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Planners versus Searchers in Foreign Aid

WILLIAM EASTERLY

Only for the recipients of foreign aid is something akin to central planning seen as a way to achieve prosperity. The end of poverty is achieved with free markets and democracy—where decentralized "searchers" look for ways to meet individual needs—not Poverty Reduction Strategy Papers (PRSPs) to achieve Millennium Development Goals (MDGs). The PRSPs and MDGs create lots of bureaucracy but hold no one specific agency in foreign aid accountable for any one specific task. Planners in foreign aid use the old failed models of the past—the "Financing Gap", the "poverty trap", the government-to-government aid model; and the "expenditures = outcomes" mentality. Searchers in foreign aid would imitate the feedback and accountability of markets and democracy to provide goods and services to individuals until homegrown markets and democracy end poverty in the society as a whole. An example of the more promising "searchers" approach in foreign aid is 2006 Nobel Peace Laureate Mohammad Yunus and Grameen Bank.

I. INTRODUCTION

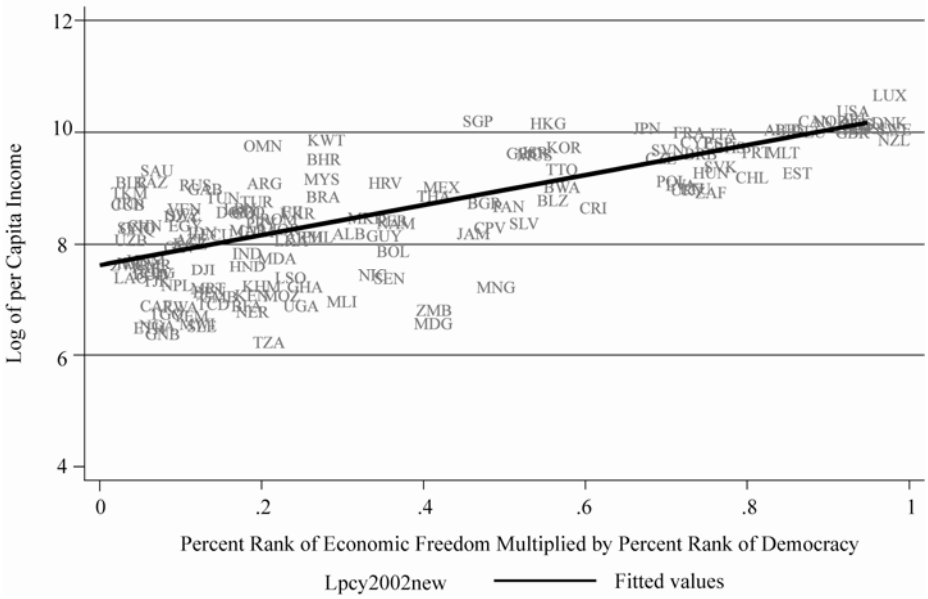
Seventeen years after the fall of the Berlin Wall, there is only one major area in the world where central planning is still seen as a way to achieve prosperity: countries that receive foreign aid. Behind the aid wall that divides poor countries from rich, the aid community is awash in plans, strategies, and frameworks to meet the very real needs of the world's poor. These exercises only make sense in a central planning mentality in which the answer to the tragedies of poverty is a large bureaucratic apparatus to dictate quantities of different development goods and services by administrative fiat. The planning mindset is in turn linked to previously discredited theories, such as that poverty is due to a "poverty trap", which can only be alleviated by a large inflow of aid from rich country to poor country governments to fill a "financing gap" for poor countries. The aid inflow is of course administered by this same planning apparatus.

This is bad news for the world's poor, as historically poverty has never been ended by central planners. It is only ended by "searchers", both economic

William Easterly is Professor of Economics and Co-Director, Development Research Institute, New York University. This paper was presented in the Asian Development Bank's Distinguished Speakers Program held 18 January 2006 at the ADB Headquarters, Manila, Philippines. The informal style of presentation has been preserved. This paper draws upon the author's book, *The White Man's Burden: Why the West's Efforts to Aid the Rest Have Done So Much Ill and So Little Good* (New York: Penguin Press 2006). The author is grateful for comments received at the AFD/EUDN 2006 conference.

and political, who explore solutions by trial and error, have a way to get feedback on the ones that work, and then expand the ones that work, all of this in an unplanned, spontaneous way. Examples of searchers are firms in private markets and democratically accountable politicians. There is a robust correlation (0.73) between economic and political freedom, on one hand, and economic development, on the other hand (Figure 1).

Figure 1. **Per Capita Income against a Multiplicative Index of Democracy and Free Markets**



Of course, there are hard questions about direction of causality and exactly which attributes of political and economic freedom are most crucial for development. However, to deal with the first problem, since researchers know a little bit about the determinants of bad government, studies can explore whether bad government causes poverty, rather than (mainly) the other way around. We can take the part of bad government induced by the factors identified in the literature (such as commodity and natural resource endowments, historical colonization strategies, etc.) and see if that part is associated with poverty. If so, that suggests that bad government causes poverty. We can also test whether these non-economic factors affect poverty directly, or only through bad government. Most of the research that takes this line finds that bad government does indeed cause poverty, and that the influence of the noneconomic factors is only through

bad government, not directly on poverty (Acemoglu et al. 2004, Easterly and Levine 2003, Rodrik et al. 2004).[1]

The research is less successful at identifying which aspect of bad government matters, such as democracy versus corruption versus economic freedom. Different dimensions of good government tend to come together in packages, so it is hard to tell which is causing economic development. This last issue is much harder to resolve, but the correlations are at least supportive of strong theoretical priors that democratic and market accountability go with economic success, not to mention the vast historical and case study literature that supports this conclusion.

Another striking feature of the above graph is that the variance of outcomes is much higher at low levels of political and economic freedom than at high levels. For countries with nearly complete freedom, all of them are rich within a narrow range. For countries with intermediate levels of freedom, there is a vast range of development outcomes. The oft-noted exceptions of Hong Kong, China; and Singapore—which both attained prosperity without democracy—lie in this middle range. However, so do very poor nations such as Madagascar, Mongolia, and Zambia. If we take cross-country evidence seriously, then the suggestion is that nations that fall short of freedom COULD become rich if they are lucky enough to have benevolent autocrats; however, they also COULD remain very poor. Democracy and free markets are ways to reduce the variance of outcomes as well as to improve the average outcome. Freedom is an investment bringing lower risk and higher returns than no freedom, which should qualify it as an attractive investment opportunity. I argue here that this is because democracy and free markets create fertile territory for creative searchers, while autocracy and government interventionism give power to ineffective planners.

What are some of the characteristics of planners and searchers? With free markets and democracy, economic and political searchers find products and public services that satisfy the customers and voters. In autocratic, centrally planned societies, planners produce shoddy goods consumers do not want, and heavily rationed and inferior public services that satisfy no one, not to mention environmental disasters.

What is the counterpart in foreign aid? Here, planners announce good intentions but do not motivate anyone to carry them out; searchers find things that work and get some reward. Planners raise expectations but take no responsibility for meeting them; searchers accept responsibility for their actions. Planners determine what to supply; searchers find out what is in demand. Planners apply global blueprints; searchers adapt to local conditions. Planners at the top lack

[1]Note that some of the results by Acemoglu et al. 2004 were challenged on the grounds of faulty data in some excellent work by Albouy (2006) at Berkeley. However, studies that do not use this data still find a causal link between good government and income.

knowledge of the bottom; searchers find out what the reality is at the bottom. Planners never hear whether the plan got what they needed; searchers find out if the customer is satisfied.

A planner thinks he already knows the answers; he thinks of poverty as a technical engineering problem that his answers will solve. A searcher admits he does not know the answers in advance; he believes that poverty is a complicated tangle of political, social, historical, institutional, and technological factors. A searcher only hopes to find answers to individual problems by trial and error experimentation. A planner believes outsiders know enough to impose solutions. A searcher believes only insiders have enough knowledge to find solutions, and that most solutions must be homegrown.

In foreign aid, searchers could find ways to make a specific task work, like getting medicines to dying children, if they could concentrate on that task instead of "big plans." They could test whether a specific task has a high payoff for the poor, get rewarded for achieving high payoffs, and be accountable for failure if plans did not work. We will see some areas where searchers have already achieved tangible benefits, but the searchers have had little chance to deliver because foreign aid has been dominated by the planners.

The planners have the rhetorical advantage of promising great things, the end of poverty. The only thing the planners have against them is that plans did not (and do not) work to help the world's poor. Poor people die not only because of the world's indifference to their poverty, but also because of ineffective efforts on behalf of those who do care. To escape the cycle of tragedy, we have to be tough on the ideas of the planners, even while we salute their goodwill.

Searchers look for any opportunity to relieve suffering, like the cash-for-school program that has worked well in Bangladesh and Mexico. They do not get stuck on infeasible grand objectives, like "ending world poverty." One of the key predictions about planners that we will see confirmed in this paper is that the planners keep pouring in resources at a fixed objective, despite many previous failures at reaching that objective, despite the models that guide the plans being rejected by the data, and despite a track record that suggests the objective is infeasible or the plan is unworkable. They fail to search for what does work to help the poor. Yet searchers in aid are already finding things that help the poor, and we will see that they could find many more if the balance of power in aid were shifted from planners to searchers.

Two key elements that make searches work, and the absence of which is fatal to plans, are FEEDBACK and ACCOUNTABILITY. Searchers only know if something works if the people at the bottom can give feedback. This is why successful searchers have to be close to the customers at the bottom, rather than surveying the world from the top. Consumers tell the firm "this product is worth the price" by buying the product, or decide the product is worthless and return it

to the store. Voters tell their local politician that "public services stink" and the politician tries to fix the problem.

Lack of feedback is one of the most critical flaws in existing aid. It comes about because of the near-invisibility of efforts and results by aid agencies in distant parts of the world. To oversimplify a little, the needs of the rich get met because they give feedback to political and economic searchers, and they can hold the searchers accountable for following through with specific actions. A corporate head or government leader who does not satisfy the customers will lose his job. The needs of the poor do not get met because they have little money or political power with which to make their needs known and to hold somebody accountable to meet those needs—they are stuck with planners. Foreign aid is neither a democracy nor a free market.

Why are planners so popular in foreign aid? In any human endeavor, the people paying the bills (or voting to pay the bills) are the ones to keep happy. The big problem with foreign aid is that the people paying the bills are rich people who have very little knowledge of poor people. The rich people demand "big actions" to solve "big problems", which is understandable and compassionate. The big plans at the top keep the rich people happy that Something Is Being Done (SIBD) about such a tragic problem as world poverty. Alas, if ineffective big plans allow SIBD catharsis and take the pressure off the rich to help the poor, then the effective piecemeal actions will not happen.

More ineffective approaches survive in foreign aid than would if results were more visible. Big plans are attractive to politicians, celebrities, and activists who want to make a big splash, without the western public realizing that the big plans at the top are not connected to reality at the bottom.

The working-level staff in aid agencies or nongovernmental organizations (NGOs) are more likely to be searchers than planners. Unfortunately the political realities of rich countries just mentioned foist on these workers big plans, taking money, time, and energy away from the doable actions that workers discover in their searching.

II. THE NIGHT OF THE PLANNERS

The desire of the international aid community to estimate "aid needs" itself reflects how planning has taken over foreign aid. The terminology of "planning", along with its synonyms of "framework" and "strategy" increasingly dominates aid discourse. The direct inspiration for this seems to be the Millennium Development Goals (MDGs) exercise. Lest you think I exaggerate, consider the following quote:

> Launch a nationally owned and led preparation of an MDG-based **strategy**.… Review past and current **planning** documents.…

> Conduct a needs assessment. Quantify the specific public investments across multiple sectors to meet the MDGs in infrastructure and in human and financial resources…. Develop a 10-year **framework** for action.… Write a three- to five-year MDG-based national development **strategy**. Based on the 10-year **framework** for action, prepare the national development **strategy** as a more detailed, operational document, linked to a medium-term expenditure **framework (**UN Millennium Project 2005b, 2–3).

It is perhaps understandable that aid officials would turn to complicated plans, strategies, and frameworks in order to try to meet 54 MDGs by 2015. (Wait, some will object that there are only eight MDGs. Apparently embarrassed at just how baroque the MDG exercise is, the designers of the MDGs have grouped the 54 goals [called "indicators"] into 18 groups of "targets", which are in turn aggregated into the eight MDGs.) The UN Millennium Project offers a package on how to achieve the 54 goals that makes 10 key recommendations (which are actually 36 recommendations when you count all the bullet points), "a bold, needs-based, goal-oriented investment framework over 10 years"; 17 Quick Wins to be done immediately; 7 "main investment and policy clusters"; and 10 problems to be solved in the international aid system. For 2015, they propose 449 separate interventions to meet the 54 MDGs in a 451-page main report with 3,300 pages of technical annexes. Jeffrey Sachs recommends that the Secretary General of the United Nations (UN) personally run the Plan, coordinating the actions of thousands of officials in six UN agencies, the UN country teams, the World Bank, and the International Monetary Fund (IMF) (Sachs 2005, 285; United Nations 2005).

For their part, the international financial institutions are fervent advocates of free markets for prosperity—not statist strategizing—but some unlucky countries are so poor that they face the requirement to do statist strategizing anyway. This is in the form of what is called a Poverty Reduction Strategy Paper (PRSP). The preparation of the PRSP requires planning that would overwhelm the most sophisticated government bureaucracy anywhere, much less the underskilled and underpaid government workers in the poorest countries (Klugman 2002):

> The sector ministries prepare medium-term strategic plans that set out the sector's key objectives, together with their associated outcomes, outputs, and expenditure forecasts (within the limits agreed upon by the Cabinet). These plans should consider the costs of both ongoing and new programs. Ideally, spending should be presented by program and spending category with financing needs

> for salaries, operations and maintenance, and investment clearly distinguished.

If they have any time left after all this planning (not to mention time left after their meeting with the hundreds of donor missions that arrive every year to check up on the plan), they can also come up with a plan for those same donors, namely:

> an external assistance strategy in the context of the PRSP process that explicitly identifies the priority sectors and programs for donor financing…. More detailed external assistance strategies can then be developed for key areas through sectoral working groups in which representatives of major donors and line agencies participate.... Agreeing on financing priorities for individual donors within the framework of a global external assistance strategy, rather than through bilateral agreements… (Klugman 2002).

At least the PRSP requirement is relaxed for failed states; it is instead limited to such peaceful, politically stable, abundantly staffed, well-governed poor countries like Cambodia, Democratic Republic of the Congo, and Sierra Leone (World Bank 2006b).

The planning nightmare deepens further when we consider how each separate aid agency actor is offering its own plan, which it can only disguise by claiming that its plan is necessary for achieving the overall MDG plan. So we get such mixed-species curiosities as the World Bank's (2003) *Comprehensive Development Framework Progress Report*, whose main title is *Getting Serious About Meeting the Millennium Development Goals*. The Comprehensive Development Framework (CDF) of the World Bank (conceived by former President James Wolfensohn in 1999) still needs to be integrated into the MDG plan although it has since been superseded by the IMF and World Bank's PRSP plan. Not to be left out of the planning race, even such unrelated organizations as the World Trade Organization offer an "Integrated Framework for Least Developed Countries (IF)", which of course will connect to everybody else's plans. The IF should "incorporate prioritized Action Plan (Action Matrix) into the country's national development plans such as PRSP" (WTO 2006). The World Bank's admirable report on excessive red tape for private business in poor countries, called *Doing Business* (World Bank 2005) has yet to turn its attention to the Gordian knot of CDF/ PRSP/ IF/ MTEF/ MDG planning.

Who is motivated to effectively implement all of these plans? Who will be held accountable if the plans fail? Apparently, nobody. The Secretary General of the UN issued a progress report on the MDG plan for the UN World Summit on the MDGs in September 2005. Along with some successes in regions where

foreign aid has little role (India, People's Republic of China [PRC], and East Asia), the report recited a litany of failure:[2]

> In sub-Saharan Africa, which already had the highest poverty rate in the world, the situation deteriorated further and millions more fell into deep poverty (Annan 2005, 6).
>
> The decline in hunger is slowing (Annan 2005, 7).
>
> Almost half of all deaths among children under age 5 occur in sub-Saharan Africa, where progress has slowed owing to weak health systems, conflicts and AIDS (Annan 2005, 19).
>
> A safe, effective and relatively inexpensive vaccine has been available for over 40 years. Still, measles strikes 30 million children a year, killing 540,000 in 2002 and leaving many others blind or deaf. Global coverage of measles immunization has risen slowly, but is lagging in Oceania, sub-Saharan Africa and Southern Asia, where about a third of all children are still unprotected (Annan 2005, 20).
>
> There was no change in sub-Saharan Africa, where maternal mortality is highest (Annan 2005, 23).
>
> Forests are disappearing fastest in the poorest regions (Annan 2005, 30).
>
> The growth in the number of slum-dwellers is outpacing urban improvement (Annan 2005, 35).

The UN Secretary General's report documents that the MDG plan is failing. Yet it never occurs to the UN to take responsibility for failure of the plan the UN conceived, sponsored, and publicized. Instead, our attention is directed again to the question of "aid needs" (Annan 2005, 37):

> If all new commitments are honoured, aid is expected to exceed $100 billion by 2010. Still, this falls short of the amounts widely considered necessary to achieve the MDGs.

[2]I am grateful to William Duggan of Columbia, who has his own articulate take on the paradox of the UN highlighting failure while disavowing any responsibility, for calling this report to my attention.

The international financial institutions' reports on the MDGs obey the same logic of failure without responsibility. We are first told of failure: "for the poorest countries many of the goals seem far out of reach" and then told of the need to expand aid: "many of the poorest countries will need additional assistance and must look to the rich countries to provide it" (World Bank 2006a).

In other words, the aid community should increase further the scale of the plans that are currently failing. The reason for pointing out failure is not to hold anyone accountable, but to document the continuing "aid needs", i.e., to give a rationale for further expansion of aid. The UN and the World Bank reports do not explain why the poor have a need for more of the same thing that previously failed to address the needs of the poor.

Of course, the failure to meet goals could occur not just because of the poor effectiveness of the UN, the World Bank, and other international organizations in delivering services to the poor, but also because the goals were too optimistic or depend on factors beyond the control of the UN and the World Bank (this excuse is less applicable for something so measurable and doable as measles vaccination). Far from absolving the aid community, however, this only raises the question of why so much energy is devoted to a campaign (the MDGs) that does not create any positive incentives for any actors because it is overpromising on things that the actors cannot control. The World Bank itself cautions poor countries against setting targets in the PRSPs that are too optimistic for exactly this reason:

> Most often [the PRSP targets] are overambitious; they are technically and fiscally unattainable, which defeats their role as effective incentives to action (Christiaensen et al. 2002).

While the same *PRSP Sourcebook* of the World Bank also warns:

> it must be possible to disentangle the effects of poor performance by the implementing actors from the effects of external shocks (Christiaensen et al. 2002).

While international organizations hold the poor country governments to this standard, the international organizations that design the MDGs are apparently themselves exempt from these same sensible rules.

The international organizations also seem oblivious to the problem of multiple goals and multiple agents for the incentive structure facing aid agencies. Having multiple goals (54 in this case) is equivalent to having multiple principals. It is well known in principal–agent theory that having multiple principals weakens overall incentives for the agent to deliver to any one principal. Indeed the optimal strategy for each principal is to try to penalize the agent for

effort toward other goals in favor of effort toward the principal's own goal. In the aggregate, all the principals' incentives cancel each other out and the agent is left with little or no incentive. An agent with multiple tasks gets credit for doing some tasks, so he is not as motivated to complete any one task as an agent would be whose sole responsibility was that one task. To put this in everyday intuitive terms, a worker with multiple bosses can tell each one that he is too busy to work on their task because he is working on the other bosses' tasks (I speak from personal experience as such a worker).

Having multiple agents creates the obvious problems of collective action and free riders. If everyone is to blame if something goes wrong, then nobody is to blame.

Operating in the Bolivian mountains are the IMF, World Bank, Inter-American Development Bank, United States Agency for International Development, US Drug Enforcement Administration, British Department for International Development—just about every other rich country's aid agency and multiple NGOs. None of the agencies is responsible for a particular outcome. They jointly affect what happens to economic development in Bolivia. When something goes wrong in Bolivia, like the economic and political crisis in 1999–2005, after years of effort by these agencies, which one is to blame? We do not know, so no one agency is accountable. This weakens the incentive of agencies to deliver results.

Introductory economics explains why cultivators with individual property rights (individual responsibility) get much better results than collective farms (collective responsibility). The PRC economic miracle started with the realization of this principle in the PRC countryside.

Jeffrey Sachs has an alternative view on these principles (Sachs 2005, 3):

> Although introductory economics textbooks preach individualism … our safety and prosperity depend at least as much on collective decisions to fight disease, promote good science and widespread education, provide critical infrastructure, and act in unison to help the poorest of the poor.

Of course, there are public goods, like those mentioned by Sachs, in which collective action problems must be solved. Rich societies do this through democratic accountability of individual politicians and bureaucrats to the voters. Voters want roads, so they vote for politicians who set up specialized road ministries that are responsible for providing good roads. Rich-country bureaucracy does not have collective responsibility of the health, foreign affairs, treasury, defense, pensions, and sports ministries for good roads. Rather, each one of these ministries is accountable for specialized tasks in its own area to the

politicians, who are in turn accountable to the voters. That is why I can usually get a pothole in a road outside my house fixed with one phone call to a public official. Alas, the foreign aid system has neither democracy, nor accountability to the poor beneficiaries, nor specialized responsibility.

International financial institutions have many well-trained economists aware of introductory economics textbooks, yet they still produce documents with statements by their respective leaders like, "How to generate momentum? This report sets out an agenda spanning the responsibilities of all key actors" (IMF and World Bank 2005, xi).

Instead of promoting individual agency accountability for specific tasks, the aid community engages in such fantasies of collective responsibility as the following.

> The Paris High Level Forum on Harmonization, Alignment, and Results brought together developing countries, bilateral donors, global funds, UN agencies, civil society, and international financial institutions to assess progress and chart the way forward, including through monitoring of agreed indicators of progress (IMF and World Bank 2005, 235).

With such fatal defects, why are planners so popular? Why is the MDGs exercise so widely embraced? The political economy of aid in the rich countries tends to reward grand gestures and utopian promises rather than piecemeal efforts to gradually improve the well-being and opportunities of the poor—particularly in a situation where there will be only be weak monitoring years later of whether the promises were kept (and even then the collective responsibility system will protect any one actor from being singled out to blame for failure.)

More prosaically, the MDGs are perhaps appealing to many aid agencies as they offer some hope for answering a question beloved by aid agencies: how to assess the need for aid. Unfortunately, the models that allow one to calculate costs from goals are themselves vestiges of the long since discredited planning mentality that dominated the early days of development economics, as I will explore in the next section.

However, even it were possible to estimate costs from goals, it only begs the question of how the goals were determined. Goal #1 of the MDGs is to cut in half the proportion of people living in extreme poverty (as well as halving the proportion of hungry people, with six indicators altogether, so as usual Goal #1 is actually six goals). Why half? Why not cut by two thirds or three quarters? Why achieve the end of poverty only by 2025, rather than 2020, or 2015? Even if we ignored the already fatal modeling problem, the only hope for pinning down "aid needs" is to pin down goals.

The *PRSP Sourcebook* that guides the IMF and World Bank PRSPs gives some crucial insight into what is going on with the MDGs. The World Bank authors say:

> Mobilizing resources is without doubt a primary function of targets set by the international donor community such as the International Development Goals (Christiaensen et al. 2002, chapter 4).

There is something to admire in the World Bank stating that the whole thing was circular all along. The increased aid is required to reach the MDGs. The MDGs are required to increase aid. Although this circularity destroys any last shred of hope to determine at what number the "aid needs" reach closure, mathematical indeterminacy is nothing compared to the public relations genius of the whole exercise.

A. Caution: Searchers at Work

Just to give some anecdotal examples of how searchers could deliver better results than the MDGs, consider first how a searcher contributed to a reduction in infant mortality in India. Diarrhea is a deadly disease that is a major contributor to infant mortality. A baby suffering from diarrhea and the dehydration it induces suffers from rapid heartbeat, sunken eye sockets, sunken indentations on the skull, and reduced nutrient supply to tissues and vital organs. If the baby survives, the diarrhea contributes to her malnutrition—the child will be stunted and abnormally thin. Commonly, the baby suffering from diarrhea-induced dehydration goes into shock and dies. Preparing food with unwashed hands spreads the bacteria and viruses that cause diarrhea.

C. K. Prahalad, a University of Michigan Business School professor, wrote in 2005 a fascinating book, *The Fortune at the Bottom of the Pyramid: Eradicating Poverty through Profits* (Prahalad 2005). He shows how private firms can sometimes find it in their own interest to help solve some of the problems of the poor traditionally addressed by aid agencies. The searchers in a free market do much better than aid agencies in solving specific problems of the poor, although having a profit incentive to do so is not the typical case. Still Prahalad's book is a good reminder of what we know from free markets—self-interested behavior can do good things for others.

Prahalad gives the example of Hindustan Lever Limited (HLL), a subsidiary of the giant multinational Unilever. HLL sold a very simple product, soap, which it realized could find a larger market if they were tied to preventing diarrheal diseases for the poor. Hand washing with soap is critical to prevent the spread of the viruses and bacteria that cause diarrhea. HLL realized that if it could promote increased awareness among the poor of the benefits of

antibacterial soap, products where it dominated the Indian market, it could significantly increase sales.

Getting people to use soap is not as easy as it sounds. Poor people are not well informed about the science of disease transmission. Most poor people only washed their hands if they were visibly dirty, not when their hands were covered with invisible germs after using the latrine or changing a baby's diaper. Invisible germs on hands were the main transmission mechanism for diarrhea. HLL had to actually change behavior.

To realize this market potential, HLL had to find ways of gaining the poor's trust in its health-promoting product. Working with government, aid agencies, and NGOs, it started educational programs. One was called Lifebuoy Swasthya Chetna, or Lifebuoy Glowing Health, which sent out two-person teams to present to schoolchildren how they could avoid stomach, eye, and wound infections by washing with Lifebuoy soap. The teams enlisted the village doctors to speak to the children's parents about how hand washing with soap can prevent diarrhea and other health complications. Swasthya Chetna formed health clubs in the village.

Sales of HLL's antibiotic soap did indeed increase, and on its way to profits it also succeeded in convincing villagers to use a product that protected them against disease.

Searchers in India have taken on an even greater challenge that has foiled most efforts at solution: prevention of AIDS. Prostitutes in the red light district of Calcutta, India, and Sonagachi form a world unto themselves. Social norms about female sexual behavior in India are such that prostitution carries even a larger stigma in India than elsewhere. Cut off from the wider world, prostitutes have their own subculture, with an elite of madams and pimps. As in any subculture, its members strive for status. Prostitutes who aspire to greater status attain it most commonly by attracting long-term clients.

Many well-intentioned bureaucrats and planners have tried to help the prostitutes, "rescuing" them, and taking them to shelters to be trained in another profession like tailoring. However, sexual services pay a lot better than tailoring, and former prostitutes face harassment and discrimination in the outside world. Hence, most "rescued" women returned to prostitution. The advent of the AIDS epidemic in India and the well-known role of prostitutes in spreading AIDS caused increased concern about these failures.

Dr. Smarajit Jana, head of the All India Institute for Hygiene and Public Health, had another idea in 1992. He and his team learned the subculture of the prostitutes and work with it to fight AIDS. They formed a mutually respectful relationship with the madams and pimps, prostitutes, and clients. They noted the class system within Sonagachi. By trial and error and with feedback from the prostitutes, Dr. Jana and his team hit upon a strategy for fighting AIDS. The strategy was awfully simple in retrospect: they trained a group of 12 prostitutes to

educate their fellow workers about the dangers of AIDS and the need to use condoms. The peer educators wore green medical coats when they were engaged in their public health work, and they attained greater status in Sonagachi. Condom use in Sonagachi increased dramatically. By 1999, HIV incidence in Sonagachi was only 6 percent, compared to 50 percent in other red-light districts in India.

The project had other unexpected consequences. The increased confidence of the peer educators and the media attention to the success of prevention efforts led the community to aspire to greater things. The prostitutes formed a union to campaign for legalization of prostitution, a reduction in police harassment, and organization of festivals and health fairs. Dr. Jana's approach based on feedback from the intended beneficiaries had succeeded when so many other AIDS prevention programs failed.[3]

Next door in Bangladesh, another searcher is contributing to the MDG of reducing maternal mortality. Death of mothers during childbirth is virtually unknown in rich countries, but is tragically common in poor countries. Instead of the new life with childbirth that many in rich countries count as the most supreme moment in a lifetime, a grieving family in a poor country must confront the death of the wife and mother (and often of the newborn baby as well). The woman herself dies in agony due to such causes as the seizures and severe agitation of eclampsia. Eclampsia (and other causes of death in childbirth) can be prevented with prenatal care that recognizes the warning signs and gets the woman to the hospital once she displays symptoms. Providing such prenatal care is a major challenge in poor countries.

Feroza Yasmin Shahida is a 19-year-old Bangladeshi girl. From a poor peasant family, she got a scholarship from a program run by the United States Agency for International Development and the World Bank to finish secondary school. Now she is a paramedic on a bicycle responsible for 515 families in the countryside around Savar, Bangladesh. She is the only health worker these 515 families have. She earns $25 a month working for Gonoshasthaya Kendra (GK), the People's Health Center.

GK is the brainchild of Dr. Zafrullah Chowdhury (affectionately called Dr. Zaf), a Bangladeshi doctor who returned from Britain after Bangladesh won its independence in 1971. He trained teenage girls to treat common ailments, deliver prenatal and postnatal care to pregnant women, and refer any emergencies to the hospital that Dr. Zaf built. Foreign donors and the Bangladeshi government gave Dr. Zaf money, but he also charged his poor patients modest fees to expand services further. He found that even the poor are willing to pay for good service. Charging the poor modest fees for health care—a notion that outrages globalization activists—is a way to increase accountability for delivering health

[3]This account is based on Rao and Walton (2004, 6–9).

services. If the villagers do not get good service after they sacrificed to pay for it, they loudly complain. Dr. Zaf says "If a woman dies, the worker has to face the village. Accountability is here." GK has been successful in lowering deaths in childbirth, infant mortality, and also the number of children women choose to have. Maternal mortality in the area covered by GK is a fourth of the national average.

If Feroza continues to be one of Dr. Zaf's best paramedics, she will be promoted to supervisor, with a raise to $100 a month and a scooter instead of a bicycle. Dr. Zaf had searched for and found a piecemeal way to improve the lot of the Bangladeshi poor.

Another searcher in Bangladesh was Mohammed Yunus, the founder of the Grameen Bank, winner of the 2006 Nobel Peace Prize, and the main inventor of the microcredit scheme to poor people, who did not start off with the goal of giving poor people credit. As Columbia University Business School Professor Bill Duggan tells the story in a great book about people who find things that work, *Napoleon's Glance* (Duggan 2003), Yunus started off with the conviction that the Green Revolution and irrigation were the answer to poverty in Bangladesh. Yunus's doctoral dissertation at Vanderbilt University was titled "Optimal Allocation of Multi-Purpose Reservoir Water: A Dynamic Programming Model." His first attempt to help the poor was to sponsor tube wells for irrigation during the dry season so farmers could grow two crops a year. He gave the farmers a loan out of his own money to finance the scheme. The farmers reaped a good harvest. Ironically, for the founder of the idea that the poor can be a good credit risk, the farmers did not fully repay him and he lost money. But Yunus persisted, the city boy visiting as many rural villages as possible to try to understand how to help. He encountered a woman making a bamboo stool named Sufiya Begum. She made a pitiful two cents on every stool, mainly because a moneylender charged her a very high interest rate (around 120 percent per year) to advance her the bamboo. He realized that very small loans to very poor people could make a big difference in their lives. Contrary to conventional wisdom at the time, he realized that the poor had a huge untapped demand for credit. He experimented, and found that microcredit borrowers would repay the loan in order to get access to future loans and also because of peer pressure from other microcredit borrowers. His first loan was to Sufiya Begum, who started a successful peddling business with the money instead of making more bamboo stools. There resulted a huge demand for such loans, and Grameen Bank became the legend that it is today, with imitators from all over the world.

Microcredit is not the panacea for poverty reduction that some made it out to be after Yunus' discovery. Some disillusionment with microcredit has already come in response to these blown-up expectations. Microcredit did not solve everything; it just solved one particular problem—the poor's lack of access to

credit except at usurious rates from moneylenders—under one particular set of circumstances.

Bottom-up searchers can emerge in unlikely places. In the tiny village of Xiaogang, Anhui province—the heart of the PRC's rice-growing region—20 families held a secret meeting in 1978. The villagers were desperate because they were starving. As Stanford economist John McMillan (2002) tells the story, the commune system that the Communists had in place all over the PRC was leading to a breakdown in food production. Under this system, everybody was collectively responsible for tilling the land, and everybody had a share in the land's output. Under this system, you got your rice share whether you worked hard or not, and as a result people hardly worked. The villagers of Xiaogang reached an agreement—they would divide up the land and farm it individually, with each person keeping the output of his own land. They kept their agreement a secret out of fear of the Communist authorities. Rice production in Xiaogang shot up. The results were too spectacular to stay secret for long. Neighboring villages wanted to know how Xiaogang had increased their rice production so much. Other villages also put into place individual farming.

Before long, the Communist authorities got wind of the spontaneous outbreak of property rights in the countryside. The news arrived at a propitious moment, when reformers in the Party were seeking to get rid of the doctrinaire Maoists. Confronted with the evidence that food production increased dramatically with individual farming, the provincial Communist Party officials gave their blessing, and reported the developments to authorities in Beijing. By 1982, a Communist Party conference ratified what had already happened in the countryside, approving individual farming. By 1984, there were no communes left (McMillan 2002, 94–5). This was just one pebble that started the landslide of the PRC's economic miracle.

III. THE GHOSTS OF MODELS PAST

If Rip Van Winkle were an aid policymaker, he could have gone to sleep in 1955 and awakened in 2005 without too much discomfort. The same models that were used in the 1950s to justify foreign aid are used today to justify foreign aid, unfortunately distracting attention from the real problems of creating incentives to make aid effective. There are four models—all of them now discredited in the literature—that underlie the planning approach to foreign aid:

(i) the "financing gap" or "two-gap" model of aid, investment, and growth
(ii) the "poverty trap" model of underdevelopment
(iii) the government-to-government aid model
(iv) the expenditure-to-outcomes model in health and education

A. The Ghost of Financing Gap

One of the most widely cited papers estimating the costs of meeting the MDGs is by Devarajan et al. (2002), all World Bank researchers. One has to feel some sympathy for the contortions these well-regarded authors had to go through to arrive at an estimate, which they pretty much say they do not believe themselves. The central exercise in the paper is to use the "financing gap" or "two-gap" model of aid, investment, and growth to estimate aid requirements.

According to this model, economic growth is proportional to investment, which in turn is financed by domestic saving plus foreign aid. To reduce poverty rates by half (Goal #1 of the MDGs), you calculate a "required growth rate." This in turn determines a "required investment rate." If domestic savings is not adequate to finance "required investment", then there is a "financing gap"—the difference between required investment and available savings. The role of aid is to fill the financing gap. (Another variation on this model was the "two-gap model", which had a foreign exchange gap in addition to the investment–saving gap. However, at this point the less time we waste on exposition of these gaps, the better.) The model thus predicted that investment would increase one-for-one with aid and that an increase in investment would have a predictable, stable, immediate effect on growth. Thus aid seemed to be a panacea for creating economic development. The development economics literature had discarded these simplistic predictions after the 1960s and 1970s in the face of evidence to the contrary (see discussion in Easterly 2001, chapter 2).

In case there is any doubt that this is exactly the model the authors are using, Devarajan et al. (2002) say,

> To estimate the additional ODA [overseas development assistance] needed to reduce poverty rates to half of the 1990 levels, we begin with a simple, "two-gap" growth model in which growth depends upon the level of investment and the efficiency with which investment is turned into output.

In a footnote, the authors note that the gap model suffers from some defects, namely being outdated and wrong (Devarajan et al. 2002):

> The workhorse development model of the 1960s and 1970s, the two-gap model has been criticized as being inappropriate for projections (Easterly 1999), and for analyzing policies (Devarajan et al. 1997) and poverty (Devarajan et al. 2000).

In other words, the authors themselves give no reason to believe in the model (including their own previous research). Still the estimates made in this

paper on the basis of this lack of conviction became the benchmark for much of the discussion about the "aid needs" for the MDGs. Coincidentally, the calculation was that aid should approximately double, the same increase that World Bank President James Wolfensohn had called for publicly before the paper was written.

B. The Poverty Trap[4]

The second model assumes that the poorest countries are in a "poverty trap", from which they cannot emerge without an aid-financed "big push", involving investments and actions to address all constraints to development, after which they will have a "takeoff" into self-sustained growth and aid will no longer be needed. This was exactly the story that gave birth to foreign aid in the 1950s; it is exactly the story that the advocates of a massive aid increase are giving today.[5]

According to the UN Millennium Project (for example), the "big push" of massive aid increases is supposed to get poor countries out of a "poverty trap", which automatically prevents very poor countries from growing. As Sachs explains it in his book *The End of Poverty:*

> When people are … utterly destitute, they need their entire income, or more, just to survive. There is no margin of income above survival that can be invested for the future. This is the main reason why the poorest of the poor are most prone to becoming trapped with low or negative economic growth rates. They are too poor to save for the future and thereby accumulate the capital that could pull them out of their current misery (Sachs 2005, 56–7).

Sachs also argues the poverty trap stems from increasing returns to capital:

> An economy with twice the capital stock per person means an economy with roads that work the year round, rather than roads that are washed out each rainy season; electrical power that is reliable 24 hours each day, rather than electric power that is sporadic and unpredictable; workers who are healthy and at their jobs, rather than workers who are chronically absent with disease. The likelihood is that doubling the human and physical capital stock will actually

[4]This section is based on Easterly (2005).

[5]The advocates of the poverty trap in the 1950s were the leading development economists: Paul Rosenstein-Rodan, Sir Arthur Lewis, and Walt Rostow.

> *more* than double the income level, at least at very low levels of capital per person (Sachs 2005, 250).

Under these circumstances, Sachs argues, "foreign aid … would enable the economy to break out of the poverty trap and begin growing on its own" (Sachs 2005, 250).

We can check this story out. Table 1 shows data on per capita income from 1950 to 2001 for 137 countries from a statistical compilation done by the economist Angus Maddison (2003) (I exclude Communist economies and Persian Gulf oil producers as special cases). We rank countries according to their per capita income in 1950. Did the poorest countries in 1950 remain stuck in poverty over the next half century? Well, no. The poorest fifth of countries in 1950 increased their income over the next five decades by a factor of 2.25 times. The other four fifths of countries increased their incomes by a factor of 2.47 times. The difference in growth rates between the two groups is not statistically distinguishable from random fluctuation. We can statistically reject that the growth rate of the poorest countries as a group was zero. Examining all periods, only the 1985–2001 period fits the "poverty trap" story; I will return to this period shortly.

Table 1. **Testing the Poverty Trap for Long Periods**

Per Capita Growth per Year for	**1950–2001**	**1950–75**	**1975–2001**	**1980–2001**	**1985–2001**
Poorest fifth at beginning of period indicated (percent)	1.6	1.9	0.8	0.5*	0.2*
All others (percent)	1.7	2.5**	1.1	0.9	1.3**
Reject stable income for poorest fifth	Yes	Yes	Yes	Yes	Yes
Fail to reject unstable income for poorest fifth	Yes	Yes	Yes	Yes	Yes

* Poorest fifth not statistically distinguishable from zero.
** All others' growth statistically distinguishable from poorest fifth.
Note: The sample includes 137 countries. Statistical tests exclude 12 transition economies and Gulf oil states.

There are further statistical tests we can do to assess the poverty trap hypothesis. If the poverty trap hypothesis holds, then the poorest countries should have stagnant income at a very low level. Income will fluctuate randomly around this level, but will always tend to return to it. There are two ways we can test whether low-income countries have stationary income. We can assume stationarity and see whether the data reject that assumption, or we can assume nonstationarity and see whether the data fail to reject nonstationarity. When we do a test for the stagnation of income over the subsequent half century for the poorest fifth of countries in 1950, we decisively reject the hypothesis of stationarity. When we assume nonstationarity—such as positive growth—the data provide no evidence against that assumption.

Perhaps it was aid that enabled poor countries to break out of stagnant income? When I break the sample in half into those poor countries that had above-average foreign aid and below-average foreign aid, I find identical results in 1950–2001 in both halves as with the above tests of stationarity. Over 1950 to 2001, countries with below-average aid had the same growth rate as countries with above-average foreign aid. Poor countries without aid had no trouble having positive growth.[6]

To be sure, there were individual poor countries that failed to grow among the poorest countries. Chad had zero growth from 1950 to 2001. Zaire/Democratic Republic of the Congo actually had negative per capita growth over this period. Aid still has a role to help those unlucky enough to be born into a stagnant economy.

The stagnant economies were offset by such success stories as Botswana, which was the fourth poorest in 1950, but increased its income by a factor of 13 by 2001. Lesotho was the fifth poorest in 1950, but increased its income by a factor of 5 over the half century. Other subsequent success stories that were among the poorest in 1950 are the PRC and India.

Let us keep looking for confirmation of the two main predictions of the poverty trap story: (i) that growth of the poorest countries is lower than other countries, and (ii) that per capita growth of the poorest countries is zero or negative. The poorest did have lower growth in an earlier period, 1950–1975, than the others. However, this was not a poverty trap, as average growth of the poorest during 1950–1975 was still a very healthy 1.9 percent per year (roughly the same as the long-run growth rate of the American economy, for example).

There is no evidence of lower growth for the poorest countries for recent periods, like 1975–2001 or 1980–2001. Their growth was disappointing—much worse than in the previous period—but so was growth in middle-income countries. The poorest fifth of countries at the beginning of those periods had growth performance over the subsequent period that was statistically indistinguishable from the other four fifths of countries. Only when the starting point is set at 1985 does there finally appear evidence that the poorest did worse.

The evidence that Sachs adduces for the poverty trap in his book *The End of Poverty* is from this later period. So over 1985 to the present, it is true that the poorest fifth of countries have significantly lower per capita growth than other countries, about 1.1 percentage points lower. Even for this period, we reject the hypothesis that all of the poorest countries had stable per capita income for 1985 to the present.

[6]More systematically, a large literature on aid and growth fails to find a robust causal link from aid to growth or to investment. See Rajan and Subramanian (2005) for a survey of where this literature stands now, and for their own tests of the aid and growth relationships.

The numbers in the table do not seem to add up. The poorest countries did not have lower growth in the whole period 1950–2001, but they had slightly lower growth in 1950–1975 and much lower growth in more recent periods. The solution to the conundrum is that the identities of the poorest countries at the start of each period keep changing. It does not help the poverty trap story that 11 out of the 28 poorest countries in 1985 had NOT been in the poorest fifth back in 1950. They had gotten into poverty by declining from above, rather than being stuck in it from below, while others escaped. If the identity of who is in the poverty trap keeps changing, it must not be much of a trap.

To make things worse, the poorest countries were getting more in foreign aid as a percent of their income in the last decade, compared to the previous decades (as we saw for Africa above). Foreign aid is supposed to be helping the poor countries escape from the poverty trap; hence the poorest countries in the recent decade should have been LESS likely to be stuck in poverty than the previous decades with lower foreign aid. (I can also separately test whether aid raises economic growth, which I will do next.) All told, there is not very strong evidence of a poverty trap snapping shut on the poorest countries.

Other scholars (e.g., Kraay and Raddatz 2005, Graham and Temple 2004) have also failed to find any evidence for a "poverty trap." In a January 2005 paper Kraay and Raddatz studied the saving rate and found that that saving *does* not behave the way the poverty trap requires at low income. The reasons countries stay poor must lie elsewhere.

C. The Government-to-Government Aid Model

What about the period of lower growth and stagnation in poor countries in 1985–2001 shown above? The UN Millennium Project argues that it is the poverty trap rather than bad government that explains poor growth of low-income countries and the failure to make progress toward the MDGs. Sachs says "the claim that Africa's corruption is the basic source of the problem [the poverty trap] does not withstand practical experience or serious scrutiny" (Sachs 2005, 191). Likewise the UN Millennium Project says, "Many reasonably well governed countries are too poor to make the investments to climb the first steps of the ladder" (UN Millennium Project 2005a, 34.)

The search for the elusive "well governed low income countries" casts a broad net. The UN Millennium Project report lists 63 poor countries that are "potentially well governed", and thus potentially eligible for a massive increase in foreign aid. The list includes five out of the seven countries singled out by Transparency International in October 2004 as the most corrupt in the world: Azerbaijan, Bangladesh, Chad, Nigeria, and Paraguay. The list of "potentially well governed" countries also includes 15 governments that Freedom House classifies as "not free." Such dictators as Paul Biya of Cameroon, Hun Sen of

Cambodia, and Ilham Aliyev of Azerbaijan are on the list. President Aliyev of Azerbaijan scored a double as most autocratic and most corrupt since he was "elected" to succeed his autocratic father in 2003 (*UnderReported* 2004).

Although convinced that bad government was not the problem, the UN report did rule out aid to the four most awful rulers in the world. The report identifies these four governments (Belarus, Myanmar, North Korea, and Zimbabwe) as beyond the pale. This is a pretty small number for bad governments of the world. Even a dictator like Saparmurat Niyazov of Turkmenistan, who so terrorizes his country that he renames the months of the year after himself and his late mother, cannot get into the UN bad despots club.

Why does it matter whether it is bad government or a technological poverty trap? The case for planning is even weaker if planners must deal with the complexities of bad government. Sachs worries in *The End of Poverty*: "If the poor are poor because … their governments are corrupt, how could global cooperation help?" (Sachs 2005, 226). Unfortunately, whether poor country governments are corrupt must be determined by evidence, not by hopes for global cooperation.

The UN seems to want to deny the existence of bad government because it threatens another cherished model of traditional aid delivery: the government-to-government aid model. In this view, the altruistic rich country government (either directly or through multilateral organizations) gives money to an altruistic poor country government, which implements aid projects to benefit the poor in the poor country.

Let us test bad government against the poverty trap as a story for poor economic growth. The earliest rating we have on corruption is from 1984, from the *International Country Risk Guide.* We have a rating on democracy for the same year from a research project at the University of Maryland research project called Polity IV. Let us take countries that have the worst ratings on both corruption and democracy, and call these countries "bad governments." While poor countries did worse, it is also true that the 24 countries with bad governments in 1984 had significantly lower growth from 1985 to the present: 1.3 percentage points slower than the rest. There is some overlap between these two stories, as poor countries are much more likely to have bad government. So which is it, bad government or the poverty trap? When we control for both initial poverty and bad government, it is bad government that explains the slower growth. We cannot statistically discern any effect of initial poverty on subsequent growth once we control for bad government. This is still true if we limit the definition of bad government to corruption alone. The recent stagnation of the poorest countries appears to have more to do with awful government than with a poverty trap, contrary to the Sachs hypothesis.

Actually if the UN Millennium Project report about escaping the well-governed poverty trap had looked into its own country studies, it would have

found interesting clues to this result, such as the following vignette on Cambodian schoolteachers: "many supplement their income by soliciting bribes from students, including the sale of examination questions and answers … the end result is a high dropout rate" (UN Millennium Project 2005a, 119).

The international aid planners have remained stuck on the government-to-government aid model even though decades of evidence have accumulated against it. Another camp of planners has a variant on the UN model of overlooking bad government. This other camp (associated with the United States government, World Bank, and IMF) says poor country governments are bad and the west should get tough with the bad governments—force them to change in return for aid. This contrasts with the UN Millennium Project's view that poor country governments are not so bad and they should be free to determine their own development strategies. However, this artificially restricts the debate. It may be true that poor country governments are bad, and it may be just as true that western attempts to change them have been fruitless.

We see here that bad government has a lot to do with low growth of poor countries that were allegedly in "poverty traps." In the introduction, we saw some evidence that bad government has a lot to do with countries being poor in the first place.

Along with these formal data, we have plenty of anecdotes of what a poor job the state does in poor countries in enforcing contracts or protecting property and persons. In one poor neighborhood in Thailand, the police were so ineffective that parents reported keeping children out of school to guard against break-ins (Narayan, Patel, Schaff, Rademacher, and Koch-Schulte 2000, 181). Police in Mtamba, Malawi gave crime victims the unwelcome assignment of catching the thief or murderer and delivering them to the police station (Narayan and Petesch 2000, 71). The police, far from enforcing property rights, often seize property themselves to extort bribes. The police seized the tea shop of Ali Ahmad in Patna, India and detained him. He bribed the policeman 920 rupees to get his shop back, which his wife borrowed at a high interest rate from a neighbor. The police and criminals collaborate in blackmail, harassment, and extortion from shop owners and vegetable sellers in Patna (Narayan, Chambers, Shah, and Petesch 2000, chapter 8).

The world's 25 most undemocratic government rulers (out of 199 countries the World Bank rated on democracy) got a sum of $9 billion in foreign aid in 2002. Similarly, the world's 25 most corrupt countries got $9.4 billion in foreign aid in 2002. The top 15 recipients of foreign aid in 2002, which each got a more than a billion dollars each, have a median ranking in the worst fourth of all governments everywhere in 2002 (ranked by democracy, corruption, etc.). It would be good to get aid from the rich of rich countries to the poor of poor countries, but what we see happening is that aid shifts money from being spent by

the best governments in the world to being spent by the worst. What are the chances that these billions are going to reach poor people?

There has been some progress over time. Ten years ago, the aid donors and international financial institutions seldom discussed corruption or dictatorship. Since then, Donor Talk Radio has been full of chatter about "good governance." Unfortunately, rhetoric has outpaced action. Donors have still not figured out what to do to make good governance happen, or how to be selective to whom they give their money.

More systematically, Alberto Alesina of Harvard and Beatrice Weder of the University of Mainz have found no evidence that aid donors give less aid to corrupt countries; in fact, in some of their statistical analyses donors gave more aid (Alesina and Weder 2002). Have things changed over the past few years? In 1996, there was no association between how much aid per capita a developing country received and its rating on the World Bank measure of corruption (controlling for other determinants of aid per capita, like per capita income and population size). Six years later in 2002, after oceans of ink on corruption, there was still no association between aid given to a country and how corrupt it was.[7] Similarly, there was no association between aid given to a country and how democratic it was, either in 1996 or 2002, controlling for per capita income and population size.

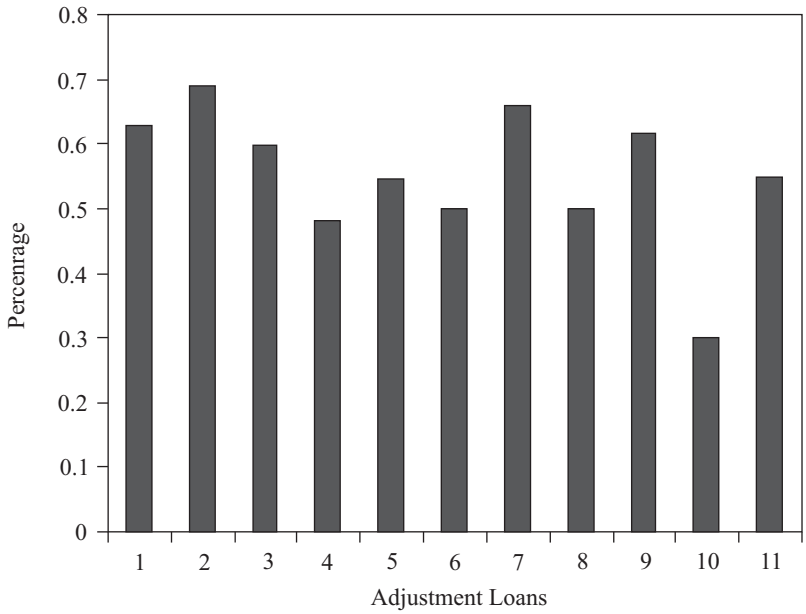
The international financial institutions' view is that aid should always work through government but conditions on aid should try to change government behavior. Apparently, this is not working as far as punishing countries that are corrupt or tyrannical. The other major attempt of the international financial institutions to change behavior was the structural adjustment loan. "Structural adjustment," meant reforms to straighten out finances and promote free markets. The key number is what happens to the budget deficit. Remarkably, budget deficits do not improve from one adjustment loan to the next over 1980–1999 (Easterly 2005b).

Let us now broaden the definition of bad government policy to include a variety of indicators: (i) whether the inflation rate was above 40 percent, (ii) whether the dollar is trading on the black market for foreign exchange at a more than 40 percent premium over the official rate, (iii) whether the official exchange rate is more than 40 percent out of line with the competitive rate that facilitates exports, and (iv) whether interest rates are controlled to be more than 5 percent below the rate of inflation. If any of these conditions are met, economic policy is classified as bad. These are exactly the kind of bad economic policies

[7]The regression ran the log of aid per capita on log of population, log of per capita income, and the Kaufmann–Kraay indicator of corruption, all for the year cited. The sample (including all countries that received positive aid inflows) was kept the same in between 1996 and 2002. The source for all data is the World Bank's *World Development Indicators* (various years).

targeted by the international financial institutions, i.e., "structural adjustment loans" are given on the condition that all of these problems are corrected. Yet the fraction of structural adjustment loan recipients that was violating one or more of these conditions did not go down from one structural adjustment loan to the next (Figure 2).

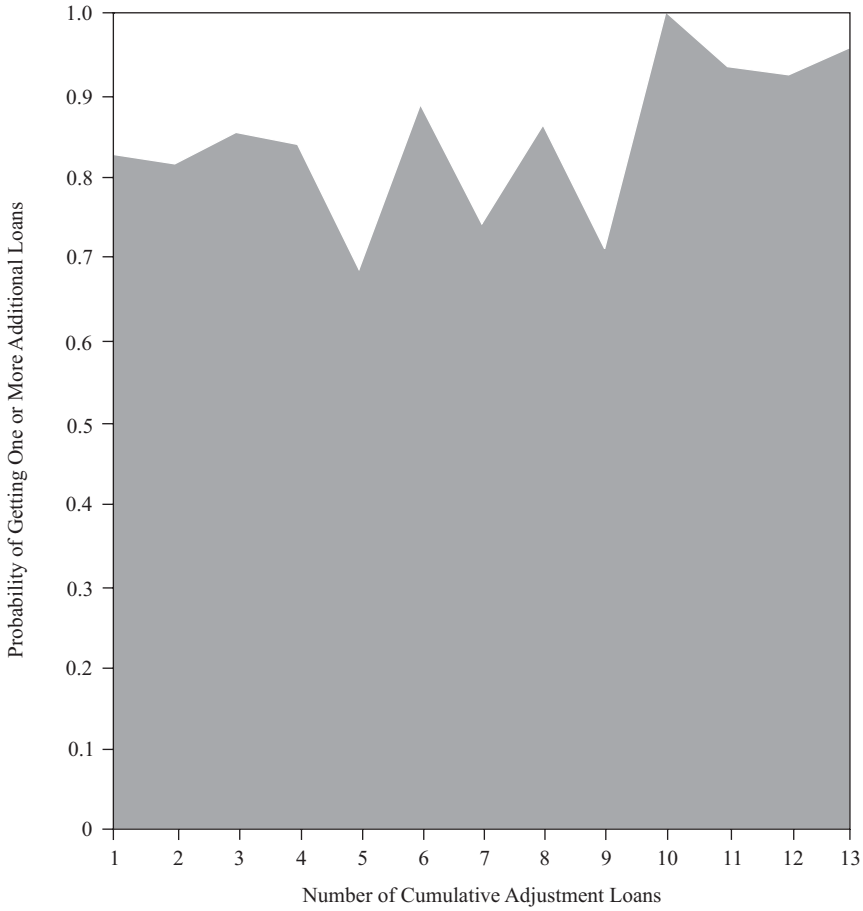
Figure 2. **Fraction of Countries with Macroeconomic Distortions by Cumulative Number of Adjustment Loans**



What explains this surprise? One possible explanation is the international financial institutions' tendency to wipe the slate clean with each new loan, especially if new officials are in power in the recipient country. Even though an adjustment loan is supposed to be a short-term or medium-term bailout, the countries often do not seem to stay bailed out. Other countries fail to fulfill the conditions on old loans, and yet get new loans anyway. Countries like Ecuador and Pakistan went for over two decades receiving one IMF loan after another, even though they never completed any previous IMF program (meaning they did not fulfill the conditions to get a second or later installment of a loan commitment).[8] Countries have a remarkably high repetition rate for structural adjustment loans, which does not go down no matter how many structural adjustment loans a country has already gotten (Figure 3).

[8]Both countries recently completed IMF programs successfully for the first time.

Figure 3. **Repetition Rates of Adjustment Lending after a Given Number of Loans, 1980-1999**



The IMF in particular has a inconsistent relationship with its clients. First, the IMF is tough on cutting budget deficits and causes riots. Then a new government comes in and again runs a high deficit, which the IMF then tries to bring down again (the deficit, not the government). The record of structural adjustment brought the worst of all worlds—the government could blame poor outcomes on the international financial institutions forcing it to do things it did not want to do, even though the governments in the long run often did not fulfill the conditions anyway.

International financial institutions are increasingly aware that it looks bad to boss around poor country governments, and increasingly they deny that they do so. At the same time, they want to put conditions on aid and loans to ensure that the government uses the money well. The planners tie themselves up in rhetorical knots as they try to resolve the unresolvable contradiction between the

two. The World Bank described in 2001 the PRSP as a means to resolve the contradiction: "the PRSP … was a crucial step towards greater national ownership of development programs which is essential for increased effectiveness of external assistance" (World Bank 2001).The IMF agreed: "The broadest and most fundamental changes to the work of the IMF arise from the fact that the targets and policies embodied in [IMF]-supported programs will emerge directly from the country's own poverty reduction strategy" (IMF 2001; the "country" here means the government, as it almost always does in foreign aid.)

Cornell political scientist Nicolas Van de Walle describes the PRSP process as one of "ventriloquism" by the IMF and World Bank (van de Walle 2005, 67). The IMF and World Bank have allegedly given up on telling governments what to do. So the IMF and World Bank want the governments to tell them what the governments will do in order to get a loan. Of course, the IMF and World Bank will approve only acceptable actions in return for infusions of cash. So the poor country governments, instead of being told what to do, are now trying to guess what the international agencies will approve them doing. The PRSP plans are similar to the long lists of conditions imposed on the poor countries. If the government does not guess the right answer the first time, the international financial institutions prepare a "Joint Staff Assessment" of each PRSP.

Neither pretending that bad governments are really good governments, nor forcing bad governments to be good, has worked well. Nevertheless, the planners remain stuck on the government-to-government aid model, confirming once again the prediction that planners keep doing the same thing over again even if it fails.

D. Expenditures to Outcomes in Social Sectors

Returning to the Devarajan et al. (2002) paper, they also report an attempt to derive aid needs for the MDGs based on the costs of inputs to the health and education outcomes covered by the MDGs. Of course, it is one thing to estimate the cost of providing a health service as being, say, $1 per drug dose, and a completely different thing to assume that an additional $1 of foreign aid will result in a drug dose being given to a sick patient. Much as they did with the "gap model", Devarajan et al. themselves explain that they see no reason to believe their own calculations: "empirical evidence from developing countries suggests only a weak link between public spending on education and school enrollments, or between health expenditures and mortality or disease" (Filmer 1999, Filmer et al. 2000).

Filmer et al. (also World Bank researchers) point out such stories as the results of a survey at government health centers in the Mutasa district of Tanzania. In the survey, new mothers reported what they least liked about their

birthing experiences assisted by government nurses. The poor mothers-to-be were "ridiculed by nurses for not having baby clothes (22 percent) … and nurses hit mothers during delivery (13 percent)."[9] Because of the insistence on working through governments, aid funds get lost in patronage-swollen national health bureaucracies (not to mention international health bureaucracies). In countries where corruption is as endemic as any other disease, health officials often sell aid-financed drugs on the black market. Studies in Cameroon, Guinea, Tanzania, and Uganda estimated that 30 to 70 percent of government drugs disappeared before reaching the patients. In one low-income country, a crusading journalist accused the Ministry of Health of misappropriating $50 million in aid funds. The Ministry issued a rebuttal: the journalist had irresponsibly implied the $50 million went AWOL in a single year, whereas they had actually misappropriated the $50 million over a three-year period.

Another egregious case that donors tried to remedy is Pakistan, which has poor health and education. Compared to other countries at its level of income, Pakistan has 36 percent lower births attended by trained personnel. It has 11 percentage points higher babies born with low birth weight, 42 percent lower health spending per capita, 1.6 percent of GDP less in public health spending, 27 excess infant deaths per thousand, 19 excess child deaths per thousand, and 23 percentage points less share of population with access to sanitation. Relative to other countries at its level of income, Pakistan has 20 percentage points fewer elementary school-age children enrolled in primary school. This gap is explained entirely by the 40 percentage points fewer elementary school-age girls who attend primary school. The 14 percentage point shortfall in secondary enrollment compared to other countries at its income level is explained mainly by a 20 percentage point shortfall for females. Twenty-four percentage points more of Pakistan's population is illiterate than is normal for a country of its income level, reflecting excess illiteracy of 32 percentage points for females and 16 percentage points for males.

The World Bank in 1993 tried to repair this social train wreck by supporting a "Social Action Program" in Pakistan, which aimed to "improve the coverage and quality of basic social services." An independent analyst, Nancy Birdsall of the Center for Global Development and associates, later concluded that aside from a few modest successes,

> The period during which the SAP was implemented witnessed stagnation, marginal improvement, or—in some cases—even a

[9]Bureaucracies in rich countries where clients do not have much voice could be equally oppressive, like Customs or Immigration in the United States. The government during the Clinton administration tried to make various agencies more client-friendly. According to an anecdote by John Nellis, the response of Customs officials to this initiative was "we don't have clients; we have suspects."

> decline in social indicators. For example, aggregate education enrollment rates stagnated during the 1990s, with enrollments for boys and children from public schools registering a modest decline (Birdsall et al. 2004).

World Bank staff recognized the first phase of the project, SAP I, as a failure. Therefore, management approved a second phase, SAP II. Deep into the project, in 2000, a Bank review concurred "improvements in service delivery are either not happening, or occurring at a very slow pace." After nearly a decade of failure, the SAP was finally abandoned in June 2002.

Dr. Birdsall asks "Why did a sound idea turn into a practical disaster?" She said that "implementation failures were rampant—manifested in non-merit recruitment of staff, absenteeism of teachers and doctors, and frequent transfers of essential staff … politicians used staff recruitment, construction contracts, and site selection for schools and clinics to enrich their kith and kin." A Pakistani economist gave the deeper reason for failure in 2003: "[T]he poor face markets, state institutions and local structures of power that discriminate against [them].... [They are] unable to access public entitlements like … goods and services." Foreign aid could not deal with the deep roots of bad government in Pakistan, such as a powerful agrarian elite and sharp ethnic divisions.

Such examples, as well as systematic cross-country evidence that social expenditure does not equal social outcomes, have little effect on aid planners. The UN Millennium Project's *Investing in Development* (2005), *The End of Poverty* (Sachs 2005), and the Report of the Commission on Macroeconomics and Health (World Health Organization 2001) each has elaborate costing exercises based on unit costs of multitudinous inputs, but each fails to address the issue of who will be motivated to deliver these inputs to the poor in such a way that they produce better outcomes. Devarajan et al. (2002) cite the Commission on Macroeconomics and Health's estimates as support for the estimates in their paper, estimates based on the same flawed methodology that their paper itself disqualifies on evidentiary grounds.

IV. CONCLUSIONS

That foreign aid by itself could accomplish the MDGs was always a delusion. Most of the hope for reduced poverty and human suffering comes from the self-reliant efforts of the poor themselves in free markets. While the aid community planners were dithering about whether to increase foreign aid by a few tens of billions for all poor countries, the citizens of just two large poor countries—the PRC and India—were generating an increase in income for themselves of $715 billion every year.

Aid can still do much good for the poor, but only when individual aid agents have the incentive to deliver tangible services for which they can be held accountable. The bad incentives created by top-down planning, collective responsibility, and multiple goals can be replaced by individual accountability for aid agents, based upon independent evaluation of aid outcomes, which will motivate a search for what works in the field under the varied circumstances of each time and place.

The planners' approach led to collective responsibility for multiple goals for each agency, one of the worst incentive systems invented since mankind started walking upright. The planning agenda also led to an unproductive focus on trying to change whole political systems and governments. The status quo—large international bureaucracies giving aid to large national government bureaucracies—is not getting money to the poor. Conditions on aid do not work to change government behavior.

When you are in a hole, the top priority is to stop digging. Discard the planners' patronizing confidence that the planners know how to solve other peoples' problems better than the people themselves do. Don't try to fix governments or societies. End conditionality. Stop wasting our time with summits and frameworks. Give up on sweeping and naive institutional reform schemes. The aim should be to make individuals better off, not to transform governments or societies.

Once we are willing to aid individuals rather than governments, some conundrums that tie foreign aid up in knots are resolved. Those so unlucky as to have warlords or kleptocrats as leaders will still be eligible for aid. We can end the coddling of warlords and kleptocrats. We can end the paternalism and hypocrisy of conditionality. We can end the inherent contradiction between "country ownership" and dictating conditions.

Aid should not aim directly at the end of poverty. The main hope for ending poverty is the homegrown development based on the dynamism of individuals and firms in free markets. Shorn of the sweeping planners' task of general economic development, aid can achieve much more than it is achieving now to relieve the sufferings of the poor.

Put the focus back where it belongs: get the poorest people in the world such obvious goods as vaccines, antibiotics, food supplements, improved seeds, fertilizer, roads, boreholes, water pipes, textbooks, and nurses. This is not making the poor dependent on handouts; it is giving the poorest people the health, nutrition, education, and other inputs that raise the payoff to their own efforts to better their lives.

I do not mean to imply that all aid should be for projects. Other areas of aid agencies' possible comparative advantage could include distilling practical knowledge on operating banking systems or stock markets, advice on good

macroeconomic management, simplifying business regulations, or making piecemeal reforms that promote a merit-based civil service.

The current aid system is not working partly because the rich countries do not care enough about making aid work for the poor, and are willing to settle for grand utopian plans that do not work. It is partly because nobody is actually held accountable for making THIS intervention work in THIS place at THIS time. My suggestions here could be ludicrously misguided; they should be subject to skeptical examination and ex-post evaluation just like everything else.

I will plunge recklessly ahead with some suggestions, just because the current system is unacceptable. These could guide the searchers.

Fix the incentive system of collective responsibility for multiple goals. Have individual accountability for individual tasks. Let aid agencies specialize in the sectors and countries they are best at helping. Then hold the aid agencies accountable for THEIR results by having truly independent evaluation of their efforts.

Perhaps the aid agencies should each set aside a portion of their budgets (such as the part now wasted on self-evaluation) to contribute to an international independent evaluation group made up of staff trained in the scientific method from the rich and poor countries, who will evaluate random samples of each aid agency's efforts. Evaluation will involve (i) randomized controlled trials where feasible, (ii) less pure statistical analysis if randomized controlled trials are not feasible, and (iii) will at least be truly independent even when randomized trials and statistical analysis are not feasible. Experiment with different methods to just ask the poor if they are better off. Mobilize the altruistic people in rich countries to put the heat on agencies to make their money actually reach the poor, and to get angry when the aid does NOT reach the poor.

With specialization on a small number of tasks and the fear and reward induced by independent evaluation, maybe agents of aid will be willing to keep exploring different means of fixing a problem, like malnutrition, until they get it working. Agents of aid can experiment with different delivery mechanisms: NGOs, private firms, social entrepreneurs who scout out ways to help the poor, maybe even a decently functioning local government agency. Specialization on modest tasks and evaluation for whether you accomplished them will transfer power from planners to searchers.

Although I think the existing bilateral or multilateral aid agencies and poor country governments have done a bad job, they might be able to perform better once they are held accountable. Official aid agencies and national government bureaucracies should remain on the list of possible vehicles for delivering development services. Again, all that matters is what works to get help to the poor.

If the main problem with foreign aid is the lack of FEEDBACK from the poor themselves, and ACCOUNTABILITY to those same poor, then why not

attack the problem directly? Is aid reaching the poor? Well, let the agents of foreign assistance ask them. Evaluation efforts could include surveys of the poor, asking the poor whether they got what they most needed and whether they are better off because of an aid intervention, and holding the aid agencies accountable for the results. Hold surveys of the population's well-being both before and after the aid program to compare the results on specific outcomes. More rigorous evaluation could use the randomized control trial methods that have been successfully applied in many settings to see which interventions work (Duflo and Kremer 2003).

The main mechanism for feedback and accountability for public services in the west, as described above, is democracy. Could aid agencies find democratic mechanisms for local communities to vote on what services and projects they want? Could independent local watchers make sure the goods actually arrive and deliver what the agencies promised? Myriads of volunteers like local college students could simply monitor a sample of potholes, missing textbooks for schoolchildren, or drugs out of stock in health clinics. They could make the call to the responsible party to repair the pothole, supply the textbooks, or restock the drugs. Publicize the results and thus put pressure on the aid donors and their local partners. Reinikka and Svensson (2005a and 2005b) describe the positive results of a newspaper campaign in Uganda to announce how much local schools should be receiving in direct grants from the government, to reduce diversion of these funds before they reached the schools. The program increased the amount that reached the schools, raising school attendance and student performance.

It is strange that aid agencies talk so much these days about "good governance" in the aid-recipient countries without worrying about "good governance" of their own aid projects.

Aid could utilize far more one group of agents who do have an incentive to find things that please the customers: private firms. For example, private firms can provide services that reach the poor, function as watchers, provide funding for poor entrepreneurs, and train aid workers to think like searchers for customer satisfaction.

A little bit of this is happening already, but not in any systematic way that aid agencies take seriously. Surveys, votes, and watchers are not always reliable, but on average they would be a big step forward from the accountability-free zone that aid agencies now enjoy.

The best aid plan is to have no plan. Just reward aid agencies for doing more of what works, and less of what does not work. It is not possible to say how much aid "is needed." However, when the rich country public sees aid delivering the many things that do work to create more opportunities and less suffering for the poor, then public support for more aid will increase accordingly.

Searching can work in foreign aid by following some simple maxims: experiment, evaluate, and learn. The basic principles are much easier to state than

to actually make happen. Agents of assistance have to have incentives to search for what works to help the poor. To aid the poor the following need to be done:

(i) Have aid agents individually accountable for individual, feasible areas for action that help poor people lift themselves up.
(ii) Let those agents search for what works, based on past experience in their area.
(iii) Experiment with the results of the search.
(iv) Evaluate, based on feedback from the intended beneficiaries and scientific testing, and learn what works.
(v) Reward success and penalize failure. Get more money to interventions that are working, take money away from interventions that are not working. Each aid agent should explore and specialize further in the direction of what they prove good at doing.
(vi) Make sure incentives in (v) are strong enough to do more of what works, then repeat steps (iv) on. If action fails, make sure incentives in (v) are strong enough to send the agent back to step (i). If the agent keeps failing, get a new one.[10]

These are so obvious, I'm embarrassed to even lay it out. It is worth laying out only because it is the opposite of the present methodology of foreign aid.

Think of the great potential for good, if aid agencies probe, experiment, and learn their way toward effective interventions—such as saving the life of a child with malaria, building a road for a poor farmer to get his crops to market and support his family, or getting food and dietary supplements to people who would otherwise be stunted from malnutrition. Think of the positive feedback loop that can get started as success is rewarded with more resources and expanded further. Think of the increased support for foreign aid if rich people know that an additional dollar of aid is an additional dollar to meet the desperate needs of the poorest people in the world.

Is it time yet to end the impunity of foreign aid, in which aid agents are not held accountable for whether the scarce aid dollars reach the poor? What a tragedy, that aid agencies have spent $2.3 trillion over the last five decades and yet there is still so much preventable human suffering that they failed to prevent. Could the Aid Wall, behind which the poor must put up with planners while on the other side the rich prosper with searchers, finally come down? The planners have had five decades to deliver results in foreign aid and have not done so. It is past time in foreign aid to take power away from planners and give searchers a chance.

[10]This is akin to Duggan (2003, 167).

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India: The Past and Its Future

RAGHURAM G. RAJAN

The unshackling of India from its historically low rate of growth has occurred. The challenge of maintaining high growth rates in some states and igniting them in the presently bypassed and marginalized states has to be met squarely. Sustaining high overall growth rates would require that rising inequalities be checked, if not reversed, to broaden the inclusiveness of growth.

A few years ago, what most people had in mind when they thought of India was a land of tigers, the land of the Taj Mahal, and a land of extreme poverty. What is the picture of India today? One, outsourcing; two, computers; three, services. But there is also an Indian story on manufacturing, seen, for example, in the sleek sports cars by the Indian firm Tata. India has the beginnings of first-class manufacturing and infrastructure.

So the India of today is no longer the India of 10 years ago, no longer the land of tigers and the Taj Mahal. But what exactly was India then, and what are India's strengths today? Can we gauge where it might be headed?

I. 1950s–1970s: STRONG POLICY INTERVENTION, SPECIALIZATION, AND CONSTRAINED GROWTH

What India was, economically speaking, is something well known to most people. At the start, India followed a set of policies that resembled those in other countries, i.e., a policy primarily of import substitution with much emphasis on the public sector. The dramatic development of the then Soviet Union had so impressed the people who came to power, like Jawaharlal Nehru, that they emphasized import substitution and the public sector. The attitude in India then toward the private sector was one of ambivalence. Not that the private sector was totally discouraged, not that India ever went completely down the socialist line, but the private sector was sometimes encouraged, sometimes discouraged. Indeed there was a notion that capital was scarce and had to be conserved, but the private sector could not be left to decide where to invest this scarce capital. Thus,

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investment had to go through a tedious process of licensing. Directed credit also helped in this process. The government controlled much of the financial sector and decided who would get credit, who would get licenses, and who would have the opportunity to invest. There was the notion likewise, that small firms were the lifeblood of the economy, that they were critical to job creation. Hence, preferences were provided to small firms in a variety of sectors, meaning that only small firms could enter them.

Similarly there was concern about large firms becoming too large. Large firms were initially classified as firms with over 300 employees, but that was soon reclassified to any firm that had over 100 employees. Various antimonopoly legislations prevented large firms from dominating the economy. Labor was likewise protected, and labor laws became increasingly strict over time especially for large firms. Large firms were prevented from firing workers at will, and a variety of permissions were needed to close down.

A defining feature of India's development approach was an emphasis on higher education. Myron Weiner (1991) argues that this reflects the strength of the middle and upper class in India, in that somehow, the middle class captured public policy making and directed investment in public services toward higher education. Certainly India had a much higher expenditure on higher education relative to primary education; in fact, primary education was woefully neglected for a long period of time. The benefit, however, was that India established world-class institutions at the higher level, including institutes of technology and institutes of management. The question is what actually happened as a result of all these policies. Often these policies had exactly the opposite effect of what was intended, and the intended effect was lost. I call this constrained adaptation. The bigger question is what this means for India going forward.

The early Indian development approach resulted in a set of specializations that were not reversed when Indian policy was reformed. So even though Indian policy has been reforming substantially for the last 15–20 years, the specializations that were put in place during the period of fairly constrained growth and strong policy intervention were not substantially changed.

Industry characteristics may be described in terms of size and skill intensity. Iron and steel is a large-scale industry, furniture is relatively small-scale. Skill-intensive industries typically use highly educated people, as in the professional and scientific sectors, while footwear does not. An industry is labor-intensive if a significant portion of value added consists of wages. Hence, textiles are labor-intensive, petroleum refineries are not.

Relative to the typical developing country, India has a much larger specialization in large-scale industries—exactly the opposite of what was intended. Part of this can be attributed to public sector involvement. The public sector tended to favor, and typically got involved in, industries that were large-

scale and capital-intensive, and as a result India had an overwhelming presence in those industries relative to small industry.

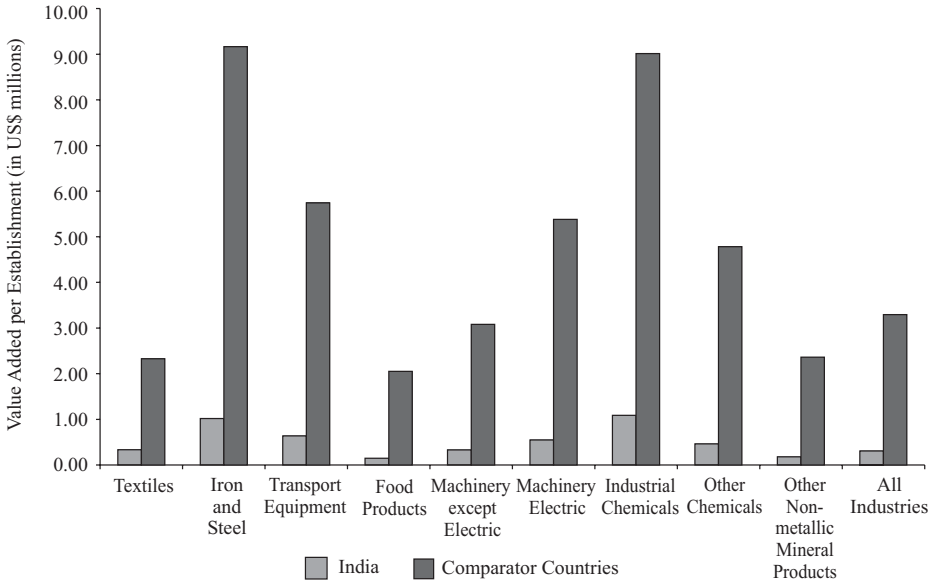
India also favored skill-intensive industries, thus the country had a large presence in industries like pharmaceuticals, which are relatively skill-intensive, and even in the auto industry, perhaps because of the emphasis on tertiary education. However it had very little presence, relative to the average developing country, in labor-intensive industries. One potential reason for this is because of its strong labor laws, which could have driven labor to the unregistered sector, i.e., the informal sector not subject to labor laws. Labor-intensive industries tended to migrate to the unorganized sector where they were not subject to government control.

One could ask if this is typical of labor-intensive industries but not of skill-intensive industries. In skill-intensive industries, there was an equal presence in both the registered and unregistered sectors. It was labor-intensive industries that migrated especially into the unregistered sector.

Why was it different for skill-intensive industries? The answer is labor laws typically did not protect highly skilled employees. Highly skilled employees, management, etc. were not subject to labor laws against firing. In India today, managers can be fired but workers cannot. Hence industries are hiring engineers and other skilled labor, and are staying away from labor-intensive workers.

Also interestingly, against this mesh of different protections, laws, licensing, etc., India was much more diversified across manufacturing compared to a typical developing country. Further, establishments in India were far smaller than in other countries. Clearly the panoply of laws accounted significantly for this. Credit was not easily available to large industries, labor laws put more restrictions on large firms, and even antimonopoly laws combined in a sense to make the average Indian firm small. Figure 1 shows average firm size in India relative to other countries. Note that the industries that are larger in other countries are also larger in India, but the average size of an establishment in India is far smaller than in other countries.

Figure 1. **Average Firm Size in India and Comparator Countries**



Note: Top nine ISIC 3 digit industries by value added for India in 1990.

II. THE 1980s AND 1990s: BUSINESS-FRIENDLY AND MARKET-FRIENDLY REFORMS

As India moved into the early 1980s, the slow process of liberalization started and the environment became a little more business-friendly, allowing businesses to do more things. Liberalization really took off in the early 1990s following India's foreign exchange crisis, which saw the Indian economy opening up to foreign entry and an increasing level of competition. Some people have termed what happened in the 1980s "business-friendly reforms", which expanded opportunities for existing businesses; and the 1990s as the period of market-friendly reform, which increased the extent of competition and expanded the freedoms industry had.

A. Hysteresis: The Legacy of the Past

The service sector has been the biggest story since reforms started in the 1980s. Services have exploded in value added relative to the typical comparable emerging market country, although service employment has not grown. The share of labor in manufacturing has fallen slightly but remains almost where it was. Despite the reforms, industry has not pursued the same traditional focus of poor countries, which is labor-intensive manufacturing. India still has very little

presence in labor-intensive manufacturing and still focuses on skill-intensive manufacturing and large-scale industries. In other words, there is a form of ***hysteresis***, where the specialization during the period of heavy government intervention continues despite changes on the fringes. For example, the relative value added of labor-intensive industries tends to be far below other countries at similar levels of per capita gross domestic product (GDP). In Figure 2, at similar levels of per capita GDP, India lies far below People's Republic of China (PRC) in the share occupied by labor-intensive industries. Similarly looking at skill-intensive industries (Figure 3), India's share is above the PRC's share and in fact is above countries like Republic of Korea (henceforth Korea) and Malaysia at similar levels of per capita GDP.

Figure 2. **Value Added Share by Labor Intensity**

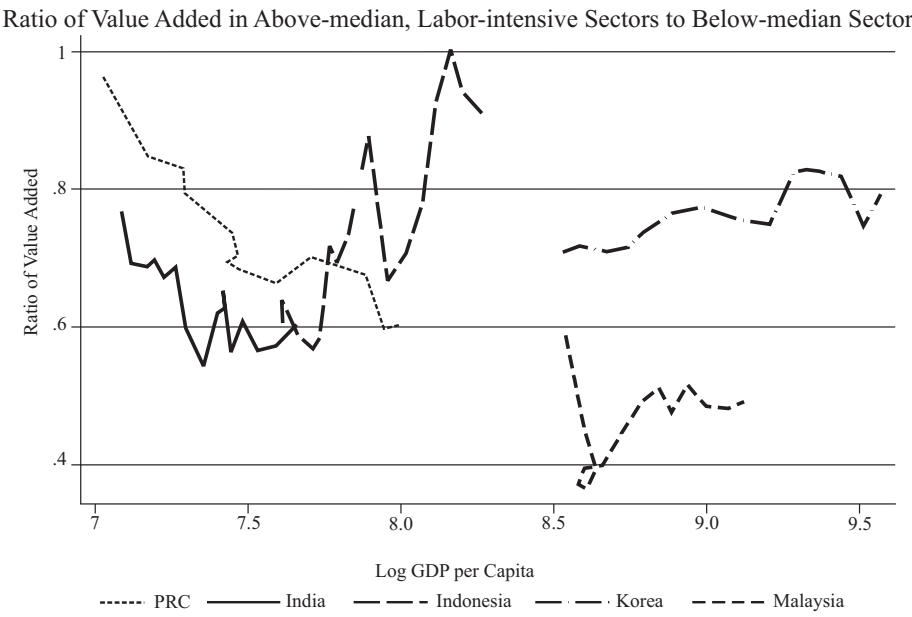
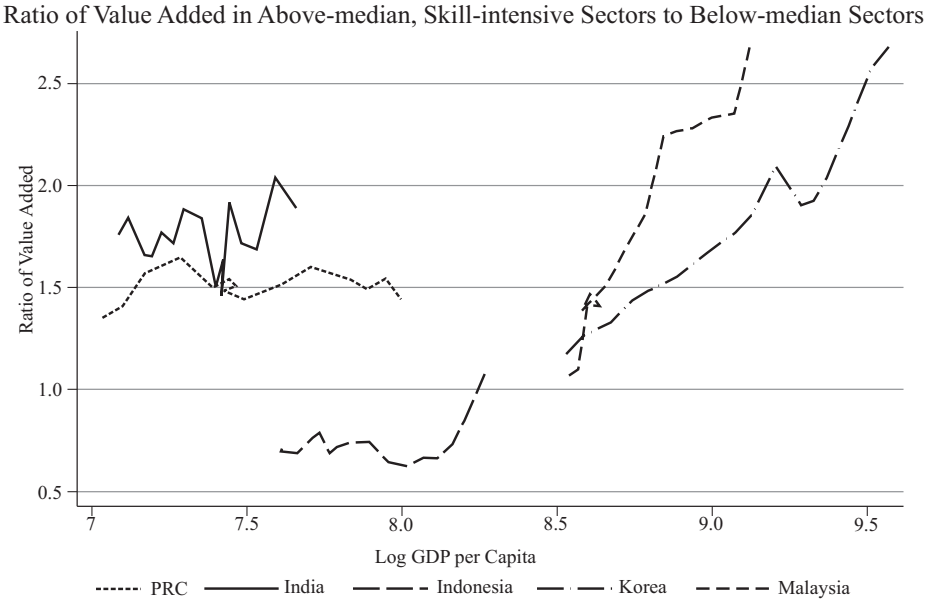


Figure 3. **Value Added Share by Skill Intensity**



It is also interesting to look at the different states to check for differences. Almost all the Indian states are moving toward small, service-oriented firms. There is a difference, however, between the fast-growing states and the slow-growing states. The fast-growing states are moving toward private services like telecom and finance, and are not shifting toward manufacturing—and certainly not toward labor-intensive manufacturing. Gujarat for example is increasing its presence in manufacturing, but it is moving from textiles to petrochemicals in terms of share of value added.

B. Widening Inequality

Earlier, all the states moved together at the same stately Hindu rate of growth. To some extent that was an objective of the licensing system: to spread growth around the country. Licenses were often contingent on setting up in remote locations without infrastructure, because development was needed in that area. That was an objective of state-led development: to ensure balanced growth. This convoy system of growth resulted in all the states growing, but it also kept the average growth rate considerably down. What happened postreform in the 1990s was that the center no longer determined where investments would take place, it was more the states themselves competing through policies to attract investment. What this did was to completely change the pattern of growth. Some

states took advantage, especially the coastal states of Gujarat and Maharashtra, and the southern coastal states of Karnataka and Tamil Nadu. These shot up in growth rate, leaving behind the interior states, especially the states where much of the population was concentrated like Bihar, Madhya Pradesh, and Uttar Pradesh. The highly populous states with rapidly growing populations were the ones left behind. Eventually, the states diverged in growth rates and per capita GDP. All of the states were growing, but the fastest growing states were growing so much faster that inequality increased rapidly.

Two elements determine growth rate. One, pre-existing capabilities. In Karnataka, elements of the electronics industry through the public sector were already in place. CMC Limited and the Electronics Corporation of India, Ltd. were public sector corporations that were operating in Bangalore. As the economy opened up, these corporations became the seed for private sector corporations that sprung up around that area. A lot of former CMC Limited employees started software enterprises that became famous.

This was also true elsewhere. For example, the much derided Indian Airlines, which anybody who has flown will recognize as a true state monopoly, provided the manpower skills for new airlines like Jet Airways, which is now considered the epitome of efficiency and customer care. Hence, the much derided public sector in a sense seeded private sector growth that took place in some of these states.

C. Poor Institutions

One reason for the difference in growth among states was that there were pre-existing capabilities in some states that allowed them to take advantage of opportunities once they opened up. Pre-existing capabilities in the southern states that focused more on education than did the interior and northern states helped the southern states once the economy opened up.

A second factor was the decentralization process itself. Essentially states were allowed to run on their own scheme rather than forced to grow at the same Hindu rate of growth. In particular, states that had better institutions grew much faster. One example of performance of an institution can be seen in the line losses or transmission and distribution losses in India. Once power is generated by an electricity generator, what actually reaches the final consumers, and is billed, is only a fraction of the power generated. Part of the reason is because technically, there are line losses that take place across the line depending on the level of voltage, among others. There is also a tremendous amount of theft, resulting in unaccounted leakage. The extent of transmission and distribution losses is a quick and ready measure of the quality of institutions in a state. Looking at the states, the states that had the highest transmission and distribution losses were those that

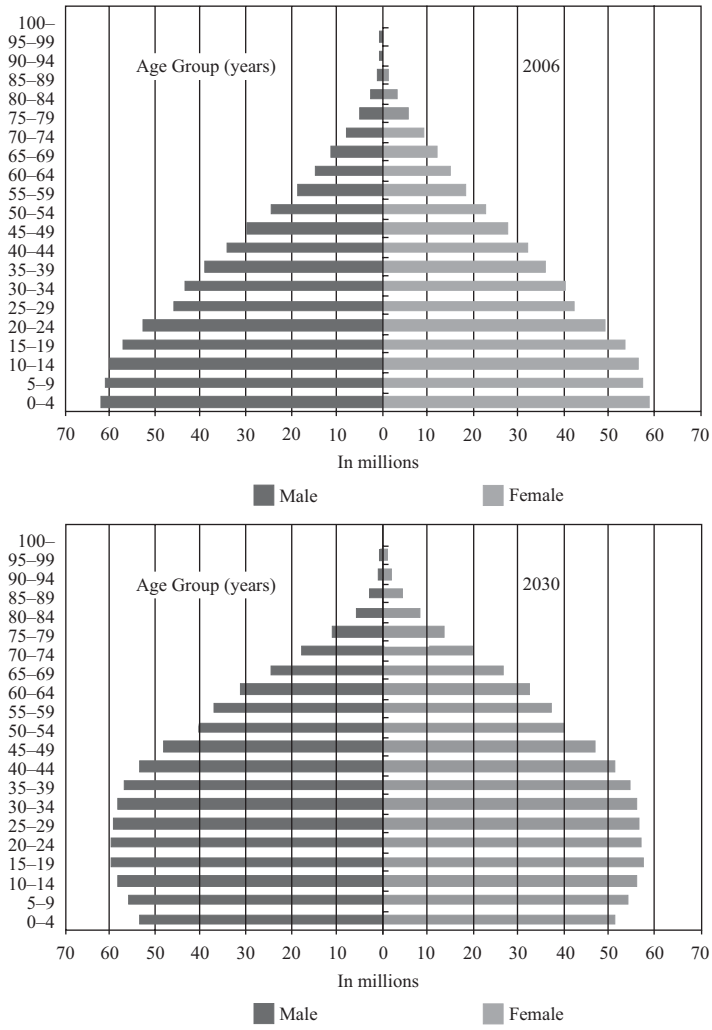
have grown slowest. In other words, institutional quality exerts a major effect on performance.

The pro-market reform period of the 1990s therefore can be described as a time when pre-existing specializations mattered a lot. India's specialization in skill-based industries resulted partly from the neglect of infrastructure. Without good infrastructure, how can you compete when the economy opens up? You cannot compete on highly labor-intensive, low-margin industries that depend a lot on low-cost power, access to ports, and so on. Where India could compete despite the poor infrastructure was in high-value-added, high-skill industries where the output is relatively lightweight and relatively less dependent on things like ports and electricity. Electricity and ports are only a fraction of the value added in high-skill industries, as in pharmaceuticals or software. Thus Indian industry had migrated to its comparative advantage. But its comparative advantage was linked to what had been built up in the period of relatively slow growth (1950s–1970s), and so India today has a presence certainly in the service industry, certainly in the value-added services, but also in skill-based manufacturing.

III. THE WAY FORWARD

Going forward, what are the problems that could arise? The central problem for India is the inequality that is emerging between the populous interior states where there are few jobs, and the coastal areas that are on a roll and that presumably would take care of themselves going forward. The challenge here is that because of the dismal state of infrastructure in India it is very hard to create much needed labor-intensive jobs. This is not to say one must absolutely create labor-intensive jobs for manufacturing. More labor-intensive jobs could likewise be generated through services; there can be an economy that has far more jobs created in tourism, health care, and so on. It is quite possible to build a more service-oriented economy that creates labor-intensive jobs. But certainly anybody who takes a close look at this will argue that at least some labor-intensive manufacturing needs to be created, and for that clearly one key has to be an increase in infrastructure. Looking at India's labor force, one can see a transition taking place from the typical pyramid with lots of very young people at the base and very few old people at the apex. This is going to change moving into 2030, where one can see the bulge moving up the pyramid as more and more people enter the workforce (Figure 4).

Figure 4. **India's Demographic Transition**



Source: United Nations Population Division (medium variant).

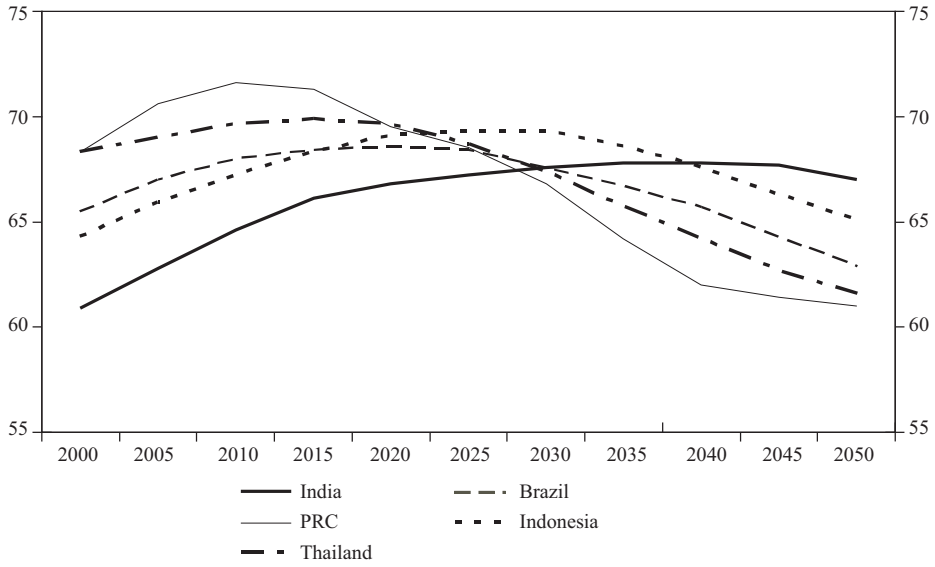
A. The Challenge of Productive Job Creation

Some people argue that this is going to be India's salvation: that more and more people in the workforce will mean more people saving, as did other countries that have developed rapidly including the PRC and Korea, where the greater bulge within the labor force created additional growth. That is only true provided you can find jobs for this bulge. And this clearly is the big problem for India. It is a problem that is going to affect not just India's growth rate but also equity within the country, for unless there are jobs, and unless these jobs appear

in the hinterland states and not in the coastal areas, there will only be growing disparities that in turn will create growing political turmoil.

India has the benefit of having had a relatively young population for a considerable period of time relative to other developing countries such as Brazil, PRC, and Indonesia, but India yet has to create jobs to take advantage of its young population (Figure 5). In this job creation mission, laggard states are central. For laggard states to create jobs, labor law reform will be an important part of job creation, and so will infrastructure development and agriculture. Agriculture at this point is far less productive than manufacturing and services. One way of increasing value added in agriculture is by improving the retail network. Any Indian government bureaucrat will talk about the tons of vegetables that are wasted from the farm to the market. Storage facilities, refrigeration facilities, and transportation facilities from the fields to the markets are dismal. The government has that in mind but clearly private sector involvement will play an important role in this. What is encouraging is more and more private sector firms are discussing setting up networks to bring agricultural produce from the farmer to the markets. Press reports suggest Reliance and Bharati have talked about setting up this network. To my mind that is where hope lies, that in fact agricultural jobs will be created.

Figure 5. **Forecasts of Working Age Population (percent of total)**



Source: United Nations Population Database.

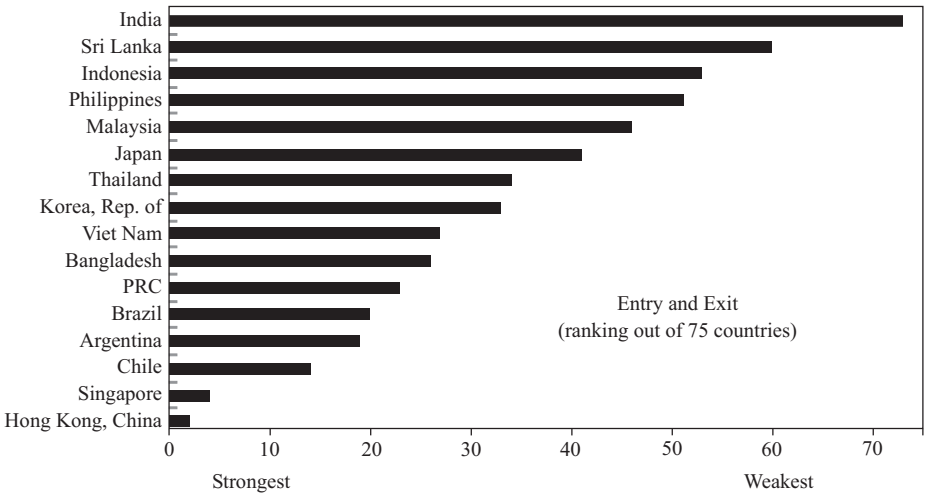
In some of the laggard states, clearly the state of institutions has to be improved considerably. Law and order in some of these states has been deteriorating considerably, and as the Prime Minister has said, the emergence of Marxist rebellions in different districts is getting alarming. While this movement is still contained, unless jobs are created in the rural areas in a significant way and people find opportunities, there will be a great and greater tendency to embrace extreme measures. Clearly, to stem this occurrence, institutions, education, health care, the police, and the judicial system need to be improved.

B. Improving Institutions: Labor and Judicial Reform

India's judicial system in many ways is central to much of what India is trying to do. Consider for example labor laws earlier discussed. Assume the existing labor protection is abolished and instead workers are allowed to be dismissed at will. What will happen? For a while employers will have the luxury of firing workers but soon workers will find that since they cannot seek redress through the laws, and since they cannot seek redress through the judicial system because it takes so long, they will turn to the other alternative, which is the street. Thus the level of labor violence will increase if reforms leave us without adequate worker protection in the form of a safety net and a more rapid judicious system to take care of unfair firing. Reform is needed on all fronts when reforming labor laws. Part of that reform has to be judicial reform.

Figure 6 shows where India stands in terms of labor market flexibility. There is a fair amount of restrictiveness on hiring and firing in India. But making Indian labor laws more flexible has to be seen as an overall package to be put together, rather than simply amending the laws on hiring and firing.

Figure 6. **Global Perspectives on the Restrictiveness of Hiring and Firing**



Finally, legal reform will need to encompass not just labor laws, but also laws to protect contracts and property rights. This requires reform of the judicial system not just in terms of laws but in terms of delivery of justice. Justice is too slow in India and that poses a significant problem.

C. Improve the Business and Investment Climate: Speed Up Infrastructure Development

Among the concerns that businesses in India have are infrastructure where there are still huge gaps, the bureaucracy, corruption, and labor regulation (Figure 7). Problems with infrastructure can be seen in the increasing shortage in electricity supply (Figure 8). The reaction of industry to this is fairly opportunistic as in industry elsewhere. Industry overcomes some of these problems but at a relatively high cost, which is to build captive power plants instead of relying on the public network. In India, each industry regardless of size has its own power plant. Obviously this increases the cost of doing business, which means India cannot compete with the PRCs and Viet Nams of the world in terms of power-intensive areas.

Figure 7. **Most Problematic Factors for Doing Business in India (percent of responses)**

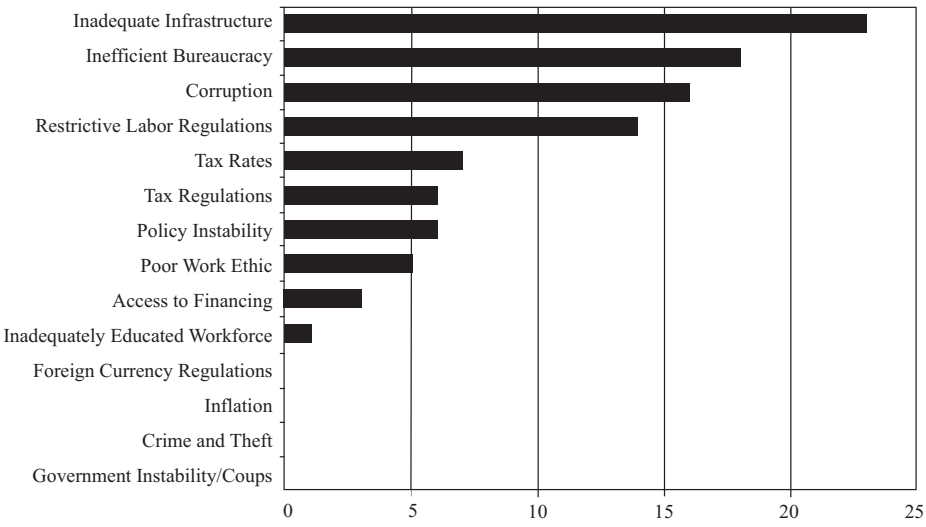
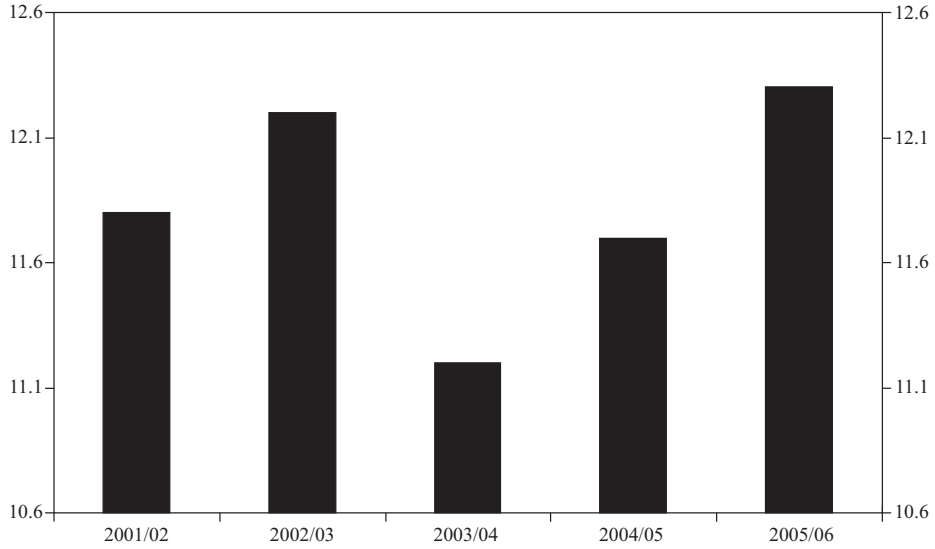


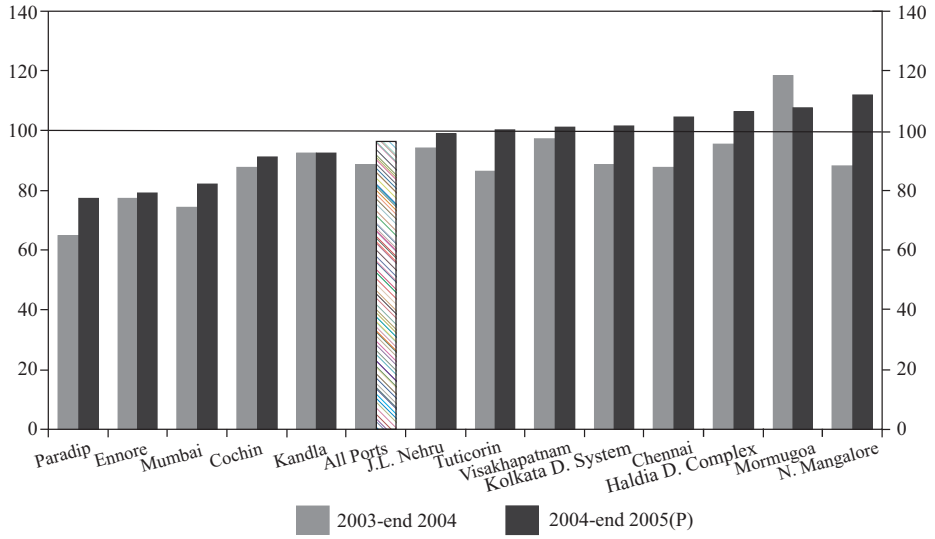
Figure 8. **Peak Shortage in Electricity Supply (percent)**



Note: 2005/06 data is from April 2005 to August 2005.

Ports are one of the better stories in India's infrastructure, where privatization has created considerable competition with public sector ports, such that public sector ports have reduced tariffs in order to compete both with domestic ports and international ports (Figure 9).

Figure 9. **Capacity Utilization at Ports (percent)**



Telecommunications are another example of a success story; and a challenge for the Indian government is to implement liberalization more widely. The government is trying to liberalize as significantly in roads and airports but the process has to be more rapid. Indeed, the concern in India has always been why can't this be done much faster? The process of reform is always a little too slow for anybody watching. But for a large country with diverse interests it may be the only way to go. If you need to bring people along it may be difficult to do so without this slow pace.

Another issue—which also is an issue across emerging markets— is urban infrastructure such as water supply, quality of cities, congestion, and pollution. Environmental quality is breaking down, as can be seen in Bangalore, Bombay, and Delhi. Clearly, a service-oriented, high-skilled, manufacturing-oriented economy will need professionals who will be valuable to that effort, but without adequate living conditions these professionals will not be enticed. So it is important to focus on urban infrastructure.

Currently there is a lot of rural–urban migration that is not kept track of well in Indian data. As the disparities between states increase, this migration will increase. India will need significant upgrading of the urban infrastructure to address this migration. Estimates of how much financing is needed—around $400 billion over the next 5 to 10 years—demonstrate the need for infrastructure development for laggard states to stimulate labor-intensive growth, and for fast-moving states to address the same problems as well.

D. Increasing the Supply of Skilled Labor

One of the places where India has a comparative advantage is tertiary education. That was a reason India moved so heavily into highly skilled manufacturing and services. But what that move has done especially with the advent of foreign capital, is that it has quickly eaten up the available labor supply at the highly skilled level. All this talk of 400,000 engineers produced every year is just talk. The degree of some 350,000 of those engineers is probably not that valuable, probably obtained from a very small engineering college where teachers are of "uneven quality", to use a euphemism.

The fact is in India right now, a lot of training is being done by corporations. The largest educators now are not the public sector universities but increasingly the corporations like Infosys, Wipro, and ICICI. A lot of on-the-job training is being done precisely because of the uneven quality of tertiary education. So can tertiary education up its gains? For this India has to allow more entry into tertiary education, not just domestically but by foreign institutions to meet tremendous demand. In fact one of India's biggest imports is education. There are around $2–3 billion being spent every year by Indian parents to educate their children abroad. They are importing education. There is no reason why education cannot be produced domestically. But the poor quality of domestic education is forcing these people to go outside. You may have heard about the recent clamor to expand reservations in universities. One silver lining in the government response to this demand is the government is expanding tertiary education considerably, and hopefully that will sustain quality and create far more highly educated individuals.

E. Broadening the Inclusiveness of Growth

Because of rising inequality in India, there are many people who do not see the benefits of reforms. Distributional concerns will have to be addressed. The people see the costs rather than the benefits. Opening up opportunities to the middle class makes the services that the middle class provides the rest of the economy more expensive. As the economy is opened up, access to education, health care, and finance should be provided to the poor. Unless this is done, the poor will not see the opportunity in reforms and in increasing competition.

Needless to say, there is a need for safety nets to protect workers as the economy becomes more subject to business cycles. The government is talking about some of these issues, for example, through the rural employment guarantee scheme, which is trying to give work to one person per family. Concerns about these programs have been expressed in the past, such as leakage and corruption, and government has to see whether those concerns are valid. It is also very important that the government has fiscal space to undertake some of these

programs, and to determine if they are well targeted and worth undertaking. The problem is that with the increased revenues from growth, there is also tremendous demand for all kinds of expenditures, and there is worry that these expenditures will be misdirected. Thus it is very important to focus on targeting.

The disparity between the states is creating more migration that has to be handled well. Migration is also creating pressure for center-led redistribution initiatives. States that have not benefited from high growth are yearning for the old convoy system where the center forced balanced development. The finance commission is becoming the center of acrimonious dialogue because of the states that are losing out. These states want to tax the states that are gaining, and clearly the states that are gaining do not want to have anything to do with this. This could become a much more serious political problem in the future. In fact one of the things keeping a lid on this is the fact that populous states have not been allowed increasing representation in parliament, as representation is based on a frozen population figure. This has kept the more populous states from acquiring more political power through which they can in a sense acquire economic rents from the other states. How long this would last is something that remains to be seen. There are also more disparities between communities that are creating more tension. What is happening is communities that are being left behind want a share of the pie, and they increasingly see the political route as the way they can get a share of the pie.

One example of this is the demand for reservations in university seats. The demand for reservations is just the tip of the iceberg. Down the line there is going to be a lot of pressure for reservation of jobs in the private sector for different communities. Thus unless people are convinced they have equal opportunity, there will always be more attempts to engineer outcomes so that they become more equal. This tension is going to play out between the haves and have-nots, and it is going to be played out on things like jobs and access to education.

IV. INDIA MUST BECOME A RESPONSIBLE GLOBAL PLAYER

India will have to consider the issue of how it will engage with the world. It is becoming an increasingly significant trading partner, and increasingly, manufacturing will play a role especially if India gets its infrastructure straightened out. The competition for resources between the PRC, India, and many other emerging markets is now being compared to the “Great Game” for resources and influence between Great Britain and Russia toward the end of the 19th century. To my mind this game is overstated and if the participants actually indulge in it, it would be detrimental to themselves. Going forward I do not think there is an imminent shortage of resources. Prices could increase but the notion that countries should be engaged in buying up these resources around the world is a very dangerous notion and could be problematic going forward.

In conclusion, there are challenges ahead for India. I am very wary of straight line projections, such as the famous Goldman–Sachs–BRICS report, which suggests that if India grows at 6 percent for a long time, it will become a big country. The problem is that 6 percent for a long time is a pretty challenging rate of growth. But there is also reason for optimism.

Let me conclude with lessons I draw from India's highly regulated past. First, India's past policies relating to science and education, no matter how distorted, gave it capabilities in skilled manufacturing and in services, where its comparative advantage now lies. India should not sacrifice this advantage in a blind attempt to follow the East Asian path of unskilled, labor-intensive manufacturing. In particular, it should remove distortions that hold back its areas of strength: the overregulated higher education system and the sclerotic legal system. But it also needs to remove the disincentives for the creation of unskilled jobs, not just by getting rid of archaic job protection while building a genuine safety net for all workers, but also by improving infrastructure, especially in laggard states and rural areas so that they connect better to the larger economy.

Second, the government cannot simply legislate outcomes or achieve them by offering resources or subsidies, especially as the economy becomes more market-oriented. Indeed, such direction can be counterproductive. What the government intends and what materializes can be very different because of the way people react to policy. The government must focus instead on getting the environment right, and thus spread opportunity.

Third, the government, by and large, will not refocus in a vacuum. I do not believe that there will be a revolutionary change in government attitudes, because Indian society is not ready for it. Instead, I see a more evolutionary change—as more and more people in India obtain access and see opportunity in the market economy, they will press for a more enabling government, and Indian democracy will respond. The sooner this happens though—and reformers in government can play a role here in expanding access—the better it will be for India. For better governance and wider opportunity, rather than turning back from market-oriented reforms, will be the way to social justice and a more prosperous, fairer, India.

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Inclusiveness of Economic Growth in the People's Republic of China: What Do Population Health Outcomes Tell Us?

AJAY TANDON, JUZHONG ZHUANG, AND SOMNATH CHATTERJI

Despite the People's Republic of China's (PRC) remarkable economic growth, improvements in population health outcomes slowed during the reform period. Along with increasing commercialization of the health sector, urban–rural disparities in health have increased; there are large health inequalities between the rich and the poor; and income has become a major constraint to health. Noting the current debate in the PRC on models of the health care system, the paper argues that whatever model is followed, there has to be a greater public sector role in funding basic health care, providing protective health cover to the poor and vulnerable groups, and regulating various actors in the health market. If not, the PRC's growth process risks leaving a large section of its population behind in terms of key development indicators such as health.

I. INTRODUCTION

The People's Republic of China (PRC) has achieved spectacular economic growth during the past three decades. However, whether or not this growth has been inclusive has become an issue of concern, and increasingly so in recent years. It is widely noted that inequality, especially between urban and rural populations and between coastal and interior provinces, has increased significantly after the PRC embarked on economic reforms in the late 1970s (Ravallion and Chen 2007). Most studies on inequality in the PRC have tended to focus on income inequality. More recently, inequality in other dimensions, especially in health and education, has begun to attract attention (see, for example, Zhang and Kanbur 2005).

This paper focuses on the issue of inclusiveness of growth from the perspective of population health. Health is a key aspect of human welfare and an intrinsic goal of development, as reflected in the prominence of health among the

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Millennium Development Goals. The distribution of population health outcomes, namely, average levels of health attainments of a country's entire population (e.g., life expectancy) or its subgroups (e.g., infant mortality and child mortality rates), is a key indicator of the inclusiveness of economic growth (Sen 1998). Arguably, levels and distribution in health outcomes can also serve as proxies for the concern a government has for all its citizens, and for the extent to which a government is pro-poor. Population health outcomes and their distribution are now also an important focus of the PRC government's strategy toward a harmonious society, as reflected in its 11th Five-Year Plan.

This paper attempts to contribute to the discussion and debate on the inclusiveness of the PRC's growth by asking two specific questions regarding population health. First, has spectacular economic growth over the past three decades been accompanied by similar achievements in terms of improvements in population health outcomes? Second, how inclusive have the improvements in health outcomes been? To answer the first question, we compare the PRC's life expectancy outcomes during the postreform period (i.e., post-1978) with those achieved during the prereform period, and compare the performance of the PRC with some of its regional peers. To assess the inclusiveness of improvements in population health outcomes, we examine inequality in health outcomes and health care coverage, and the relationship between health and income using aggregate and micro-level data.

Three key messages emerge from the analysis. Firstly, despite the PRC's remarkable economic growth, the pace of improvements in population health outcomes has actually slowed in the postreform period, that is, after the country moved away from an exemplar public health system to an increasingly commercialized one. Secondly, there has been convergence in health indicators across provinces (i.e., reduced interprovincial inequality in health), but divergence between rural and urban areas (i.e., increased rural–urban inequality in health) during the reform period. Furthermore, there is evidence that the relationship between health and income at the provincial level has strengthened over time. Thirdly, as suggested by evidence from household health survey data, there are glaring disparities in health outcomes and health care coverage between the poor and rich households (and, by association, between rural and urban populations); and income now constitutes a major constraint to achieving better health for households, especially the poorer, and by association, rural households. One key policy implication of these findings is that redressing health-related inequalities must now be a priority for the government. If not, the PRC's growth process risks leaving a large section of its population behind in terms of key development indicators such as health.

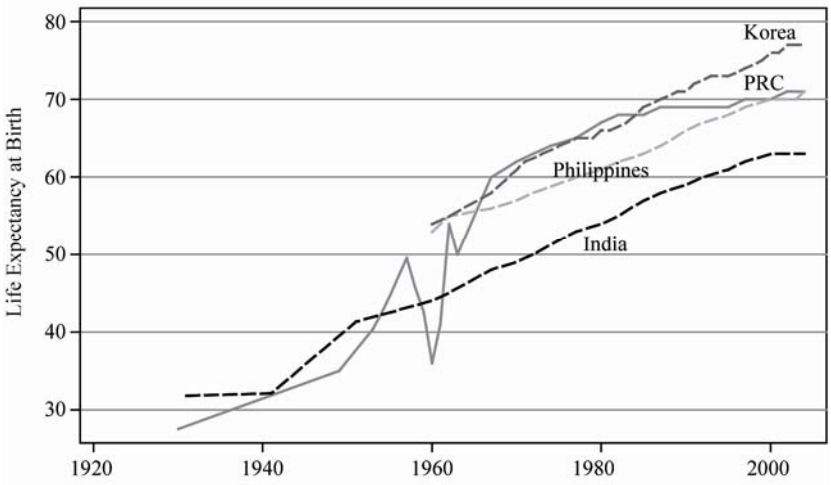
II. HEALTH OUTCOMES FROM HISTORICAL AND COMPARATIVE PERSPECTIVES

To examine whether the PRC's spectacular economic growth has been accompanied by similar improvements in population health, we compare its life expectancy outcomes during prereform and postreform periods with those of India, Republic of Korea (henceforth Korea), and Philippines (Figure 1).

For the PRC and India, we have data from as far back as the 1930s, when the two countries started off at very similar levels of population health, and average life expectancies ranged between 25 and 35 years. India gained independence in 1947 while in the PRC, the Communist Party came to power in 1949. Subsequently, for more than three decades, the PRC and India had very similar levels of per capita income, until around the mid-1980s when the PRC had a gross domestic product (GDP) per capita of about US$290 compared with India's US$261 (in constant 2000 US$ terms; see World Bank 2006). However, during the three decades prior to the initiation of reforms in 1978, the PRC's improvements in life expectancy far outstripped those of India. Except for a dip in the late 1950s and early 1960s due to its "Great Leap Forward" and the associated famine, the PRC consistently had life expectancy figures that were 10–15 years higher than those of India. The PRC also outperformed the Philippines in life expectancy by about 5 years during the late 1960s through the mid-1980s, and was at par with Korea, although the average per capita income of the Philippines was 15 times, and Korea four times, higher than that of the PRC during this period (World Bank 2006).

Many attribute the PRC's success in improving health outcomes in the prereform period to the implementation of several effective public health interventions. These included, among others, programs for the elimination of pests such as flies, mosquitoes, and rats; high levels of and wide access to primary health care; and training of a legion of "barefoot" doctors that descended on rural areas (see Hesketh and Zhu 2004). A relatively equitable income distribution was also likely to have been conducive to achieving better population health outcomes during the period.

Figure 1. **Life Expectancy over Time in PRC, India, Korea, and Philippines**



Sources: *World Development Indicators* (World Bank 2006), Banister (1984), and Indiastat (2006).

Figure 1, however, also shows that the pace of growth in the PRC's life expectancy slowed significantly after the initiation of reforms in 1978. Cornia and Menchini (2005) estimated that the PRC's life expectancy grew by 0.80 percent annually in the 1970s. By the 1980s, the pace of growth had slowed to about 0.30 percent per year on average. In the 1990s, it dropped further to an annual rise of about 0.20 percent. In comparison, India, Korea, and Philippines all managed to keep the pace of growth in life expectancy more or less unchanged during the past three decades. As a result, growth of life expectancy in the PRC has gravitated toward the (lower) trajectory of that of the Philippines, instead of following that of Korea's. Sen (2006) estimates that, in the PRC's postreform period, India's pace of improvement in life expectancy has on average been at least three times faster than that of the PRC, resulting in a narrowing of the gap between the two countries. A leveling-off in improvements in other population health indicators such as infant mortality has also been noted in the PRC since the 1990s (Zhang and Kanbur 2005).

It may be argued that the slowdown in the pace of improvement in population health indicators in the PRC is a result of "diminishing returns." From a biological perspective, it gets progressively more and more difficult to raise life expectancy (or to lower infant and child mortality) beyond a certain point. Furthermore, for natural, sociological, or cultural reasons, it is also difficult to actualize health improvements among certain marginalized population subgroups. However, comparisons with other countries, in particular Korea—which has maintained a steady growth path for life expectancy since the 1960s (the earliest period covered by the data available to us)—suggest that the slowdown in the PRC should not be entirely attributed to diminishing returns. Further evidence of

the decline in the PRC's relative health performance can be seen in comparison with other countries at similar income levels when using a larger, global sample. For example, Grigoriou et al. (2005) show that in 1980–1984 the PRC was far above the average with regard to the child mortality measure relative to other countries in the same income class. By 1995–1999, its relative standing had declined and its child mortality was significantly closer to the average for its income level.

Hence, at least in terms of national averages, the PRC's spectacular growth during the past three decades has not been accompanied by similar achievements in improving population health. There is evidence to suggest that the country's economic success has, paradoxically, had somewhat of an inimical impact on health outcomes in that the pace of improvements in health slowed and performance worsened when compared with its own historical achievements and with those of its regional peers such as India, Korea, and Philippines.

III. SPATIAL INEQUALITY IN HEALTH AND INCOME

In order to better understand national trends, in this section we examine what is happening at the regional level within the PRC with regard to health outcomes. Across provinces, per capita incomes have clearly diverged during the postreform period (Figure 2). The difference between the average income for the richest five provinces and that for the poorest five provinces was Yuan 3,719 in 1981. This difference rose to Yuan 5,622 in 1990; Yuan 13,111 in 2000; and Yuan 20,188 in 2004 (in constant 2000 yuan terms). The Gini coefficient for the provincial real per capita incomes increased from 0.22 in 1981 to 0.25 in 2000, and to 0.27 in 2004 (Table 1). An important question is whether the divergence in provincial incomes has led to divergence in provincial health outcomes.

An examination of provincial-level health indicators suggests that the divergence in incomes has not led to divergence in health outcomes. In fact, levels of health indicators such as life expectancy and infant mortality at the provincial level have been converging over time during the reform period (Figure 3). The difference in the average life expectancy between the top five provinces and bottom five was 11.7 in 1981, 10.8 in 1990, and 8.6 in 2000; and for infant mortality, the difference was 82.7 in 1981, 68.2 in 1990, and 17.0 in 2000. The Gini coefficients of provincial life expectancies and infant mortality rates were 0.03 and 0.25 in 1981, and the two fell to 0.02 and 0.18 in 2000, respectively (Table 1). In many ways, this convergence in health outcomes in the presence of divergence in average incomes across the PRC's provinces mirrors similar trends observed globally as noted by Kenny (2004).

Table 1. **Gini Coefficients of Provincial Income and Health Indicators**

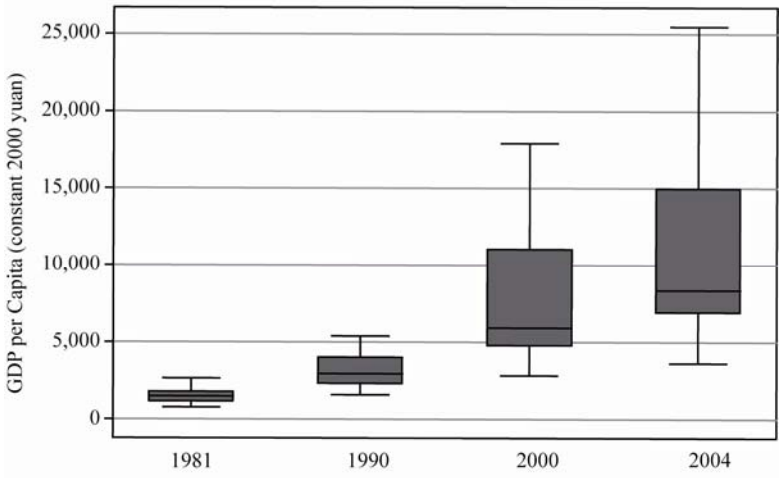
	1981	2000	2004
Per capita income	0.22	0.25	0.27
Life expectancy	0.03	0.02	n.a.
Infant mortality	0.25	0.18	n.a.

n.a. means not available.

Note: Gini coefficients take into consideration of different provincial population sizes.

Sources: Authors' estimates using data from various issues of the *China Statistical Year Book* (National Bureau of Statistics of China, various years) and *Health Statistical Year Book* (CMOH, various years).

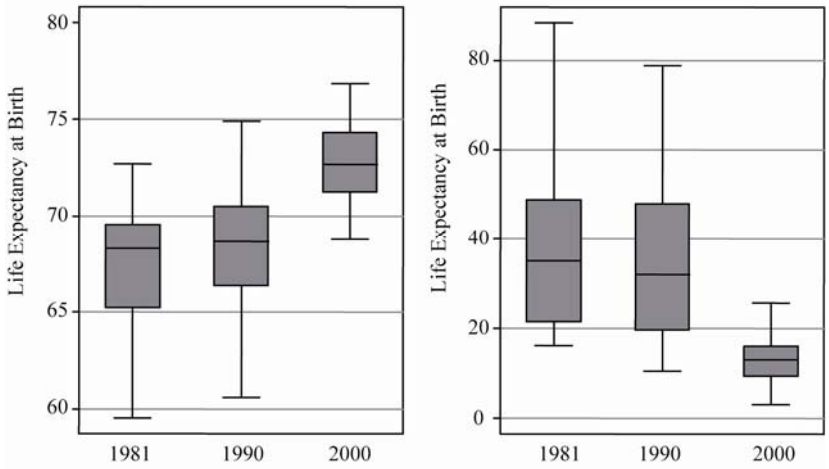
Figure 2. **Distribution of Income by Province in the PRC, 1981–2004**



Note: The graph shows the distribution using a box plot: the horizontal line inside the box represents the median. The top and bottom lines are the 75% and 25% percentile, respectively. The extended tails are 1.5 times the 75% and 25% percentile.

Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years)

Figure 3. **Distribution of Health Indicators by Province in the PRC, 1981–2000**

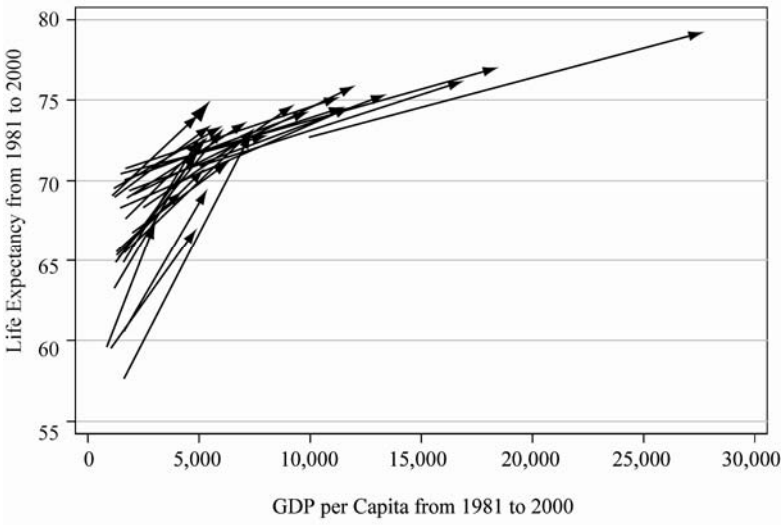


Note: Distribution is represented by box plots (excluding outliers).
Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years).

The convergence in provincial health indicators means that provinces with poorer initial health achieved greater improvements than those with better initial health during 1981–2000. This is clearly shown in Figure 4 where the provincial life expectancy is plotted against the corresponding provincial per capita real GDP (in yuan) in 1981 (the base of the arrow) and in 2000 (the head of the arrow). The slope of each arrow represents the ratio of absolute changes in life expectancy between 1981 and 2000 to absolute changes in per capita incomes during the same period. As can be seen, provinces that had lower life expectancies in 1981, most of which were also poorer, tend to have steeper slopes, and hence achieved greater improvements in life expectancy during 1981–2000 per unit of incremental income, than those that had higher initial life expectancies (most of which were also richer). Figure 4 also shows that, between 1981 and 2000, initially poorer provinces grew slower than those that were initially richer, leading to income divergence and increasing income inequality. But this was more than offset by the poorer provinces' faster improvements in life expectancy relative to the richer ones. This is the provincial analog of a Preston curve—the fact that, at lower levels of income, even a small change in incomes could have a large impact on health outcomes—and provides a plausible explanation for the convergence in provincial health outcomes despite divergence in provincial incomes that has been observed in the PRC. There could be other explanations for the convergence in health indicators as well: if provincial education levels have been converging over time in the PRC—as is likely—this

may offset the effects of diverging incomes on health as education tends to be a significant determinant of health.

Figure 4. **Changes in Provincial Life Expectancy versus Changes in Provincial Incomes in the PRC, 1981–2000**



Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years).

Despite convergence in health outcomes across provinces, however, there are indications that regional inequality in population health outcomes across the rural–urban dimension has increased during the reform period. Zhang and Kanbur (2005) report, on the basis of the PRC population censuses, that the ratio of rural to urban infant mortality rates increased from about 1.7 in 1981 to 2.8 in 2000 (see Table 2). More recent survey data collected from the areas under government health surveillance show that this ratio remained at 2.4 in 2004 (CMOH 2006). The same survey data show that the ratio of rural to urban maternal mortality rates increased from 2.2 in 1991 to 2.4 in 2004. A similar widening of disparities among rural and urban areas has been reported with regard to growth of children measured using height-for-age indicators (Shen et al. 1996). This is not inconsistent with convergence in provincial health averages: as provinces grow and urbanize, provincial average health outcomes can improve even with increasing rural–urban disparities, as the former would increasingly be influenced by improvements in urban health as opposed to rural health trends.

Table 2**. Rural-urban Differentials in Infant Mortality over Time in the PRC**

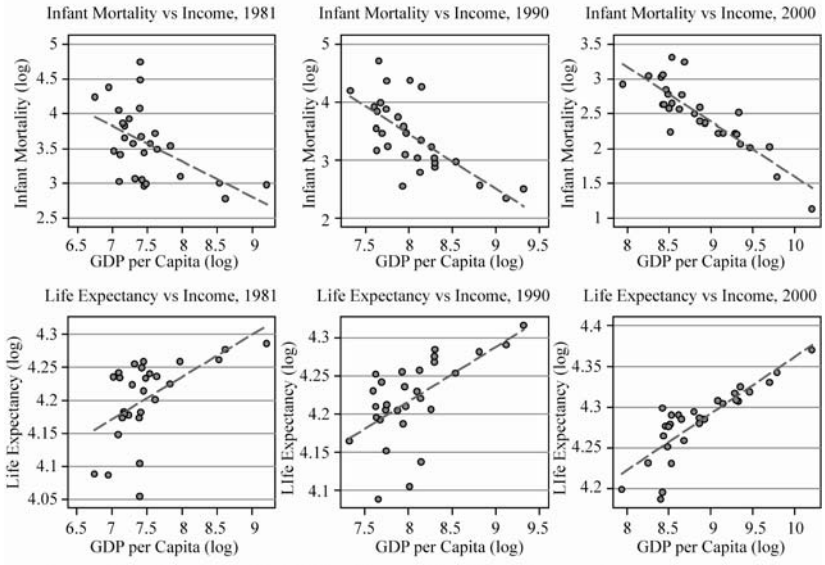
Year	Rural	Urban	Rural/Urban
1981	39.1	23.6	1.7
1990	32.4	19.1	1.7
2000	30.8	11.0	2.8

Source: Zhang and Kanbur (2005).

Others have noted growing disparities in health across the economic spectrum in the PRC, i.e., between the rich and poor. Meng et al. (2004) reports on evidence from urban surveys indicating that nutrition intake among the poor declined during the 1990s, probably a result of removal of price subsidies and rising food prices. Official sources show that utilization of health facilities declined from 1993 to 2003 across all income groups, and particularly so for those at the bottom end (Liu 2006).

Commercialization, rising medicine prices, increasing out-of-pocket health expenditure, and the virtual collapse of the rural cooperative medical system have all been blamed for the rise in rural–urban and rich–poor health disparities in the postreform period. Grigoriou et al. (2005) argue that, as the PRC health system has progressively become commercialized, health outcomes are now increasingly a function of ability to pay. This trend is evident if one looks at the "tightening" of the relationship between provincial incomes and health outcomes over time (Figure 5).

Figure 5. **Provincial Income versus Health Indicators, 1981–2000**



Source: *China Statistical Yearbook* (National Bureau of Statistics, various years).

IV. HEALTH AND INCOME: EVIDENCE FROM HOUSEHOLD-LEVEL DATA

National and provincial averages can sometimes be misleading. Averages may improve even if there are no changes (or even declines) in the health outcomes for certain population subgroups such as the poor. As noted in the previous section, there is evidence that health outcomes for the PRC's rural (and, by association, poorer) population have seen relative declines despite overall improvements in national and provincial averages. In this section, we look at what is happening at the household level, based on a recent *World Health Survey* (WHS) by the World Health Organization (2003).

The WHS data used in this study were collected in 2002, and covered about 4,000 households across 10 provinces in the PRC.[1] The survey uses both household and individual questionnaires, with one individual adult randomly selected from each household as a respondent. The household questionnaire provides information on households' socio-demographic profiles, health insurance cover, permanent income indicators, and expenditure. The individual questionnaire provides health information related to the respondents, including their socio-demographic characteristics; state of health (overall health, mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy, and affect); health risk factors (access to safe drinking water and sanitation facility, prevalence of smoking and heavy alcohol drinking, nutrition, physical activity, living conditions, etc); child and adult mortality of family members; health care coverage received by the respondents and their family members (diagnosis, screening, and treatment; inventory of medicine and drugs; maternal health care; preventive and curative cares for children; reproductive and sexual health care; vision and oral cares; health emergency care, etc); and health system responsiveness.

An examination of the WHS data for the PRC indicates that there were large disparities in health state and health care coverage between the rich and the poor. Grouping the sampled households into quintiles on the basis of an economic status index,[2] it is found that more than 15 percent of the respondents in the bottom quintile for both rural and urban residents were underweight (with a body mass index [BMI] less than 18.5) as opposed to about 6 percent in the top quintile (Figure 5). A self-reported health index, constructed from 16 health items covering mobility, self-care, pain and discomfort, cognition, interpersonal

[1]For more details on the survey, see the WHO website (http://www.who.int/healthinfo/survey).

[2]This was constructed on the basis of the information on housing conditions and possession of household durables as indicated in the household questionnaire.

activities, vision, sleep and energy, and affect, also shows that the poor had significantly lower values, implying poorer health in both rural and urban areas.

The WHS data also show that the health insurance coverage among the poor was particularly low: less than 5 percent of those in the bottom quintile of households had some form of health insurance, as opposed to over 75 percent among the top quintile. This is in stark contrast to the late 1970s when virtually all urban residents and nearly 90 percent of rural residents had some form of health cover (Akin et al. 2004). Unsurprisingly, the data indicate that the bottom quintile spent a greater proportion of their nonsubsistence expenditure on health care than the top quintile: 40 percent compared to 22 percent. Key heath care coverage indicators such as antenatal care, cervical cancer screening, breast cancer screening, and Vitamin A supplementation rates were also significantly lower for the poorer (and rural) segments of the population than the richer (Table 3).[3]

The fact that poorer households have poorer health indicators suggests that income is a major determinant of and hence a constraint to health for households in the PRC. To further test the significance of incomes as a constraint to health, we estimated four health equations relating a health outcome (the dependent variable) to the household economic status (an explanatory variable). To control for effects of non-income factors on the health outcome, we entered education attainment, age, household size, sex, rural/urban residence, and health insurance cover as explanatory variables in two of the four equations.

Table 3. **Coverage Indicators by Economic Status (percent)**

Economic Status Quintile	Antenatal Care	Cervical Cancer Screening	Breast Cancer Screening	Vitamin A Supplementation
1 (Bottom)	56.7	11.4	1.1	1.2
2	72.5	25.8	10.6	21.3
3	84.2	35.8	20.1	26.2
4	86.0	44.0	21.2	34.3
5 (Top)	96.9	66.0	41.7	49.2

Source: Authors' estimates using data from *World Health Survey* (World Health Organization 2003).

Table 4 reports the four health equations estimated from the WHS data. The equations in columns 1 and 2 were estimated using the ordinary least squares (OLS) method, with the dependent variable being the 16-item self-reported health index as described earlier. The equations in columns 3 and 4 were estimated using the probit model, with the dependent variable equal to one if the respondent has a BMI less than 18.5 (implying underweight), and zero otherwise. To estimate the effect of the household economic status on health outcomes, we

[3]In the sample, about 95 percent of the respondents in the poorest quintile and 80 percent of those in the second lowest quintile were rural residents.

constructed four dummy variables, each corresponding to a particular economic status quintile group, except for the bottom quintile, which was treated as the reference group.[4] Each of the dummy variables takes the value of one if a household belongs to the quintile group with which the dummy is associated, and zero otherwise. Therefore, the coefficient of, say, quintile 2 measures the difference in health outcomes between the second and bottom quintile; the coefficient of quintile 3 measures the difference in heath outcomes between the third and bottom quintile, and so on.

Table 4. **Determinants of Health Outcomes**

	Dependent variable = self-reported health (16-item index; OLS)		**Dependent variable = 1 if underweight (BMI < 18.5) and 0 otherwise (probit)**	
	(1)	**(2)**	**(3)**	**(4)**
Economic Status (reference group=Quintile 1)				
Quintile 2	0.23 (0.03)**	0.18 (0.027)**	–0.23 (0.079)**	–0.18 (0.089)**
Quintile 3	0.30 (0.03)**	0.21 (0.030)**	–0.41 (0.083)**	–0.25 (0.099)**
Quintile 4	0.32 (0.03)**	0.21 (0.033)**	–0.65 (0.091)**	–0.52 (0.119)**
Quintile 5	0.43 (0.03)**	0.29 (0.037)**	–0.55 (0.087)**	–0.32 (0.132)**
Schooling Attainment (reference group=No Schooling)				
Below primary		0.16 (0.039)**		–0.01 (0.123)
Primary		0.23 (0.033)**		0.06 (0.107)
Secondary		0.24 (0.035)**		–0.11 (0.119)
High		0.26 (0.041)**		–0.09 (0.141)
University		0.19 (0.047)**		0.17 (0.164)
Postgraduate		0.08 (0.129)		--
Age (reference group =18–29)				
30-39		–0.07 (0.029)**		–0.60 (0.101)**
40-49		–0.17 (0.030)**		–0.53 (0.104)**
50-59		–0.31 (0.033)**		–0.51 (0.116)**
60-69		–0.44 (0.037)**		–0.26 (0.122)**
70+		–0.88 (0.042)**		0.18 (0.132)**
Female (reference group=Male)		–0.11 (0.018)**		0.28 (0.064)**
Urban (reference group=Rural)		–0.04 (0.024)*		–0.22 (0.089)**
Insured (reference group=Uninsured)		0.10 (0.020)**		–0.12 (0.074)*
Household Size		0.016 (0.01)**		0.003 (0.034)
Constant	5.24 (0.02)**	5.34 (0.052)**	-0.96 (0.053)**	–0.76 (0.173)**
Sample Size	3,948	3,526	3,948	3,563

** indicates significance at the 1% level and * significance at the 5% level.
OLS means ordinary least squares.
BMI means body mass index.
Note: Figures in parentheses are standard errors.
Source: Authors' estimates using *World Health Survey* data (WHO 2003).

[4] See footnote 2 for the classification of quintile groups.

Results in Table 4 show that the coefficients of the four economic status dummy variables all have the expected signs and are significant at the 1 percent level in all the four equations. Further, as one would expect, the coefficients for higher quintile groups are on average greater than those for lower quintile groups. These results suggest that richer households have better self-reported health and lower probability of being underweight than poorer households, and the differences are statistically significant, implying that income does constitute a constraint to health for the sampled households. These results hold with or without controlling for effects of non-income health determinants.

Non-income explanatory variables used in the health equations include schooling attainment (7 categories, No Schooling being the reference category); age (6 categories, Below 30 being the reference); sex (2 categories, Male being the reference), residence (2 categories, Rural being the reference); and health insurance (2 categories, No Insurance being the reference). Therefore, coefficients of all the non-income explanatory variables measure the difference in health outcomes between the respondents associated with a particular category and those belonging to a reference category.

Among the non-income explanatory variables, schooling attainment has a significant positive effect on self-reported health: respondents with schooling are healthier than those without schooling (the reference group), and respondents with more schooling are healthier than those with less schooling.[5] Schooling attainment, however, does not have any effect on BMI. Age is also an important determinant of health: higher age groups have lower self-reported health state and are more likely to be underweight. Females on average have lower self-reported health and are more likely to be underweight than males. Urban residents have lower self-reported health—likely reflective of differing expectations regarding health status among urban and rural residents—but are less likely to be underweight. Health insurance improves self-reported health and also reduces the probability of being underweight.

V. CONCLUSIONS

This paper highlights the fact that, despite the PRC's spectacular economic growth during the last three decades, there has been a slowdown in improvements in population health outcomes, which has occurred concomitantly with a rise in disparities in health outcomes between urban and rural populations. It also presents evidence from micro-level data of large inequalities in health care coverage and health outcomes between the rich and the poor, with income being a

[5]Except that the coefficient for the university group is smaller than those for primary, secondary, and high school groups, and the coefficient for the postgraduate group is insignificant, possibly due to the small number of observations in these two groups.

major constraining factor for health among the poor: Compared to those in the top economic status quintile, households in the bottom economic status quintile had significantly lower self-reported health status; higher proportion of underweight, lower health insurance cover (5 versus 75 percent); higher share of health expenditure in total household spending; and lower preventive heath care coverage such as antenatal care, cervical and breast cancer screening, and Vitamin A supplementation. The paper further shows that, across provinces, the correlation between income and health outcomes has strengthened. These findings suggest that there has been a weakening of the much-heralded public health system in the PRC. This conclusion appears also to be supported by the following figures released by the government. In 1982, of the total national health spending, 39 percent was financed by the government budget and 21 percent by out-of-pocket payments of households; in 2004, the share of the government financing fell to 17 percent and the share of household out-of-pocket payments increased to 54 percent. Also, between 1982 and 2004, national health spending financed through various social insurance schemes (including the rural cooperative medical system) fell from 40 to 29 percent (CMOH 2006).

The weakening of the public health system and increasing inequality in health outcomes and health care coverage in the PRC have occurred during a period of market-oriented reform characterized by decentralization, profit orientation, and withdrawal of the government from many spheres of the society. During this period, the PRC's health care system underwent significant transformation, as documented by many studies (see, for example, DRC 2005).

First, the abolition of the people's communes and introduction of the household responsibility system in the rural areas in the late 1970s and early 1980s significantly weakened the financial base of township hospitals and village health clinics, leading to a virtual collapse of the rural cooperative medical system. It was estimated that before the initiation of economic reform, the rural cooperative medical system provided free or affordable basic health cover to about 90 percent of the rural population. Now, it only covers 10 percent.

Second, in the urban areas, the health insurance system has also been significantly transformed. Prior to reform, state-owned and collectively owned enterprises provided free or affordable access to health care services to all employees and their family members. Now urban residents are largely covered by localized social insurance schemes, financed through pooling of employer contributions and employee accounts, supplemented with commercial health insurance. With deductibles, limits on reimbursements, and other restrictions, the new system has significantly shifted the responsibility of paying for health care from the state and society toward individuals, leaving the unemployed workers, employees of financially weak enterprises, migrant workers, retirees, other vulnerable groups, and low-income households particularly vulnerable to illnesses.

Third, the reduction in the government funding for the health system and devolution of responsibilities of providing financial resources to all levels of hospitals and public health clinics have fundamentally changed the way these service providers operate. Instead of offering health care as "public goods" and pursuing "social objectives and responsibilities", they have become highly commercialized and profit-oriented, with widely reported overprescribing and overcharging. This, coupled with the deregulation of prices of drugs and supplies, has led to the escalation of costs and fees of hospital services, making them unaffordable and inaccessible to many.

Some have attributed these problems to that fact that reform in the health sector in the PRC has gone too far, arguing that the market-oriented reforms have failed, and calling for the restoration of the dominant role of the government in financing and delivering public health services and basic health care (see, for example, DRC 2005). Some, on the other hand, have argued that the problems are not necessarily due to over-reliance on market and commercial principles, citing the fact that most health care providers are still owned by the state (Zhou 2007). There are also views that the problems are partly reflective of the failure of the government in instituting an effective regulatory framework for health care providers and the drug industry following their commercialization and privatization, as government regulation is essential for efficient functioning of the health market characterized by pervasive information asymmetry.

The PRC government is taking measures to address problems in the health system. In 2003, the government started piloting a new rural cooperative medical scheme. In March 2006, it adopted the Rural Health Service System Construction and Development Program, aiming to improve the level and capacity of rural health services by investing about Yuan 22 billion in hospitals and medical clinics at the township and country levels in the poor areas of western, middle, and eastern regions, to be financed primarily by the central government budget. The Eleventh Five-Year Plan for National Economic and Social Development has also made improving people's health one of the strategic priorities. More recently, it was reported that top PRC leaders have called for a bigger government role in public health with a goal for everyone to enjoy basic health care services (*People's Daily* 2006).

International experiences suggest that there is no one-size-fits-all model of health care, and the role of the government vis-à-vis the market in financing and delivering health care services differs from one country to another, depending on country-specific circumstances—which are often a result of the interplay of political, economic, and historical factors that change over time. Going forward, therefore, the PRC will have to decide what model of health care to follow based on its own circumstances. Some have argued that there is probably no quick fix and the government will have a long way to go in coping with its health care

problems (Bekedam 2006, Liu 2006). With the sheer size of its population, universal assess to basic health care (of good quality) will probably take time to achieve. A phased approach with clearly set stepwise targets is likely to be the way forward. Whichever model of the health care system is chosen, the findings of this paper suggest that there has to be a greater public sector role in funding basic health care, providing protective health cover to the poor and vulnerable groups, and regulating various actors in the health market. While broad overhauls of the system are being considered, establishing a health care safety net targeted at the poor and vulnerable groups should be on the top of the government's health policy agenda.

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Investment Climate, Productivity, and Regional Development in a Developing Country

ERNESTO M. PERNIA AND J. M. IAN S. SALAS

This paper examines the Philippines's investment climate in relation to the performance of manufacturing firms and the productivity of regional economies. The thesis is that the country's slow economic growth can be attributed in no small measure to its poor investment climate that hampered the productivity growth of firms; further, the disparities in regional development can be explained by, among others factors, differences in investment environments. Addressing the deficiencies of the investment climate would significantly contribute to enhancing the economy's long-run growth and redressing regional inequalities.

I. INTRODUCTION

Private sector development is key to a country's long-run economic growth and poverty reduction. Steady increases in investment and productivity underpin the evolution of the private sector. Investment and productivity growth critically hinge on the quality of the investment climate. Fostering a sound investment climate is one of the fundamental responsibilities of the government for the country to achieve rapid and sustained growth and poverty reduction.

The investment climate can be broadly defined as the institutional and policy environment that influences the actual and potential performance of business establishments (Stern 2002). Three broad sets of factors make up the overall investment environment: macro fundamentals, institutions and governance, and infrastructure. Macro fundamentals include social and political stability; macroeconomic stability (e.g., sustainable fiscal and external balances, realistic exchange rate, low inflation and interest rates); and competitive markets. Institutions and governance refer to transparency and efficiency in regulation, taxation, and legal system; strong and well-functioning financial sector; labor market flexibility; and skilled labor force. Infrastructure concerns the availability and quality of physical infrastructure, such as transportation (roads and ports), telecommunications, power, and water supply.

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In this paper we examine the Philippines's investment climate in relation to economic performance at the national and subnational levels. Our thesis is as follows: the economy's slow growth over the past two decades or more can be attributed in no small measure to its poor investment climate that had constricted capital formation and hampered the productivity improvements and competitiveness of firms. By extension, the uneven development of its regions can be explained by, among other factors, differences in their investment climates. Thus, addressing the deficiencies of the investment climate at the national level and in the regions would significantly contribute to enhancing the economy's productivity and long-run growth, as well as raise the performance of the lagging regions closer to the level of the leading regions.

In Section II, we briefly describe the data and approach used in the analysis. Section III looks at the Philippines's economic performance in a cross-national perspective, and compares it with that of other Asian developing countries. Section IV analyzes how investment climate indicators relate to the economic performance of business establishments in the major industrial centers. We subsequently examine in Section V the investment climate and productivity differences across the provinces. We conclude in Section VI with a summary of the main findings and implications for policy.

II. DATA AND METHOD

A main source of data is the Investment Climate and Productivity Survey (ICS) conducted in June–November 2003 by the National Statistics Office (NSO) for the Asian Development Bank (ADB). The ICS involved a random sample of over 700 business establishments in the country's principal industrial centers (Metro Manila, also called National Capital Region [NCR]; Cavite, Laguna, Batangas, Rizal, and Quezon provinces [CALABARZON]; Metro Cebu; Davao-General Santos; and Clark-Subic), stratified by industry (food and food processing, textiles, garments, and electronics) and firm size (small, medium, and large). The four industries selected are the main contributors to the economy's manufacturing output. The data include investment climate indicators and measures of firm productivity and performance.

Data on the provinces are drawn from the NSO's Family Income and Expenditure Surveys (FIES) and Labor Force Surveys, and from the National Statistical Coordination Board's Regional Income Accounts. Additional data are taken from the population censuses of 1990 and 2000 and the published election reports of the Commission on Elections. Other data are from the Department of Education, Culture, and Sports; Department of Transportation and Communications; and Philippine National Police as shown in the Philippine

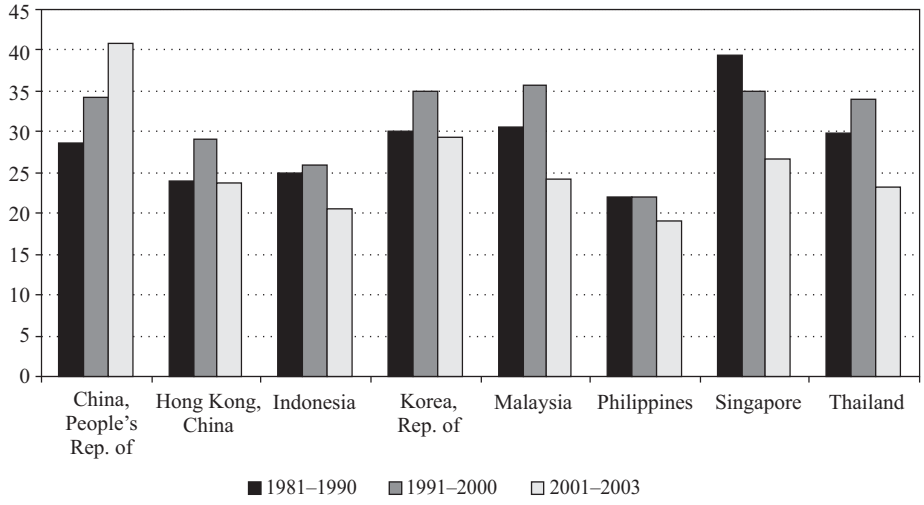
Institute for Development Studies website (PIDS 2006). Cross-country comparative data are taken from the ADB Statistical Database System.

Our analytical approach is to examine how the investment climate is related to the performance of business establishments in the country's major industrial centers, as well as how provincial productivity differences can be explained by differences in investment climate. We use regression techniques to relate economic performance measures to investment climate indicators and other factors.

III. INVESTMENT, ECONOMIC GROWTH, AND POVERTY REDUCTION

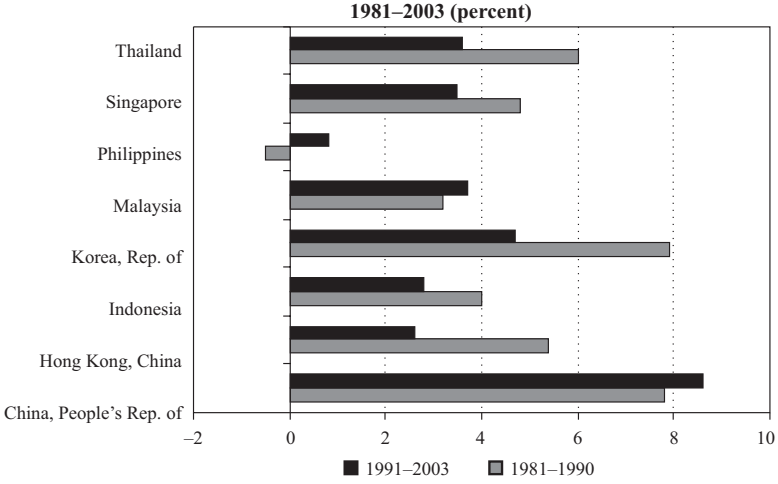
Capital accumulation depends critically on the investment climate, as can be noted from the experience of East and Southeast Asian economies. Countries with better investment climates (as shown in Pernia and Salas 2005) tend to have higher rates of capital accumulation (Figure 1). Higher rates of capital formation, in turn, fuel productivity and economic growth (Figure 2). The Philippines pales on these scores when compared with the dynamic economies of the region.

Figure 1. **Gross Capital Formation in Selected Asian Countries, 1981**



Source: ADB Statistical Database System.

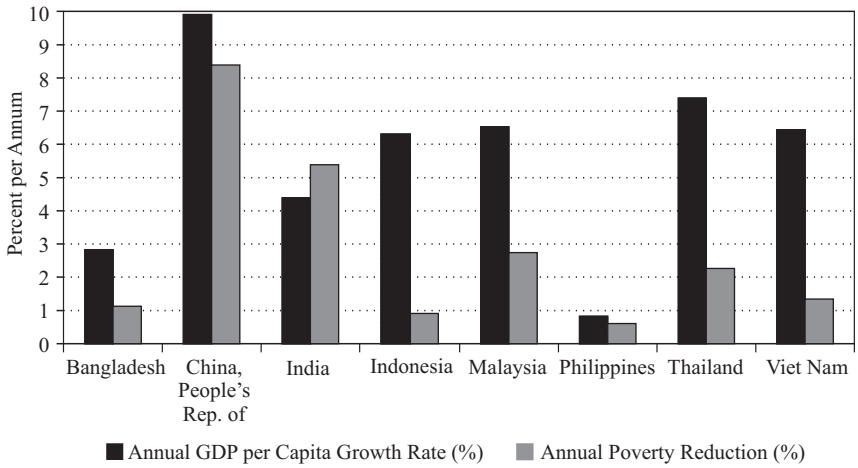
Figure 2. **GDP per Capita Growth Rates in Selected Asian Countries, 1981–2003 (percent)**



Source: ADB Statistical Database System.

Increases in investment and productivity lead to rapid and sustained growth, resulting in substantial poverty reduction. The Philippines's failure to achieve significant poverty reduction has been attributed to its unsteady and weak economic growth (Balisacan 2003). During the 1990s, the country's per capita gross domestic product (GDP) growth averaged a mere 0.63 percent, the lowest in East and Southeast Asia and even markedly lower than the rates for Bangladesh, India, and Sri Lanka. Hence, during that period, the country's poverty reduction rate was also the slowest, as shown in Figure 3 that juxtaposes poverty reduction with GDP per capita growth.

Figure 3. **GDP per Capita Growth Rate and Poverty Reduction, Early to Late 1990s**



Note: Poverty reduction rate in Viet Nam accelerated sharply in the late 1990s and thereafter.
Sources: ADB Statistical Database System and *World Development Indicators 2003* (World Bank 2003).

Economic liberalization and investment policy reforms from the late 1980s through the mid-1990s seemed instrumental in attracting foreign direct investment (FDI) into the Philippines, reaching a peak of $2.3 billion (3.5 percent of GDP) in 1998 (ADB 2005). However, this was disrupted by the Asian financial crisis, resulting in a sharp drop in FDI flows to $1.3 billion (1.8 percent of GDP) in 2000. In 2002 FDI fell again to 1.4 percent of GDP, which was just around the median for most Asian developing countries. The People's Republic of China's and Viet Nam's net FDI flows were the highest at around 4 percent of GDP in 2002.

The system of investment incentives by itself, however, appears to have done little in making up for the deficiencies in the Philippines's investment climate. Fiscal incentives are in fact costly, estimated in terms of foregone revenues at about Pesos 13 billion, representing 30 percent of collected revenues from corporate income taxes in 2000 (Medalla 2002). Recent moves to rationalize these investment incentives represent an attempt to reverse these revenue losses to help alleviate the fiscal deficits.

IV. INVESTMENT CLIMATE AND FIRM PERFORMANCE

Using the ICS survey data on business establishments in the Philippines described above, we now analyze how aspects of the investment climate relate to the performance of firms. Indicators of firm performance (dependent variables) include total factor productivity (TFP), labor productivity, investment rate, employment growth, and sales growth. The independent variables comprise

relations with government (bureaucratic regulations and informal payments); infrastructure (power, water, and information and communications technology [ICT]); access to finance; labor market flexibility; export orientation; workforce quality; capacity utilization; and research and development (R&D) spending. We use dummy variables to control for industry, location, and employment size. The list of variables with their definitions is given in Appendix 1.[1]

A. Productivity

Firms with longer export experience have significantly higher TFP, underscoring the benefits of exposure to wider markets and competition (Table 1).[2] Employment of temporary workers is also positively and significantly associated with TFP, suggesting the benefits of labor market flexibility and cost savings from labor contracting. Access to bank finance (particularly foreign commercial banks) is positively correlated with TFP, while informal credit sources, which typically charge higher interest rates, affect productivity negatively.[3] Excess capacity is negatively related to productivity, implying the importance of capacity utilization. Firms that have to use water from costly private sources appear to have lower productivity, suggesting the need for efficient public water supply systems.

Given the known pitfalls of TFP, labor productivity is often used as an alternative, or even the more favored measure. Labor productivity is positively and significantly associated with R&D spending, computerization, share of temporary workers in a firm's workforce, and education level of skilled production workers (Table 2).

[1]In Tables 1–6, the list of regressors is divided into two: the first part comprises the main factors reflecting investment climate while the second consists of initial conditions and control variables.

[2]The effect of trade openness on regional development is discussed in Pernia and Quising (2003).

[3]We did not correct for possible selection bias in terms of, e.g., banks' preference to lend to productive firms.

Table 1. **Factors Associated with Total Factor Productivity**

Variable	Coefficient	Std error		Impact of one SD improvement
excesscap	–0.008	(0.003)	***	0.167
workertemp	0.165	(0.047)	***	0.137
waterx	–0.002	(0.001)		
leverage	–0.222	(0.119)	*	0.113
inv_nformal	–0.019	(0.006)	***	0.055
wcap_bankf	0.010	(0.004)	**	0.067
wcap_creditc	–0.029	(0.011)	***	0.107
yearsexport	0.022	(0.007)	***	
textile	–0.743	(0.254)	***	
garments	0.003	(0.154)		
electronics	1.806	(0.204)	***	
CALABARZON	–0.138	(0.139)		
Cebu	–0.017	(0.276)		
Davao	0.188	(0.282)		
medium	0.119	(0.203)		
small	0.038	(0.183)		
Constant	2.149	(0.234)	***	
Observations	408	Total impact		0.647
R-squared	0.291	Fitted DV		1.970

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

Table 2. **Factors Associated with Labor Productivity**

Variable	Coefficient	Std error		Impact of one SD improvement
workertemp	0.111	(0.040)	***	0.098
researchsh	0.130	(0.029)	***	0.095
educ3	0.019	(0.010)	*	0.072
email	0.268	(0.102)	***	0.268
inlabprod	0.801	(0.040)	***	
textile	–0.037	(0.179)		
garments	0.025	(0.092)		
electronics	0.340	(0.174)	*	
CALABARZON	–0.015	(0.084)		
Cebu	–0.065	(0.149)		
Davao	0.142	(0.153)		
medium	0.073	(0.143)		
small	0.122	(0.120)		
Constant	0.370	(0.217)	*	
Observations	328	Total impact		0.533
R-squared	0.761	Fitted DV		3.860

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

In a similar vein, labor productivity growth is positively associated with the quality of production workers, access to bank financing especially foreign banks, and adequate water supply even from private sources (Table 3). It is negatively correlated with high leverage (debt-to-equity ratio) and corruption (business establishments having to give informal payments to secure government contracts).

Table 3. **Factors Associated with Labor Productivity Growth**

Variable	Coefficient	Std error	Impact of one SD improvement
waterx	0.127	(0.06) **	6.104
staffq3	8.577	(3.60) **	13.250
share4	–32.351	(18.92) *	8.388
wcap_bankf	0.962	(0.34) ***	7.869
leverage	–9.904	(4.00) **	5.475
giftcontract	–0.495	(0.23) **	3.357
inlabprod	–2.852	(2.53)	
textile	7.935	(11.59)	
garments	4.668	(6.53)	
electronics	3.358	(8.68)	
CALABARZON	–2.958	(5.13)	
Cebu	2.044	(11.80)	
Davao	10.317	(12.73)	
medium	–9.904	(8.66)	
small	–4.119	(7.33)	
Constant	4.401	(14.16)	
Observations	288	Total impact	44.442
R-squared	0.101	Fitted DV	2.090

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

B. Investment Rate

As in the case of productivity, the investment rate is positively and significantly correlated with export orientation, education level of workforce, ICT utilization, access to foreign commercial banks, and labor market flexibility (Table 4). On the other hand, investment rate is negatively associated with excess capacity, cumbersome bureaucratic regulations, and informal payments.

Table 4. **Factors Associated with Investment Rate**

Variable	Coefficient	Std error		Impact of one SD improvement
excesscap	–0.110	(0.046)	**	2.194
giftshr	–0.345	(0.154)	**	1.761
exportsales	0.064	(0.035)	*	2.846
avgeduc	1.091	(0.366)	***	2.846
wcap_nformal	–0.123	(0.055)	**	1.021
inv_bankf	0.260	(0.041)	***	1.399
ict	4.111	(1.158)	***	5.728
workertemp	2.393	(1.359)	*	2.025
mgmttime	–0.099	(0.058)	*	1.362
incap	–1.179	(0.552)	**	
textile	–8.237	(2.655)	***	
garments	–6.270	(2.547)	**	
electronics	–4.478	(3.181)		
CALABARZON	–0.316	(2.098)		
Cebu	–4.350	(3.923)		
Davao	–2.811	(3.624)		
medium	6.140	(3.288)	*	
small	5.604	(3.634)		
Constant	2.063	(6.589)		
Observations	363	Total impact		21.181
R-squared	0.184	Fitted DV		8.550

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

C. Employment Growth

Quality of management and technical staff relates positively and significantly to employment growth as it fosters expansion of business (Table 5). Employment growth is also correlated with export orientation and ready access to credit from foreign banks and state investment funds. It is negatively associated with inadequate water supply, unreliable power supply,[4] and unsafe business

[4]Power supply does not seem to be a major issue in the industrial centers where the surveyed firms are mostly located, while water supply still appears to be a problem. This matter will be addressed again in the provincial regressions below.

environment that results in theft, vandalism, or arson. Not unexpectedly, R&D spending is negatively associated with jobs growth, suggesting a trade-off between labor and technology at least in the short run.

Table 5. **Factors Associated with Employment Growth**

Variable	Coefficient	Std error		Impact of one SD improvement
staffq2	3.101	(0.959)	***	4.090
days_water	–0.052	(0.022)	**	2.586
days_power	–0.098	(0.062)		
theftshr	–0.601	(0.358)	*	1.967
researchsh	–2.074	(0.749)	***	1.438
exportsales	0.071	(0.040)	*	3.199
inv_bankf	0.694	(0.066)	***	3.678
wcap_creditc	0.228	(0.135)	*	0.833
wcap_devfund	0.204	(0.113)	*	0.657
inlabor	–8.097	(1.848)	***	
textile	–0.809	(3.258)		
garments	–2.073	(2.337)		
electronics	2.511	(4.200)		
CALABARZON	3.505	(2.528)		
Cebu	–12.756	(4.333)	***	
Davao	–18.120	(7.086)	**	
medium	–12.409	(5.758)	**	
small	–25.447	(7.489)	***	
Constant	45.400	(12.047)	***	
Observations	373	Total impact		18.446
R-squared	0.222	Fitted DV		0.630

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

D. Sales Growth

Again, as expected, ICT positively and significantly relates to sales growth, as it ensures prompt and timely transactions with clients and suppliers (Table 6). On the other hand, sales growth is negatively correlated with bureaucratic red tape, informal payments, excess capacity, and a high share of the workforce needing additional training.

Table 6. **Factors Associated with Sales Growth**

Variable	Coefficient	Std error		Impact of one SD improvement
excesscap	–0.151	(0.072)	**	3.089
ict	4.163	(1.576)	***	5.634
mgmttime	–0.249	(0.135)	*	3.135
trainingsh	–0.094	(0.045)	**	3.023
giftcontract	–0.518	(0.188)	***	3.575
inv_nformal	–0.996	(0.206)	***	2.993
insales	–0.253	(0.872)		
textile	–2.374	(5.178)		
garments	–2.958	(3.384)		
electronics	–1.672	(5.413)		
CALABARZON	9.150	(3.670)	**	
Cebu	17.167	(8.770)	*	
Davao	8.080	(10.956)		
medium	9.561	(4.765)	**	
small	11.867	(4.164)	***	
Constant	0.392	(9.790)		
Observations	390	Total impact		21.448
R-squared	0.118	Fitted DV		5.310

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.
Fitted DV applies to a large-sized firm involved in food and food processing in the NCR.

E. Simulations

To better appreciate the effect of improvements in the investment climate on the different measures of firm performance, we introduce one standard-deviation favorable changes in the explanatory variables[5] and sum up their total impact. We do this only on variables that are significant at the 10 percent level or better. The one standard-deviation changes represent realistic improvements that the government can bring about, or that an average firm can effect, in the short to medium term.

It is instructive to compare the resulting overall improvement in the dependent variable with the estimated performance of the average firm in the sample. Food and food processing establishments located in Metro Manila with a large workforce are treated as the base in the simulations. But note that firm performance may vary significantly according to industry category, employment size, and location. Also, the magnitude of the simulated contribution of an improvement in the independent variable would depend on the distribution (variance) of the particular characteristic in the relevant sample and the degree of its marginal effect. The simulation results are shown in the rightmost columns of Tables 1–6 above.

[5]There is one instance where the relevant variable is a dummy (email); we assume an initial value of zero for this variable and thus a discrete change to one for its improvement.

Higher capacity utilization contributes the most to an increase in TFP, followed by greater labor flexibility. Firms in the textile industry have lower TFP than food and food processing firms, which in turn have comparable TFP with those in the garments industry. Electronics and electrical machinery firms have significantly higher TFP than food establishments. As to labor productivity, computerization makes the biggest contribution, followed by labor flexibility.

An improvement in ICT contributes the most to an increase in investment rate. It is followed by export orientation, educational level of the workforce, labor flexibility, and reduced informal payments. As regards employment growth, an improvement in the quality of management and administrative staff makes the greatest contribution, followed by better access to foreign commercial banks, export orientation, and more adequate water supply. Finally, an improvement in ICT contributes the most to sales growth, but a reduction in informal payments as a share of the value of government contracts and less cumbersome bureaucratic regulations make sizable impacts as well.

V. PROVINCIAL INVESTMENT CLIMATE

While the analysis of survey data on firms gives us a good sense of the characteristics of firms and how these reflect the investment climate, provincial data perhaps offer a better clue to the location-specific quality of the business environment (Herrin and Pernia 1987).[6] A limitation of these data, however, is that we have only one measure of economic performance, namely, labor productivity.

We compiled panel data on infrastructure, economic, social and demographic indicators in 3-year intervals from 1988 to 2000. We also constructed political variables denoting the saturation of clan members in local elective posts and whether or not incumbent officials are politically affiliated with the sitting national president.

Using a random-effects generalized least squares regression, we find that labor productivity is positively and strongly influenced by road density,[7] electrification, and potable water supply coverage (Table 7). At the same time, dependency ratio has a negative and significant effect on labor productivity, indicating the expected adverse saving and capital-shallowing effects in high-fertility provinces. Investment in educational facilities is also strongly and positively related to labor productivity, and so is local officials' party affiliation with the sitting president. Clan membership of elective officials (political dynasty

[6]There were 73 provinces distributed among 12 regions in 1988 (the base year) plus Metro Manila, which is considered a region by itself. For data consistency, the 1988 provinces were maintained throughout the period (1988–2000) of analysis.

[7]Quality-adjusted road density as used in Balisacan and Pernia (2003).

that facilitates corruption), as defined by Gutierrez 1994, is negatively associated with productivity. However, these two political variables lose their significance when initial conditions [1988 GDP per capita and typhoons[8]] are included in the regression.

Table 7. **Factors Associated with Provincial Labor Productivity**

	Variant 1		Variant 2	
Variable	**Coefficient**	**Std error**	**Coefficient**	**Std error**
roadd_qa	3.069	(0.468) ***	1.289	(0.271) ***
water	0.052	(0.024) **	0.037	(0.017) **
elect	0.138	(0.029) ***	0.071	(0.023) ***
dep_ratio	–0.071	(0.036) **	–0.068	(0.030) **
ieduc	2.629	(0.608) ***	0.975	(0.523) *
pparty	1.446	(0.793) *	0.816	(0.736)
clan	–4.386	(1.805) **	–1.946	(1.359)
pcgdp88			1.870	(0.137) ***
typhoon			–1.940	(0.904) **
Constant	14.066	(4.100) ***	5.444	(3.401)
Observations	365		361	
R-squared: within	0.067		0.062	
between	0.633		0.903	
overall	0.564		0.811	

***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Further, we carried out simulations on how provinces would fare if they had a similar investment climate as the five locations that had the highest productivity in 2000, namely, Metro Manila, Rizal, Cavite, Laguna, and Benguet (note that except for Benguet, all four are included in the ICS data). For this purpose, we adopt the second variant of the provincial regressions and present below the provinces whose predicted productivity values are within 10 percent difference from the actual. Simulation results of this sample of provinces, listed from highest to lowest actual productivity, are presented in Table 8 (with the designated numbers of their respective regions).

[8]Provinces prone to typhoons as used also in Balisacan and Pernia (2003).

Table 8. **Simulation Results from the Provincial Regression**

Region[a]	Province	Actual labor productivity[b]	Rank	Percentage change if IC variables correspond to: NCR	Rizal	Benguet	Cavite	Laguna
3	Pampanga	35,194	10	62.06	4.54	-0.79	4.44	3.05
11	Davao Oriental	33,137	14	69.50	8.40	2.74	8.30	6.82
3	Zambales	30,289	17	75.94	9.10	2.91	8.99	7.37
11	Davao (del Norte)	30,152	18	83.79	16.65	10.42	16.53	14.91
12	Lanao del Norte	28,995	20	83.36	13.53	7.06	13.41	11.72
14	Kalinga-(Apayao)	28,322	21	95.35	23.87	17.25	23.75	22.02
10	Camiguin	26,992	25	82.23	7.22	0.28	7.10	5.28
3	Nueva Ecija	26,767	26	89.57	13.93	6.92	13.80	11.97
4	Quezon	25,900	30	93.39	15.22	7.98	15.09	13.19
12	Sultan Kudarat	25,577	31	103.99	24.84	17.50	24.70	22.78
6	Negros Occidental	24,653	33	101.45	19.32	11.71	19.18	17.19
6	Capiz	23,052	37	114.59	26.76	18.63	26.61	24.49
4	Palawan	22,816	39	114.05	25.31	17.09	25.16	23.01
2	Nueva Vizcaya	21,651	40	122.49	28.98	20.32	28.82	26.56
1	La Union	19,851	43	125.12	23.13	13.68	22.96	20.49
1	Pangasinan	19,664	44	124.14	21.18	11.64	21.00	18.51
2	Isabela	19,284	47	131.92	26.93	17.21	26.75	24.21
7	Siquijor	18,607	48	139.59	30.78	20.70	30.59	27.96
1	Ilocos Sur	16,817	55	148.12	27.73	16.57	27.52	24.61
5	Albay	16,044	59	149.26	23.06	11.37	22.85	19.80
9	Sulu	15,321	62	191.15	59.00	46.76	58.78	55.58
4	Romblon	13,942	64	193.48	48.26	34.81	48.02	44.50
5	Catanduanes	13,056	66	196.51	41.44	27.08	41.18	37.42

[a] Based on the regional classification in 1988.
[b] In pesos, 1994 prices.

The investment climate variables that we allow the various provinces to acquire from the five base locations are road density, electricity and water supply coverage, and investment in educational facilities. The increases in productivity range from 62 to 197 percent if the provinces were to have the investment climate of Metro Manila. These improvements are huge relative to those that could be achieved if the provinces were to acquire the infrastructure set of any of the four other base provinces, where the highest productivity increases are only between 56 and 59 percent.

These findings underscore the well-known primacy of Metro Manila and highlight the importance of better road networks, which largely drives the result for the Metro Manila simulation. Nonetheless, even modest infrastructure improvements to the standards of Cavite, Laguna, or Rizal could lead to measurable productivity increases in the lagging provinces.

VI. CONCLUSION AND POLICY IMPLICATIONS

Investment climate—as indicated by bureaucratic red tape and corruption (informal payments), infrastructure (particularly water and ICT), access to finance, labor market flexibility, and export orientation—is critical to business performance, as reflected in productivity, investment rate, employment growth, and sales growth. Other business establishment characteristics that matter to performance include workforce quality, capacity utilization, and R&D spending.

Analysis of provincial data provides a clue to the locational attributes of the business environment. Provincial economic performance is positively and strongly associated with provincial road density, electrification, and potable water supply coverage. Dependency ratio has a negative and significant effect on labor productivity, suggesting the adverse saving and capital-shallowing effects of high fertility. Investment in educational facilities is also strongly and positively related to labor productivity, and so is party affiliation of local officials with the sitting president. Political dynasty that tends to conduce to corruption is negatively associated with provincial economic performance.

What if poorly performing provinces were able to upgrade their investment environment to the level of the better performing provinces (Cavite, Laguna, and Rizal) or Metro Manila, which arguably has the country's best investment climate? Productivity increases would range from 62 to 197 percent if the provinces were to have the investment environment of Metro Manila. By comparison, productivity improvements would be at most between 56 and 59 percent if the provinces were to be at par with the investment climate of the better performing provinces. Thus, while catching up with Metro Manila is a long shot, even more modest improvements in infrastructure could result in significantly better performance of the provincial economies.

The above findings suggest what policy and institutional reforms are called for at the national and subnational levels both to make the country internationally competitive and to redress regional and provincial inequalities. While the government under the past and the current administration has made strides in improving the investment climate, a lot more needs to be done vis-à-vis international and subnational benchmarks. To the extent that a better investment climate is good for the long-term development of the private sector and the economy in general, foresightful businessmen would see wisdom in cooperating in the policy reform effort, such as reducing corruption and improving infrastructure through public–private partnerships. Indeed, making positive changes on all aspects of the investment climate to hasten and sustain national and regional development is the collaborative effort of all sectors of society—the public and private sectors and the wider citizenry.

APPENDIX 1
LIST OF VARIABLES WITH THEIR DEFINITIONS

A. Firm-level Regressions

All variables refer to 2002 values unless otherwise stated.

REGRESSAND
(growth refers to percentage change from 2001 to 2002)

tfp	Total factor productivity (residual estimated from the usual regression of value added on capital assets and labor size, with industry-specific coefficients)
labprod	Labor productivity, computed as value added per worker (excluded outlier observations with values above the 95th percentile)
labprodgr	Growth in labor productivity
Invrate	100 x investment rate, computed as the value of investments in new machinery and equipment, second-hand machinery and equipment, land, buildings and improvement in leasehold, and vehicles divided by the present value (net book value) of current stock of the same (excluded outlier observations with values above the 95th percentile)
employgr	Growth in employment including temporary workers, weighted by duration of employment in months with permanent workers assumed to have worked full-time for the whole year (excluded outlier observations with values above the 99th percentile)
salesgr	Growth in sales (excluded outlier observations with values above the 99th percentile)

REGRESSORS

Firm Characteristics

exportsales	Percentage of total sales exported (directly or through a distributor)
excesscap	Percentage of available production capacity not used in current operations
workertemp	Proportion of temporary workers in total workforce, weighted by duration of employment

Governance-related

mgmttime	Proportion of senior management's time in a typical week spent in dealing with requirements imposed by government regulations
giftshr	Average amount given to government officials in informal payments as a proportion of total sales
giftcontract	Percentage of contract value typically expected in gifts or informal payments to secure a government contract
theftshr	Amount of losses due to theft, robbery, vandalism, or arson as a proportion of total sales

Access to Finance

Leverage	Ratio of total liabilities to total assets
inv_bankf	Percentage of new investment spending financed from loans with foreign-owned commercial banks
inv_nformal	Percentage of new investment spending financed from informal sources, e.g., money lenders
wcap_devfund	Percentage of working capital financed from investment funds/special development financing/or other state services
wcap_bankf	Percentage of working capital financed from loans with foreign-owned commercial banks
wcap_creditc	Percentage of working capital financed from credit cards
wcap_nformal	Percentage of working capital financed from informal sources, e.g., money lenders

Human Resources

educ*i*	Average number of years of education of *i*
Avgeduc	Average number of years of education of permanent workforce
share*i*	Share of *i* in permanent workforce
staffq1	Principal components index of staff quality using *i* = 1, 2, 3, 5, constructed as -0.04641*share1 + 0.26121*share2 - 0.27277*share3 + 0.36726*share5 + 0.45816*educ1 + 0.45751*educ2 + 0.30448*educ3 + 0.45651*educ5 + 3.75
staffq2	Principal components index of staff quality using *i* = 1, 2, and 5, constructed as 0.00776*share1 + 0.43165*share2 + 0.19498*share5 + 0.54419*educ1 + 0.61278*educ2 + 0.32243*educ5 + 2.75
staffq3	Principal components index of staff quality using *i* = 3 and 4, constructed as -0.56048*share3 + 0.59468*share4 - 0.27746*educ3 + 0.50521*educ4 + 2.0
trainingshr	Proportion of permanent workers needing training

where *i* refers to (mutually exclusive and exhaustive):

1	Permanent management staff
2	Permanent professional staff (trained and certified specialists outside of management)
3	Permanent skilled production workers
4	Permanent unskilled production workers
5	Permanent non-production workers (involved in sales, support, and administrative work not included in management or among professionals)

Infrastructure

waterx	Proportion of water supply sourced from private vendors; owned/ shared wells
days_power	Number of days power outages or surges from the public grid were experienced
days_water	Number of days insufficient water supply was experienced

R&D and ICT

researchsh	Spending on design or R&D as a percentage of total sales
email	Firm regularly uses e-mail in its interactions with clients and suppliers, =1 if yes and =0 if no
ict	Principal components index of ICT utilization, constructed as 0.50349*computer + 0.60769*web + 0.61417*email + 1.5, where computer is the percentage of the workforce regularly using computers and web is a variable indicating whether the firm regularly uses a website in its interactions with clients and suppliers

Dummy Variables

food	Food and food processing
textile	Textile
garments	Garments
electronics	Electronics and electrical machinery
NCR	National Capital Region and Subic/Olongapo City
CALABARZON	Cavite, Laguna, Batangas, Rizal, and Quezon
Cebu	Metro Cebu (Cebu City, Mandaue City, Consolacion, Liloan, Compostela, Talisay City, Minglanilla, Naga, Lapu-lapu City, and Cordova)
Davao	Metro Davao and General Santos City (Davao City, Panabo City, Island Garden City of Samal, and Sta. Cruz)
small	With employment size greater than or equal to 10 but less than 100 (includes number of temporary workers, weighted by duration of employment in months)
medium	With employment size greater than or equal to 100 but less than 500 (includes number of temporary workers, weighted by duration of employment in months)
large	With employment size greater than or equal to 500 (includes number of temporary workers, weighted by duration of employment in months)

Initial Conditions

yearsexport	Number of years since the firm started to export
inlabprod	Log of labor productivity in 2000
insales	Log of sales in 2000
incap	Log of capital stock in 2000
inlabor	Log of employment in 2000

B. Provincial Regressions

(1988 regional classification consistently used)

Variable	Description	Source
lprod	Labor productivity in pesos per person, in constant 1994 prices, computed as the quotient of real GDP and average employment over the year (FIES income share used as proxy for regional GDP share)	FIES, Labor Force Surveys, Regional Income Accounts of the National Statistical Coordination Board
pcgdp88	Per capita GDP in 1988, in constant 1994 prices	FIES
typhoon	Average annual number of typhoons from 1948 to 1998	Philippine Atmospheric, Geophysical and Astronomical Services Administration
roadd_qa	Road density, adjusted by quality of material	Department of Public Works and Highways and NSO
water	Proportion of the household population with potable water, obtained from own-use or shared faucet connected to the community water system	FIES
elect	Proportion of the household population with electricity	FIES
dep_ratio	Ratio of the household population less than 15 years old to those 15 years and above	FIES
ieduc	Weighted average of *barangay* indicator variables for the presence of an elementary school (1/8), high school (1/4), college (3/8), and library (1/4)	1990 and 2000 NSO censuses
pparty	Average of dummy variables for political affiliation of elected local officials (governor, vice-governor, and representatives), =1 if in the same party as the president, =0 otherwise	Commission on Elections
clan	Average of indicator variables for membership of elected local officials in political clan(s), as listed in Appendix A of Gutierrez (1994)	Gutierrez (1994)
hspr	High school participation rate	Department of Education, Culture, and Sports

continued.

Provincial Regressions. *continued.*

elempr	Elementary participation rate	Department of Education, Culture, and Sports
crime	Average monthly crime rate, in number of incidents per 100,000 population	Philippine National Police
teld	Telephone density, in number of installed lines per 100 persons	Department of Transportation and Communications

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