, divided into OECD and non-OECD nations). The average Gini for the early period was 38.3 ($\sigma = 10.1$); for the late 1980s/early 1990s was 37.6 ($\sigma = 11.4$); and for the late 1990s was 39.3 ($\sigma = 10.9$).

Growth-Equity Analysis

Figure 3.1 plots both early and late period Gini coefficients against the average annual growth of GDP per capita for the period. In step with a standard method of investigation in this field, the initial Gini of each period was deemed the independent variable and the growth rate per capita over the period (~10 years) was the dependent variable. A bivariate regression showed no significance. Following Barro (2000) and Chen (2003) we searched for a more nuanced growth-equity relationship.

Countries were divided into two groups depending on whether they had Ginis above or below a specified level. Since the interpretation of the Gini score is political in nature and there is no mathematically objective way to determine whether a Gini is fair or unfair, our divisions are also somewhat subjective. At the same time it would be generally agreed that a Gini of 20 would reveal a very equitable society (Sweden: 26) and a Gini of 60 would indicate a very inequitable society (Brazil: 62).

Multiple groupings were tested by varying the Gini dividing line from 30 to 45 in 2.5 intervals. The analysis was performed on both time periods. Using a standard start year, such as 1950, would have been preferred, but the nature of the data precluded this possibility. Therefore the 'early' period refers to Gini figures from 1950 through the 1970s. Growth rate was

Table 3.1 Gini and GDP dataset, OECD countries

Country	Early year	Gini	GDP per capita	Recent start year	Gini	GDP per capita	Recent end year	Gini	GDP per capita	Latest year	Gini
Australia	1968	31.8	11 234	1990	30.9	17 043	1998	30.3	20 390	2002	30.9
Austria	-	-	-	1995	27.0	17 876	1998	23.7	18 905	2001	23.7
Belgium	1979	28.2	13 861	1988	25.7	16 212	1998	27.3	18 442	2001	29.3
Canada	1969	36.1	12 166	1990	28.1	18 933	1998	32.8	20 559	-	-
Switzerland	1982	32.3	18 780	1992	35.9	20 962	1998	31.9	21 367	2002	31.1
Germany	1950	39.6	3 881	1990	26.4	15 932	1997	32.9	17 419	2003	28.0
Denmark	1966	19.3	11 161	1992	25.0	18 857	1999	21.0	22 660	2001	22.0
Spain	1965	22.7	5 075	1990	31.4	12 210	1998	33.3	14 227	2002	31.0
Finland	1966	30.8	7 824	1990	21.5	16 868	1998	25.5	18 324	2003	25.8
France	1970	42.5	11 668	1990	28.0	16 868	1998	29.5	19 558	2002	27.0
United Kingdom	1961	25.5	8 857	1990	33.5	16 411	1998	34.3	18 714	2003	35.0
Greece	1973	41.3	7 655	1988	37.0	9 731	1998	35.7	11 268	2001	32.3
Ireland	1973	37.6	6 867	1987	36.0	9 690	1998	32.4	18 183	2001	28.9
Italy	1967	40.4	8 416	1989	32.4	15 988	1998	36.0	17 759	2002	36.2
Japan	1956	25.7	2 949	1990	29.4	18 789	1998	31.9	20 431	-	-
Korea, Rep.	1966	28.6	1 415	1992	29.3	9 844	1998	36.9	13 317	-	-
Luxembourg	-	-	-	1991	26.8	-	1998	25.1	-	2001	26.6
Mexico	1963	56.4	3 343	1989	53.9	5 920	1998	54.1	6 655	2002	51.1
Netherlands	1977	23.5	14 174	1990	29.0	17 267	1998	28.5	20 224	2001	25.8
Norway	1970	30.5	10 029	1990	28.0	18 470	1998	30.9	23 660	2002	34.2
New Zealand	1973	24.6	12 759	1990	34.5	13 825	1997	31.4	14 971	-	-
Poland	1976	25.8	-	1990	22.8	-	1998	32.6	-	2002	35.3
Portugal	1973	40.1	7 343	1990	33.5	10 852	1998	38.0	12 929	2001	37.1
Sweden	1972	30.7	13 002	1991	23.0	17 380	1998	24.2	18 685	2002	25.7
Turkey	1963	52.0	2 750	1987	44.2	5 163	-	-	-	-	-
United States	1967	34.2	14 330	1990	38.1	23 213	1998	39.7	27 331	2003	40.8

Table 3.2 Gini and GDP dataset, non-OECD countries

Country	Early year	Gini	GDP per capita	Recent start year	Gini	GDP per capita	Recent end year	Gini	GDP per capita	Latest year	Gini
Argentina	1953	41.3	4 874	1990	44.4	6 512	1998	49.4	9 219	2001	52.3
Bangladesh	1963	38.6	594	1988	33.6	608	1996	41.2	757	-	-
Brazil	1976	63.5	4 472	1990	60.5	4 924	1998	60.4	5 459	2001	61.2
Chile	1968	46.1	5 188	1990	55.2	6 402	1998	55.2	9 757	2000	58.1
China	1964	27.2	648	1990	26.3	1 858	1998	33.0	3 259	2003	37.1
Columbia	1967	42.8	2 784	1990	49.5	4 822	1998	50.6	5 317	2000	57.4
Costa Rica	1971	42.3	3 889	1990	42.0	4 754	1998	41.5	5 346	2000	44.5
Ecuador	-	-	-	1993	50.1	4 002	1998	54.6	4 165	2000	56.0
Israel	1979	36.3	10 516	1992	35.3	13 379	1997	38.0	15 148	2001	38.9
Jamaica	1958	51.4	2 458	1990	45.1	3 605	1998	50.1	3 533	1999	48.4
Sri Lanka	1953	42.0	980	1991	38.3	2 537	1996	41.2	3 077	2002	41.3
Malaysia	1968	44.1	1 942	1989	43.0	4 789	1997	49.9	7 774	-	-
Nigeria	1975	33.7	1 475	1992	51.6	1 270	1996	46.6	1 245	-	-
Panama	1970	52.3	3 814	1989	56.5	4 361	1998	56.8	5 705	2000	57.8
Peru	1981	57.0	4 283	1991	46.2	2 960	1997	48.6	3 736	2000	49.3
Philippines	1961	45.5	1 511	1991	41.3	2 136	1997	44.7	2 328	2000	43.9
Singapore	1973	35.4	5 977	1990	38.0	14 258	1998	44.6	22 643	2000	48.1
El Salvador	1977	42.2	2 633	1990	44.7	2 143	1998	56.0	2 717	2000	51.0
Thailand	1962	38.1	1 149	1990	43.8	4 645	1998	44.4	6 205	2001	37.1
Taiwan	1953	50.5	1 144	1990	30.9	9 910	1998	32.0	15 012	2003	33.9
Tanzania	1969	43.3	543	-	-	-	-	-	-	-	-
Uruguay	1981	37.1	6 668	1989	41.5	6 462	1998	43.9	8 315	2000	44.5
Zambia	1972	51.4	1 108	1991	77.6	788	1998	66.6	674	-	-

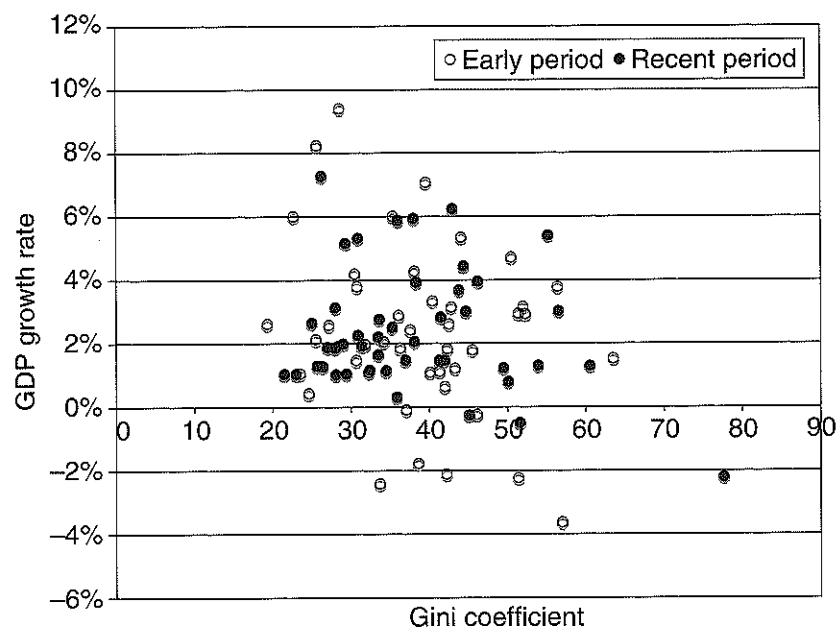


Figure 3.1 Gini coefficient and growth rates for 49 countries for both early and recent periods

assessed from this start date to 10 years later. The 'recent' category refers to Gini figures from roughly 1990, and a growth rate from the start date to 1998. We used an equivalence of means test to identify if significant differences existed between more and less equitable nations as determined by the specified Gini level. These tests also proved insignificant.

These simple statistical tests did not suggest a clear growth–equity relationship, but much of the empirical work described above including Alesina and Rodrik (1994) and Perotti (1996) suggest that inequity is generally associated with lower growth rates. The suggested mechanism is that in countries with high income inequity worker incentive is stifled, whereas in countries with very low Ginis redistribution mechanisms stifle investment. Additionally, in Partridge's (1997) study of US states he found a positive relationship between growth in states where the middle quintile had a larger share of income, suggesting that the growth–equity relationship may be more of a relative relationship than an absolute one.

The number of studies finding this relationship elicits, at minimum, a severe critique of the idea that growth and equity are antagonistic (Temple, 1999). The statistical support for the opposite relationship should be a call

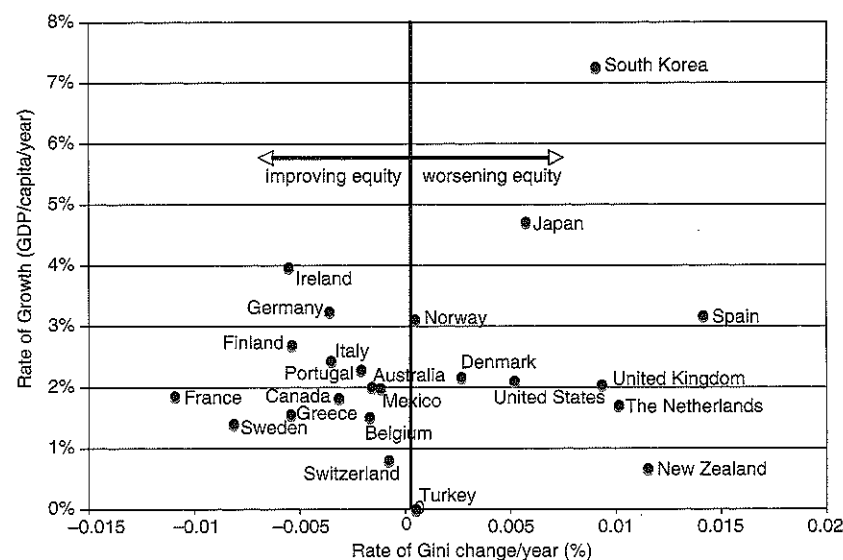


Figure 3.2 Changes in Gini for OECD countries over the past 50 years and associated GDP per capita growth

for a more in-depth look not only at which policies foster more equitable distributions, but also which policies are currently in place that hinder equity. Research into the mechanisms behind these results suggest that policies do matter, but there is no consensus on which ones are most effective (Temple, 1999).

Even within the generalization that more equitable societies have had higher growth rates there is a great amount of variation as to the growth–equity relationships for individual countries (Figure 3.1). Figure 3.2 highlights a closer look at the growth–equity movement of the OECD countries over the past 50 years using the growth rate of GDP/capita over the entire period of data (~1950–1998). For the Gini measures, we used a rate of change per year to correct for different initial Ginis and different number of observation years. This figure shows the direction in which countries moved in terms of equity, as well as their long-term growth rate.

Of note are the movements of the United States and United Kingdom. Both had long-term growth rates over 2 percent while these countries had an increase in the Gini coefficient of five and ten points respectively over a 30 plus year period. Taken together these countries lost, on average, a full Gini point every 5 years. Also of note are the countries that had similar growth rates, but significantly decreased their Gini, such as Finland and

France, Japan, Denmark and The Netherlands, despite a rise in Gini over the long term, still maintained a very equitable income spread with Gini coefficients of 31, 21 and 29 respectively.

The experiences of countries that have been able to increase income equity without compromising growth could provide valuable policy lessons. Countries like Ireland and Germany may hold key policy lessons for developing countries, which in a world of finite capacity for economic growth may not be able to follow the Kuznets type growth path. There is strong evidence that the inverted-U growth path is not the only growth–equity trajectory.

Figure 3.3 shows a similar result for the non-OECD countries over the past 50 or so years. There are a large variety of experiences. Countries like China, Singapore, Thailand and Malaysia may be following the Kuznets type growth path with high growth rates and increasing inequity. Another path is that of Sri Lanka, which has seen a long-term growth rate of close to 3 percent with a steady Gini near 41. Taiwan offers another developing country perspective, with high growth and a vast improvement in equity, with their Gini coefficient moving from 50 in 1953 to 32 in 1998. There are probably as many reasons for these movements as there are changes themselves. Conflict and corruption are two forces that have been shown to slow growth and simultaneously increase inequity. A negative

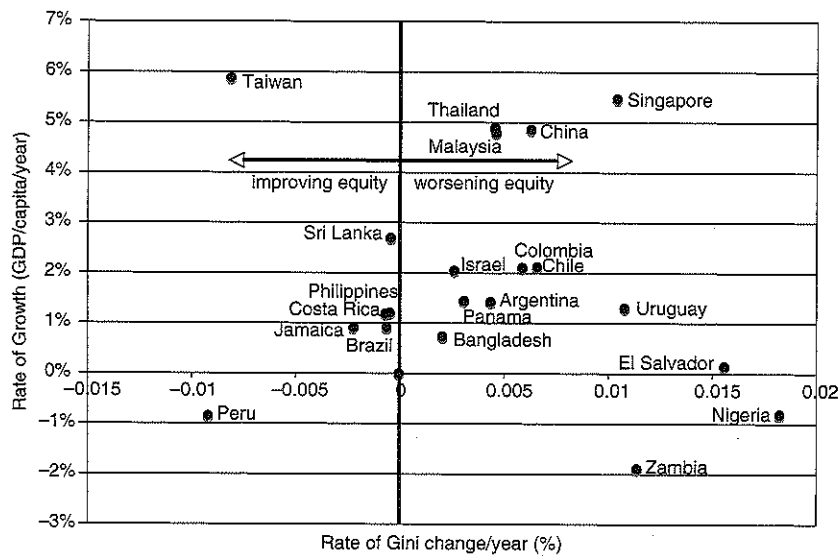


Figure 3.3 Changes in Gini for non-OECD countries over the past 50 years and associated GDP per capita growth

growth rate in and of itself can improve measures of equality by depressing total income, thereby compressing income distribution, as in the case of Peru.

Figure 3.4 is another look at the growth–equity relationship for OECD countries. Where Figure 3.2 shows the movements of countries over the long term ending in 1998, Figure 3.4 is a look at more recent changes. It highlights the changes once again in Gini per year as a percentage of Gini at the start of the period. This recent period covers roughly 1990 to 2003, depending on data availability. These changes are shown against the growth rate.

In the recent period the United States, the United Kingdom and South Korea show similar growth rates to their long-term trend, while continuing to increase inequity. Denmark and the Netherlands also show similar growth rates to their long-term trend, but have been decreasing their already low Gini coefficients. Ireland shows recent high growth rates combined with improving equity. Norway, Canada and Italy have growth rates consistent with their long-term trend but have moved from decreasing to increasing inequity. These countries along with the US and the UK may offer policy clues of how not to combine growth and equity. The lesson of Ireland may provide keys to the illusive path of growth with improving equity, a lesson valuable for development policy and developing countries.

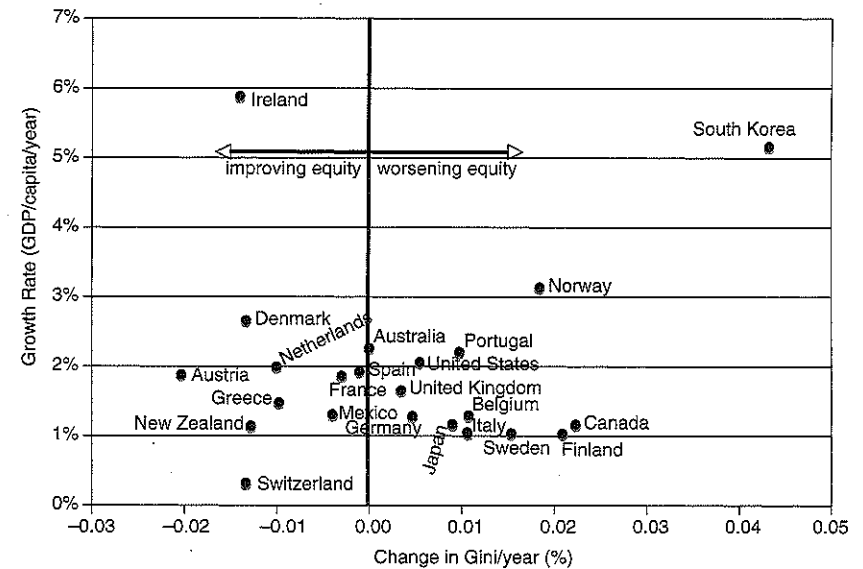


Figure 3.4 Recent changes in Gini over the past 15 years for OECD countries and their associated GDP per capita growth

CONCLUDING REMARKS

This work corroborates other recent analysis demonstrating the existence of a variety of experiences of individual countries regarding their economic growth and equity. Growth paths have been shown to be accelerating, decelerating or stagnant regardless of initial income level (Skott and Auerbach, 1995). Quah's (1996) work on convergence showed a range of dynamics for countries of various income levels. Despite the stochasticity, cross-country analysis can provide general results for framing macroeconomic questions, which can be a great complement to more specific case studies (Temple, 1999). A general finding from Kuznets (1955) that still resonates today is that growth itself is likely to have distributional consequences. In our understanding, growth is likely to affect and be affected by distribution issues.

The development policies of capital accumulation of the 1950s and 1960s, the end to import substitution projects by the IMF and World Bank in the 1980s (Wade, 2004b), and the current era of neoliberal policies have all greatly affected the development landscape over the past 50 years, often ignoring (implicitly and/or explicitly) equity issues in pursuit of growth. Our current understanding that growth and equity factors are endogenous and are likely to co-vary challenges an equity-blind growth path (Garcia-Penalosa and Turnovsky, 2006). The vital role played by institutions in Japan and Korea's development (Skott and Auerbach, 1995), the recent acknowledgment of the IMF that their liberalization policies may have exacerbated the 1997–98 global financial crisis (Prasad et al., 2003), and the astounding fact that global poverty and equity have worsened over the past 20 years of liberalization (see Wade, 2004a for a review) are all reasons why the current development policy prescriptions should be called into immediate question. The Kaldor–Kuznets–Solow consensus has been hobbled, and real world data showing global divergence (Bourguignon and Morrisson, 2002; Stiglitz, 2002; Wade, 2004a) are more in line with Myrdal's cumulative causation arguments.

Addressing within-country inequality and across-country growth rates, a new consensus is that policies do matter, but exactly which policy levers to pull is still puzzling (Temple, 1999). We have shown that countries can follow a variety of growth–equity paths, and from the experience of several countries it seems a trade-off between growth and equity is unlikely to exist. More in-depth case study work to understand which policies in which contexts can close inequality gaps and increase growth in developing countries should be the focus of future work in this field. Dismantling the policy advice built on the shaky Kaldor–Kuznets–Solow consensus is another avenue of pursuit. Finally, due to the complexity and

cumulative effects of the equity–growth relationship, Kuznets's closing words from his landmark 1955 paper seem fitting: 'Effective work in this field necessarily calls for a shift from market economics to political and social economy' (p. 28).

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