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Growth is Good for Whom, When, How?

John Donaldson

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“It should come as no surprise that the general relationship between growth of income of the poor and growth of mean income is one-to-one.” (Dollar and Kraay 2000, p. 28)

I. Introduction

Economic growth often helps the poor, but what about the many cases when it does not? The consensus that economic growth reduces poverty, encapsulated by two World Bank economists in the above-quoted article entitled “Growth is Good for the Poor,” leaves many important questions unanswered. What help does the knowledge that economic growth can reduce poverty provide for economies with few realistic prospects for robust, sustained growth? What hope does the understanding that growth reduces poverty “on average” provide for poor families that are excluded from prosperity? How should we respond when economic growth undermines the market positions of the poor, becoming what Jagdish Bhagwati calls “immiserizing growth”? What advice emerges from the linkage between economic growth and poverty reduction for those who hope to make growth even *better* for the poor? With regard to these vital issues, observations based on aggregated data concerning economic growth’s connection to poverty reduction contribute little. Instead, much can be learned from disaggregating the data and examining cases that defy this relationship, as well as those in which countries did especially well in increasing the income of the poor.

Among the research on the connection between economic growth and poverty reduction, David Dollar and Aart Kraay’s article is notable for its analysis of an extensive dataset that reflects the experience of hundreds of countries over the past few decades. Using this same dataset, we can study exceptions to the hypothesized link between economic growth and poverty reduction, as well as the cases in which income of the poor increased the most, in order to seek alternative paths to poverty reduction. This approach indirectly counters Dollar and Kraay’s two primary conclusions. They argue first that, for the countries in their extensive sample, economic growth explains nearly half of the changes in the income of the poor. This relationship is both one-to-one and consistent across different regions, over

different time periods, and for both boom and bust cycles.ⁱ This paper responds not by challenging this conclusion directly, but by identifying and analyzing “exceptional cases” – those cases within the same dataset that defy the relationship between economic growth and poverty reduction. In doing so, insights emerge regarding ways to reduce poverty beyond what economic growth might otherwise allow, as well as which mechanisms prevent economic growth from reaching the poor. Second, the authors argue that policies consistent with a liberal agenda (i.e., stable inflation rates, rule of law, financial development, reduced government consumption and increased trade openness) best produce economic growth without negatively affecting distribution, while other factors, such as education and formal democratic institutions, have little or no systematic relationship with the income of the poor. This paper challenges this conclusion by examining the extent to which “extreme cases” – those countries in the dataset that saw the greatest increases in the income of the poor – actually achieved economic growth through generally liberal prescriptions. Perhaps economic growth can be achieved through alternate means.

This paper is a departure from the approach of other scholars who criticize Dollar and Kraay’s study directly on methodological and theoretical grounds (e.g., Danielson 2001; Eastwood and Lipton 2001; Kakwani and Pernia 2000; Lubker et al. 2002; Ravallion 2001; Rozelle et al. 2003; Rodrik 2000; Weisbrot et al. 2000; White and Anderson 2001). By contrast, this research does not contest the overall, general relationship between economic growth and poverty reduction,ⁱⁱ arguing instead that there are multiple pathways to poverty reduction, of which Dollar and Kraay identify but one – economic growth spurred by liberal policies. As many have pointed out (e.g., George and Bennett 2005; Goertz 2005), aggregate statistics cannot identify the diverse ways in which countries have successfully (and unsuccessfully) attacked poverty. Instead, careful qualitative research is more effective in identifying alternative pathways. Else Øyen’s argument, nearly a decade old, applies equally today:

“Up-to-date data are necessary to ensure that the poor and the intensity of poverty are kept visible to the public eye, but it may still be wise to put somewhat less energy into sheer measurement research, and instead turn to issues that yield more in poverty understanding.” (Øyen 1996, p. 10)

Dollar and Kraay's dataset, also adopted in this research, is compiled from four different sources to produce 953 observations from 137 different countries or territories between 1950 and 1999. To make the data more balanced and evenly distributed across countries, Dollar and Kraay filter the data by choosing dates from each country that are spaced five years apart starting with the year available, resulting in 418 country-year observations of mean income of the poor. For their regression analysis, the authors further limit the sample to 258 observations from 92 countries with at least two observations, spaced five years apart.ⁱⁱⁱ While Dollar and Kraay attempt to adjust to the difficulties in comparing surveys across countries, such as differing coverage, measures and units between observations, critics argue that this dataset has numerous additional problems.^{iv} Nevertheless, I use the same data to pursue the goal of exploring what we can learn from exceptions to their research. Although some data problems can be exacerbated when shifting from aggregate data to individual cases,^v such issues are also easier to identify through the closer scrutiny that qualitative analysis affords.

II. Methodology and Objectives

Dollar and Kraay, in performing an OLS regression analysis of economic growth against poverty reduction, find an R^2 of 0.49 and a regression line with a slope of 1.19 (Figure 1). In spite of these results, the authors realize (notwithstanding their uncompromising title) that they cannot claim that poverty rates vary lockstep with changes in the economy, cautioning,

“Our findings do not imply that growth is all that is needed to improve the lives of the poor. Rather, we simply emphasize that growth on average does benefit the poor as much as anyone else in society, and so standard growth-enhancing policies should be at the center of any effective poverty reduction strategy.” (Dollar and Kraay 2002, p. 219)

Dollar and Kraay's sample contains much more variation than the R^2 measure implies. In fact, more than one in six of the authors' 285 historical cases violate the expectation that positive income growth improves the income of the poor (in 45 cases, incomes of the poor declined while GDP increased) and its correlate that negative income growth will reduce the incomes of the poor (six cases saw the income of the poor increase despite negative GDP growth). Moreover, numerous data points lie far enough away

from the regression line that they are statistically likely to be exceptional cases, ones in which the increase in the income of the poor is statistically unlikely to be explained by economic growth alone.

I determine the exceptions to this regression by computing the residuals, the vertical distance between the regression line and each data point, and then calculating the probability that the distance is due to random variation. Each point on the X-axis of the regression line corresponds to a bell-shaped curve that indicates the chance that any given data point is random. This bell curve has its modal value over the X-axis and extends in both directions along the Y-axis (Figure 2). For example, a point (such as point “A” on Figure 2) that is positioned directly on the regression line is likely to be explained by the independent variables. If the point is a modest distance (such as point “B”) from the regression line, it remains likely that the explanatory factors account for that point, though this likelihood decreases as the distance from the regression line increases. For a case far away from the regression line (such as point “C”), the likelihood becomes low.

In this case, we will calculate the chance that changes in GDP explain changes in the income of the poor for each point in Dollar and Kraay’s dataset.^{vi} When this probability drops below five percent in either direction (equivalent to a 90 percent confidence interval), I label that point an exception. This process generates two types of exceptions: a) cases in which the increase in the income of the poor significantly outpaces expectations based on economic growth (“positive exceptions,” i.e., positive from the point of view of poverty reduction), and b) cases in which the increase in the income of the poor was much less than the expectations based on economic growth (“negative exceptions”). Specifically, I subtract the change in poverty rates predicted by the model (column 4 in Table 1 below) from the value reported by the data (column 5). This “residual” value is recorded in column 6. Column 7 (labeled “outlier”) records the probability that the position of each case’s corresponding value for income of the lowest quintile is caused by random variation. This is estimated by calculating the “P” values of the residual’s “Z” scores to determine the chance that the point’s distance from the regression line is caused by random factors. The cases with an outlier score higher or lower than five percent are listed in the table.

For instance, in the five-year period between 1962 and 1971, Finland experienced an annual growth rate of 3.99 percent, according to Dollar and Kraay's data. Although this would predict that income of the poorest quintile should have increased 4.05 percent, the actual increase in income of the poor over this period, according to the data, was 14.6 percent, exceeding model's prediction by 10.56 percentage points. Since the likelihood that this data point can be explained by random error is approximately 0.38 percent, Finland is considered a positive exception, unexplained by Dollar and Kraay's model. In contrast, the economy of China between 1990 and 1995 grew at an annual pace of 8.7 percent. However, although the model predicts that the growth rate in the income of the bottom quintile would exceed 9.6 percent, the income of that group grew by 0.87 percent per annum. The chance that this data point is explained by random error is approximately 1.3 percent, meaning China qualifies as a negative exception.

If the data are correct and the model is accurate, 27 of Dollar and Kraay's 285 cases can be considered likely exceptions. In the 13 positive exceptions, the income of approximately 33.5 million poor people grew faster than the model's predicted rate by an average of 9.1 percentage points. Some 341 million poor people (101 million, excluding the case of China) in the 14 negative exceptions saw their incomes rise by an average of 8.5 percentage points less than the model predicted.^{vii} Perhaps in these exceptional cases, particular political, social or economic factors intruded to disrupt the causal connection between economic growth and poverty reduction. A complete analysis of each of the cases is an ambitious project, requiring greater time, space and specific area knowledge than is afforded here. Nevertheless, an initial examination reveals that these exceptional cases represent a diverse range approaches to poverty reduction and economic growth. The goal of this paper is not so much to analyze the situations in these countries fully, but to note that even a cursory examination of these cases reveals that they achieved these results by traversing a variety of paths and using an assortment of mechanisms. While none of these paths is new, they nevertheless serve as a counterpoint to Dollar and Kraay's conclusions about the importance of economic growth and using a liberal set of policies to achieve poverty reduction.

III. Examining Exceptional Cases

Three of the positive exceptions are Scandinavian social democracies with broad-based social programs designed to minimize poverty rates (Gustafsson and Pedersen 2000). While Norway's economy grew relatively slowly between 1979 and 1984 (2.8 percent each year) and again between 1989 and 1995 (per capita GDP shrank 0.2 percent on average each year), the income of the poorest quintile grew rapidly, increasing 14.6 percent and 9.6 percent on average each year over those periods, respectively. Similarly, the per capita GDP of Finland grew on average nearly four percent each year between 1962 and 1971, while the income of the bottom quintile increased 14.6 percent on average each year over that period. While these countries, importantly, boasted developed economies with the resources needed to sustain generous social programs, the poverty reduction achieved in each of these cases is exceptional.

Even as these social democracies maintained broadly targeted programs to ensure the distribution of wealth throughout these societies, one positive exception reduced poverty through newly established, narrowly targeted social safety nets. During the oft-derided presidency of President Giscard d'Estaing, the growth in income of the poorest quintile in France outpaced economic growth to such an extent that the country qualifies as a positive exception. During this period Giscard, arguing that France would "never be at ease with herself until all the old inequalities had been removed," established no fewer than seven benefit programs targeting the poor (Levy 1999). Partially as a result, the income of the bottom quintile rose by an average of nine percent each year, in spite of the country's moribund overall economic performance of 2.2 percent each year between 1977 and 1982, caused in large part by economic problems from an oil crisis and skyrocketing prices of raw materials.

A number of positive exceptions from the developing world achieved poverty reduction through land reform and other distributive policies. Colombia (1964-1970) is one case in which land reform appears to have increased the income of the poor, at least during the presidency of Carlos Lleras Restrepo (1966-1970). Between 1968-69 alone, some 60,000 land titles involving 2.5 million hectares were issued to peasants and unemployed workers (Findlay 1972).^{viii} Dollar and Kraay's raw data supports this view, reporting that the Gini index for income in Colombia declined from .62 to .52 between 1964 and 1970

(although the Gini index rose again from .51 to .57 between 1991 and 1995 once land reform was reversed). Thus, during a period in Colombia which included several years of land reform (1964-1970), land reform seems to be a primary cause behind the income growth of the poor, which averaged 17 percent each year despite a relatively modest annual economic growth of 2.3 percent.^{ix}

Redistributive policies are also likely to be responsible for the exceptional income growth of the poorest quintile in some of the other exceptional Latin American cases. For instance, the term of Peru's discredited President Juan Velasco Alvarado was characterized by nationalization of the petroleum and other industries, as well as ambitious land reform policies (McClintock 1981). Although Peru's economy stagnated between 1971 and 1981, growing less than one percent on average, the income of the poor in Peru increased by more than eight percent per year over that time as peasants benefited from land reform and other redistributive policies. El Salvador experienced a similar period (1989-1995), with the income of the poorest quintile increasing 9.5 percent on average, despite relatively modest annual average economic growth of nearly 2.6 percent. The peace accords signed in January 1992, ending the civil war in that country, coincided with policies designed to address staggering inequality through land transfers, support for establishing microenterprises and housing assistance, as well as broadened poverty alleviation programs intended to reintegrate combatants into civilian life (Boyce 1995). These progressive redistributive programs, along with remittances from overseas relatives^x and a period of relative peace and stability, helped to make El Salvador a positive exception.

By contrast, at least two of the positive exceptions in Latin America were led by right-wing governments that implemented structural reforms, indicating that liberal prescriptions are indeed a path that helped some countries become positive exceptions.^{xi} First, Rodrigo Alberto Carazo Odio, Costa Rica's conservative president between 1978 and 1982, faced an emerging debt crisis and rapidly increasing inflation rates. In response, he implemented IMF-mandated reforms and policies, with mixed results. Between 1977 and 1982, Costa Rica's economy shrank more than three percent each year on average, increasing unemployment. Nevertheless, the two percent increase in the income of the poor outpaced the annual four percent decline in income that the model predicts.^{xii} Second, Chile's General

Augusto Pinochet based his economic policies on market-oriented reforms under the slogan of making Chile “not a nation of proletarians, but a nation of entrepreneurs.” While a number of initiatives to help the poor were implemented in the early 1980s, when extremely poor rural families were for the first time assisted directly by social welfare policies, and a brief employment policy was implemented in the mid-1980s (phased out by 1988), the latter parts of Pinochet’s reign (1974-1990) focused primarily on the implementation of liberal policies. By in the mid-1980s, Pinochet, dissatisfied with the country’s economic performance, turned to classical economists who helped guide Chile’s economic policies through an automatic adjustment strategy. The policies, consistent with a pro-market, liberal approach, called for active macroeconomic management, consolidation of the market-oriented structural reforms from the 1970s, and debt management and restructuring of debt payments (Hudson 1994). Moreover, despite intentions to break from the abuses of the Pinochet’s regime and to provide more equitable policies, the first several post-Pinochet governments continued these policies, including the Aylwin administration that succeeded Pinochet’s (Taylor 2004; Murray 2002). Despite Pinochet’s abhorrent human rights record, between 1987 and 1992, during the last part of the Pinochet and early part of the Aylwin administrations, Chile became a positive exception, during which the income of the poor increased 13.3 percent, dwarfing the pace of Chile’s already impressive economic growth rate of 5.1 percent per year.

Just as countries have traversed a variety of paths to become positive exceptions, so too have some countries become negative exceptions due to a variety of causes. The most common of these in the sample did so through implementing rapid liberalization reform programs. The “shock therapy” policies implemented in the wake of Communism’s collapse and the subsequent privatization policies of Eastern Europe and the former Soviet Union sparked economic recessions that hit the poor especially hard (Bunce 1999). The gross domestic products of Bulgaria (1989-1994), Estonia (1988-1993) and Ukraine (1988-1995) declined annually by an average of 4.9 percent, 8.4 percent and 11 percent, respectively. However, over this period, the income of the poor fell far more than expected, declining each year by an average of 16.3 percent, 18.4 percent and 20.2 percent, respectively. Russia’s experience (1989-1993) is especially

dramatic. While the Russian economy contracted as per capita GDP declined 6.4 percent each year on average, the income of the poor declined 20.9 each year, as workers were retrenched, inefficient factories were closed, the agricultural sector weakened and economic protections were dismantled. Overall, these Eastern European countries implemented sudden transitions from planned to market-based economies, including the removal of price supports, elimination of subsidies from state-owned enterprises, liberalization of foreign trade and slashing of government expenditures (Derleth 2000) – especially-rapid versions of liberal reforms. However, without economic and political institutions to moderate the effects of these sudden shifts, the economy collapsed. Productivity in all of the countries that implemented shock therapy plummeted, with the poor suffering more than every other group in many countries (World Bank 2000). Poland, despite being the only post-socialist state to achieve a positive average GDP growth rate between 1990 and 1997 (Bunce 1999) and the only European post-socialist economy to surpass its pre-transition GDP within six years of the transition (Derleth 2000), is considered a model for post-Communist reform.^{xiii} Nevertheless, Poland’s post-socialist experience still qualifies as a negative exception, as shock therapy was especially harsh on the poor, whose income declined by an average of 2.7 percent each year between 1991 and 1996, indicating that this country’s record during its early reform period may be less laudable is commonly asserted.^{xiv}

At least two other countries became negative exceptions through rolling back progressive social policies. Colombia between 1970 and 1978, directly after the period in which the country was a positive exception, became a negative exception. During this period, the government rolled back land reform and implemented market-oriented policies, including increasing openness, incentives designed to attract foreign capital and elimination of barriers to free investment in the countryside (Molano 2000). The government’s cancellation of land reform in 1971 and the subsequent introduction of new crop varieties during the green revolution exacerbated the already inequitable distribution of land (Findlay 1972; Puyana 2000). Ironically, though this is considered a time of economic recovery, with annual per capita GDP growth in Colombia increasing during this period by 3.3 percent on average, the income of the poor concurrently declined annually by an average of 4.8 percent.

Like Colombia, China rolled back key initiatives that were important to raising rural poor incomes. That China is a negative exception is surprising, since the country is often cited as a typical case in which economic growth directly contributed to poverty reduction (e.g., Rozelle et al. 2003; World Bank 2001). Although economic growth has increased steadily and the rural poverty rate declined sharply in China since the beginning of the 1978 post-Mao era, the direct link between economic growth and poverty reduction over some periods is less clear. While China's economic growth between 1978 and 1984 led to unprecedented windfalls for the rural poor in most areas, in the early 1990s the pace of rural poverty reduction slowed despite continuing rapid economic growth. One key reason was the shift from reforming the rural economy to stimulating urban development, while slashing prices for agricultural goods purchased under government quotas (e.g., Park and Wang 2001). According to Dollar and Kraay's data, economic growth in China between 1990 and 1995 increased by an average of 8.7 percent, even as the income of the poor increased on average less than one percent each year.^{xv}

In contrast, Brazil became a negative exception primarily because of debt and corruption. The country's economic downturn of 1986-1993, a period of mounting debt and rampant corruption was inaugurated by the Sarney administration's misguided and overly punitive 1986 policy of price and wage control followed by a 1987 moratorium on foreign debt payments that isolated Brazil, weakening foreign credit and investment. In 1990, its first year in office, the succeeding Collor presidency implemented far-reaching economic reforms, including deepening price and wage freezes, confiscating savings and deindexing the economy, which succeeded in curbing inflation while slashing real incomes (Roett 1999, pp. 14-15). The policies implemented during these two presidencies caused far more pain to the poorest quintile (the income of the poor declined 10.6 percent each year) than to the economy as a whole, according to the data. Abuses of the state hamstrung national development (per capita GDP dropped less than one percent each year over that period), although the poor, whose income declined 10.6 percent per year, fared worse than the population as a whole.

Chaos and violent disruption was the direct cause of at least one other negative exception. The economic losses to the poor when death squads terrorized El Salvador compounded the general misery of

this period. Much of the period of the “death squads,” which began with the right-wing military government seizing power in 1979 and ended with peace accords in 1992 (Boyce 1995), overlaps with the 1977-89 period in which the income of the poor shrank 9.3 percent per year, compared to the annual decline in per capita GDP of 1.7 percent. Subsequently, as we have seen, the country’s recovery qualified it as a positive exception.

That Singapore is also a negative exception is surprising, given that the country’s relatively broad-based housing and primary education policies were intended in part to moderate poverty. Nevertheless, between 1978 and 1983, when per capita economic growth averaged 5.8 percent per year, the income of the lowest 20 percent declined 1.3 percent on average each year. During this period, the government intentionally transformed the economy to be more human and physical capital-intensive, encouraging the automation of processes previously done by non-skilled or semi-skilled physical labor (Chow et al. 1988, p. 178; Peebles and Wilson 1996, p. 37). Since public assistance for the poor in Singapore is highly restricted, families avoid poverty mainly through employment (Lee 2001). During this period, economic growth remained moderately strong, but those with insufficient human capital to meet new demands from the service sector apparently lost income (Chow et al. 1988). As is discussed in the next section, however, the relative losses for the bottom quintile in Singapore between 1978 and 1983 are sandwiched between two periods (1973-1978 and 1983-1988) in which Singapore achieved one of the most impressive increases in the income of the poor that can be found in Dollar and Kraay’s dataset.^{xvi} Nevertheless, during this five-year period, as the government navigated a large-scale change in industrial structure designed to keep Singapore’s economy competitive, lower-skilled workers lost income.

Focusing on exceptional countries can sometimes identify two comparable countries that are relatively similar in many respects, but are on opposite ends of the spectrum. Examining these naturally controlled cases allows us to focus on contrasting policies and other social features that might cause the differences. This sample contains two neighboring African countries, one a positive exception, the other a negative one. Paradoxically, during a period of communal violence and a border war with neighboring Senegal (1989-1991), the income of the poor in Mauritania increased 9.7 percent each year on average

between 1988 and 1993, even as per capita GDP increased by an average of a mere 1.7 percent per annum, according to the data. Could the increase in the income of the poor be explained by a return to stability in the wake of recovery from repeated droughts in the 1980s and the cessation of hostilities with neighboring Senegal (Coulombe and McKay 1996)? Mali, Mauritania's neighbor, is also an exception, but a negative one. The country's economic recession – per capita GDP declined 2.6 percent on average each year between 1989 and 1994 – was especially harsh to the country's poor, whose income declined 11.4 percent annually over that period. While economic growth recovered in the mid-1990s, reaching 7.4 percent in 1995, even as late as the middle of the present decade, an estimated 175,000 Mali children remain undernourished (United Nations World Food Programme 2005).

The contrasting experiences of these two analogous countries over similar time periods make them ripe for comparison across a range of issues, including democratization and structural adjustment. In the cases of Mali and Mauritania, democratization is not a likely cause, because it appears to have been weaker in Mauritania than it was in Mali, opposite of the expected pattern. Whereas both countries established democratic institutions in 1992 and democracy was shaky in both countries, Mali's president Alpha Oumar Konaré successfully completed (despite rampant corruption and vote boycotting) two full constitutionally-limited terms between 1992 and 2002. In contrast, Mauritania's incumbent president Maaouya Ould Sid'Ahmed Taya's election in 1992 was widely regarded as illegitimate, and his regime, especially unpopular, was eventually toppled in a bloodless coup in August 2005, reportedly delighting crowds. Thus, democratization was apparently weaker in the positive exception than it was in the negative one. A more likely explanation is the effect of structural adjustment. Structural adjustment is not an explanation for Mauritania's performance, since the country did not accede to a structural adjustment program until 1999, well after the time period in which it was a positive exception. On the other hand, Mali implemented a stringent and controversial IMF program that overlapped with the period in question. Under IMF conditions, Mali slashed government employment, sold state assets, increased taxes and enhanced control over import and export duties. The sudden and steep devaluation of the local currency made it more difficult and expensive for urbanites – the poor especially – to purchase food (Toulmin et al.

2000). While structural adjustment is unlikely to be the sole factor explaining Mali as a negative exception, it likely contributed to the country's qualifications as a negative exception.

IV. Analyzing Extreme Cases

Unlike analyzing exceptional cases, which primarily addresses the link between economic growth and poverty reduction, examining “extreme cases” – those cases (whether exceptional or not) that performed best in terms of increasing income of the poor^{xvii} – can raise questions about both of Dollar and Kraay's primary conclusions: that economic growth effectively reduces poverty and that liberal economic policies are the best way to achieve growth. That 12 positive exceptions (all except Costa Rica) represent nearly half of the sample's 25 leading extreme cases is inconsistent with the conclusion that economic growth is critical for income growth of the poor. That such a high proportion of these leading cases of poverty reduction cannot be explained by economic growth indicates that cases within the database itself suggest there are ways other than economic growth to achieve poverty reduction. Although the majority of these 12 cases had positive economic growth, the increase in the income of the poor significantly outpaced the extent of economic growth that could be anticipated using an explanation of economic growth alone, as analyzed in the section above. Analyzing the non-exceptional extreme cases is also a way to explore how pro-poor economic growth is best achieved (see Table 2). Many advocates of liberal reforms assert that strategies focusing on reducing the size, role and expense of government, establishing and open, market-based economy and minimizing inflation should be especially successful at increasing economic growth that is particularly good for the poor. If so, many or most of the other 13 extreme cases that are not exceptions (i.e., those cases in which economic growth contributes to explaining poverty reduction) should have achieved this result entirely or primarily through liberal policies. However, while some cases are consistent with this expectation, most other cases achieved this result through other strategies.

Six of the cases in which economic growth was generally associated with rapid poverty reduction are from five “Asian miracle” countries and territories, including Korea (over two periods), Japan, Singapore, Taiwan and Hong Kong. However, these countries implemented economic strategies that involved a mix

of market forces and strong, active state intervention. While some scholars argue that these countries featured modest government roles, the consensus is that each of these economies, with the exception of Hong Kong, relied heavily on state-led growth and development, and did not even approximate typical cases of liberal economic policy (e.g., Johnson 1982; Amsden 1985; Huff 1999; Wade 1993).

Trinidad and Tobago (1976-1981) and Gabon (1960-1975) are both highly dependent on oil for their economic growth. Trinidad and Tobago's economy received a boost from an oil boom in 1974, with its economy peaking in 1983 – a period that is similar to the period in which the income growth of the country's poor ranked 16th among Dollar and Kraay's sample. Gabon's discovery of oil and subsequent oil boom in the 1970s supported two decades of economic growth, which averaged 9.5 percent each year, making Gabon one of sub-Saharan Africa's wealthiest nations. That oil booms largely explain both cases is ironic, first because the oil industry is generally capital-intensive and foreign-owned and managed, excluding non-poor people from the majority of the job opportunities generated from the sector.^{xviii} Second, the windfalls in government finance in oil-rich countries usually benefit the non-poor, as government jobs and programs funded by oil revenues often favor the middle-class and higher. In Trinidad and Tobago's case, employment of the low-income poor was primarily in the construction industry, as the government invested in the energy sector and infrastructure, and these jobs disappeared soon after the subsequent oil bust (IBRD 1995, p. 11). Third, the "Dutch Disease," in which oil exports drive up currency exchange rates, hurting other domestic industries and sparking deindustrialization, should also limit employment generating opportunities in other sectors. This subsequently occurred in both countries, with little diversification occurring in either country. While both countries went into lengthy recessions during the slump in oil prices in the 1980s, hurting the poor along with the rest of the economy, the initial oil booms of both countries, the data suggest, sparked economic growth that benefited the bottom quintile of the population more than it did the rest of the population (IBRD 1995; World Bank 1996; Zafar 2004).

The diverse island nation of Mauritius (population 1.2 million), which a 1972 novel described as "an island that everyone wants to leave" (Laville 2000, p. 277), has achieved since its independence in 1968 a

remarkably rapid increase in living standards. After a failed attempt to reduce the nation's dependence on sugar exports through a misguided program of ISI, the nation opened its economy, establishing an export processing zone in 1971 and implementing between 1982 and 1986 a World Bank and IMF structural adjustment program. Since that time, Mauritius has focused on export-led growth and tourism to diversify the economy. By 1984, the export processing zone employed 70,000 workers (more than a quarter of the total workforce), while tourism took up an increasingly important role in the economy. While the nation's government was actively involved in dulling the sharp edges of adjustment (including raising wages 14 percent to compensate for losses in real wages due to adjustments) and establishing economy-promoting programs (like the export processing zone), Mauritius, like Hong Kong, is nevertheless overall consistent with Dollar and Kraay's prescriptions. By opening up to exports and foreign investment while faithfully implementing structural adjustment programs, the country established a platform for growth, the benefits of which went disproportionately to the poor (Findlay and Wellisz 1993).

V. Conclusions

This brief survey serves as a counterpoint to two common findings in the social science literature: a) a robust link between economic growth and poverty reduction and b) a causal connection between liberal economic policies and economic growth. Thus, this article contributes to the literature countering the "Washington Consensus" not by directly contradicting these conclusions, but by analyzing the dataset of an influential article that reinforces these arguments to fill in significant blanks.

This process does identify two exceptional cases, Costa Rica (1977-1982) and Chile (1987-1992), that suggest that liberal policies can increase the income of the poor without economic growth, as well as two extreme cases, Mauritius (1986-1991) and Hong Kong (1981-1986), that implemented liberal policies and not only achieved steady economic growth, but also experienced some of the most rapid increases in the income of the poor. In addition, this process identifies negative exceptions – which were also caused by a variety of factors – that include cases in which countries adopted policies consistent with the liberal agenda by implementing shock therapy programs, restructuring their economies or shifting away from progressive to regressive redistributive policies. Given the conclusions of the original article, a study of

both extreme and exceptional cases should discover more positive examples and fewer negative ones, suggesting that what is found in aggregated data does not necessarily imply common occurrences at the case level. That some negative exceptions were caused by violent, right-wing terror, El Salvador (1977-1989)) and through corruption and high debt (Brazil (1986-1993)) does not take away from this mixed record for liberal policies. Moreover, by analyzing other positive exceptional cases, this analysis also demonstrates that many pathways – those that are largely inconsistent with liberal policies – effectively reduced poverty through means other than economic growth. Some of these positive exceptions centered on progressive redistribution, including Colombia (1964-1970), El Salvador (1989-1995) and Peru (1971-1981). The case of France (1975-1981) exemplifies an approach that insulated the poor from economic recession through the use of social welfare policies. No fewer than three positive exceptions are Scandinavian social democracies. These exemplify paths to poverty reduction far different than prescriptions that liberal economists generally advocate.

Similarly, most of the extreme cases are examples not of liberal states, but of developmental ones – governments that achieved economic growth and poverty reduction not through small government, but through active, state-led economic development. The resulting economic growth of these cases stimulated some of the highest rates of income growth for the poor. The oil endowments of other extreme cases (exemplified by Gabon and Trinidad and Tobago) allowed, during oil boom years, sharp increases in economic growth and even more impressive gains in income for the poor. The remaining two extreme countries, France (1962-197) and Cold War-era Bulgaria (1984-1989), also provide little additional support for liberal policies. While Hong Kong and Mauritius appear to reflect a liberal orientation, an open economy and a relatively light (though vital) role for government, these are but two of the 25 extreme cases in Dollar and Kraay's sample. Therefore, while a complete list of viable pathways to poverty reduction should include economic growth (achieved in a number of ways) and liberal economic policies (which have reduced poverty through growth and independently of growth), it should also incorporate numerous other strategies that have been used by many countries to reduce poverty (See Figure 3, which by no means exhausts the entire range of possible strategies).

These conclusions are not new. Area specialists and other scholars have long cited these positive exceptions for their unexpected accomplishments in reducing poverty without economic growth and these extreme cases for their achievements in increasing the income of the poor. Nevertheless, a point often lost is that there are multiple paths to reduce poverty and multiple ways to exacerbate it. This brief survey represents an initial exploration into these issues, a step that is incomplete. First, the database adopted for these exercises, though covering the experiences of an extensive range of countries over the past several decades, understandably omits many countries – especially the poorest, for which data are difficult to obtain. Moreover, limitations in space, time and expertise prevent the extensive exploration required to establish strong causal linkages between potential factors and the end result. In this article for example, some exceptional and extreme cases were not analyzed, while the analysis for others was by necessity brief. Nevertheless, for many of these cases, distinct policies and strategies implemented over specific time periods can be identified as plausible candidate causes. For instance, Peru’s case was based on a special set of radical redistributive policies implemented by a left-leaning administration that resulted in a pattern that violated the general relationship between economic growth and poverty reduction. Despite the need for additional work to trace causal connections between these policies and the economic effects, we can initially suggest that in many cases, government strategies and policies shaped and influenced the degree of economic growth and poverty reduction, as well as the degree to which economic growth (or the lack thereof) influenced poverty rates. It is insufficient to look at economic factors alone. Understanding the political and social contexts is crucial.

In most cases, the factors that were tentatively identified in this paper demand further attention. Because these factors are not unique, they are unlikely by themselves to explain these relatively unusual outcomes. For instance, while some of the positive exceptions are Scandinavian social democracies (Finland and Norway), identifying them as such is insufficient to explain these performances. Since many social democracies (e.g., Sweden and Denmark) and many time periods in Norway and Finland were not exceptional under this study’s strict criteria, it is not possible that these countries’ status as social democracies *alone* account for their exceptional results. Similarly, some countries that restructured their

economies achieved strikingly different results, with some (e.g., Costa Rica) becoming positive exceptions and others (e.g., Mali) becoming negative ones. Crucially, most countries that implemented structural adjustment programs were not exceptions in either direction – thus restructuring by itself is unable to explain either type of exceptional result. Identifying which factors, in combination with restructuring (assuming that structural adjustment is involved at all), led to these puzzling results requires a closer comparative review of the cases. Through qualitative methods, we can discover the complex array of factors, whether political, economic, social, geographic, demographic or otherwise, that interacted to produce these results.^{xix}

Some might argue that, valid as these conclusions might be in the short term, fewer exceptions will appear in the long term because the disjuncture between economic growth and poverty reduction narrows over time. For instance, following the principles behind Kuznets's inverted "U" (which predicts that, due to varied responses from different economic sectors under economic growth, income inequality will initially increase for a time as the economy grows, before subsequently diminishing), we would expect that "negative exceptions" could occur while growth is primarily benefiting the non-poor, until the gap closes over time as the benefits of growth spread, possibly even creating "positive exceptions." Little empirical evidence supports Kuznets's inverted "U" (Kanbur 2000), but even without following that strict pattern, growth can eventually benefit the poor. This appears to be the case with Singapore, which was an extreme case in one period (1973-78), a negative exception during a subsequent period (1978-1993), before becoming an extreme case once again.

While this argument is plausible, many advocates of economic growth and liberal economic policies specifically reject "trickle-down" growth as an important mechanism for poverty reduction (e.g., Dollar and Kraay 2002, p. 219). Moreover, few of the cases fall into this pattern. For instance, most of the Asian developmental states succumbed to financial crisis that subsequently produced more inequality and an upright (not inverted) "U" shape. Colombia, for one, became a negative exception after – not before – it was a positive exception. El Salvador does show an inverted "U" pattern, but this is explained by peace and redistribution, not by the dynamics that Kuznets predicts. In many countries, such as China (which in

the 1980s showed an upright “U” pattern), the Gini index continues to grow, despite decades of growth. The image of a generation sacrificing for the benefit of their children is evocative, yet it is probably more common to see a generation of poor people toiling for national development, the benefits of which are skewed away from themselves and their children alike. While economic growth may someday trickle down to the poor, the vague promises of such future gains may be a cold comfort.

To provide models that have increased income of the poor in the present, we have looked to a variety of cases, both extreme and exceptional. Of the two types, the latter is more controversial, since the suggestion that we scrutinize exceptions is often viewed with skepticism. Many social scientists using regression and other types of quantitative methods often discard residual cases as random anomalies that, while inconvenient, do not detract significantly from, or contribute to, the overall conclusions. Granted, some exceptional cases will be explained by important but uninteresting (to social scientists) factors, such as weather or natural disasters, which are largely out of human hands. Data errors can create other apparent exceptions. Furthermore, exceptions by themselves do not undermine a general relationship – to assert that they do falls into the trap of extreme falsificationism in which one or some exceptions undermine otherwise generally applicable theoretical statements. For these reasons, in the policy realm, we should be cautious in applying insights from such exceptions to other cases, as much damage has been caused by blindly following models generated in certain spheres to dissimilar situations.

Despite these concerns, it remains possible that these unusual patterns are caused by social actors who did something within the political, social or economic realms that the model failed to anticipate. More broadly, disaggregated models of all kinds potentially produce puzzling cases that might offer potential guidance that nations can consider. Seeking anomalies, and understanding and explaining them, furthers theory, a key mission for social scientists. Theoretically, analyzing such exceptions deepens our understanding of the connection between economic growth and poverty reduction and the conditions under which this connection applies. Studying outliers opens up theoretical space, allowing us to ask: what other factors reduce poverty? Similarly, for policy purposes, researching countries that have defied the link between economic growth and poverty reduction uncovers empirical models that policymakers

seeking to reduce poverty can cautiously emulate, carefully adapt or consciously avoid. Such a study can contribute ideas to the United Nations Millennium Project's goal of halving poverty around the globe. Within the variation in Dollar and Kraay's data are clues to alternative paths to effective poverty reduction. Studying exceptional cases increases our knowledge on what has and has not worked (besides promoting economic growth) for reducing poverty. As two economists argue:

“However, the general assertion that ‘growth is good for the poor’ is not the most interesting way to interpret this finding. What is interesting is to identify common features of positive (negative) residuals—cases where growth leads to substantially better (worse) poverty outcomes than predicted from global regressions. If these features can be linked to policies, there is a case for switching toward policies that connect the poor more to growth...” (Eastwood and Lipton 2000, p. 40)

This paper reflects precisely this call for a study. Its conclusions do not undermine a basic conclusion: economic growth and poverty reduction are related, with the former often causing the latter. At the same time, in numerous cases involving tens of millions of poor people, economic growth is divorced from poverty rates. For negative exceptions, either heady economic growth sparked little poverty reduction or recessions hurt the poor significantly more than it did others. For positive exceptions, either the income of the poor increased despite negative growth or poverty rates declined without much economic growth. Similarly, the best-performing countries, as judged by increases in the income of the poor, can be explained by economic growth only about half the time and by fundamentally liberal policies only rarely.

Although advocates of economic growth and liberal economic policies at times acknowledge the contingent relationship between economic growth and poverty reduction, the thrust of their arguments is generally less compromising.^{xx} Moreover, the use of aggregate data to seek solutions to poverty comes dangerously close to a search for a panacea, part and parcel of the discredited attempt to confront complex and multifaceted social issues with a covering law. There is no miracle lever – not economic growth, not

the market, not the state – for poverty reduction. Economic growth sometimes reduces poverty; sometimes, when poorly distributed, it leaves poverty untouched. Other times, when economic growth shifts market forces, capital and property rights against the interests of the poor, it can undermine the positions of the most vulnerable of society, exacerbating poverty. When economic growth does benefit the poor, often it is insufficient or takes a long time in coming. Nobel Lauriat Amartya Sen’s argument, nearly two decades old, remains true today:

“Not merely is it the case that economic growth is a means rather than an end, it is also the case that for some important ends it is not a very efficient means either... It might well be the case that ‘money answereth all things,’ but the answer certainly comes slowly.” (Sen 1983, p. 754)

More than one billion people live on less than one dollar a day, and annual poverty-related deaths exceed 18 million (Pogge 2005). Given the contingent and sometimes long-delayed benefits of economic growth for the poor, the imperative of discovering alternative pathways to reduce poverty should not be doubted.

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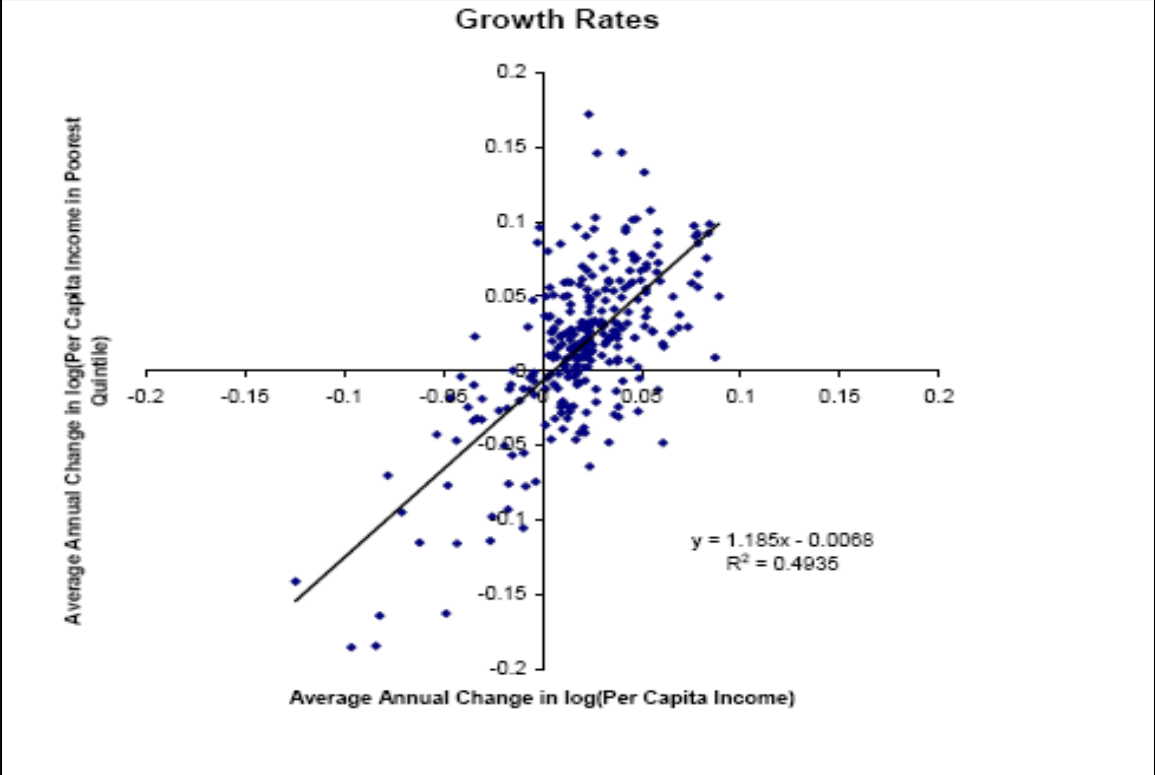


Figure 1: GDP growth rates compared with changes in income of the poor
Source: Reproduced from Dollar and Kraay (2002)

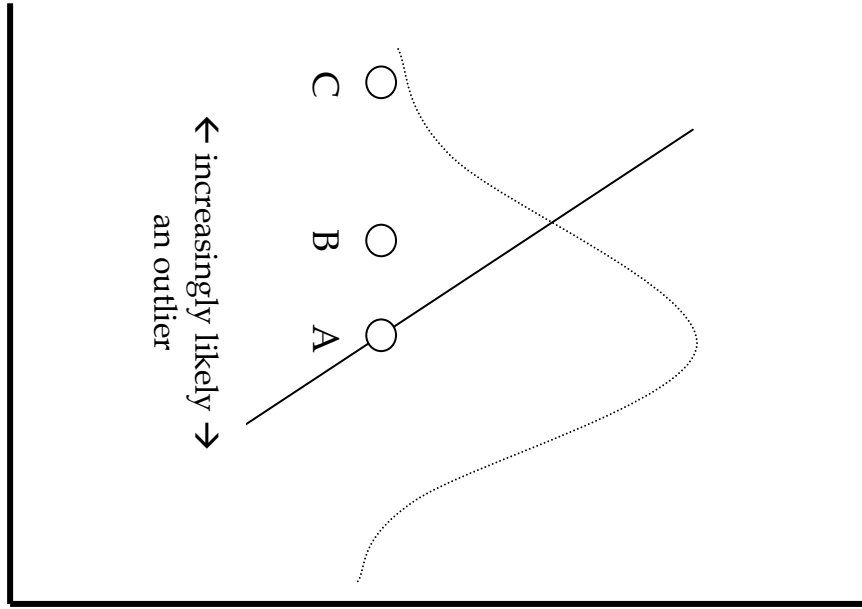


Figure 2: Calculating likelihood given point is an outlier

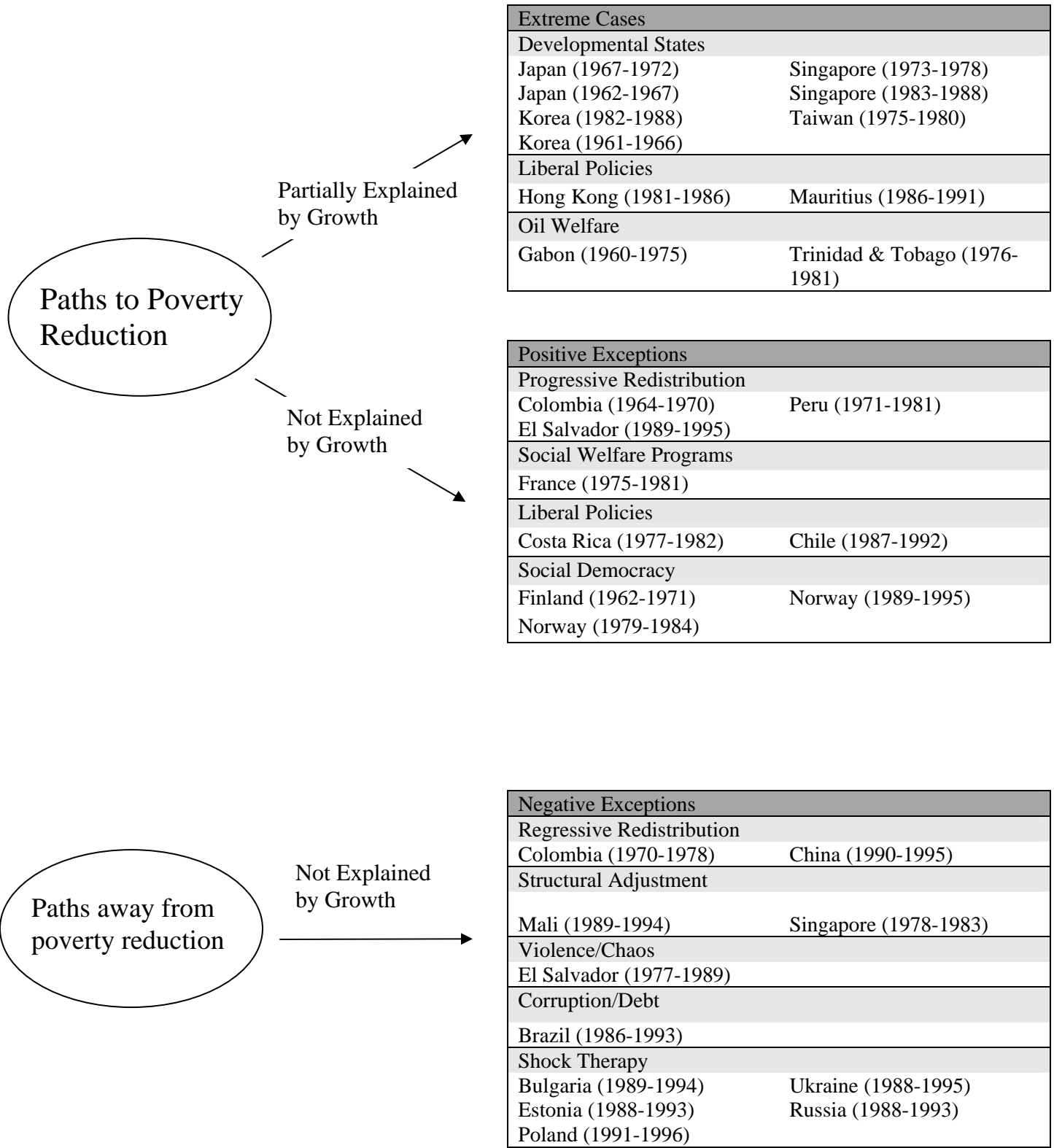


Figure 3: Multiple Paths to Poverty Reduction

<u>Country</u>	<u>Time Period</u>	<u>Annual Growth of GDP/Capita</u>	<u>Predicted annual change in income of lowest quintile</u>	<u>Reported annual change in income of lowest quintile</u>	<u>Residual Re - Predicted</u>
Cases in which reported annual change in income of lowest quintile exceeded model's predictions					
Colombia	1964-1970	2.33%	2.08%	17.16%	15.08%
Norway	1979-1984	2.75%	2.58%	14.57%	11.99%
Finland	1962-1971	3.99%	4.05%	14.61%	10.56%
Nepal	1977-1984	-0.15%	-0.86%	9.61%	10.47%
Honduras	1986-1991	-0.25%	-0.97%	8.62%	9.60%
Yemen	1992-1998	0.28%	-0.35%	8.00%	8.35%
Mauritania	1988-1993	1.72%	1.36%	9.65%	8.30%
Peru	1971-1981	0.91%	0.40%	8.51%	8.11%
Chile	1987-1992	5.14%	5.41%	13.35%	7.94%
Norway	1989-1995	2.67%	2.48%	10.26%	7.78%
El Salvador	1989-1995	2.59%	2.39%	9.51%	7.11%
France	1975-1981	2.19%	1.92%	9.01%	7.08%
Costa Rica	1977-1982	-3.41%	-4.72%	2.25%	6.97%
Cases in which reported annual change in income of lowest quintile fell below model's predictions					
Ukraine	1988-1995	-10.96%	-13.66%	-20.21%	-6.55%
El Salvador	1977-1989	-1.74%	-2.73%	-9.31%	-6.58%
France	1956-1962	3.84%	3.87%	-3.07%	-6.95%
Singapore	1978-1983	5.83%	6.23%	-1.28%	-7.51%
Mali	1989-1994	-2.62%	-3.78%	-11.39%	-7.61%
Poland	1991-1996	4.83%	5.04%	-2.73%	-7.78%
Estonia	1988-1993	-8.40%	-10.63%	-18.41%	-7.78%
Colombia	1970-1978	3.35%	3.29%	-4.79%	-8.08%
Dominican Rep	1984-1989	2.38%	2.15%	-6.45%	-8.59%
Brazil	1986-1993	-0.97%	-1.83%	-10.57%	-8.75%
China	1990-1995	8.71%	9.64%	0.87%	-8.77%
Bulgaria	1989-1994	-4.86%	-6.43%	-16.28%	-9.85%
Puerto Rico	1963-1967	6.08%	6.53%	-4.80%	-11.33%
Russia	1988-1993	-6.43%	-8.30%	-20.88%	-12.58%

Table 1: Exceptional cases. Sources: Dollar and Kraay (2002); author's calculations

<u>Country</u>	<u>Time Period</u>	<u>Growth: Income of Bottom Quintile</u>	<u>Rank: Growth of Bottom Quintile</u>	<u>GDP Growth</u>
Singapore	1973-1978	10.7%	5	5.4%
Korea	1961-1966	10.2%	7	4.7%
France	1962-1970	10.1%	8	4.5%
Japan	1962-1967	9.8%	9	8.4%
Taiwan	1975-1980	9.7%	10	7.6%
Singapore	1983-1988	9.6%	13	4.2%
Hong Kong	1981-1986	9.3%	15	4.2%
Trinidad &				
Tobago	1976-1981	9.3%	16	5.8%
Korea	1982-1988	9.2%	17	8.4%
Bulgaria	1984-1989	9.2%	18	7.8%
Gabon	1960-1975	9.0%	20	7.7%
Japan	1967-1972	8.6%	22	7.8%
Mauritius	1986-1991	8.4%	24	5.8%

Table 2: 25 cases with most rapid growth of income of bottom quintile, excluding exceptional countries. Sources: Dollar and Kraay (2002); author's calculations.

ⁱ Although most researchers concede that the economic growth's connection with poverty reduction is to some degree contingent, most academics, including skeptics such as Dani Rodrik (2000) and Oxfam (2000), also agree that economic growth is often helpful – even necessary – for reducing poverty. This consensus drives economist Ravi Kanbur, who studies the debate surrounding economic growth and poverty reduction, to label the debate over the need for economic growth a “red herring,” concluding, “The word ‘growth’ was immediately divisive ... with [one group] accusing [the second] of being ‘anti-growth,’ and [the second group] characterizing [the first] as holding the view that ‘growth is everything.’ In fact, there is more agreement here than meets the eye, and the rhetoric of both groups stands in the way of seeing the degree of agreement that does exist” (Kanbur 2001).

ⁱⁱ The conclusions are limited. Even if accepted at face value, Dollar and Kraay's results do not indicate that economic growth reduces either absolute poverty, since they define poverty relatively within each country, or inequality, since positive overall income growth actually exacerbates absolute inequality if it varies one-to-one with the income of the poor (Ravallion 2001; Eastwood and Lipton 2001).

ⁱⁱⁱ Because the resulting periods do not correspond to changes in administrations or policies, the particular patterns of years impede analysis of the political causes of changes. This problem plagues the authors' attempts to assign variables to factors such as degree of democracy and trade openness, as well as my attempt to analyze why some cases were exceptions.

^{iv} Such criticisms include: the dataset contains implausible changes in income for some countries, excludes the poorest countries and most time periods over the past 45 years, includes too much variation in the number of observations for each country and likely depends on data from one or two countries (Weisbrot et al. 2000; Eastwood and Lipton 2001; Lubker et al. 2000).

^v For instance, the emergence of Yemen (1992-1998) and Nepal (1977-1984) as positive exceptions (explained below) is inconsistent with other research. During the identified period, Yemen suffered a protracted and severe recession resulting in rising unemployment and inflation. The poor likely suffered

from lost job opportunities, and from declining remittances caused by the return of overseas workers during the first Gulf War. The unsustainable increase in government spending, moreover, more likely benefited civil servants and segments of the population other than the poorest quintile. Whether the 1995 reform program – which enhanced infrastructure and improved health – can account for the reported increase in income of the poor requires further study (Republic of Yemen 2002). Similarly, one study (Asian Development Bank 2002) suggests, in contrast to Dollar and Kraay’s data, that rural poverty in Nepal increased markedly from the mid-1970s and through the 1977-1984 period, although at least one NGO contests these statistics.

^{vi} In the statistics used here (as in Dollar and Kraay’s article), economic growth is measured in changes in per capita GDP, expressed as an average rate over a particular period of at least five years. Income growth of the poorest quintile is also expressed as average annual changes. Some of the samples measure incomes through consumption, as explained in Dollar and Kraay (2002).

^{vii} Since Dollar and Kraay’s data, though extensive, are partial and exclude many poor countries, this likely underestimates the extent that such exceptions occurred in the world.

^{viii} The effect of land reform on poverty in Colombia is contested. Some analysts, pointing out that the Gini coefficient for land holdings declined only modestly from .87 to .84 between the 1960s and 1990 (Deininger 1999), argue that land reform failed to make land holdings more equitable, in part because most of these new land titles were taken not from large farms but from public land (Dorner and Felstehausen 1970). However, the date range of these analyses may be too broad to determine the effect of the program, as land reform was rolled back in the early 1970s. Subsequent research shows that the increase in the concentration of land holdings, as Deininger (2004) subsequently noted, occurred after this rollback, primarily between the mid-1980s and 1990s when the share of land controlled by larger farms increased from 46 percent to 54 percent between 1984 and 1997.

^{ix} Urban-to-rural migration increased substantially during this period, probably contributing to these rates of growth. However, the rate of increase in urban population, which greatly outpaced expansion in urban jobs, limited the benefit of migration for the income of poorest quintile (Dorner and Felstehausen 1970).

^x Whereas in 1989, remittances from relatives made up 3.5 percent of the country's GDP, after the peace accord was signed remittances increased rapidly, reaching US\$686 million, or 8.1 percent of GDP, in 1992, and US\$870 million, or 9.7 percent of GDP, in 1994 (Wood and Segovia 1995).

^{xi} This contrasts with the spirit of Dollar and Kraay's argument that liberal policies lead to economic growth that reduces poverty. The authors also argue that liberal policies are not just distribution neutral, but can tilt growth in favor of the poor (e.g., Chart 2, p. 213, shows that reducing government expenditure and inflation – two policies that the authors claim are part of neoliberal policies – in addition to promoting economic growth, have the additional effect of distributing the benefits of growth to the poorest quintile). Thus, the authors would likely expect that implementation of a liberal agenda should also reduce poverty independently of economic growth, an argument supported by the cases of Costa Rica and Colombia.

^{xii} Other studies conclude that poverty in Costa Rica increased between 1977 and 1983 from 16.1 percent to 30.5 percent (Rodriguez and Smith 1994). This result does not necessarily contradict Dollar and Kraay's data since the poorest quintile's income could increase even as the poverty rate rises.

^{xiii} Jeffrey Sachs suggested that "Poland – the basket case of Eastern Europe in 1989 – has been the most dramatic illustration of the success of radical economic reforms" (Sachs 1995, p. 275).

^{xiv} This is consistent with poverty rates published by the World Bank that suggest that Poland's poverty rates were higher in 1998 than they were in 1991 (World Bank 2000).

^{xv} In addition, there are significant provincial variations in poverty reduction within the various regions of China, as well as in many other large, decentralized countries such as India and Brazil.

^{xvi} Between 1973 and 1978, the income of the poor in Singapore increased more than 10 percent, compared to an average per capita growth rate of 5.4 percent, while between 1983 and 1988, the income of the poor increased 9.6 percent, based on an average annual per capita GDP growth of 4.2 percent.

These two periods do not qualify as exceptions under the strict guidelines adopted for this study, yet they do indicate that the weak linkage between economic growth and poverty reduction in Singapore.

^{xvii} An analysis of 25 extreme cases in the other direction (cases that performed the worst in terms of income for the poor) are not analyzed. First, the conclusion that liberal policies spark growth in both GDP and incomes of the poor is more central to this discussion than the conclusion that a lack of liberal policies will prevent this result. Second, the dataset excludes many of the poorest countries that lack sufficient data for inclusion, a problem that primarily applies to the worst performing countries. Briefly, the 25 extreme negative cases include 10 of the 13 negative exceptions (all except France, Poland and Singapore). Six are Eastern European shock therapy cases (Moldova, Kyrgyz Republic, Latvia, Uzbekistan, Lithuania and Russia). Five Latin American (The Bahamas (1970-1975), Guatemala (1979-1987), Peru (1981-1986 and 1986-1994) and Panama (1979-1989)); three African (Nigeria (1985-1991), Sierra Leone (1968-1989) and Zimbabwe (1991-1996)); and one Middle Eastern (Jordan (1986-1991)) case round out the list.

^{xviii} Trinidad and Tobago's oil industry during the mid-1990s employed only four percent of the labor force, although the industry accounted for more than a quarter of the country's GDP and 70 percent of its merchandise exports (World Bank 1996).

^{xix} It might be possible to reduce these factors, once they are identified, to statistical variables and to re-introduce them into the regression to see if they can explain more about these cases. Given the contingent nature of development, however, this might not work.

^{xx} Dollar and Kraay, for instance, both recognize that economic growth *sometimes* reduces poverty while simultaneously claiming a one-to-one relationship between economic growth and poverty reduction. This is not inconsistent, for they refer to the slope of the regression line, not the variation within the actual points. Still, this conclusion can be unintentionally deceptive. In 10 percent of Dollar and Kraay's cases, the link between economic growth and poverty reduction was statistically likely to be invalid.
