Democracy and poverty reduction

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The past decade was witness to the rapid economic growth of countries whose political systems deviate from conventional democratic philosophy. Countries such as Taiwan, Singapore, and South Korea, among others, have become big economies rivaling major players like the United States and the United Kingdom. On the other hand, democratic, low-income countries have experienced relatively sluggish growth. In this paper, we explore the influence of democracy and political freedom on economic growth, utilizing poverty reduction as its indicator. We will focus on identifying the requisites of a functioning democracy within the context of developing nations that will enable it to effectively reduce poverty. Utilizing the 2-stage least squares method of estimation, our findings suggest that democracy, in general, has a negative influence on poverty reduction for developing countries. However, when complemented with trade openness, primary education, regulatory quality, effective governance, and voice and accountability, the outcome becomes positive.

1. Introduction

For the past decades, the world has witnessed an unprecedented wave of democratization. With it emerged the heated and inconclusive debate among scholars on whether there exists a positive correlation between democracy and economic growth.

The appendices are available upon request from the authors.

[1]Taiwan's prosperity was propelled by Martial Law, and South Korea developed under a military dictatorship.

There are reasons to believe that democracy does not reinforce growth, and the experiences of Southeast Asian countries such as Hong Kong, Japan, South Korea, and Taiwan assert this claim.[1] Entrepreneurial tycoon, Washington Sycip, takes this view when he hypothesized that among developing countries with relatively lower per capita income, democracy has proved to be a bane to economic growth.

On the other hand, burgeoning literature has revealed that democracy is not necessarily inimical to growth, but can possibly have a positive influence when complemented by certain requisites. As early as the late 1950s, there has been a wide acceptance of democracy as the best form of government and academics have tried to determine the conditions under which it could prosper.

One of the leading topics that persistently appear beside democracy in literature is macroeconomic stability. Many believe that the two complement each other because of two main reasons: (a) the efficiency and sustainability of national policies lie in the consistency between the different goals set by government authorities; and (b) manifestations of macroeconomic instability, such as high inflation and exchange-rate crises, are costly in both the economic and social aspects. In brief, this means that consistency in macroeconomic policies is crucial to the advancement of development objectives and "broadens the temporal horizons of individuals, firms, and authorities". This, in turn, facilitates the proper functioning of democracy [Ocampo 2006].

Conversely, others believe that a "quality" or "good" democracy is necessary for the system to be effective. Morlino [2002] considers "good democracy to be one presenting a stable institutional structure that realizes the liberty and equality of citizens through the legitimate and correct functioning of its institutions and mechanisms". Thus, the principal roles of democratic government are to satisfy the needs of the citizenry, provide (at the very least) a moderate level of liberty and equality to its constituents, and empower the citizens by equipping them with tools to evaluate its performance. These roles relate to some of the dimensions of quality of governance: government effectiveness, accountability, and rule of law.

Accessible education is also frequently mentioned to have a high correlation with democracy. Glaeser, Ponzetto, and Shleifer [2006] conducted an empirical study, and their findings suggest that education increases the benefits of civic participation. This is manifested in higher voter turnouts and higher member-base of organizations. They claim that a democracy's success is contingent on having a large number of supporters who experience sufficiently high gains from political participation that will then induce them to support democracy despite the low personal incentives. "Education supplies such supporters and stabilizes democracy" [Glaeser, Ponzetto, and Shleifer 2006].

This paper will not necessarily identify the conditions that complement a democracy. Rather, it will focus on the requisites of a functioning democracy in developing nations that will enable it to effectively reduce poverty.

It can be said that the single, most defining characteristic of developing countries is poverty. In recent years, there has been a subtle shift in the focus of exploration from economic development to poverty reduction. The United Nations Development Program's Millennium Development Goals (MDG) is a testament to this.[2] It is a widely accepted notion that economic growth is a necessary condition for poverty reduction, but it is not sufficient. An increase in the income per capita of a nation does not mean that the poorest quintile gets a piece of the development pie. This, in turn, leaves a gap in the passage to poverty reduction that demands closure. One of the attempts to supply this demand comes about from a major query into which political regime has the highest rate of success in poverty reduction; in particular, whether democracy, the most celebrated political system in today's world, has a positive or negative impact on poverty reduction. What social features exist in tandem with democracy in order for it to be an effective tool in reducing poverty?

There is limited literature that explores the links between democracy and poverty. Other than Amartya Sen [1981], who in his book argues that the severest symptoms of poverty are less likely to occur in functioning democracies,[3] research related to this persistent question remains few and far between.

1.1. *Working hypothesis*

Given few explored terrains in this area of study, and the stronger demand for poverty-reduction strategies at the dawn of the new century, this paper attempts to venture into the domain with the hypothesis that a democratic regime in developing and underdeveloped nations will be effective for poverty reduction under the condition that it is accompanied by sound institutions, accessible education, and good macroeconomic policies. We will also endeavor to determine whether there exists a critical level of income for which democracy becomes effective, income being the most widely used determinant of poverty.

1.2. *Significance of the study*

Poverty is a multidimensional phenomenon afflicting people worldwide. In fact, even the affluent countries are not free from this condition. If this

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[2]The MDGs are eight targets for global development in such aspects as human welfare and the environment, among others, which are to be achieved by the year 2015. At the heart of these goals is poverty alleviation.

[3]In "Poverty and famines: an essay on entitlement and deprivation" (1981), Sen discusses the likelihood that famines or starvation will transpire in a democracy where there is a solid framework for entitlement and support. He asserts that leaders of such regimes are assumed to be more responsive to the demands and the needs of their citizens.

is true for the richer areas of the world, moreso will it be among developing countries. Because the fight against poverty has of late become the heart of many international institutions such as the United Nations and the World Bank, while a formula for poverty alleviation has yet to be fully studied, a link between poverty reduction and a democratic form of government proves to be quite timely.

Thus it is of utmost importance to determine whether or not a democratic regime truly relieves the world of the problem, given the context that most countries are shifting, or already have shifted, to this form of government. Consequently, it is important to identify conditions that are necessary for democracy to work effectively, thus making it an impetus for poverty reduction. We hope the findings of this study could be translated into policy reforms and poverty-reduction strategies that are suitable for both developing and underdeveloped countries.

1.3. Objectives of the study

Given the present emphasis on democratization and poverty reduction in human development initiatives, this paper aims to achieve the following objectives:

1. Empirically discover whether democracy has an impact on poverty reduction, and whether it is positive or negative.
2. Explore the poverty reduction-democracy-education nexus through the analysis of regression estimates.
3. Discover which of the macroeconomic policy reforms and quality of governance indicators complement democracy in the pursuit of reducing poverty.
4. Identify the income level with which countries below this threshold will significantly gain, or lose, from democracy.
5. Recommend poverty-reduction strategies tailored to the underlying economic, social, and political conditions that are comparable for developing and underdeveloped countries.

1.4. Outline of the study

This paper is divided into six sections. Section 2 reviews related literature on past and current works. Section 3 presents the model that will be used to determine the impact of democracy on poverty reduction. Section 4 provides definitions and sources of the variables. Section 5 presents and analyses the results of the regressions. Section 6 offers our conclusions and corresponding recommendations.

2. Review of related literature

Unlike studies on growth, those on poverty reduction do not have the advantage of a vast spectrum of literature, and all the more for its link with democracy. Therefore in the attempt to investigate relationships that have not been widely studied, we will turn first to the related correlations that have been established.

In this section we explore the literature on democracy and poverty reduction beginning with the more widely debated "democracy effect" on economic growth. Then we move on to studies that deal with the effects of democracy on poverty reduction occasioned by growth, the relationship that more precisely concerns this paper.

2.1. Democracy and economic growth

One of the oldest definitions for democracy, and one that has become a classic, comes from Joseph Shumpeter who defines it as a decision-making arrangement that utilizes people's vote by means of a competitive struggle to give individuals a hand in political decisions. Inherent in the Schumpeterian definition is the competitiveness of players participating in the decision-making process, and it assumes that political participation is comprehensive. Diamond [1990] adds to these two conditions, injecting civil and political liberties as a third condition to ensure the integrity of the first two. Freedom of the press, for instance, serves to pool a diversity of opinions into the arena of debate to ensure both due scrutiny and far-reaching participation by the majority.
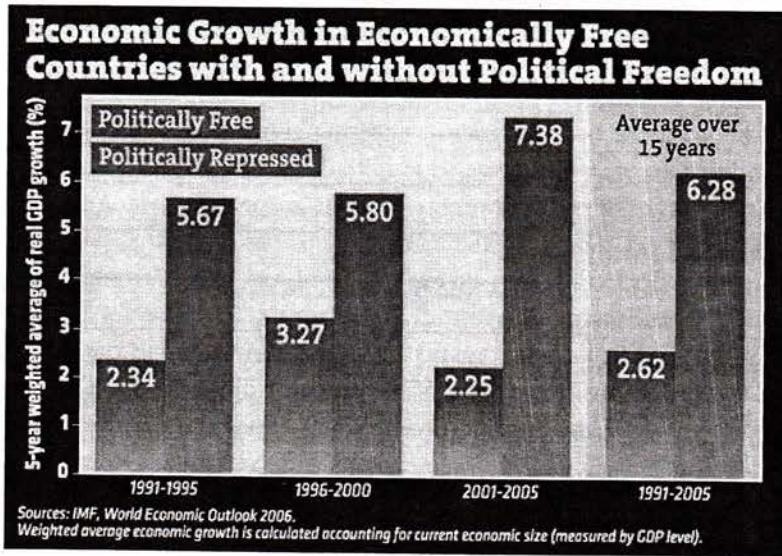
Recent decades have witnessed the advent of a growing dispute on whether or not a democratic form of government contributes to the performance of the economy. Southeast Asia's successful "market economics without democratic politics" testifies against the conventional belief of democracy as the blueprint for economic growth, and Sycip was one to revive this debate in the Philippines. He believes that among developing countries with per capita incomes less than US$ 2,000 to U$ 3000, political freedom and democracy, which he refers to as "the western model", hamper economic growth, although this thesis has yet to be tested. Fabella [2007] provides a softer version of this theory, that "the likelihood of success of a democratic regime below the threshold, while not impossible, is slim".

Samarasinghe [1994] provides a brief but thorough summary of the opposing beliefs on democracy and development. Followers of the compatibility between democracy and development reason that seasoned democracies give way to many civil and political rights, rule of law, property rights, and the free flow of information that are perceived to be growth enhancing. Meanwhile, the opposition argues that many influences exist within the realm of a democratic regime that cause a state of political gridlock, making it difficult to implement

unpopular but efficient decisions that are otherwise easier in an authoritarian form of government. Democracy creates social factions that lead to instability, puts a burden on the leaders to prioritize redistribution in lieu of growth, and distorts this redistribution by allowing political elites the room to respond to certain pressure groups. It is in the trade-off between these two opposing characteristics of democracy that the debate lies.

Hasset [2007] gives a graphic illustration of the growth effects of democracy. Using the Freedom House democracy indices, he divided the economically free countries into "politically free" and "politically repressed" using the Freedom House democracy index, and compares the growth rates of these two categories within the years 1991-2005. His results show, as in Figure 1, that politically repressed countries, on average, have better growth performance, averaging around 3.5 percentage points above the politically free countries over the 15-year period.

Figure 1. Bar graphs for the growth rates of politically free and politically repressed countries that have economic freedom

Economic Growth in Economically Free Countries with and without Political Freedom

	1991-1995	1996-2000	2001-2005	1991-2005 (Average over 15 years)
Politically Free	2.34	3.27	2.25	2.62
Politically Repressed	5.67	5.80	7.38	6.28

y-axis: 5-year weighted average of real GDP growth (%)

Sources: IMF, World Economic Outlook 2006.
Weighted average economic growth is calculated accounting for current economic size (measured by GDP level).

Alesina and Rodrick [1991] have found that democracies are inimical to growth because working classes vote for the redistribution of income instead of productive investments, effectively putting economic development on hold. Barro [1994] has observed that the relationship is nonlinear, although he found that democracy has a negative but weak overall effect on growth. "More democracy enhances growth at low levels of political freedom but depresses growth when a moderate level of political freedom has been attained." In this sense there is a critical level of democracy where the influence on economic

development is maximized, after which, as the phrase goes, everything is downhill.

As for the positive thread, Gerring et al. [2005] tested growth rates against a country's stock of democracy, i.e., its "democratic experience over the course of the twentieth century". Their hypothesis rests on the assumption that democracy, rather than being an immediate cause for growth, is one that accumulates over time and therefore is more of a "stock" variable. Their findings show a robust relationship between democratic stock and growth, which means that long-term democracy is a good condition for superior economic performance.

Still others, such as Kirmanoglu [2003], have results that show no glaring empirical evidence for the growth and democracy correlation, although Kirmanoglu observes causal relationships between the two in both directions, for particular countries.[4]

If anything, studies on the correlation between economic performance and democracy have been inconclusive. Hence we may want to turn to other variables that may serve as indicators for economic performance to shed some light on the subject. This study focuses on one such indicator—poverty reduction.

2.2. Poverty reduction and democracy

According to Glewwe and van Der Gaag [1988], the analysis of poverty is undertaken at two levels: defining it and measuring it. For the past decades, two main approaches have emerged—the conventional economic definitions, which make use of income and consumption measures (gross domestic product [GDP] and household income) to classify the poor from the nonpoor; and the alternative approach, which expands the former by including important social indicators such as life expectancy, child mortality, nutrition, and access to education and health clinics.

Absolute-income measures of poverty are very straightforward, although there has been a lot of criticism that such measures do not adequately capture the multifaceted nature of poverty. These measures provide "a monetary figure as a cut-off for being counted among the poor, and families fall either at the level, above it, or below it" [Glewwe and van Der Gaag 1988]. This minimum level is commonly referred to as the poverty line. Since what is necessary to meet basic needs varies across societies, different countries establish poverty lines that are appropriate to their levels of development, norms, and values. On the other hand, relative-income measures of poverty are "characterized by comparing one income to a reference group, usually the mean or median national income of a similarly structured household". Relative measures of poverty tend to produce a higher number of people defined as poor compared to absolute measures.

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[4]Kirmanoglu [2003] finds that political freedom generates more growth for Malaysia and Bolivia, while it is the other way around for Turkey, Panama, and Korea.

Various poverty measures have been used in studies, and statistics point only to one fact—poverty is consistent across nations. What is interesting is that even rich countries are not impervious to this, as pointed out by UNICEF when it declared that 50 million children in wealthy countries worldwide are living in poverty.

In light of this new awareness, world poverty reduction has become a growing concern, more so in today's rapidly changing global economy. In fact, poverty reduction is the first of eight Millenium Development Goals set by the United Nations in 2000 as described in the previous section. The best approach in sustainably augmenting income levels of the poor, however, is still open to deliberation. Myriad strategies has been tried out, the focus of which ranges from economic growth, income redistribution to trade liberalization, yet many nations are still afflicted by high poverty rates.

The 1990s have seen the rise in popularity of democracy and good governance as a condition for development. The acclaim of democratic regimes was further put forward by the failed human experiment that was Communism, after which there has become a growing notion that democracy solves almost anything, even poverty. The popularity of this notion can be attributed to some extent to Amartya Sen [1981] who discussed the political, economic, and social conditions by which famines, the most blatant indicator of poverty, can take place. He claimed that inequality under which rights are distributed to different groups in society can have a strong effect on each group's command for food. These rights, coupled with the political, social, and economic characteristics that he argues can reduce the probability of starvation and famines, are akin to that of democracy.

However, despite this emergent speculation in the relationship between democracy and poverty reduction, all but a few have attempted to test it empirically. Literature that considers poverty as a metric for development is limited, more so that which tackles how it is affected by democracy. More commonly studied are the aspects of democracy in the form of good governance,[5] and its impacts on poverty. In his book *Economic Development, Poverty Alleviation and Governance*, Khan [1996] analyses three Asian countries—Bangladesh, Malaysia, and Philippines—to demonstrate the importance of good governance in reducing poverty:

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[5]Although good governance is not necessarily equivalent to democracy (for there have been democratic regimes that fare badly in the context of good governance, for instance, the Philippines), they are certainly related. Khan's [1996] definition of good governance includes the "ability of citizens to express views and access decision making freely", which is innately democratic. Macdonald [2006] theorizes that democracy is contained within a broader good governance context, although he admits that the two may at times become incompatible depending on the view of the political realm in question. Also, Samarasinghe [1994] stresses that "these broader definitions of governance generally imply the legitimacy of authority, public responsiveness and public accountability of government. These conditions can be satisfied only by a democratic regime. Thus good governance means democratic governance."

Malaysia achieved consistently positive results with its develop-
ment efforts simply because its policy managers consistently
devised, practiced and monitored policies and projects which
were development and poverty oriented and which were mutu-
ally supportive of both growth and equity. The Philippines and
Bangladesh failed because these two countries practiced weak and
sometimes contradictory policies, and maintained a corrupt and
inefficient public service.

The World Bank is also a firm supporter of this view [Kaufmann, Kraay,
and Mastruzzi 2005]. In fact, since the late 1990s they have started to develop
and analyse six components of good governance (voice and accountability,
political instability and violence, government effectiveness, regulatory burden,
rule of law, and control of corruption) in 209 countries to track the quality of
institutions, improve governance, and address corruption. A key finding is that
a realistic improvement in any of the six components in a country could result
in about 300 percent increase in per capita income in the long term.

Meanwhile, there is theory to support the hypothesis that three particular
political market imperfections in democracies—information gap, social
polarization, and the incapacity of politicians to make credible promises—
which disrupt the translation of voter preferences into government policy are
reasons why democracies can fail to improve the welfare of the poor [Keefer
and Khemani 2004].

2.3. *Contingency effects*

A pool of literature also gives us reason to believe that democracy has
contingency effects on growth and poverty reduction. That democracy is
contingent on education is one example, and this notion is nothing new. Dating
as far back as the mid-19th century, the philosopher John Stuart Mill, Fabella
[2007] recalls, believed that political freedom had no place in the scheme of
things so long as the players are not yet "in the maturity of their faculties". For
Mill, liberty, like everything else, has costs and benefits, and the benefits will
overshadow the costs only for well-educated polities.

Indeed, a more recent study finds theoretical evidence for the fact that
education promotes civic involvement because it raises the benefits over the
costs of social interaction. Interaction is a nondeliberate corollary of education
and entails "understanding and appreciating others' point of view, as well as
being able to effectively communicate one's own, through both writing and
speech" (Glaeser, Ponzetto, and Shleifer 2006). This instills a stronger sense
of civic responsibility and participation within the educated population and
produces more competent political players translating into better democratic
performance, as gauged by lower poverty levels or higher income.

Another perception is that democracy is contingent on macroeconomic stability and therefore on the macroeconomic policies that sustain stability, and many studies reveal a strong positive correlation between the two. Ocampo [2006] provides two reasons that eloquently justify this claim. First, for every public policy to be efficient and sustainable in the long run, there must be consistency in the goals set by the authorities. To maintain this consistency certain trade-offs must be resolved, trade-offs that are better addressed through democratic institutions. Second, instabilities at the macrolevel, high inflation for instance, entail large social costs such as massive layoffs, among others. Therefore, in a democracy, the people will elect leaders who implement reforms related to a more stable macroeconomy. "Economic policy in democracy is risk-avoiding relative to policy in non-democracy. Because voters are risk averse, they penalize incumbent governments for economic volatility, and democratic governments respond accordingly" [Quinn and Wooley 2001].

The macroeconomic policy of trade liberalization, or trade openness, is one of the main thrusts of globalization. Theoretically, openness benefits all countries because it promotes global efficiency. Moreover, prices are reduced as a consequence of specialization and more efficient methods of production. But these do not cover all the effects of trade openness. Positive externalities also improve the quality of democracy in a country. "The exchange of goods and services serves as a conduit for the exchange of ideas, and a more diverse stock of ideas encourages political competition" [Eichengreen and Leblang 2006]. Therefore the movement of knowledge and ideas across countries participating in international trade drives democracies into performing better.

It is with this background that the present study takes flight. The study attempts to provide the debate with empirical evidence in the hope of shedding light on the relationships in question, and jump-starting a new string of research especially on the subject of poverty reduction, which is quite timely given the pressing issues that haunt the present.

3. Model presentation and analysis

Democracy is essentially a social experiment, just as socialism and communism had been in the previous century. It is an ongoing experiment that has passed many of the tests that other forms of government have failed, which explains why it is the most celebrated political system to date. But in an evolving world, evolving social issues is a way of life, and the social issue on top of everyone's mind today is poverty. For this reason there is an incentive to test democracy on poverty, and see whether the most popular political system solves the biggest global problem. This section will discuss the framework under which we will go about testing this inquiry. First we will look into the theoretical basis for the effects of democracy on poverty reduction, after which

we will incorporate the other determinants of poverty reduction to complete the standard model.

3.1. *Effects of democracy on poverty*

It is established that a basic prerequisite for a nation's development is a political environment with a legal framework of well-defined and properly enforced property rights, and democracy has characteristics suitable for providing such an environment [Bardhan 1999]. To give an example, in the context of less developed countries (LDCs), the median voter principle entails that in a functioning democracy, when the median voter has an income lower than the average income, policies are expected to be more heavily directed to the welfare of the poor in society [Keefer and Khemani 2004].

But there is reason not to believe that these legal and social prerequisites are sure to thrive in a democratic atmosphere. There are instances, especially under the inherent conditions of developing countries, where the weaknesses of democracy are magnified at the expense of the poor. Democracy carries with it a number of characteristics innately growth and welfare enhancing but, as we shall see, may falter under the circumstances of less developed nations.

First is the presence of checks and balances. This provides a standard of transparency and public scrutiny that keeps political leaders from pursuing personal interests [Barro 1994]. In countries, however, where poverty is prevalent and many are unsatisfied, properly functioning complaint mechanism will generate too many complaints from different social groups that are appropriately given the right to be heard. Cases such as these will inevitably delay provision of good policies. Also, a deceleration in decision making and overscreening of projects may, in turn, lead to a Type 1 error, that is, many good proposals only end up being scrapped [Bardhan 1999]. In the long run, these will indirectly hurt the poor through withheld welfare-enhancing projects and slow implementation.

Second, in a democracy, politicians are subject to public pressures that make them receptive to demands of the people. The existence of this provides quicker aid and assistance to the people who are urgently in need, especially during crises [Sen 1981]. However, this characteristic is subject to a glaring Achilles' heel. The command of each sector in society cannot be expected to equalize throughout the nation. There are always particular groups that wield more influence and apply stronger pressure on the government. And in nations where the government is susceptible to targeted pressure, as in LDCs, the government policies and allocation of resources will skew toward those targeted groups [Bardhan 1999].

From this framework, therefore, we expect an inversely proportional relationship between democracy and poverty reduction within the confines of developing countries.

3.2. *Other determinants of poverty reduction*

There is little theory that can guide us in determining the proper specification for poverty. However, Asra et al. [2005] in their attempt to find a link between financial assistance and poverty reduction, has postulated a poverty reduction equation that includes controls which have gained importance in recent years. The role of initial conditions, macroeconomic policy variables, and quality of governance have found emphasis in recent empirical works conducted on the subject of poverty and growth [Dollar and Kraay 2002; Chang, Kaltani, and Loayza 2005].

3.2.1. *Initial conditions*

Asra et al. [2005] utilize such conditions as initial poverty, log of population, infant mortality rate, life expectancy, and income distribution measured using the Gini coefficient (all values expressed at the beginning of the five-year period)[6] in their study to control for the factors that may have an effect on the allocation of aid, so as to get the isolated effect of aid on poverty reduction. Since most of the conditions were significant and robust in all their specifications, we will adopt the same factors in our model under the preconditions that these factors have a bearing on the level of poverty reduction. It is understandable that the initial level of poverty can have an influence on poverty reduction in the sense that a high level of poverty means there is more poverty to "reduce". Population, infant mortality, and life expectancy also run in this logic. High infant mortality and population levels, as well as low life expectancy levels, are characteristics of destitute countries; hence such conditions give more leeway for poverty reduction. A less equitable income distribution, on the other hand, has been found by Deininger and Squire [1998] to hurt the poor on two accounts: it is a factor that contracts overall growth, and it reduces the income-generating opportunities for the poor. Therefore, a measure of income distribution (the Gini coefficient) is expected to have a negative impact on poverty reduction.

3.2.2. *Macroeconomic policies and governance*

The importance of macroeconomic policy and proper institutions has gained popularity in recent literature pertaining to growth and poverty reduction. For this paper we utilize trade openness, inflation, and the size of government consumption as indicators of macroeconomic policy, following Asra et al. [2005]. We also adopt measures for the quality of governance such as the rule of law and government effectiveness, among others. In a study conducted by Chang, Kaltani, and Loayza [2005], they discover that trade openness is dependent on macroeconomic price stability and governance to reinforce growth. Furthermore, the findings of Dollar and Kraay [2002] reveal that pro-growth policies and institutions such as inflation, openness, and rule of law

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[6]Henceforth, all variables mentioned will assume an average value for a five-year period.

reap benefits for the poor. In addition, Hasan, Quibria, and Kim [2003] find that larger government expenditures are significantly related to higher levels of poverty. They explain this phenomenon, saying that large public expenditures do not automatically translate to investments in social services that benefit the poor. Also, although government expenditures provide social services, these services are not necessarily targeting the poor. Subsidies to secondary and tertiary education serve as an example. With these in mind, successful poverty analysis then requires an examination of the differential effects of each of these variables on poverty reduction.

3.2.3. Aid effectiveness

A key finding in Asra et al.'s [2005] study of poverty reduction and aid is that aid effectiveness depends to an extent on the size of aid. That is, aid is a quadratic function and is only effective up to a certain critical value. Aid and aid-squared are then important factors to control for to ensure the integrity of the specification.

3.2.4. Education

Chang et al. [2005] find that the presence of quality education enhances the effects of trade openness on economic development. Becker, Murphy, and Tamura [1990] support this result, further highlighting the direct importance of investments in human capital in growth and development. Therefore, under the condition that education influences poverty reduction, and backed by wide literature on the subject, we believe it to be favorable to our model to include a control for education.

3.2.5. Income dummies

To test the hypothesis being explored by this paper, it is unavoidable to include income dummies in the specifications. In particular, this study will focus on per capita income lower than a certain threshold. Since the composition of the dataset centers on developing countries, there is a better opportunity for us to segregate low- from middle-income countries without the trouble of outliers to capture the entire effect of democracy on poverty reduction in countries in the lower half of the income scale.

3.2.6. Regional dummies

It is of interest to explore if the individual effect of democracy on growth varies for different regions of the globe. Furthermore, this will shed some light on the differences in the extent to which democracy has had an effect on growth in different regions. For instance, the East Asia and Pacific region has experienced unprecedented growth despite the slow integration of democratic principles into their political systems.

From here, we will inject the democracy variable into the poverty specifications constructed from past literature to establish a final backbone specification, which is as follows:

$$Poverty \ Reduction = \alpha_0 + \alpha_1 (Democracy) + \alpha_2 (Initial \ Conditions)$$
$$+ \alpha_3 (Aid) + \alpha_4 (Policy \ Variables)$$
$$+ \alpha_5 (Governance \ Variables) + \alpha_5 (Education) + \varepsilon$$

3.3. Various specifications of base regression

To ensure the robustness of the results, two democracy indicators, Polity IV and Freedom House, will be used for each of these specifications:

Without Interactions

1. Poverty Reduction = f (initial conditions, macroeconomic variables, aid, aid2)

2. Poverty Reduction = f (initial conditions, macroeconomic variables, aid, aid2, education)

3. Equation 2 + democracy

4. Equation 3 + regional fixed-effects

With Interactions

5. Equation 3 + democracy-education interaction

6. Equation 3 + democracy-policy interaction

7. Equation 3 + democracy-governance interaction

8. Equation 3 + democracy-income interaction

9. Equation 3 + democracy-region interaction

3.4. The importance of interactions

Interaction terms will be given special attention for two reasons. First, one of the hypotheses of this study rests on how democracy performs in lower-income countries. Therefore, income-democracy interactions are of utmost concern. The sample will be segregated into low- and high-income countries using per capita income thresholds, from which the interactions are expected to demonstrate the effectiveness of democracy in alleviating poverty for countries below each threshold.

Second and more important, in light of the fact that democracy may have more reinforcing effects when coupled with good governance and well-implemented policies, it is highly instructive that these relationships be captured when exploring the democracy-poverty reduction correlation. It may happen

that democracy alone has no particularly significant influence on poverty, but that good institutions and a stable government make a good complement to democracy. Such cases can be looked into using democracy-policy and democracy-governance interactions. Discovering which policy and institutional variables enhance the influence of democracy has important policy implications. It is important to consider that democracy is a "sticky" concept in that it is not flexible and can only be adjusted in the span of many, many years. Under this constraint, the factors that produce positive results with democracy, being that they are easier to manipulate, can then be used as tools to augment poverty reduction in an environment where democracy persists.

As a consequence of interaction, then, the complete effect of democracy can be studied from every possible angle.

4. Data presentation

For our purposes, we have adopted a recently modified version of the data compiled by Hasan, Quibria, and Kim [2003], which includes poverty values for 47 developing countries from 1960 to 1998. The dataset was adjusted by Asra et al. [2005] to complete missing data points and to smooth out irregular yearly changes, producing a sample of 141 observations. Finally, we included education variables, taken from Barro and Lee [2000], into the complete dataset, bringing entire time-series and cross-country array to a total of 129 observations, each spanning a five-year interval.

A brief run-through of the variables of interest will ensue. The complete list and description of the variables are presented in Appendix A.

Our dependent variable (POVRED) is based on the poverty measures generated by Hasan, Quibria, and Kim [2003]. In brief, poverty estimates were derived from a process that utilized three pieces of information: data on distribution by quintile, mean per capita expenditures on consumption, and poverty line. The resulting values are percentages of the country's population with incomes under US$ 2 a day. The data are based on purchasing-power parity dollars. These values are utilized for the poverty (POVB) variable under the initial conditions. Since Asra et al. [2005] use this measure to get five-year intervals for each observation, the POVRED variable is therefore the difference between the fifth-year poverty and first-year poverty values within each five-year period. Meanwhile, POVB is the initial poverty measure on the first year of the period.

The initial conditions are captured by six variables, one of which has been mentioned above: poverty in the beginning year (POVB), log of income per capita in the beginning year (LPCYB), log of population in the beginning year (LPOPB), infant mortality rate in the beginning year (MORTB), life expectancy in the beginning year (LIFEB), and Gini coefficient in the beginning year

(GINIB). Given that our dataset is divided into five-year intervals, all six variables refer to the first-year values within each five-year period.

LPCYB is derived from the Penn Word Tables (PWT) using the year 1996 as the base year. It is GDP per capita benchmarked at 1996 US dollar purchasing power parity. We expect a positive effect from this variable since a high GDP per capita indicates higher standards of living, thus lower poverty levels. Data for LPOPB are gathered by Asra et al. [2005]. Meanwhile, MORTB and LIFEB are both obtained from the World Bank. The former shows the number of deaths of infants under one year of age per 1,000 live births in a given year, while the latter represents the number of years a newborn infant would live assuming that the prevailing patterns at the time of birth would remain the same throughout its life span. On the other hand, data for GINIB, a measure of income or expenditure distribution, is gathered by Asra et al. [2005].

The next explanatory variable, AID (volume of aid), is computed as the percentage of effective development assistance (EDA) to gross national income (GNI) expressed as average for each five-year period. EDA[7] focuses on grant equivalence of financial flows and does not include the loan component of concessional loans. This is contrary to the conventional measure of aid called Official Development Assistance (ODA), which includes both grants and concessional loans (net of repayment of principal). On the other hand, AID^2 is merely the squared value of AID.

The macroeconomic policy variables consist of openness (OPEN), government expenditures (GOVT), and inflation (LINF). Data for the three variables are available in the World Penn Tables, all averaged over a five-year period. OPEN, a measure of openness to trade, is obtained by adding exports to imports divided by GDP. Both the export and import values are in national currencies based from the World Bank and United Nations data archives. Meanwhile, GOVT is the share of government expenditures on GDP. LINF enters the equation in log form. It is defined as the percentage growth in consumer price indices using the year 1996 as the base year. We expect that a higher share of trade in GDP can accelerate poverty reduction, but the contrary for higher government expenditures and price levels.

Conversely, data on educational attainment are compiled by Barro and Lee [2000].[8] PE refers to the percentage of the total population (ages 15 and above) who has completed primary schooling. This variable can be used to determine the literacy of the population. SE, on the other hand, pertains to the share of the total population (ages 15 and above) who has finished secondary schooling. It is important to note that when we introduced the education variables, the number of observations is reduced to 129, compared to the previous 149

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[7]EDA is generated by Chang, Fernandez-Arias, and Serven [1998] and is argued to be a better measure of aid relative to ODA.

[8]The dataset provides the estimates for two different age groups: over age 15 and over age 25. It also gives a breakdown by sex at five-year intervals for the years 1960-2000.

observations. We expect both PE and SE to have a positive impact on poverty reduction since educated people are more inclined to vote into office leaders who put a premium on accountability.

We have two measures of democracy: Freedom House (FH) and Polity (POL). To acknowledge the fact that the concept of democracy is complex and multifaceted, these two indices will be used to allow for an investigation of the differential effects of certain distinct aspects of democracy. Polity IV focuses only on the level of political participation in the government, while Freedom House zones in on the civil and political liberties inherent in a democracy. A comparison of the effects of these two on poverty reduction will offer further insight into which characteristics of democracy have relatively heavier weight in its influence on poverty reduction.

Freedom House is an organization that conducts an annual survey, "Countries at the Crossroads", to different countries worldwide. The survey intends to gather information on the state of democratic governance within a country. Afterward, quantitative ratings are applied to the four main areas of performance: accountability and public voice,[9] civil liberties,[10] rule of law,[11] anticorruption, and transparency.[12] They further narrowed down the key areas to political rights and civil liberties, which are measured on a 1-7 scale, with 1 representing the highest degree of freedom and 7 representing the lowest.

We find it imperative to rescale FH and use the rescaled variable (FHREV) to acquire greater instructive interpretation of the estimates. FH was rescaled from a descending measure of political freedom (the lower the score, the more politically free) to an ascending measure (the higher the score, the more politically free), retaining the interval [1,7].[13] Therefore we expect a negative estimate for FHREV variable and a positive estimate for the Freedom House interaction terms. On the other hand, data for POL were compiled by the

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[9]Note that accountability and public voice is characterized by "free and fair electoral laws and elections, effective and accountable government, civic engagement and civic monitoring, media independence and freedom of expression" (Survey Methodology of Freedom House).

[10]Note that civil liberties is characterized by "protection from state terror, unjustified imprisonment, and torture; gender equity, rights of ethnic, religious; and other distinct group, freedom of conscience and belief, freedom of association and assembly" (Survey Methodology of Freedom House).

[11]Note that rule of law is characterized by "independent judiciary, primacy of rule of law in civil and criminal matters, accountability of security forces and military to civilian authorities; protection of property rights; equal treatment under the law" (Survey Methodology of Freedom House).

[12]Note that anticorruption and transparency is characterized by "environment to protect against corruption, existence of laws, ethical standards, and boundaries between private and public sectors, enforcement of anticorruption laws, governmental transparency" (Survey Methodology of Freedom House).

[13]FHREV was generated using the function:

$$FHREV = 8 - FH$$

people behind the Polity IV project,[14] which continues the Polity research tradition[15] of coding the authority characteristics of the different states around the world to facilitate comparative and quantitative analysis. The unit of analysis adopted is the polity.[16] *Merriam-Webster Online Dictionary* defines it as "a political organization; a specific form of political organization; the form or constitution of a politically organized unit". The Polity score (under the series name POLITY in the Polity IV Project dataset) is computed by subtracting the autocracy characteristics (under the series name AUTOC in the Polity IV Project dataset) from the democracy characteristics (under the series name DEMOC in the Polity IV Project dataset).

The autocracy indicator is an additive eleven-point scale (0-10). It is derived from codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive using the weights on Table 1.

Meanwhile, the democracy indicator is an additive eleven-point scale (0-10). It is derived from codings of the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive using the weights in Table 2.

Thus, given that the Polity score is the difference between DEMOC and AUTOC, the resulting polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic).

For the purpose of this study, the term POL (under the series name POLITY2 in the Polity IV Project dataset) will refer to the modified POLITY to facilitate the use of the POLITY regime measure in time-series analyses.

Even if FHREV and POL use different sets of criteria to measure democracy, we expect both of them to have a negative impact on poverty reduction running in line with Washington Sycip's hypothesis mentioned earlier.

The resulting interaction terms after rescaling and interacting are variables whose scores rise as democracy and the quality of governance rise. Appendix A.2 presents a summary of the FH and its rescaled counterpart in a sample of ten arbitrary countries.

[14]Polity IV dataset covers contemporary countries where the 2002 population exceeds 20 thousand and is argued to be a better version compared to its predecessors.

[15]One pitfall of the Polity I dataset is its structure, which made longitudinal analyses very difficult. This in turn led to the development of Polity II, in which the authority traits of each country were coded annually. In contrast to Polity I in which only six authority traits was coded for each polity, nine traits were coded in Polity II. In the mid-1990s, a reformatting was deemed necessary from the country-year format of Polity II to the regime format of Polity I. Also, Polity III focused on only six component variables to capture the essential institutional authority properties of polities. The most recent instalment, Polity IV, joins the information essential to the two predominant approaches so that crucial analytical information will be captured and recorded.

[16]Eckstein and Gurr [1975] narrowed down further the definition of polities as subsets of a class of authority patterns, which are equivalents of state-organizations.

Table 1. Weights of the categories for the autocracy indicator

Authority coding	Scale weight
Competitiveness of Executive Recruitment (XRCOMP):	
(1) Selection	+2
Openness of Executive Recruitment (XROPEN):	
only if XRCOMP is coded Selection (1)	
(1) Closed	+1
(2) Dual/designation	+1
Constraints on Chief Executive (XCONST):	
(1) Unlimited authority	+3
(2) Intermediate category	+2
(3) Slight to moderate limitations	+1
Regulation of participation (PARREG):	
(4) Restricted	+2
(3) Sectarian	+1
Competitiveness of Participation (PARCOMP):	
(1) Repressed	+2
(2) Suppressed	+1

Source: Polity IV Project Dataset Manual.

Table 2. Weights of the categories for the democracy indicator

Authority coding	Scale weight
Competitiveness of Executive Recruitment (XRCOMP):	
(3) Election	+2
(2) Transitional	+1
Openness of Executive Recruitment (XROPEN):	
only if XRCOMP is Election (3) or Transitional (2)	
(3) Dual/election	+1
(4) Election	+1
Constraint on Chief Executive (XCONST):	
(7) Executive parity or subordination	+4
(6) Intermediate category	+3
(5) Substantial limitations	+2
(4) Intermediate category	+1
Competitiveness of Political Participation (PARCOMP):	
(5) Competitive	+3
(4) Transitional	+2
(3) Factional	+1

Source: Polity IV Project Dataset Manual.

In summary, we rewrite our basic model as follows:

For Freedom House

$$POVRED = F \begin{pmatrix} POVB, \ LPCYB, \ MORTB, \ LIFEB, \ GINIB, \ FHREV, \ AID, \\ AID \wedge 2, \ OPEN, \ GOVT, \ LINF, \ PE \end{pmatrix}$$

For Polity

$$POVRED = F \begin{pmatrix} POVB, \ LPCYB, \ MORTB, \ LIFEB, \ GINIB, \ POL, \ AID, \\ AID \wedge 2, \ OPEN, \ GOVT, \ LINF, \ PE \end{pmatrix}$$

5. Interpretation and results

This study is primarily concerned with answering the central question, does democracy affect poverty reduction? Toward this, we have constructed a regression model that can provide, to the extent our sample permits, an explanation for the correlation between these two variables. The regression results are presented in Appendix B.

An array of specifications is tested to validate the robustness of the variables of interest. If, in most or all of the equations, FHREV and POL appear significant, this signals robust results for our democracy indicators. The base regressions (equations [1-3]; Appendix B.1.) are estimated to facilitate a comparison between specifications without the democracy variable, and a specification that includes the democracy variable, following the central equation presented in the model. The next regressions (equation [4]; Appendix B.2.) inject dummies for five regions: East Asia and Pacific (EAP), Europe and Central Asia (ECA), Middle East and North Africa (MENA), South Africa (SA), and Sub-Saharan Africa (SSA). The goal for including regional dummies lies in the fact that there may be poverty reduction effects that differ from one region to another. Intuitively, it would be interesting to verify which regions realize greater benefits from democracy and which regions do not.

The succeeding regressions with the interactions (that of education, macroeconomic policy, and governance) will aid us in the discovery of which among the variables in these three categories complement or impede the effects of democracy in developing countries. There are possibilities of such cases where democracy alone may bear no significant effects on poverty alleviation, but we might discover that when coupled with, say, certain policies, or particular conditions of governance, democracy may in fact be effective for poverty reduction. Results such as these have crucial policy implications, especially for developing countries such as the Philippines.

Finally, specifications that include democracy interacted with dummy variables, such as the Income and Regional dummies, will also be estimated.

The importance of these equations lies in their ability to give us a sense of the isolated impact of democracy on the chosen region or income threshold. Just as the extent to which poverty is reduced differs between regions, the effectiveness of democracy may also differ. Similarly, there is much to gain from finding a level of per capita income with which countries below this threshold level will significantly gain, or lose, from democracy. Such estimations will shed light on the heated debate about whether countries below a certain level will find it to their benefit to become more democratic.

To ensure that ordinary least squares (OLS) is the correct method of estimation to use, we have run tests for endogeneity of regressors. The Hausman specification test revealed the presence of an endogenous regressor, which will then result in biased and inconsistent OLS estimators. To remedy this endogeneity problem, we have opted to adopt the 2-stage least squares (2SLS) method. Furthermore, each of the equations estimated are corrected for heteroskedasticity by utilizing White's heteroskedasticity robust standard errors. All equations have also passed the skewness/Kurtosis test for normality, with probabilities ranging from 50 percent to 90 percent. Hence, we cannot reject the null hypothesis that the error terms are normal.

Given the validity of 2SLS estimators, we will now proceed with the regression results tackling the nine equations progressively. A tabulated summary of the results segregated per variable is provided in Appendix B.2 and B.3.

Appendix B.1. illustrates the regression results for the base regressions (equations [1-3]). For equations (1) and (2), most of the explanatory variables (initial conditions and macroeconomic policies) are significant, excluding GINIB and AID. When the democracy indicators are included in separate regressions, there are minimal changes in the estimates and minor variations in their levels of significance. FHREV and POL are both negatively significant at 5 percent, which is consistent with our hypothesis. This suggests that democracy in developing nations has a negative effect on poverty reduction, supporting the views of some economists (Alesina and Rodrick [1991], to name one) who believe that democracy is unfavorable to economic growth. Democracy might not fare well in an impoverished country's hierarchy of needs, given that the most basic needs (food, shelter, and clothing) might not have completely been met. Therefore, citizens of developing countries will not care so much for exercising their rights, unless their basic needs are satisfied.

When the regional dummies are added into the regression equation (equation [4]), surprisingly none of the regional variables come out significant. This indicates the inconsequentiality of regional differences on poverty reduction initiatives. However, R-squared increased from 0.44 (equation [3]) to 0.50 (both for FHREV and POL), meaning 50 percent of the dependent variable is explained by the regression equation.

We now move to equation (5) that includes the education-democracy interactions for both FHREV and POL as presented in Appendix B.3. As expected, the democracy-primary education interaction term is positively significant at 10 percent for both FHREV and POL. This suggests that democracy complemented with educated citizens has a positive impact on poverty reduction. The intuition behind this is that through education, people become wise voters, thereby electing effective leaders. This, in turn, actualizes a genuine representative democracy. In addition, this outcome further implicates the positive correlation between democracy and education, because the latter, as explained by Glaeser, Ponzetto, and Shleifer [2006], reinforces the former by raising the benefits of civic participation. However, when secondary schooling[17] was interacted with the two democracy indicators instead of primary schooling, the significance disappeared.

Appendix B.4 presents the results for the Macroeconomic Policy interaction regressions for both Freedom House and Polity. For these regressions, only the GOVT and the OPEN interaction terms utilized the FHREV variable, while the INF interaction used the originally scaled variable (FH). This was done in consideration of the expected signs for INF and FH. We reiterate that a lower level of inflation is expected to increase poverty reduction. The same goes for FH. Hence when interacted, the INF interaction can be expected to have a negative effect on the dependent variable. On the other hand, the GOVT and the OPEN interactions (which were interacted with the FHREV) are expected to have positive impacts on poverty reduction.

The table shows that among the three interactions (FHREV-GOVT, FHREV-OPEN, and FH-INF) only the FHREV-OPEN interaction has turned out significant. In fact, it is strongly significant at 1 percent with a positive coefficient. Similarly, the POL-OPEN interaction is positively significant at 1 percent. The consistency of the results suggests that democracy coupled with trade openness, one of the facets of globalization, can actually mitigate poverty levels. This idea is consistent with the results of Eichengreen and Leblang [2006]. Since the two are mutually reinforcing, the benefits of free trade are amplified. Some of these benefits include improvements in global efficiency, resource allocation, specialization, and methods of production [Tupy 2005].

Moving on to equation (7), the regressions with governance indicator interactions, results for the Freedom House-governance interactions are presented in Appendix B.5, and the results when POL is used in Appendix B.6. In Appendix B.5., only three governance variables (RQ, GE, and PS) are interacted with FHREV. The reason for this is that the rest of the governance indicators (voice and accountability, rule of law and control of corruption) coincide with three of the four key areas from which the Freedom House variable was measured. Thus, including them in the interactions can be perceived as a

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[17]It is the percentage of the population with ages 15 and above who has completed secondary schooling.

double-count of sorts, which is why, to avoid complications in interpretation, we have excluded the other three indicators from the regressions.

In three of the four auxiliary regressions in Appendix B.5, FHREV retains its negative and significant estimates at 10 percent. This further validates our hypothesis of the undesirable impact of democracy on developing countries. In all estimations as well, the R-squares ranges from 0.44 to 0.49, a fit that is still high for regressions using panel data.

A closer look at the results would reveal that the specifications with RQ, and GE interactions are particularly forthcoming. Both contain interaction terms that are positive and significant at 5 percent and 10 percent, respectively. We discover from this that the effectiveness of government and the regulatory environment complement political freedom, which Freedom House measures, and consequently, democracy. That is, democracy, in the presence of good regulations, increases reductions in poverty. In much the same way, the presence of both democracy and effectiveness of government raises poverty reduction.

The results for the Polity counterpart of equation (7) are presented in Appendix B.6. Here, all of the six governance indicators are interacted with POL and regressed individually. With R-squares retained at a high level of around 0.44, POL appears to be robust; its estimates are negative and significant at 10 percent or lower in all specifications. The interactions, though, reveal that only with VA does POL significantly influence poverty reduction. This means that so long as the government remains accountable to the people they serve, the country will reap benefits of poverty reduction from a more decentralized regime. This makes sense because a democratic regime will certainly fall apart when the citizens are not free to express their discontent with the government and when leaders are not accountable to the people. In this case, a moral hazard problem comes into play, and political leaders will have an incentive to do what benefits them, instead of what benefits the country, without fear of being deposed.

The income threshold regression results are illustrated in Appendices B.7-B.8. As usual, FHREV in Appendix B.7 appears to have a negative coefficient, with consistently significant t-statistics for every regression. This essentially says that for developing nations, greater political freedom hampers poverty alleviation. But the thresholds tell a different story. For all the specification (using FH for the interaction), the income threshold chosen appears to have negative coefficients, attaining a 5 percent level of significance in the US$ 3,000 per capita income threshold and 10 percent in the US$ 3,500 per capita income threshold.

On the surface, this means that democracy may in fact be beneficial for the poorest of the poor countries while it is the middle-income developing countries that suffer from democracy. An intuitive reasoning for this runs

along the lines of the Amartya Sen hypothesis, which claims that functioning democracies reduce the likelihood of famines because they are quick to respond to the demands of its citizens. This implies that democracy must be effective for poverty reduction in the poorest of nations. It can be so that the poorest nations care less for democratic gibber than those in the middle-income developing countries. That is, political rights are ranked lower in their hierarchy of needs, and there is no benefit to them of asserting their rights. In the struggle for survival in such countries, democracy as a result may be able to alleviate the worst blights of poverty: famines. The income threshold tabulations for Freedom House agree with this theory.

On the other hand, in middle-income developing countries, survival is assured. Citizens may already have a sense of what political rights can offer them, in which case they become more assertive, maybe even too assertive. In the end, the nation might in fact need less democracy to keep the citizens within bounds. The recent Manila Peninsula mutiny led by Sen. Antonio Trillanes IV is a testament to this. Marching through the streets of Makati City with the rallying cry to oust the current president caused nothing but disturbance. His adamant assertion of his rights only served his interests and not of the masses.

On the other hand, the POL specifications for equation (8) as presented in Appendix B.8 all produced insignificant results.

Finally, we move on to the regional interactions of equation (9). Appendix B.9 presents the resulting estimates and t-stats. For both POL and FH, none of the democracy-regional dummy interactions resulted in significant estimates. This leads us to believe that regional differences do not impinge on the effectiveness of democracy in reducing poverty.

As a whole, both democracy indicators illustrate an inverse relationship between poverty reduction and democracy and are robust in an array of specifications, although it is the FH variable that appears the more infallible of the two. In general, in developing countries where people cannot wisely vote for the right policies beneficial to the country and where political rights are likely to be misused, democracy may result in decreased levels of poverty reduction.

But in extremely poor countries, tables can turn a hundred and eighty degrees. The US\$ 3,500 to US\$ 3,000 income threshold for FH reveals a significant and positive relationship between poverty reduction and democracy. Therefore, for a subset of our sample, the Sen hypothesis holds. In countries where the struggle to survive is a daily routine, democratic governments may realize higher levels of poverty reduction because they can be more responsive and flexible to the needs of their people, therefore avoiding the darkest sides of poverty.

The results also show that governance measures—such as voice and accountability, government effectiveness, and regulatory quality—provide a good environment for democracy to effectively reduce poverty. Furthermore,

the more literate a population becomes (the higher the score for primary education), the more effective democracy becomes.

5.1. Partial derivative slope analysis

Toward studying the effect of democracy on poverty reduction, a closer investigation that entails the partial derivatives of a number of the regressions follows. It is important to note that the values presented here are not absolute; they are merely inferred from the estimated coefficients of the specifications, which are themselves only approximations of their true values. This section will only serve as an illustration to allow further insight into the nuts and bolts that make up the democracy-poverty reduction dynamics.

From our results, it is clear that the individual effect of democracy on poverty reduction for developing countries is a negative. This holds true whether democracy is measured through the level of political participation (POL) or through the extent of civil and political liberties (FHREV) in the country. When taking the partial derivatives of POVRED with respect to the democracy measures from the base regression, though, we will find a key distinction.

$$\frac{\delta POVRED}{\delta FHREV} = -2.2581$$

$$\frac{\delta POVRED}{\delta POL} = -0.4452$$

Notice from the results of equation (3) (Appendix B.1.) that the partial derivative of FHREV is more than five times larger than its POL counterpart. In most of the significant estimates that have come out from the regression results, this ratio proves to be consistent, despite the varying values that come with varying specifications. This observation suggests that an incremental increase in civil and political rights will have a stronger negative effect on POVRED than will an increase in political participation; hence, civil liberties explain more of the adverse influence of democracy on poverty reduction than does polity.
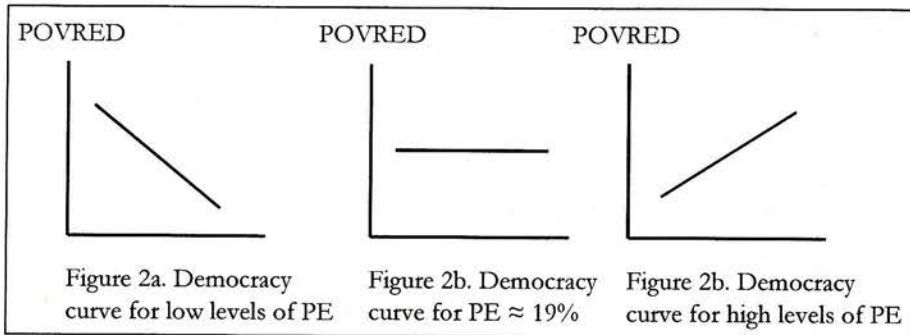
If we turn to equation (5), which includes a democracy-education interaction term, we find another elegant discovery. The marginal effect of democracy continues to be negative but is contingent on the level of primary education attained by the population.

$$\frac{\delta POVRED}{\delta FHREV} = -4.2670 + 0.2197 PE$$

$$\frac{\delta POVRED}{\delta POL} = -0.9891 + 0.0504PE$$

In both the partial derivatives of POL and FHREV, three things can happen with respect to PE. First, for low levels of primary education, the adverse marginal effect of democracy on POVRED is reduced. Second, for high levels of PE, the tables turn and democracy will in fact have a marginally positive effect on POVRED. And third, there is a particular level of PE to which the effect of democracy is nullified. Any value of PE beyond this level will make the slope of the democracy index positive, denoting that democracy will positively influence growth, while any level lower than the critical PE value will result in a negative marginal effect on POVRED. Figure 2 presents an illustration of the effects of PE on the slope of the democracy curve. Interestingly, this critical level of PE for POL and FHREV are very close to each other, at approximately PE=19%.

**Figure 2. Effect of the magnitude of primary education
on the democracy (FH) curve**

POVRED	POVRED	POVRED
Figure 2a. Democracy curve for low levels of PE	Figure 2b. Democracy curve for PE ≈ 19%	Figure 2b. Democracy curve for high levels of PE

This discovery may imply that the extent to which primary education complements political participation and the level of civil liberties does not differ considerably.

On the other hand, when it comes to interactions with macroeconomic variables, equation (6), the only variable that proved significant when interacted with both POL and FHREV, is OPEN.

$$\frac{\delta POVRED}{\delta FHREV} = -4.6901 + 0.0603OPEN$$

For Freedom House, the incremental effect of democracy on POVRED is negative despite the positive openness interaction estimate. Only for levels of openness beyond 78 percent of GDP does this marginal effect become favorable. In contrast, the marginal effect of Polity on POVRED is completely

determined by the level of openness. Indeed, for as long as the country is not completely closed and self-sustaining (i.e., there is the least bit of international exchange), an increase by one unit of political participation reaps positive results for poverty reduction. This could be explained by the spillover effects accompanying international trade, one of which is a more diversified exchange of ideas [Eichengreen and Leblang 2006]. An enhanced pool of ideas encourages public discussion and improves voter competence, in turn securing better quality in the arena of political competition.

The disparity between the marginal effects of FHREV and POL on POVRED with respect to OPEN suggests that trade openness complements political participation more than it complements civil and political liberties in the aim of reducing poverty.

From the regression results of equation (7) (Appendices B.5 and B.6), we find that the two measures of democracy are contingent on different aspects of governance: government effectiveness and regulatory quality for Freedom House, and voice and accountability for Polity. When taking the partials of POVRED with respect to the democracy indicators in equation (7) (Appendices B.5 and B.6), it can be noticed that it is in the quality of governance interactions that POL and FHREV produce stark differences. In particular, Freedom House is contingent on

$$\frac{\delta POVRED}{\delta FHREV} = -1.8446 + 1.0209RQ$$

$$\frac{\delta POVRED}{\delta FHREV} = 0.8219GE$$

$$\frac{\delta POVRED}{\delta POL} = -0.4023 + 0.2905VA$$

In much the same way that PE and OPEN complements democracy, there is a particular level RQ* and VA* for which the incremental effects of FHREV and POL, respectively, on poverty reduction becomes zero, and beyond which the incremental effects become favorable. Given the regression results, these values can be approximated as RQ*=1.80 and VA*=1.40. A close comparison between these two critical values and the maximum values of VA and RQ in our dataset proves to be quite telling. Table 3 reveals that the maximum values for both governance indicators fall below the critical values RQ* and VA*.

**Table 3. Summary statistics for regulatory quality,
and voice and accountability**

Variable	Observations	Mean	Std. dev.	Min.	Max.
RQ	141	0.0786525	0.4727234		
	-0.9	1.28			
VA	141	-0.1085816	0.6132089	-1.41	1.3

These observations suggest that none of the developing nations in our dataset (in the time frame 1960-1998) had the level of quality of governance needed to counteract the unfavorable impact of democracy on poverty reduction.

In all, two things remain consistent across all the regressions that include interactions. First, that whenever the effect of democracy alone on poverty reduction appears significant, it has a negative sign; and second, that despite this adverse marginal effect, some macroeconomic, governance, and educational factors may, if high enough, reverse the undesirable effect of democracy on poverty reduction.

6. Conclusion and recommendations

This paper embarked on the study of poverty reduction with the central objective of discovering whether democracy affects it, and if so, in what direction. The findings shed some light on this inquiry, revealing evidence that in the general case for developing countries, there is a strong negative relationship between poverty reduction and democracy. We discover, however, that within the sample of developing countries, democracy interacting with certain variables such as education and governance turns the effect around from being one that is detrimental to poverty reduction, to that which is in fact good for poverty reduction. Also, there is reason to believe that the Sen hypothesis holds true for those developing countries that have relatively lower per capita incomes. The investigations regarding income thresholds shed more light into the rhythm by which democracy influences poverty reduction. The findings from the income threshold interactions reveal that although the net effect of democracy is negative, countries with per capita incomes less than US$ 3,500 will realize positive outcomes from democracy. Results suggest that when a country is poor, democracy demonstrates a positive net effect on the level of poverty reduction, but as a country gets richer, democracy becomes more and more of a burden. This is suggestive of the nonlinearity of the democracy curve, similar to an observation by Barro [1994], but this time conditional to income.

In exploring the poverty reduction, democracy, and education nexus, we see that democracy is contingent on the level of literacy within the population.

This finding provides support for policies that encourage primary education over *higher levels of education in developing countries. We would like to take* special note, however, that this remark rests on the constraining assumption that quality education is provided to the citizens, which unfortunately in some poor countries may not always be the case.

Investigations that attempt to answer the question of whether or not particular governance indicators and macroeconomic policies complement democracy led us to examine the interactions of these variables with the two democracy indicators. The findings reveal that the interactions of democracy with government expenditure and inflation variables are not significantly different from zero, suggesting that democracy is not contingent on these macroeconomic policies. In contrast, the results from regressions that include democracy-openness interactions for both Polity and Freedom House show significantly that democracy's effect on poverty reduction is a function of the level of participation in the international markets. Governance interactions, moreover, identify regulatory quality, government effectiveness, and voice and accountability as reinforcing the effect of democracy on poverty reduction. In particular, regulatory quality and government effectiveness fortify the benefits from civil and political liberties, while voice and accountability provide the proper foundation for effective political participation.

6.1. A poverty reduction strategy

Recognizing the significance of poverty reduction in the global scene of the present day—given the looming deadline of the UN Development Program's MDGs—means recognizing that an approach to this goal is imperative. What follows is our humble proposition to this end, subject to our findings and to the best our sample can provide.

This paper has discovered that the most celebrated form of government in the late twentieth century turns out, under the constraints of developing countries, not to provide the best results for the most pressing issue welcoming the twenty-first century. But we also discover that such is not a lost cause. Certain tools can be employed to turn democracy around to our advantage.

We have but three proposals to suggest:

6.1.1. Primary education

First and foremost, we have found that higher literacy in a democratic regime, if high enough, produces positive results in reducing poverty. (Partial derivative slope analysis conducted from the regression results provides an illustration for the level that is "high enough", i.e., higher than 19 percent of the population must have completed primary education for it to yield positive net benefits.) Thus we propose that democracy be accompanied by a more widespread promotion of primary education in every developing country.

There is nothing new in such a proposition; the difference is that the proposal suggests prioritizing primary education over other levels of education. Through widespread poverty reduction, more of the population will be given opportunities to step away from the clutches of poverty and into the first rung of the development ladder, an opportunity that they otherwise might never have.

6.1.2. Trade openness

There is reason to suppose from our findings that openness reinforces democracy. Like primary education, it can offset the marginal adverse effect of political rights and civil liberties if it climbs beyond a particular level, while it completely determines (positively) the effect of political participation. We, therefore, cannot leave out this valuable factor in our proposition. We suggest that developing countries open their markets further to the international trade circuit, through reductions in trade barriers for both imports and exports. These are suggested with the consideration that (a) there are social safety nets for the few citizens that may get hurt from layoffs, and (b) the loosening of international speed bumps be gradual to allow the sectors that could get hurt the grace period to adjust to new competition.

6.1.3. Regulatory quality, effectiveness and accountability of government, and public voice

Our results also suggest that democracy is contingent on three particular aspects of governance: the quality of the regulatory framework, government effectiveness and accountability, and public voice. From this, we therefore propose that more attention be given strengthening such sides of democratic governments. Regulatory quality has to do with providing more competent regulations in areas such as taxation, and financial intermediation, among others. Government effectiveness and accountability is related to the performance of the government in its public service provisions and its ability to free itself from political pressures. And public voice means that more groups and communities in the country can express their views and contribute to the decision-making process.

From our partial derivative analysis, it may be possible that this proposal will be the most difficult for developing countries to implement. From our illustration, none of the countries in our dataset have achieved a level of regulatory quality or voice and accountability that is substantial enough to counteract the unfavorable marginal effect of democracy on poverty reduction. Developing nations, then, might still have a long way to go with regard to good governance. But it does not diminish the fact that good governance may be used as a tool to reinforce democracy.

We recognize that achieving these three goals will not be as easy as it sounds. It will require some level of social restructuring that can be achieved only in the long term. Stiglitz [2002] acknowledges this social restructuring in his book, *Globalization and Its Discontents*, expressing his belief that a social contract between the government and the people must first be built and solidified before many of the policies imposed by international institutions (some of which coincide with our own suggestions, i.e., trade liberalization) can work. This proposal requires a certain level of cooperation and ardent willingness by the government to build a good relationship with its citizens. Nonetheless, this strategy will provide guidance as to which features of the government should be prioritized while this social contract is gradually being developed.

6.2. Recommendations for further studies

The experiments conducted in this study have opened many doors for further research and investigation. There is certainly a very glaring constraint under which this paper chose to subject itself. All the results that have been found are subject to the constraint of developing countries. There is thus a potential to test our hypothesis and results under a larger set of countries, extending beyond the confines of LDCs and including the rest of the world.

There is also an opportunity to explore more explicitly the democracy relationships overlooked in this paper. The link between democracy and higher levels of education demands to be looked into in greater detail because it provides an interesting and novel perspective into the mechanisms of education in a thriving democracy. Also, other aspects of the economy can be tested to shed some light on their interrelations with democracy toward poverty reduction. An example would be to see which combinations of budget allocations are more effective for democracy, given the aspects of society that might complement or clash with the strengths and weaknesses of democratic forms of government in augmenting poverty reduction.

An inquiry into what specific aspects of democracy are good and bad for poverty reduction can also be explored. This study used two indicators that have different origins and that focus on different facets of democracy, and we found that the thin line between the two indicators may at times result in observable differences in the results. This provides potential for further study.

And finally, consistent with the fight against poverty, further research can be conducted using the poverty variable directly, instead of poverty reduction, in finding relationships and correlations with democracy and other forms of government. There may be instances where democracy interactions may augment both poverty and poverty reduction at the same time, and another dimension will be added to our current perceptions of poverty and democracy.

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