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Asian Development Bank

Measuring Sustainable Development: Theory and Application

PARTHA DASGUPTA

Abstract. The paper applies the notion of social well-being to show that “sustainable development” should mean the maintenance of the productive base of an economy relative to its population. It is shown that the concept is operational. Crude data from the world’s poorest countries are used to study whether those countries had experienced sustainable development during the period 1970–2000. The findings are then compared to the experiences of the United Kingdom and the United States.

I. INTRODUCTION

In development economics (in welfare economics, more generally), three questions can be asked in connection with human well-being in an economy: (i) How are people doing? (ii) How have they been doing in recent years? (iii) What should they do? The first question describes the current state of affairs, the second question evaluates recent performance, and the third question seeks to evaluate choices.

No matter which of the three questions we ask, however, we need to have an appropriate measure of human well-being. In recent years, debates on how to measure of human well-being have been influenced by two dichotomies: the constituents versus the determinants of human well-being, and current versus sustainable well-being.¹ In publications from international organizations, much emphasis has been placed on the former dichotomy (e.g., UNDP 1994). It is, however, the case that the most well-known indices of social well-being—gross domestic product (GDP) per capita and the human development index (HDI) of the United Nations Development Programme (UNDP)—are, for all practical purposes, measures of current well-being. Given the attention “sustainable development” continues to receive in international discourse, an index is needed with which to check whether current policies are consistent with sustainable development.

This paper is structured as follows. Section II defines sustainable development while Section III discusses total factor productivity (TFP). The final section, Section IV, discusses the inclusiveness of investments by comparing the

¹The terms “quality of life” and well-being” are used interchangeably in this paper.

Sir Partha Dasgupta is Frank Ramsey Professor of Economics at the University of Cambridge. This paper was prepared for the Asian Development Bank’s Distinguished Speakers Program held on 3 October 2007 in Manila, Philippines. The original lecture style of the presentation has been preserved.

experiences of Pakistan with that of United States (US), People’s Republic of China (PRC), and Sub-Saharan Africa. Section V concludes.

II. MEASURING ECONOMIC PERFORMANCE

Table 1, which collates well-known statistics about rich and poor countries, is proto-typical of the way the question, “How are people doing?” is addressed. The table offers no comment on the way the second and third questions may be addressed and answered.

Table 1. Rich and Poor

	Rich Nations	Poor Nations
Population (billions)	1.0	2.3
GDP per capita	\$30,000	\$2,100
Human development index	High	low
Annual population growth rate (percent): 1966–2004	0.8	2.4
Annual growth rate of GDP per capita (percent): 1966–2004	2.4	1.8
Total fertility rate	1.8	3.7
Adult literacy (percent)	>95	58
Female literacy (percent)	(>95)	(48)
Index of government corruption	Low	high
Life expectancy at birth (years)	78	58
Under-5 mortality (per 1,000)	7	120
Rural population (percent of total population)	20	70
Agriculture’s share in GDP (percent)	5	25

GDP means gross domestic product.
Source: *World Development Indicators* (World Bank 2005).

The right way to judge the economic performance of a country (or for that matter, any economic unit be it household, village, district, state, country, or the world as a whole) is to study movements in its *productive base*. An economy’s productive base is composed of its *institutions* and *capital assets*. Institutions are different from capital assets in that the former comprise the social infrastructure (e.g., laws, property rights, beliefs, extent of trust among people) for guiding the allocation of resources, including the capital assets themselves. Capital assets encompass not only manufactured capital (roads, building, machines); human capital (education, skills, and health); and publicly available knowledge (science and technology). It also includes natural capital (minerals, oil, and natural gas; fisheries; forests, soil resources, or more generally, ecosystems).

The social worth of an economy’s productive base is considered to be its *inclusive wealth*. In this section, the progress made by the world’s poorest regions in recent decades (question ii above) will be examined. Results will confirm that the PRC has performed much better than the other two poor regions of the world, namely, sub-Saharan Africa and the Indian subcontinent. It will also be shown

that the PRC's wealth creation has been far more muted than the expansion of GDP. If degradation of such forms of natural capital as soil and the atmosphere were to be included, the PRC's wealth creation would probably seem even more muted.

A. Definition of Sustainable Development

Following the Brundtland Commission Report (World Commission on Environment and Development 1987), I adopt the view here that "sustainable development" means *sustained* social well-being, and that well-being means not just current well-being, but well-being across generations. The index of social well-being I shall work with is the present value of the flow of each generation's well-being. This is of course a familiar concept in development economics. It was adopted long ago in the theory and empirics of national saving rates and has been the foundation of the theory and empirics of social cost benefit analysis. Hence, "*sustainable development*" is an economic programme along which average well-being of present and future generations, taken together, does not decline over time.

B. Sustainable Development and Inclusive Investment

It can be shown that an economy enjoys sustainable development if and only if, relative to its population, its inclusive wealth (at constant prices) does not decline.² Naturally, a change in inclusive wealth over time (at constant prices) is *inclusive investment*. An economy would enjoy sustainable development if and only if, relative to its population, inclusive investment is not negative.³ This is the sense in which inclusive wealth is a measure of intergenerational well-being. It is also the sense in which accumulation of wealth corresponds to sustained development. Inclusive investment is thus a key to economic progress.

A capital asset's worth is its quantity multiplied by the present value of the flow of social benefits an extra unit would be able to generate over time. That present value is called the asset's *shadow price*. Hence, an economy's inclusive wealth is the shadow value of its productive base, and inclusive investment is the shadow value of the net change in its productive base. Of course, even if some assets have decumulated, inclusive wealth would increase if there were compensatory accumulation of other assets in the economy. Similarly, even if

²See Dasgupta and Mäler (2000) for the case of constant population, and Dasgupta (2001) and Arrow et al. (2003a and b) for the case of variable population.

³Those familiar with the Brundtland Commission Report will recognize this as a precise formulation of its definition of sustainable development, namely, "... development that meets the needs of the present without compromising the ability of future generations to meet their own needs." In this reckoning sustainable development requires that relative to their populations each generation should bequeath to its successor at least as large a productive base as it had itself inherited. Notice that the requirement is derived from a relatively weak notion of intergenerational justice. Sustainable development demands that future generations have no less of the means to meet their needs than the present has.

some assets have accumulated (building, roads, machines), inclusive wealth would decline if there was a substantial decumulation of other forms of capital assets (wetlands, coastal waters, forests, the atmosphere as a sink for pollutants).

Inclusive investment is to be contrasted from recorded investment. Because a wide range of services obtained from natural capital are missing from standard economic accounts, recorded investment could be positive even if inclusive investment was negative—a possibility explored in Table 2. On the other hand, current accounting practice does not recognize that nutrition, health care, and potable water are not merely consumption goods, but they are simultaneously investment goods. Thus, there is corresponding undercounting in recorded investment.

Table 2. The Progress of Nations

Country/Region	Annual Growth Rate, 1970–2000 (percent)					Δ HDI***
	I/Y* (percentage)	Population (per head)	TFP**	Productive Base (per head)	GDP (per head)	
Sub-Saharan Africa	–2.1	2.7	0.1	–2.9	–0.1	+
Bangladesh	7.1	2.2	0.7	0.1	1.9	+
India	9.5	2.0	0.6	0.4	3.0	+
Nepal	13.3	2.2	0.5	0.6	1.9	+
Pakistan	8.8	2.7	0.4	–0.7	2.2	+
People’s Republic of China	22.7	1.4	3.6	7.8	7.8	+
United Kingdom	7.4	0.2	0.7	2.4	2.2	+
United States	8.9	1.1	0.2	1.0	2.0	+

* means inclusive investment as a share of GDP (average over 1970–2000).

** means total factor productivity.

*** means change in human development index between 1970 and 2000.

GDP means gross domestic product.

Source: Adapted from Arrow et al. (2004).

The notion of investment I am advocating here is not only inclusive of various types of capital assets, it also inclusive of individual and locational differences. A pond in one location is a different asset from a pond in another, because their ecological characteristics are likely to differ, and because the communities making use of them are likely to face different economic circumstances. It follows that seemingly identical ponds should have different shadow prices. Of course, in practice, such refinements may not be attainable. But it is always salutary to be reminded that macroeconomic reasoning glosses over the heterogeneity of the earth’s resources, and the diverse ways to which they are put to use by people residing at the site and elsewhere. Shadow prices depend not only technology and consumer preferences, but also on institutions and their combined effect on people’s lives.

C. Substitution Possibilities and Sustainable Development

It is important to realize that even if an economy satisfies the sustainability criterion (i.e., relative to population, inclusive investment is not negative) today, or has satisfied the criterion in the recent past, it might not continue to do so in the future. Whether it is able to do so depends on the scale of the economy (measured by, say, gross domestic product [GDP]), among other things. If the scale becomes too large relative to the natural capital base of the economy, the economy will be unable to maintain its inclusive wealth. Specifically, as an economy's scale increases, natural capital (e.g., ecosystems) becomes more scarce relative to the size of the economy. Consequently, the amount of other types of capital needed to substitute for natural capital—that is, the shadow price of natural capital—may rise. The extent to which the shadow price rises depends on a number of factors, including the rate of technological progress. There can even come a point where no amount of feasible investment in manufactured capital or human capital can offset further declines in natural capital (Ehrlich and Goulder 2007).

D. Weaknesses in GDP and HDI

It is easy to see why GDP is inadequate as an index of sustainable development. An economy's productive base will shrink if its stock of capital assets depreciates, and its institutions are not able to improve sufficiently to compensate for that depreciation. The term GDP is an acronym for *gross* domestic product. The word "gross" means that GDP ignores the depreciation of capital assets. It is certainly possible for a country's productive base to grow while its GDP increases (this is confirmed in Table 2), which is no doubt a path of economic development we all would like to follow. However, it is also possible for a country's productive base to *shrink* during a period when GDP grows (this is also confirmed in Table 2). The problem is that no one would notice the shrinking if everyone's eyes were riveted on gross domestic product. If the productive base continues to shrink, economic growth will, sooner or later, stop and reverse sign. The standard of living will then decline, but no one would have suspected that a fall was forthcoming. Thus, growth in GDP per head can encourage us to think that all is well when in fact it is not. Similarly, it is possible for a country's HDI to increase even while its productive base shrinks. This means that HDI too can mislead.

The moral is telling: GDP (or for that matter, HDI) is not a measure of long-run human well-being, and that movements in GDP or HDI are a poor basis for judging economic progress.

In advocating HDI over GDP, the UNDP (1994, 14–15) castigated those who regard GDP to be an index of an economy's well-being on the grounds that it is a measure of a country's "opulence." The criticism is faulty in two ways. Firstly, opulence is a stock concept, and GDP is not a return on any index of

opulence that I am aware of.⁴ Secondly, and more importantly, as we have just noted, it is not a mistake to seek to measure a society's well-being in terms of an index of opulence. The point is not that opulence misleads, but rather, we should search for the *right measure* of opulence.

III. INSTITUTIONS: WHAT ABOUT THE RESIDUAL?

The aggregate output of an economy is produced by various factors of production. We can therefore decompose observed changes in output over time into its sources: how much can be attributed to changes in labor force participation, how much to accumulation of manufactured capital and human capital, how much to the accumulation of knowledge brought about by expenditure in research and development, how much to changes in the use of natural resources, and so on. If a portion of the observed change in output cannot be credited to any of the above factors of production, that portion is called the change in total factor productivity. Growth in TFP is known as the *residual*, to indicate that it is that bit of growth in output that cannot be explained.

Should wealth decline, could growth in TFP not compensate for the decline and ensure that long-run well-being is sustained? Traditionally, labor force participation, manufactured capital, and marketed natural resources have been the recorded factors of production. In recent years, partial measures of human capital have been added. Attempts have also been made also to correct for changes in the quality of manufactured capital brought about by research and development. But national accounts mostly still do not include the use of nonmarketed natural resources—nor, for that matter, nonmarketed labor effort—for the understandable reason that shadow prices of nonmarketed natural resources are extremely hard to estimate. Moreover, how do you estimate unrecorded labor effort? Now imagine that over a period of time the economy makes increasing use of the natural resource base, or of unrecorded labor effort. The residual would be overestimated. In fact, a simple way to increase the residual would be to “mine” the natural resource base at an increasing rate. But this would be a perverse thing to do if we seek to measure economic prospects.

What if it is possible to decompose the growth of an economy's aggregate output in a comprehensive manner, by tracing the growth to the sources originating from all the factors of production? To assume that over the long run the residual could still be positive is to imagine that the country enjoys a “free lunch” (like manna from heaven). Is the latter a possibility? One way to enjoy a free lunch, for poor countries at least, is to use technological advances made in other countries without paying for them. The residual would then reflect increases in freely available knowledge. Note though that adaptation is not without cost. To meet local conditions, adjustments need to be made to product design and to the

⁴One can even argue that, because it does not take note of capital depreciation, GDP cannot be a measure of opulence. It can also be shown that *net* national product also would not work as an index of sustainable development (see Dasgupta 2001).

processes involved in production, all of which require appropriate local institutions that are frequently missing in poor countries.

Of course, TFP can have short bursts. Imagine that a government reduces economic inefficiencies by improving the enforcement of property rights, or by reducing centralized regulations (import quotas, price controls, and so forth). We would expect the factors of production to find better uses. As factors realign in more productive fashions, TFP would increase.

In the opposite vein, TFP could decline over a period. Increased government corruption or civil strife could cause this decline, which not only destroys capital assets, but also damages a country's institutions, both public or civic. When institutions deteriorate, assets are used even more inefficiently than previously, and TFP declines.

IV. WEALTH MOVEMENTS IN POOR COUNTRIES: HAS ECONOMIC DEVELOPMENT IN RECENT DECADES BEEN SUSTAINABLE?

Economists at the World Bank (Hamilton and Clemens 1999) have estimated inclusive investment in different countries during the past few decades. They have done that by adding net investment in human capital to existing countrywide estimates of investment in manufactured capital, and then subtracting *disinvestments* in natural capital from that sum. The economists used official estimates of net national saving as proxies for net investment in manufactured capital. For estimates of investment in human capital, they used expenditure on education as a proxy.⁵ To quantify disinvestments in natural capital, they considered net changes in the stocks of commercial forests, oil and minerals, and quality of the atmosphere in terms of its carbon dioxide content. Oil and minerals were valued at their market prices minus extraction costs. The shadow price of global carbon emission into the atmosphere is the damage caused by bringing about climate change. That damage was taken to be \$20 per ton, which in all probability is a serious underestimate. Forests were valued in terms of their market price minus logging costs. Contributions of forests to ecosystem functions were ignored.

The World Bank's list of natural resources is incomplete. It does not include water resources, fisheries, air and water pollutants, soil, and ecosystems. Their notion of human capital is inadequate because health does not enter the calculus. And their estimates of shadow prices are just approximate. Nevertheless, one has to start somewhere, and the World Bank's is a first pass at what is an enormously messy enterprise.

What I want to do now is to examine figures published recently by a group of ecologists and economists (Arrow et al. 2004), who adapted the World Bank estimates of inclusive investment, and then went on to determine whether economic development in some of the major countries and regions has been

⁵In recent work, Arrow et al. (2007) have greatly refined the way human capital is measured.

sustainable in recent decades. Table 2 is a refinement of that study. It remains a crude beginning to the study of sustainable development, but is a start.

The places in question are sub-Saharan Africa, Bangladesh, India, Nepal, and Pakistan (all poor countries); PRC (a middle-income country); and United Kingdom and United States (both rich countries). The period under study is 1970–2000. The first column in Table 2 consists of refinements of the World Bank's estimates of average inclusive investment as a proportion of gross domestic product. The second column gives the average annual population growth rate. The third column gives estimates of annual growth rates of TFP, which we take as the annual percentage rate of change in a combined index of knowledge and institutions. The figures in the first three columns are used to arrive at estimates of the annual percentage rate of change in the productive base per capita. They are given in the fourth column.

Before summarizing the findings, it will be useful to get a feel for what the numbers in the table are telling us. Consider Pakistan. During 1970–2000, inclusive investment as a proportion of GDP was 8.8 percent annually. Total factor productivity increased at an annual rate of 0.4 percent. As both figures are positive, we can conclude that Pakistan's productive base was larger in year 2000 than it had been in 1970. But looking at Pakistan's population, which grew at a high 2.7 percent rate annually, the fourth column shows that Pakistan's productive base per capita consequently declined at an annual rate of 0.7 percent, implying that in year 2000 it was about 80 percent of what it was in 1970.

In contrast, consider the United States. Inclusive investment as a share of GDP was 8.9 percent a year, which is only slightly larger than that of Pakistan. Growth in TFP (an annual 0.2 percent) was even lower than Pakistan's. But population grew only at 1.1 percent a year, meaning that the productive base per capita in the US grew at an average annual rate of 1 percent. Economic development in the US was sustainable during 1970–2000, while in Pakistan it was unsustainable.

Interestingly, judging economic performance in terms of growth in GDP per capita gives a different picture. As the fifth column of Table 2 shows, Pakistan grew at a respectable 2.2 percent rate a year, while the US grew at only 1.1 percent a year. The HDI for Pakistan improved during the period, although the movements in HDI tell us nothing about sustainable development.

The striking message in Table 2, however, is that during 1970–2000 economic development in *all* the poor countries on the list was either unsustainable or barely sustainable. Sub-Saharan Africa offers no surprise. Its inclusive investment was negative, implying that the region *disinvested* in manufactured, human, and natural capital—together at 2.1 percent of gross domestic product. Population grew at 2.7 percent a year and TFP barely advanced (annual growth rate was only 0.1 percent). Even without performing any calculation, we should suspect that the productive base per capita in sub-Saharan Africa declined. Table 2 confirms that it did, at 2.9 percent annually.

Looking further at the values, GDP per capita in sub-Saharan Africa remained fairly constant. But the region's HDI showed an improvement,

confirming once again that studying movements in HDI enables us to say nothing about sustainable development.

Pakistan is the worst performer in the Indian subcontinent, but the remaining countries in the region just barely made it when judged in terms of sustainable development. Inclusive investment in each country (Bangladesh, India, and Nepal) was positive, as was growth in total factor productivity. The two together imply that the productive base expanded in each country. But population growth was so high that the productive base per capita just about grew at annual percentage rates 0.1, 0.4, and 0.6 respectively. Even these figures are most likely to be overestimates. The list of items that Hamilton and Clemens (1999) used in order to estimate inclusive investment did not include soil erosion and urban pollution, both of which are considered by experts to be problematic in the Indian subcontinent. Moreover, the human desire to reduce risk, mentioned earlier, implies that downside risks of natural capital degradation should be given a higher weight than a corresponding chance that things will turn out to be better than expected. Thus, allowing for risk aversion, estimates of inclusive investment would be lowered. One cannot help suspecting that economic development in the Indian subcontinent was unsustainable during 1970–2000. But one would not discern that from figures for GDP per capita and the human development index. The former grew in each country in the region and the latter improved.

Meanwhile, in the PRC, inclusive investment was 22.7 percent of GDP, a very large figure in the sample of countries in Table 2. Growth in TFP was a high 3.6 percent while population had grown at a relatively low 1.4 percent annual rate. We should not be surprised that the PRC's productive base per capita expanded—as it happens, at 7.8 percent annually. Per capita GDP also grew at an annual rate of 7.8 percent, and HDI improved. In the PRC, GDP per capita, HDI, and the productive base per head moved in parallel.

There is little to comment on the United Kingdom and the United States. Both are rich, mature economies. Inclusive investment during 1970–2000 was modest, but then so was population growth. Growth in TFP was low. Although the figures imply that the productive base per capita expanded in both countries, we should be circumspect because, as noted earlier, the World Bank costed carbon emissions at too low a rate. Gross domestic product per capita increased in both countries, and HDI improved.

V. CONCLUSION

The figures just presented are preliminary, but they show how accounting for natural capital can make a substantial difference in the conception of the development process. In Table 2, I have deliberately made conservative assumptions regarding the degradation of natural capital. For example, a price of \$20 per ton of carbon in the atmosphere is almost certainly a good deal below its true social cost (or negative shadow price). Taking instead the reasonable shadow price of \$75 per ton, all the poor countries in Table 2 would show a decline in their GDP per capita during 1970–2000.

The message we should take away is sobering. Over the past three decades, sub-Saharan Africa (home to 750 million people today) has become poorer if judged in terms of its productive base per capita. Economic development in the Indian subcontinent (home to over 1.4 billion people today) was either unsustainable or just barely sustainable. That said, it would be wrong to conclude that people in poor countries should have invested more in their productive base by consuming less. The production and distribution of goods and services in poor countries are highly inefficient. It would be wrong to regard consumption and investment in the productive base there as competing for a fixed quantity of funds. Rather, the creation of better institutions to enable people in the world's poorest regions to both consume more and invest more (inclusively, of course!) is the first step toward achieving sustainable development.

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Measuring Inclusive Growth

IFZAL ALI AND HYUN HWA SON

This study proposes an approach to measuring inclusive growth. It draws from the idea of a social opportunity function akin to a social welfare function. In this context, growth is defined as inclusive if it increases the social opportunity function, which depends on two factors: (i) average opportunities available to the population, and (ii) how opportunities are shared among the population. In part, the inclusiveness of growth can be captured by means of an opportunity curve, which has a one-to-one relationship with the social opportunity function. To complement the shortcoming of the opportunity curve particularly partial ranking, the study also develops the opportunity index to provide a complete ranking. These tools are applied to the Philippines to analyze the access to and equity of opportunities in education and health. More importantly, the empirical application illustrates how these tools can be useful in the dynamic analysis of inclusive growth, as they evaluate changes in opportunities over time.

I. INTRODUCTION

The dramatic reduction in poverty achieved in parts of Asia is well-documented. Overall between 1990 and 2001, the number of people living on less than \$1-a-day declined from 931 to 679 million, or from 31 to 20 percent of a growing population (ADB 2006). These successes are closely associated with rapid growth, and driven in particular by high growth rates in a few countries including People's Republic of China, India, and Viet Nam.

While some level of growth is obviously a necessary condition for sustained poverty reduction, and strong average growth has been accompanied by a sharp reduction in poverty, the evidence is clear that growth by itself is not a sufficient condition. Growth does not guarantee that all persons will benefit equally. Growth can bypass the poor or marginalized groups, resulting in increasing inequality. High and rising levels of income inequality can lower the impact on poverty reduction of a given rate of growth, and can also reduce the growth rate itself. High inequality also has implications for political stability and social cohesion needed for sustainable growth (ADB 2007a and b). Hence, reducing inequality has become a major concern of development policy, a concern that has generated interest in inclusive growth. While there remains no

Ifzal Ali is Chief Economist of the Asian Development Bank. Hyun Hwa Son is Economist in the Economic Analysis and Operations Support Division, Economics and Research Department, Asian Development Bank. The authors would like to thank an anonymous referee for helpful comments and suggestions.

consensus on how to define or measure inclusive growth, the issue has generated a certain amount of policy and academic debate.

Very recently, the report of the Eminent Persons Group that was initiated by the Asian Development Bank (ADB 2007c) made reference to the term “inclusive growth”, which emphasizes ensuring that the economic opportunities created by growth are available to all—particularly the poor—to the maximum possible extent (see also Ali and Zhuang 2007). The growth process creates new economic opportunities that are unevenly distributed. The poor are generally constrained by circumstances or market failures that constrain them from availing these opportunities. As a result, the poor generally benefit less from growth than the nonpoor. Thus, growth will generally be not pro-poor if left completely to markets. The government, however, can formulate policies and programs that facilitate the full participation of those less well off in the new economic opportunities. We may thus define inclusive growth as growth that not only creates new economic opportunities, but also one that ensures equal access to the opportunities created for all segments of society, particularly for the poor.

Consistent with this definition, this paper provides an approach to measuring inclusive growth. The study proposes a new methodology to capture inclusive growth, based on a social opportunity function that is similar to the idea of a social welfare function. The paper is organized in the following manner. Section II is devoted to describing the methodology. Section III provides discussion of the empirical results. For the empirical study, we have used data culled from the Philippines’s Annual Poverty Indicator Survey (APIS) conducted in 1998 and 2004. Finally, Section IV concludes the study.

II. METHODOLOGY

Inclusive growth may be measured using the idea of a social opportunity function, which is similar to a social welfare function. Hence, it can be said that inclusive growth leads to the maximization of the social opportunity function. To be consistent with our definition of inclusive growth, we propose a methodology to measure growth inclusiveness in terms of increasing the social opportunity function, which depends on two factors: (i) average opportunities available to the population, and (ii) how opportunities are shared or distributed among the population. This social opportunity function gives greater weight to the opportunities enjoyed by the poor: the poorer a person is, the greater the weight will be. Such a weighting scheme will ensure that opportunities created for the poor are more important than those created for the nonpoor, i.e., if the opportunity enjoyed by a person is transferred to a poorer person in society, then social opportunity must increase, thus making growth more inclusive.

Suppose there are n persons in the population with incomes x_1, x_2, \dots, x_n , where x_1 is the poorest person and x_n is the richest. Then we define a social welfare function as

$$W = W(x_1, x_2, \dots, x_n) \quad (1)$$

which is an increasing function of its arguments. Similar to this idea of social welfare function, we can define a social opportunity function:

$$O = O(y_1, y_2, \dots, y_n) \quad (2)$$

where y_i is the opportunity enjoyed by the i th person who has income x_i . Opportunity can be defined in terms of various services, e.g., access to a health or educational service, access to job opportunity in the labor market, etc. y_i can take binary values 0 and 100. It takes the value 0 if the i th person is deprived of a certain opportunity, and takes the value 100 when the i th person has that opportunity. The average opportunity for the population is then defined as

$$\bar{y} = \frac{1}{n} \sum_{i=1}^n y_i \quad (3)$$

which is the percentage of the population who enjoys a given opportunity.¹

The opportunity function should be an increasing function of its arguments. If the opportunity of any person increases, then the social opportunity function must increase. Economic growth must expand the average opportunities available to the population. This is a necessary, but, by no means, sufficient requirement to achieve inclusive growth. The poor are generally constrained in availing these opportunities. Inclusive growth therefore should not only expand average opportunities, but also improve the distribution of opportunities across the population. If our development model is entirely focused on the maximization of \bar{y} as defined in (3), we are completely ignoring the distribution of opportunities. To bring in distribution considerations, we require the social opportunity function to satisfy the transfer principle: any transfer of opportunity from a poorer person to a richer person must decrease the social opportunity

¹Since y_i is a binary variable that takes a value 0 or 100, the average \bar{y} is exactly equal to the percentage of the population who has access to a certain opportunity. To clarify this, suppose p is the probability that an individual selected from the population has access to an opportunity and $(1-p)$ is the probability that the selected individual does not have access the opportunity. Given that, the average opportunity available to the population is equal to $100 \times p + 0 \times (1-p) = 100 \times p$, which is simply the percentage of the people that has access to the opportunity.

function. Without loss of generality, we can suppose that t amount of opportunity is transferred from a poorer person with income x_1 to a richer person with income x_2 . After the transfer, the poorer person will have $y_1 - t$ opportunities and the richer person will enjoy $y_2 + t$ opportunities. Such transfers should reduce the social opportunity function. Following from that, the social opportunity function must satisfy the following requirement:

$$O(y_1 - t, y_2 + t, y_3, \dots, y_n) \leq O(y_1, y_2, y_3, \dots, y_n) \quad (4)$$

which must hold for all non-negative values of t .

Let us denote the opportunity distribution vector $Q(t)$ by

$$Q(t) \approx (y_1 - t, y_2 + t, y_3, \dots, y_n) \quad (5)$$

From (4), it can be said that the vector $Q(0)$ is opportunity superior to the vector $Q(t)$, i.e., the vector $Q(0)$ will always provide equal or greater social opportunities than the vector $Q(t)$ for all non-negative values of t . A cumulative distribution of $Q(t)$ can be constructed as:

$$Q^C(t) \approx \left(y_1 - t, \frac{y_1 + y_2}{2}, \frac{y_1 + y_2 + y_3}{3}, \dots, \frac{y_1 + y_2 + \dots + y_n}{n} \right) \quad (6)$$

which is the distribution of cumulative means of $Q(t)$ when the individuals are arranged in ascending order of their incomes. Analogous to the generalized Lorenz curve, $Q^C(t)$ may be called the generalized concentration curve of the distribution $Q(t)$.² Similarly, the generalized concentration curve of the distribution $Q(0)$ is given by

$$Q^C(0) \approx \left(y_1, \frac{y_1 + y_2}{2}, \frac{y_1 + y_2 + y_3}{3}, \dots, \frac{y_1 + y_2 + \dots + y_n}{n} \right) \quad (7)$$

Comparing (6) and (7) it is evident that the generalized concentration curve $Q^C(0)$ will always be higher than the generalized concentration curve $Q^C(t)$ for all t and $t > 0$ (i.e., non-negative values of t). Thus we have shown that if the distribution y denotes opportunity superior to the distribution y^* , then the distribution y will always have a higher generalized concentration curve.

²See Kakwani (1980) for detailed discussions on the concentration curve.

Similarly, we can prove that if the distribution y has a higher generalized concentration curve than y^* , then distribution y will always give a greater social opportunity function. Thus, by looking at the generalized concentration curves of two distributions, we can judge which of these two will provide greater social opportunities provided the two generalized concentration curves do not intersect.

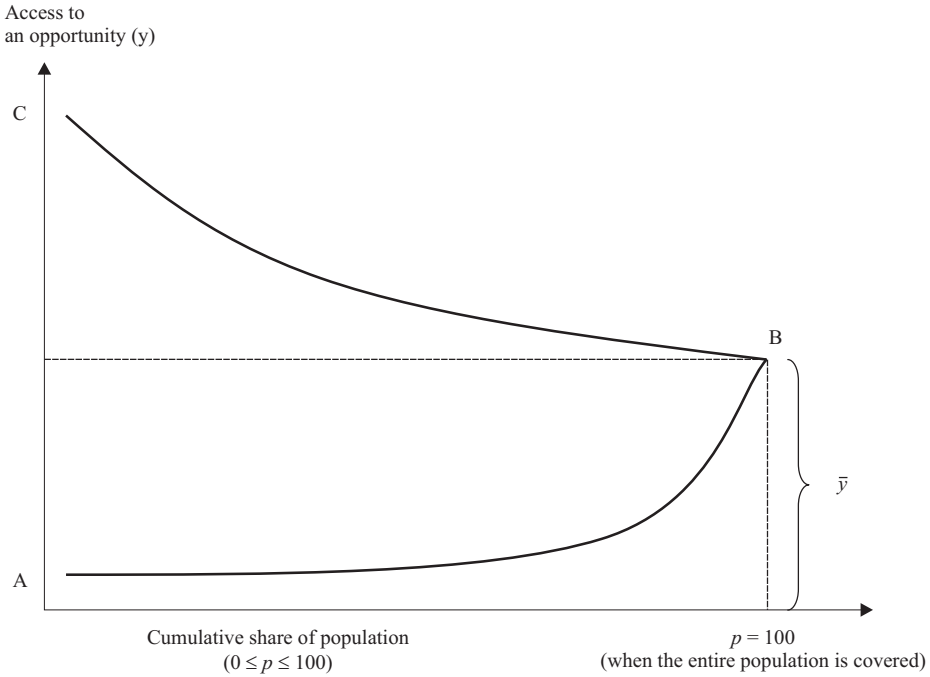
To make the above idea operational, it will be useful to formulate the problem in terms of continuous distribution. Suppose we arrange the population in ascending order of their incomes. Suppose further that \bar{y}_p is the average opportunity enjoyed by the bottom p percent of the population, where p varies from 0 to 100 and \bar{y} is the mean opportunity that is available to the whole population, then \bar{y}_p will be equal to \bar{y} when $p = 100$ (which covers the whole population).

As \bar{y}_p varies with p , we can draw a curve \bar{y}_p for different values of p . This is, in fact, a generalized concentration curve of opportunity when the individuals are arranged in ascending order of their incomes. We may call this curve as the opportunity curve: the higher the curve, the greater the social opportunity function. Thus growth will be inclusive if it shifts the opportunity curve upward at all points. If the entire opportunity curve shifts upward, this implies that everyone in society—including the poor—is enjoying an increase in opportunities, and hence we may call such a growth process as unambiguously inclusive. The degree of inclusiveness, however, will depend on (i) how much the curve is shifting upward and (ii) in which part of the income distribution the shift is taking place.

If the opportunity curve is sloping downward, then we can say that opportunities available to the poor are more than those available to the nonpoor (i.e., the opportunities are distributed equitably). Similarly, if the curve is sloping upward, opportunities are distributed inequitably (antipoor). Figure 1 depicts two opportunity curves with the same mean (\bar{y}): one is sloping upward (AB) and the other is sloping downward (CB). The curve CB indicates equitable distribution of opportunities, meaning that the poor at the bottom end of the distribution have greater opportunity than the nonpoor at the top end. The upward-sloping curve AB, on the other hand, indicates the opposite: the poor enjoy less opportunities than the nonpoor.

The opportunity curve can be useful to assess the pattern of growth that is defined in terms of access to and equity of opportunities available to the population, without specifying a social opportunity function. However, it is unable to quantify the precise magnitude of the change, i.e., one cannot be conclusive as to how much changes in opportunities have occurred over time. In this respect, the opportunity curve provides only partial rankings of opportunity distributions.

Figure 1. **Opportunity Curves**



To be able to capture the magnitude of the change in opportunity distributions, we need to make a stronger assumption about the form of the social opportunity function used. One simple form of the social opportunity function can be obtained by calculating an index from the area under the opportunity curve as denoted below:

$$\bar{y}^* = \int_0^1 \bar{y}_p dp \quad (8)$$

which is our proposed opportunity index (OI). The greater \bar{y}^* is, the greater will be the opportunities available to the population. Our development objective should be to maximize the value of \bar{y}^*

If everyone in the population enjoys exactly the same opportunity, then it can be shown that \bar{y}^* will be equal to \bar{y} . As such, the deviation of \bar{y}^* from \bar{y} provides an indication of how opportunities are distributed across the population. If \bar{y}^* is greater than \bar{y} , then opportunities are equitably distributed (pro-poor).

Similarly, if \bar{y}^* is less than \bar{y} , then opportunities are inequitably distributed (antipoor). Thus we propose an equity index of opportunity (EIO):

$$\varphi = \frac{\bar{y}^*}{\bar{y}} \quad (9)$$

which implies that opportunities are equitably (inequitably) distributed if φ is greater (less) than 1. From (9), it immediately follows that

$$\bar{y}^* = \varphi \bar{y} \quad (10)$$

which shows that our proposed OI is the product of EIO and the average level of opportunities available to the population.

To achieve inclusive growth, we need to increase \bar{y}^* , which can be accomplished by: (i) increasing the average level of opportunities \bar{y} , (ii) increasing the equity index of opportunities φ , or (iii) both (i) and (ii). To understand the dynamics of inclusive growth, we differentiate (10) both sides to obtain:

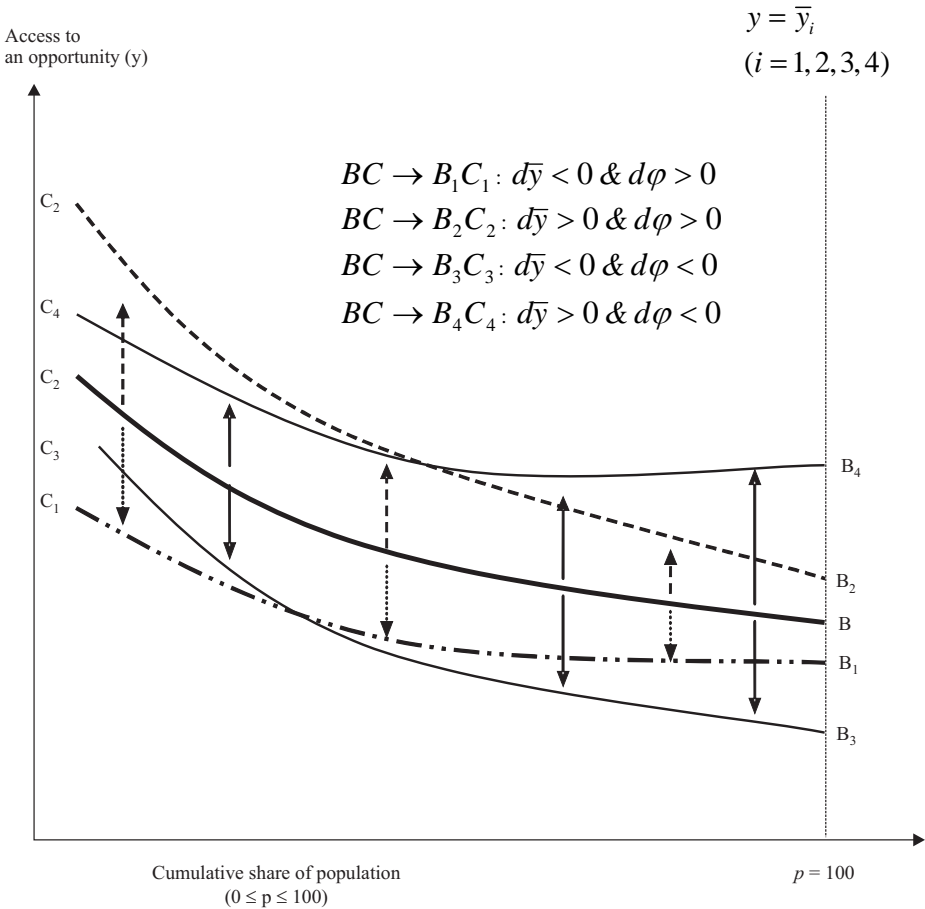
$$d\bar{y}^* = \varphi d\bar{y} + \bar{y} d\varphi \quad (11)$$

where $d\bar{y}^*$ measures the change in the degree of growth inclusiveness. Growth becomes more inclusive if $d\bar{y}^* > 0$. The first term in the right side of equation (11) is the contribution to inclusiveness of growth by increasing the average opportunity in society when the relative distribution of the opportunity does not change; the second term of the equation shows the contribution of changes in the distribution when the average opportunity does not change.

The two contributions carry important policy implications: they tell us how government policies or development strategies can influence the inclusiveness of growth. Consider a case where the second term of the right side in equation (11) is larger than the first term. In this case, a development strategy is focused on creating opportunities for the poor, rather than on expanding the average opportunities for all. There could be a trade-off between \bar{y} and φ , which will be evident from the first and second terms of the equation: if \bar{y} is increased, φ may decrease and vice versa. If the first term is positive but the second term is negative, higher average opportunity for the society as a whole is achieved at the expense of reducing equitable access to opportunity: in Figure 2, this case can be illustrated by the shift of the opportunity curves from BC to B₄C₄. Similarly, if

the first term is negative but the second term is positive, then the equity objective is achieved at the cost of the foregone average opportunity for the society: in Figure 2, this case can be illustrated by the shift of the opportunity curves from BC to B_1C_1 . The inclusiveness of growth will depend on which contribution outweighs the other. It should be noted that there will not always be a trade-off between \bar{y} and ϕ : one can increase (or decrease) concurrently with the other. If both terms are positive ($d\bar{y} > 0$ and $d\phi > 0$), growth will always be inclusive; similarly, if both terms are negative ($d\bar{y} < 0$ and $d\phi < 0$), growth will not be inclusive.

Figure 2. Shifts in the Opportunity Curves



In addition, it will be interesting to investigate if one unit of increase in the average opportunity \bar{y} will result in more than one unit of increase in the degree

of growth inclusiveness, when the initial value of ϕ is greater than 1 (i.e., opportunity is equitably distributed in favor of the poor). Thus, the initial distribution of opportunity plays an important role in determining inclusive growth: the more equitable the initial distribution, the greater the impact will be on the growth inclusiveness by expanding the average opportunity for all. Similarly, the initial level of \bar{y} can also enhance the impact of equity on growth inclusiveness. These findings, therefore, suggest that both \bar{y} and ϕ are important policy instruments that reinforce each other in achieving more inclusive growth.

III. EMPIRICAL ILLUSTRATION

The proposed methodology outlined in Section II is applied to the Philippines. For this purpose, we have used the Annual Poverty Indicator Survey conducted in 1998 and 2004, obtained from the National Statistics Office in Manila. The APIS is a nationwide survey designed to provide poverty indicators at the province level. This household survey is micro unit recorded. The data requirement for the proposed methodology is micro unit record household surveys for an individual country.

APIS gathers information on various aspects of well-being for all of the Philippines' 78 provinces, including the cities and municipalities of Metro Manila. It provides detailed information on demographic and economic characteristics; health status and education of family members; awareness and use of family planning methods; housing, water, and sanitation conditions of families; availability of credit to finance family business or enterprise; and family income and expenditures. The 1998 and 2004 APIS collected these information from more than 38,000 households and 190,000 individuals across the Philippines.

In terms of the social opportunity function, inclusive growth can be measured by two approaches, namely partial and full. The partial approach is derived based on a curve called the "opportunity curve." The full approach is based on an index quantified from the area under the opportunity curve.

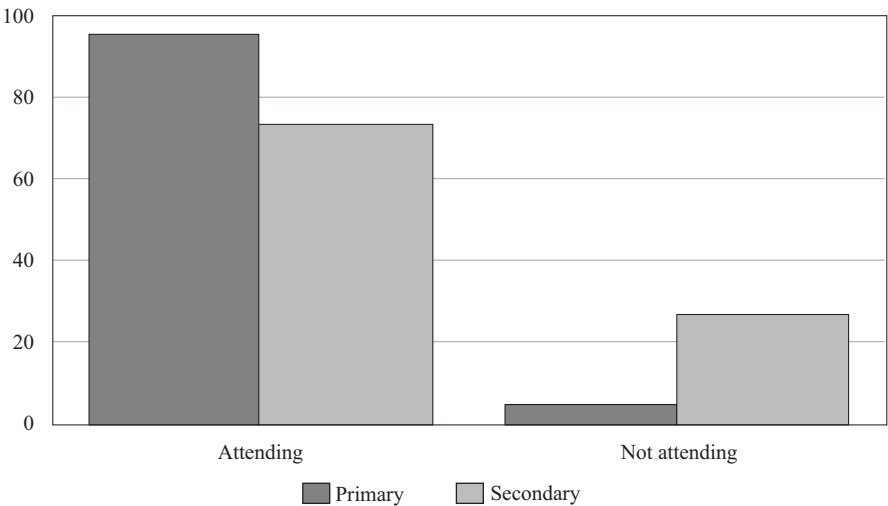
The slope of the opportunity curve may be helpful in examining the extent to which opportunities are distributed equitably or inequitably among the people at a given point in time. As discussed earlier, if the opportunity curve slopes downward, it suggests that opportunities are distributed equitably among the population. Conversely, an upward sloping curve suggests inequitable distribution of opportunities among the people. Using these technical tools, this paper will focus on assessing: (i) access to and equity of educational and health services in the Philippines, and (ii) how this access and equity of such services has changed over time.

A. Access to and Equity of Education

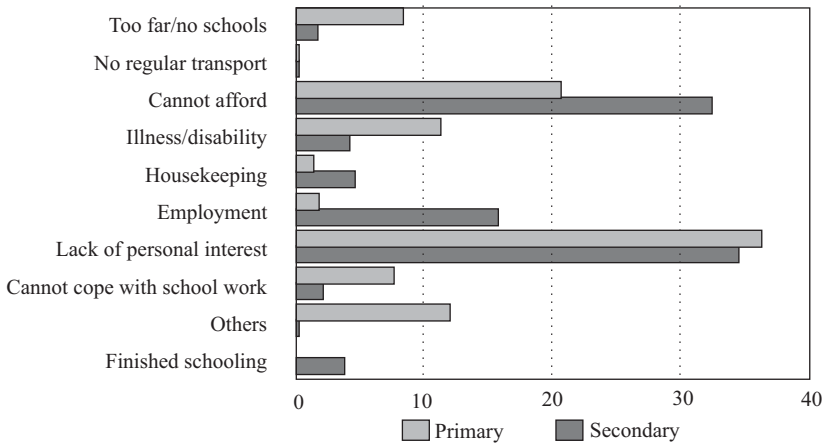
Education is known to promote social mobility and therefore improve equity. This is often cited as a justification for public intervention in the education sector. There are two dimensions by which one can measure whether the education system is indeed serving this end. One is through average access to education by school-age children over time and across space. The other is through distribution of educational opportunities across different socioeconomic and income groups. This section deals with both average access to and equity of education at the primary and secondary levels.

Figure 3 shows that the Philippine primary education system provides impressively wide access to children aged between 7 and 12 years. Almost 96 percent of school-age children attended primary school in 2004. However, the proportion of school attendance by children aged 13–16 years drops at the secondary level (i.e., 73 percent as shown in Figure 3). This stems from the lack of personal interest (35 percent), affordability (32 percent), and employment (16 percent) as illustrated in Figure 4. At the primary level, the main reason for not attending school is lack of personal interest. The lack of interest results in turn, from a number of factors that discourage students to study, including inadequate curriculum, unqualified teachers, and lack of learning materials. Such factors are largely related to the quality of education.

Figure 3. Proportion of Children Currently Attending Primary and Secondary Schools, 2004



Source: Authors' calculations based on the 2004 APIS.

Figure 4. **Reasons for Not Attending School**

Source: Authors' calculations based on the 2004 APIS.

Nevertheless, there is little direct evidence—using household survey data and school data—in the Philippines on the impact of improved school quality on school enrollments. There is, however, convincing evidence of its impact on learning outcomes. A report by the World Bank (2001) uses provincial data to show that some school staffing characteristics—particularly related to teachers—can affect elementary school completion rates. This report also suggests that there are provincial imbalances in school staffing characteristics that are correlated with provincial income.

In the Philippines, regional differences in school attendance exist in both the primary and secondary levels. This is shown in Table 1. While the regional gap is smaller for primary education, the gap is larger at secondary level. These results reveal a degree of correlation between children's school attendance and poverty across regions in the Philippines. Indeed, poor regions—such as Bicol, the Visayas, and Mindanao regions (particularly the Autonomous Region of Muslim Mindanao)—tend to have lower school attendance by children, which falls below the national average. On the other hand, richer regions like National Capital Region (NCR) and Cordillera Administrative Region exhibit the best performance on this account.

All in all, educational attainment in the Philippines has almost achieved universal access at the primary level, but remains far behind at the secondary level. Like income level, the disparity in access to primary and secondary education is quite large across regions within the country. This suggests that there is scope for improving the provision of primary and secondary education to regions that are lagging behind.

**Table 1. Percentage of School-age Children Attending Primary
and Secondary Schools, 2004**

Regions	Primary	Secondary
Ilocos	98.0	77.6
Caragan Valley	96.5	74.1
Central Luzon	97.7	71.6
Southern Luzon	96.7	75.4
Bicol	95.6	73.4
Western Visayas	95.4	74.3
Central Visayas	95.2	70.8
Eastern Visayas	95.8	68.7
Western Mindanao	93.1	63.9
Northern Mindanao	96.1	72.8
Southern Mindanao	94.4	70.0
Central Mindanao	90.7	68.2
National Capital Region	97.4	82.0
Cordillera Administrative Region	97.5	79.9
Autonomous Region of Muslim Mindanao	86.4	61.9
CARAGA	96.7	74.9
Philippines	96.5	74.8

Note: CARAGA, or Region XIII, is the newest region and includes Agusan del Norte, Butuan City, Agusan del Sur, Surigao del Norte, Surigao City, and Surigao del Sur.

Source: Authors' calculations based on the 2004 APIS.

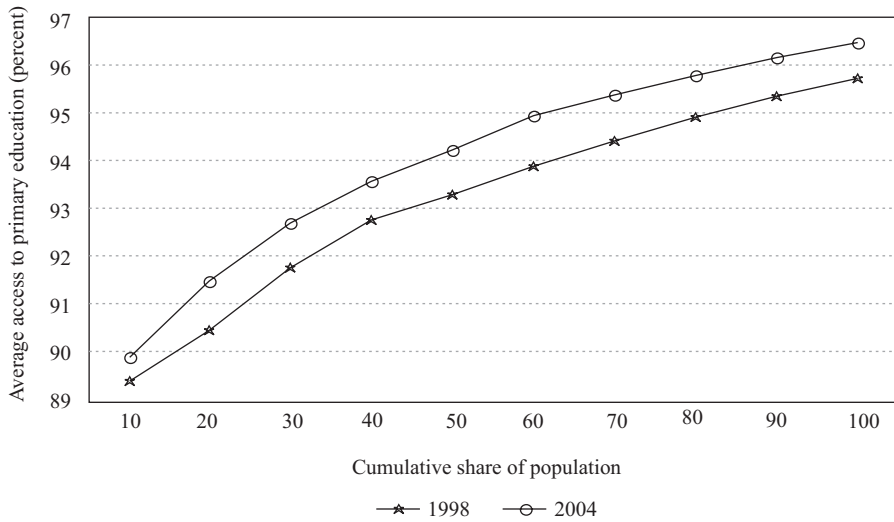
Moreover, some studies argue that there are pronounced differences in access to education between different income groups. For instance, a study by Balisacan (1994) suggests that while there is almost 100% enrollment rate for children aged 7–10 years, the figure drops beyond that age, particularly for the three poorest deciles. More recently, Manasan (2001) has found that the poor have much lower access to education compared to the nonpoor, and the disparity becomes greater at the higher educational level.

Figures 5 and 6 present the opportunity curves over the period 1998–2004. In this case, the opportunities are evaluated in terms of access to primary and secondary education. There are two points to consider on these curves. First, when the entire population is covered (i.e., a variable in the horizontal axis is 100), the opportunity curve coincides with the average access to primary (or secondary) education among children aged 7–12 years (or 13–16 years). Hence, access to primary education by the 7–12 year-old children was on average 95.7 percent in 1998, which increased slightly to 96.5 percent in 2004. Similarly, 73.4 percent of the children aged between 13 and 16 years attended a secondary school in the Philippines in 1998; and its corresponding figure was slightly higher at 74.8 percent in 2004. These results can be seen from the upward shift in the

opportunity curve. Yet, such changes in both educational levels are quite small over a 6-year period, particularly for the secondary level.

Second, in terms of the equity of access to education, children at the bottom end of the income distribution have lower access to primary and secondary education. Such inequity can be seen from the shape of the opportunity curves for both educational levels, which shows an upward slope.

Figure 5. **Opportunity Curves for Access to Primary Education, 1998–2004**



Source: Authors' calculations based on the 1998 and 2004 APIS.

It is clear from Figure 5 that the average opportunity in primary education has expanded over the period 1998–2004 among children aged 7–12 years (i.e., $d\bar{y} > 0$ in equation (11)). However, it is difficult to assess how equity in primary education has changed over time, because the opportunity curve seems to have shifted parallel across the income distribution. In such case, we need to estimate the EIO to evaluate the change in the equity of the opportunity over time (i.e., $d\phi$). Table 2 shows that the values of EIO have remained below 1 and been almost unchanged over 1998–2004: more precisely, the EIO increased slightly from 0.974 in 1998 to 0.975 in 2004 (i.e., $d\phi > 0$ from equation (11)).

Figure 6 clearly depicts an expansion of the average opportunity in secondary education, available among the children aged 13–16 years between 1998 and 2004 (i.e., $d\bar{y} > 0$ in equation (11)). From Figure 6, the shift in the opportunity curve is greater for households with higher income than those with lower income. This suggests $d\phi < 0$, meaning that secondary education has been utilized increasingly more by children from richer households than from

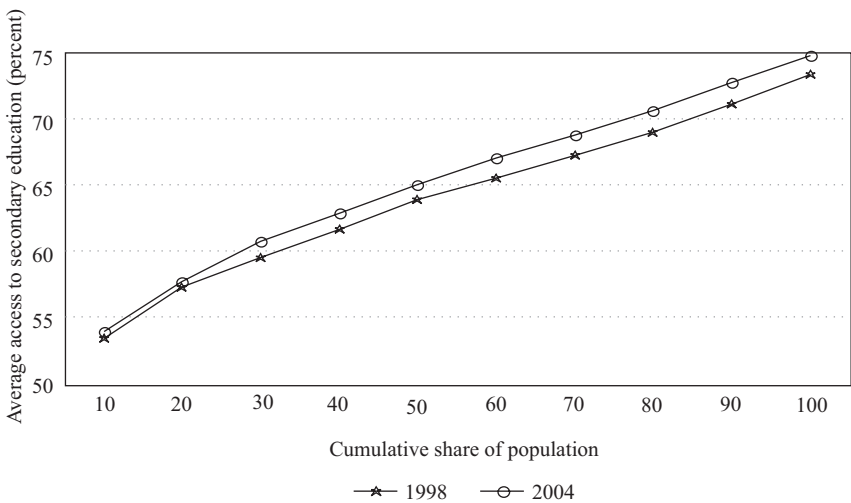
poorer ones. This result is also supported by a slight drop in the value of EIO from 0.876 in 1998 to 0.875 in 2004. The foregoing illustrates how tools such as the opportunity curve and the EIO can play a critical role in the dynamic analysis of inclusive growth.

Table 2. **Opportunity Index for Access to Primary and Secondary Education, 1998–2004**

Population Share	Primary		Secondary	
	1998	2004	1998	2004
10	89.39	89.88	53.44	53.93
20	90.45	91.49	57.29	57.74
30	91.78	92.71	59.57	60.78
40	92.76	93.57	61.73	62.94
50	93.31	94.24	63.93	65.06
60	93.90	94.96	65.59	67.06
70	94.42	95.39	67.33	68.78
80	94.91	95.80	69.03	70.66
90	95.36	96.16	71.22	72.83
100	95.75	96.49	73.44	74.82
Opportunity index	93.20	94.07	64.26	65.46
Equity index of opportunity	0.97	0.97	0.87	0.87
Comments	Not equitable	Not equitable	Not equitable	Not equitable

Source: Authors' calculations based on the 1998 and 2004 APIS.

Figure 6. **Opportunity Curves for Access to Secondary Education, 1998–2004**



Source: Authors' calculations based on the 1998 and 2004 APIS.

B. Access to and Equity of Health Services

Table 3 shows access to and equity of health services in the Philippines. The results suggest that in 1998–2004, about 44 to 46 percent of sick people sought treatment in one of the available health facilities, e.g., government hospital, private hospital, private clinic, rural health unit (RHU), *barangay* health station (BHS), or other health facilities. Moreover, overall health services in the Philippines appear to be inequitable in the sense that they are largely utilized by those at the top end of the income distribution. This is depicted in the upward sloping opportunity curves in Figure 7.

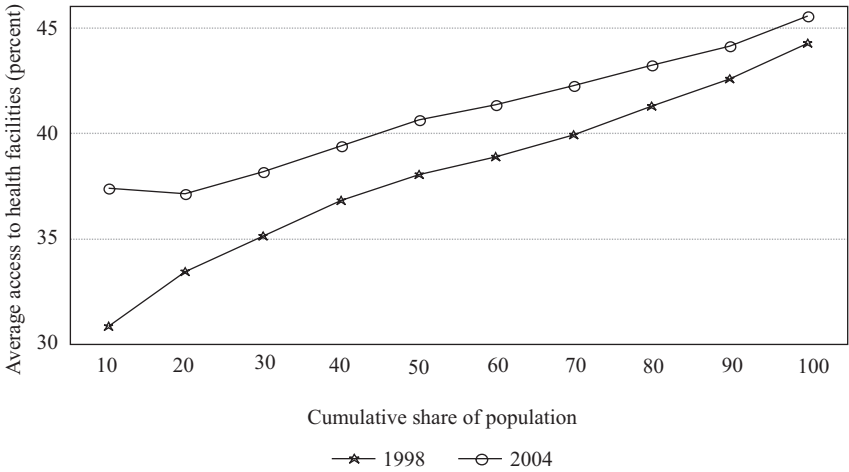
More importantly, the proportion of sick people who sought treatment in a health facility declined over 1998–2004, as seen from the downward shift of the opportunity curve between the two periods (i.e., $d\bar{y} < 0$ from equation (11)). What is worse, the shift is far greater at the bottom end of the income distribution: the gap between the two curves narrows down as we move toward the top end of the distribution. This implies that the provision of health services has become more inequitable between 1998 and 2004 (i.e., $d\phi < 0$ from equation (11)). This is indeed confirmed by the drop in the value of the EIO from 0.90 in 1998 to 0.86 in 2004, as shown in Table 3.

Table 3. **Opportunity Index for Having Access to Health Facilities among Ill/Sick People, 1998–2004**

Population Share	1998	2004
10	37.38	30.80
20	37.14	33.39
30	38.19	35.07
40	39.37	36.81
50	40.60	38.06
60	41.38	38.86
70	42.27	39.89
80	43.23	41.27
90	44.15	42.62
100	45.60	44.31
Opportunity index	40.93	38.11
Equity index of opportunity	0.90	0.86
Comments	Not equitable	Not equitable

Source: Authors' calculations based on the 1998 and 2004 APIS.

Figure 7. **Opportunity Curve for Having Access to Health Facilities, 1998–2004**



Source: Authors' calculations based on the 1998 and 2004 APIS.

Tables 4 and 5 show different types of health facilities utilized by sick individuals during 1998–2004. Services provided by government hospitals, private clinics, RHUs, and BHSs are highly utilized by sick individuals from different income groups. But the quality of health services is expected to differ vastly among these facilities. A health facility that provides a better quality of service is likely to be utilized mainly by rich individuals. Such a health facility is expected to show an opportunity curve that slopes upward steeply.

Clearly, health services provided by private clinics tend to be highly inequitable and have become more so over 1998–2004. This is shown in Table 4. This suggests that private clinics are heavily utilized by the richer segments of the society. A similar result emerges with private hospitals. As Figure 8 suggests, access to private hospitals has fallen across different income groups, declining more for those at the bottom end. From equation (11), this thus suggests both $d\bar{y} < 0$ and $d\phi < 0$. Compared to private health facilities, government hospitals tend to be utilized more by the people: in Table 4, the value of OI is far greater for government hospitals than that for private hospitals and clinics. Moreover, the value of EIO suggests that poor Filipinos often sought treatment in government hospitals than in private health facilities. Unfortunately, the quality of health care in government hospitals remain severely wanting compared to private facilities, especially in NCR. This is particularly disconcerting since a large share of the national government budget for health is spent on NCR hospitals.

Table 4. Opportunity Index for Having Access to Hospitals and Clinics, 1998–2004

Population Share	Government Hospital		Private Hospital		Private Clinic	
	1998	2004	1998	2004	1998	2004
10	16.64	21.24	6.51	4.80	13.50	8.95
20	18.73	23.00	6.58	5.68	14.22	10.77
30	20.19	24.86	7.02	5.98	15.07	12.46
40	20.61	25.92	7.79	6.59	16.89	13.48
50	20.95	26.68	8.30	7.03	18.38	15.12
60	21.06	27.03	8.94	7.86	19.97	16.56
70	21.23	27.03	10.27	8.86	21.55	18.60
80	21.08	27.21	11.44	10.43	23.53	20.44
90	20.86	26.93	13.26	12.10	25.06	22.61
100	20.22	26.12	15.38	14.40	27.02	25.15
Opportunity index	20.16	25.60	9.55	8.37	19.52	16.41
Equity index of opportunity	0.99	0.98	0.62	0.58	0.72	0.65
Comments	Not equitable	Not equitable	Not equitable	Not equitable	Not equitable	Not equitable

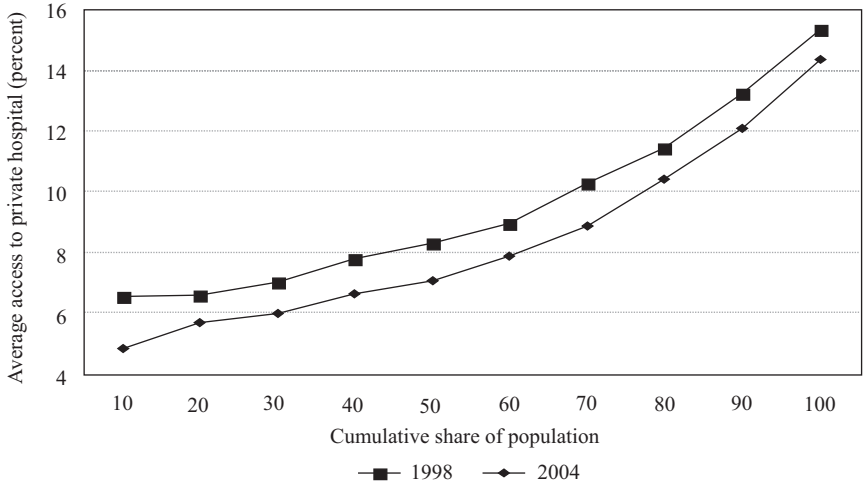
Source: Authors' calculations based on the 1998 and 2004 APIS.

Table 5. Opportunity Index of Having Access to Rural Health Centers and *Barangay* Health Stations, 1998–2004

Population Share	Rural Health Unit		<i>Barangay</i> Health Station	
	1998	2004	1998	2004
10	39.80	40.33	21.50	35.80
20	39.10	38.45	20.46	33.02
30	37.48	36.51	20.05	31.13
40	35.98	35.65	18.94	29.57
50	34.76	34.59	18.10	28.35
60	33.43	33.24	17.28	27.12
70	31.70	31.55	16.07	25.65
80	29.97	29.67	14.96	23.90
90	27.98	27.89	13.90	22.05
100	25.74	25.72	12.69	20.05
Opportunity index	33.59	33.36	17.39	27.66
Equity index of opportunity	1.31	1.30	1.37	1.38
Comments	Equitable	Equitable	Equitable	Equitable

Source: Authors' calculations based on the 1998 and 2004 APIS.

Figure 8. **Opportunity Curve for Having Access to Private Hospital, 1998–2004**



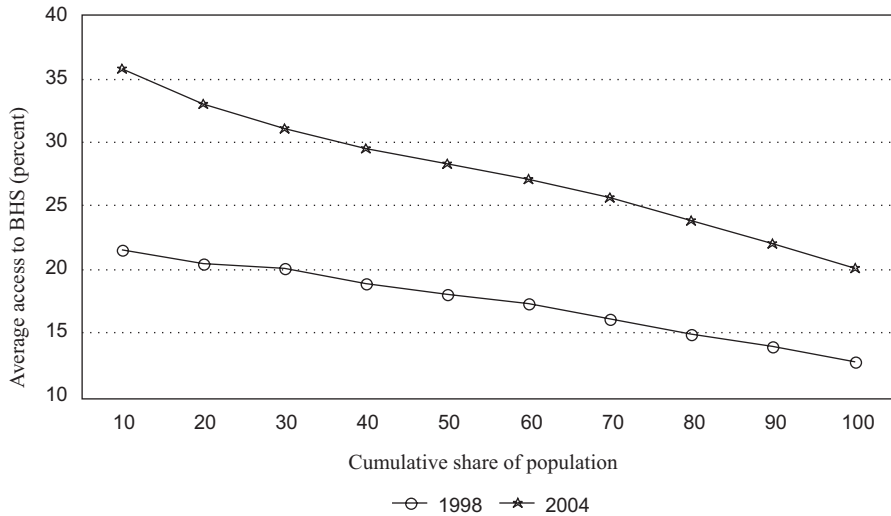
Source: Authors' calculations based on the 1998 and 2004 APIS.

Public health services are used mainly by those who cannot afford private health care. Compared to government facilities, private facilities are ranked superior on all aspects of quality, e.g., care, facility, personnel, medicine, and convenience—by the clients. Government facilities cater to the poor because of low costs of treatment, cheaper medicines and supplies, and flexibility in paying health bills.

Expectedly, health facilities such as RHUs and BHSs are utilized more by people at the lower end of the income distribution. This is evident in the downward-sloping and flat opportunity curves for BHSs, as shown in Figure 9. Moreover, the opportunity curve has shifted upward over the 1998–2004 period, with the shift being far greater at the bottom end of the distribution (i.e., $d\bar{y} > 0$ and $d\phi > 0$ in equation (11)). This therefore suggests that poor people utilize health services provided by BHSs, as well as by RHUs.

It is generally perceived that RHUs and BHSs provide low-quality health services (World Bank 2001). Diagnosis is poor, resulting in repeat visits. Medicines and supplies are inferior and rarely available. Staff members are often absent, especially in rural areas, and are perceived to lack medical and people skills. Waiting time is long, schedules are very inconvenient, and facilities are rundown.

Figure 9. Opportunity Curve for Having Access to BHS, 1998–2004



Source: Authors' calculations based on the 1998 and 2004 APIS.

It is essential to note that both RHUs and BHSs are categorized as primary government facilities that can appropriately provide preventive health services and treatment for minor illnesses/accidents. Despite access to these primary facilities, however, a sizable number of Filipinos still prefer to seek treatment in government hospitals and private clinics/hospitals. Thus, government hospitals end up providing the same services as primary facilities. It is, therefore, critical to ensure that primary health services are delivered efficiently so that they can prevent the incidence of diseases such as diarrhea, bronchitis, influenza, pneumonia and tuberculosis. Preventive health care services do a lot more in the long run in protecting the people's health, and require less amounts of budgetary allocation than medical treatments.

Table 6 shows that utilization of health facilities vary across regions. Those living in the Mindanao region tend to underutilize health services during 1998–2004. In terms of health status indicators moreover, there are large differentials across regions and provinces within the country. For instance, NCR has an infant mortality rate of around 20, which is very close to the norm of developed countries, whereas there are parts of Mindanao where the mortality rates are still close to or a little over 100, similar to the least developed countries. Given that Mindanao is one of the poorest in the country, the wide gap in health status calls for an effective system of health service delivery that will reach the disadvantaged areas and regions.

Table 6. **Proportion of Sick People Having Access to Health Facilities by Regions**

Regions	Health Facilities		Public Hospital		Rural Health Units	
	1998	2004	1998	2004	1998	2004
Ilocos	41.3	52.6	20.1	29.9	28.5	30.8
Caragan Valley	49.2	53.7	23.1	33.1	23.8	29.9
Central Luzon	47.4	46.3	19.6	26.6	17.1	17.5
Southern Luzon	48.5	46.6	18.3	26.6	21.6	21.9
Bicol	48.7	39.7	19.5	24.7	21.5	25.9
Western Visayas	38.3	36.2	22.8	24.3	23.6	28.5
Central Visayas	45.0	52.3	16.1	21.8	39.2	24.6
Eastern Visayas	40.4	41.2	31.6	30.1	25.1	36.6
Western Mindanao	37.1	24.9	20.6	35.0	30.9	33.3
Northern Mindanao	42.0	36.9	17.9	26.3	28.8	22.0
Southern Mindanao	44.3	38.6	13.4	19.6	16.1	13.9
Central Mindanao	34.9	40.9	17.5	15.1	31.9	23.3
NCR	55.5	54.6	20.2	26.3	22.2	22.6
CAR	52.2	57.8	24.1	35.1	25.7	18.4
ARMM	48.7	37.4	22.6	35.7	41.6	43.4
CARAGA	36.1	39.4	24.4	27.6	36.8	27.6

Note: NCR means National Capital Region, CAR means Cordillera Administrative Region, and ARMM means Autonomous Region of Muslim Mindanao. CARAGA, or Region XIII, is the newest region and includes Agusan del Norte, Butuan City, Agusan del Sur, Surigao del Norte, Surigao City, and Surigao del Sur.

Source: Authors' calculations based on the 1998 and 2004 APIS.

IV. CONCLUSIONS

This paper introduces a new approach to measuring inclusive growth. Similar to the idea of a social welfare function, the paper has introduced the idea of a social opportunity function. Growth is defined as inclusive if it increases the social opportunity function, which depends on two factors: (i) average opportunities available to the population and (ii) how opportunities are distributed in the population. This idea has been made operational by means of the opportunity curve, which has a one-to-one relationship with the social opportunity function: the higher the opportunity curve, the greater will be the social opportunity function. The opportunity curve can be empirically calculated using unit record household surveys. Empirical applications to the Philippines presented in the paper show that the opportunity curve is a useful device to analyze the inclusiveness of growth in quantitative terms.

But a more relevant issue is the assessment of how the opportunities change over time. This type of dynamic analysis can be done by examining how the opportunity curves shift between two periods. For instance, if the entire

opportunity curve shifts upward, this suggests that growth is inclusive: growth is not only increasing the average opportunities available to the whole population, but is also increasing the opportunities for the poor that belong to the bottom of the income distribution. The degree of inclusiveness will depend on (i) how much the curve shifts upward and (ii) in which part of the income distribution the shift takes place. This dynamic analysis will also allow for monitoring the inclusiveness of growth over time for an individual country.

For empirical analysis, the paper looked at the case of the Philippines. The proposed methodologies have brought out various aspects of the Philippine public service deliveries in health and education. The methodologies were not only useful in assessing the average access to the public services available to the people, but also in evaluating the equity of access to such services across different income groups. More importantly, the study had demonstrated that while the analysis could be done at a point in time, dynamic analysis was also possible to assess the changes in the access and equity of opportunities. From a policy perspective, the results revealed the urgency to tailor public health and education services that will cater to the needs of the disadvantaged groups (or regions) in the country. But beyond health and education, our methodologies can be a useful tool for the government to draw policies that can channel its resources to the needy, thereby significantly contributing to its efforts to reduce poverty.

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Measuring Government Inclusiveness: An Application to Health Policy

AJAY TANDON

Abstract. This paper examines the issue of government inclusiveness—i.e., the extent to which a government can be characterized as “pro-poor”—within the context of inequalities in the health sector. The paper discusses different ways of measuring government inclusiveness and argues that benefit incidence analysis comes closest to measuring the extent to which a government can be characterized as pro-poor. Using this perspective, the paper examines broad determinants of government inclusiveness, especially the role of democracy. Analysis of data indicates a positive relationship between democratization and government inclusiveness, even after controlling for additional determinants of “pro-poorness.” Ethnic heterogeneity, on the other hand, has a negative effect on government inclusiveness. Overall, the analysis suggests the importance of political freedoms for ensuring that the poor benefit from government programs. In countries with high levels of ethnic diversity, special provisions may need to be made to ensure that elite capture of government expenditure does not occur.

I. INTRODUCTION

In almost all developing countries, health attainment indicators for the poor tend to be worse than the national average. However, the extent to which such health inequalities exist also varies significantly across countries. Recent empirical evidence suggests that health inequalities have been persistent over time and, in many cases, have been growing (ADB 2006). Some argue that the existence and persistence of large health inequalities is indicative of a lack of resources. The rich can bypass government finance and provision of health in favor of the private sector. The poor are more reliant on the public sector, and governments often do not have enough resources to spend on pro-poor health programs and interventions. Sachs (2004) is a key proponent of this perspective, calling for a massive scaling up of government programs in order to attain health-related Millennium Development Goals.

Others argue that the problem is more of lack of prioritization among governments with regard to the choice and implementation of health policies that

Ajay Tandon is currently Senior Economist with the Health, Nutrition, and Population Hub Unit at the World Bank. This paper was written when the author was Economist in the Development Indicators and Policy Research Division, Economics and Research Department, Asian Development Bank. The author thanks Ifzal Ali and Rana Hasan for comments and discussion.

are beneficial for the poor. Proponents of this perspective adduce the fact that in many low-income countries, the rich disproportionately capture the benefits of government expenditure on health. This suggests the fundamental problem is not necessarily one of tight resources—although this could be a concern—but a deeper one, more reflective of fundamental political or institutional weaknesses in a country. Hence, addressing the former without addressing the latter would not lead to sustainable solutions.

Given this backdrop, this paper examines the issue of government inclusiveness—i.e., the extent to which a government can be characterized as “pro-poor”—within the context of inequalities in the health sector.¹ In recent years, the notion of growth inclusiveness has attracted a great deal of attention from policymakers and academics. The debate has focused, in particular, on issues related to measurement of pro-poor growth, as well as on policy options that could potentially enhance the inclusiveness of growth (Ravallion 2004). More recently, this concept of inclusiveness has been extended to measure and analyze pro-poor governance as well, i.e., whether or not a government is pro-poor as evidenced from its public expenditure allocation priorities. One strand of this literature focuses on the issue of aid effectiveness. Government inclusiveness is measured from the perspective that foreign aid is likely to be more effective in countries with more pro-poor governments (Mosley et al. 2004). Others, such as Kakwani and Son (2006), have examined this issue from more of a targeting efficiency perspective, i.e., in terms of assessing how well a government is doing in reaching the poor with regard to welfare-enhancing policy interventions. This latter framework tends to be more specific, much more suited toward analyzing the pro-poor focus of clearly defined projects. The former tends to be more general, focusing more on evaluating a government’s overall orientation toward enhancing the welfare of the poor.

This paper examines two primary questions related to government inclusiveness in health.² Firstly, how can we measure whether or not a government is pro-poor with regard to health policy? What are the alternatives? What sort of data is needed for measurement? Do the measures make sense? Secondly, the paper examines what makes some governments more pro-poor than others. What factors, if any, are associated with greater government inclusiveness? Are there any lessons that can be gleaned from a policy perspective?

The remainder of the paper is organized as follows. Section II discusses issues and debates surrounding measurement of government inclusiveness in health. Section III reviews the literature with regard to determinants of

¹The terms “inclusive” and “pro-poor” are used interchangeably throughout the paper.

²For an application to education, see Addison and Rahman (2001).

government inclusiveness. Section IV examines the issue of democracy and pro-poor orientation in more detail.

II. MEASURING GOVERNMENT INCLUSIVENESS IN HEALTH

There are several different approaches for measuring government inclusiveness with regard to health policy. These can be classified under three broad categories: (i) the final outcomes approach, (ii) the benefit incidence approach, and (iii) the health financing approach. These are briefly discussed in turn.

A. Final Outcomes Approach

This is the most general and broad of the three approaches. In this perspective, inequalities in final health outcomes are considered as indicators of the extent of pro-poor stewardship on the part of governments. Large levels of health inequalities existing within a country—and holding governments accountable for population health outcomes—logically imply that the very existence of such inequalities indicates that governments are not inclusive. The implication being that, if governments were indeed pro-poor, sustained health inequalities would not be tolerated.³

Such an outcomes approach may be useful in situations where health indicators in question are clearly linked with government efforts, e.g., in the case of inequalities in indicators such as immunization rates, which are often government-administered or mandated. For other health indicators, e.g., for levels of infant and child mortality or life expectancy, the role of the government in influencing outcomes becomes much less obvious. Such outcomes are, arguably, the result of a variety of factors that could include things such as housing, income, food, and nutrition, which are not directly controllable by the state. However, proponents of this approach push the accountability angle to the extent that if nonhealth-system-related factors are responsible for health inequalities, it still is the responsibility of the government as a steward to ensure that such inequalities be minimized. This is explicit, for instance, in the World Health Organization's conceptualization of the performance of health systems: health inequalities are considered to be one prominent indicator for which governments are to be held accountable (World Health Organization 2000).

³It is important to note that a focus on outcome inequalities—and holding governments accountable for them—does not necessarily assume that the governments are direct providers of health services in the country. Even if provision is primarily private, the governments can still be held accountable in the sense of making sure that bypassed individuals get care as needed using alternate policy instruments such as insurance provision or subsidized care, for example.

Others argue that indicators such as infant and child mortality rates are reflective of the health outcomes of the poor even if one looks at national averages, since most infant and child deaths tend to be concentrated at the bottom end of the income distribution (Ross 2006). Although this may be true for some countries, this has to be contrasted with the fact that there is also the danger that declines in average infant and child mortality rates can occur without much movement at the bottom end of the income distribution. As Gwatkin (2005) argues, it is often easiest to realize infant and child mortality declines among the better-off segments of the population given that they are the easiest to cover and generally require the least amount of effort and resources to do so. If there is political pressure to attain overall declines in mortality rates within a given time frame, then such pressures may distort preferences for project and government administrators and remove incentives for enhancing inclusiveness.

One disadvantage of the outcomes perspective is that it discounts information on what the governments may actually be doing (or not doing) and, therefore, this bypasses what may be a critical intermediary step that could help guide corrective policy making. Governments may very well be pro-poor—and doing their best—yet outcomes may remain unequal due to a variety of environmental, cultural, or institutional factors that governments may not have the ability to influence directly. In such situations, focusing on final health outcomes without taking into account government attempts would be disingenuous, and presumptive of a level of omnipotence that governments simply may not possess. This is akin to making the argument that the poverty rate in a country is in of itself indicative of whether or not a government is pro-poor.

On the flip side, inequalities in certain health indicators (such as immunization rates) may be low but this may reflect nothing more than the priorities and preferences of donor agencies and, hence, ought not to be attributed to the stance of governments (Becker et al. 2006). Hence, in order to assess government inclusiveness, it may be important to look at government actions and not just at final outcomes.

B. Benefit Incidence Approach

The benefit incidence approach is the most widely utilized approach for measuring whether or not government health policy is inclusive. The basic idea is simple: the focus here is on measuring either the extent to which government services reach the poor, either in terms of service units, or in terms of expenditure allocations. This entails matching information on expenditure allocation from government budgets with information on user characteristics and utilization available from survey data in order to assess the proportion of government expenditure that is actually reaching the poor. More specifically, a typical application entails measurement of unit costs, i.e., the average unit cost of

providing public health services. Given the usage rates of the poor versus the nonpoor—or for different income or consumption quintiles—an estimate can be made as to the extent to which the expenditure that the government allocates is utilized by the different population subgroups.⁴ An allocation is typically deemed pro-poor if, say, the bottom 20 percent of the population receives at least a 20 percent or higher share of total government expenditure spent on health. This is the simplest characterization of pro-poorness. Other measures can also be calculated: e.g., some may argue that since the poor have greater health needs they should get a greater share of the government budget than their share of the population.

Benefit incidence, if measured correctly, can be a very informative diagnostic. At the very least, it can indicate the extent to which governments are making an effort to reach the poor. And if government expenditure is not reaching the poor, it can trigger examinations of where the problems lie, e.g., is there a leakage or targeting problem? Or is there a political economy concern resulting in elite capture?

Benefit incidence, however, does not quite capture benefits completely. If the goal of government expenditure is to improve the health of the poor, benefit incidence only measures a part of the process. If services provided are not enough, or are of poor quality, then a pro-poor government may look good on paper but may not be delivering outcomes in practice. Hence, ideally, a combinatorial approach is needed where health outcomes as well as benefit incidence are used in any analyses of health inequalities. If large health inequalities exist in the presence of an obvious pro-poor stance, it suggests that there may be other factors that are more important for improving health outcomes that would need to be looked into. In addition, in several countries, governments are not direct providers of health services, and hence such an incidence analysis would not be particularly informative.

There are variants of the public expenditure approach that can be used to assess government inclusiveness. One alternative would be to look at the extent to which government spends on the diseases of the poor, although such detailed disaggregated data are unlikely to be available for more than a handful of low-income countries. Another alternative would be to assess the extent to which government spends on primary health care versus urban tertiary care, the latter being less likely to be utilized by the poor. Availability of basic health care services and immunization coverage rates can also give an indication of the extent to which the government is pro-poor. A consultation report by the Center for Global Development on measuring government commitment to health, for instance, suggests that the share of 1-year-olds immunized with the third dose of diphtheria, tetanus toxoid, and pertussis (DPT3) vaccine; as well the proportion

⁴See Davoodi et al. (2003) for additional details.

of government health expenditure devoted to public health functions and services (i.e., on core basic health functions), should be used as indicators of governments' commitment to health (Becker et al. 2006).

Another related example is that of Mosley et al. (2004). They construct a pro-poor public expenditure index within the context of measuring the effectiveness of aid in terms of poverty reduction. Their index is based on the rationale that aid is likely to be more effective in reducing poverty in countries where the composition of public expenditure is more pro-poor. A pro-poor stance is identified by the proportion of expenditure allocated to basic needs and areas that have a direct impact on the welfare of the poor, namely, education, health, water and sanitation, agricultural research and extension, and rural roads. The index is a weighted average of government spending in these areas, with the weights derived from a regression of \$1-a-day poverty rates on the proportion of government spending in these areas.

Kakwani and Son's (2006) pro-poor policy index is also related to the benefit incidence perspective on measuring government inclusiveness. In their framework, a government policy or program is considered pro-poor if it benefits the poor more than the nonpoor. In other terms, a pro-poor policy is one where the benefits to the poor are greater than the benefits that would have accrued to the poor had everyone in the country received exactly the same benefits. They highlight an application of their methodology to programs in Russia, Thailand, Viet Nam, as well as 15 African countries. They find the implementation of recent welfare reforms in Thailand and Russia, for instance, to be quite pro-poor.

C. Health Financing Approach

One additional perspective on whether or not a government is inclusive looks at the issue from a purely financing perspective. Do users of health services spend in accordance with their ability to pay? In other words, is the health system geared toward protecting the poor or near-poor from catastrophic health-related expenses? Are out-of-pocket payments a significant proportion of health financing? Typically, implementing this approach entails creation of an index that measures the extent to which the health system is "fair" in terms of the means by which it is financed.⁵

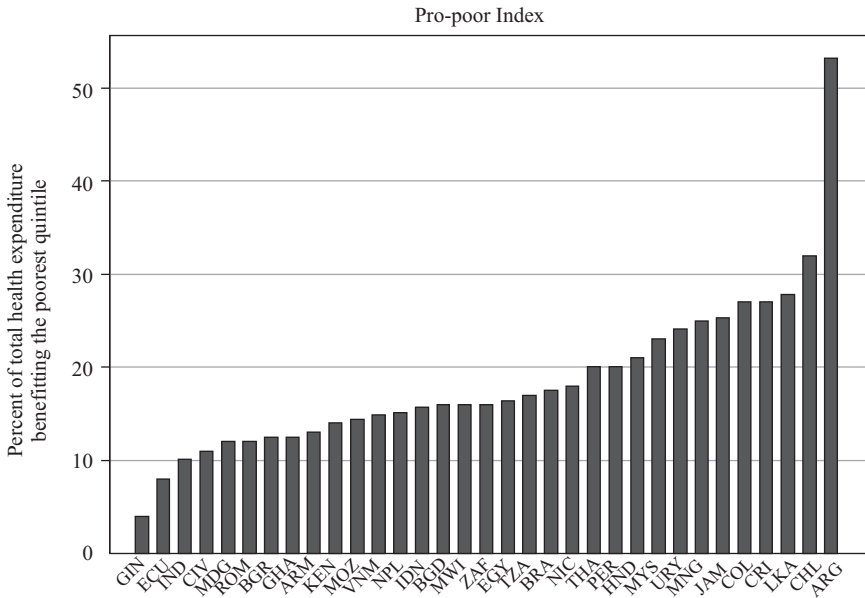
A health financing approach for measuring the extent to which governments are pro-poor is important given its focus on the poverty impact of health-related shocks. However, it discounts the final health impact of health policies (or, at the very least, takes it as given). Also, there is an implicit assumption under this approach that users do not respond to prices and expenditure. This is not realistic: the poor and near-poor are likely to adjust their

⁵Xu et al. (2003) is an example measuring fairness in financing across countries.

health-seeking behavior such that if health care is relatively expensive, they may choose to forego care, or choose poorer quality care, instead of risking impoverishment. In the most extreme case, a health system can appear to be extremely “fair” if the poor and near-poor are completely deterred from utilizing expensive health services.

Each of three above-mentioned approaches on its own tends to be an incomplete characterization of the extent to which a government may be characterized as inclusive and—for a broader situational perspective—elements of all three would need to be taken into account. Of the three, the benefit incidence approach comes closest to measuring government inclusiveness as it focuses on the actions of the government. For the remainder of this paper, the benefit incidence perspective is used in analyzing determinants of government inclusiveness. In particular, the share of total government health expenditure benefiting the bottom 20 percent of the population is used as a measure of government inclusiveness: the higher this share, the more pro-poor and inclusive is the government. This measure was compiled from various published sources of benefit incidence studies for developing countries conducted using data for the 1990s. Figure 1 shows a plot of these data. As can be seen, Argentina, Chile, and Sri Lanka are highly pro-poor. Argentina, in particular, appears to be an outlier, with more than 50 percent of government health expenditure benefiting the bottom 20 percent of the population. Guinea, Ecuador, and India, on the other hand, are at the opposite end of the spectrum.

Figure 1. **Pro-poor Index for Selected Countries in the 1990s**



GIN: Guinea; ECU: Ecuador; IND: India; CIV: Cote d'Ivoire; MDG: Madagascar; ROM: Romania; BGR: Bulgaria; GHA: Ghana; ARM: Armenia; KEN: Kenya; MOZ: Mozambique; VNM: Viet Nam; NPL: Nepal; IDN: Indonesia; BGD: Bangladesh; MWI: Malawi; ZAF: South Africa; EGY: Egypt; TZA: Tanzania; BRA: Brazil; NIC: Nicaragua; THA: Thailand; PER: Peru; HND: Honduras; MYS: Malaysia; URY: Uruguay; MNG: Mongolia; JAM: Jamaica; COL: Colombia; CRI: Costa Rica; LKA: Sri Lanka; CHL: Chile; ARG: Argentina.

III. WHY ARE SOME GOVERNMENTS MORE PRO-POOR THAN OTHERS?

Theoretical research on the determinants of government inclusiveness has tended to emphasize the role of political economy factors.⁶ Democratization, in particular, has been posited as being good for the poor as it should (at least in principle) empower the poor to demand greater responsiveness and public good provision from their governments. In addition, democratization is associated with press freedoms, which should allow for better flows of information from the electorate to the state and vice-versa, making it difficult to ignore the poor if they are a significant proportion of the populace (Ross 2006). In a seminal paper on this issue, Meltzer and Richard (1981) argue that, in a well-functioning representative democracy, the priorities of public spending will reflect the preferences of the median voter. If income distribution is skewed such that the median voter is relatively poor—this being the likely situation in most low-income countries—then their model suggests that this should translate into an

⁶See Addison and Rahman (2001) for an application to education.

emphasis by democratically elected governments on ensuring the delivery of basic social services for the poor.

Several variants of the political economy model of pro-poorness have been tested empirically. Using infant mortality as an indicator, Gerring and Thacker (2001) find democracy to have a beneficial effect on government pro-poorness even after controlling for other significant determinants. Lake and Baum (2001), McGuire (2002), and Tsai (2006) reach similar conclusions using a host of pro-poor indicators that include access to basic health services as well as child and infant mortality rates.

In a sense, the link between political freedom and government inclusiveness can also be found in empirical studies that have looked at the relationship between government responsiveness to the needs of citizens (more generally, or not just related to health), and the extent to which the electorate is well-informed and politically active. In the Indian context, Sen (1984) has argued that, post-independence, the existence of a vibrant free press has played an important role in preventing famines in the country. Using data from India, Besley and Burgess (2002) find that states with higher levels of political activism and mass media were also more responsive in implementing public food distribution programs and calamity relief expenditure.

On the other hand, a dissenting view on the link between political freedom and health outcomes can be found in Keefer and Khemani (2005) who argue that political market distortions block the translation of voter preferences to outcomes, pointing to the abysmal levels of social services in low-income democracies such as India. They argue that lack of information among voters regarding performance of politicians, ethnic fragmentation, and lack of credibility of political promises are primary explanations of why such a low priority is given to social services for the poor even in low-income countries that are democratic.

In a similar vein, Ross (2006) makes a slightly different counter argument: his point is that there is reliable evidence to suggest that democracies are indeed more likely to spend more on public services, but the problem is that this spending does not reach the poor and, hence, does not translate into better health outcomes such as lower infant and child mortality rates. In his empirical model, he finds democracy to have no significant impact on child mortality rates. This is in contrast with the beneficial impact of democracy that has been found by previous studies on this issue. Ross argues that his empirical analysis accounts for several problems with previous analyses. One of these problems is that previous studies were conducted on a selected sample of countries, and that—for a variety of reasons related to data availability—these samples tended to systematically exclude countries that were high-performing but not democratic. Furthermore, previous work ignored the impact of country-specific heterogeneity and did not account for secular trends in health. With regard to the latter, he argues that the availability of low-cost health interventions has been increasing globally over

time. This has also coincided with unrelated trends in the rise in democratization. The empirical association between population health outcomes and democracy could therefore be spurious: his empirical evidence suggests that the relationship disappears once this issue has been accounted for. Ross does not directly test his elite-capture explanation of why democracies do not have a beneficial effect on child and infant mortality.

In addition to political freedom and democracy, there are several other factors that have been postulated as being important determinants of government inclusiveness in health. Prominent among these is ethno-linguistic heterogeneity within a country: the greater this heterogeneity, the less pro-poor the government is expected to be. Keefer and Khemani (2005) highlight the importance of social divisions in explaining political failures in government health provision. Another example is Banerjee and Somanathan (2001) who find evidence of a negative link between ethnic heterogeneity and public good provision. The basic reason why social fractionalization may impact the extent of inclusiveness of governments comes from an extrapolation of what psychologists have found in the context of experiments on altruism, wherein individuals have a tendency to help and support those with whom they can identify, i.e., people tend to help those who are most like them (McCarty 1993). Aggregating this yields the prediction that countries that are more socially, ethnically, or religiously diverse might be expected to have governments that are less pro-poor, especially if there are powerful population subgroups who are reluctant to spend on broad-based public goods such as health. Miguel (2006) discusses other reasons for expecting inimical effects of social diversity on pro-poorness. Different social groups in diverse countries may have different preferences, for instance, and this may make it difficult to reach common ground with regard to policy making. Localized community-based pressure for public good provision may be nonexistent or ineffective in ethnically diverse countries.

More generally, Easterly (2002) argues that social polarization is key to understanding policy choices: countries that have a high degree of social polarization—and those that have not developed the institutions to offset the negative effects of this lack of social cohesion—are more likely not to choose policies that benefit the poor. Collier (2001) calls for a more nuanced approach to this issue. He argues that it is not that ethnic *fragmentation* leads to bad policy choices and therefore to poor development outcomes, but rather it is ethnic *dominance* that is the problem. One definition of ethnic dominance would pertain to the situation whereby the dominant group constitutes 45 to 60 percent of the population. He argues that ethnic dominance is more problematic for development outcomes regardless of whether or not a country is democratic. Ethnic fragmentation, he argues, should not to be inimical in a democratic setting as ethnic preferences would tend to get replaced by other cross-cutting concerns. It is not clear, however, how useful such a nuanced approach would be to

understanding the determinants of development outcomes. If one considers a longer-term perspective, and recognizing that conflicts are costly, one could also argue that a dominant ethnic group ought to be more likely to invest in development in order to reduce political instability and economic uncertainty (Annet 2001).

Finally, one other major factor that is often discussed in relation to being a determinant of government inclusiveness is income inequality. Arguably, high levels of income inequality may serve as a proxy for the power that elite groups may have to skew policies in their favor and, hence, be negatively correlated with the extent of government inclusiveness. This is the sense in which Ghobarah et al. (2004) interpret their finding that high levels of income inequality—serving as a measure of the degree of political inequality in a country—depressed the amount a government spent on health care. Income inequality could also increase socio-political instability, leading to lower investment rates and lower growth, and making it fiscally difficult for governments to finance or provide social services (Alesina and Perotti 1993).

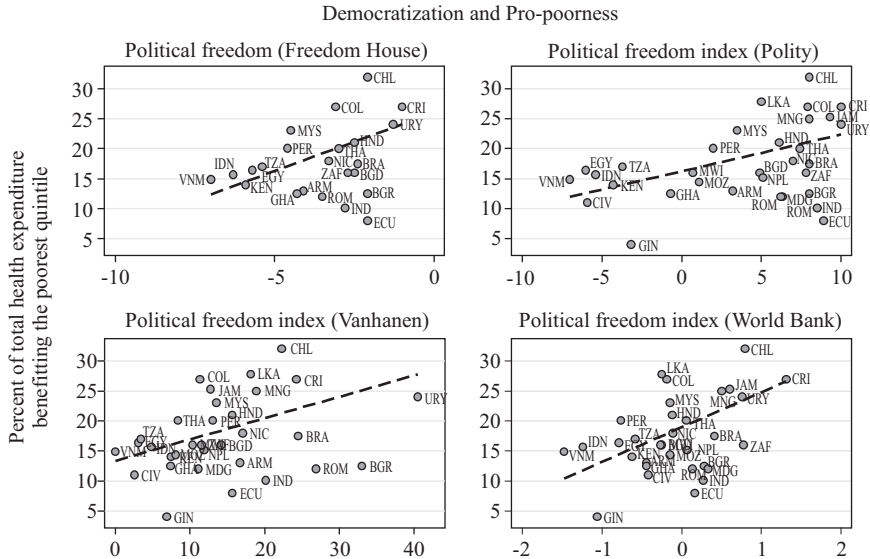
Rajan and Zingales (2006) extend this argument back in time, arguing that an understanding of poor development outcomes in general needs to be grounded in a better understanding and analysis of initial differences in factor endowments, which encourage the formation of “self-perpetuating constituencies”, i.e., of powerful political interest groups who prefer (and benefit from) the status quo and oppose institutional development. As a result, in their framework, democracies with high levels of initial income or asset inequality would not necessarily be more inclusive.

IV. REVISITING DEMOCRACY AND GOVERNMENT INCLUSIVENESS

This section revisits the issue of whether democracies are more pro-poor than nondemocracies. Unlike previous studies on this issue, this paper uses the proportion of government health expenditure benefiting the bottom quintile of the population, which is a more direct measure of government inclusiveness. If the arguments in Ross (2006) and Keefer and Khemani (2005) are correct and political inequality and elite capture comprise the primary problem, then there should be no observed relationship between democratization and government inclusiveness. Figure 2 shows the association between indicators of democracy and political freedom (the graph shows four widely used measures) and government inclusiveness in health. As can be seen, at least in terms of raw associations for the sample of low-income countries, greater levels of political freedom do appear to be correlated with a higher degree of government inclusiveness, contrary to priors based on Ross (2006) and Keefer and Khemani (2005). However, it needs to be noted that there is also a large amount of

variation around this average, indicating the importance of other factors and of country-specific heterogeneity.

Figure 2. **Democratization versus Government Inclusiveness in Health, 1990s**



Note: Higher values of index imply greater political freedom.

Data are for the 1990s.

Sources: Freedom House (2006), Polity IV (Center for International Development and Conflict Management 2006), Vanhanen (2000), and World Bank (2006).

In addition to the proportion of government expenditure reaching the bottom quintile of the population, two alternative measures of government inclusiveness in health are also used: the ratio between the poorest versus richest quintile for the proportion of children treated at public facilities for diarrhea, as well as for acute respiratory infections (ARI). These are utilization-based measures of government inclusiveness estimated from the Demographic and Health Survey data estimated by Gwatkin et al (2006). Sahn and Younger (1999) argue that these simple binary indicators of public utilization rates by economic status are highly correlated with those derived from more complex benefit incidence calculations (for the small sample of overlapping countries, the Spearman's correlation was of the order 0.4).

Arguably, in a cross section, it is not the presence of democracy in a given year that ought to be associated with pro-poorness, rather, the number of years a country has been democratic should be a stronger determinant. Figure 3 shows the two alternative measures of governance based on public utilization for diarrhea and ARI among the poor relative to the rich versus the number of years a

country has been democratic since 1950. A country such as India is a clear outlier: democratic for most of the years since 1950 but with a lower than average utilization of public services by the poor. The Philippines, on the other hand, is more of a positive outlier: having a higher than average public utilization by the poor than the sample average. On average though, there is a positive association between government inclusiveness as measured by public utilization by the poor and number of years a country has been democratic since 1950.

Figure 3. Utilization of Public Health Services
versus Number of Years of Democracy

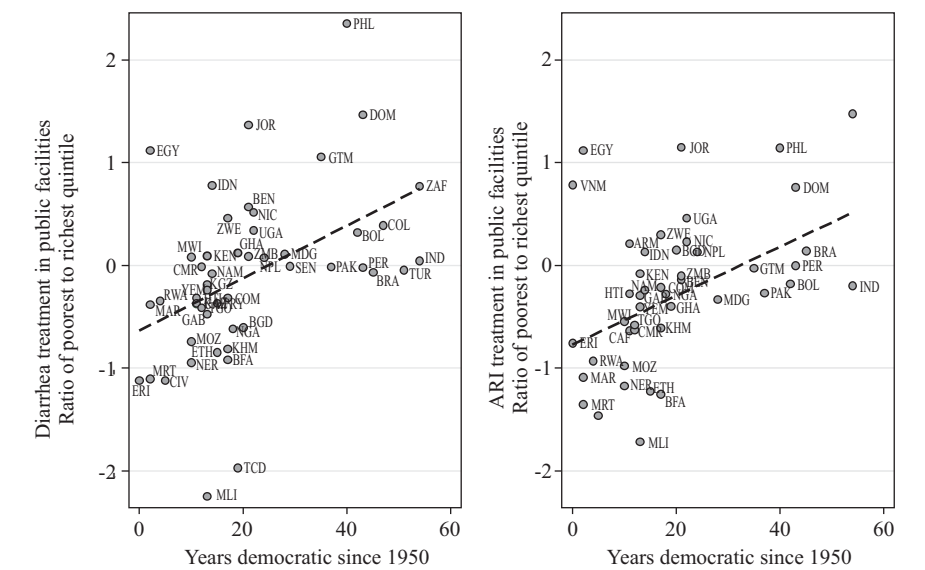


Table 1. **Determinants of Government Inclusiveness**

Independent Variables	MODEL I Dependent Variable: Share of Government Expenditure Benefiting the Poorest Quintile			MODEL II Dependent Variable: Ratio of Utilization at Public Facility for Poorest versus Richest Quintile (diarrhea)			MODEL III Dependent Variable: Ratio of Utilization at Public Facility for Poorest versus Richest Quintile (ARI)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Number of years democratic since 1950	0.17** (0.06)	0.19** (0.05)	0.11* (0.06)	0.03** (0.01)	0.03** (0.01)	0.02** (0.01)	0.02** (0.01)	0.03** (0.01)	0.02** (0.01)
Index of ethnic heterogeneity		-0.09** (0.02)	-0.08** (0.03)		-0.01** (0.003)	-0.01** (0.003)		-0.02** (0.01)	-0.01** (0.003)
Adult literacy in 1970			0.02 (0.04)			0.01** (0.004)			0.02** (0.01)
Gini coefficient			15.61 (12.04)			-1.50 (1.28)			-0.43 (1.31)
Adjusted R-squared	0.24	0.49	0.42	0.21	0.32	0.37	0.13	0.44	0.51
N	32	32	31	50	50	48	46	46	45

* denotes statistical significance at 10% level

** denotes statistical significance at 5% level

Note: Dependent variable in logs for models I and II; robust standard errors in parentheses; constant not reported.

Column (2) shows the model with both democratic experience as well as index of ethnic heterogeneity for each country.⁷ The coefficient on democratic experience remains significant and the coefficient on index of ethnic heterogeneity is negative and significant. This suggests that ethnic heterogeneity has a strong, independent impact on government inclusiveness: regardless of a country's democratic experience, greater levels of ethnic heterogeneity are associated with lower government inclusiveness.

Column (3) reports the model that includes adult literacy rates in 1970 and a country's level of income inequality as measured by the Gini coefficient, in addition to democratic experience and ethnic heterogeneity. Initial literacy rates were used instead of contemporaneous ones in order to account for possible endogeneity problems: countries that are pro-poor with regard to health are also likely to invest in education, therefore current literacy could arguably be an

⁷The index of ethnic heterogeneity is from Vanhanen (1999) and includes components of racial, linguistic, national, tribal, and religious differences.

outcome variable rather than an explanatory variable. As can be seen, higher literacy rates in 1970 do appear to be associated with greater government inclusiveness, suggesting the importance of demand-side factors. Surprisingly, the Gini coefficient is not significantly associated with lower government inclusiveness for the countries in the sample. This latter result is at odds with the literature and merits further investigation especially in terms of assessing sensitivity to other measures of inequality.

V. CONCLUSIONS

This paper has examined the issue of measuring government inclusiveness using the health sector as an example. There are several different approaches to measuring government inclusiveness. Of these, the benefit incidence approach comes closest to assessing the actions of governments with regard to their intent and ability to reach the poor. Using this perspective for measurement, the paper looks at different determinants of government inclusiveness.

Democracy is often hypothesized as being a critical factor in making governments more responsive to the poor. In a sample of low-income countries—and using the share of government spending reaching poor, the share of public utilization for diarrhea treatment by the poor, and the share of public utilization for ARI treatment by the poor as indicators of inclusiveness—the paper finds that democratic experience does indeed have a positive impact on inclusiveness. Ethnic heterogeneity, on the other hand, has a negative impact on inclusiveness. This negative effect exists despite controlling for democratic experience, suggesting that democracy alone may not be sufficient for making governments inclusive if there is large ethnic diversity in the population. In this regard, India's experience is particularly relevant: despite having robust democratic credentials, the government has tended not to be pro-poor. Basic health and education for the poor have been neglected in favor of elite universities and urban hospitals.

The analysis also indicates the positive relationship between initial levels of adult literacy and government inclusiveness. Regardless of democratic experience and ethnic diversity, countries that had high levels of literacy in 1970 were more likely to be pro-poor in the 1990s, suggesting the importance of demand-side factors for eliciting government responsiveness. The level of income inequality, on the other hand, does not appear to influence government inclusiveness, a surprising result, and one that is at odds with previous work on this issue. One explanation could be that—for the sample used for this analysis—levels of income inequality were highly correlated with ethnic diversity and democratic experience and, once these factors are controlled for, there is no independent impact of income inequality on government inclusiveness.

Overall, the analysis suggests the importance of political freedoms for ensuring that the poor benefit from government programs. In countries with high

levels of ethnic diversity, special provisions may need to be made to ensure that elite capture of government expenditure does not occur.

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Farm Household Production Theories: A Review of “Institutional” and “Behavioral” Responses

MARIAPIA MENDOLA

Abstract. This paper reviews major lines of theoretical and empirical research on farm household production choices in developing countries. It provides a wide-ranging literature review of different microeconomic approaches to peasant economy, shedding light on the underlying reasons that lead modern development economists away from the neoclassical framework to study “real people in real environments.” The paper focuses on recent insights into the way peasant households manage the trade-off between income risk and expected returns when making production decisions in the context of weak or missing institutions. Several contributions point out that farm household behavioral responses to market imperfections in low-income settings may generate situations of efficiency losses and “poverty traps.” Yet, the extent to which such vicious circles are generated by the farm household decision-making process itself is currently a major object of study of development economics.

I. INTRODUCTION

Modern development economics contributions have highlighted the “knowledge gap” between observed farm household production choices and efficient behavior as predicted by standard neoclassical theories. Within this latter framework, the effect of market failures, institutional arrangements, and the *ex ante* abilities of households to manage risk have provided some of the explanations. In addition, more recent theoretical underpinnings of “behavioral economics”¹ have produced a new research agenda based on what remains out of the neoclassical framework.

¹“Behavioral economics” in this context means the combination of psychology and economics applied to investigations of what happens in markets, wherein some of the agents display psychological human limitations and complications. Throughout this paper, the term “behavioral” is used to indicate the way of life and decision making of farm households within a neoclassical framework.

Mariapia Mendola is Assistant Professor in the Department of Economics, Università di Milano Bicocca, Italy.

This paper presents a review of these theoretical and empirical contributions based on different analytical frameworks, while cumulatively shedding light into peasant household behavior in low-income settings with weak institutions and incomplete markets. In particular it reviews neoclassical explanations of household responses to the risk–return trade-off typically faced in farm production, and highlights the underlying reasons that lead modern development economists away from the traditional approach to study “real people in real environments.”²

Peasant farm households account for no less than a quarter of the world’s population. Most are in developing countries where they can represent up to 70 percent of the national population (Bardhan and Udry 1999). Agricultural production is significantly dependent on the performance of farmers and, at the same time, poverty is disproportionately concentrated among them. Therefore, understanding the determinants of their modes of production is a primary concern in any poverty alleviation strategy. This is particularly relevant for Asia, which is home to more than half of the world’s 1.1 billion poor who live in rural areas and depend on agriculture.

Peasants are farm households, with access to a piece of land and utilizing mainly household labor in farm production. They are located in a larger dominant economic and political system that could affect their production behavior, but fundamentally they are characterized by partial engagement in markets, which are often imperfect or incomplete (Ellis 1992, 9–10).³ Hunt (1991) identifies peasant farms as both production and consumption units: a proportion of produce is sold to meet their cash requirements and financial obligations, and a part is consumed by them. These units involve a variety of market and nonmarkets tasks such as agriculture; pastoralism; fishing; crafts; and gathering (fruits, nuts, fuelwood, water, etc.). Peasant farms typically have to work with developing markets that function sporadically and somewhat disconnectedly across locations and time. Asian agriculture, in particular, displays a large array of property, tenure, and contractual institutions regulating labor and land, but most of it is still smallholder farming, with the notable exception of tree crops or extensive sugar plantations (e.g., in Indonesia).

Farm households in developing countries have been the object of study of different areas of the social sciences, which has resulted in a wide array of contributions offering insights into the anthropological, sociological, and economic peculiarities of the modes of peasant production in the wider social system. Hence, peasant societies are described as communities (rather than single individuals) that retain specific cultural identities, and represent the “transition”

²“Real people and institutions” are those that internalize spillovers or manage moral hazard or information problems (Roumsset 2004).

³This is to delineate the difference between peasant and commercial farms. Hereafter, the terms peasant, farm household, and small farm are used interchangeably and are all distinct from large commercial farms.

from a primitive to a modern society. They are subordinate to other social groups, standing midway between subsistence and market participation (see Ellis 1992).

In addition, a considerable proportion of the economics literature has been devoted to the study of the production decisions of peasant farmers in developing countries. The classic models that incorporate the consumption goals of households into microeconomic models of peasant households' decision making are the so-called agricultural household models, which have become popular for explaining the behavior of farm households (as consumption and production units) in both perfect and incomplete market contexts (Taylor and Adelman 2003).⁴

The recognition that farm household behavior is typically influenced by several natural, market, and social uncertainties in developing countries has raised some complexities in terms of understanding their production decisions. Seeking to insure household members against hunger and destitution is of great importance to any rural family in a less developed setting (Dasgupta 1993). Within the standard expected utility approach, the introduction of risk in peasant production choices has entailed including household preferences toward risk (e.g., risk aversion). However, the risk behavior of agents is determined not only by preferences but also by the availability of institutions that facilitate risk bearing (Roumasset 1976). In other words, household preferences and market imperfections (e.g., in capital markets) are not independent (Eswaran and Kotwal 1989). Furthermore, where institutional arrangements provide imperfect insurance, households will self-protect by exercising caution in their production decisions (Morduch 1995). All these factors shape farm households' production choices and explain why vulnerable peasants are often observed to sacrifice expected profits for greater self-protection. This is because risk management is costly, and will differ across households at different points in the wealth distribution, with subsequent implications in terms of efficiency losses and poverty traps (Eswaran and Kotwal 1986, Morduch 1994). Yet, none of these studies refers to the psychological or decision costs of peasant production choices, even as some more recent work in the area of behavioral economics has considered these aspects (Duflo 2003).

The paper is organized as follows. Section II covers the main economic theoretical foundations of peasant household behavior, i.e., the profit-maximizing, utility-maximizing, and risk-averse peasant frameworks. Section III reviews some theoretical and empirical contributions that shed light on farm households' *ex ante* risk management strategies with respect to production choices in the context of imperfect capital markets. Section IV briefly reviews some empirical literature related to how asset-poor conditions—inherent in the economic conditions of farm households living and operating in developing

⁴In most developing countries there are market imperfections due to high transactions costs and imperfect information. These market imperfections are particularly common in relation to land resources, labor, credit, risk/insurance, and some basic commodities (de Janvry et al. 1991).

countries—influence farm household production choices. This presents another way to decompose the complex analysis of peasant production choices. Section V concludes.

II. STANDARD THEORIES OF FARM HOUSEHOLD PRODUCTION CHOICES

Three alternative economic theories of peasant household behavior are presented below. Each approach assumes that peasant households have an objective function to maximize, with a set of constraints. Moreover, these theories are based on a set of assumptions about the workings of the wider economy within which peasant production takes place. Not all these assumptions are shared by all theories, but all adopt the same theoretical method to explain farm household behavior.

First, consider the model of the “profit-maximizing” peasant, which has been criticized on the ground that it overlooks the aspect of consumption in peasant household decision processes. Subsequently, neoclassical agricultural household models, which incorporate both the production and consumption goals of farm households, have become popular. Mostly as a reaction to these models, other economists have crafted the risk aversion theory, which states that the objective function of peasant households is to secure the survival of the household by avoiding risk.

A. Profit-maximizing Peasant Theories

Schultz’s (1964) hypothesis that farm households in developing countries are “poor but efficient” gave rise to a long debate among economists and a new wave of empirical work designed to test it.⁵

Referring explicitly to allocative efficiency, and implicitly to technical efficiency, Schultz describes the peasant production mode as profit-maximization behavior, where efficiency is defined in a context of perfect competition (i.e., where producers all apply the same prices, workers are paid according to the value of their marginal product, inefficient firms go out of business, and entrepreneurs display nondiminishing marginal utility of money income).

Several studies have adopted the allocative efficiency criterion to test whether peasants were or were not efficient (i.e., whether they were profit-maximizers or not) with some contradictory results (see Bliss and Stern 1982 on the economy of Indian villages). Conflicting evidence apart, the main caveat in this approach is that profit maximization has both a behavioral content (motivation of the household) and a technical-economic content (economic performance of the farm as a business enterprise). Most work in the area of efficiency infers the nature of the former by investigating on the latter. It is

⁵Prior to Schultz’s work, development economics had been dominated by the notion that peasant farmers were poor because they were backward and inefficient.

therefore concerned less with the *way a farm household reaches* its decisions than with the *outcome* of those decisions for the efficiency of the farm as a firm.⁶

Economic work on farm household behavior, though, has evolved along the line of other important criticisms of the profit maximization theory, such as the existence of trade-offs between profit maximization and other household goals, and the role of uncertainty and risk in farm household production decisions. The next section presents these alternative specifications of farm household behavior.

B. Utility Maximization Theories

A number of *utility* maximization theories have been applied to peasant production behavior. The main difference between them and the theories described above is that utility maximization approaches encompass the dual character of peasant households as both families and enterprises and thereby take account of the consumption side of peasant decision making.

The seminal work of Chayanov in the 1920s emphasized the influence of family size and structure on peasant economic behavior, through the subjective evaluation of labor within the household, in the absence of the labor market (Chayanov 1966).⁷

In expanding the scope of the Chayanovian model and assuming perfect markets, the *neoclassical farm household model* became popular in the 1960s to explain the behavior of farm households in simultaneous decision making about consumption and production. This model typically incorporates the notion of full household income (Becker 1965) and conceives of the household as a production unit that converts purchased goods and services as well as its own resources into use values or utilities when consumed.⁸ Thus, the household maximizes utility through the consumption of all available commodities (i.e., home-produced goods, market-purchased goods, and leisure), subject to full income constraints. The model shows that if all markets exist and all goods are tradeables, prices are exogenous and production decisions are taken independently of consumption

⁶From the perspective of policy implications, interventions that seek to increase the output of the peasant sector by raising farm output prices or by lowering the cost of variable inputs are predicted from profit maximization as a behavioral trait of peasant farm households.

⁷Essentially, the assumption of absence of a labor market in this model makes the value of labor time—and hence the optimum level of labor use—a subjective matter that varies across households according to their demographic structure. Chayanov’s model also assumes an unlimited supply of land. These are the main shortcomings of the model, which the new farm household models will exclude.

⁸The degree of subsistence consumption of own output and family labor usage as a proportion of total labor employed could be used as a criterion to identify any farm. The extreme case where all output is consumed by the household, and all labor is family labor, is called pure subsistence production; at the other extreme is the pure commercial farm where all output is sold and all labor is employed labor. The remainder falls somewhere between these two extremes.

decision.⁹ In such conditions the decision making process could be regarded as recursive (or separable), because time spent on leisure and time used in production becomes independent; utilization of family labor will be directly linked to the market-determined wage rate, and income is singled out as the only link between production and consumption¹⁰ (see Singh et al. 1986).

In the absence of a labor market, as in the Chayanovian model, or any other missing market, the decision may not be recursive because the family will be left to decide about the percentage of its total available time to be devoted to production (the difference being assumed to be used for leisure). Therefore, there is no separability between consumption and production. The decision process becomes circular as consumption affects income and income affects consumption.

Hence, the validity of recursive modelling of household resource allocation depends on the household being a price taker and the absence of missing or imperfect markets (for output or input, including labor and capital).

In reality, households operating in developing countries are likely to face more than one market imperfection, which prevents first-best transactions and investments from taking place. Empirical analyses of recursivity in farm household decision making have generally produced negative results (Bardhan and Udry 1999).

Hence, theoretical advances on farm household models with missing markets (see de Janvry et al. 1991) have opened up a new research agenda for neoclassical economists: the household's objective is still to maximize (a discounted future stream of expected) utility from a list of consumption goods (including home-produced goods, purchased goods, and leisure), but subject to what may be a large set of constraints, in which a missing market is yet another constraint on the household. At the same time, the task of empirical economics has shifted to providing evidence of market inefficiencies and their impact on (second-best) household production choices.

However, these theories have some serious shortcomings in explaining peasant economies. Similar to profit-maximizing theory, they ignore the effect on farm household behavior of the uncertainty and risk involved in peasant production, and the social context in which peasant production takes place. Most of these models are static and assume that prospects are certain or, equivalently, that households are *risk-neutral*. When it comes to empirically testing farm household models, the research focus, analytical tractability, and available data

⁹The solution for this model is the first-best choice situation, in which the marginal rate of substitution between each pair of goods in consumption is equal to the marginal rate of transformation in production, or $MRS = MRT$.

¹⁰In contrast to consumer theory in which the household budget is generally assumed to be fixed, in the farm household model, the budget constraint is endogenous and depends on production decisions that contribute to income through farm profits. Thus, to the standard Slutsky effects in the consumer model, the agricultural household models add an additional, "farm profit" effect, which may be positive (e.g., if the price of the home-produced staple increases) or negative (such as when the market wage increases, squeezing profits). See Taylor and Adelman (2003) for a review.

result in significant simplifications of both the objective function and the constraints (Taylor and Adelman 2003). Criticisms of this theoretical framework are particularly severe when uncertainty and risk aversion¹¹ are acknowledged to play a central role in farm household production decisions.

C. The Risk-averse Peasant

According to Ellis (1992), peasants produce under very high levels of uncertainty induced by natural hazards (weather, pests, diseases, natural disasters); market fluctuations; and social uncertainty (insecurity associated with control over resources, such as land tenure and state interventions, and war). These conditions pose risks to peasant production and make farmers very cautious in their decision making (see Walker and Jodha 1986). It is not surprising, therefore, that farmers (in common with most other decision makers) are generally assumed to exhibit *risk aversion* in their decision making. Lipton's (1968) criticism of the profit approach sought to show how the existence of uncertainty and risk eroded the theoretical basis of the profit-maximizing model. He argued that small farmers are, of necessity, risk-averse, because they have to secure their household needs from their current production or face starvation. There is no room for aiming at higher income levels by taking risky decisions (Lipton and Longhurst 1989).

There are two ways of conceptualizing farm households' risk-aversion: the standard expected utility theory and the disaster avoidance approach. According to the former approach, farm households make choices from available risky alternatives, based on what appeals most to their given preferences in relation to outcomes and their beliefs about the probability of their occurrence.¹² This normative approach is based on a set of assumptions (which are sufficient for the validity of the Von Neumann-Morgenstern expected utility model; see Mas-Colell et al. 1995),¹³ and on an implicit hypothesis that farm decision makers are in fact utility maximizers. Both household behavior and its revealed attitude toward risk (e.g., risk aversion) are reflected in its utility function. Other things being equal, a risk-averse household prefers a smooth consumption stream to a fluctuating one, which—in contexts of incomplete capital markets or underdeveloped institutional arrangements—entails a low risk portfolio choice of productive activities (see Morduch 1994).

¹¹Although in the very early literature they were studied as different concepts, uncertainty and risk are used as substitutes here.

¹²In general, the theory of decision making under uncertainty deals with choices among probability distributions with different outcomes. In appraising risky choices, the neoclassical expected utility framework is based on the decision maker's personal preference among outcomes, and his or her subjective probabilities of their occurrence. The utility function for outcomes is typically concave, reflecting risk aversion; in essence, expected utility introduces a person's subjective appetite for risk in order to explain behavior.

On the other hand, the complexity of risks faced by peasant farmers has led some analysts to develop allocative choice models that do not depend on the ability to calculate expected returns for large numbers of alternative prospects or knowledge about complex probability distribution of outcomes.¹⁴ Roumasset (1976)'s early criticism of expected utility theory builds on the application of the latter to decision making by subsistence farmers in Southeast Asia. He asserts that main limitations of this theory are related to the measurement of risk aversion (which cannot be defined independently of the utility function) and the absence of decision costs. Moreover, expected utility maximization can be described as a "full optimality model" since it prescribes the best choice of an individual, given the relevant constraints. However, it fails to specify the decision process that makes the outcomes possible, and thus ignores any important role of decision costs in analyzing decision-making behavior under uncertainty. As Roumasset emphasizes, "where costs of obtaining and processing information are substantial it is not necessarily rational for an individual to act consistently with his underlying preferences. A complete preordering only guarantees that an individual can make binary comparisons. But going from the binary comparisons to the most preferred alternatives is not a trivial step" (Roumasset 1976, 24). In cases of finite information processing devices, it is difficult to generate choices consistent with a preordering.

Therefore, the full optimality approach appears to be a weak basis for describing the decision process of small-farm operators in developing countries.¹⁵ On the other hand, to many analysts it seemed reasonable to assume that individuals act according to behavioral rules: they choose among a limited number of objectives from their realm of experience by a finite process of thought that may appropriately be described by "rules of thumb" (see Dasgupta 1993).

Critics of the full optimality approach in peasant production modelling formulated the idea of household production behavior at low levels of income in uncertain environments. They assume that, when choosing among risky income streams, households first opt for safety and from the safe alternatives they choose based on expected utility (and possibly expected income).¹⁶ These models based on a feasible decision process (or a rule of thumb) are known as *safety first* models of choice under uncertainty: here, the decision maker is assumed to

¹⁴Indeed, many theoretical and empirical works, not only on peasant behavior, have challenged the expected utility theory. There is a wide literature on systematic violations of the von Neumann-Morgenstern theory, especially in the more recent experimental and behavioral investigations (see Kahneman et al. 1982). Yet, there is tension between experimental conditions and real life choices involving matters such as planting crops, taking out insurance, etc.

¹⁵Actually, the debate would be over the normative or descriptive scope of farm household production theories. Yet in implicitly assuming that farm decision makers are in fact utility maximizers, the expected utility theory turns to be both descriptive as well as prescriptive (Roumasset 1976).

¹⁶This argument reverses the expected utility theory, in that the continuity assumption guarantees that no one gamble is infinitely preferred to another.

ensure survival for him or herself and therefore wants to avoid the risk of his or her income or return falling below a certain minimum (subsistence) level. Thus, risk is defined as the probability that the stochastic variable in question (income) will take on a value less than some critical or disaster level. This safety-first criterion can lead to the household favoring either risky income streams or low-risk alternatives.¹⁷ This is to say that there are no reasons to expect that individuals behave in conformity with the expected utility theory at very low levels of income, which is in stressful circumstances. The disaster avoidance perspective is helpful for describing individual choice under such conditions (Dasgupta 1993).

Thus, the attraction of the safety-first approach is that it is a *positive* method to capture some specific behaviors that can be culled from the expected utility theory (as the *normative* model of choice under uncertainty) near threshold income levels. The *safety-first* model does not take actual decision rules as given, as in a “pure behavioral (and experimental) approach”, but results from the attempt to incorporate into a model the strong points from both the behavioral and full optimality approaches, which seems an appropriate descriptive device for a risky choice in low-income farmers. In practice, although these two perspectives do not necessarily imply different course of actions, they may, depending on the options and initial conditions. From a wider perspective, though, while utility maximization theory cannot highlight such problems as extreme poverty, insecurity, and deprivation that characterize peasant life in most parts of the world, the safety first theory explicitly captures these aspects of peasant behavior in rural economies.

III. FARM HOUSEHOLD CHOICES UNDER UNCERTAINTY: “INSTITUTIONAL” AND “BEHAVIORAL” EXPLANATIONS

The theoretical literature on uncertainty and its serious impact on the economic behavior of the peasant household provide much scope for empirical research into the issue of risk.

An early strand of the literature focuses on the preferences of farm households toward risk. Majority of these studies, on the basis of both

¹⁷There are a few variants of the safety first model according to which the household objective is to minimize the probability of disaster or maximize return given a constraint on the probability of disaster (see Ellis 1992). The disaster avoidance motive may be defined using an expected utility model where there is a jump or vertical section in the utility function (and even convexity around the threshold income level; see Dasgupta 1993). The jump represents a large disutility associated with the loss of another unit of money (Masson 1974). This type of utility function, in contrast with expected utility theory, has some interesting investment decision implications.

For example, *if the disaster is considered to be serious enough*, an individual may invest proportionately more of his portfolio in a project, as the variance on the project's return increases. Similarly, the safety-first principle may be incorporated into a lexicographic context, where however, the ordering cannot be represented by a real-valued utility function, discrete or continuous (see Mas-Colell et al. 1995).

experimental and observed data on farmer behavior, conclude that peasants are risk-averse, (e.g., Moscardi and de Janvry 1977, Binswanger and Sillers 1983).¹⁸

However, this empirical literature wrongly attributes to risk aversion all the departures from economic efficiency and confounds risk behavior with other underlying factors. Roumasset (1976) finds that in several areas in the Philippines, risk-neutral rice growers behave as they were risk-averse while facing different land quality, imperfect or costly product markets, and different temporal input demand. Furthermore, in an early application of experimental economics in India, Binswanger (1980) found that the differences in risk aversion were too small to explain the full differential investment behavior among farm households with access to similar technologies and facing similar risks. He postulated that such differences could only be explained by the differences in farm households' constraints, such as access to credit, marketing, extension programs, institutional arrangements etc.

In work that had a major influence on subsequent research, Eswaran and Kotwal (1989 and 1990), using the expected utility framework, formalized the argument that risk preferences are influenced by the resource constraints and capital market imperfections faced by decision makers. Thus, differences in risk behaviors may not arise from differences in preferences, but may be due to differences in access to institutional arrangements that enable households to pool risks across time.¹⁹ Credit-bound, poorly resourced households may act as if risk-averse. This is particularly noticeable in developing countries where market imperfections are prominent and consumption and production decisions are nonseparable.

The thinness of markets may mean that terms of trade are implicit (e.g., gift exchange) or that contracts have to be personalized. It does not mean, though, that households are not sensitive to income risk or uncertain conditions of production. On the contrary, seeking to *insure* all household members against hunger and destitution is of paramount importance to any rural family living in a less developed setting (Dasgupta 1993).

Another aspect neglected by the standard empirical perspective on the risk-averse peasant is the potential role of uninsured risks in shaping farm household behavior with respect to production and consumption choices. Estimates of risk preferences based on the assumption that farmers have to absorb all income risk may be misleading. They should be made taking into account market imperfections on one hand, and nonmarket insurance mechanisms (or the abilities of households to pool risks across times and contingencies) on the other (Morduch 1994 and 1995).²⁰

¹⁸See also Binswanger (1981) and Roumasset (1976) for empirical evidence on risk-taking behavior of farm households.

¹⁹Access to credit provides households with the facility to absorb random shocks in income.

²⁰To better explain this point, according to expected utility theory, a risk-averse household will choose a smoothed consumption pattern. Thus, observed consumption variability could be misinterpreted as a risk-loving attitude of the household, which may

Hence, an important body of literature has switched the focus on behavioral responses to risk in rural households, that is, *ex ante* mechanisms of risk management in contexts where perfect markets for risk and credit allocation do not exist (or, in other words, when households’ consumption and production decisions are nonseparable)²¹ (see Dercon 2002 for a review).

Living and operating in risky environments where capital markets are rationed (i.e., for consumption-smoothing purposes, households are credit-constrained) affects how farm households decide about resource allocation and, in Morduch’s words, about “both the composition and nature of income generating activities” (Morduch 1995, 7). This is especially so with respect to choices made by the most vulnerable and poorest households, an aspect that will be discussed later in this paper.

Hence, (partially) uninsured risks shape farm households’ decision making processes, creating an incentive for resources to be devoted to securing a more stable income stream, along the lines of Roumasset’s early theoretical arguments. *Ex ante* risk management strategies involve trying to shape the risks peasants face by exercising caution in making production decisions, i.e., adopting activity portfolios that are more favorable in terms of risks but (often) less so in terms of profits (Morduch 1994; see also Dasgupta 1993, chapter 9). For example, cultivating drought-resistant crops, adopting intercropping methods, pursuing off-farm activities, migration, etc., are examples of low-risk activities or diversification into portfolios of activities with differing risk profiles. Also the use of contracts (such as sharecropping) may contribute to decreasing income variance (and incentives for producing profit-maximizing levels of output). Banerjee et al. (2002), for example, study the effect of Operation Barga, a major change in property rights and agricultural tenancy law, on agricultural productivity in the Indian state of West Bengal. They show that such a program—which is a limited intervention that empowers tenants through the regulation of rents and tenure security of tenants without giving sharecroppers the full

actually be credit-constrained. Furthermore, observed consumption smoothing could be interpreted as the result of the household’s risk aversion, overlooking *ex ante* household mechanisms designed to insure against risk that would inherently lead to low consumption variability in a context of capital market imperfections.

²¹This is to say that *ex post* mechanisms of risk coping (including formal insurance and credit markets) are missing or incomplete. There is a wide literature on informal risk-coping strategies, i.e., activities to cope with the consequences of income risk in the absence of insurance markets. Two types are commonly observed: self-insurance using savings (including cattle) to be sold off when the need arises, and informal mutual support mechanisms, where members of the group or community subsidize each other in times of need, typically on a reciprocal basis (Dercon 2002). This paper does not include this body of literature, as it is focused on household production choices in risky environments. Therefore only household strategies attempting to reduce the riskiness of the income process *ex ante* (e.g., income smoothing; see Morduch 1995) are reviewed. Consumption and income smoothing are difficult to disentangle, though. The degree of the latter depends on the amount of risk, the degree of risk aversion, and the extent to which other consumption smoothing mechanisms are available. But measuring the ability to smooth consumption *ex post* depends on knowing about the degree of *ex ante* income smoothing (Morduch 1995).

landownership—can have a positive effect on productivity, without a cost in terms of equity. This is so because different tenures make credit, tools, management, and land available to farm laborers in different proportions—as also pointed out by Roumasset (1976 and 2004). These, as are other strategies of empowerment (politically), easy to implement while being a valid way out of the persistent trade-off between risk and efficiency.

There is a wide array of empirical studies providing evidence of the conflict between risk and productive choices, which may result in efficiency losses when safety is paramount. Rosenzweig and Binswanger (1993) estimate the impact of riskiness (based on measures of rainfall variability) on the agricultural investment portfolios of farmers. They show that uninsured weather risk is a significant cause of lower efficiency, and that farmers in riskier environments select portfolios of assets that are less risky (i.e., less sensitive to rainfall variation), but also less profitable. Similarly, Morduch (1993) found evidence that Indian farm households close to subsistence (i.e., those whose consumption is more vulnerable to income shocks) are less likely to use risky high-yielding seed varieties than low-risk traditional varieties.

These results consistently suggest that vulnerable peasants (and especially the well-off ones who have more to lose) will tend to prefer a safe or conservative strategy with a low return, over a risky strategy with potential higher returns (Duflo 2003). In the case of adoption of a new technology, for example, given the costs involved in information, it can be wisest for households to postpone their investments until they know more about the expected (risky) conditions. This might explain the low take-up of pineapple cultivation in Ghana, despite the high rates of return (Goldstein and Udry 1990).²²

Many studies (including those mentioned above) take into account multiple aspects involved in farm households' choice that are related to security, particularly engagement in multiple activities and/or plot diversification. These activities include income diversification from the despatch of a household member to work in a different (uncorrelated) market.

Spatially diversified families represent an institution arising from or influenced by the risky nature of rural production and the difficulties of self-insurance in low-income, rural settings (Rosenzweig 1988, Townsend 1994). This argument is at the basis of migration for insurance motives, whereby greater income uncertainty may encourage out-migration as a risk diversification strategy (see Stark and Levhari 1982, Katz and Stark 1986, Daveri and Faini 1996). For example, Rosenzweig and Stark (1989) find that households in rural India facing less volatility in farm profits are those that seek income sources that are not covariate with their home base (and find it in other households where sons have married into).

The idea that farm households aim at reducing income risk and therefore may forego profit-maximizing activities (which may include a range of activities

²²Furthermore, once it is known that weather conditions, for example, will be risky, households may choose to limit production to cut potential losses.

with lower expected profits rather than a profit-maximizing single business) has inspired a new wave of behavioral and experimental works on farm household decision processes. Indeed, the "simplicity"²³ of low-income economies has fostered a range of experimental studies on the functioning of rural institutions and the economic behavior of farm households living and operating in something close to a controlled environment.²⁴

On the basis of an experimental study on maize fertilizer adoption in Kenya, Duflo and Kremer (2004) argue that neoclassical economic theories are not sufficient to explain farm household behavior. Preliminary results showed that simple, effective technology does not diffuse, and that social learning is slow, even when the switch to the new technology is subsidized. Access to credit does not seem to be an impediment. Only commitment devices at a specific point in time²⁵ seem to contribute to increase the adoption rate. This is to say that only when households perceive the program as an obligation, not entitlement, does adoption rate increase. As Duflo (2003) states, when choices involve the subsistence of one's family, trade-offs are distorted in peculiar ways (particular to individuals) and also, to some extent, pressure from extended family or neighbors may have an influence. According to behavioral economists, rural communities may not always seek out the best options because they are constrained by psychological and/or social norms.²⁶ Thus, the idea of individual decision making based on bounded rationality, and not pure self-interest and psychological decision costs, is a better explanation of farm household behavior in low-income economies. Nevertheless, as Morduch (1995) says, the simplicity of low-developed communities may obscure a deeper complexity, as—given institutional imperfections and behavioral nonmarket rational household mechanisms—the nonseparability of choices in different spheres is the rule, rather than the exception, rendering very few household choice exogenous (even perhaps under experimental conditions).

²³The simplicity of rural economies is revealed through missing markets, limited spatial integration, and straightforward income-generating activities (and a subsequent readily specifiable production process). However, this simplicity is paradoxically an important dimension of the complexity (Morduch 1995).

²⁴Indeed, Duflo (2003, 9) states that "there may be more to learn about human behavior from the choices made by Kenyan farmers confronted with a real choice than from those made by American undergraduate in laboratory conditions." Experimental studies in developing countries can be found, among others, in Hoff and Pandey (2004), who test the effects of Indian caste system on performance; and Miguel and Kremer (2004) who look at social learning effect on deworming in Kenya.

²⁵Only programs that help farmers to commit at the point when they have money to use fertilizer in the future, as in after harvesting, are those that have an impact on future fertilizer adoption.

²⁶Mutual insurance arrangements across households in traditional village communities in developing countries are often codified through social norms of behavior (see Dasgupta 1993).

IV. ENTRY CONSTRAINTS TO EFFICIENT BEHAVIOR

The final element highlighted in this review is intimately tied to what characterizes farm households and their members in developing countries, which is that they are typically poor.²⁷ Having poor initial asset endowments of course entails an equity issue, but also may mean that the poor may not be able to use their own assets as efficiently as the rich. In other words, not only living under uncertainty (as discussed above), but also being poor contributes to deviations in the behavior of farm households from the full-optimal-efficient framework. These two conditions invariably coexist in developing countries; therefore both risk and poverty perspectives are needed to analyze farm household production decisions. Again, there are several examples of institutional and behavioral explanations.

The nature of agricultural production typically implies a need for working capital to acquire necessary inputs. In a classic paper, Eswaran and Kotwal (1986) developed a model to show that, in the context of an imperfect credit market (where land may act as collateral) the land-rich farmer can easily acquire fertilizer and, if necessary, additional land and extra labor to make sure inputs are used as efficiently as possible. On the other hand, the land-poor farm household will necessarily be using its assets—land and labor—less efficiently.²⁸ In a later study on credit as insurance, Eswaran and Kotwal (1989) show that asset-poor households cannot enter into high-risk activities because they do not own enough (and they do not have access to credit) to cope with downside risks. To reduce their income risk, poor households may enter into low-risk, low-return activities. The consequence is further impoverishment and presumably increased inequality.²⁹

These results are not based on differences in risk preference: controlling for preference, the poor select a low-risk, low-return portfolio, whereas the rich take on a riskier set of activities. Thus they are a reflection of the options available to poor households.³⁰

²⁷The present paper reviews works that conceive of farm households as being poor (noncommercial farms). In this section, some arguments are offered on the link between poverty (in rural households) and efficiency.

²⁸The poor farmer will be using less than optimal amounts of fertilizer, and will be farming too intensively in terms of labor, with more labor per unit of land than efficiency would require.

²⁹The rich do not just earn more income because they have more assets, but also because they can use them more efficiently. Market failures exacerbate initial inequalities. Along the same lines, but in a dynamic framework, Banerjee and Newman (1993) demonstrate the adverse impacts of asset inequality on entry into profitable activities (and thus on growth) as linked to credit market failures. This intuition is at the basis of a number of growth models, leading to poverty traps for some and accumulation for others (e.g., Galor and Zeira 1993, Aghion and Bolton 1997).

³⁰This reflects the idea of “poverty as desperation”, where resource constraints leave little role for preferences; see Banerjee (2001).

Looking at behavioral responses to risk, poverty also influences the *ex ante* ability to reduce uncertainty at the household level. As mentioned above, the optimal consumption-smoothing mechanism requires borrowing opportunities. However, in the absence of credit markets, a household can use its own resources (wealth) to smooth consumption over time, a mechanism that clearly prevents poorly resourced households from being able to absorb risk (Morduch 1994).³¹

In general, income-risk management strategies are not without costs (both financial and decisional): as mentioned above, they result in a reduction in mean income to balance the lower risk and variability in income. This affects the household's long-term income and ability to escape poverty.

Furthermore, if widespread diversification of farm household income sources is a means of managing risk in developing countries, there are important constraints to entering into profitable and risk-reducing diversification. Nonagricultural activities or profitable alternative agricultural activities are not easily accessed. Entry constraints could take the form of working capital, skills, and other requirements.³² Dercon (1998) shows the importance of entry barriers to relatively lucrative activities in rural Tanzania and Ethiopia as being more important than comparative advantages in determining entry to high-return activities.

Risk management strategies imply substantial efficiency losses for the poor, which the rich—typically better protected via assets and institutional arrangements—do not have to endure (Dercon 2002). There is growing evidence that entry constraints limit the usefulness of income diversification, thereby having a different potential effect on household wealth distribution. Rosenzweig and Binswanger (1993), for example, showed that poor farmers are more affected by income risk than wealthier ones; and that as the environment becomes riskier, more vulnerable households shift production into more conservative, but less profitable modes.³³ Poor farmers have been found to hold livestock as a precaution against risk even when more productive investment opportunities exist (see Rosenzweig and Wolpin 1993 on investment in bullocks in India). Thus,

³¹Household wealth is typically land and livestock (children too), although land is the most valued possession. Because of this, while livestock may be easily sold to smooth consumption, the household will be willing to sell land only if the prospects from doing so are very promising (see Dasgupta 1993, chapter 9). Moreover, when profitable activities are risky, farmers may not be willing to commit their assets since they cannot afford to suffer failure. This is one reason why the land market is typically thin in developing countries.

³²In Mendola (2007), heterogeneity of constraints in Bangladesh dealing with migration household decisions is examined. Poor farm households typically enter into migration with low entry costs and low returns (i.e., domestic migration). Entry into high-return migration (i.e., international migration) in which most households would probably like to engage in an “income-maximizing perspective”, is restricted to richer and large-holder households, presumably those with more access to capital.

³³They found that the loss in efficiency between the richest and poorest quintiles in their sample from India was more than 25 percent, attributable to portfolio adjustments in assets and activities due to risk exposure. Over time, these are very substantial efficiency losses, disproportionately affecting the poor.

wealth effects on exposure to uninsured risk influence investment decisions among farm households.

This process may produce *poverty traps*, in which poor farmers, in order to avoid further destitution (i.e., to assure themselves less variability in consumption and nutritional levels), are forced to forego more profitable, but risky opportunities, and thereby the opportunity to move out of poverty.³⁴

Given assets inequality, the poorest farmers are likely to adopt technology or activity portfolios with lower returns and may find it impossible to accumulate any wealth, while the better-off farmers earn higher returns and are able to get rich. There is some empirical evidence on these dynamics being significant causes of poverty persistence and establishment of possibly permanent poverty traps in developing countries. Jalan and Ravallion (2003), for example, investigate portfolio, behavioral responses to risk, and poverty traps using household panel data for rural areas in the People's Republic of China (PRC). They find that middle-income groups invest in unproductive wealth as a response to idiosyncratic risk income; high-income households do not need to do so; while the poor cannot afford to do so. Thus, they estimate that eliminating income risk would promote productive portfolio behavior by a higher magnitude for middle-income groups with respect to the better-off or the poor. Yet, while they find no evidence that uninsured risks discourage schooling, they find that risk inhibits the out-migration of labor. This has serious implications in terms of persistence of poverty and inequality, with labor mobility and economic migration constituting crucial self-insurance and wealth-generating household strategies (see, for example, Rozelle et al. 1999 and Taylor et al. 2003 on rural PRC; Mendola 2007 on rural Bangladesh).

Overall, a large body of evidence points to the significant consequences of uninsured risks in developing countries, and particularly in relation to poor farmers and their productive capacity. The root causes of inefficient farm household behavior are again a market failure or a behavioral response to risk, which is exacerbated by inequality and poverty.

V. CONCLUSIONS

This paper has provided a synthesis of main theoretical frameworks, and some important empirical contributions, for analyzing how farm households behave with respect to risky and costly production choices. The review shed light on several reasons underlying “contradictory” empirical results or common policy failures with respect to (agricultural) development and poverty reduction. This is particularly relevant in order not only to identify which behaviors and institutions

³⁴This reflects the idea of “poverty as vulnerability”, where being vulnerable (or being risk-averse) impedes the ability of the agent to move out of the poverty trap equilibrium; see Banerjee 2001). A poverty trap is an equilibrium outcome and a situation from which one cannot emerge without outside help, such as redistribution or aid, or via a fundamental change in the functioning of markets.

are (exogenously) inefficient, but most importantly, to explain the diversity of different (formal and informal) institutions in the Asian region.

Assuming perfect markets, profit maximization and utility-maximizing peasant theories take efficiency—i.e., profit or full income maximization under one constraint in a competitive economy—as a central issue in peasant production analysis. It has been argued that the high risk and uncertainty faced by subsistence producers erode the prescriptive relevance of these theories. Thus, standard theory includes peasant risk aversion in its full-optimal utility maximization framework, thereby spotting the preferences of farm households toward risk as a key element in explaining uncertain production choices. However, the analysis of risk preferences based on the assumption that farmers have to absorb all income risk, without taking into account market imperfections and nonmarket insurance mechanisms, may be misleading (Morduch 1995). Differently said, the risk-averse behavior of farm households may be the result of other mechanisms related to the institutional context—such as insufficient channels to self-insure or share risk with the rest of the world (e.g., Townsend 1994, Morduch 1993, Roumasset 2004).

A wide array of theoretical and empirical contributions on farm household production choices under uncertainty have shown that market imperfections, such as rationed capital markets, may contribute to shaping risk preferences and behavioral responses to risk, entailing heterogeneous effects across household wealth distribution. When borrowing constraints are binding and production risks uninsured (whereby credit access may act as an insurance mechanism), households may self-protect by exercising caution in making production decisions. Thus, living and operating in risky environments make farm households adopt income-risk-reducing behavior, i.e., they choose (*ex ante*) safe or conservative strategies.

There is a large body of evidence on the various household strategies aimed at reducing income risk. It has been shown that farm households with poor asset endowment and limited formal protection will underinvest more than better-off farmers. This is to say that risk, along with asset-poor initial conditions, may contribute to making small farm households inefficient and persistently poor.

The paper has offered a few insights into the way farm household production behavior is shaped by market failures and risk,³⁵ but there is more to be learned about the peasant economy. Current research efforts are being directed toward behavioral economics (i.e., including individual psychological traits) through experimental analysis. Many program evaluation experiments and field experiments are currently under way in developing countries in a bid to acquire a deeper understanding of the determinants of decision making in poor and developing settings. However, it remains questionable whether investigations into farm household behavior under uncertainty should directly involve farmers into

³⁵There are of course other reasons why farmers are prevented from making the best use of their resources, which are related for example to coordination failures, learning processes, and political economy.

an experimental setting, or should be based on the analysis of the institutional and social environment the farmer is embedded in, his wealth position, his investment possibilities, and so forth. This is important in shaping both development microeconomic theory and policy design in developing countries. On one hand the theory should explain evolution of (formal and informal) institutions by accounting for the nature and causes of agricultural economic organization in their multiple (complementary) aspects. On the other hand, evidence of (*ex ante*) household subsistence strategies should not be interpreted as a motivation for *laissez faire*, as many barriers to risk sharing and household self-insurance mechanisms should still be removed.

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Institutions and Policies for Growth and Poverty Reduction: The Role of Private Sector Development

RANA HASAN, DEVASHISH MITRA,
AND MEHMET ULUBASOGLU

This paper goes over some of the recent discussions on the effects on growth and poverty of institutions and policies, especially those that relate to the functioning of the private sector. It examines the empirical relationship between various measures of institutional quality and regulatory policies, and economic growth and poverty. The results suggest that good governance, as measured by a strong commitment to the rule of law, among other things, matters for poverty reduction largely through its effect on economic growth. In terms of business regulations, the paper finds that less restrictive regulations pertaining to starting a business are associated with higher economic growth as well as lower rates of \$2-a-day poverty. Political freedom is not associated with either higher growth or lower poverty. Taken together, the evidence here seems to suggest that the delivery of good governance and policies that facilitate the creation of new enterprises are more relevant for growth and poverty reduction than the nature of the political system per se.

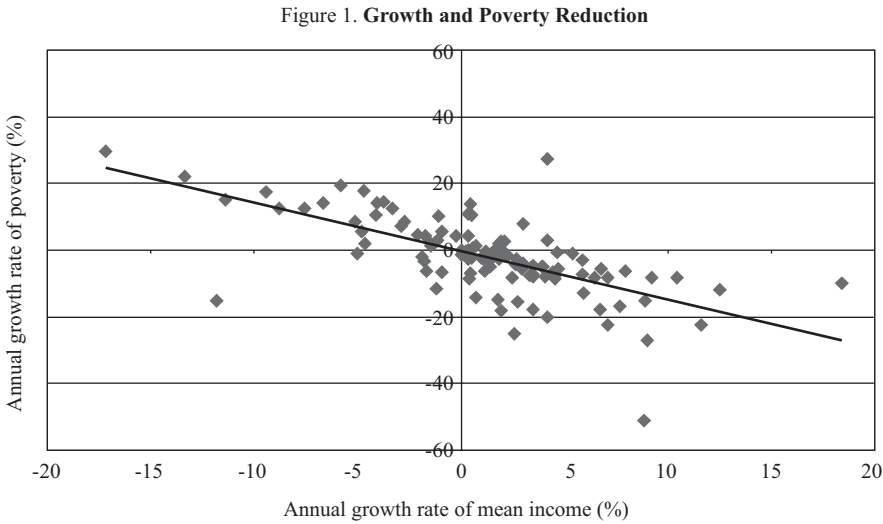
I. INTRODUCTION

Despite having made significant progress in reducing poverty over the last several decades, over 600 million people, constituting more than a fifth of Asia's population, live below the \$1-a-day poverty line (ADB 2004). On the basis of poverty lines more typically found in low-to-middle income countries as opposed to only low income countries—the \$2-a-day poverty line—an even more staggering number are poor in Asia: 60 percent of Asia's population or 1.9 billion people. Faced with such numbers, it is difficult to argue with the notion that the reduction of poverty is the central development challenge facing Asia, and indeed, the developing world at large.

What can policymakers do to reduce poverty? Many economists would argue that igniting economic growth and sustaining it is the surest and most

Rana Hasan is Senior Economist in the Development Indicators and Policy Research Division, Economics and Research Department, Asian Development Bank; Devashish Mitra is Professor of Economics and Gerald B. and Daphna Cramer Professor of Global Affairs at the The Maxwell School of Citizenship and Public Affairs, Syracuse University; and Mehmet A. Ulubasoglu is Senior Lecturer in Economics at the School of Accounting, Economics and Finance, Deakin University.

sustainable way to fight poverty. Figure 1, which plots cross-country data on economic growth and poverty reduction, is consistent with this argument.¹ This figure shows, for example, that a 1 percent increase in growth has been associated on average with a 1.5 percent reduction in poverty. Moreover, episodes where poverty grew despite economic growth (quadrant 1) or where poverty declined despite economic contraction (quadrant 3) are clearly the minority. But Figure 1 also reveals that there is a great deal of variation in how much economic growth has reduced poverty across countries, and even within countries over different periods of time. In statistical terms, the variation in economic growth can explain only around 45 percent of the variation in poverty reduction (ADB 2004).



Source: *Key Indicators 2004* (ADB 2004).

These two “stylized facts” about growth and poverty linkages—that poverty reduction is closely associated with economic growth but that this association is by no means perfect—suggests two challenges for policymakers. First, what are the policies and institutions that can ignite and thereafter sustain growth? Second, how does one ensure that growth generates significant opportunities for the poor?

In this paper, some of the recent evidence on both of these questions is discussed, paying special attention to policies and institutions that relate to the development and regulation of the private sector. It carries out some empirical analysis using data on poverty (PovcalNet [World Bank 2004b] and ADB 2004)

¹Poverty reduction is based on changes in \$1-a-day poverty rates. The source of this figure is *Key Indicators 2004* (ADB 2004).

and recently developed indicators relating to the regulations under which the private sector operates (World Bank 2004a). The objectives of the empirical analysis are modest. In particular, it does not attempt to tease out the deep causal relationships between measures of policies and institutions on one hand, and economic growth and poverty reduction on the other. Instead, the approach is more an attempt at uncovering which elements of the various measures of policies and institutions stressed by the recent literature are more or less robustly correlated with growth and poverty. This is a useful exercise in that it highlights broad patterns in the data and suggests some issues for further research.

The paper's focus on private sector development stems from the now widespread belief that market forces and private initiative provide a powerful basis for generating economic growth. This belief explains the importance private sector development is receiving in the strategies being adopted by both developing country policymakers as well as international development agencies. From the perspective of developing country policy making, for example, scores of countries have moved over the last 10 to 20 years to liberalize their trade and industrial policy regimes. These liberalizations have been underpinned by the belief that greater reliance on private agents—including not only large-scale manufacturing firms but also farmers and micro-entrepreneurs—to allocate resources on the basis of market signals would improve economic performance. Similarly, development agencies, including the Asian Development Bank (ADB) and the World Bank, have made support to private sector development a key component of their overall strategy for assisting less developed countries. ADB's private sector development strategy (ADB 2000), notes right at the outset that the development of a strong and dynamic private sector is crucial to long-term, rapid economic growth. Long-term, rapid economic growth is in turn seen as a necessary condition for sustained poverty reduction.

The policies and institutions the paper focuses on can be distinguished into four types. The first type relates to the various regulatory barriers faced by actual and potential private sector firms. These factors are measured in terms of variables available from the Doing Business database of the World Bank. Examples include information on the ease of starting and closing businesses. The second type consists of broader outcome-based measures of overall policy orientations of the government that may affect the way businesses operate. These are captured by measures of openness to trade and size of the public sector. While the former relates directly to how much domestic firms are exposed to foreign competition (via imports) and foreign markets (via exports), the latter captures quantitatively how important the private sector is in overall production. The third type relates to the institutions of governance. As is now increasingly appreciated, the most encouraging regulations (on paper) may not amount to much in terms of creating an enabling environment for the private sector if those regulations were enforced capriciously or by a predatory state machinery. Thus it is important to

take into account the policy and institutional environment related to governance. The final set of variables relates to political institutions, in particular to political rights and civil liberties.

One element of policies that the empirical work cannot capture directly is that relating to attempts by governments to resolve market failures—for example, policies designed to tackle coordination failures and learning externalities. As the review of recent debates on policies and institutions highlights below, such an omission may be an important one. Unfortunately, it is also an omission that is very difficult to resolve. Future research programs on policies to spur private sector development are advised to seriously consider how to incorporate this element of policy.

With this caveat in place, the results of this empirical work can be summarized as follows. Good governance, as measured by a strong commitment to the rule of law, a competent and efficient government sector, and control of corruption, matters for poverty reduction largely through its effect on economic growth. Though not a panacea, less cumbersome regulations governing private sector operations, especially those pertaining to starting a business, matter more directly for both economic growth as well as poverty reduction. Increases in trade shares are also found to be associated with lower poverty, even as the impact of trade openness on growth is not clear. Furthermore, the size of the public sector has a strong negative effect on growth and can be detrimental for poverty alleviation. Finally, political freedom is not associated with either higher growth or lower poverty. Taken together, the evidence here seems to suggest that the delivery of good governance and regulations that facilitate the creation of new enterprises are more relevant for growth and poverty reduction than the nature of the political system through which such governance and regulations are delivered.

The paper is organized as follows. Section II provides a brief discussion on policies and institutions for private sector development and why these should matter for economic performance and thus economic development. Section III reviews the related empirical literature. Section IV describes the methodology of the empirical investigation into the correlates of growth and poverty using measures of policies and institutions, including those on regulations governing the private sector. Section V describes the data. Section VI discusses the results of the empirical work while Section VII provides some concluding remarks.

II. INSTITUTIONS AND POLICIES AND WHY THEY MATTER FOR ECONOMIC PERFORMANCE

The dividing line between institutions and policies is thin. Nevertheless, it is useful to try and distinguish between them for purposes of understanding their roles in improving economic performance. One basis for distinguishing between

the two is that institutions encompass the formal and informal rules and customs within which individuals and firms operate; policies, on the other hand, refer to various strategies and measures a government adopts to achieve its goals and objectives within a country's institutional framework (Quibria 2002). Of course, policies can have a profound impact on a country's institutions, and this is ultimately what the objective of the efforts at policy reform in developing countries is about. In what follows, institutions are discussed in more detail—what they encompass, and why they are important to economic functioning and performance. Also briefly covered are key policies that may have an important bearing on economic performance and on the process of institutional change itself.

A. Institutions

The work of Douglas North has been an important influence on economists' thinking about institutions and their linkages with economic performance. North (1990) describes institutions as the "rules of the game" in a society. In his words, institutions encompass "humanly devised constraints that shape human interaction." These constraints can be formal or informal. The former would include constitutions, laws, and regulations governing politics and economics, while the latter would include conventions, customs, codes of behavior, and conduct. Formal rules and informal constraints together determine the incentives in human exchange—political, social, and economic. Importantly, how well the given institutions function depends on the nature of enforcement, that is, how costly it is to identify violations of the "rules of the game" and how severe the punishments for deviating from rules are.

Why are institutions important to economic performance? According to North, institutions have a profound influence on the incentive structure of a society. Countries are rich or poor depending on "whether or not their institutional constraints define a set of payoffs to political/economic activity" that encourage productive activity. Put differently, when organizations, including firms, trade unions, political parties, business associations, etc. are engaged in what are unproductive activities, it is because the institutional framework in which they operate provides them with an incentive to be unproductive. In developing countries the institutional framework "overwhelmingly favor(s) activities that promote redistributive rather than productive activity, (that) create monopolies rather than competitive conditions, and that restrict opportunities rather than expand them. They seldom induce investment in education that increases productivity" (North 1990, 9). In this way institutions affect both the process of capital accumulation as well as the process of converting this capital into output.

If developing countries are poor because their current institutions provide a weak basis for providing the incentives that generate growth, what type of institutions should they acquire? And how can developing countries get there? Recent research has been in far more agreement on the first of these questions than the second.

Consider the first question. By and large, most economists today would assign a critical role to private incentives and initiatives in driving modern economic growth via the accumulation of capital, and the conversion of that capital and labor into marketable output. Underlying this process of private accumulation, production, and exchange, however, has been a set of market-supporting institutions. The most fundamental among these have been the existence of secure and stable property rights and the rule of law. The importance of these was clearly noted and anticipated by Adam Smith in his *Wealth of Nations*: “Commerce and manufactures can seldom flourish long in any state which does not enjoy a regular administration of justice, in which the people do not feel themselves secure in the possession of their property, in which the faith of contracts is not supported by law, and in which the authority of the state is not supposed to be regularly employed in enforcing the payment of debts from all those who are able to pay. Commerce and manufactures, in short, can seldom flourish in any state in which there is not a certain degree of confidence in the justice of government” (as cited in Rodrik, Subramanian, and Trebbi 2002, 1).

The experience of today’s prosperous countries therefore suggests that stable property rights and the rule of law are prerequisites for a dynamic private sector to emerge. However, their experience also reveals that market economies require much more if they are to function efficiently and with at least a modicum of equity. As the experience of the 20th century has shown, market economies also need fiscal and monetary institutions that perform stabilizing functions; institutions that try to check market failures and regulate conduct in all sorts of markets including those dealing with goods and services, labor, and finance; and institutions that provide social insurance (Rodrik 1999).

It is difficult to imagine that today’s developing countries, which are by and large transitioning to more fully market-based economic systems, will attain prosperity without these market-supporting institutions. The acquisition of these institutions is therefore part of their developmental challenge. However, it is far from clear how poor countries should go about acquiring these institutions (and as noted below, even how *urgently* they need all of them).

Rodrik (1999) discusses and contrasts two alternative approaches to the acquisition of institutions. According to the first, it is possible to “import [the] blueprint” or institutional design from the developed world. Following this approach the removal of price distortions and privatization of enterprises would be accompanied by a set of “governance” reforms that would include the

enactment of legal codes and legislations (often in line with those existing in the developed countries), establishment of an independent judiciary, etc.

The second approach, however, emphasizes that local circumstances will require in many cases a unique, context-specific institutional design. The usefulness and importance of such an approach can be understood and appreciated through the very real caution suggested by North (1994, 8): “economies that adopt the formal rules of another economy will have very different performance characteristics than the first economy because of different informal norms and enforcement. The implication is that transferring the formal political and economic rules of successful western economies to Third World and Eastern European economies is not a sufficient condition for good economic performance.”

Consider the case of property rights and rule of law (investor perceptions, which are shown to be strongly associated with better economic performance as both the literature survey below as well as our own empirical work reveals). While strengthening property rights and rule of law in an economy where they have been weak or absent to begin with are very likely to be instrumental in getting entrepreneurs and investors to expand their investment activities, there is more than one way to establish stronger property rights and respect for the rule of law. An illustration from Rodrik (2004), contrasting Russia in the 1990s with the People’s Republic of China’s (PRC) investment boom driven by the township and village enterprises (TVEs) in the 1980s reveals quite clearly the complexities involved in successful institutional change. In the 1990s, Russia provided its citizens with a private property rights regime that was ostensibly enforced by an independent judiciary. However, surveys routinely revealed that investors consistently gave low marks to the country insofar as rule of law was concerned. Why? While Russia made the appropriate legislative changes, weaknesses in enforcement and the actual codes of conduct to which Russians were accustomed to probably diluted the effectiveness of these changes.

Put differently, context matters so that “institutional outcomes do not map into unique institutional design.” Consider now the case of the PRC. The investment booms in the PRC’s TVEs took place despite the nonexistence of a private property regime and an independent judiciary. Apparently, investors did believe their “property” to be safe. Drawing upon the work of Qian (2002), Rodrik points to what may have served to provide secure property rights when none actually existed formally: with local governments (typically the owners of the TVEs) and private entrepreneurs as “effective” partners, “private entrepreneurs felt secure not because the government was prevented from expropriating them, but because, sharing in the profits, it had no interest to expropriate them” (Rodrik, 2004, 9).

Following the second approach’s emphasis on local context, the general lesson is that “there is no unique, noncontext specific way of achieving desirable

institutional outcomes.” This, of course, makes it more difficult to give policy advice. But Rodrik argues that while good institutions are ultimately crucial for sustaining growth, igniting growth need not wait until large-scale institutional transformation has been generated. Instead, igniting growth entails the easier task of being able to identify and relax specific constraints that are holding back the private sector. Thus, in the case of the PRC in the late 1970s and 1980s, the main “binding” constraint to growth may have been the absence of market-oriented incentives. Doing away with the household responsibility system and allowing local governments to “own” the TVEs were innovations that gave entrepreneurs incentives to be productive within the existing overall institutional framework. More generally, the challenge for policy then becomes the search for responses that are appropriate for local conditions. This in turn requires an encouragement of experimentation—risks notwithstanding—with reforms of different elements of the current institutional framework to see what types of reforms work and which ones do not.

B. Policies

Policies can be thought of as the instruments by which governments can change the “rules of the game.” Which policies have a particularly important bearing on economic performance? More to the point, what policies are holding back the private sector? Until very recently, policy advice for generating growth and spurring the private sector tended to emphasize policy reforms focused on a relatively narrow range of areas. In particular, policy reforms have been targeted toward macroeconomic stabilization, price liberalization, trade liberalization, and the privatization of public sector enterprises.

Unfortunately, undertaking these policy reforms has not led to a big expansion in private sector activities; conversely, the private sectors of some countries that have avoided the above set of policy reforms have boomed (World Bank 2003). This has led analysts to look more closely at the full range of policies that influence the environment in which production takes place (as well as the institutional framework in which policies operate).

Rodrik (2003) contrasts two views on the policies and processes that can get “entrepreneurs excited about investing in the home economy.” One view emphasizes cumbersome and misguided government regulations as the constraint to entrepreneurship and a vibrant private sector. The second view emphasizes market imperfections in developing countries. According to this approach the government should not just get out of the way of the private sector. Instead it needs to find ways to crowd in private investment.

According to the first view, government imposed imperfections, which include macroeconomic instability and high inflation, high government wages that distort the functioning of labor markets, a large tax burden, arbitrary

regulations, burdensome licensing requirements, corruption, among others, which hold back the private sector. Surveys of enterprises, including the investment climate studies initiated by the World Bank and also carried out by the ADB become a key tool in determining which aspects of government policy and regulations constrain the operations and growth of the private sector.

According to the second view, however, economies can get stuck in the low-level equilibrium due to the nature of technology and markets, even when government policy does not penalize entrepreneurship. Rodrik points out that even though developing countries need not create new technologies they do need to adapt technologies that are new to them. This process of adaptation will usually require a certain amount of human capital internal to the individual and the firm contemplating using the new technology. But crucially both the costs of adaptation as well as the returns from adaptation are often subject to externalities. For example, the costs of producing a new (for the developing countries) good may be uncertain. The uncertainties can deter investors. However, even one investor's entry into the new line of production would provide information on the costs. If the investor struggles, then this is a signal that the costs of production are high. If the investor, on the other hand, is successful then this is a signal that the costs of production are worth the effort. The point is that "entrepreneurs engaged in the cost discovery process incur private costs, but provide social benefits that can vastly exceed the anticipated profits". The end effect is that "the relevant learning is under produced in a decentralized equilibrium, with the consequences being that the economy fails to diversify into non-traditional, more advanced lines of activity. In such a scenario there will be policy interventions which would improve upon the decentralized outcome" (Rodrik 2003, 21).

Both of these views have merit. This is because both factors may be at work, even within the same country. Thus while learning externalities may be holding back certain types of investments, other investments could be constrained by unnecessarily burdensome regulation. Consider the wide range of regulatory policies that govern the rules and regulations on starting and closing a business. Cumbersome and/or costly regulations for starting a business could easily result in lower entry than otherwise; they could also lead to a lack of competition faced by existing firms. The result would not only be lower investment than otherwise, but also lower efficiency among incumbents protected from competition. Similarly, regulatory hurdles in closing a business would prevent firms that are currently inefficient from exiting the market. They may also deter entry by artificially raising the cost of exiting if market conditions ultimately prove to be too difficult for a firm. A similar logic can apply to some elements of labor market regulations. For example, in the Indian context it has been argued that overly stringent restrictions on laying off industrial workers have benefited incumbent workers, but harmed overall prospects of employment generation in the industrial sector as firms respond to firing restrictions by reducing the number

of workers they would otherwise hire (see, for example, Besley and Burgess 2003).

III. SURVEY OF RELATED LITERATURE

A. Institutions, Policies, and Growth

As may be alluded from the previous discussion, the work by North (1990) has generated a great deal of interest in the role of institutions in determining output and growth. Knack and Keefer (1995) looked at the impact of property rights on economic growth. In particular, they study the effects of contract enforceability and risk. While the variables are shown to have an impact on growth, controlling for them generates estimates that show faster conditional convergence to incomes levels in the United States. In a subsequent paper, Keefer and Knack (1997) look at how the convergence rate itself might be a function of indicators of institutional quality such as the rule of law, corruption, and the risk of expropriation and contract repudiation. They study this by interacting initial income with these institutional indicators on the right-hand side of a standard, cross-country growth regression.²

Mauro (1995) focuses on the effect of corruption on growth and finds it to be negative in his cross-country regressions. He also looks at the effects of a subjective perceptions-based index of bureaucratic efficiency as well as that of political stability and finds them to be positive. Due to the possibility of reverse causation from growth to institutions, there is a potential endogeneity problem, which Mauro corrects by instrumenting corruption by an index of ethnolinguistic fractionalization.

Another important study is by Barro (1997) who studies a panel of around 100 countries from 1960 to 1990. Using controls such as the initial level of real per capita gross domestic product (GDP), initial schooling, life expectancy, fertility, government consumption, inflation, and terms of trade, growth is found to be increasing in the rule of law. Although Barro finds a weak effect of political freedom on growth, there is some indication of a nonlinear relation, an inverted U-shaped relationship between democracy and growth, with the growth-maximizing level of political freedom lying somewhere in between a pure democracy and pure dictatorship.

Using a new database consisting of 300 indicators of governance and creating six aggregates out of those, namely rule of law, corruption, political

²Another paper that pursues this line of research is Rodrik (1997), which looks at the role of institutions in explaining the stellar growth performance of East Asian economies prior to the Asian financial crisis. Almost all the variation in their growth performance is explained by initial income, initial education, and institutional quality. His measure of institutional quality is drawn from the work of Knack and Keefer (1995) and Easterly and Levine (1996).

instability, voice and accountability, and government efficiency and regulatory burden, Kaufmann, Kraay, and Zoido-Lobaton (1999) show that there is a strong association between good governance and growth, with the causation running from the former to the latter. The instruments they use for their governance indicators are the ones used by Hall and Jones (1999).

While the above papers emphasize the effect of institutions on growth, later work has mainly emphasized the impact of institutions on income levels and not on growth rates. In support of this change in emphasis, Hall and Jones (1999) have argued that “levels capture the differences in long-run economic performance that are most directly relevant to welfare as measured by the consumption of goods and services.” Also, in this context they point to the recent evidence on the transitional nature of growth rate differences across countries; the empirical questioning by Jones (1995) of the relevance of endogenous growth models; and the theoretical support from recent models that show the effect of policies on income levels and not on growth rates, and where countries in the long run differ in their income levels and not growth rates.

Hall and Jones (1999) look at how capital accumulation, productivity, and therefore output per worker are affected by social infrastructure. Social infrastructure here refers to institutional and policy variables that determine the economic environment determining capital accumulation, skill formation, invention, innovation and technology transfer. Their measure of social infrastructure is based on measures of corruption, expropriation risk, government repudiation of contracts, law and order, bureaucratic quality and trade barriers. While output is made a function of social infrastructure in their estimation framework, they correct for endogeneity of the latter using instruments such as geographical variables, mainly distance from the equator and the extent to which modern European languages are spoken as first languages today, which captures European influences on institutions. Their study concludes that countries with better social infrastructure have higher levels of output per worker in the long run, have higher investment rates, and are more efficient at converting inputs to output.

Recently, a major advance in this literature has been made by Acemoglu, Johnson, and Robinson (2001) who looked at former European colonies to study the impact of institutions on per capita income levels. For these countries, they are able to use European settler mortality rates as instruments for institutions. In countries conquered by Europeans, whether they decided to permanently settle or not was determined by their ability to survive there (by their mortality rates). If they decided to settle in a country themselves, they adopted good institutions, while if they decided to rule from their home country, they put in place extractive institutions. Their decision to settle in a region, however, was a function of their mortality there. On the other hand, mortality rates of potential settlers, to begin with, can be viewed as a function of geographical variables. While even after

instrumenting for institutions (expropriation risk that current and potential investors face), Acemoglu, Johnson, and Robinson find statistically significant effects of these variables on per capita income in the expected direction, the instrumentation completely takes away the effect of geographical variables on income.

Turning to trade policy, the effects of trade barriers on growth and income have been studied since the early 1990s. While Dollar (1992), Sachs and Warner (1995), and Edwards (1998) showed positive effects of trade on growth using different measures of openness, in many cases constructed from standard policy measures, these papers have been strongly criticized by Rodriguez and Rodrik (2001) for the problems with measures of trade openness and the econometric techniques used, as well as for the difficulty in establishing the direction of causality. While Rodriguez and Rodrik (2001) have criticized the measure of openness used by Sachs and Warner (1995) as capturing many aspects of the macroeconomic environment in addition to trade policy, Baldwin (2002) has recently defended that approach on the grounds that the other policy reforms captured in the measure, though not trade reforms per se, accompany most trade reforms sponsored by international institutions. Therefore, using such a measure tells us the value of the entire package of trade and accompanying reforms. Wacziarg and Welch (2003) have updated the Sachs-Warner data set and have again shown the benefit of such reforms in driving growth.

Just as in the case of the literature on the effect of institutions as explained above, the trade literature has also shifted focus to levels from growth rates. Frankel and Romer (1999) look at the effect of trade share in GDP on income levels across countries for the year 1985. They construct an instrument for the trade share by summing up the gravity-model driven, geography-based predicted values of bilateral trade flows across all trading partners. The variables used to predict bilateral trade flows include distance, country size variables such as land area and population, and dummies for whether the countries are landlocked or have a common border, etc. They find that their instrumental variables approach produces positive effects of trade on income levels that are greater than the estimates produced by ordinary least squares. Irwin and Tervio (2002) apply the Frankel-Romer approach to cross-country data from various periods in the 20th century to show that this trade-income relationship is indeed highly robust.

Building on two literatures, namely the one on institutions and incomes and the other on trade and incomes, Rodrik, Subramanian, and Trebbi (2002) looked at the simultaneous effects of institutions, geography, and trade on per capita income levels. They used a measure of property rights and the rule of law to capture institutions and the trade-GDP ratio to capture openness in trade, treating both as endogenous in their growth regressions. They used the instruments of Acemoglu, Johnson, and Robinson (2001) and Frankel and Romer (1999) to instrument institutions and trade openness, respectively, and separately.

Rodrik, Subramanian and Trebbi (2002) find that “the quality of institutions trumps everything else.” However, trade and institutions have positive effects on each other, so that the former affects incomes through the latter. Similarly, geography also affects institutions.

B. Institutions, Policies and Poverty

The literature on determinants of poverty rates and changes (or reductions) in it is much smaller. Dollar and Kraay (2002), in a cross-country study of 92 countries over the last four decades, find that the growth rates of average incomes of people in the bottom quintile are no different from the growth rates of overall per capita incomes, with the former growth always positively associated with the latter. Thus the share of the bottom quintile of the population in overall income is fairly stable. Likewise, policies that promote overall growth advance growth in the incomes of the poor. These policies include trade openness, macroeconomic stability, moderate government size, financial development, and strong property rights and the rule of law.

One difficulty with interpreting the results of Dollar and Kraay is in their measure of poverty being a relative one. Due to their focus on incomes of the bottom quintile, it can be argued that their paper is more directly connected to the issue of inequality rather than absolute poverty per se. As a number of analysts have argued, insofar as developing countries are concerned, it is not so much relative poverty but absolute poverty that needs to be the focus of attention. Cross-country studies on absolute poverty are very limited. Ravallion (2001) studies the relationship between \$1-a-day poverty rates and economic growth. He finds that an increase in per capita income by 1 percent can reduce the proportion of people below the \$1-a-day poverty line by about 2.5 percent on average. This “poverty elasticity” varies across countries, depending on initial inequality. In other words, how close the poor are to the poverty line matters. Ravallion, however, does not examine the links between (absolute) poverty and policies. A recent paper that does so is that of Hasan, Quibria, and Kim (2003). A key finding of this paper is that measures of economic freedom are found to be closely linked to reductions in poverty.³ A measure of political freedom, on the other hand, is not. Economic freedom indicators used by these authors include government size, price stability, freedom to trade with foreigners, and measures of political and civil liberties.

Moving to country-specific empirical work, a notable study is that of Ravallion and Datt (1999) on the determinants of poverty reduction across India’s

³It may be noted that this paper derives estimates of absolute poverty by combining data on the distribution of per capita income (expenditure) with national account data on income (private consumption expenditure). Such an approach has been used by Bhalla (2002) and Sala-I-Martin (2002).

major states between 1960 and 1994. The study shows empirically how initial conditions—and thus initial inequalities—matter. Similar to the findings from cross-country comparisons of poverty–growth linkages, Ravallion and Datt find that the impact of a given amount of growth in nonfarm output on poverty reduction can vary considerably across India’s states. For example, a 1 percent increase in nonagricultural state domestic product leads to a 1.2 percent decline in poverty rates in the states of Kerala and West Bengal versus only 0.3 percent decline in Bihar. The fact that growth of nonfarm output was also relatively meager in Bihar over the period under consideration exacerbated the poverty problem in Bihar.⁴

IV. INSTITUTIONAL AND POLICY CORRELATES OF GROWTH AND POVERTY

This section investigates the institutional and policy correlates of growth and poverty, focusing on elements of institutions and policies that relate to the regulation of the private sector. The variables on the right-hand side fall into two broad categories, namely institutional indicators and policy variables. Thus, the estimating equation for growth is the following:

$$g_i = \alpha_0 + \alpha_1 \cdot y_i + \alpha_2 \cdot INV_i + \beta \cdot Inst_i + \gamma \cdot Policy_i + \varepsilon_i \quad (1)$$

where g_i stands for the average growth rate of per capita income during a decade (1990–1999), y_i stands for the logarithm of initial per capita income (at the beginning of the decade), INV_i stands for the average investment rate (investment as a fraction of overall GDP) for that decade, $Inst_i$ is the decade average vector of institutional variables and $Policy_i$ the vector of policy variables.⁵ The estimating equation for poverty is the following:

⁴Ravallion and Datt explore which factors “explain” this differential impact of nonfarm sector growth on poverty by state. Differences in initial conditions relating to rural development and human resources are found to be a key source of the interstate differential in poverty impacts of nonfarm output. The role played by initial literacy appears especially large. In particular, Ravallion and Datt find that more than half of the differential impact of nonfarm output on poverty rates is attributable to Kerala’s much higher levels of initial literacy. Their results suggest that while the transition from (low-wage) agriculture to (higher wage) nonfarm sectors may be key for the removal of poverty, making the transition is not easy or automatic for the poor. In other words, there are costs to be incurred on the part of a poor agricultural worker to making the transition. These costs are not only pecuniary ones but also nonpecuniary associated with investments in minimum levels of education, nutrition, and health so as to be able to work productively in the nonfarm sector.

⁵The institutional and policy variables can affect the rate of growth through investment and other channels. Therefore, the above regression is run with and without INV as a regressor. This helps somewhat in identifying the investment and noninvestment channels.

$$P_i = b_0 + b_1 \cdot y_i + B \cdot Inst_i + C \cdot Policy_i + v_i \quad (2)$$

where P_i stands for the poverty rate, given by the under-\$2-a-day headcount ratio in 1999 and the other variables as defined earlier.

The institutional variables include a measure of governance—the principle-component aggregate of measures of the rule of law, government efficiency, and corruption. These also include the “meta-institution” of democracy as captured by an index of political freedom. Why do we include a measure of political freedom? There is a strong presumption that the lack of property rights, high regulatory burden, and high levels of corruption, etc., result in high levels of rent-seeking activity and the exploitation of the rest of the society by the elite through the exercise of “public power for private benefit.” Thus the poor could end up getting a very small share of an already small pie. In a democracy, however, it can be dangerous to keep a significant proportion of the population deprived and angry. Alternatively, political freedom could lead to populist policies that could end up reducing economic growth. We therefore look at the impact of political freedom and governance on the incidence of poverty.

Some have argued that institutions are endogenous to growth. Recent literature (Hall and Jones 1999; Rodrik, Subramanian, and Trebbi 2004) argues that it is the income level and not the growth rate that depends on institutions, which in turn also depend on the income level itself. Nevertheless, it is plausible to believe that model specification, sample compositions, and lead and lag effects influence the inference regarding endogeneity, especially in the growth context. As the objectives of this empirical analysis are modest, we do not get into a wide-scale control of endogeneity, such as the one that can be done via instrumental variables estimation or estimation of a system of simultaneous equations. However, using initial per capita income as a control is expected to address part of the endogeneity problem.

The policy variables capture key regulations governing the operations of the private sector. These include measures relating to the ease of starting a business, closing a business, and labor market policies that businesses must abide by. The policy variables also include measures of government size and trade openness. We know that the public sector provides basic infrastructure and social services, and that, at one level, it can have strong complementarities with the private sector. However, too big a government can lead to inefficiency especially if it tries to operate in spheres that are normally meant for the private sector. Also, big governments can be captured by the elite and can promote rent seeking at the cost of real production. Trade, on the other hand, can generate efficiency through gains from specialization and exchange, as well as through the availability of larger varieties of final and intermediate goods. Thus, it can result in enhanced real incomes. While the theoretical foundations for enhanced real income levels through trade are strong, the growth effects are less clear cut. There is a vast and

rich theoretical literature on trade and growth, but the results span the entire spectrum depending on the specifics of the assumptions made. Therefore, this is an empirical question that has received considerable attention recently but for which no conclusive answers have been provided so far.

Further, the size of the public sector and trade openness should also have an impact on poverty. As explained above, the size of the public sector should affect income and growth and thus, for a given distribution of income, have an impact on poverty. Additionally, the size of the public sector can also have an impact on the distribution of income. If the government believes in making society more egalitarian, it will use its machinery to provide social services for the relatively poorer sections of the society. On the other hand, the government can just be an instrument of the elite, which means that an increase in government size will worsen the distribution of income. This relationship between poverty and the share of the government in overall GDP is therefore empirically explored.

International trade can have an impact on poverty through its effects on the overall level of real income, distribution of income, sectoral composition of the economy, relative rewards to different factors of production, and extent of urbanization. Again, trade affects poverty through both growth and distribution. As Bhagwati (2004, 53), focusing on the growth channel writes, "The scientific analysis of the effect of trade on poverty ... has centered on a two-step argument: that trade enhances growth, and that growth reduces poverty." Furthermore, Winters, McCulloch, and McKay (2004) argue that although growth can be unequalizing, it has to be strongly so if it is to increase absolute poverty. This appears to be not the case either in general or for growth associated with freer trade. They argue that it is, in fact, the openness–growth link on which economists differ.

Other channels, according to Winters, McCulloch, and McKay through which trade can affect poverty are through its effects on overall economic stability, the creation and destruction of markets, output prices, wages, and employment. Also, how trade will affect wages of the poor will depend on the nature of factor endowments and comparative advantage. An important factor here is the extent of transitional unemployment caused by trade liberalization that gets concentrated on the poor. Finally, trade liberalization also does have an impact on the poor through its effects on government revenue.

V. DATA

The data set in this study covers over a hundred countries, each with one data point (a decadal average unless otherwise stated) for each variable over the period 1990–1999. Fifteen countries are from developing Asia. The data set covers a number of variables obtained from various sources. Growth is the average of annual percentage changes in real GDP per capita (base year 1995)

within a decade. Initial income is the log real per capita income of 1990. INV is the share of investment (gross capital formation) in GDP; PUB is the share of general government final consumption expenditure in GDP; and trade/GDP is the sum of exports and imports of goods and services measured as a share of gross domestic product. These data were obtained from *World Development Indicators* (World Bank 2003).

Poverty is measured as the proportion of the population living on less than “\$2-a-day” and is primarily obtained from the PovcalNet database of the World Bank.⁶ For a few countries from developing Asia, however, the poverty estimates from PovcalNet were replaced with estimates from *Key Indicators* (ADB 2004). These countries are Cambodia, Lao People’s Democratic Republic (Lao PDR), Malaysia, Nepal, Pakistan, and Viet Nam.⁷ While Chen and Ravallion (2004) describe the PovcalNet data in detail, the following points are useful to keep in mind. First, the PovcalNet database presents two types of poverty estimates: “actual” and “synthetic.” The former pertain to years in which nationally representative household income and/or expenditure surveys were carried out. The latter pertain to poverty estimates derived for common “reference” years.⁸ This study uses poverty estimates from 1990 and 1999 reference years for the 76 developing countries that overlap across the sample and the PovcalNet database. While many of these reference-year estimates may be “synthetic” ones, including these in the analysis allows for a much richer analysis than would otherwise have been possible. Second, the choice of the \$2-a-day poverty line, as opposed to the \$1-a-day poverty line popularly used in the international media, is due to the fact that it conforms better with poverty lines more typical in low-middle-income countries as opposed to low-income countries only. Additionally, using the \$2-a-day poverty line enables the sample size to be increased in a meaningful way. This is because while \$1-a-day poverty estimates exist for many middle-income countries, these estimates can be extremely low (close to 0) thereby reducing the variation in poverty rates in the way that could bias econometric results.

Political freedom is the simple average of the countries’ political rights and civil liberties scores as given in the Freedom House (2003) report. The correlation between political rights and civil liberties is very high, so taking their simple average is expected to measure the overall political freedom in the countries.

This study also utilized a set of institutional variables capturing the state of “governance” obtained from Kaufman et al. (1999). These are measures of rule of

⁶The term \$2-a-day is used for convenience. The actual figure is \$2.15 in 1993 PPP exchange rates for the consumption aggregate.

⁷See ADB (2004) for more details.

⁸Since most countries typically carry out the relevant household surveys every 3–5 years, it will be common to find that a survey is not carried out in one of the reference years. In all such cases, poverty estimates are obtained for reference years using the extrapolation methods of Chen and Ravallion (2004).

law, government efficiency, and control of corruption. While these variables are used individually in the regressions, they are also used in terms of their principal components aggregation, and the results are reported with this variable. Additionally, because these data are available from 1996 onward, only the 1996 values are used, and in this way, the scope for reverse causation is limited.

A set of “Doing Business” variables obtained from World Bank (2004a) is used. While there are five broad categories (entry regulations, labor regulations, contract enforcement, getting credit, and closing business) to measure business regulations, with several criteria within each category, some single measures are used. These are for the categories of entry regulations, closing business categories, and labor regulations, to capture the business environment, believing that the other categories are generally covered by the other governance variables. The original sources for these data are Djankov et al. (2002) and Djankov et al. (2003), respectively, for entry/starting a business and closing a business, and labor market regulations. In particular, for entry regulations, the number of procedures for starting a business, cost of starting a business (as a percent of income per capita), and time/duration taken for starting a business (in days) are used. As in the case of Kaufman et al. variables, these single indicators were used as well as with their principal components aggregation. Regarding closing a business, the cost of closing a business (as a percent of the value of the estate) and time required for closing a business (in years) were used as both single and aggregated indicators. For labor market regulations, indexes of regulatory difficulties associated with hiring workers and firing workers (the values of both indexes ranging from 0 to 100), and costs of firing workers (in terms of weekly wages) were employed.⁹ Lastly, these various Doing Business indicators were aggregated using principal components to obtain aggregated Doing Business variables, and the results are also reported with these variables. The Doing Business variables—whether in aggregated form or in terms of their individual values—are again treated as belonging to the 1990s.

⁹The difficulty of hiring index measures whether term contracts can only be used for temporary tasks, the maximum duration of term contracts, and the ratio of the mandated minimum wage to the average value added per working population. The difficulty of firing index is composed of various components that include whether regulations allow dismissal on the basis of worker redundancy, whether the firing of redundant workers requires notification of labor union or labor ministry, whether their approval is required, etc. The cost of firing indicator measures the cost of advance notice requirements, severance payments, and penalties that may arise when firing a worker. All of these costs are totaled and expressed in terms of weekly wages. See *Doing Business in 2005* (World Bank 2004a) for more details.

VI. RESULTS

A. Summary Statistics and Broad Regional/Country Comparisons

Tables 1 to 3 present summary statistics on the variables of interest in this paper. While Table 1 presents mean values by region for all but the Doing Business variables, Tables 2 and 3 present country-specific values for all variables pertinent to this paper's analysis, including the Doing Business variables for not only the developing member countries (DMCs) of the Asian Development Bank but also other countries, developing and developed, to serve as points of comparison.

Consider first the region-specific averages presented in Table 1. The DMCs are grouped into three categories:

- (i) DMC South Asia (Bangladesh, India, Nepal, and Pakistan)
- (ii) DMC East and Southeast Asia (ESA 3) (Singapore; Republic of Korea; Taipei, China)
- (iii) DMC East and Southeast Asia (ESA 7) (Cambodia, People's Republic of China, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam)

The first three columns of Table 1 reveal that as of 1990 the highest poverty rates existed in South Asia, sub-Saharan Africa, and DMC ESA 7. As for changes in poverty, the largest declines took place in DMC ESA 7. South Asia also saw reasonable declines in poverty; however, this record is rendered a bit suspect due to the case of Pakistan for which national estimates of poverty reveal poverty to have increased slightly over the 1990s (see ADB 2004 for more details). In contrast, declines in poverty were on average meager for sub-Saharan Africa.

The experiences with poverty reduction follow closely the experiences with economic growth. Thus, the large declines in poverty experienced by ESA 7 have been accompanied by high growth of per capita incomes—on average 4% per annum. Similarly, sub-Saharan Africa's meager reduction in poverty has been accompanied by a slight contraction of its economy over the 1990s. A clear outlier in this general pattern is the Middle East and North Africa region. In this region, despite positive though low economic growth, poverty rates increased by 5 percentage points over the 1990s.

High growth in the ESA region has itself been accompanied by a high share of investment in GDP, low shares of government consumption expenditures in GDP, and a high degree of international integration whether measured in terms of trade shares or in terms of the Sachs-Warner index of openness updated by Wacziarg and Welch (2003), or SWWH. By comparison, investment rates have been significantly lower in South Asia and the degree of international integration

has been quite a bit less. Indeed, South Asia is less integrated than any other developing region in the world including sub-Saharan Africa. However, the share of government expenditures has been comparable to that of ESA.

South Asia also performs poorly on the measure of governance (where lower values reflect worse governance). Only sub-Saharan Africa comes up with a poorer level of governance. On political freedom, however, South Asia does not perform too badly. In terms of the index of political freedom, whereby lower values reflect more political freedom, South Asia is found to have on average greater political freedom than ESA 7, sub-Saharan Africa, and Middle East and North Africa.

In summary, region-specific averages indicate that among developing regions where poverty is still a significant problem, ESA 7 has done the best job in reducing poverty. It has had the highest rates of economic growth, the highest rates of investment, and been quite open to trade. In terms of governance, however, its performance has been average, while on political freedom it ranks low. At the same time, it should not be forgotten that poverty rates in ESA continued to be far higher than in three other major developing regions: Latin America, Middle East and North Africa, and Eastern Europe.

Since region-specific averages can mask important differences across countries we now turn to an examination of country-specific values taken by the variables of interest in this paper including those pertaining to business regulation. An examination of changes in poverty by country, shown in column 3 of Table 2, reveals, for example, that while Latin America's performance in reducing poverty may have been lackluster on average over the 1990s, some individual Latin American countries did quite well in reducing poverty. For example, Mexico reduced poverty rates by 20 percentage points over the 1990s. This performance is comparable to the poverty reduction record of the PRC and Viet Nam. In contrast, the examination of changes in poverty in major African countries reveals that their performance has been much worse than that of the average country in that region. Similarly, it can be seen that ESA 7's high investment shares are driven mainly by the extraordinarily high values registered by PRC, Malaysia, Thailand, and Indonesia. Philippines, Viet Nam, and especially Cambodia on the other hand are marked by investment shares that are much lower than the average for this region. On governance, although South Asia registers a weak score, disaggregating the numbers by country shows that the weak score is driven to a large degree by the very low scores for Bangladesh and Pakistan.

Table 1. Summary Statistics by Region

Region	Initial Poverty Rate, 1990 (%)	Final Poverty Rate, 1999 (%)	Change in Poverty, 1990–1999 (percentage points)	Per Capita Income Growth, 1990–1999 (%)	Initial Per Capita Income, 1990 (1995 US\$)	Average Investment Share, 1990s (% of GDP)	Average Government Expenditure, 1990s (% of GDP)	Average Trade Share, 1990s (% of GDP)	SWWH Index, 1990s	Governance Index, 1996	Political Freedom Index, 1990s
DMC South Asia	76.8	68.9	–7.9	2.9	370.8	21.8	9.4	42.2	0.4	–1.0	3.7
DMC East and Southeast Asia 7	60.5	48.0	–12.5	4.0	1,110.0	28.6	10.0	83.2	0.8	–0.6	5.2
DMC East and Southeast Asia 3	n.a.	n.a.	n.a.	4.4	11,527.4	31.5	11.8	161.0	1.0	1.9	3.3
Eastern Europe	4.8	9.6	4.8	–1.0	4,152.7	23.5	17.6	84.7	0.7	–0.3	2.6
Latin America	30.7	29.1	–2.9	1.6	3,244.2	21.8	12.6	77.0	0.9	–0.7	2.6
Middle East and North Africa	17.0	22.3	5.3	1.6	4,850.1	23.1	20.5	85.3	0.6	–0.2	5.3
Sub-Saharan Africa	73.2	71.9	–1.1	–0.1	771.1	18.9	14.2	64.6	0.5	–1.3	4.6
Developed	n.a.	n.a.	n.a.	2.1	24,243.4	21.6	20.0	77.7	0.9	2.6	1.1

n.a. means not applicable or not available; SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

Table 2. Summary Statistics by Economy

Economy	Initial Poverty Rate, 1990 (%)	Final Poverty Rate, 1999 (%)	Change in Poverty, 1990–1999 (percentage points)	Per Capita Income Growth, 1990–1999 (%)	Initial Per Capita Income, 1990 (1995 US\$)	Average Investment Share, 1990s (% of GDP)	Average Government Expenditure, 1990s (% of GDP)	Average Trade Share, 1990s (% of GDP)	SWWH Index, 1990s	Governance Index, 1996	Political Freedom Index, 1990s
Bangladesh	85.5	79.6	–5.9	3.0	278.2	19.1	4.5	25.7	0.4	–1.4	3.2
Cambodia	84.3	77.7	–6.6	1.7	239.6	15.8	8.5	55.4	n.a.	–1.9	5.9
PRC	71.5	50.0	–21.5	8.5	350.3	38.4	12.4	39.7	0.0	–0.5	6.9
India	86.1	80.8	–5.3	3.7	323.9	23.1	11.4	23.0	0.0	–0.6	3.3
Indonesia	70.9	55.4	–15.5	3.3	776.7	27.6	7.8	57.6	1.0	–0.8	5.7
Malaysia	11.4	9.6	–1.8	4.6	3104.0	36.3	12.1	178.1	1.0	1.0	4.6
Nepal	83.8	75.7	–8.1	2.4	188.0	22.9	8.8	50.0	0.9	–0.9	3.4
Pakistan	87.9	77.2	–10.7	1.4	448.2	18.7	12.5	36.4	0.0	–1.4	4.5
Philippines	54.9	48.1	–6.9	0.5	1090.9	22.4	11.3	82.4	1.0	–0.6	2.9
Singapore	n.a.	n.a.	n.a.	4.6	17620.4	35.5	9.5	328.6	1.0	3.6	4.7
Republic of Korea	n.a.	n.a.	n.a.	5.2	7967.4	34.4	10.4	64.5	1.0	0.8	2.2
Sri Lanka	40.6	31.3	–9.3	4.0	615.9	24.9	9.9	75.9	0.9	–0.5	4.2
Taipei, China	n.a.	n.a.	n.a.	3.5	8994.3	24.6	15.4	90.0	1.0	1.4	2.9
Thailand	43.3	31.6	–11.7	4.2	1997.1	36.3	10.1	87.1	1.0	0.0	3.4
Viet Nam	87.4	63.6	–23.8	5.5	211.2	23.5	8.1	82.5	n.a.	–1.1	7.0

continued.

Table 2. Summary Statistics by Economy. *continued.*

Economy	Initial Poverty Rate, 1990 (%)	Final Poverty Rate, 1999 (%)	Change in Poverty, 1990–1999 (percentage points)	Per Capita Income Growth, 1990–1999 (%)	Initial Per Capita Income, 1990 (1995 US\$)	Average Investment Share, 1990s (% of GDP)	Average Government Expenditure, 1990s (% of GDP)	Average Trade Share, 1990s (% of GDP)	SWWH Index, 1990s	Governance Index, 1996	Political Freedom Index, 1990s
Latin America											
Argentina	n.a.	n.a.	n.a.	3.2	5775.8	17.8	10.0	18.7	0.9	–0.1	2.5
Brazil	32.3	23.7	–8.6	0.4	4079.1	20.8	18.4	18.0	0.9	–0.7	3.1
Chile	24.8	9.4	–15.4	4.9	3282.6	25.1	10.2	59.1	1.0	1.8	2.1
Mexico	43.6	23.5	–20.1	1.7	3187.2	22.9	10.1	49.0	1.0	–0.8	3.8
Africa											
Botswana	55.7	48.1	–7.6	2.2	3067.7	29.4	27.3	94.0	1.0	0.5	2.0
Ethiopia	83.7	77.8	–6.0	1.2	100.3	14.4	13.5	30.6	0.4	–1.4	5.1
Ghana	74.3	78.5	4.2	1.6	345.9	20.7	12.5	62.7	1.0	–0.8	4.2
Kenya	61.2	64.9	3.8	–0.5	358.0	16.7	16.4	64.1	0.7	–1.8	5.8
Nigeria	86.6	91.2	4.7	0.2	258.5	19.8	12.9	79.8	0.0	–2.5	5.5
South Africa	31.8	33.5	1.7	–0.6	4112.6	14.6	19.6	44.3	0.9	0.4	2.8
Developed Countries											
France	n.a.	n.a.	n.a.	1.4	25966.7	19.8	23.6	44.6	1.0	2.4	1.5
Italy	n.a.	n.a.	n.a.	1.3	18160.6	19.7	19.0	44.4	1.0	0.9	1.5
Japan	n.a.	n.a.	n.a.	1.4	39955.4	29.2	14.6	18.2	1.0	2.0	1.6
United Kingdom	n.a.	n.a.	n.a.	1.9	18072.1	17.2	19.6	53.4	1.0	3.1	1.5
United States	n.a.	n.a.	n.a.	1.8	26140.6	18.2	15.6	22.5	1.0	2.8	1.0

n.a. means not applicable or not available; SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

Turning now to the Doing Business measures of business regulation, what is interesting to note is the wide variance in the values taken by the various business regulation variables across the countries. Singapore is found to have the least cumbersome regulations governing entry and exit of businesses and labor issues in Asia. Singapore's regulations even compare favorably with the most developed countries in the world. By contrast, starting a business in Cambodia, India, and Indonesia is found to entail far more time; the relative costs for starting to business are also far higher, especially in Cambodia and Indonesia. Similarly, while it takes less than a year to close a business in Singapore it takes as long as 10 years to do so in India! This can represent a considerable wastage of capital—both physical as well as entrepreneurial—as the capital waits to get redeployed from a failing business to an alternative one. Next, while three countries in the region have few restrictions on the hiring of workers (for example, they do not disallow the usage of fixed term contracts for particular types of tasks) a number of other economies in the region, including Indonesia; Pakistan; Taipei, China; and Thailand put considerable restrictions on the types of contracts that can be used to hire workers. Interestingly, virtually every country, with the notable exception of Singapore from developing Asia, puts in place restrictions on firing workers. These restrictions are especially severe in India and Nepal followed by Indonesia, Sri Lanka, and Viet Nam. Finally, while firing workers entails a cost of four weeks of wages for firms in Singapore, this can be as high as 157 weeks in the case of Indonesia and 108 weeks in the case of Sri Lanka.

In what follows, growth and poverty regressions are run involving the various variables discussed above including business regulation variables provided in the Doing Business database. In this way it can be determined whether and how these variables are related to economic growth and poverty.

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Table 3. **Business Regulations by Economy**

Region	Start- Procedures (numbers)	Start- Time (days)	Start-Cost (percent of income per capita)	Close Time (years)	Close- Cost (percent of estate)	Labor- hiring Index (0–100)	Labor- firing Index (0–100)	Firing Cost (weeks)
Asia and the Pacific Region								
Bangladesh	8.0	35.0	91.0	4.0	8.0	11	20	47
Cambodia	11.0	94.0	480.1	n.a.	n.a.	33	30	39
PRC	12.0	41.0	14.5	2.4	18.0	11	40	90
India	11.0	89.0	49.5	10.0	8.0	33	90	79
Indonesia	12.0	151.0	130.7	6.0	18.0	61	70	157
Malaysia	9.0	30.0	25.1	2.3	18.0	0	10	74
Nepal	7.0	21.0	74.1	5.0	8.0	22	90	90
Pakistan	11.0	24.0	36.0	2.8	4.0	78	30	90
Philippines	11.0	50.0	19.5	5.6	38.0	22	40	90
Singapore	7.0	8.0	1.2	0.8	1.0	0	0	4
Republic of Korea	12.0	22.0	17.7	1.5	4.0	11	30	90
Sri Lanka	8.0	50.0	10.7	2.2	18.0	0	80	108
Taipei, China	8.0	48.0	6.3	0.8	4.0	61	30	90
Thailand	8.0	33.0	6.7	2.6	38.0	67	20	47
Viet Nam	11.0	56.0	28.6	5.5	18.0	44	70	98
Latin America								
Argentina	15.0	32.0	15.7	2.8	18.0	44	30	94
Brazil	17.0	155.0	11.7	10.0	8.0	67	70	165
Chile	9.0	27.0	10.0	5.6	18.0	17	20	51
Mexico	8.0	58.0	16.7	1.8	18.0	67	90	83
Africa								
Botswana	11.0	108.0	11.3	2.2	18.0	0	40	19
Ethiopia	7.0	32.0	77.4	2.4	8.0	50	20	48
Ghana	12.0	85.0	87.5	1.9	18.0	11	50	25
Kenya	12.0	47.0	53.4	4.5	18.0	22	30	47
Nigeria	10.0	44.0	95.2	1.5	18.0	22	30	13
South Africa	9.0	38.0	9.1	2.0	18.0	56	60	38
Developed Countries								
France	7.0	8.0	1.1	1.9	8.0	78	40	32
Italy	9.0	13.0	16.2	1.2	18.0	61	30	47
Japan	11.0	31.0	10.6	0.5	4.0	33	0	21
United Kingdom	6.0	18.0	0.9	1.0	6.0	11	10	25
United States	5.0	5.0	0.6	3.0	8.0	0	10	8

n.a. means not applicable or not available.

Source: World Bank (2004a).

B. Growth Regressions

Tables 4–7 present the results of the growth regressions. In Table 4 the Doing Business variables enter the regression equation expressed as principal components. In contrast, in Tables 5 and 6 they appear in terms of the actual values taken by the individual regulatory measures, for example, as numbers of procedures, duration or time, and costs of starting a business, etc. While Table 5 only introduces measures of governance, political freedom, and the Doing Business measures as explanatory variables, Table 6 also introduces measures of openness and the size of public sector as elements of the overall, economywide policy setup. Initial income is included in every regression equation.¹⁰

Consider first the effect of governance on growth. As noted earlier, the variable governance is the principal component aggregation of the rule of law, government efficiency, and corruption variables of Kaufman et al. As is clearly seen in all tables, regardless of the controls used, governance is strongly significant at the 1 percent level with a robust positive sign. What is its quantitative impact on growth? Consider the first column of Table 4 where the coefficient of governance is 1.37. This implies that, holding all else constant, an improvement in governance from the value registered by Cambodia (the lowest in Asia) to the value registered by Singapore (not only the best in Asia but the best in the world) would lead to a 7.5 percentage point increase in the growth rate. This is clearly a dramatic effect. On the other hand, political freedom is mostly insignificant across specifications. In the few instances in which political freedom enters significantly, it shows up with a positive sign. Since larger values of political freedom imply a more authoritarian regime, this suggests that controlling for initial income, governance, and other variables, greater political freedom has been weakly associated with lower economic growth. This would be consistent with recent work that has stressed the importance of good governance as distinct from political freedom being critical for driving economic growth (Glaeser et al. 2004).

As noted above, the Doing Business variables are introduced into the growth regressions in terms of two broad approaches. One approach aggregates individual variables in various combinations using principal component analysis. First, the individual measures of business regulation relating to starting and closing a business and labor issues are aggregated with the principal component

¹⁰From all these tables, it can be seen that there is some evidence of conditional convergence, depending on the controls used. In other words, in some cases the logarithm of the initial per capita income has a negative sign and is significant. The evidence is not so strong as the sample consists of only the time period 1990–1999 (due to institutional data availability). The Asian financial crisis took place toward the end of this period and may have interfered with convergence effects among countries.

method using the various individual measures in different combinations. Higher values of the principal component variables reflect more cumbersome regulations. Table 4 describes these results. “Doing Business–1” is the principal component aggregation of the number of procedures, costs, and time for starting a business; and the costs and time required for closing a business. The most notable result is that this “super-aggregated” variable is estimated with a negative and significant (at 10 percent) coefficient when governance is not in the regression; but in the presence of governance the coefficient becomes insignificant. Exactly the same result holds for “Doing Business–2”, which also includes in the principal component aggregation of “Doing Business–1”, indexes of difficulties in hiring and firing workers and a measure of the monetary costs of firing workers.¹¹

A second approach to introducing the Doing Business variables is to use the actual values taken by the various measures of regulation. It is useful to recall that as the values of these variables rise, regulations become more cumbersome. The key findings, reported in Tables 5 and 6, are as follows. Most notably, starting cost is robustly significant at the 1 percent level with a negative sign, both with and without the governance and the political freedom variables in the regressions. The coefficient is estimated consistently to be around -0.005 . This implies that holding all else constant, a decline in starting costs from the levels recorded for Cambodia (by far the highest in Asia) to those recorded for the United States (among the lowest in the world) would lead to a 2.4 percentage point increase in growth rates. Starting procedures, however, has unexpectedly a positive and significant (at 10 percent) sign in one case (Table 5 column 2) so that an increase in starting procedures is associated with an increase in growth rates. However, the impact of this variable is not very robust. When government expenditure and openness are controlled for (as in Table 6), the impact of starting procedures turns to be insignificant. Starting time is in all cases estimated as insignificant.

¹¹A less aggregated approach was also used for constructing principal component variables, but these results are not reported. “Start” is the principal component aggregation of the number of procedures, costs, and time needed for starting a business; “close” is the principal component aggregation of the costs and time required for closing a business; and “labor” is the principal component aggregation of indexes of difficulties in hiring and firing workers and the costs associated with firing workers. These variables are employed both separately and jointly in the regressions. All of them are estimated to be insignificant in the regressions, except one case of “close” where it is employed individually and the controls are initial income, government expenditure, and share of trade in GDP. In this case, it has a negative sign significant at the 10 percent level. In other words, regulations that make it more difficult to close a business are associated with lower growth. See Hasan, Mitra, and Ulubasoglu (2006) for details.

Table 4. **Growth, Institutions, and Policies I**

Dependent Variable: Per Capita Income Growth												
	1	2	3	4	5	6	7	8	9	10	11	12
Initial Income	-1.073 (4.06)***	0.080 (0.49)	0.009 (0.07)	-0.008 (0.06)	-0.925 (3.66)***	0.184 (1.15)	0.138 (0.97)	0.127 (0.88)	-0.859 (3.22)***	0.168 (0.76)	0.015 (0.09)	-0.017 (0.10)
Government Expenditure					-0.141 (3.76)***	-0.111 (2.98)***	-0.116 (3.16)***	-0.123 (3.30)***	-0.150 (3.36)***	-0.083 (1.92)*	-0.094 (2.17)**	-0.102 (2.37)**
Trade Share					0.007 (1.53)	0.011 (2.88)***	0.006 (1.56)	0.004 (0.97)				
SWWH									0.317 (0.44)	1.634 (2.21)**	1.562 (1.77)*	1.570 (1.81)*
Governance	1.371 (5.27)***				1.437 (5.33)***				1.415 (5.15)***			
Political Freedom		-0.224 (1.07)				-0.252 (1.23)				-0.124 (0.47)		
Doing Business-1			-0.318 (1.86)*				-0.366 (2.08)**				-0.298 (1.74)*	
Doing Business-2				-0.300 (1.71)*				-0.370 (1.94)*				-0.333 (1.93)*
Constant	9.613 (4.70)***	1.259 (0.71)	1.103 (0.97)	1.239 (1.08)	10.140 (4.70)***	1.482 (0.86)	1.491 (1.26)	1.828 (1.42)	9.955 (4.24)***	0.310 (0.13)	1.319 (1.16)	1.696 (1.45)
Observations	116	131	112	112	115	130	112	112	108	120	106	106
Adjusted R-squared	0.24	0.02	0.02	0.03	0.31	0.08	0.06	0.07	0.30	0.11	0.11	0.12

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.
 SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

Table 5. Growth, Institutions, and Policies II

Dependent Variable: Per Capita Income Growth						
	1	2	3	4	5	6
Initial Income	-0.099 (0.69)	-1.397 (5.43)***	0.105 (0.85)	-1.185 (4.52)***	0.114 (0.96)	-1.203 (4.26)***
Governance		1.919 (6.44)***		1.618 (5.41)***		1.662 (5.51)***
Political Freedom		0.306 (1.88)*		0.228 (1.30)		0.228 (1.37)
Start-Procedures	-0.070 (0.77)	0.167 (1.96)*				
Start-Time	0.005 (0.58)	0.008 (1.16)				
Start-Cost	-0.006 (5.46)***	-0.006 (7.23)***				
Close-Time			-0.041 (0.37)	0.020 (0.19)		
Close-Cost			-0.023 (1.42)	0.010 (0.38)		
Labor - Hiring					-0.016 (2.15)**	-0.001 (0.12)
Labor - Firing					-0.011 (0.97)	-0.015 (1.41)
Labor - Cost					0.009 (1.38)	0.014 (1.95)*
Constant	2.809 (1.75)*	9.429 (4.53)***	0.841 (0.69)	9.473 (4.67)***	0.750 (0.64)	9.520 (4.27)***
Observations	115	105	112	103	115	105
Adjusted R-squared	0.10	0.41	0.00	0.27	0.04	0.30

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.

Table 6. Growth, Institutions, and Policies III

Dependent Variable: Per Capita Income Growth												
	1	2	3	4	5	6	7	8	9	10	11	12
Initial Income	0.034 (0.24)	-1.243 (4.98)***	0.239 (1.75)*	-1.055 (4.30)***	0.240 (1.91)*	-1.050 (3.89)***	-0.088 (0.51)	-1.135 (4.35)***	0.096 (0.62)	-0.951 (3.58)***	0.068 (0.41)	-0.914 (3.28)***
Government Expenditure	-0.120 (3.03)***	-0.136 (3.68)***	-0.111 (3.05)***	-0.150 (3.85)***	-0.094 (2.49)**	-0.123 (3.09)***	-0.096 (2.16)**	-0.130 (3.05)***	-0.083 (1.93)*	-0.150 (3.34)***	-0.069 (1.62)	-0.118 (2.66)***
Trade Share	0.005 (1.27)	-0.002 (0.40)	0.007 (1.79)*	-0.001 (0.22)	0.005 (1.06)	-0.001 (0.11)						
SWWH							1.461 (1.73)*	0.706 (0.95)	1.598 (1.76)*	0.921 (1.17)	1.652 (1.89)*	0.990 (1.20)
Governance		1.984 (6.58)***		1.757 (5.82)***		1.731 (5.67)***		1.843 (6.06)***		1.627 (5.42)***		1.553 (5.04)***
Political Freedom		0.322 (1.95)*		0.225 (1.23)		0.243 (1.37)		0.393 (1.94)*		0.296 (1.44)		0.337 (1.57)
Start-Procedures	-0.105 (1.11)	0.126 (1.50)					-0.093 (1.02)	0.118 (1.30)				
Start-Time	0.005 (0.60)	0.007 (1.11)					0.005 (0.63)	0.007 (1.09)				
Start-Cost	-0.006 (5.73)***	-0.006 (8.37)***					-0.006 (4.91)***	-0.006 (7.29)***				
Close-Time			-0.029 (0.25)	0.026 (0.26)					-0.037 (0.29)	0.027 (0.26)		
Close-Cost			-0.027 (1.65)	0.005 (0.17)					-0.017 (1.02)	0.011 (0.37)		
Labor - Hiring					-0.016 (2.02)**	-0.001 (0.14)					-0.018 (2.36)**	-0.003 (0.45)
Labor - Firing					-0.008 (0.72)	-0.010 (1.11)					-0.007 (0.67)	-0.010 (1.09)
Labor - Cost					0.006 (0.83)	0.009 (1.12)					0.007 (0.90)	0.008 (1.09)

Constant	3.601 (2.12)**	10.824 (4.92)***	1.049 (0.82)	10.918 (5.22)***	0.935 (0.67)	10.389 (4.50)***	3.298 (1.95)*	9.115 (3.89)***	0.886 (0.71)	9.020 (3.86)***	1.016 (0.84)	8.257 (3.40)***
Observations	115	105	112	103	115	105	108	100	106	99	108	100
Adjusted R-squared	0.15	0.48	0.04	0.35	0.06	0.34	0.19	0.48	0.09	0.36	0.13	0.35

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.
SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

Table 7. **Growth, Institutions, and Policies IV**[illegible]

							(0.86)	(1.58)
Investment Share	0.121	0.122	0.104	0.075	0.128	0.120	0.119	0.136
	(2.57)**	(2.65)***	(2.94)***	(1.91)*	(3.43)***	(2.53)**	(3.13)***	(3.01)***
Constant	7.927	8.087	1.193	8.152	-1.651	7.718	-1.120	7.227
	(3.32)***	(3.31)***	(0.69)	(3.41)***	(1.32)	(3.10)***	(0.86)	(3.04)***
Observations	99	99	108	100	106	99	108	100
Adjusted R-squared	0.43	0.43	0.25	0.50	0.20	0.42	0.22	0.44

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.

SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

Closing time and closing costs are estimated insignificant in all cases as well. However, firing costs have the same result as starting procedures: a positive and significant (at 10 percent) sign in one case (Table 5 column 6) so that the higher the firing costs, the higher the growth. But again, when government expenditure and trade policy are controlled for, this sign turns to be insignificant (as in Table 6).

Cumbersome labor hiring regulations have a negative and significant impact (at the 5 percent level) on growth in the absence of the governance and political freedom variables as controls.¹² The coefficient on labor hiring implies that, holding all else constant, moving from the level of difficulties in hiring regulations seen in Pakistan (the most difficult in Asia) to those in Singapore or Sri Lanka (the least difficult) would lead to an increase in growth of about 1.25–1.4 percentage points. Interestingly, difficulties in firing labor always appear with a negative sign, implying that the greater regulatory barriers to firing workers are associated with lower economic growth. However, the effect is typically found to have an insignificant impact on growth, the exception being when governance, political freedom, and investment variables are jointly controlled for in the regression (Table 7 column 8). In this case regulatory restrictions on firing workers have a negative and significant coefficient at 10 percent.

The results with the Doing Business variables imply that there is some evidence that private sector regulations have an impact on growth. But the results also suggest that it is not individual components of the set of regulations but the overall package that is more important. In other words, there could be several alternative combinations of various regulations that might result in a given growth rate, and this results in the significance of the overall index and not the individual components. Also, it is only through better governance that better packages of regulations can be delivered, and therefore controlling for the former takes away the effect of the latter.

From the regressions, it cannot really be said that openness as measured by the share of trade in GDP has any systematic effect on the growth rate of an economy. In most of the regressions, this variable is insignificant. The impact of openness, however, is often positive using the SWWH index of openness (Tables 6 and 7). When the SWWH index is significant, the coefficient is estimated to be between 1.5–1.7. This implies that completely open regimes—such as that of Singapore (SWWH index = 1)—have, on average, growth rates that are 1.5–1.7 percentage points higher than those of closed regimes such as that of India (SWWH index = 0). However, interestingly, the significance of SWWH is conditional upon the absence of the governance variable in the regression. There

¹²This suggests that the influence of labor hiring on growth works through these variables.

are two possible reasons for this conditional significance of the SWWH dummy. Firstly, the opening of the trade regime, as shown by the SWWH dummy, captures more than trade liberalization; it involves a higher scale policy reform and institutional changes.¹³ Secondly, the governance variable itself could capture trade policy if good trade policy itself is an integral part of good governance. A possible implication of this conditional significance of the trade policy variable is that all well-governed economies are open to trade but not all open economies are well governed; and that openness, in the absence of good governance, is irrelevant for economic growth.

Lastly, we consider the size of public sector, as measured by the share of government expenditure in GDP, and trade policy variables. In almost all the growth regressions, government expenditure is negative and significant. This means that the larger the size of the public sector relative to the overall economy, the lower is the growth rate. While the public sector provides infrastructure essential to the proper functioning of the private sector, an increase in its size could also portend a reduction in the more dynamic component of the economy, namely the private sector. Also, the public sector may breed corruption and inefficiency, and increase the incentives for unproductive activities such as lobbying. It is evident from the regressions that a percentage point increase in the share of the public sector is generally associated with a 0.1–0.15 percentage point reduction in the growth rate.

As one can see, the regressions, except the ones presented in Table 7, do not include INV (investment as a share of GDP) as a right-hand side variable. The reason is that the institutional, policy, and governance variables may affect growth through their effect on investment as well as independently of it. In the former case, the parameter estimates of the policy and institutional variables are allowed to capture their full role in the determination of growth through all possible mechanisms. But as can be clearly seen in Table 7, there is no drastic change in the impact of policy and institutional variable on growth when INV is controlled for in the regressions as compared to the results reported in Table 6. The results for government expenditure, SWWH, governance, and starting costs are qualitatively the same. There are only three changes over previous results. First, although countries that lack political freedom continue to tend toward having higher growth rates, this effect is not statistically significant in any specification. Similarly, restrictions on hiring workers now do not show up with a significant negative impact on growth. Both suggest that the impact of these variables on growth work through their (positive) effect on investment rates. Interestingly, however, there is some evidence now that restrictions on labor firing can have a negative and significant impact on growth (column 8). The

¹³Rodriguez and Rodrik (2001) note that the SW dummy is a better measure of institutional change than as a trade policy indicator.

coefficient of -0.014 implies that holding all else constant, moving from a regime such as that of India as (difficulty of firing worker index = 90) to that of Singapore (index equal 0) would add 1.26 percentage points to growth rates.

As for the impact of investment on growth, as can be seen from examining Table 7 investment has a positive and robust effect on growth. This is consistent with the old Harrod-Domar type as well as Mahalanobis type growth models. It is also consistent with the prediction of recent endogenous growth theories. Additionally, Easterly and Levine (1997) find that among nearly 50 variables considered in growth regressions, the most robust effect is that of investment. A high rate of investment helps build up the economy's future capacity to produce, and hence results in higher growth. From the regressions reported in Table 7, a 15 percentage point increase in the investment rate—the difference in investment rates across India and PRC—can bring about a 1.2–2.1 percentage point increase in the growth rate depending on the particular specification employed.

In sum, a fair amount of the cross-country differences in growth can be explained by differences in governance quality, investment, and size of the public sector. Since good governance should lead to good policies, and good (bad) policies are not readily observed when the quality of governance is poor (good), policies do not exhibit an independent impact on growth. Additionally, policies will be effective for growth as long as the institutional framework allows them to do so. However, investment and public sector size do seem to matter for growth independently of institutions, as they may not entirely be a function of the nature, quality, and style of governance. While savings, and therefore investment rates, also depend on rates of time preference and intergenerational altruism of households, the size of the public sector depends on the government's inequality aversion and its concern for unemployment reduction. In other words, it is possible to have good governments both to the left and right of center, and they may resolve the equity–efficiency trade-offs in different ways.

C. Poverty Regressions

Tables 8 through 10 are the poverty regressions. Table 8 includes as regressors only institutional variables (governance and political freedom) and the Doing Business variables introduced in terms of the two approaches noted above (that is, in terms of various principal component aggregations as well as values taken up by the individual measures). Table 9 introduces the share of government expenditure as well as trade shares as a measure of openness, while Table 10 uses the SWWH index as a measure of openness in place of trade shares. Initial income is included in all specifications.¹⁴

¹⁴As can be seen, a higher initial per capita income is negatively correlated with the poverty rate. A 1 percent increase in the initial per capita income can lead to a reduction in the

A notable result and one that is very different from the growth regressions above is that the poverty regressions mostly fail to produce significant estimates for the governance variable. However, it should be mentioned that the sign of the governance variable is always negative, indicating that better governance has been associated with lower poverty levels. Moreover, in the one case where governance does show up with a statistically significant impact—the case where government expenditure, trade policy as measured by the SWWH index, and closing time and costs are jointly controlled for (Table 10)—the “economic” impact of governance can be very large. The size of the estimated coefficient on governance implies that India’s poverty rate would be 18.9 percentage points lower if its governance was as good as that of Singapore (that is, a value of 3.6 rather than -0.6 for measure of governance) while holding all else constant. As for political freedom, this variable is estimated to be insignificant in all cases, a case generally in concurrence with the growth regressions.

Interestingly, “Doing Business–1” is estimated to be significant in all cases at levels varying between 5–10 percent. The average of the coefficient is 3.4. “Doing Business–2”, however, is estimated as insignificant in all regressions. Recall that this variable includes “start”, “close” and “labor” in its aggregation, suggesting that something regarding the labor regulations is working against the Doing Business–1 variable. This can be confirmed by examining the business regulation variables on a more disaggregated basis. Indeed, as suggested by column 7 of Table 8, which reports the results from principal component aggregations of Doing Business variables by separate “start”, “close”, and “labor” groupings, the significant impact of Doing Business–1 on poverty is driven by regulations having to do with starting businesses. Regulations associated with closing businesses also matter in the same direction, that is, an increase in regulations is associated with greater poverty, albeit not significantly so. However, increased regulations relating to labor are associated with lower poverty (though not significantly so).

To get a better sense of which specific types of regulations affect poverty, the remainder of the results that are based on including the Doing Business variables are inspected in terms of the values taken by individual measures of regulation. Starting costs are estimated to have a robust adverse impact on poverty in all cases, significant at 1 percent level (Table 8 column 8; Tables 9 and 10 columns 3 and 4). The coefficient centers on 0.055. To get a sense of the quantitative impact of this variable on poverty we can note that a reduction in starting costs from the levels registered in Cambodia (by far the highest in Asia and perhaps the world) to levels registered in the United States would, holding all else constant, lead to a decline in poverty rates of 26.4 percentage points. Taking

poverty rate from anywhere between 20 and 23 percentage points. While these are pretty extreme numbers, they are a reflection of a significant bunching of large groups of the population around the \$2-a-day poverty line.

less extreme values, a reduction in starting costs from the levels registered in Indonesia to levels registered by its Southeast Asian neighbor, Thailand, would lead to a reduction in poverty rates of 6.8 percentage points. Clearly, this is not a trivial decline. In contrast to starting costs, starting procedures and starting time are estimated to be insignificant in affecting poverty.

As for closing regulations, while the estimate for closing time is always insignificant, closing cost is estimated to have some impact on poverty, with a positive sign that is significant between 5–10 percent levels. Focusing on the statistically significant estimates, a decline in closing costs from levels registered in the Philippines, where among Asian countries they are the highest, to a level registered by Pakistan, among the lowest in Asia, would lead to a decline of around 8.8–9.9 percentage points in poverty rates holding all else constant. Lowering closing costs to levels registered in Singapore would lead to even lower poverty rates.

Among labor regulations variables, firing costs enter with a negative sign, which in some cases are significant at the 5–10 percent levels (Table 8 column 10; Table 9 column 7). This is interesting, as it implies that an increase in firing costs decreases poverty. Thus, while higher firing costs may be a detriment to investments, the results would be consistent with the notion that higher firing costs lead firms to either fire workers in lesser numbers, or that the various payments that firms must make to workers they are firing prevent the workers from falling into poverty. On the other hand, difficulties with hiring and firing regulations seem not to have any impact on poverty. Overall, except for the firing costs results, the results with disaggregated Doing Business variables are in line with the results for the growth regressions.

Close-Cost									0.234 (1.59)	
Labor - Hiring										0.048 (0.74)
Labor - Firing										0.071 (0.91)
Labor - Cost										-0.096 (2.00)**
Constant	194.584 (19.27)***	205.776 (10.41)***	182.997 (12.97)***	210.387 (11.15)***	194.584 (19.27)***	197.261 (18.67)***	194.179 (18.68)***	172.896 (11.53)***	197.918 (18.51)***	204.321 (17.62)***
Observations	73	68	72	80	73	73	73	76	73	76
Adjusted R-squared	0.75	0.72	0.70	0.69	0.75	0.73	0.75	0.77	0.73	0.75

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.

Table 9. Poverty, Institutions, and Policies II

Dependent Variable: \$2-a-Day Poverty

	1	2	3	4	5	6	7	8
Initial Income	-22.652 (10.05)***	-23.007 (9.76)***	-20.418 (11.22)***	-21.598 (8.83)***	-22.740 (15.22)***	-22.970 (10.14)***	-22.496 (14.68)***	-22.494 (9.95)***
Government	0.808	0.808	0.706	0.681	0.863	0.880	0.476	0.469
Expenditure	(1.79)*	(1.76)*	(1.73)*	(1.56)	(2.02)**	(1.81)*	(1.04)	(0.94)
Trade Share	-0.087 (1.18)	-0.091 (1.15)	-0.120 (1.95)*	-0.102 (1.40)	-0.134 (2.23)**	-0.122 (1.55)	-0.141 (1.96)*	-0.126 (1.49)
Governance	-2.630 (1.04)	-2.686 (1.01)		-1.447 (0.49)		-3.282 (1.26)		-3.261 (1.23)
Political Freedom	-2.161 (1.35)	-2.489 (1.49)		-2.341 (1.55)		-2.387 (1.40)		-2.445 (1.39)
Doing Business-1	3.182 (1.96)*							
Doing Business-2		1.497 (0.99)						
Start-Procedures			0.222 (0.32)	0.300 (0.37)				
Start-Time			0.065 (1.29)	0.073 (1.26)				
Start-Cost			0.051 (2.41)**	0.044 (1.93)*				
Close-Time					-0.237 (0.31)	-0.147 (0.16)		
Close-Cost					0.264 (1.80)*	0.269 (1.06)		
Labor - Hiring							0.020 (0.29)	-0.017 (0.22)
Labor - Firing							0.051 (0.68)	0.088 (1.15)
Labor - Cost							-0.095 (1.98)*	-0.083 (1.61)

Constant	197.792 (10.17)***	202.071 (10.07)***	171.851 (11.14)***	185.776 (9.63)***	192.696 (17.69)***	199.031 (9.35)***	203.738 (17.67)***	207.937 (11.35)***
Observations	68	68	76	70	73	68	76	70
Adjusted R-squared	0.74	0.73	0.77	0.76	0.75	0.73	0.76	0.74

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses

Table 10. Poverty, Institutions, and Policies III

Dependent Variable: \$2-a-Day Poverty								
	1	2	3	4	5	6	7	8
Initial Income	-22.416 (9.76)***	-22.902 (9.49)***	-19.726 (9.00)***	-20.743 (-7.81)***	-23.267 (12.85)***	-22.782 (-9.61)***	-23.021 (12.65)***	-22.685 (9.92)***
Government Expenditure	0.326 (0.61)	0.355 (0.65)	0.016 (0.03)	0.093 (0.17)	0.203 (0.39)	0.347 (0.63)	-0.154 (0.29)	-0.029 (0.05)
SWWH	-3.395 (0.61)	-2.839 (0.49)	-5.658 (1.02)	-5.643 (-1.02)	-3.827 (0.65)	-3.188 (-0.56)	-3.680 (0.64)	-1.795 (0.31)
Governance	-3.125 (1.30)	-3.189 (1.25)		-1.558 (-0.54)		-4.497 (-1.96)*		-3.910 (1.50)
Political Freedom	-1.902 (1.21)	-2.308 (1.39)		-2.293 (-1.53)		-2.040 (-1.22)		-2.173 (1.21)
Doing Business-1	3.764 (2.52)**							
Doing Business-2		2.163 (1.61)						
Start-Procedures			0.441 (0.67)	0.449 (0.55)				
Start-Time			0.061 (1.16)	0.068 (1.12)				
Start-Cost			0.069 (3.09)***	0.064 (2.30)**				
Close-Time					0.309 (0.38)	0.508 (0.57)		
Close-Cost					0.292 (2.02)**	0.319 (1.27)		

Labor - Hiring							0.058 (0.89)	0.022 (0.27)
Labor - Firing							0.065 (0.83)	0.096 (1.23)
Labor - Cost							-0.087 (1.66)	-0.078 (1.41)
Constant	197.576 (10.55)***	201.863 (10.31)***	168.842 (10.29)***	181.993 (9.49)***	196.606 (16.87)***	193.533 (9.26)***	206.184 (15.47)***	204.926 (11.49)***
Observations	66	66	73	67	71	66	73	67
Adjusted R-squared	0.74	0.73	0.78	0.76	0.75	0.73	0.75	0.73

* significant at 10%; ** significant at 5%; *** significant at 1%. Robust t statistics in parentheses.
 SWWH means Sachs-Warner index of openness updated by Wacziarg and Welch (2003).

The impact of openness on poverty depends crucially on which measure of openness is used. In striking contrast to the results from the growth regressions, larger trade shares are found to be often associated with lower poverty (Table 9) while a higher value of the SWWH index of openness is always insignificantly related to poverty (Table 10). These results suggest that while a more open trade *policy* may not lead to significantly lower poverty, countries that have managed to increase trading volumes relative to their GDP have often done so with benefits flowing to the poor. This is not as weak a result as some may claim. For example, media reports sometimes claim that trade has benefited countries at the expense of their poor. The results here do not lend support to such reports.

Interestingly, the particular measure of openness used also has an important bearing on the estimated impact of government expenditures on poverty. When trade shares are used as the measure of openness, increased government expenditures show up with a positive and significant impact on poverty. In other words, a larger public sector (as proxied by government expenditures) is significantly associated with higher poverty. However, moving to the SWWH index of openness completely wipes out the statistical significance on the coefficient of government expenditures. This is understandable, as large government expenditures are a sign of fiscal irresponsibility, and the SWWH captures macroeconomic/fiscal reforms that accompany most trade reforms (see Rodriguez and Rodrik 2001).

In sum, initial income, “Doing-Business–1” and starting costs turn out to be the important variables that matter for poverty. In some contrast to the results for the growth regressions, this suggests more room for policies that could fuel private sector activities in the economy. The fact that governance and political freedom variables are mostly insignificant suggests that governments of the same quality can resolve the equity–efficiency trade-offs in different ways. Noting that governance is always significant in growth regressions, this further suggests that the actions to be taken to reduce poverty are quicker than those to increase steady-state growth, which requires institutional modification.

VI. CONCLUDING REMARKS

This paper empirically examined the relationship between measures of institutional quality and policies on one hand, and economic growth and poverty on the other. In doing so close attention was paid to institutions and policies that relate to the overall economic climate and regulations under which the private sector operates. The findings suggest that good governance as measured by a strong commitment to the rule of law, among other things, matters for poverty reduction largely through its effect on economic growth. While the relationship between trade *policy* and growth appears to be statistically weak, increases in trade *shares* have been associated with lower poverty. Furthermore, the size of

the public sector is negatively associated with growth and positively with poverty. While a large public sector can be an asset to the rest of the economy in terms of the infrastructure and social services it provides, it also means that the economy has a relatively smaller private sector, usually the more dynamic sector. Alternatively, a large public sector could be a wasteful one and detract from both growth and poverty reduction, especially if captured by an elite. While different interpretations are certainly possible, the regression results are consistent with the notion that growth is driven by the dynamism of the private sector, which in turn depends importantly on the quality of governance.

The results also suggest that less cumbersome regulations governing private sector operations, especially those pertaining to starting a business, matter for both economic growth as well as poverty reduction more directly. Interestingly, political freedom is not associated with either higher growth or lower poverty. Indeed, the evidence here seems to suggest that the delivery of good governance and regulations that facilitate the creation of new enterprises are more relevant for growth and poverty reduction than the nature of the political system per se.

It is important to point out that eliminating cumbersome regulations is unlikely to serve as a panacea. There is little doubt that there can exist regulatory practices that are inefficient and can dampen growth. Eliminating such practices will probably be good for both business as well for the poor. The results on starting costs, in particular, are certainly consistent with this notion. At the same time, however, policymakers must not lose sight of the fact that spurring on the private sector is unlikely to be driven by the elimination or alleviation of “government failures” alone. Spurring on the private sector will also require the elimination or alleviation of market failures through appropriately designed public–private partnerships. The critical challenge for private sector development is getting this design correct. More research in uncovering the nature and processes that can lead to more effective public–private partnerships is likely to be a higher value-added activity. It is also one that is likely to require in-depth, country-specific studies.

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